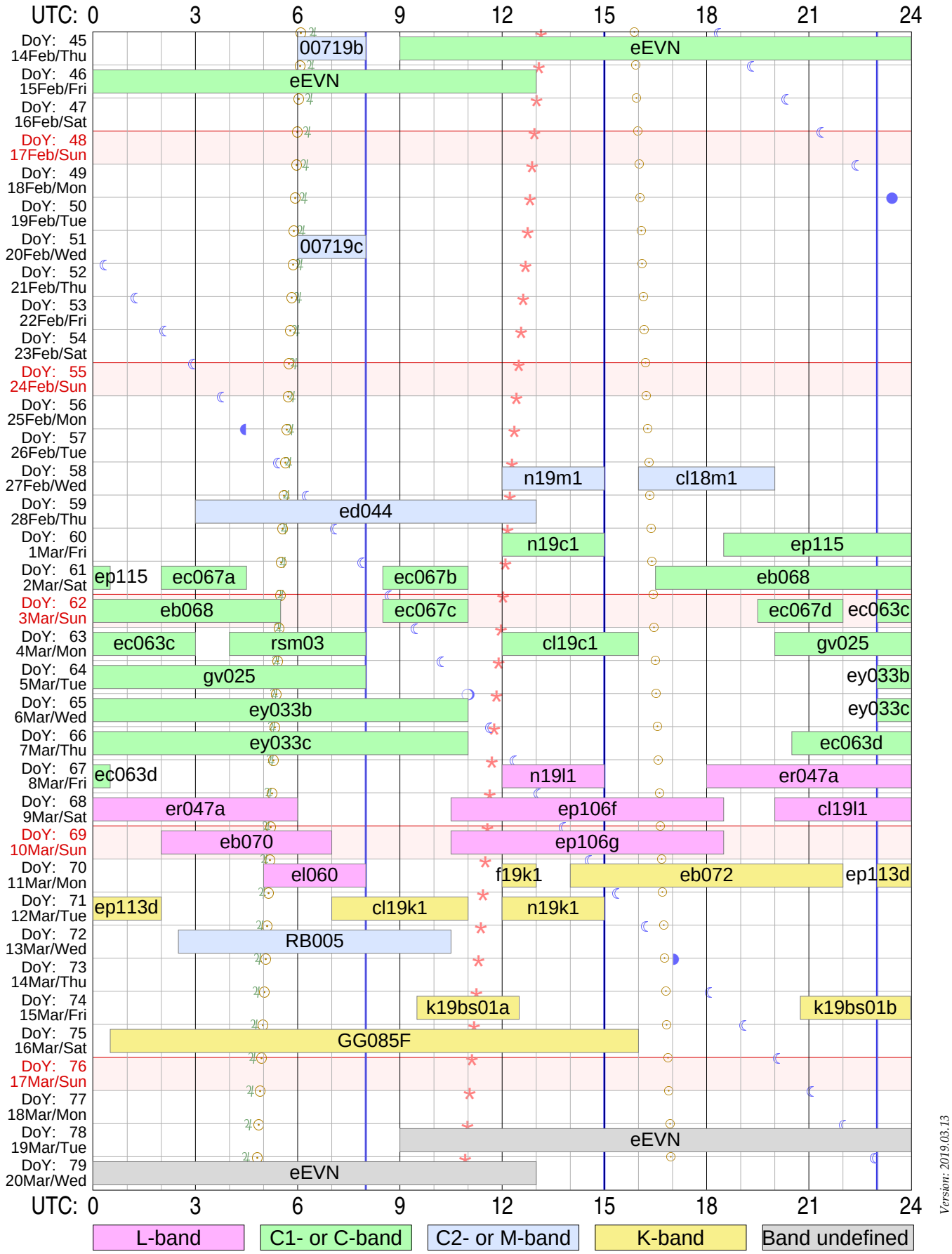
# Tr VLBI plan for Feb/Mar 2019




Sky events at Tr: Sunrise & sunset Transit of Moon Transit of Jupiter Transit of Aries (0h ST)

Vertical lines in blue mark operator shift times at Tr

*Total observing time: 252.7 hours in 36 experiments scheduled*

Strona zostawiona celowo pusta

# RadioAstron & EVN Experiments
# **Nov 2018**

Uytkownik ftp dla logw i schedulw RA: `grt`
`ftp://webinet.asc.rssi.ru`
Przykad dla log files: `cd GRT_log_files/2014_09/2014_09_01_raks08ak`
Przykad dla sched files: `cd schedule/grtsched/RAKS/rk08ak`

| Year 2019 D | Date M DoW | UTstart hh mm | UTstop hh mm | Exper. name | xxComment |
|---|---|---|---|---|---|
| 1 | 27.02 3.0 | | | n19m1 | M |
| 2 | 27.02 4.0 | | | cl18m1 | M |
| 3 | 28.02 10.0 | | | ed044 | M |
| 4 | 1.03 3.0 | | | n19c1 | C |
| 5 | 1.03 5.5 | | | ep115 | C |
| 6 | 2.03 2.5 | | | ec067a | C |
| 7 | 2.03 2.5 | | | ec067b | C |
| 8 | 2.03 7.5 | | | eb068 | C |
| 9 | 3.03 2.5 | | | ec067c | C |
| 10 | 3.03 2.5 | | | ec067d | C |
| 11 | 3.03 1.0 | | | ec063c | C |
| 12 | 4.03 4.0 | | | rsm03 | C |
| 13 | 4.03 4.0 | | | cl19c1 | C |
| 14 | 4.03 4.0 | | | gv025 | C |
| 15 | 5.03 1.0 | | | ey033b | C |
| 16 | 6.03 1.0 | | | ey033c | C |
| 17 | 7.03 3.5 | | | ec063d | C |
| 18 | 8.03 3.0 | | | n19l1 | L |
| 19 | 8.03 6.0 | | | er047a | L |
| 20 | 9.03 8.0 | | | ep106f | L |
| 21 | 9.03 4.0 | | | cl19l1 | L |
| 22 | 10.03 5.0 | | | eb070 | L |
| 23 | 10.03 8.0 | | | ep106g | L |
| 24 | 11.03 3.0 | | | el060 | L |
| 25 | 11.03 1.0 | | | f19k1 | K |
| 26 | 11.03 8.0 | | | eb072 | K |
| 27 | 11.03 1.0 | | | ep113d | K |
| 28 | 12.03 4.0 | | | cl19k1 | K |
| 29 | 12.03 3.0 | | | n19k1 | K |
| 30 | 12.03 2.0 | | | gg085a | K |
| 31 | 13.03 2.0 | | | gg085b | K |
| 32 | 14.03 2.0 | | | gg085c | K |
| 33 | 14.02 2.0 | | | 00719b | M |
| 34 | 20.02 2.0 | | | 00719c | M |
| 35 | 14.02 28.0 | | | eEVN | C |

Plik pdf tego dokumentu jest dost/epny w sieci pod adresem:

`http://paulo.astro.uni.torun.pl/~pw/VLBI/schedules/feb19.pdf`

# 00719btr

00719B

PI: *Marcin Gawronski*

```
Address:  Torun Centre for Astronomy

Observing mode: MKV, 256Mb/s

Schedule for TORUN     (Code Tr )                                   Page   2
               00719b
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-------------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-------------------------------------------------------------------------------------------
 --- Thu  14 Feb 2019   Day  45 ---
 Next scan frequencies:  6662.66  6662.66  6662.66  6662.66  6666.66  6666.66  6666.66  6666.66
                         6670.66  6670.66  6670.66  6670.66  6674.66  6674.66  6674.66  6674.66
 Next BBC frequencies:    762.66   762.66   762.66   762.66   766.66   766.66   766.66   766.66
                          770.66   770.66   770.66   770.66   774.66   774.66   774.66   774.66
 Next scan bandwidths:      2.00     2.00     2.00     2.00     2.00     2.00     2.00     2.00
                            2.00     2.00     2.00     2.00     2.00     2.00     2.00     2.00

06 00 00  J1733-1304   16 50 09  23.1 168.4 -0.7      -7.1     0        0   06 00 00
06 04 00  =NRAO530     16 54 10  23.3 169.4 -0.7      -6.5   240        4   06 00 01

06 05 30  J1744-3116   16 55 40   4.9 169.3 -0.8      -7.5     7        4   06 05 30
06 07 30  ---          16 57 41   5.0 169.7 -0.8      -7.2   120        6   06 05 31

06 08 00  G358         16 58 11   6.4 169.9 -0.8      -6.9    11        6   06 08 00
06 11 30  ---          17 01 41   6.5 170.7 -0.7      -6.4   210        9   06 08 01

06 11 30  J1744-3116   17 01 41   5.1 170.6 -0.7      -6.6   -19        9   No stop
06 13 00  ---          17 03 12   5.1 170.9 -0.7      -6.4    71       11   06 11 31

06 13 00  G358         17 03 12   6.6 171.0 -0.7      -6.2   -19       11   No stop
06 17 00  ---          17 07 12   6.6 171.9 -0.6      -5.6   221       14   06 13 01

06 17 00  J1744-3116   17 07 12   5.2 171.8 -0.6      -5.8   -19       14   No stop
06 18 30  ---          17 08 43   5.2 172.1 -0.6      -5.5    71       16   06 17 01

06 19 00  G358         17 09 13   6.7 172.3 -0.6      -5.3    11       16   06 19 00
06 22 30  ---          17 12 43   6.8 173.1 -0.5      -4.8   210       19   06 19 01

06 22 30  J1744-3116   17 12 43   5.3 173.0 -0.5      -4.9   -19       19   No stop
06 24 00  ---          17 14 13   5.3 173.3 -0.5      -4.7    71       21   06 22 31

06 24 00  G358         17 14 13   6.8 173.4 -0.5      -4.5   -19       21   No stop
06 28 00  ---          17 18 14   6.8 174.3 -0.4      -3.9   221       25   06 24 01

06 28 00  J1744-3116   17 18 14   5.4 174.1 -0.5      -4.1   -19       25   No stop
06 29 30  ---          17 19 44   5.4 174.5 -0.4      -3.9    71       26   06 28 01

06 30 00  G358         17 20 14   6.9 174.7 -0.4      -3.6    11       26   06 30 00
06 33 30  ---          17 23 45   6.9 175.5 -0.3      -3.1   210       29   06 30 01

06 33 30  J1744-3116   17 23 45   5.5 175.3 -0.4      -3.3   -19       29   No stop
06 35 00  ---          17 25 15   5.5 175.6 -0.3      -3.1    71       31   06 33 31
```

Schedule for TORUN (Code Tr ) Page 3

00719b

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu | 14 Feb 2019 | Day 45 --- | | | | | | | | |
| 06 35 00 | G358 | 17 25 15 | 6.9 | 175.8 | -0.3 | | -2.9 | -19 | 31 | No stop |
| 06 39 00 | --- | 17 29 16 | 7.0 | 176.7 | -0.3 | | -2.3 | 221 | 35 | 06 35 01 |
| 06 39 00 | J1744-3116 | 17 29 16 | 5.5 | 176.5 | -0.3 | | -2.5 | -19 | 35 | No stop |
| 06 40 30 | --- | 17 30 46 | 5.6 | 176.8 | -0.2 | | -2.2 | 71 | 36 | 06 39 01 |
| 06 41 00 | G358 | 17 31 16 | 7.0 | 177.1 | -0.2 | | -2.0 | 11 | 36 | 06 41 00 |
| 06 44 30 | --- | 17 34 47 | 7.0 | 177.9 | -0.2 | | -1.4 | 210 | 39 | 06 41 01 |
| 06 44 30 | J1744-3116 | 17 34 47 | 5.6 | 177.7 | -0.2 | | -1.6 | -19 | 39 | No stop |
| 06 46 00 | --- | 17 36 17 | 5.6 | 178.0 | -0.2 | | -1.4 | 71 | 41 | 06 44 31 |
| 06 46 00 | G358 | 17 36 17 | 7.0 | 178.2 | -0.1 | | -1.2 | -19 | 41 | No stop |
| 06 50 00 | --- | 17 40 18 | 7.0 | 179.1 | -0.1 | | -0.6 | 221 | 45 | 06 46 01 |
| 06 50 00 | J1744-3116 | 17 40 18 | 5.6 | 178.9 | -0.1 | | -0.8 | -19 | 45 | No stop |
| 06 51 30 | --- | 17 41 48 | 5.6 | 179.2 | -0.1 | | -0.6 | 71 | 46 | 06 50 01 |
| 06 52 00 | G358 | 17 42 18 | 7.0 | 179.6 | -0.0 | | -0.3 | 11 | 46 | 06 52 00 |
| 06 55 30 | --- | 17 45 49 | 7.0 | 180.3 | 0.0 | | 0.2 | 210 | 50 | 06 52 01 |
| 06 55 30 | J1744-3116 | 17 45 49 | 5.6 | 180.0 | 0.0 | | 0.0 | -19 | 50 | No stop |
| 06 57 00 | --- | 17 47 19 | 5.6 | 180.4 | 0.0 | | 0.3 | 71 | 51 | 06 55 31 |
| 06 57 00 | G358 | 17 47 19 | 7.0 | 180.6 | 0.0 | | 0.4 | -19 | 51 | No stop |
| 07 01 00 | --- | 17 51 19 | 7.0 | 181.5 | 0.1 | | 1.1 | 221 | 55 | 06 57 01 |
| 07 01 00 | J1744-3116 | 17 51 19 | 5.6 | 181.2 | 0.1 | | 0.9 | -19 | 55 | No stop |
| 07 02 30 | --- | 17 52 50 | 5.6 | 181.6 | 0.1 | | 1.1 | 71 | 56 | 07 01 01 |
| 07 03 00 | G358 | 17 53 20 | 7.0 | 182.0 | 0.1 | | 1.4 | 11 | 56 | 07 03 00 |
| 07 06 30 | --- | 17 56 50 | 7.0 | 182.7 | 0.2 | | 1.9 | 210 | 60 | 07 03 01 |
| 07 06 30 | J1744-3116 | 17 56 50 | 5.6 | 182.4 | 0.2 | | 1.7 | -19 | 60 | No stop |
| 07 08 00 | --- | 17 58 21 | 5.6 | 182.7 | 0.2 | | 1.9 | 71 | 61 | 07 06 31 |
| 07 08 00 | G358 | 17 58 21 | 7.0 | 183.1 | 0.2 | | 2.1 | -19 | 61 | No stop |
| 07 12 00 | --- | 18 02 21 | 6.9 | 183.9 | 0.3 | | 2.7 | 221 | 65 | 07 08 01 |
| 07 12 00 | J1744-3116 | 18 02 21 | 5.5 | 183.6 | 0.3 | | 2.5 | -19 | 65 | No stop |
| 07 13 30 | --- | 18 03 52 | 5.5 | 183.9 | 0.3 | | 2.8 | 71 | 66 | 07 12 01 |
| 07 14 00 | G358 | 18 04 22 | 6.9 | 184.4 | 0.3 | | 3.0 | 11 | 66 | 07 14 00 |
| 07 17 30 | --- | 18 07 52 | 6.9 | 185.1 | 0.4 | | 3.6 | 210 | 70 | 07 14 01 |
| 07 17 30 | J1744-3116 | 18 07 52 | 5.5 | 184.8 | 0.4 | | 3.4 | -19 | 70 | No stop |
| 07 19 00 | --- | 18 09 22 | 5.5 | 185.1 | 0.4 | | 3.6 | 71 | 71 | 07 17 31 |

Schedule for TORUN (Code Tr ) Page 4
00719b

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | LST | Start / Stop<br>EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 14 Feb 2019 Day 45 --- | | | | | | | | | | |
| 07 19 00 | G358 | 18 09 22 | 6.9 | 185.5 | 0.4 | | 3.8 | -19 | 71 | No stop |
| 07 23 00 | --- | 18 13 23 | 6.8 | 186.3 | 0.5 | | 4.4 | 221 | 75 | 07 19 01 |
| 07 23 00 | J1744-3116 | 18 13 23 | 5.4 | 186.0 | 0.5 | | 4.2 | -19 | 75 | No stop |
| 07 24 30 | --- | 18 14 53 | 5.4 | 186.3 | 0.5 | | 4.4 | 71 | 76 | 07 23 01 |
| 07 25 00 | G358 | 18 15 23 | 6.8 | 186.8 | 0.5 | | 4.7 | 11 | 76 | 07 25 00 |
| 07 28 30 | --- | 18 18 54 | 6.7 | 187.5 | 0.6 | | 5.2 | 210 | 80 | 07 25 01 |
| 07 28 30 | J1744-3116 | 18 18 54 | 5.3 | 187.1 | 0.6 | | 5.0 | -19 | 80 | No stop |
| 07 30 00 | --- | 18 20 24 | 5.3 | 187.5 | 0.6 | | 5.2 | 71 | 81 | 07 28 31 |
| 07 30 00 | G358 | 18 20 24 | 6.7 | 187.9 | 0.6 | | 5.4 | -19 | 81 | No stop |
| 07 34 00 | --- | 18 24 25 | 6.6 | 188.7 | 0.7 | | 6.0 | 221 | 85 | 07 30 01 |
| 07 34 00 | J1744-3116 | 18 24 25 | 5.2 | 188.3 | 0.6 | | 5.8 | -19 | 85 | No stop |
| 07 35 30 | --- | 18 25 55 | 5.2 | 188.6 | 0.7 | | 6.1 | 71 | 87 | 07 34 01 |
| 07 36 00 | G358 | 18 26 25 | 6.5 | 189.2 | 0.7 | | 6.3 | 11 | 87 | 07 36 00 |
| 07 39 30 | --- | 18 29 56 | 6.4 | 189.9 | 0.8 | | 6.9 | 210 | 90 | 07 36 01 |
| 07 39 30 | J1744-3116 | 18 29 56 | 5.1 | 189.5 | 0.7 | | 6.7 | -19 | 90 | No stop |
| 07 41 00 | --- | 18 31 26 | 5.0 | 189.8 | 0.8 | | 6.9 | 71 | 91 | 07 39 31 |
| 07 41 00 | G358 | 18 31 26 | 6.4 | 190.3 | 0.8 | | 7.1 | -18 | 91 | No stop |
| 07 45 00 | --- | 18 35 27 | 6.3 | 191.1 | 0.9 | | 7.7 | 222 | 95 | 07 41 01 |
| 07 45 00 | J1744-3116 | 18 35 27 | 4.9 | 190.7 | 0.8 | | 7.5 | -19 | 95 | No stop |
| 07 46 30 | --- | 18 36 57 | 4.9 | 191.0 | 0.9 | | 7.7 | 71 | 97 | 07 45 01 |
| 07 47 00 | G358 | 18 37 27 | 6.2 | 191.6 | 0.9 | | 8.0 | 12 | 97 | 07 47 00 |
| 07 50 30 | --- | 18 40 58 | 6.1 | 192.3 | 0.9 | | 8.5 | 210 | 100 | 07 47 01 |
| 07 50 30 | J1744-3116 | 18 40 58 | 4.8 | 191.8 | 0.9 | | 8.3 | -18 | 100 | No stop |
| 07 52 00 | --- | 18 42 28 | 4.7 | 192.2 | 0.9 | | 8.5 | 72 | 101 | 07 50 31 |
| 07 52 00 | G358 | 18 42 28 | 6.1 | 192.6 | 1.0 | | 8.7 | -18 | 101 | No stop |
| 07 56 00 | --- | 18 46 29 | 5.9 | 193.5 | 1.0 | | 9.3 | 222 | 105 | 07 52 01 |
| 07 56 00 | J1744-3116 | 18 46 29 | 4.6 | 193.0 | 1.0 | | 9.1 | -18 | 105 | No stop |
| 07 57 30 | --- | 18 47 59 | 4.5 | 193.3 | 1.0 | | 9.3 | 72 | 107 | 07 56 01 |
| 07 59 00 | J1733-1304 | 18 49 29 | 21.9 | 199.8 | 1.3 | | 12.1 | 11 | 107 | 07 59 00 |
| 08 04 00 | =NRAO530 | 18 54 30 | 21.6 | 201.1 | 1.3 | | 12.8 | 300 | 112 | 07 59 01 |

SETUP FILE INFORMATION:

```
  NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


======== Setup file: sess119M1.setini

  Setup group:    3         Station: TORUN            Total bit rate:   128
  Format: MARK5B            Bits per sample: 2        Sample rate:  4.000
  Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

  Disk used to record data.
```

```
 1st LO=   5900.00   5900.00   5900.00   5900.00   5900.00   5900.00   5900.00   5900.00
           5900.00   5900.00   5900.00   5900.00   5900.00   5900.00   5900.00   5900.00
 Net SB=         L         L         U         U         L         L         U         U
                 L         L         U         U         L         L         U         U
 IF SB =         U         U         U         U         U         U         U         U
                 U         U         U         U         U         U         U         U
 Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
               RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
 BBC   =         1         5         1         5         2         6         2         6
                 3         7         3         7         4         8         4         8
 BBC SB=         L         L         U         U         L         L         U         U
                 L         L         U         U         L         L         U         U
 IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

 Frequency Set:   2  Based on FREQ, BW, and/or DOPPLER in schedule.  Used with PCAL = off
  LO sum=   6662.66  6662.66  6662.66  6662.66  6666.66  6666.66  6666.66  6666.66
            6670.66  6670.66  6670.66  6670.66  6674.66  6674.66  6674.66  6674.66
  BBC fr=    762.66   762.66   762.66   762.66   766.66   766.66   766.66   766.66
             770.66   770.66   770.66   770.66   774.66   774.66   774.66   774.66
  Bandwd=      2.00     2.00     2.00     2.00     2.00     2.00     2.00     2.00
               2.00     2.00     2.00     2.00     2.00     2.00     2.00     2.00
   Matching frequency sets:   2

  Track assignments are:
   track1=  18, 26,  2, 10, 20, 28,  4, 12, 22, 30,  6, 14, 24, 32,  8, 16
   barrel=roll_off



POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                       (B1950)             (J2000)             (Date)             (mas)

* G358               17 39 58.011804   * 17 43 10.020000     17 44 21.497662       0.00
                    -29 50 25.26336    *-29 51 45.80000     -29 52 06.49376        0.00
                     Doppler based on LSR frame and radio definition.  Velocities:
                        -16.00   -16.00   -16.00   -16.00   -16.00   -16.00   -16.00   -16.00
                        -16.00   -16.00   -16.00   -16.00   -16.00   -16.00

* J1744-3116         17 41 09.335206   * 17 44 23.578200     17 45 35.877384       0.00
                    -31 15 21.01917    *-31 16 36.29400     -31 16 54.56117        0.00
                     Doppler based on other sources.

  NRAO530            17 30 13.535193   * 17 33 02.705790     17 34 05.721983       0.01
* J1733-1304        -13 02 45.83971    *-13 04 49.54818     -13 05 32.00532        0.01
  1730-130           /usr/local/sched/catalogs/sources.gsfc
  J1733-13           GSFC 2016a X/S astro solution,  25408 observations.
                     Doppler based on other sources.
```

# rso03tr

e-EVN: rso03, eg102g, ey033a, rsc05, rp028b

PI: *Orienti, Gabanyi, Yang, Chen, Perez-Torres*

```
Address:  JIVE

Observing mode: realtime e-vlbi

Schedule for TORUN     (Code Tr )                                  Page   2
               e-EVN: rso03, eg102g, ey033a, rsc05, rp028b
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------
 --- Thu  14 Feb 2019   Day  45 ---
 ---------- CLOCK-SEARCH ----------
 Next scan frequencies:  4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
                         5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
 Next BBC frequencies:    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
                          806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
 Next scan bandwidths:     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
                           16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00

09 00 00  3C454.3      19 50 39  38.6 117.8 -3.1     -33.6     0        0   09 00 00
09 15 00  ---          20 05 42  40.6 121.8 -2.8     -32.1   900      115   09 00 01

09 15 40  3C454.3      20 06 22  40.6 121.9 -2.8     -32.1    34      115   09 15 40
09 30 00  ---          20 20 44  42.4 125.9 -2.6     -30.5   860      226   09 15 41

09 30 40  3C454.3      20 21 24  42.5 126.1 -2.6     -30.4    34      226   09 30 40
09 45 00  ---          20 35 46  44.2 130.2 -2.3     -28.5   860      336   09 30 41

09 45 40  3C454.3      20 36 27  44.3 130.4 -2.3     -28.5    34      336   09 45 40
10 00 00  ---          20 50 49  45.9 134.7 -2.1     -26.4   860      446   09 45 41

10 03 00  J0019+2021   20 53 49  38.9 109.1 -3.4     -37.3   113      446   10 03 00
10 15 00  =0017+200    21 05 51  40.6 112.0 -3.2     -36.5   720      538   10 03 01

10 15 40  J0019+2021   21 06 31  40.7 112.2 -3.2     -36.4    34      538   10 15 40
10 30 00  =0017+200    21 20 54  42.7 115.8 -3.0     -35.2   860      649   10 15 41

10 30 40  J0019+2021   21 21 34  42.8 116.0 -3.0     -35.2    34      649   10 30 40
10 45 00  =0017+200    21 35 56  44.7 119.9 -2.7     -33.8   860      759   10 30 41

10 45 40  J0019+2021   21 36 36  44.8 120.0 -2.7     -33.7    34      759   10 45 40
11 00 00  =0017+200    21 50 59  46.6 124.1 -2.5     -32.1   860      869   10 45 41

11 00 40  J0019+2021   21 51 39  46.7 124.3 -2.5     -32.0    34      869   11 00 40
11 15 00  =0017+200    22 06 01  48.4 128.6 -2.2     -30.1   860      979   11 00 41

11 15 40  J0019+2021   22 06 41  48.5 128.8 -2.2     -30.0    34      979   11 15 40
11 30 00  =0017+200    22 21 04  50.1 133.3 -2.0     -27.8   860     1090   11 15 41

11 30 40  J0019+2021   22 21 44  50.2 133.5 -2.0     -27.7    34     1090   11 30 40
11 45 00  =0017+200    22 36 06  51.7 138.3 -1.7     -25.2   860     1200   11 30 41
```

Schedule for TORUN (Code Tr ) Page 3

e-EVN: rso03, eg102g, ey033a, rsc05, rp028b

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu | 14 Feb 2019 | Day 45 --- | | | | | | | | |
| 11 45 40 | J0019+2021 | 22 36 46 | 51.8 | 138.5 | -1.7 | | -25.1 | 34 | 1200 | 11 45 40 |
| 12 00 00 | =0017+200 | 22 51 09 | 53.1 | 143.6 | -1.5 | | -22.4 | 860 | 1310 | 11 45 41 |
| 12 03 00 | J0238+1636 | 22 54 09 | 33.2 | 107.5 | -3.8 | | -36.7 | 91 | 1310 | 12 03 00 |
| 12 15 00 | =0235+164 | 23 06 11 | 34.9 | 110.3 | -3.6 | | -36.0 | 720 | 1403 | 12 03 01 |
| 12 15 40 | J0238+1636 | 23 06 51 | 35.0 | 110.5 | -3.5 | | -36.0 | 34 | 1403 | 12 15 40 |
| 12 30 00 | =0235+164 | 23 21 14 | 37.0 | 113.9 | -3.3 | | -35.0 | 860 | 1513 | 12 15 41 |
| 12 30 40 | J0238+1636 | 23 21 54 | 37.1 | 114.1 | -3.3 | | -34.9 | 34 | 1513 | 12 30 40 |
| 12 45 00 | =0235+164 | 23 36 16 | 39.1 | 117.7 | -3.1 | | -33.7 | 860 | 1623 | 12 30 41 |
| 12 45 40 | J0238+1636 | 23 36 56 | 39.2 | 117.9 | -3.0 | | -33.7 | 34 | 1623 | 12 45 40 |
| 13 00 00 | =0235+164 | 23 51 18 | 41.0 | 121.7 | -2.8 | | -32.3 | 860 | 1733 | 12 45 41 |
| ---------- GAP ---------- | | | | | | | | | | |
| 13 10 00 | J0238+1636 | 00 01 20 | 42.3 | 124.4 | -2.6 | | -31.2 | 593 | 1733 | 13 10 00 |
| 13 22 00 | =0235+164 | 00 13 22 | 43.8 | 127.8 | -2.4 | | -29.7 | 720 | 1826 | 13 10 01 |
| 13 23 00 | J0238+1636 | 00 14 22 | 43.9 | 128.1 | -2.4 | | -29.6 | 54 | 1826 | 13 23 00 |
| 13 37 00 | =0235+164 | 00 28 25 | 45.5 | 132.2 | -2.2 | | -27.7 | 840 | 1933 | 13 23 01 |
| 13 38 00 | J0238+1636 | 00 29 25 | 45.6 | 132.5 | -2.2 | | -27.5 | 54 | 1933 | 13 38 00 |
| 13 52 00 | =0235+164 | 00 43 27 | 47.1 | 136.9 | -1.9 | | -25.4 | 840 | 2041 | 13 38 01 |
| 13 53 00 | J0238+1636 | 00 44 27 | 47.2 | 137.2 | -1.9 | | -25.2 | 54 | 2041 | 13 53 00 |
| 14 07 00 | =0235+164 | 00 58 29 | 48.6 | 141.8 | -1.7 | | -22.8 | 840 | 2149 | 13 53 01 |
| 14 12 00 | 3C84 | 01 03 30 | 64.3 | 102.7 | -2.3 | | -51.6 | 205 | 2149 | 14 12 00 |
| 14 22 00 | --- | 01 13 32 | 65.8 | 105.5 | -2.1 | | -50.7 | 600 | 2226 | 14 12 01 |
| 14 23 00 | 3C84 | 01 14 32 | 65.9 | 105.8 | -2.1 | | -50.6 | 54 | 2226 | 14 23 00 |
| 14 37 00 | --- | 01 28 34 | 67.9 | 110.1 | -1.9 | | -48.9 | 840 | 2333 | 14 23 01 |
| 14 38 00 | 3C84 | 01 29 35 | 68.1 | 110.4 | -1.9 | | -48.8 | 54 | 2333 | 14 38 00 |
| 14 52 00 | --- | 01 43 37 | 70.0 | 115.4 | -1.6 | | -46.5 | 840 | 2441 | 14 38 01 |
| 14 53 00 | 3C84 | 01 44 37 | 70.2 | 115.8 | -1.6 | | -46.3 | 53 | 2441 | 14 53 00 |
| 15 07 00 | --- | 01 58 39 | 72.0 | 121.5 | -1.4 | | -43.2 | 840 | 2549 | 14 53 01 |
| 15 08 00 | 3C84 | 01 59 39 | 72.1 | 122.0 | -1.4 | | -42.9 | 53 | 2549 | 15 08 00 |
| 15 22 00 | --- | 02 13 42 | 73.9 | 128.8 | -1.1 | | -38.8 | 840 | 2656 | 15 08 01 |
| 15 23 00 | 3C84 | 02 14 42 | 74.0 | 129.3 | -1.1 | | -38.4 | 53 | 2656 | 15 23 00 |
| 15 37 00 | --- | 02 28 44 | 75.5 | 137.4 | -0.9 | | -32.9 | 840 | 2764 | 15 23 01 |

Schedule for TORUN (Code Tr ) Page 4

e-EVN: rso03, eg102g, ey033a, rsc05, rp028b

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 14 Feb 2019 Day 45 --- | | | | | | | | | | |
| 15 38 00 | 3C84 | 02 29 44 | 75.6 | 138.0 | -0.9 | | -32.5 | 53 | 2764 | 15 38 00 |
| 15 52 00 | --- | 02 43 47 | 76.9 | 147.7 | -0.6 | | -25.4 | 840 | 2872 | 15 38 01 |
| 15 53 00 | 3C84 | 02 44 47 | 77.0 | 148.5 | -0.6 | | -24.8 | 52 | 2872 | 15 53 00 |
| 16 07 00 | --- | 02 58 49 | 77.9 | 159.8 | -0.4 | | -16.1 | 840 | 2979 | 15 53 01 |
| 16 12 00 | J0555+3948 | 03 03 50 | 58.0 | 96.8 | -2.9 | | -50.9 | 158 | 2979 | 16 12 00 |
| 16 22 00 | =0552+398 | 03 13 52 | 59.5 | 99.2 | -2.7 | | -50.5 | 600 | 3056 | 16 12 01 |
| 16 23 00 | J0555+3948 | 03 14 52 | 59.6 | 99.4 | -2.7 | | -50.5 | 54 | 3056 | 16 23 00 |
| 16 37 00 | =0552+398 | 03 28 54 | 61.7 | 102.9 | -2.5 | | -49.6 | 840 | 3164 | 16 23 01 |
| 16 38 00 | J0555+3948 | 03 29 54 | 61.8 | 103.2 | -2.4 | | -49.6 | 54 | 3164 | 16 38 00 |
| 16 52 00 | =0552+398 | 03 43 57 | 63.9 | 107.1 | -2.2 | | -48.4 | 840 | 3272 | 16 38 01 |
| 16 53 00 | J0555+3948 | 03 44 57 | 64.0 | 107.4 | -2.2 | | -48.3 | 54 | 3272 | 16 53 00 |
| 17 07 00 | =0552+398 | 03 58 59 | 66.0 | 111.7 | -2.0 | | -46.6 | 840 | 3379 | 16 53 01 |
| 17 08 00 | J0555+3948 | 03 59 59 | 66.1 | 112.0 | -1.9 | | -46.4 | 54 | 3379 | 17 08 00 |
| 17 22 00 | =0552+398 | 04 14 02 | 68.1 | 116.9 | -1.7 | | -44.2 | 840 | 3487 | 17 08 01 |
| 17 23 00 | J0555+3948 | 04 15 02 | 68.2 | 117.3 | -1.7 | | -44.0 | 53 | 3487 | 17 23 00 |
| 17 37 00 | =0552+398 | 04 29 04 | 70.0 | 122.8 | -1.5 | | -41.1 | 840 | 3595 | 17 23 01 |
| 17 38 00 | J0555+3948 | 04 30 04 | 70.2 | 123.3 | -1.4 | | -40.8 | 53 | 3595 | 17 38 00 |
| 17 52 00 | =0552+398 | 04 44 06 | 71.8 | 129.7 | -1.2 | | -37.0 | 840 | 3703 | 17 38 01 |
| 17 53 00 | J0555+3948 | 04 45 07 | 72.0 | 130.2 | -1.2 | | -36.7 | 53 | 3703 | 17 53 00 |
| 18 07 00 | =0552+398 | 04 59 09 | 73.5 | 137.7 | -1.0 | | -31.7 | 840 | 3810 | 17 53 01 |
| 18 12 00 | J0854+2006 | 05 04 10 | 35.0 | 103.6 | -3.9 | | -38.4 | 140 | 3810 | 18 12 00 |
| 18 22 00 | =OJ287 | 05 14 11 | 36.4 | 105.9 | -3.7 | | -37.9 | 600 | 3887 | 18 12 01 |
| 18 23 00 | J0854+2006 | 05 15 12 | 36.6 | 106.1 | -3.7 | | -37.9 | 54 | 3887 | 18 23 00 |
| 18 37 00 | =OJ287 | 05 29 14 | 38.6 | 109.4 | -3.4 | | -37.1 | 840 | 3995 | 18 23 01 |
| 18 38 00 | J0854+2006 | 05 30 14 | 38.7 | 109.7 | -3.4 | | -37.0 | 54 | 3995 | 18 38 00 |
| 18 52 00 | =OJ287 | 05 44 16 | 40.7 | 113.1 | -3.2 | | -36.0 | 840 | 4103 | 18 38 01 |
| 18 53 00 | J0854+2006 | 05 45 16 | 40.8 | 113.4 | -3.2 | | -35.9 | 54 | 4103 | 18 53 00 |
| 19 07 00 | =OJ287 | 05 59 19 | 42.7 | 117.0 | -2.9 | | -34.7 | 840 | 4210 | 18 53 01 |
| 19 08 00 | J0854+2006 | 06 00 19 | 42.9 | 117.3 | -2.9 | | -34.6 | 54 | 4210 | 19 08 00 |
| 19 22 00 | =OJ287 | 06 14 21 | 44.7 | 121.0 | -2.7 | | -33.2 | 840 | 4318 | 19 08 01 |

```
Schedule for TORUN     (Code Tr )                                  Page   5
              e-EVN: rso03, eg102g, ey033a, rsc05, rp028b
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Thu  14 Feb 2019   Day  45 ---

19 23 00  J0854+2006   06 15 21  44.8 121.3 -2.7     -33.1    54     4318   19 23 00
19 37 00  =OJ287       06 29 24  46.6 125.3 -2.4     -31.4   840     4426   19 23 01

19 38 00  J0854+2006   06 30 24  46.7 125.6 -2.4     -31.3    54     4426   19 38 00
19 52 00  =OJ287       06 44 26  48.4 129.8 -2.2     -29.4   840     4533   19 38 01

19 53 00  J0854+2006   06 45 26  48.5 130.1 -2.2     -29.2    54     4533   19 53 00
20 07 00  =OJ287       06 59 29  50.1 134.6 -1.9     -27.1   840     4641   19 53 01

20 08 00  J0854+2006   07 00 29  50.2 134.9 -1.9     -26.9    54     4641   20 08 00
20 13 00  =OJ287       07 05 30  50.7 136.6 -1.8     -26.1   300     4679   20 08 01

 ---------- RSO03 ----------

20 23 00  J0927+3902   07 15 31  63.3 108.6 -2.2     -47.1   524     4679   20 23 00
20 28 00  =4C39.25     07 20 32  64.0 110.1 -2.1     -46.5   300     4718   20 23 01

20 30 00  J0950+0615   07 22 32  34.2 133.5 -2.5     -26.0    -6     4718   20 30 00
20 33 00  ---          07 25 33  34.5 134.3 -2.4     -25.6   174     4741   20 30 01

20 33 00  J0950+0615   07 25 33  34.5 134.3 -2.4     -25.6    -5     4741   No stop
20 36 00  ---          07 28 33  34.8 135.1 -2.4     -25.2   175     4764   20 33 01

20 36 30  J0950+0615   07 29 03  34.9 135.3 -2.4     -25.2    24     4764   20 36 30
20 39 30  ---          07 32 04  35.2 136.1 -2.3     -24.8   180     4787   20 36 31

20 39 30  J0950+0615   07 32 04  35.2 136.1 -2.3     -24.8    -5     4787   No stop
20 42 30  ---          07 35 04  35.5 136.9 -2.3     -24.4   175     4810   20 39 31

20 42 30  J0950+0615   07 35 04  35.5 136.9 -2.3     -24.4    -5     4810   No stop
20 45 30  ---          07 38 05  35.8 137.8 -2.2     -24.0   175     4833   20 42 31

20 45 30  J0950+0615   07 38 05  35.8 137.8 -2.2     -24.0    -5     4833   No stop
20 48 30  ---          07 41 05  36.1 138.6 -2.2     -23.5   175     4856   20 45 31

20 49 00  J0950+0615   07 41 36  36.2 138.8 -2.2     -23.5    24     4856   20 49 00
20 52 00  ---          07 44 36  36.5 139.6 -2.1     -23.0   180     4879   20 49 01

20 52 00  J0950+0615   07 44 36  36.5 139.6 -2.1     -23.0    -5     4879   No stop
20 55 00  ---          07 47 37  36.7 140.5 -2.1     -22.6   175     4903   20 52 01

20 55 00  J0950+0615   07 47 37  36.7 140.5 -2.1     -22.6    -5     4903   No stop
20 58 00  ---          07 50 37  37.0 141.3 -2.0     -22.2   175     4926   20 55 01
```

Schedule for TORUN (Code Tr ) Page 6

e-EVN: rso03, eg102g, ey033a, rsc05, rp028b

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 14 Feb 2019 Day 45 --- | | | | | | | | | | |
| 20 58 00 | J0950+0615 | 07 50 37 | 37.0 | 141.3 | -2.0 | | -22.2 | -5 | 4926 | No stop |
| 21 01 00 | --- | 07 53 37 | 37.3 | 142.2 | -2.0 | | -21.7 | 175 | 4949 | 20 58 01 |
| 21 01 30 | J0950+0615 | 07 54 08 | 37.4 | 142.3 | -1.9 | | -21.7 | 24 | 4949 | 21 01 30 |
| 21 04 30 | --- | 07 57 08 | 37.6 | 143.2 | -1.9 | | -21.2 | 180 | 4972 | 21 01 31 |
| 21 04 30 | J0950+0615 | 07 57 08 | 37.6 | 143.2 | -1.9 | | -21.2 | -5 | 4972 | No stop |
| 21 07 30 | --- | 08 00 09 | 37.9 | 144.1 | -1.8 | | -20.7 | 175 | 4995 | 21 04 31 |
| 21 07 30 | J0950+0615 | 08 00 09 | 37.9 | 144.1 | -1.8 | | -20.7 | -5 | 4995 | No stop |
| 21 10 30 | --- | 08 03 09 | 38.2 | 145.0 | -1.8 | | -20.3 | 175 | 5018 | 21 07 31 |
| 21 10 30 | J0950+0615 | 08 03 09 | 38.2 | 145.0 | -1.8 | | -20.3 | -5 | 5018 | No stop |
| 21 13 30 | --- | 08 06 10 | 38.4 | 145.9 | -1.7 | | -19.8 | 175 | 5041 | 21 10 31 |
| 21 14 00 | J0950+0615 | 08 06 40 | 38.5 | 146.0 | -1.7 | | -19.7 | 24 | 5041 | 21 14 00 |
| 21 17 00 | --- | 08 09 40 | 38.7 | 146.9 | -1.7 | | -19.2 | 180 | 5064 | 21 14 01 |
| 21 17 00 | J0950+0615 | 08 09 40 | 38.7 | 146.9 | -1.7 | | -19.2 | -5 | 5064 | No stop |
| 21 20 00 | --- | 08 12 41 | 39.0 | 147.8 | -1.6 | | -18.7 | 175 | 5087 | 21 17 01 |
| 21 20 00 | J0950+0615 | 08 12 41 | 39.0 | 147.8 | -1.6 | | -18.7 | -5 | 5087 | No stop |
| 21 23 00 | --- | 08 15 41 | 39.2 | 148.8 | -1.6 | | -18.3 | 175 | 5110 | 21 20 01 |
| 21 23 00 | J0950+0615 | 08 15 41 | 39.2 | 148.8 | -1.6 | | -18.3 | -5 | 5110 | No stop |
| 21 26 00 | --- | 08 18 42 | 39.4 | 149.7 | -1.5 | | -17.8 | 175 | 5133 | 21 23 01 |
| 21 26 30 | J0950+0615 | 08 19 12 | 39.5 | 149.8 | -1.5 | | -17.7 | 24 | 5133 | 21 26 30 |
| 21 29 30 | --- | 08 22 12 | 39.7 | 150.8 | -1.5 | | -17.2 | 180 | 5156 | 21 26 31 |
| 21 29 30 | J0950+0615 | 08 22 12 | 39.7 | 150.8 | -1.5 | | -17.2 | -5 | 5156 | No stop |
| 21 32 30 | --- | 08 25 13 | 39.9 | 151.7 | -1.4 | | -16.6 | 175 | 5179 | 21 29 31 |
| 21 32 30 | J0950+0615 | 08 25 13 | 39.9 | 151.7 | -1.4 | | -16.6 | -5 | 5179 | No stop |
| 21 35 30 | --- | 08 28 13 | 40.1 | 152.6 | -1.4 | | -16.1 | 175 | 5203 | 21 32 31 |
| 21 35 30 | J0950+0615 | 08 28 13 | 40.1 | 152.6 | -1.4 | | -16.1 | -5 | 5203 | No stop |
| 21 38 30 | --- | 08 31 14 | 40.3 | 153.6 | -1.3 | | -15.6 | 175 | 5226 | 21 35 31 |
| 21 39 00 | J0950+0615 | 08 31 44 | 40.3 | 153.7 | -1.3 | | -15.5 | 24 | 5226 | 21 39 00 |
| 21 42 00 | --- | 08 34 44 | 40.5 | 154.7 | -1.3 | | -15.0 | 180 | 5249 | 21 39 01 |
| 21 42 00 | J0950+0615 | 08 34 44 | 40.5 | 154.7 | -1.3 | | -15.0 | -5 | 5249 | No stop |
| 21 45 00 | --- | 08 37 45 | 40.7 | 155.6 | -1.2 | | -14.4 | 175 | 5272 | 21 42 01 |

```
Schedule for TORUN     (Code Tr )                                  Page   7
              e-EVN: rso03, eg102g, ey033a, rsc05, rp028b
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                  Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Thu  14 Feb 2019   Day  45 ---

21 45 00  J0950+0615   08 37 45  40.7 155.6 -1.2     -14.4    -5     5272   No stop
21 48 00  ---          08 40 45  40.9 156.6 -1.2     -13.9   175     5295   21 45 01

21 48 00  J0950+0615   08 40 45  40.9 156.6 -1.2     -13.9    -5     5295   No stop
21 51 00  ---          08 43 46  41.1 157.5 -1.1     -13.3   175     5318   21 48 01

21 51 30  J0950+0615   08 44 16  41.1 157.7 -1.1     -13.2    24     5318   21 51 30
21 54 30  ---          08 47 16  41.3 158.7 -1.1     -12.7   180     5341   21 51 31

21 54 30  J0950+0615   08 47 16  41.3 158.7 -1.1     -12.7    -5     5341   No stop
21 57 30  ---          08 50 17  41.4 159.7 -1.0     -12.1   175     5364   21 54 31

21 57 30  J0950+0615   08 50 17  41.4 159.7 -1.0     -12.1    -5     5364   No stop
22 00 30  ---          08 53 17  41.6 160.6 -1.0     -11.6   175     5387   21 57 31

22 00 30  J0950+0615   08 53 17  41.6 160.6 -1.0     -11.6    -5     5387   No stop
22 03 30  ---          08 56 18  41.7 161.6 -0.9     -11.0   175     5410   22 00 31

22 04 00  J0950+0615   08 56 48  41.8 161.8 -0.9     -10.9    24     5410   22 04 00
22 07 00  ---          08 59 48  41.9 162.8 -0.9     -10.3   180     5433   22 04 01

22 07 00  J0950+0615   08 59 48  41.9 162.8 -0.9     -10.3    -5     5433   No stop
22 10 00  ---          09 02 49  42.0 163.8 -0.8      -9.7   175     5456   22 07 01

22 10 00  J0950+0615   09 02 49  42.0 163.8 -0.8      -9.7    -5     5456   No stop
22 13 00  ---          09 05 49  42.2 164.7 -0.8      -9.1   175     5479   22 10 01

22 13 00  J0950+0615   09 05 49  42.2 164.7 -0.8      -9.1    -5     5479   No stop
22 17 00  ---          09 09 50  42.3 166.1 -0.7      -8.4   235     5510   22 13 01

22 19 30  J1159+2914   09 12 20  51.2 111.2 -2.8     -39.9    25     5510   22 19 30
22 25 00  =1156+295    09 17 51  51.9 112.6 -2.7     -39.4   330     5553   22 19 31

 ---------- EG102G ----------

22 35 00  J1300+1417   09 27 53  32.9 112.0 -3.6     -35.0   510     5553   22 35 00
22 36 30  ---          09 29 23  33.1 112.4 -3.5     -34.9    90     5564   22 35 01

22 36 30  J1307+1507   09 29 23  32.8 110.1 -3.7     -35.7   -18     5564   No stop
22 40 00  ---          09 32 54  33.3 111.0 -3.6     -35.5   192     5591   22 36 31

22 40 00  J1300+1417   09 32 54  33.6 113.2 -3.5     -34.7   -19     5591   No stop
22 41 30  ---          09 34 24  33.8 113.6 -3.5     -34.6    71     5603   22 40 01
```

Schedule for TORUN (Code Tr ) Page 8

e-EVN: rso03, eg102g, ey033a, rsc05, rp028b

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 14 Feb 2019 Day 45 --- | | | | | | | | | | |
| 22 41 30 | J1307+1507 | 09 34 24 | 33.5 | 111.3 | -3.6 | | -35.4 | -18 | 5603 | No stop |
| 22 45 00 | --- | 09 37 55 | 34.0 | 112.1 | -3.5 | | -35.2 | 192 | 5629 | 22 41 31 |
| 22 45 40 | J1300+1417 | 09 38 35 | 34.3 | 114.6 | -3.4 | | -34.3 | 21 | 5629 | 22 45 40 |
| 22 47 10 | --- | 09 40 05 | 34.6 | 114.9 | -3.4 | | -34.2 | 90 | 5641 | 22 45 41 |
| 22 47 10 | J1307+1507 | 09 40 05 | 34.3 | 112.7 | -3.5 | | -35.0 | -18 | 5641 | No stop |
| 22 50 40 | --- | 09 43 36 | 34.8 | 113.5 | -3.4 | | -34.8 | 192 | 5668 | 22 47 11 |
| 22 50 40 | J1300+1417 | 09 43 36 | 35.0 | 115.8 | -3.3 | | -33.9 | -19 | 5668 | No stop |
| 22 52 10 | --- | 09 45 06 | 35.2 | 116.2 | -3.3 | | -33.8 | 71 | 5679 | 22 50 41 |
| 22 52 10 | J1307+1507 | 09 45 06 | 35.0 | 113.9 | -3.4 | | -34.6 | -18 | 5679 | No stop |
| 22 55 40 | --- | 09 48 36 | 35.5 | 114.7 | -3.3 | | -34.4 | 192 | 5706 | 22 52 11 |
| 22 56 20 | J1300+1417 | 09 49 16 | 35.8 | 117.2 | -3.2 | | -33.4 | 21 | 5706 | 22 56 20 |
| 22 57 50 | --- | 09 50 47 | 36.0 | 117.6 | -3.2 | | -33.3 | 90 | 5718 | 22 56 21 |
| 22 57 50 | J1307+1507 | 09 50 47 | 35.8 | 115.3 | -3.3 | | -34.2 | -18 | 5718 | No stop |
| 23 01 20 | --- | 09 54 17 | 36.2 | 116.1 | -3.2 | | -33.9 | 192 | 5745 | 22 57 51 |
| 23 02 00 | J1300+1417 | 09 54 57 | 36.5 | 118.6 | -3.1 | | -32.9 | 21 | 5745 | 23 02 00 |
| 23 03 30 | --- | 09 56 28 | 36.7 | 119.0 | -3.1 | | -32.8 | 90 | 5756 | 23 02 01 |
| 23 03 30 | J1307+1507 | 09 56 28 | 36.5 | 116.7 | -3.2 | | -33.8 | -18 | 5756 | No stop |
| 23 07 00 | --- | 09 59 58 | 37.0 | 117.6 | -3.1 | | -33.5 | 192 | 5783 | 23 03 31 |
| 23 07 00 | J1300+1417 | 09 59 58 | 37.2 | 119.9 | -3.0 | | -32.5 | -19 | 5783 | No stop |
| 23 08 30 | --- | 10 01 28 | 37.4 | 120.3 | -3.0 | | -32.3 | 71 | 5795 | 23 07 01 |
| 23 08 30 | J1307+1507 | 10 01 28 | 37.2 | 117.9 | -3.1 | | -33.3 | -19 | 5795 | No stop |
| 23 12 00 | --- | 10 04 59 | 37.7 | 118.8 | -3.1 | | -33.0 | 191 | 5822 | 23 08 31 |
| 23 12 40 | J1300+1417 | 10 05 39 | 37.9 | 121.4 | -2.9 | | -31.9 | 21 | 5822 | 23 12 40 |
| 23 14 10 | --- | 10 07 09 | 38.1 | 121.8 | -2.9 | | -31.8 | 90 | 5833 | 23 12 41 |
| 23 14 10 | J1307+1507 | 10 07 09 | 37.9 | 119.4 | -3.0 | | -32.8 | -19 | 5833 | No stop |
| 23 17 40 | --- | 10 10 40 | 38.4 | 120.3 | -3.0 | | -32.5 | 191 | 5860 | 23 14 11 |
| 23 18 20 | J1300+1417 | 10 11 20 | 38.7 | 122.9 | -2.8 | | -31.4 | 21 | 5860 | 23 18 20 |
| 23 19 50 | --- | 10 12 50 | 38.8 | 123.3 | -2.8 | | -31.2 | 90 | 5872 | 23 18 21 |
| 23 19 50 | J1307+1507 | 10 12 50 | 38.7 | 120.9 | -2.9 | | -32.3 | -19 | 5872 | No stop |
| 23 23 20 | --- | 10 16 21 | 39.1 | 121.8 | -2.9 | | -31.9 | 191 | 5899 | 23 19 51 |

```
Schedule for TORUN     (Code Tr )                                  Page   9
              e-EVN: rso03, eg102g, ey033a, rsc05, rp028b
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Thu  14 Feb 2019   Day  45 ---

23 23 20  J1300+1417   10 16 21  39.3 124.2 -2.8     -30.8   -19     5899   No stop
23 24 50  ---          10 17 51  39.5 124.6 -2.7     -30.7    71     5910   23 23 21

23 24 50  J1307+1507   10 17 51  39.3 122.2 -2.8     -31.8   -19     5910   No stop
23 28 20  ---          10 21 22  39.8 123.1 -2.8     -31.4   191     5937   23 24 51

23 29 00  J1300+1417   10 22 02  40.0 125.7 -2.7     -30.2    21     5937   23 29 00
23 30 30  ---          10 23 32  40.2 126.2 -2.6     -30.0    90     5949   23 29 01

23 30 30  J1307+1507   10 23 32  40.0 123.7 -2.8     -31.1   -19     5949   No stop
23 34 00  ---          10 27 03  40.5 124.7 -2.7     -30.8   191     5976   23 30 31

23 34 40  J1300+1417   10 27 43  40.7 127.3 -2.6     -29.5    21     5976   23 34 40
23 36 10  ---          10 29 13  40.9 127.7 -2.5     -29.3    90     5987   23 34 41

23 36 10  J1307+1507   10 29 13  40.7 125.2 -2.7     -30.5   -19     5987   No stop
23 39 40  ---          10 32 44  41.2 126.2 -2.6     -30.1   191     6014   23 36 11

23 39 40  J1300+1417   10 32 44  41.3 128.7 -2.5     -28.9   -19     6014   No stop
23 41 10  ---          10 34 14  41.4 129.1 -2.5     -28.7    71     6026   23 39 41

23 41 10  J1307+1507   10 34 14  41.3 126.6 -2.6     -29.9   -19     6026   No stop
23 44 40  ---          10 37 44  41.8 127.6 -2.5     -29.5   191     6053   23 41 11

23 45 20  J1300+1417   10 38 24  41.9 130.3 -2.4     -28.2    21     6053   23 45 20
23 46 50  ---          10 39 55  42.1 130.8 -2.4     -28.0    90     6064   23 45 21

23 46 50  J1307+1507   10 39 55  42.0 128.2 -2.5     -29.2   -19     6064   No stop
23 50 20  ---          10 43 25  42.4 129.2 -2.4     -28.8   191     6091   23 46 51

23 51 00  J1300+1417   10 44 05  42.6 132.0 -2.3     -27.4    21     6091   23 51 00
23 52 30  ---          10 45 36  42.7 132.4 -2.3     -27.2    90     6103   23 51 01

23 52 30  J1307+1507   10 45 36  42.7 129.9 -2.4     -28.5   -19     6103   No stop
23 56 00  ---          10 49 06  43.1 130.9 -2.3     -28.0   191     6129   23 52 31

23 56 00  J1300+1417   10 49 06  43.1 133.5 -2.2     -26.7   -20     6129   No stop
23 57 30  ---          10 50 36  43.3 133.9 -2.2     -26.5    70     6141   23 56 01

 --- Start: Thu  14 Feb 2019   Day  45 -- Stop: Fri  15 Feb 2019   Day  46 ---

23 57 30  J1307+1507   10 50 36  43.3 131.3 -2.3     -27.8   -19     6141   No stop
00 01 00  ---          10 54 07  43.7 132.4 -2.2     -27.4   191     6168   23 57 31
```

Schedule for TORUN (Code Tr ) Page 10

e-EVN: rso03, eg102g, ey033a, rsc05, rp028b

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Fri 15 Feb 2019 Day 46 --- | | | | | | | | | | |
| 00 01 40 | J1300+1417 | 10 54 47 | 43.7 | 135.2 | -2.1 | | -25.9 | 20 | 6168 | 00 01 40 |
| 00 03 10 | --- | 10 56 17 | 43.9 | 135.6 | -2.1 | | -25.7 | 90 | 6179 | 00 01 41 |
| 00 03 10 | J1307+1507 | 10 56 17 | 43.9 | 133.0 | -2.2 | | -27.0 | -19 | 6179 | No stop |
| 00 06 40 | --- | 10 59 48 | 44.3 | 134.0 | -2.1 | | -26.5 | 191 | 6206 | 00 03 11 |
| 00 07 20 | J1300+1417 | 11 00 28 | 44.3 | 136.9 | -2.0 | | -25.0 | 20 | 6206 | 00 07 20 |
| 00 08 50 | --- | 11 01 58 | 44.5 | 137.3 | -2.0 | | -24.8 | 90 | 6218 | 00 07 21 |
| 00 08 50 | J1307+1507 | 11 01 58 | 44.5 | 134.7 | -2.1 | | -26.2 | -19 | 6218 | No stop |
| 00 12 20 | --- | 11 05 29 | 44.9 | 135.8 | -2.1 | | -25.7 | 191 | 6245 | 00 08 51 |
| 00 12 20 | J1300+1417 | 11 05 29 | 44.8 | 138.4 | -1.9 | | -24.3 | -20 | 6245 | No stop |
| 00 13 50 | --- | 11 06 59 | 45.0 | 138.9 | -1.9 | | -24.0 | 70 | 6256 | 00 12 21 |
| 00 13 50 | J1307+1507 | 11 06 59 | 45.0 | 136.2 | -2.0 | | -25.5 | -19 | 6256 | No stop |
| 00 17 20 | --- | 11 10 30 | 45.4 | 137.3 | -2.0 | | -24.9 | 191 | 6283 | 00 13 51 |
| 00 18 00 | J1300+1417 | 11 11 10 | 45.4 | 140.2 | -1.8 | | -23.3 | 20 | 6283 | 00 18 00 |
| 00 19 30 | --- | 11 12 40 | 45.5 | 140.7 | -1.8 | | -23.1 | 90 | 6295 | 00 18 01 |
| 00 19 30 | J1307+1507 | 11 12 40 | 45.6 | 138.0 | -1.9 | | -24.6 | -19 | 6295 | No stop |
| 00 23 00 | --- | 11 16 11 | 46.0 | 139.1 | -1.9 | | -24.0 | 191 | 6322 | 00 19 31 |
| 00 23 40 | J1300+1417 | 11 16 51 | 45.9 | 142.0 | -1.7 | | -22.4 | 20 | 6322 | 00 23 40 |
| 00 25 10 | --- | 11 18 21 | 46.1 | 142.5 | -1.7 | | -22.1 | 90 | 6333 | 00 23 41 |
| 00 25 10 | J1307+1507 | 11 18 21 | 46.2 | 139.8 | -1.8 | | -23.7 | -20 | 6333 | No stop |
| 00 28 40 | --- | 11 21 52 | 46.5 | 140.9 | -1.8 | | -23.1 | 190 | 6360 | 00 25 11 |
| 00 28 40 | J1300+1417 | 11 21 52 | 46.4 | 143.7 | -1.7 | | -21.5 | -20 | 6360 | No stop |
| 00 30 10 | --- | 11 23 22 | 46.5 | 144.2 | -1.6 | | -21.3 | 70 | 6372 | 00 28 41 |
| 00 30 10 | J1307+1507 | 11 23 22 | 46.7 | 141.4 | -1.8 | | -22.8 | -20 | 6372 | No stop |
| 00 33 40 | --- | 11 26 52 | 47.0 | 142.6 | -1.7 | | -22.2 | 190 | 6399 | 00 30 11 |
| 00 34 20 | J1300+1417 | 11 27 33 | 46.9 | 145.5 | -1.6 | | -20.5 | 20 | 6399 | 00 34 20 |
| 00 35 50 | --- | 11 29 03 | 47.0 | 146.0 | -1.5 | | -20.2 | 90 | 6410 | 00 34 21 |
| 00 35 50 | J1307+1507 | 11 29 03 | 47.2 | 143.3 | -1.7 | | -21.8 | -20 | 6410 | No stop |
| 00 39 20 | --- | 11 32 33 | 47.5 | 144.4 | -1.6 | | -21.2 | 190 | 6437 | 00 35 51 |
| 00 40 00 | J1300+1417 | 11 33 13 | 47.3 | 147.4 | -1.5 | | -19.5 | 20 | 6437 | 00 40 00 |
| 00 41 30 | --- | 11 34 44 | 47.5 | 147.9 | -1.4 | | -19.2 | 90 | 6449 | 00 40 01 |

Schedule for TORUN (Code Tr ) Page 11

e-EVN: rso03, eg102g, ey033a, rsc05, rp028b

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Fri 15 Feb 2019 Day 46 --- | | | | | | | | | | |
| 00 41 30 | J1307+1507 | 11 34 44 | 47.7 | 145.2 | -1.6 | | -20.8 | -20 | 6449 | No stop |
| 00 45 00 | --- | 11 38 14 | 48.0 | 146.4 | -1.5 | | -20.2 | 190 | 6476 | 00 41 31 |
| 00 45 00 | J1300+1417 | 11 38 14 | 47.7 | 149.1 | -1.4 | | -18.5 | -20 | 6476 | No stop |
| 00 46 30 | --- | 11 39 45 | 47.8 | 149.6 | -1.4 | | -18.2 | 70 | 6487 | 00 45 01 |
| 00 46 30 | J1307+1507 | 11 39 45 | 48.1 | 146.9 | -1.5 | | -19.9 | -20 | 6487 | No stop |
| 00 50 00 | --- | 11 43 15 | 48.4 | 148.1 | -1.4 | | -19.2 | 190 | 6514 | 00 46 31 |
| 00 50 40 | J1300+1417 | 11 43 55 | 48.2 | 151.1 | -1.3 | | -17.4 | 20 | 6514 | 00 50 40 |
| 00 52 10 | --- | 11 45 25 | 48.3 | 151.6 | -1.3 | | -17.1 | 90 | 6526 | 00 50 41 |
| 00 52 10 | J1307+1507 | 11 45 25 | 48.5 | 148.8 | -1.4 | | -18.8 | -20 | 6526 | No stop |
| 00 55 40 | --- | 11 48 56 | 48.8 | 150.0 | -1.3 | | -18.1 | 190 | 6553 | 00 52 11 |
| 00 56 20 | J1300+1417 | 11 49 36 | 48.6 | 153.1 | -1.2 | | -16.3 | 20 | 6553 | 00 56 20 |
| 00 57 50 | --- | 11 51 06 | 48.7 | 153.6 | -1.2 | | -16.0 | 90 | 6564 | 00 56 21 |
| 00 57 50 | J1307+1507 | 11 51 06 | 49.0 | 150.8 | -1.3 | | -17.7 | -20 | 6564 | No stop |
| 01 01 20 | --- | 11 54 37 | 49.2 | 152.0 | -1.2 | | -17.0 | 190 | 6591 | 00 57 51 |
| 01 01 20 | J1300+1417 | 11 54 37 | 48.9 | 154.8 | -1.1 | | -15.3 | -20 | 6591 | No stop |
| 01 02 50 | --- | 11 56 07 | 49.0 | 155.4 | -1.1 | | -15.0 | 70 | 6603 | 01 01 21 |
| 01 02 50 | J1307+1507 | 11 56 07 | 49.3 | 152.6 | -1.2 | | -16.7 | -20 | 6603 | No stop |
| 01 06 20 | --- | 11 59 38 | 49.6 | 153.8 | -1.1 | | -15.9 | 190 | 6629 | 01 02 51 |
| 01 07 00 | J1300+1417 | 12 00 18 | 49.2 | 156.9 | -1.0 | | -14.1 | 20 | 6629 | 01 07 00 |
| 01 08 30 | --- | 12 01 48 | 49.3 | 157.4 | -1.0 | | -13.8 | 90 | 6641 | 01 07 01 |
| 01 10 50 | J1521+1756 | 12 04 09 | 38.1 | 113.2 | -3.3 | | -35.4 | 36 | 6641 | 01 10 50 |
| 01 12 20 | --- | 12 05 39 | 38.3 | 113.6 | -3.3 | | -35.3 | 90 | 6653 | 01 10 51 |
| 01 12 20 | J1520+1835 | 12 05 39 | 38.9 | 113.3 | -3.3 | | -35.6 | -15 | 6653 | No stop |
| 01 15 50 | --- | 12 09 09 | 39.4 | 114.1 | -3.2 | | -35.3 | 195 | 6679 | 01 12 21 |
| 01 16 30 | J1521+1756 | 12 09 49 | 38.8 | 114.6 | -3.2 | | -35.0 | 26 | 6679 | 01 16 30 |
| 01 18 00 | --- | 12 11 20 | 39.0 | 115.0 | -3.2 | | -34.9 | 90 | 6691 | 01 16 31 |
| 01 18 00 | J1520+1835 | 12 11 20 | 39.7 | 114.7 | -3.2 | | -35.1 | -15 | 6691 | No stop |
| 01 21 30 | --- | 12 14 50 | 40.2 | 115.6 | -3.1 | | -34.8 | 195 | 6718 | 01 18 01 |
| 01 21 30 | J1521+1756 | 12 14 50 | 39.5 | 115.9 | -3.1 | | -34.6 | -14 | 6718 | No stop |
| 01 23 00 | --- | 12 16 21 | 39.7 | 116.2 | -3.1 | | -34.5 | 76 | 6729 | 01 21 31 |

Schedule for TORUN (Code Tr ) Page 12

e-EVN: rso03, eg102g, ey033a, rsc05, rp028b

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Fri 15 Feb 2019 Day 46 --- | | | | | | | | | | |
| 01 23 00 | J1520+1835 | 12 16 21 | 40.4 | 116.0 | -3.1 | | -34.7 | -15 | 6729 | No stop |
| 01 26 30 | --- | 12 19 51 | 40.9 | 116.9 | -3.0 | | -34.4 | 195 | 6756 | 01 23 01 |
| 01 27 10 | J1521+1756 | 12 20 31 | 40.3 | 117.3 | -3.0 | | -34.1 | 26 | 6756 | 01 27 10 |
| 01 28 40 | --- | 12 22 01 | 40.5 | 117.7 | -3.0 | | -34.0 | 90 | 6768 | 01 27 11 |
| 01 28 40 | J1520+1835 | 12 22 01 | 41.1 | 117.4 | -3.0 | | -34.2 | -15 | 6768 | No stop |
| 01 32 10 | --- | 12 25 32 | 41.6 | 118.3 | -2.9 | | -33.9 | 195 | 6795 | 01 28 41 |
| 01 32 50 | J1521+1756 | 12 26 12 | 41.0 | 118.8 | -2.9 | | -33.6 | 26 | 6795 | 01 32 50 |
| 01 34 20 | --- | 12 27 42 | 41.2 | 119.2 | -2.9 | | -33.4 | 90 | 6806 | 01 32 51 |
| 01 34 20 | J1520+1835 | 12 27 42 | 41.9 | 118.9 | -2.9 | | -33.7 | -15 | 6806 | No stop |
| 01 37 50 | --- | 12 31 13 | 42.4 | 119.9 | -2.8 | | -33.3 | 195 | 6833 | 01 34 21 |
| 01 37 50 | J1521+1756 | 12 31 13 | 41.7 | 120.1 | -2.8 | | -33.1 | -14 | 6833 | No stop |
| 01 39 20 | --- | 12 32 43 | 41.9 | 120.5 | -2.8 | | -32.9 | 76 | 6845 | 01 37 51 |
| 01 39 20 | J1520+1835 | 12 32 43 | 42.5 | 120.3 | -2.8 | | -33.2 | -15 | 6845 | No stop |
| 01 42 50 | --- | 12 36 14 | 43.0 | 121.2 | -2.8 | | -32.8 | 195 | 6872 | 01 39 21 |
| 01 43 30 | J1521+1756 | 12 36 54 | 42.4 | 121.7 | -2.8 | | -32.5 | 26 | 6872 | 01 43 30 |
| 01 45 00 | --- | 12 38 24 | 42.6 | 122.1 | -2.7 | | -32.3 | 90 | 6883 | 01 43 31 |
| 01 45 00 | J1520+1835 | 12 38 24 | 43.3 | 121.8 | -2.7 | | -32.6 | -15 | 6883 | No stop |
| 01 48 30 | --- | 12 41 55 | 43.7 | 122.8 | -2.7 | | -32.2 | 195 | 6910 | 01 45 01 |
| 01 49 10 | J1521+1756 | 12 42 35 | 43.1 | 123.2 | -2.7 | | -31.9 | 26 | 6910 | 01 49 10 |
| 01 50 40 | --- | 12 44 05 | 43.3 | 123.6 | -2.6 | | -31.7 | 90 | 6922 | 01 49 11 |
| 01 50 40 | J1520+1835 | 12 44 05 | 44.0 | 123.4 | -2.6 | | -31.9 | -15 | 6922 | No stop |
| 01 54 10 | --- | 12 47 36 | 44.4 | 124.4 | -2.6 | | -31.5 | 195 | 6949 | 01 50 41 |
| 01 54 10 | J1521+1756 | 12 47 36 | 43.8 | 124.6 | -2.6 | | -31.3 | -14 | 6949 | No stop |
| 01 55 40 | --- | 12 49 06 | 44.0 | 125.0 | -2.6 | | -31.1 | 76 | 6960 | 01 54 11 |
| 01 55 40 | J1520+1835 | 12 49 06 | 44.6 | 124.8 | -2.5 | | -31.3 | -15 | 6960 | No stop |
| 01 59 10 | --- | 12 52 36 | 45.1 | 125.8 | -2.5 | | -30.9 | 195 | 6987 | 01 55 41 |
| 01 59 50 | J1521+1756 | 12 53 17 | 44.5 | 126.2 | -2.5 | | -30.6 | 26 | 6987 | 01 59 50 |
| 02 01 20 | --- | 12 54 47 | 44.6 | 126.7 | -2.5 | | -30.4 | 90 | 6999 | 01 59 51 |
| 02 01 20 | J1520+1835 | 12 54 47 | 45.3 | 126.4 | -2.4 | | -30.6 | -15 | 6999 | No stop |
| 02 04 50 | --- | 12 58 17 | 45.7 | 127.5 | -2.4 | | -30.2 | 195 | 7026 | 02 01 21 |

Schedule for TORUN (Code Tr ) Page 13

e-EVN: rso03, eg102g, ey033a, rsc05, rp028b

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Fri 15 Feb 2019 Day 46 --- | | | | | | | | | | |
| 02 05 30 | J1521+1756 | 12 58 58 | 45.1 | 127.9 | -2.4 | | -29.9 | 26 | 7026 | 02 05 30 |
| 02 07 00 | --- | 13 00 28 | 45.3 | 128.3 | -2.4 | | -29.7 | 90 | 7037 | 02 05 31 |
| 02 07 00 | J1520+1835 | 13 00 28 | 46.0 | 128.1 | -2.3 | | -29.9 | -15 | 7037 | No stop |
| 02 10 30 | --- | 13 03 58 | 46.4 | 129.1 | -2.3 | | -29.4 | 195 | 7064 | 02 07 01 |
| 02 10 30 | J1521+1756 | 13 03 58 | 45.7 | 129.4 | -2.3 | | -29.2 | -14 | 7064 | No stop |
| 02 12 00 | --- | 13 05 29 | 45.9 | 129.8 | -2.3 | | -29.0 | 76 | 7076 | 02 10 31 |
| 02 12 00 | J1520+1835 | 13 05 29 | 46.6 | 129.6 | -2.3 | | -29.2 | -15 | 7076 | No stop |
| 02 15 30 | --- | 13 08 59 | 47.0 | 130.7 | -2.2 | | -28.7 | 195 | 7103 | 02 12 01 |
| 02 16 10 | J1521+1756 | 13 09 39 | 46.4 | 131.1 | -2.2 | | -28.4 | 26 | 7103 | 02 16 10 |
| 02 17 40 | --- | 13 11 10 | 46.6 | 131.5 | -2.2 | | -28.2 | 90 | 7114 | 02 16 11 |
| 02 17 40 | J1520+1835 | 13 11 10 | 47.2 | 131.3 | -2.2 | | -28.4 | -15 | 7114 | No stop |
| 02 21 10 | --- | 13 14 40 | 47.6 | 132.4 | -2.1 | | -27.9 | 195 | 7141 | 02 17 41 |
| 02 21 50 | J1521+1756 | 13 15 20 | 47.0 | 132.8 | -2.1 | | -27.6 | 26 | 7141 | 02 21 50 |
| 02 23 20 | --- | 13 16 50 | 47.2 | 133.3 | -2.1 | | -27.3 | 90 | 7153 | 02 21 51 |
| 02 23 20 | J1520+1835 | 13 16 50 | 47.9 | 133.1 | -2.1 | | -27.6 | -15 | 7153 | No stop |
| 02 26 50 | --- | 13 20 21 | 48.2 | 134.2 | -2.0 | | -27.0 | 195 | 7179 | 02 23 21 |
| 02 26 50 | J1521+1756 | 13 20 21 | 47.6 | 134.4 | -2.0 | | -26.8 | -14 | 7179 | No stop |
| 02 28 20 | --- | 13 21 51 | 47.7 | 134.8 | -2.0 | | -26.6 | 76 | 7191 | 02 26 51 |
| 02 28 20 | J1520+1835 | 13 21 51 | 48.4 | 134.7 | -2.0 | | -26.8 | -15 | 7191 | No stop |
| 02 31 50 | --- | 13 25 22 | 48.8 | 135.8 | -1.9 | | -26.2 | 195 | 7218 | 02 28 21 |
| 02 32 30 | J1521+1756 | 13 26 02 | 48.2 | 136.2 | -1.9 | | -25.9 | 26 | 7218 | 02 32 30 |
| 02 34 00 | --- | 13 27 32 | 48.3 | 136.7 | -1.9 | | -25.7 | 90 | 7229 | 02 32 31 |
| 02 34 00 | J1520+1835 | 13 27 32 | 49.0 | 136.5 | -1.9 | | -25.8 | -15 | 7229 | No stop |
| 02 37 30 | --- | 13 31 03 | 49.4 | 137.6 | -1.8 | | -25.3 | 195 | 7256 | 02 34 01 |
| 02 38 10 | J1521+1756 | 13 31 43 | 48.7 | 138.0 | -1.8 | | -25.0 | 26 | 7256 | 02 38 10 |
| 02 39 40 | --- | 13 33 13 | 48.9 | 138.5 | -1.8 | | -24.7 | 90 | 7268 | 02 38 11 |
| 02 39 40 | J1520+1835 | 13 33 13 | 49.6 | 138.4 | -1.8 | | -24.9 | -15 | 7268 | No stop |
| 02 43 10 | --- | 13 36 44 | 49.9 | 139.5 | -1.7 | | -24.3 | 195 | 7295 | 02 39 41 |
| 02 43 10 | J1521+1756 | 13 36 44 | 49.2 | 139.7 | -1.8 | | -24.1 | -14 | 7295 | No stop |
| 02 44 40 | --- | 13 38 14 | 49.4 | 140.2 | -1.7 | | -23.8 | 76 | 7306 | 02 43 11 |

```
Schedule for TORUN     (Code Tr )                                  Page  14
              e-EVN: rso03, eg102g, ey033a, rsc05, rp028b
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                  Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Fri  15 Feb 2019   Day  46 ---

02 44 40  J1520+1835   13 38 14  50.1 140.0 -1.7     -24.0   -15     7306   No stop
02 48 10  ---          13 41 45  50.4 141.2 -1.7     -23.4   195     7333   02 44 41

02 48 50  J1521+1756   13 42 25  49.8 141.6 -1.7     -23.1    26     7333   02 48 50
02 50 20  ---          13 43 55  49.9 142.1 -1.6     -22.8    90     7345   02 48 51

02 50 20  J1520+1835   13 43 55  50.6 142.0 -1.6     -23.0   -15     7345   No stop
02 53 50  ---          13 47 25  50.9 143.2 -1.6     -22.3   195     7372   02 50 21

02 54 30  J1521+1756   13 48 06  50.3 143.5 -1.6     -22.0    26     7372   02 54 30
02 56 00  ---          13 49 36  50.4 144.0 -1.5     -21.7    90     7383   02 54 31

02 56 00  J1520+1835   13 49 36  51.1 143.9 -1.5     -21.9   -15     7383   No stop
02 59 30  ---          13 53 06  51.4 145.2 -1.5     -21.2   195     7410   02 56 01

02 59 30  J1521+1756   13 53 06  50.7 145.3 -1.5     -21.1   -15     7410   No stop
03 01 00  ---          13 54 37  50.9 145.8 -1.5     -20.8    75     7422   02 59 31

03 01 00  J1520+1835   13 54 37  51.6 145.7 -1.4     -20.9   -15     7422   No stop
03 04 30  ---          13 58 07  51.8 147.0 -1.4     -20.2   195     7449   03 01 01

03 05 10  J1521+1756   13 58 47  51.2 147.3 -1.4     -19.9    25     7449   03 05 10
03 06 40  ---          14 00 18  51.3 147.8 -1.4     -19.6    90     7460   03 05 11

03 06 40  J1520+1835   14 00 18  52.0 147.8 -1.4     -19.7   -15     7460   No stop
03 10 10  ---          14 03 48  52.3 149.0 -1.3     -19.0   195     7487   03 06 41

03 10 50  J1521+1756   14 04 28  51.7 149.3 -1.3     -18.8    25     7487   03 10 50
03 12 20  ---          14 05 58  51.8 149.9 -1.3     -18.5    90     7499   03 10 51

03 12 20  J1520+1835   14 05 58  52.5 149.8 -1.3     -18.6   -15     7499   No stop
03 15 50  ---          14 09 29  52.7 151.1 -1.2     -17.8   195     7526   03 12 21

03 15 50  J1521+1756   14 09 29  52.0 151.2 -1.2     -17.7   -15     7526   No stop
03 17 20  ---          14 10 59  52.1 151.7 -1.2     -17.4    75     7537   03 15 51

03 19 25  3C345        14 13 05  61.3 102.3 -2.5     -49.8    11     7537   03 19 25
03 25 00  ---          14 18 41  62.1 103.8 -2.4     -49.4   335     7580   03 19 26

 ---------- EY033A ----------

03 35 00  J1619+2247   14 28 42  53.0 134.3 -1.9     -27.8   530     7580   03 35 00
03 36 00  ---          14 29 42  53.1 134.6 -1.8     -27.6    60     7588   03 35 01
```

Schedule for TORUN (Code Tr ) Page 15

e-EVN: rso03, eg102g, ey033a, rsc05, rp028b

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Fri 15 Feb 2019 Day 46 --- | | | | | | | | | | |
| 03 36 00 | AT2018 | 14 29 42 | 53.0 | 136.1 | -1.8 | | -26.7 | -16 | 7588 | No stop |
| 03 39 00 | --- | 14 32 43 | 53.3 | 137.2 | -1.7 | | -26.2 | 164 | 7611 | 03 36 01 |
| 03 39 00 | J1619+2247 | 14 32 43 | 53.5 | 135.6 | -1.8 | | -27.1 | -16 | 7611 | No stop |
| 03 40 00 | --- | 14 33 43 | 53.6 | 136.0 | -1.8 | | -26.9 | 44 | 7619 | 03 39 01 |
| 03 40 00 | AT2018 | 14 33 43 | 53.4 | 137.5 | -1.7 | | -26.0 | -16 | 7619 | No stop |
| 03 43 00 | --- | 14 36 44 | 53.7 | 138.6 | -1.7 | | -25.4 | 164 | 7642 | 03 40 01 |
| 03 43 40 | J1619+2247 | 14 37 24 | 53.9 | 137.3 | -1.7 | | -26.2 | 24 | 7642 | 03 43 40 |
| 03 44 40 | --- | 14 38 24 | 54.0 | 137.6 | -1.7 | | -26.0 | 60 | 7649 | 03 43 41 |
| 03 44 40 | AT2018 | 14 38 24 | 53.9 | 139.2 | -1.6 | | -25.1 | -16 | 7649 | No stop |
| 03 47 40 | --- | 14 41 24 | 54.2 | 140.2 | -1.6 | | -24.5 | 164 | 7672 | 03 44 41 |
| 03 47 40 | J1619+2247 | 14 41 24 | 54.3 | 138.7 | -1.6 | | -25.5 | -16 | 7672 | No stop |
| 03 48 40 | --- | 14 42 24 | 54.4 | 139.1 | -1.6 | | -25.3 | 44 | 7680 | 03 47 41 |
| 03 48 40 | AT2018 | 14 42 24 | 54.3 | 140.6 | -1.6 | | -24.3 | -16 | 7680 | No stop |
| 03 51 40 | --- | 14 45 25 | 54.6 | 141.7 | -1.5 | | -23.7 | 164 | 7703 | 03 48 41 |
| 03 52 20 | J1619+2247 | 14 46 05 | 54.8 | 140.4 | -1.6 | | -24.5 | 24 | 7703 | 03 52 20 |
| 03 53 20 | --- | 14 47 05 | 54.9 | 140.8 | -1.5 | | -24.3 | 60 | 7711 | 03 52 21 |
| 03 53 20 | AT2018 | 14 47 05 | 54.7 | 142.3 | -1.5 | | -23.4 | -16 | 7711 | No stop |
| 03 56 20 | --- | 14 50 06 | 55.0 | 143.4 | -1.4 | | -22.7 | 164 | 7734 | 03 53 21 |
| 03 56 20 | J1619+2247 | 14 50 06 | 55.2 | 141.9 | -1.5 | | -23.7 | -16 | 7734 | No stop |
| 03 57 20 | --- | 14 51 06 | 55.3 | 142.2 | -1.5 | | -23.5 | 44 | 7742 | 03 56 21 |
| 03 57 20 | AT2018 | 14 51 06 | 55.1 | 143.8 | -1.4 | | -22.5 | -16 | 7742 | No stop |
| 04 00 20 | --- | 14 54 06 | 55.3 | 144.9 | -1.4 | | -21.9 | 164 | 7765 | 03 57 21 |
| 04 01 00 | J1619+2247 | 14 54 46 | 55.6 | 143.6 | -1.4 | | -22.7 | 24 | 7765 | 04 01 00 |
| 04 02 00 | --- | 14 55 47 | 55.7 | 144.0 | -1.4 | | -22.5 | 60 | 7772 | 04 01 01 |
| 04 02 00 | AT2018 | 14 55 47 | 55.5 | 145.6 | -1.4 | | -21.5 | -16 | 7772 | No stop |
| 04 05 00 | --- | 14 58 47 | 55.7 | 146.7 | -1.3 | | -20.9 | 164 | 7795 | 04 02 01 |
| 04 05 00 | J1619+2247 | 14 58 47 | 55.9 | 145.1 | -1.4 | | -21.9 | -16 | 7795 | No stop |
| 04 06 00 | --- | 14 59 47 | 56.0 | 145.5 | -1.3 | | -21.6 | 44 | 7803 | 04 05 01 |
| 04 06 00 | AT2018 | 14 59 47 | 55.8 | 147.1 | -1.3 | | -20.6 | -17 | 7803 | No stop |
| 04 09 00 | --- | 15 02 48 | 56.1 | 148.3 | -1.2 | | -20.0 | 163 | 7826 | 04 06 01 |

Schedule for TORUN (Code Tr ) Page 16

e-EVN: rso03, eg102g, ey033a, rsc05, rp028b

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Fri 15 Feb 2019 Day 46 --- | | | | | | | | | | |
| 04 09 40 | J1619+2247 | 15 03 28 | 56.3 | 146.9 | -1.3 | | -20.8 | 24 | 7826 | 04 09 40 |
| 04 10 40 | --- | 15 04 28 | 56.4 | 147.3 | -1.3 | | -20.6 | 60 | 7834 | 04 09 41 |
| 04 10 40 | AT2018 | 15 04 28 | 56.2 | 148.9 | -1.2 | | -19.6 | -17 | 7834 | No stop |
| 04 13 40 | --- | 15 07 29 | 56.4 | 150.1 | -1.2 | | -18.9 | 163 | 7857 | 04 10 41 |
| 04 13 40 | J1619+2247 | 15 07 29 | 56.7 | 148.5 | -1.2 | | -19.9 | -16 | 7857 | No stop |
| 04 14 40 | --- | 15 08 29 | 56.7 | 148.9 | -1.2 | | -19.7 | 44 | 7865 | 04 13 41 |
| 04 14 40 | AT2018 | 15 08 29 | 56.5 | 150.5 | -1.1 | | -18.6 | -17 | 7865 | No stop |
| 04 17 40 | --- | 15 11 29 | 56.7 | 151.7 | -1.1 | | -17.9 | 163 | 7888 | 04 14 41 |
| 04 18 20 | J1619+2247 | 15 12 09 | 57.0 | 150.4 | -1.1 | | -18.8 | 24 | 7888 | 04 18 20 |
| 04 19 20 | --- | 15 13 09 | 57.1 | 150.8 | -1.1 | | -18.5 | 60 | 7895 | 04 18 21 |
| 04 19 20 | AT2018 | 15 13 09 | 56.8 | 152.4 | -1.1 | | -17.5 | -17 | 7895 | No stop |
| 04 22 20 | --- | 15 16 10 | 57.0 | 153.6 | -1.0 | | -16.8 | 163 | 7919 | 04 19 21 |
| 04 22 20 | J1619+2247 | 15 16 10 | 57.3 | 152.0 | -1.1 | | -17.8 | -16 | 7919 | No stop |
| 04 23 20 | --- | 15 17 10 | 57.4 | 152.4 | -1.0 | | -17.6 | 44 | 7926 | 04 22 21 |
| 04 23 20 | AT2018 | 15 17 10 | 57.1 | 154.0 | -1.0 | | -16.5 | -17 | 7926 | No stop |
| 04 26 20 | --- | 15 20 11 | 57.3 | 155.2 | -0.9 | | -15.8 | 163 | 7949 | 04 23 21 |
| 04 27 00 | J1619+2247 | 15 20 51 | 57.6 | 153.9 | -1.0 | | -16.6 | 24 | 7949 | 04 27 00 |
| 04 28 00 | --- | 15 21 51 | 57.7 | 154.3 | -1.0 | | -16.4 | 60 | 7957 | 04 27 01 |
| 04 28 00 | AT2018 | 15 21 51 | 57.4 | 155.9 | -0.9 | | -15.3 | -17 | 7957 | No stop |
| 04 31 00 | --- | 15 24 51 | 57.6 | 157.2 | -0.9 | | -14.6 | 163 | 7980 | 04 28 01 |
| 04 31 00 | J1619+2247 | 15 24 51 | 57.9 | 155.6 | -0.9 | | -15.6 | -16 | 7980 | No stop |
| 04 32 00 | --- | 15 25 52 | 57.9 | 156.0 | -0.9 | | -15.4 | 44 | 7988 | 04 31 01 |
| 04 32 00 | AT2018 | 15 25 52 | 57.6 | 157.6 | -0.8 | | -14.3 | -17 | 7988 | No stop |
| 04 35 00 | --- | 15 28 52 | 57.8 | 158.9 | -0.8 | | -13.5 | 163 | 8011 | 04 32 01 |
| 04 35 40 | J1619+2247 | 15 29 32 | 58.2 | 157.5 | -0.8 | | -14.4 | 24 | 8011 | 04 35 40 |
| 04 36 40 | --- | 15 30 32 | 58.2 | 158.0 | -0.8 | | -14.1 | 60 | 8019 | 04 35 41 |
| 04 36 40 | AT2018 | 15 30 32 | 57.9 | 159.6 | -0.8 | | -13.1 | -17 | 8019 | No stop |
| 04 39 40 | --- | 15 33 33 | 58.0 | 160.8 | -0.7 | | -12.3 | 163 | 8042 | 04 36 41 |
| 04 39 40 | J1619+2247 | 15 33 33 | 58.4 | 159.2 | -0.8 | | -13.3 | -16 | 8042 | No stop |
| 04 40 40 | --- | 15 34 33 | 58.4 | 159.7 | -0.8 | | -13.1 | 44 | 8049 | 04 39 41 |

Schedule for TORUN (Code Tr ) Page 17

e-EVN: rso03, eg102g, ey033a, rsc05, rp028b

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Fri 15 Feb 2019 Day 46 --- | | | | | | | | | | |
| 04 40 40 | AT2018 | 15 34 33 | 58.1 | 161.3 | -0.7 | | -12.0 | -17 | 8049 | No stop |
| 04 43 40 | --- | 15 37 33 | 58.2 | 162.6 | -0.7 | | -11.2 | 163 | 8072 | 04 40 41 |
| 04 44 20 | J1619+2247 | 15 38 14 | 58.6 | 161.2 | -0.7 | | -12.1 | 24 | 8072 | 04 44 20 |
| 04 45 20 | --- | 15 39 14 | 58.7 | 161.7 | -0.7 | | -11.8 | 60 | 8080 | 04 44 21 |
| 04 45 20 | AT2018 | 15 39 14 | 58.3 | 163.3 | -0.6 | | -10.8 | -17 | 8080 | No stop |
| 04 48 20 | --- | 15 42 14 | 58.4 | 164.6 | -0.6 | | -9.9 | 163 | 8103 | 04 45 21 |
| 04 48 20 | J1619+2247 | 15 42 14 | 58.8 | 163.0 | -0.6 | | -11.0 | -16 | 8103 | No stop |
| 04 49 20 | --- | 15 43 14 | 58.9 | 163.4 | -0.6 | | -10.7 | 44 | 8111 | 04 48 21 |
| 04 49 20 | AT2018 | 15 43 14 | 58.5 | 165.0 | -0.6 | | -9.6 | -17 | 8111 | No stop |
| 04 52 20 | --- | 15 46 15 | 58.6 | 166.3 | -0.5 | | -8.8 | 163 | 8134 | 04 49 21 |
| 04 53 00 | J1619+2247 | 15 46 55 | 59.0 | 165.1 | -0.6 | | -9.7 | 24 | 8134 | 04 53 00 |
| 04 54 00 | --- | 15 47 55 | 59.0 | 165.5 | -0.5 | | -9.4 | 60 | 8142 | 04 53 01 |
| 04 54 00 | AT2018 | 15 47 55 | 58.6 | 167.1 | -0.5 | | -8.3 | -17 | 8142 | No stop |
| 04 57 00 | --- | 15 50 56 | 58.7 | 168.4 | -0.4 | | -7.5 | 163 | 8165 | 04 54 01 |
| 04 57 00 | J1619+2247 | 15 50 56 | 59.2 | 166.8 | -0.5 | | -8.5 | -16 | 8165 | No stop |
| 04 58 00 | --- | 15 51 56 | 59.2 | 167.3 | -0.5 | | -8.2 | 44 | 8172 | 04 57 01 |
| 04 58 00 | AT2018 | 15 51 56 | 58.8 | 168.8 | -0.4 | | -7.2 | -17 | 8172 | No stop |
| 05 01 00 | --- | 15 54 56 | 58.8 | 170.2 | -0.4 | | -6.3 | 163 | 8195 | 04 58 01 |
| 05 01 40 | J1619+2247 | 15 55 36 | 59.3 | 168.9 | -0.4 | | -7.2 | 24 | 8195 | 05 01 40 |
| 05 02 40 | --- | 15 56 37 | 59.3 | 169.4 | -0.4 | | -6.9 | 60 | 8203 | 05 01 41 |
| 05 02 40 | AT2018 | 15 56 37 | 58.9 | 170.9 | -0.3 | | -5.9 | -16 | 8203 | No stop |
| 05 05 40 | --- | 15 59 37 | 58.9 | 172.3 | -0.3 | | -5.0 | 164 | 8226 | 05 02 41 |
| 05 05 40 | J1619+2247 | 15 59 37 | 59.4 | 170.7 | -0.3 | | -6.0 | -16 | 8226 | No stop |
| 05 06 40 | --- | 16 00 37 | 59.4 | 171.2 | -0.3 | | -5.7 | 44 | 8234 | 05 05 41 |
| 05 06 40 | AT2018 | 16 00 37 | 59.0 | 172.7 | -0.3 | | -4.7 | -16 | 8234 | No stop |
| 05 09 40 | --- | 16 03 38 | 59.0 | 174.1 | -0.2 | | -3.8 | 164 | 8257 | 05 06 41 |
| 05 10 20 | J1619+2247 | 16 04 18 | 59.5 | 172.8 | -0.3 | | -4.7 | 24 | 8257 | 05 10 20 |
| 05 11 20 | --- | 16 05 18 | 59.5 | 173.3 | -0.2 | | -4.4 | 60 | 8265 | 05 10 21 |
| 05 11 20 | AT2018 | 16 05 18 | 59.0 | 174.8 | -0.2 | | -3.4 | -16 | 8265 | No stop |
| 05 14 20 | --- | 16 08 19 | 59.1 | 176.2 | -0.1 | | -2.5 | 164 | 8288 | 05 11 21 |

Schedule for TORUN (Code Tr ) Page 18

e-EVN: rso03, eg102g, ey033a, rsc05, rp028b

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | Start / Stop LST | EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Fri 15 Feb 2019 Day 46 --- | | | | | | | | | | |
| 05 14 20 | J1619+2247 | 16 08 19 | 59.6 | 174.7 | -0.2 | | -3.5 | -16 | 8288 | No stop |
| 05 15 20 | --- | 16 09 19 | 59.6 | 175.1 | -0.2 | | -3.2 | 44 | 8295 | 05 14 21 |
| 05 15 20 | AT2018 | 16 09 19 | 59.1 | 176.6 | -0.1 | | -2.2 | -16 | 8295 | No stop |
| 05 18 20 | --- | 16 12 19 | 59.1 | 178.0 | -0.1 | | -1.3 | 164 | 8319 | 05 15 21 |
| 05 19 00 | J1619+2247 | 16 12 59 | 59.6 | 176.8 | -0.1 | | -2.1 | 24 | 8319 | 05 19 00 |
| 05 20 00 | --- | 16 13 59 | 59.6 | 177.2 | -0.1 | | -1.8 | 60 | 8326 | 05 19 01 |
| 05 20 00 | AT2018 | 16 13 59 | 59.1 | 178.7 | -0.0 | | -0.8 | -16 | 8326 | No stop |
| 05 23 00 | --- | 16 17 00 | 59.1 | 180.1 | 0.0 | | 0.1 | 164 | 8349 | 05 20 01 |
| 05 23 00 | J1619+2247 | 16 17 00 | 59.6 | 178.6 | -0.1 | | -0.9 | -16 | 8349 | No stop |
| 05 24 00 | --- | 16 18 00 | 59.7 | 179.1 | -0.0 | | -0.6 | 44 | 8357 | 05 23 01 |
| 05 24 00 | AT2018 | 16 18 00 | 59.1 | 180.5 | 0.0 | | 0.3 | -16 | 8357 | No stop |
| 05 27 00 | --- | 16 21 01 | 59.1 | 181.9 | 0.1 | | 1.2 | 164 | 8380 | 05 24 01 |
| 05 27 40 | J1619+2247 | 16 21 41 | 59.7 | 180.7 | 0.0 | | 0.5 | 24 | 8380 | 05 27 40 |
| 05 28 40 | --- | 16 22 41 | 59.6 | 181.2 | 0.0 | | 0.8 | 60 | 8388 | 05 27 41 |
| 05 28 40 | AT2018 | 16 22 41 | 59.1 | 182.6 | 0.1 | | 1.7 | -16 | 8388 | No stop |
| 05 31 40 | --- | 16 25 41 | 59.1 | 184.0 | 0.1 | | 2.6 | 164 | 8411 | 05 28 41 |
| 05 31 40 | J1619+2247 | 16 25 41 | 59.6 | 182.6 | 0.1 | | 1.7 | -15 | 8411 | No stop |
| 05 32 40 | --- | 16 26 42 | 59.6 | 183.0 | 0.1 | | 2.0 | 45 | 8419 | 05 31 41 |
| 05 32 40 | AT2018 | 16 26 42 | 59.1 | 184.5 | 0.2 | | 2.9 | -16 | 8419 | No stop |
| 05 35 40 | --- | 16 29 42 | 59.0 | 185.8 | 0.2 | | 3.8 | 164 | 8442 | 05 32 41 |
| 05 36 20 | J1619+2247 | 16 30 22 | 59.6 | 184.7 | 0.2 | | 3.1 | 25 | 8442 | 05 36 20 |
| 05 37 20 | --- | 16 31 22 | 59.6 | 185.2 | 0.2 | | 3.4 | 60 | 8449 | 05 36 21 |
| 05 37 20 | AT2018 | 16 31 22 | 59.0 | 186.6 | 0.2 | | 4.2 | -16 | 8449 | No stop |
| 05 40 20 | --- | 16 34 23 | 58.9 | 187.9 | 0.3 | | 5.1 | 164 | 8472 | 05 37 21 |
| 05 40 20 | J1619+2247 | 16 34 23 | 59.5 | 186.5 | 0.2 | | 4.2 | -15 | 8472 | No stop |
| 05 41 20 | --- | 16 35 23 | 59.5 | 187.0 | 0.3 | | 4.5 | 45 | 8480 | 05 40 21 |
| 05 41 20 | AT2018 | 16 35 23 | 58.9 | 188.3 | 0.3 | | 5.4 | -16 | 8480 | No stop |
| 05 44 20 | --- | 16 38 23 | 58.9 | 189.7 | 0.4 | | 6.3 | 164 | 8503 | 05 41 21 |
| 05 45 00 | J1619+2247 | 16 39 04 | 59.4 | 188.6 | 0.3 | | 5.6 | 25 | 8503 | 05 45 00 |
| 05 46 00 | --- | 16 40 04 | 59.4 | 189.1 | 0.3 | | 5.9 | 60 | 8511 | 05 45 01 |

Schedule for TORUN (Code Tr ) Page 19

e-EVN: rso03, eg102g, ey033a, rsc05, rp028b

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | LST | Start / Stop EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Fri 15 Feb 2019 Day 46 --- | | | | | | | | | | |
| 05 46 00 | AT2018 | 16 40 04 | 58.8 | 190.4 | 0.4 | | 6.7 | -16 | 8511 | No stop |
| 05 49 00 | --- | 16 43 04 | 58.7 | 191.8 | 0.4 | | 7.6 | 164 | 8534 | 05 46 01 |
| 05 49 00 | J1619+2247 | 16 43 04 | 59.3 | 190.4 | 0.4 | | 6.8 | -15 | 8534 | No stop |
| 05 50 00 | --- | 16 44 04 | 59.3 | 190.9 | 0.4 | | 7.1 | 45 | 8542 | 05 49 01 |
| 05 50 00 | AT2018 | 16 44 04 | 58.7 | 192.2 | 0.5 | | 7.9 | -16 | 8542 | No stop |
| 05 53 00 | --- | 16 47 05 | 58.6 | 193.5 | 0.5 | | 8.7 | 164 | 8565 | 05 50 01 |
| 05 53 40 | J1619+2247 | 16 47 45 | 59.2 | 192.5 | 0.5 | | 8.1 | 25 | 8565 | 05 53 40 |
| 05 54 40 | --- | 16 48 45 | 59.2 | 193.0 | 0.5 | | 8.4 | 60 | 8572 | 05 53 41 |
| 05 54 40 | AT2018 | 16 48 45 | 58.5 | 194.3 | 0.5 | | 9.2 | -15 | 8572 | No stop |
| 05 57 40 | --- | 16 51 46 | 58.4 | 195.6 | 0.6 | | 10.0 | 165 | 8595 | 05 54 41 |
| 05 57 40 | J1619+2247 | 16 51 46 | 59.1 | 194.3 | 0.5 | | 9.3 | -15 | 8595 | No stop |
| 05 58 40 | --- | 16 52 46 | 59.0 | 194.8 | 0.5 | | 9.6 | 45 | 8603 | 05 57 41 |
| 05 58 40 | AT2018 | 16 52 46 | 58.4 | 196.0 | 0.6 | | 10.3 | -15 | 8603 | No stop |
| 06 01 40 | --- | 16 55 46 | 58.2 | 197.3 | 0.6 | | 11.1 | 165 | 8626 | 05 58 41 |
| 06 02 20 | J1619+2247 | 16 56 26 | 58.9 | 196.4 | 0.6 | | 10.6 | 25 | 8626 | 06 02 20 |
| 06 03 20 | --- | 16 57 27 | 58.8 | 196.8 | 0.6 | | 10.9 | 60 | 8634 | 06 02 21 |
| 06 03 20 | AT2018 | 16 57 27 | 58.2 | 198.0 | 0.7 | | 11.6 | -15 | 8634 | No stop |
| 06 06 20 | --- | 17 00 27 | 58.0 | 199.3 | 0.7 | | 12.4 | 165 | 8657 | 06 03 21 |
| 06 06 20 | J1619+2247 | 17 00 27 | 58.7 | 198.1 | 0.7 | | 11.7 | -14 | 8657 | No stop |
| 06 07 20 | --- | 17 01 27 | 58.6 | 198.6 | 0.7 | | 12.0 | 46 | 8665 | 06 06 21 |
| 06 07 20 | AT2018 | 17 01 27 | 58.0 | 199.7 | 0.7 | | 12.7 | -15 | 8665 | No stop |
| 06 10 20 | --- | 17 04 28 | 57.8 | 201.0 | 0.8 | | 13.5 | 165 | 8688 | 06 07 21 |
| 06 11 00 | J1619+2247 | 17 05 08 | 58.5 | 200.2 | 0.8 | | 13.0 | 25 | 8688 | 06 11 00 |
| 06 12 00 | --- | 17 06 08 | 58.4 | 200.6 | 0.8 | | 13.2 | 60 | 8695 | 06 11 01 |
| 06 12 00 | AT2018 | 17 06 08 | 57.7 | 201.7 | 0.8 | | 13.9 | -15 | 8695 | No stop |
| 06 15 00 | --- | 17 09 08 | 57.5 | 203.0 | 0.9 | | 14.7 | 165 | 8719 | 06 12 01 |
| 06 15 00 | J1619+2247 | 17 09 08 | 58.2 | 201.9 | 0.8 | | 14.0 | -15 | 8719 | No stop |
| 06 16 00 | --- | 17 10 09 | 58.2 | 202.3 | 0.8 | | 14.3 | 45 | 8726 | 06 15 01 |
| 06 20 00 | J1801+4404 | 17 14 09 | 78.0 | 134.1 | -0.8 | | -36.9 | 86 | 8726 | 06 20 00 |
| 06 25 00 | =1800+440 | 17 19 10 | 78.5 | 137.7 | -0.7 | | -34.2 | 300 | 8765 | 06 20 01 |

```
Schedule for TORUN     (Code Tr )                                  Page  20
              e-EVN: rso03, eg102g, ey033a, rsc05, rp028b
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Fri  15 Feb 2019   Day  46 ---

 ---------- RSC05 ----------

06 35 00  J1912-0804   17 29 12  25.0 151.4 -1.7     -16.9   384     8765   06 35 00
06 36 00  =1909-081    17 30 12  25.1 151.7 -1.7     -16.7    60     8772   06 35 01

06 36 00  J1858-0814   17 30 12  25.8 155.3 -1.5     -14.7   -22     8772   No stop
06 39 00  ---          17 33 12  26.0 156.1 -1.4     -14.2   158     8795   06 36 01

06 39 00  J1912-0804   17 33 12  25.3 152.5 -1.7     -16.3   -22     8795   No stop
06 40 00  =1909-081    17 34 13  25.4 152.7 -1.6     -16.1    38     8803   06 39 01

06 40 00  N1858-0735   17 34 13  26.7 156.2 -1.4     -14.2   -22     8803   No stop
06 42 00  ---          17 36 13  26.8 156.7 -1.4     -13.8    98     8819   06 40 01

06 42 00  J1912-0804   17 36 13  25.5 153.2 -1.6     -15.8   -22     8819   No stop
06 43 00  =1909-081    17 37 13  25.6 153.5 -1.6     -15.7    38     8826   06 42 01

06 43 00  N1855-0820   17 37 13  26.3 158.0 -1.3     -13.1   -24     8826   No stop
06 45 00  ---          17 39 13  26.4 158.5 -1.3     -12.8    96     8842   06 43 01

06 45 45  J1912-0804   17 39 59  25.7 154.2 -1.6     -15.3    21     8842   06 45 45
06 46 45  =1909-081    17 40 59  25.8 154.5 -1.5     -15.1    60     8849   06 45 46

06 46 45  J1858-0814   17 40 59  26.5 158.2 -1.3     -13.0   -22     8849   No stop
06 49 45  ---          17 43 59  26.6 159.0 -1.3     -12.6   158     8872   06 46 46

06 49 45  J1912-0804   17 43 59  26.0 155.3 -1.5     -14.7   -22     8872   No stop
06 50 45  =1909-081    17 44 59  26.1 155.6 -1.5     -14.5    38     8880   06 49 46

06 50 45  N1858-0735   17 44 59  27.3 159.1 -1.2     -12.5   -22     8880   No stop
06 52 45  ---          17 47 00  27.4 159.7 -1.2     -12.2    98     8895   06 50 46

06 52 45  J1912-0804   17 47 00  26.2 156.1 -1.4     -14.2   -22     8895   No stop
06 53 45  =1909-081    17 48 00  26.2 156.4 -1.4     -14.1    38     8903   06 52 46

06 53 45  N1855-0820   17 48 00  26.9 160.9 -1.1     -11.4   -24     8903   No stop
06 55 45  ---          17 50 00  27.0 161.5 -1.1     -11.1    96     8919   06 53 46

06 56 30  J1912-0804   17 50 45  26.4 157.1 -1.4     -13.6    21     8919   06 56 30
06 57 30  =1909-081    17 51 45  26.5 157.4 -1.4     -13.5    60     8926   06 56 31

06 57 30  J1858-0814   17 51 45  27.0 161.1 -1.1     -11.3   -22     8926   No stop
07 00 30  ---          17 54 46  27.2 161.9 -1.1     -10.9   158     8949   06 57 31
```

Schedule for TORUN (Code Tr ) Page 21

e-EVN: rso03, eg102g, ey033a, rsc05, rp028b

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Fri 15 Feb 2019 Day 46 --- | | | | | | | | | | |
| 07 00 30 | J1912-0804 | 17 54 46 | 26.6 | 158.2 | -1.3 | | -13.0 | -22 | 8949 | No stop |
| 07 01 30 | =1909-081 | 17 55 46 | 26.7 | 158.5 | -1.3 | | -12.9 | 38 | 8957 | 07 00 31 |
| 07 01 30 | N1858-0735 | 17 55 46 | 27.8 | 162.1 | -1.1 | | -10.8 | -22 | 8957 | No stop |
| 07 03 30 | --- | 17 57 46 | 27.9 | 162.6 | -1.0 | | -10.4 | 98 | 8972 | 07 01 31 |
| 07 03 30 | J1912-0804 | 17 57 46 | 26.8 | 159.0 | -1.3 | | -12.5 | -22 | 8972 | No stop |
| 07 04 30 | =1909-081 | 17 58 47 | 26.9 | 159.3 | -1.2 | | -12.4 | 38 | 8980 | 07 03 31 |
| 07 04 30 | N1855-0820 | 17 58 47 | 27.4 | 163.9 | -1.0 | | -9.7 | -24 | 8980 | No stop |
| 07 06 30 | --- | 18 00 47 | 27.4 | 164.4 | -0.9 | | -9.4 | 96 | 8995 | 07 04 31 |
| 07 07 15 | J1912-0804 | 18 01 32 | 27.0 | 160.0 | -1.2 | | -12.0 | 21 | 8995 | 07 07 15 |
| 07 08 15 | =1909-081 | 18 02 32 | 27.0 | 160.3 | -1.2 | | -11.8 | 60 | 9003 | 07 07 16 |
| 07 08 15 | J1858-0814 | 18 02 32 | 27.5 | 164.0 | -1.0 | | -9.6 | -22 | 9003 | No stop |
| 07 11 15 | --- | 18 05 33 | 27.6 | 164.9 | -0.9 | | -9.1 | 158 | 9026 | 07 08 16 |
| 07 11 15 | J1912-0804 | 18 05 33 | 27.2 | 161.1 | -1.1 | | -11.3 | -22 | 9026 | No stop |
| 07 12 15 | =1909-081 | 18 06 33 | 27.2 | 161.4 | -1.1 | | -11.2 | 38 | 9034 | 07 11 16 |
| 07 12 15 | N1858-0735 | 18 06 33 | 28.3 | 165.0 | -0.9 | | -9.0 | -22 | 9034 | No stop |
| 07 14 15 | --- | 18 08 33 | 28.4 | 165.6 | -0.9 | | -8.7 | 98 | 9049 | 07 12 16 |
| 07 14 15 | J1912-0804 | 18 08 33 | 27.3 | 161.9 | -1.1 | | -10.8 | -22 | 9049 | No stop |
| 07 15 15 | =1909-081 | 18 09 33 | 27.4 | 162.2 | -1.1 | | -10.7 | 38 | 9057 | 07 14 16 |
| 07 15 15 | N1855-0820 | 18 09 33 | 27.8 | 166.8 | -0.8 | | -7.9 | -24 | 9057 | No stop |
| 07 17 15 | --- | 18 11 34 | 27.8 | 167.4 | -0.8 | | -7.6 | 96 | 9072 | 07 15 16 |
| 07 18 00 | J1912-0804 | 18 12 19 | 27.5 | 163.0 | -1.0 | | -10.2 | 21 | 9072 | 07 18 00 |
| 07 19 00 | =1909-081 | 18 13 19 | 27.6 | 163.3 | -1.0 | | -10.1 | 60 | 9080 | 07 18 01 |
| 07 19 00 | J1858-0814 | 18 13 19 | 27.9 | 167.0 | -0.8 | | -7.8 | -23 | 9080 | No stop |
| 07 22 00 | --- | 18 16 20 | 28.0 | 167.9 | -0.7 | | -7.3 | 157 | 9103 | 07 19 01 |
| 07 22 00 | J1912-0804 | 18 16 20 | 27.7 | 164.1 | -0.9 | | -9.6 | -22 | 9103 | No stop |
| 07 23 00 | =1909-081 | 18 17 20 | 27.7 | 164.4 | -0.9 | | -9.4 | 38 | 9111 | 07 22 01 |
| 07 23 00 | N1858-0735 | 18 17 20 | 28.7 | 168.1 | -0.7 | | -7.2 | -22 | 9111 | No stop |
| 07 25 00 | --- | 18 19 20 | 28.7 | 168.6 | -0.7 | | -6.9 | 98 | 9126 | 07 23 01 |
| 07 25 00 | J1912-0804 | 18 19 20 | 27.8 | 164.9 | -0.9 | | -9.1 | -22 | 9126 | No stop |
| 07 26 00 | =1909-081 | 18 20 20 | 27.8 | 165.2 | -0.9 | | -8.9 | 38 | 9134 | 07 25 01 |

Schedule for TORUN (Code Tr ) Page 22

e-EVN: rso03, eg102g, ey033a, rsc05, rp028b

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Fri 15 Feb 2019 Day 46 --- | | | | | | | | | | |
| 07 26 00 | N1855-0820 | 18 20 20 | 28.1 | 169.8 | -0.6 | | -6.2 | -24 | 9134 | No stop |
| 07 28 00 | --- | 18 22 20 | 28.1 | 170.4 | -0.6 | | -5.8 | 96 | 9149 | 07 26 01 |
| 07 28 45 | J1912-0804 | 18 23 06 | 27.9 | 166.0 | -0.8 | | -8.5 | 21 | 9149 | 07 28 45 |
| 07 29 45 | =1909-081 | 18 24 06 | 28.0 | 166.2 | -0.8 | | -8.3 | 60 | 9157 | 07 28 46 |
| 07 29 45 | J1858-0814 | 18 24 06 | 28.2 | 170.0 | -0.6 | | -6.0 | -23 | 9157 | No stop |
| 07 32 45 | --- | 18 27 06 | 28.3 | 170.9 | -0.5 | | -5.5 | 157 | 9180 | 07 29 46 |
| 07 32 45 | J1912-0804 | 18 27 06 | 28.1 | 167.1 | -0.8 | | -7.8 | -22 | 9180 | No stop |
| 07 33 45 | =1909-081 | 18 28 06 | 28.1 | 167.3 | -0.8 | | -7.6 | 38 | 9188 | 07 32 46 |
| 07 33 45 | N1858-0735 | 18 28 06 | 29.0 | 171.1 | -0.5 | | -5.4 | -22 | 9188 | No stop |
| 07 35 45 | --- | 18 30 07 | 29.0 | 171.6 | -0.5 | | -5.0 | 98 | 9203 | 07 33 46 |
| 07 35 45 | J1912-0804 | 18 30 07 | 28.2 | 167.9 | -0.7 | | -7.3 | -22 | 9203 | No stop |
| 07 36 45 | =1909-081 | 18 31 07 | 28.2 | 168.2 | -0.7 | | -7.1 | 38 | 9211 | 07 35 46 |
| 07 36 45 | N1855-0820 | 18 31 07 | 28.3 | 172.8 | -0.4 | | -4.3 | -24 | 9211 | No stop |
| 07 38 45 | --- | 18 33 07 | 28.4 | 173.4 | -0.4 | | -4.0 | 96 | 9226 | 07 36 46 |
| 07 39 30 | J1912-0804 | 18 33 52 | 28.3 | 169.0 | -0.7 | | -6.7 | 21 | 9226 | 07 39 30 |
| 07 40 30 | =1909-081 | 18 34 53 | 28.3 | 169.2 | -0.6 | | -6.5 | 60 | 9234 | 07 39 31 |
| 07 40 30 | J1858-0814 | 18 34 53 | 28.5 | 173.0 | -0.4 | | -4.2 | -23 | 9234 | No stop |
| 07 43 30 | --- | 18 37 53 | 28.5 | 173.9 | -0.4 | | -3.7 | 157 | 9257 | 07 40 31 |
| 07 43 30 | J1912-0804 | 18 37 53 | 28.4 | 170.1 | -0.6 | | -6.0 | -22 | 9257 | No stop |
| 07 44 30 | =1909-081 | 18 38 53 | 28.4 | 170.4 | -0.6 | | -5.8 | 38 | 9265 | 07 43 31 |
| 07 44 30 | N1858-0735 | 18 38 53 | 29.2 | 174.1 | -0.3 | | -3.6 | -23 | 9265 | No stop |
| 07 46 30 | --- | 18 40 54 | 29.2 | 174.7 | -0.3 | | -3.2 | 97 | 9280 | 07 44 31 |
| 07 46 30 | J1912-0804 | 18 40 54 | 28.5 | 170.9 | -0.5 | | -5.5 | -22 | 9280 | No stop |
| 07 47 30 | =1909-081 | 18 41 54 | 28.5 | 171.2 | -0.5 | | -5.3 | 38 | 9288 | 07 46 31 |
| 07 47 30 | N1855-0820 | 18 41 54 | 28.5 | 175.9 | -0.2 | | -2.5 | -25 | 9288 | No stop |
| 07 49 30 | --- | 18 43 54 | 28.5 | 176.4 | -0.2 | | -2.2 | 95 | 9303 | 07 47 31 |
| 07 50 15 | J1912-0804 | 18 44 39 | 28.6 | 172.0 | -0.5 | | -4.9 | 21 | 9303 | 07 50 15 |
| 07 51 15 | =1909-081 | 18 45 39 | 28.6 | 172.3 | -0.5 | | -4.7 | 60 | 9311 | 07 50 16 |
| 07 51 15 | J1858-0814 | 18 45 39 | 28.6 | 176.1 | -0.2 | | -2.4 | -23 | 9311 | No stop |
| 07 54 15 | --- | 18 48 40 | 28.6 | 176.9 | -0.2 | | -1.9 | 157 | 9334 | 07 51 16 |

```
Schedule for TORUN     (Code Tr )                                  Page  23
              e-EVN: rso03, eg102g, ey033a, rsc05, rp028b
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Fri  15 Feb 2019   Day  46 ---

07 54 15  J1912-0804   18 48 40  28.6 173.1 -0.4      -4.2   -22     9334   No stop
07 55 15  =1909-081    18 49 40  28.7 173.4 -0.4      -4.0    38     9342   07 54 16

07 55 15  N1858-0735   18 49 40  29.3 177.2 -0.2      -1.7   -23     9342   No stop
07 57 15  ---          18 51 40  29.3 177.8 -0.1      -1.4    97     9357   07 55 16

07 57 15  J1912-0804   18 51 40  28.7 173.9 -0.4      -3.7   -22     9357   No stop
07 58 15  =1909-081    18 52 40  28.7 174.2 -0.3      -3.5    38     9365   07 57 16

07 58 15  N1855-0820   18 52 40  28.6 178.9 -0.1      -0.7   -25     9365   No stop
08 00 15  ---          18 54 41  28.6 179.5 -0.0      -0.3    95     9380   07 58 16

08 01 00  J1912-0804   18 55 26  28.7 175.0 -0.3      -3.0    21     9380   08 01 00
08 02 00  =1909-081    18 56 26  28.8 175.3 -0.3      -2.9    60     9388   08 01 01

08 02 00  J1858-0814   18 56 26  28.7 179.1 -0.1      -0.5   -23     9388   No stop
08 05 00  ---          18 59 27  28.7 180.0 -0.0      -0.0   157     9411   08 02 01

08 05 00  J1912-0804   18 59 27  28.8 176.1 -0.2      -2.3   -22     9411   No stop
08 06 00  =1909-081    19 00 27  28.8 176.4 -0.2      -2.2    38     9419   08 05 01

08 06 00  N1858-0735   19 00 27  29.3 180.3  0.0       0.2   -23     9419   No stop
08 08 00  ---          19 02 27  29.3 180.8  0.0       0.5    97     9434   08 06 01

08 08 00  J1912-0804   19 02 27  28.8 177.0 -0.2      -1.8   -22     9434   No stop
08 09 00  =1909-081    19 03 27  28.8 177.3 -0.2      -1.7    38     9442   08 08 01

08 09 00  N1855-0820   19 03 27  28.6 181.9  0.1       1.2   -25     9442   No stop
08 11 00  ---          19 05 28  28.6 182.5  0.1       1.5    95     9457   08 09 01

08 11 45  J1912-0804   19 06 13  28.8 178.0 -0.1      -1.2    21     9457   08 11 45
08 12 45  =1909-081    19 07 13  28.9 178.3 -0.1      -1.0    60     9465   08 11 46

08 12 45  J1858-0814   19 07 13  28.7 182.2  0.1       1.3   -23     9465   No stop
08 15 45  ---          19 10 13  28.7 183.0  0.2       1.8   157     9488   08 12 46

08 15 45  J1912-0804   19 10 13  28.9 179.2 -0.0      -0.5   -22     9488   No stop
08 16 45  =1909-081    19 11 13  28.9 179.5 -0.0      -0.3    38     9495   08 15 46

08 20 15  J2253+1608   19 14 44  33.6 109.1 -3.7     -36.2    54     9495   08 20 15
08 25 00  =3C454.3     19 19 30  34.3 110.2 -3.6     -35.9   285     9532   08 20 16
```

```
Schedule for TORUN     (Code Tr )                                  Page  24
              e-EVN: rso03, eg102g, ey033a, rsc05, rp028b
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Fri  15 Feb 2019   Day  46 ---

 ---------- RP028B ----------

08 35 00  J2353+5518   19 29 31  52.7  59.0 -4.4     -65.1   481     9532   08 35 00
08 36 00  =2351+550    19 30 32  52.8  59.1 -4.4     -65.2    60     9540   08 35 01

08 36 00  IRAS23436    19 30 32  52.9  63.0 -4.3     -63.7   -23     9540   No stop
08 39 44  ---          19 34 16  53.4  63.4 -4.2     -64.1   201     9568   08 36 01

08 40 24  J2353+5518   19 34 56  53.4  59.6 -4.3     -65.8    17     9568   08 40 24
08 41 24  =2351+550    19 35 57  53.5  59.7 -4.3     -65.9    60     9576   08 40 25

08 41 24  IRAS23436    19 35 57  53.7  63.6 -4.2     -64.3   -23     9576   No stop
08 45 04  ---          19 39 37  54.2  64.0 -4.1     -64.7   197     9604   08 41 25

08 45 04  J2353+5518   19 39 37  54.0  60.0 -4.3     -66.4   -23     9604   No stop
08 46 34  =2351+550    19 41 07  54.2  60.2 -4.2     -66.6    67     9616   08 45 05

08 46 34  IRAS23436    19 41 07  54.4  64.2 -4.1     -64.9   -23     9616   No stop
08 50 18  ---          19 44 52  54.9  64.6 -4.0     -65.3   201     9645   08 46 35

08 50 58  J2353+5518   19 45 32  54.8  60.6 -4.2     -67.2    17     9645   08 50 58
08 51 48  =2351+550    19 46 22  54.9  60.7 -4.1     -67.3    50     9651   08 50 59

08 51 48  IRAS23436    19 46 22  55.1  64.8 -4.0     -65.5   -23     9651   No stop
08 55 32  ---          19 50 07  55.6  65.2 -3.9     -65.9   201     9680   08 51 49

08 55 32  J2353+5518   19 50 07  55.4  61.0 -4.1     -67.7   -23     9680   No stop
08 57 02  =2351+550    19 51 37  55.6  61.2 -4.1     -67.9    67     9691   08 55 33

08 57 02  IRAS23436    19 51 37  55.8  65.3 -3.9     -66.1   -23     9691   No stop
09 00 46  ---          19 55 22  56.3  65.7 -3.9     -66.5   201     9720   08 57 03

09 01 26  J2353+5518   19 56 02  56.2  61.6 -4.0     -68.5    17     9720   09 01 26
09 02 26  =2351+550    19 57 02  56.3  61.7 -4.0     -68.6    60     9728   09 01 27

09 02 26  IRAS23436    19 57 02  56.5  65.9 -3.8     -66.7   -23     9728   No stop
09 06 06  ---          20 00 43  57.0  66.3 -3.8     -67.1   197     9756   09 02 27

09 06 06  J2353+5518   20 00 43  56.8  62.0 -3.9     -69.1   -23     9756   No stop
09 07 36  =2351+550    20 02 13  57.0  62.2 -3.9     -69.3    67     9767   09 06 07

09 07 36  IRAS23436    20 02 13  57.2  66.5 -3.7     -67.2   -24     9767   No stop
09 11 20  ---          20 05 57  57.8  66.9 -3.7     -67.6   200     9796   09 07 37
```

Schedule for TORUN (Code Tr ) Page 25

e-EVN: rso03, eg102g, ey033a, rsc05, rp028b

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Fri 15 Feb 2019 Day 46 --- | | | | | | | | | | |
| 09 12 00 | J2353+5518 | 20 06 38 | 57.6 | 62.6 | -3.8 | | -69.9 | 16 | 9796 | 09 12 00 |
| 09 12 50 | =2351+550 | 20 07 28 | 57.7 | 62.6 | -3.8 | | -70.0 | 50 | 9803 | 09 12 01 |
| 09 12 50 | IRAS23436 | 20 07 28 | 58.0 | 67.0 | -3.7 | | -67.8 | -24 | 9803 | No stop |
| 09 16 34 | --- | 20 11 12 | 58.5 | 67.4 | -3.6 | | -68.2 | 200 | 9831 | 09 12 51 |
| 09 16 34 | J2353+5518 | 20 11 12 | 58.2 | 63.0 | -3.7 | | -70.5 | -24 | 9831 | No stop |
| 09 18 04 | =2351+550 | 20 12 43 | 58.4 | 63.1 | -3.7 | | -70.7 | 66 | 9843 | 09 16 35 |
| 09 18 04 | IRAS23436 | 20 12 43 | 58.7 | 67.6 | -3.6 | | -68.4 | -24 | 9843 | No stop |
| 09 21 48 | --- | 20 16 27 | 59.2 | 68.0 | -3.5 | | -68.8 | 200 | 9872 | 09 18 05 |
| 09 22 28 | J2353+5518 | 20 17 07 | 59.0 | 63.5 | -3.6 | | -71.2 | 16 | 9872 | 09 22 28 |
| 09 23 28 | =2351+550 | 20 18 07 | 59.1 | 63.6 | -3.6 | | -71.4 | 60 | 9879 | 09 22 29 |
| 09 23 28 | IRAS23436 | 20 18 07 | 59.4 | 68.2 | -3.5 | | -69.0 | -24 | 9879 | No stop |
| 09 27 08 | --- | 20 21 48 | 60.0 | 68.5 | -3.4 | | -69.4 | 196 | 9907 | 09 23 29 |
| 09 27 08 | J2353+5518 | 20 21 48 | 59.6 | 63.9 | -3.5 | | -71.8 | -24 | 9907 | No stop |
| 09 28 38 | =2351+550 | 20 23 18 | 59.8 | 64.0 | -3.5 | | -72.0 | 66 | 9919 | 09 27 09 |
| 09 28 38 | IRAS23436 | 20 23 18 | 60.2 | 68.7 | -3.4 | | -69.6 | -24 | 9919 | No stop |
| 09 32 22 | --- | 20 27 03 | 60.7 | 69.1 | -3.3 | | -70.0 | 200 | 9948 | 09 28 39 |
| 09 33 02 | J2353+5518 | 20 27 43 | 60.4 | 64.4 | -3.4 | | -72.6 | 16 | 9948 | 09 33 02 |
| 09 33 52 | =2351+550 | 20 28 33 | 60.5 | 64.5 | -3.4 | | -72.7 | 50 | 9954 | 09 33 03 |
| 09 33 52 | IRAS23436 | 20 28 33 | 60.9 | 69.2 | -3.3 | | -70.1 | -25 | 9954 | No stop |
| 09 37 36 | --- | 20 32 18 | 61.4 | 69.6 | -3.2 | | -70.5 | 199 | 9983 | 09 33 53 |
| 09 37 36 | J2353+5518 | 20 32 18 | 61.0 | 64.8 | -3.4 | | -73.2 | -25 | 9983 | No stop |
| 09 39 06 | =2351+550 | 20 33 48 | 61.2 | 64.9 | -3.3 | | -73.4 | 65 | 9994 | 09 37 37 |
| 09 39 06 | IRAS23436 | 20 33 48 | 61.6 | 69.8 | -3.2 | | -70.7 | -25 | 9994 | No stop |
| 09 42 50 | --- | 20 37 33 | 62.2 | 70.2 | -3.2 | | -71.1 | 199 | 10023 | 09 39 07 |
| 09 43 30 | J2353+5518 | 20 38 13 | 61.8 | 65.3 | -3.3 | | -74.0 | 15 | 10023 | 09 43 30 |
| 09 44 30 | =2351+550 | 20 39 13 | 62.0 | 65.4 | -3.3 | | -74.1 | 60 | 10031 | 09 43 31 |
| 09 44 30 | IRAS23436 | 20 39 13 | 62.4 | 70.4 | -3.1 | | -71.3 | -25 | 10031 | No stop |
| 09 48 10 | --- | 20 42 54 | 62.9 | 70.7 | -3.1 | | -71.7 | 195 | 10059 | 09 44 31 |
| 09 48 10 | J2353+5518 | 20 42 54 | 62.5 | 65.7 | -3.2 | | -74.6 | -25 | 10059 | No stop |
| 09 49 40 | =2351+550 | 20 44 24 | 62.7 | 65.8 | -3.2 | | -74.8 | 65 | 10070 | 09 48 11 |

Schedule for TORUN (Code Tr ) Page 26

e-EVN: rso03, eg102g, ey033a, rsc05, rp028b

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Fri 15 Feb 2019 Day 46 --- | | | | | | | | | | |
| 09 49 40 | IRAS23436 | 20 44 24 | 63.1 | 70.9 | -3.0 | | -71.9 | -25 | 10070 | No stop |
| 09 53 24 | --- | 20 48 08 | 63.7 | 71.3 | -3.0 | | -72.3 | 199 | 10099 | 09 49 41 |
| 09 54 04 | J2353+5518 | 20 48 48 | 63.3 | 66.2 | -3.1 | | -75.4 | 15 | 10099 | 09 54 04 |
| 09 54 54 | =2351+550 | 20 49 39 | 63.4 | 66.2 | -3.1 | | -75.5 | 50 | 10106 | 09 54 05 |
| 09 54 54 | IRAS23436 | 20 49 39 | 63.9 | 71.4 | -3.0 | | -72.4 | -25 | 10106 | No stop |
| 09 58 38 | --- | 20 53 23 | 64.4 | 71.8 | -2.9 | | -72.8 | 199 | 10134 | 09 54 55 |
| 09 58 38 | J2353+5518 | 20 53 23 | 63.9 | 66.5 | -3.0 | | -76.0 | -26 | 10134 | No stop |
| 10 00 08 | =2351+550 | 20 54 53 | 64.1 | 66.6 | -3.0 | | -76.2 | 64 | 10146 | 09 58 39 |
| 10 00 08 | IRAS23436 | 20 54 53 | 64.6 | 72.0 | -2.9 | | -73.0 | -26 | 10146 | No stop |
| 10 03 52 | --- | 20 58 38 | 65.2 | 72.3 | -2.8 | | -73.4 | 198 | 10175 | 10 00 09 |
| 10 04 32 | J2353+5518 | 20 59 18 | 64.7 | 67.0 | -2.9 | | -76.8 | 14 | 10175 | 10 04 32 |
| 10 05 32 | =2351+550 | 21 00 18 | 64.9 | 67.1 | -2.9 | | -77.0 | 60 | 10182 | 10 04 33 |
| 10 05 32 | IRAS23436 | 21 00 18 | 65.4 | 72.5 | -2.8 | | -73.6 | -26 | 10182 | No stop |
| 10 09 12 | --- | 21 03 59 | 65.9 | 72.9 | -2.7 | | -74.0 | 194 | 10210 | 10 05 33 |
| 10 09 12 | J2353+5518 | 21 03 59 | 65.4 | 67.3 | -2.8 | | -77.5 | -26 | 10210 | No stop |
| 10 10 42 | =2351+550 | 21 05 29 | 65.6 | 67.4 | -2.8 | | -77.7 | 64 | 10222 | 10 09 13 |
| 10 10 42 | IRAS23436 | 21 05 29 | 66.1 | 73.0 | -2.7 | | -74.1 | -26 | 10222 | No stop |
| 10 14 26 | --- | 21 09 14 | 66.7 | 73.4 | -2.6 | | -74.6 | 198 | 10251 | 10 10 43 |
| 10 15 06 | J2353+5518 | 21 09 54 | 66.2 | 67.8 | -2.7 | | -78.3 | 14 | 10251 | 10 15 06 |
| 10 15 56 | =2351+550 | 21 10 44 | 66.3 | 67.8 | -2.7 | | -78.4 | 50 | 10257 | 10 15 07 |
| 10 15 56 | IRAS23436 | 21 10 44 | 66.9 | 73.6 | -2.6 | | -74.7 | -27 | 10257 | No stop |
| 10 19 40 | --- | 21 14 29 | 67.4 | 73.9 | -2.5 | | -75.1 | 197 | 10286 | 10 15 57 |
| 10 19 40 | J2353+5518 | 21 14 29 | 66.8 | 68.1 | -2.7 | | -79.0 | -27 | 10286 | No stop |
| 10 21 10 | =2351+550 | 21 15 59 | 67.0 | 68.2 | -2.6 | | -79.2 | 63 | 10297 | 10 19 41 |
| 10 21 10 | IRAS23436 | 21 15 59 | 67.7 | 74.1 | -2.5 | | -75.3 | -27 | 10297 | No stop |
| 10 24 54 | --- | 21 19 44 | 68.2 | 74.5 | -2.5 | | -75.7 | 197 | 10326 | 10 21 11 |
| 10 25 34 | J2353+5518 | 21 20 24 | 67.6 | 68.5 | -2.6 | | -79.8 | 13 | 10326 | 10 25 34 |
| 10 26 34 | =2351+550 | 21 21 24 | 67.8 | 68.5 | -2.6 | | -80.0 | 60 | 10334 | 10 25 35 |
| 10 26 34 | IRAS23436 | 21 21 24 | 68.4 | 74.6 | -2.4 | | -75.9 | -27 | 10334 | No stop |
| 10 30 14 | --- | 21 25 04 | 69.0 | 75.0 | -2.4 | | -76.3 | 193 | 10362 | 10 26 35 |

```
Schedule for TORUN     (Code Tr )                                  Page  27
              e-EVN: rso03, eg102g, ey033a, rsc05, rp028b
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Fri  15 Feb 2019   Day  46 ---

10 30 14  J2353+5518   21 25 04  68.3  68.8 -2.5     -80.5   -27    10362   No stop
10 31 44  =2351+550    21 26 35  68.5  68.9 -2.5     -80.7    63    10374   10 30 15

10 31 44  IRAS23436    21 26 35  69.2  75.1 -2.3     -76.4   -28    10374   No stop
10 35 28  ---          21 30 19  69.7  75.5 -2.3     -76.8   196    10402   10 31 45

10 36 08  J2353+5518   21 30 59  69.1  69.2 -2.4     -81.4    12    10402   10 36 08
10 36 58  =2351+550    21 31 50  69.2  69.2 -2.4     -81.5    50    10409   10 36 09

10 36 58  IRAS23436    21 31 50  70.0  75.7 -2.3     -77.0   -28    10409   No stop
10 40 42  ---          21 35 34  70.5  76.0 -2.2     -77.4   196    10437   10 36 59

10 40 42  J2353+5518   21 35 34  69.8  69.4 -2.3     -82.1   -28    10437   No stop
10 42 12  =2351+550    21 37 04  70.0  69.5 -2.3     -82.3    62    10449   10 40 43

10 42 12  IRAS23436    21 37 04  70.7  76.2 -2.2     -77.6   -28    10449   No stop
10 45 56  ---          21 40 49  71.3  76.5 -2.1     -78.0   196    10478   10 42 13

10 46 36  J2353+5518   21 41 29  70.6  69.7 -2.2     -83.0    11    10478   10 46 36
10 47 36  =2351+550    21 42 29  70.7  69.8 -2.2     -83.1    60    10485   10 46 37

10 47 36  IRAS23436    21 42 29  71.5  76.7 -2.1     -78.2   -29    10485   No stop
10 51 16  ---          21 46 10  72.0  77.0 -2.0     -78.6   191    10514   10 47 37

10 51 16  J2353+5518   21 46 10  71.3  70.0 -2.1     -83.7   -29    10514   No stop
10 52 46  =2351+550    21 47 40  71.5  70.0 -2.1     -84.0    61    10525   10 51 17

10 52 46  IRAS23436    21 47 40  72.3  77.2 -2.0     -78.7   -29    10525   No stop
10 56 30  ---          21 51 25  72.8  77.5 -1.9     -79.1   195    10554   10 52 47

10 57 10  J2353+5518   21 52 05  72.1  70.2 -2.0     -84.7    10    10554   10 57 10
10 58 00  =2351+550    21 52 55  72.2  70.3 -2.0     -84.8    50    10560   10 57 11

10 58 00  IRAS23436    21 52 55  73.0  77.7 -1.9     -79.3   -30    10560   No stop
11 01 44  ---          21 56 40  73.6  78.0 -1.8     -79.7   194    10589   10 58 01

11 01 44  J2353+5518   21 56 40  72.7  70.4 -2.0     -85.4   -30    10589   No stop
11 03 14  =2351+550    21 58 10  73.0  70.5 -1.9     -85.7    60    10600   11 01 45

11 03 14  IRAS23436    21 58 10  73.8  78.2 -1.8     -79.9   -30    10600   No stop
11 06 58  ---          22 01 54  74.4  78.5 -1.8     -80.3   194    10629   11 03 15

11 07 38  J2353+5518   22 02 35  73.6  70.6 -1.9     -86.5     9    10629   11 07 38
11 08 38  =2351+550    22 03 35  73.7  70.7 -1.9     -86.6    60    10637   11 07 39
```

Schedule for TORUN (Code Tr ) Page 28

e-EVN: rso03, eg102g, ey033a, rsc05, rp028b

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | LST | Start / Stop<br>EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Fri 15 Feb 2019 Day 46 --- | | | | | | | | | | |
| 11 08 38 | IRAS23436 | 22 03 35 | 74.6 | 78.7 | -1.7 | | -80.5 | -31 | 10637 | No stop |
| 11 12 18 | --- | 22 07 15 | 75.1 | 79.0 | -1.7 | | -80.9 | 189 | 10665 | 11 08 39 |
| 11 12 18 | J2353+5518 | 22 07 15 | 74.2 | 70.8 | -1.8 | | -87.3 | -32 | 10665 | No stop |
| 11 13 48 | =2351+550 | 22 08 46 | 74.5 | 70.8 | -1.8 | | -87.6 | 58 | 10677 | 11 12 19 |
| 11 13 48 | IRAS23436 | 22 08 46 | 75.4 | 79.2 | -1.6 | | -81.0 | -32 | 10677 | No stop |
| 11 17 32 | --- | 22 12 30 | 75.9 | 79.5 | -1.6 | | -81.5 | 192 | 10705 | 11 13 49 |
| 11 18 12 | J2353+5518 | 22 13 10 | 75.1 | 70.9 | -1.7 | | -88.4 | 8 | 10705 | 11 18 12 |
| 11 19 02 | =2351+550 | 22 14 00 | 75.2 | 70.9 | -1.7 | | -88.6 | 50 | 10712 | 11 18 13 |
| 11 19 02 | IRAS23436 | 22 14 00 | 76.1 | 79.7 | -1.5 | | -81.6 | -33 | 10712 | No stop |
| 11 22 46 | --- | 22 17 45 | 76.7 | 80.0 | -1.5 | | -82.1 | 191 | 10740 | 11 19 03 |
| 11 22 46 | J2353+5518 | 22 17 45 | 75.7 | 70.9 | -1.6 | | -89.3 | -33 | 10740 | No stop |
| 11 24 16 | =2351+550 | 22 19 15 | 76.0 | 70.9 | -1.6 | | -89.6 | 57 | 10752 | 11 22 47 |
| 11 24 16 | IRAS23436 | 22 19 15 | 76.9 | 80.1 | -1.5 | | -82.2 | -33 | 10752 | No stop |
| 11 28 00 | --- | 22 23 00 | 77.5 | 80.5 | -1.4 | | -82.7 | 191 | 10781 | 11 24 17 |
| 11 28 50 | J2353+5518 | 22 23 50 | 76.6 | 70.9 | -1.5 | | -90.6 | 16 | 10781 | 11 28 50 |
| 11 30 10 | =2351+550 | 22 25 10 | 76.8 | 70.9 | -1.5 | | -90.8 | 80 | 10791 | 11 28 51 |
| 11 30 10 | IRAS23436 | 22 25 10 | 77.8 | 80.6 | -1.4 | | -82.9 | -35 | 10791 | No stop |
| 11 33 54 | --- | 22 28 55 | 78.3 | 81.0 | -1.3 | | -83.3 | 189 | 10820 | 11 30 11 |
| 11 33 54 | J2353+5518 | 22 28 55 | 77.3 | 70.9 | -1.4 | | -91.7 | -35 | 10820 | No stop |
| 11 35 24 | =2351+550 | 22 30 25 | 77.5 | 70.8 | -1.4 | | -92.0 | 55 | 10831 | 11 33 55 |
| 11 35 24 | IRAS23436 | 22 30 25 | 78.6 | 81.1 | -1.3 | | -83.5 | -36 | 10831 | No stop |
| 11 39 04 | --- | 22 34 06 | 79.1 | 81.4 | -1.2 | | -84.0 | 184 | 10859 | 11 35 25 |
| 11 39 54 | J2353+5518 | 22 34 56 | 78.2 | 70.7 | -1.3 | | -93.1 | 14 | 10859 | 11 39 54 |
| 11 41 14 | =2351+550 | 22 36 16 | 78.4 | 70.7 | -1.3 | | -93.4 | 80 | 10870 | 11 39 55 |
| 11 41 14 | IRAS23436 | 22 36 16 | 79.4 | 81.6 | -1.2 | | -84.2 | -37 | 10870 | No stop |
| 11 44 58 | --- | 22 40 01 | 80.0 | 81.9 | -1.1 | | -84.7 | 187 | 10898 | 11 41 15 |
| 11 44 58 | J2353+5518 | 22 40 01 | 78.9 | 70.5 | -1.2 | | -94.3 | -38 | 10898 | No stop |
| 11 46 28 | =2351+550 | 22 41 31 | 79.1 | 70.4 | -1.2 | | -94.7 | 52 | 10910 | 11 44 59 |
| 11 46 28 | IRAS23436 | 22 41 31 | 80.2 | 82.0 | -1.1 | | -84.8 | -38 | 10910 | No stop |
| 11 50 12 | --- | 22 45 16 | 80.8 | 82.3 | -1.0 | | -85.3 | 186 | 10939 | 11 46 29 |

Schedule for TORUN (Code Tr ) Page 29

e-EVN: rso03, eg102g, ey033a, rsc05, rp028b

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Fri 15 Feb 2019 Day 46 --- | | | | | | | | | | |
| 11 51 02 | J2353+5518 | 22 46 06 | 79.8 | 70.1 | -1.1 | | -96.0 | 11 | 10939 | 11 51 02 |
| 11 52 22 | =2351+550 | 22 47 26 | 79.9 | 69.9 | -1.1 | | -96.4 | 80 | 10949 | 11 51 03 |
| 11 52 22 | IRAS23436 | 22 47 26 | 81.1 | 82.5 | -1.0 | | -85.6 | -40 | 10949 | No stop |
| 11 56 06 | --- | 22 51 11 | 81.7 | 82.7 | -0.9 | | -86.1 | 184 | 10978 | 11 52 23 |
| 11 56 06 | J2353+5518 | 22 51 11 | 80.5 | 69.6 | -1.1 | | -97.5 | -41 | 10978 | No stop |
| 11 57 36 | =2351+550 | 22 52 41 | 80.7 | 69.4 | -1.0 | | -98.0 | 49 | 10989 | 11 56 07 |
| 11 57 36 | IRAS23436 | 22 52 41 | 81.9 | 82.8 | -0.9 | | -86.3 | -42 | 10989 | No stop |
| 12 01 20 | --- | 22 56 25 | 82.4 | 83.1 | -0.8 | | -86.8 | 182 | 11018 | 11 57 37 |
| 12 02 10 | J2353+5518 | 22 57 16 | 81.3 | 68.8 | -1.0 | | -99.6 | 6 | 11018 | 12 02 10 |
| 12 03 30 | =2351+550 | 22 58 36 | 81.5 | 68.5 | -0.9 | | -100.1 | 80 | 11028 | 12 02 11 |
| 12 03 30 | IRAS23436 | 22 58 36 | 82.8 | 83.2 | -0.8 | | -87.1 | -44 | 11028 | No stop |
| 12 07 10 | --- | 23 02 16 | 83.3 | 83.4 | -0.7 | | -87.6 | 176 | 11056 | 12 03 31 |
| 12 07 10 | J2353+5518 | 23 02 16 | 82.0 | 67.9 | -0.9 | | -101.5 | -46 | 11056 | No stop |
| 12 09 06 | =2351+550 | 23 04 13 | 82.3 | 67.4 | -0.8 | | -102.3 | 70 | 11071 | 12 07 11 |
| 12 12 06 | J0121+1149 | 23 07 13 | 40.8 | 133.9 | -2.3 | | -26.2 | 10 | 11071 | 12 12 06 |
| 12 15 36 | =0119+115 | 23 10 44 | 41.2 | 135.0 | -2.2 | | -25.7 | 210 | 11098 | 12 12 07 |
| 12 15 36 | IRAS23436 | 23 10 44 | 84.6 | 83.8 | -0.6 | | -88.9 | -178 | 11098 | No stop |
| 12 18 50 | --- | 23 13 58 | 85.1 | 83.9 | -0.6 | | -89.5 | 16 | 11123 | 12 15 37 |
| 12 19 55 | J2353+5518 | 23 15 03 | 83.8 | 64.1 | -0.7 | | -107.8 | 11 | 11123 | 12 19 55 |
| 12 21 30 | =2351+550 | 23 16 39 | 84.0 | 63.5 | -0.6 | | -108.8 | 95 | 11135 | 12 19 56 |
| 12 21 30 | IRAS23436 | 23 16 39 | 85.5 | 83.9 | -0.5 | | -90.0 | -56 | 11135 | No stop |
| 12 24 40 | --- | 23 19 49 | 85.9 | 83.8 | -0.5 | | -90.7 | 134 | 11160 | 12 21 31 |
| 12 24 40 | J2353+5518 | 23 19 49 | 84.4 | 62.0 | -0.6 | | -111.0 | -60 | 11160 | No stop |
| 12 26 40 | =2351+550 | 23 21 50 | 84.7 | 60.8 | -0.5 | | -112.5 | 60 | 11175 | 12 24 41 |
| 12 26 40 | IRAS23436 | 23 21 50 | 86.2 | 83.8 | -0.4 | | -91.2 | -61 | 11175 | No stop |
| 12 29 54 | --- | 23 25 04 | 86.7 | 83.6 | -0.4 | | -92.1 | 133 | 11200 | 12 26 41 |
| 12 30 44 | J2353+5518 | 23 25 54 | 85.2 | 58.2 | -0.5 | | -116.0 | -16 | 11200 | 12 30 44 |
| 12 32 34 | =2351+550 | 23 27 45 | 85.4 | 56.7 | -0.4 | | -117.8 | 94 | 11214 | 12 30 45 |
| 12 32 34 | IRAS23436 | 23 27 45 | 87.1 | 83.2 | -0.3 | | -92.9 | -68 | 11214 | No stop |
| 12 35 48 | --- | 23 30 59 | 87.6 | 82.6 | -0.3 | | -94.2 | 126 | 11239 | 12 32 35 |

```
Schedule for TORUN     (Code Tr )                                  Page  30
              e-EVN: rso03, eg102g, ey033a, rsc05, rp028b
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Fri  15 Feb 2019   Day  46 ---

12 35 48  J2353+5518   23 30 59  85.8  53.7 -0.4    -121.5   -75    11239   No stop
12 37 48  =2351+550    23 32 59  86.1  51.5 -0.4    -124.1    45    11254   12 35 49

12 37 48  IRAS23436    23 32 59  87.9  82.0 -0.2     -95.2   -75    11254   No stop
12 41 02  ---          23 36 14  88.4  80.3 -0.2     -97.5   119    11279   12 37 49

12 42 07  J2353+5518   23 37 19  86.6  45.7 -0.3    -130.8   -20    11279   12 42 07
12 43 42  =2351+550    23 38 54  86.7  43.1 -0.3    -133.7    75    11291   12 42 08

12 43 42  IRAS23436    23 38 54  88.8  77.8 -0.1    -100.6   -80    11291   No stop
12 46 52  ---          23 42 05  89.2  71.2 -0.1    -107.9   110    11316   12 43 43

12 46 52  J2353+5518   23 42 05  87.0  37.0 -0.2    -140.4   -89    11316   No stop
12 48 52  =2351+550    23 44 05  87.2  32.5 -0.2    -145.4    31    11331   12 46 53

12 48 52  IRAS23436    23 44 05  89.5  60.4 -0.0    -119.0   -46    11331   No stop
12 52 06  ---          23 47 20  89.8 -11.4  0.0     168.6   148    11356   12 48 53

12 52 56  J2353+5518   23 48 10  87.5  21.5 -0.1    -157.2   -28    11356   12 52 56
12 54 46  =2351+550    23 50 00  87.6  15.8 -0.1    -163.3    82    11370   12 52 57

12 54 46  IRAS23436    23 50 00  89.5 -61.2  0.1     118.2  -194    11370   No stop
12 58 00  ---          23 53 15  89.0 -74.7  0.1     104.0     0    11395   12 54 47



SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119.C1024e

   Setup group:    9         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
   Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
            4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
  Net SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF SB =         U         U         U         U         U         U         U         U
                  U         U         U         U         U         U         U         U
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
                RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
                  3         7         3         7         4         8         4         8
  BBC SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                 A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:   8  Setup file default.  Used with PCAL = off
  LO sum=   4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
            5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
  BBC fr=    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
             806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
  Bandwd=     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
              16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
   Matching frequency sets:   8

  Track assignments are:
   track1=  18, 26,  2, 10, 20, 28,  4, 12, 22, 30,  6, 14, 24, 32,  8, 16
   barrel=roll_off



POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                       (B1950)             (J2000)             (Date)             (mas)

* J0950+0615        09 47 25.677628   * 09 50 03.467497     09 51 04.119415       0.00
                    06 29 05.98291    * 06 15 03.81697      06 09 36.16281        0.00

* J1307+1507        13 05 10.271688   * 13 07 38.829600     13 08 35.461984       0.00
                    15 23 52.46954    * 15 07 52.23400      15 01 41.83523        0.00

* J1300+1417        12 58 11.677779   * 13 00 41.037033     13 01 38.004415       0.00
                    14 33 37.91715    * 14 17 29.41458      14 11 16.00619        0.00

* J1520+1835        15 18 11.632085   * 15 20 28.143000     15 21 19.544779       0.00
                    18 46 42.44163    * 18 35 56.16000      18 31 44.97018        0.00

* J1521+1756        15 19 00.461207   * 15 21 17.580600     15 22 09.209632       0.00
                    18 06 44.62934    * 17 56 01.08500      17 51 51.14159        0.00

* AT2018            16 13 51.046576   * 16 16 00.224400     16 16 48.533663       0.00
                    22 23 28.30125    * 22 16 04.89000      22 13 09.92156        0.00

* J1619+2247        16 17 06.466942   * 16 19 14.824599     16 20 02.804065       0.00
                    22 54 58.47384    * 22 47 47.85108      22 44 57.60437        0.00

* J1858-0814        18 55 51.693037   * 18 58 34.893000     18 59 35.249998       0.00
                   -08 18 22.58589    *-08 14 14.93800     -08 12 40.06408        0.00
```

```
* N1858-0735        18 55 51.124980   * 18 58 33.580000     18 59 33.659660       0.00
                   -07 39 34.08132    *-07 35 26.50000     -07 33 51.80818        0.00

* N1855-0820        18 52 51.701902   * 18 55 35.060000     18 56 35.488447       0.00
                   -08 24 52.72150    *-08 20 57.80000     -08 19 27.63872        0.00

* IRAS23436         23 43 37.615051   * 23 46 05.517275     23 46 59.964780       0.00
                    52 57 21.56123    * 53 14 01.26050      53 20 23.06702        0.00

  0017+200          00 17 02.119554   * 00 19 37.854497     00 20 35.642956       0.01
* J0019+2021        20 05 06.80760    * 20 21 45.64456      20 27 59.58339        0.00
  J0019+20          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,  23452 observations.

  0119+115          01 19 03.080126   * 01 21 41.595043     01 22 40.699014       0.00
* J0121+1149        11 34 09.31522    * 11 49 50.41321      11 55 39.32269        0.01
  J0121+11          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,  62476 observations.

  0235+164          02 35 52.630214   * 02 38 38.930106     02 39 41.410147       0.12
* J0238+1636        16 24 04.01612    * 16 36 59.27454      16 41 45.89295        0.16
  J0238+16          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,  64441 observations.

* 3C84              03 16 29.567265   * 03 19 48.160096     03 21 03.241279       1.50
  J0319+4130        41 19 51.91692    * 41 30 42.10404      41 34 49.24239        2.86
  0316+413          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
  J0319+41          GSFC 2016a X/S astro solution,  10291 observations.

  0552+398          05 52 01.407168   * 05 55 30.805611     05 56 50.698505       0.00
* J0555+3948        39 48 21.94581    * 39 48 49.16496      39 48 56.62042        0.00
  DA193             /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
  J0555+39          GSFC 2016a X/S astro solution, 415688 observations.

  OJ287             08 51 57.250615   * 08 54 48.874927     08 55 54.720331       0.00
* J0854+2006        20 17 58.41740    * 20 06 30.64085      20 02 01.22581        0.00
  0851+202          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
  J0854+20          GSFC 2016a X/S astro solution, 270807 observations.

  4C39.25           09 23 55.319216   * 09 27 03.013937     09 28 15.004943       0.31
* J0927+3902        39 15 23.56644    * 39 02 20.85185      38 57 16.37621        0.16
  0923+392          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
  J0927+39          GSFC 2016a X/S astro solution, 250526 observations.

  1156+295          11 56 57.786211   * 11 59 31.833912     12 00 30.778845       0.00
* J1159+2914        29 31 25.73880    * 29 14 43.82690      29 08 14.72137        0.00
  J1159+29          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,  78215 observations.

* 3C345             16 41 17.606229   * 16 42 58.809967     16 43 36.307801       0.79
  J1642+3948        39 54 10.81492    * 39 48 36.99399      39 46 19.48097        0.59
  1641+399          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
  J1642+39          GSFC 2016a X/S astro solution,  53724 observations.

  1800+440          18 00 03.197729   * 18 01 32.314823     18 02 04.735309       0.01
* J1801+4404        44 04 18.35296    * 44 04 21.90026      44 04 13.04871        0.01
  J1801+44          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,   6631 observations.

  1909-081          19 09 24.264941   * 19 12 07.128831     19 13 07.306510       0.12
* J1912-0804       -08 09 26.45766    *-08 04 21.90250     -08 02 25.88903        0.25
                    /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,    128 observations.
```

```
* 3C454.3          22 51 29.519739   * 22 53 57.747939     22 54 52.385723       0.65
* J2253+1608       15 52 54.34808    * 16 08 53.56091      16 14 52.18191        0.73
  2251+158         /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
  J2253+16         GSFC 2016a X/S astro solution,  41272 observations.

  2351+550         23 51 11.688132   * 23 53 42.299715     23 54 37.777435       0.19
* J2353+5518       55 01 59.33476    * 55 18 40.66615      55 25 03.74706        0.12
                   /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                   GSFC 2016a X/S astro solution,    199 observations.
```

# 00719ctr

00719c

PI: *Marcin Gawronski*

```
Address:  Torun Centre for Astronomy

Observing mode: MKV, 256Mb/s

Schedule for TORUN     (Code Tr )                                  Page   2
               00719c
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------
 --- Wed  20 Feb 2019   Day  51 ---
 Next scan frequencies:  6662.69  6662.69  6662.69  6662.69  6666.69  6666.69  6666.69  6666.69
                         6670.70  6670.70  6670.70  6670.70  6674.70  6674.70  6674.70  6674.70
 Next BBC frequencies:    762.69   762.69   762.69   762.69   766.69   766.69   766.69   766.69
                          770.70   770.70   770.70   770.70   774.70   774.70   774.70   774.70
 Next scan bandwidths:      2.00     2.00     2.00     2.00     2.00     2.00     2.00     2.00
                            2.00     2.00     2.00     2.00     2.00     2.00     2.00     2.00

06 00 00  J1733-1304   17 13 49  23.7 174.6 -0.3      -3.3     0        0   06 00 00
06 04 00  =NRAO530     17 17 49  23.7 175.7 -0.3      -2.7   240        4   06 00 01

06 05 30  J1744-3116   17 19 20   5.4 174.4 -0.4      -4.0     8        4   06 05 30
06 07 30  ---          17 21 20   5.5 174.8 -0.4      -3.7   120        6   06 05 31

06 08 00  G358         17 21 50   6.9 175.1 -0.4      -3.4    11        6   06 08 00
06 11 30  ---          17 25 21   6.9 175.8 -0.3      -2.9   210        9   06 08 01

06 11 30  J1744-3116   17 25 21   5.5 175.7 -0.3      -3.1   -19        9   No stop
06 13 00  ---          17 26 51   5.5 176.0 -0.3      -2.8    71       11   06 11 31

06 13 00  G358         17 26 51   6.9 176.2 -0.3      -2.6   -19       11   No stop
06 17 00  ---          17 30 52   7.0 177.1 -0.2      -2.0   221       14   06 13 01

06 17 00  J1744-3116   17 30 52   5.6 176.8 -0.2      -2.2   -19       14   No stop
06 18 30  ---          17 32 22   5.6 177.2 -0.2      -2.0    71       16   06 17 01

06 19 00  G358         17 32 52   7.0 177.5 -0.2      -1.7    11       16   06 19 00
06 22 30  ---          17 36 23   7.0 178.3 -0.1      -1.2   210       19   06 19 01

06 22 30  J1744-3116   17 36 23   5.6 178.0 -0.2      -1.4   -19       19   No stop
06 24 00  ---          17 37 53   5.6 178.3 -0.1      -1.2    71       21   06 22 31

06 24 00  G358         17 37 53   7.0 178.6 -0.1      -1.0   -19       21   No stop
06 28 00  ---          17 41 53   7.0 179.5 -0.0      -0.4   221       25   06 24 01

06 28 00  J1744-3116   17 41 53   5.6 179.2 -0.1      -0.6   -19       25   No stop
06 29 30  ---          17 43 24   5.6 179.5 -0.0      -0.3    71       26   06 28 01

06 30 00  G358         17 43 54   7.0 179.9 -0.0      -0.1    11       26   06 30 00
06 33 30  ---          17 47 24   7.0 180.7  0.1       0.5   210       29   06 30 01

06 33 30  J1744-3116   17 47 24   5.6 180.4  0.0       0.3   -19       29   No stop
06 35 00  ---          17 48 55   5.6 180.7  0.1       0.5    71       31   06 33 31
```

Schedule for TORUN (Code Tr ) Page 3

00719c

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | LST | Start / Stop EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 20 Feb 2019 Day 51 --- | | | | | | | | | | |
| 06 35 00 | G358 | 17 48 55 | 7.0 | 181.0 | 0.1 | | 0.7 | -19 | 31 | No stop |
| 06 39 00 | --- | 17 52 55 | 7.0 | 181.9 | 0.1 | | 1.3 | 221 | 35 | 06 35 01 |
| 06 39 00 | J1744-3116 | 17 52 55 | 5.6 | 181.6 | 0.1 | | 1.1 | -19 | 35 | No stop |
| 06 40 30 | --- | 17 54 25 | 5.6 | 181.9 | 0.1 | | 1.3 | 71 | 36 | 06 39 01 |
| 06 41 00 | G358 | 17 54 56 | 7.0 | 182.3 | 0.2 | | 1.6 | 11 | 36 | 06 41 00 |
| 06 44 30 | --- | 17 58 26 | 7.0 | 183.1 | 0.2 | | 2.1 | 210 | 39 | 06 41 01 |
| 06 44 30 | J1744-3116 | 17 58 26 | 5.6 | 182.8 | 0.2 | | 1.9 | -19 | 39 | No stop |
| 06 46 00 | --- | 17 59 56 | 5.6 | 183.1 | 0.2 | | 2.2 | 71 | 41 | 06 44 31 |
| 06 46 00 | G358 | 17 59 56 | 7.0 | 183.4 | 0.3 | | 2.4 | -19 | 41 | No stop |
| 06 50 00 | --- | 18 03 57 | 6.9 | 184.3 | 0.3 | | 3.0 | 221 | 45 | 06 46 01 |
| 06 50 00 | J1744-3116 | 18 03 57 | 5.5 | 183.9 | 0.3 | | 2.8 | -19 | 45 | No stop |
| 06 51 30 | --- | 18 05 27 | 5.5 | 184.3 | 0.3 | | 3.0 | 71 | 46 | 06 50 01 |
| 06 52 00 | G358 | 18 05 57 | 6.9 | 184.7 | 0.4 | | 3.3 | 11 | 46 | 06 52 00 |
| 06 55 30 | --- | 18 09 28 | 6.9 | 185.5 | 0.4 | | 3.8 | 210 | 50 | 06 52 01 |
| 06 55 30 | J1744-3116 | 18 09 28 | 5.5 | 185.1 | 0.4 | | 3.6 | -19 | 50 | No stop |
| 06 57 00 | --- | 18 10 58 | 5.4 | 185.4 | 0.4 | | 3.8 | 71 | 51 | 06 55 31 |
| 06 57 00 | G358 | 18 10 58 | 6.8 | 185.8 | 0.4 | | 4.0 | -19 | 51 | No stop |
| 07 01 00 | --- | 18 14 59 | 6.8 | 186.7 | 0.5 | | 4.6 | 221 | 55 | 06 57 01 |
| 07 01 00 | J1744-3116 | 18 14 59 | 5.4 | 186.3 | 0.5 | | 4.4 | -19 | 55 | No stop |
| 07 02 30 | --- | 18 16 29 | 5.4 | 186.6 | 0.5 | | 4.6 | 71 | 56 | 07 01 01 |
| 07 03 00 | G358 | 18 16 59 | 6.7 | 187.1 | 0.5 | | 4.9 | 11 | 56 | 07 03 00 |
| 07 06 30 | --- | 18 20 30 | 6.7 | 187.9 | 0.6 | | 5.4 | 210 | 60 | 07 03 01 |
| 07 06 30 | J1744-3116 | 18 20 30 | 5.3 | 187.5 | 0.6 | | 5.2 | -19 | 60 | No stop |
| 07 08 00 | --- | 18 22 00 | 5.3 | 187.8 | 0.6 | | 5.5 | 71 | 61 | 07 06 31 |
| 07 08 00 | G358 | 18 22 00 | 6.6 | 188.2 | 0.6 | | 5.7 | -19 | 61 | No stop |
| 07 12 00 | --- | 18 26 01 | 6.5 | 189.1 | 0.7 | | 6.3 | 221 | 65 | 07 08 01 |
| 07 12 00 | J1744-3116 | 18 26 01 | 5.2 | 188.7 | 0.7 | | 6.1 | -19 | 65 | No stop |
| 07 13 30 | --- | 18 27 31 | 5.1 | 189.0 | 0.7 | | 6.3 | 71 | 66 | 07 12 01 |
| 07 14 00 | G358 | 18 28 01 | 6.5 | 189.5 | 0.7 | | 6.6 | 11 | 66 | 07 14 00 |
| 07 17 30 | --- | 18 31 32 | 6.4 | 190.3 | 0.8 | | 7.1 | 210 | 70 | 07 14 01 |
| 07 17 30 | J1744-3116 | 18 31 32 | 5.0 | 189.8 | 0.8 | | 6.9 | -19 | 70 | No stop |
| 07 19 00 | --- | 18 33 02 | 5.0 | 190.2 | 0.8 | | 7.1 | 71 | 71 | 07 17 31 |

Schedule for TORUN (Code Tr ) Page 4
00719c

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | LST | Start / Stop<br>EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 20 Feb 2019 Day 51 --- | | | | | | | | | | |
| 07 19 00 | G358 | 18 33 02 | 6.4 | 190.6 | 0.8 | | 7.3 | -18 | 71 | No stop |
| 07 23 00 | --- | 18 37 02 | 6.2 | 191.5 | 0.9 | | 7.9 | 222 | 75 | 07 19 01 |
| 07 23 00 | J1744-3116 | 18 37 02 | 4.9 | 191.0 | 0.9 | | 7.7 | -19 | 75 | No stop |
| 07 24 30 | --- | 18 38 33 | 4.8 | 191.3 | 0.9 | | 7.9 | 71 | 76 | 07 23 01 |
| 07 25 00 | G358 | 18 39 03 | 6.2 | 191.9 | 0.9 | | 8.2 | 12 | 76 | 07 25 00 |
| 07 28 30 | --- | 18 42 33 | 6.1 | 192.7 | 1.0 | | 8.7 | 210 | 80 | 07 25 01 |
| 07 28 30 | J1744-3116 | 18 42 33 | 4.7 | 192.2 | 0.9 | | 8.5 | -18 | 80 | No stop |
| 07 30 00 | --- | 18 44 04 | 4.7 | 192.5 | 1.0 | | 8.7 | 72 | 81 | 07 28 31 |
| 07 30 00 | G358 | 18 44 04 | 6.0 | 193.0 | 1.0 | | 8.9 | -18 | 81 | No stop |
| 07 34 00 | --- | 18 48 04 | 5.9 | 193.8 | 1.1 | | 9.5 | 222 | 85 | 07 30 01 |
| 07 34 00 | J1744-3116 | 18 48 04 | 4.5 | 193.3 | 1.0 | | 9.3 | -18 | 85 | No stop |
| 07 35 30 | --- | 18 49 34 | 4.5 | 193.7 | 1.1 | | 9.6 | 72 | 87 | 07 34 01 |
| 07 36 00 | G358 | 18 50 05 | 5.8 | 194.3 | 1.1 | | 9.8 | 12 | 87 | 07 36 00 |
| 07 39 30 | --- | 18 53 35 | 5.7 | 195.0 | 1.2 | | 10.3 | 210 | 90 | 07 36 01 |
| 07 39 30 | J1744-3116 | 18 53 35 | 4.3 | 194.5 | 1.1 | | 10.1 | -18 | 90 | No stop |
| 07 41 00 | --- | 18 55 05 | 4.3 | 194.8 | 1.2 | | 10.4 | 72 | 91 | 07 39 31 |
| 07 41 00 | G358 | 18 55 05 | 5.6 | 195.3 | 1.2 | | 10.6 | -18 | 91 | No stop |
| 07 45 00 | --- | 18 59 06 | 5.5 | 196.2 | 1.2 | | 11.1 | 222 | 95 | 07 41 01 |
| 07 45 00 | J1744-3116 | 18 59 06 | 4.1 | 195.7 | 1.2 | | 10.9 | -18 | 95 | No stop |
| 07 46 30 | --- | 19 00 36 | 4.1 | 196.0 | 1.3 | | 11.2 | 72 | 97 | 07 45 01 |
| 07 47 00 | G358 | 19 01 06 | 5.4 | 196.6 | 1.3 | | 11.4 | 12 | 97 | 07 47 00 |
| 07 50 30 | --- | 19 04 37 | 5.2 | 197.4 | 1.3 | | 11.9 | 210 | 100 | 07 47 01 |
| 07 50 30 | J1744-3116 | 19 04 37 | 3.9 | 196.8 | 1.3 | | 11.7 | -18 | 100 | No stop |
| 07 52 00 | --- | 19 06 07 | 3.8 | 197.1 | 1.3 | | 12.0 | 72 | 101 | 07 50 31 |
| 07 52 00 | G358 | 19 06 07 | 5.1 | 197.7 | 1.4 | | 12.2 | -18 | 101 | No stop |
| 07 56 00 | --- | 19 10 08 | 5.0 | 198.6 | 1.4 | | 12.7 | 222 | 105 | 07 52 01 |
| 07 56 00 | J1744-3116 | 19 10 08 | 3.6 | 198.0 | 1.4 | | 12.5 | -18 | 105 | No stop |
| 07 57 30 | --- | 19 11 38 | 3.6 | 198.3 | 1.4 | | 12.7 | 72 | 107 | 07 56 01 |
| 07 59 00 | J1733-1304 | 19 13 08 | 20.5 | 205.8 | 1.7 | | 15.6 | 13 | 107 | 07 59 00 |
| 08 04 00 | =NRAO530 | 19 18 09 | 20.2 | 207.1 | 1.7 | | 16.3 | 300 | 112 | 07 59 01 |

SETUP FILE INFORMATION:

```
  NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


======== Setup file: sess119M1.setini

  Setup group:    3         Station: TORUN            Total bit rate:   128
  Format: MARK5B            Bits per sample: 2        Sample rate:  4.000
  Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

  Disk used to record data.
```

```
 1st LO=   5900.00   5900.00   5900.00   5900.00   5900.00   5900.00   5900.00   5900.00
           5900.00   5900.00   5900.00   5900.00   5900.00   5900.00   5900.00   5900.00
 Net SB=         L         L         U         U         L         L         U         U
                 L         L         U         U         L         L         U         U
 IF SB =         U         U         U         U         U         U         U         U
                 U         U         U         U         U         U         U         U
 Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
               RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
 BBC   =         1         5         1         5         2         6         2         6
                 3         7         3         7         4         8         4         8
 BBC SB=         L         L         U         U         L         L         U         U
                 L         L         U         U         L         L         U         U
 IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

 Frequency Set:   2  Based on FREQ, BW, and/or DOPPLER in schedule.  Used with PCAL = off
  LO sum=   6662.69  6662.69  6662.69  6662.69  6666.69  6666.69  6666.69  6666.69
            6670.70  6670.70  6670.70  6670.70  6674.70  6674.70  6674.70  6674.70
  BBC fr=    762.69   762.69   762.69   762.69   766.69   766.69   766.69   766.69
             770.70   770.70   770.70   770.70   774.70   774.70   774.70   774.70
  Bandwd=      2.00     2.00     2.00     2.00     2.00     2.00     2.00     2.00
               2.00     2.00     2.00     2.00     2.00     2.00     2.00     2.00
   Matching frequency sets:   2

  Track assignments are:
   track1=  18, 26,  2, 10, 20, 28,  4, 12, 22, 30,  6, 14, 24, 32,  8, 16
   barrel=roll_off


POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                       (B1950)             (J2000)             (Date)             (mas)

* G358               17 39 58.011804   * 17 43 10.020000     17 44 21.728398       0.00
                    -29 50 25.26336    *-29 51 45.80000     -29 52 06.75085        0.00
                     Doppler based on LSR frame and radio definition.  Velocities:
                        -16.00   -16.00   -16.00   -16.00   -16.00   -16.00   -16.00   -16.00
                        -16.00   -16.00   -16.00   -16.00   -16.00   -16.00

* J1744-3116         17 41 09.335206   * 17 44 23.578200     17 45 36.110893       0.00
                    -31 15 21.01917    *-31 16 36.29400     -31 16 54.78569        0.00
                     Doppler based on other sources.

  NRAO530            17 30 13.535193   * 17 33 02.705790     17 34 05.929439       0.01
* J1733-1304        -13 02 45.83971    *-13 04 49.54818     -13 05 32.59514        0.01
  1730-130           /usr/local/sched/catalogs/sources.gsfc
  J1733-13           GSFC 2016a X/S astro solution,  25408 observations.
                     Doppler based on other sources.
```

# n19m1tr

## Network Monitoring Experiment

PI: *Dhanya G. Nair*

```
Address:  JIVE

Observing mode:
Schedule for TORUN     (Code Tr )                                  Page   2
               Network Monitoring Experiment
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source                Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------
 --- Wed  27 Feb 2019   Day  58 ---
 Next scan frequencies:  6661.49  6661.49  6661.49  6661.49  6665.49  6665.49  6665.49  6665.49
                         6669.49  6669.49  6669.49  6669.49  6673.49  6673.49  6673.49  6673.49
 Next BBC frequencies:    761.49   761.49   761.49   761.49   765.49   765.49   765.49   765.49
                          769.49   769.49   769.49   769.49   773.49   773.49   773.49   773.49
 Next scan bandwidths:      2.00     2.00     2.00     2.00     2.00     2.00     2.00     2.00
                            2.00     2.00     2.00     2.00     2.00     2.00     2.00     2.00

12 00 00  J0238+1636   23 42 24  39.9 119.3 -3.0     -33.1     0        0   12 00 00
12 05 00  =0235+164    23 47 25  40.5 120.6 -2.9     -32.7   300        5   12 00 01

12 07 00  J0238+1636   23 49 25  40.8 121.1 -2.8     -32.4   113        5   12 07 00
12 20 00  =0235+164    00 02 27  42.4 124.7 -2.6     -31.0   780       17   12 07 01

12 22 00  J0238+1636   00 04 27  42.7 125.3 -2.6     -30.8   113       17   12 22 00
12 25 00  =0235+164    00 07 28  43.0 126.1 -2.5     -30.4   180       20   12 22 01

12 27 00  J0238+1636   00 09 28  43.3 126.7 -2.5     -30.2   113       20   12 27 00
12 40 00  =0235+164    00 22 30  44.8 130.5 -2.3     -28.5   780       33   12 27 01

12 42 00  J0238+1636   00 24 31  45.0 131.1 -2.3     -28.2   113       33   12 42 00
12 45 00  =0235+164    00 27 31  45.4 132.0 -2.2     -27.8   180       36   12 42 01

12 47 00  J0238+1636   00 29 32  45.6 132.6 -2.2     -27.5   113       36   12 47 00
13 00 00  =0235+164    00 42 34  47.0 136.6 -2.0     -25.5   780       48   12 47 01

13 02 00  J0238+1636   00 44 34  47.2 137.2 -1.9     -25.2   113       48   13 02 00
13 05 00  =0235+164    00 47 35  47.5 138.2 -1.9     -24.7   180       51   13 02 01

13 07 00  3C84         00 49 35  62.3  99.1 -2.5     -52.4    27       51   13 07 00
13 20 00  ---          01 02 37  64.2 102.4 -2.3     -51.6   780       63   13 07 01

13 22 00  3C84         01 04 37  64.5 103.0 -2.3     -51.5   113       63   13 22 00
13 25 00  ---          01 07 38  64.9 103.8 -2.2     -51.2   180       66   13 22 01

13 27 00  3C84         01 09 38  65.2 104.4 -2.2     -51.0   113       66   13 27 00
13 40 00  ---          01 22 40  67.1 108.2 -2.0     -49.7   780       79   13 27 01

13 42 00  3C84         01 24 41  67.4 108.8 -1.9     -49.4   113       79   13 42 00
13 45 00  ---          01 27 41  67.8 109.8 -1.9     -49.0   180       82   13 42 01

13 47 00  3C84         01 29 41  68.1 110.5 -1.9     -48.8   113       82   13 47 00
14 00 00  ---          01 42 44  69.9 115.0 -1.6     -46.7   780       94   13 47 01
```

```
Schedule for TORUN     (Code Tr )                                Page   3
               Network Monitoring Experiment
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-------------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-------------------------------------------------------------------------------------------
 --- Wed  27 Feb 2019   Day  58 ---
14 02 00  3C84         01 44 44  70.2 115.8 -1.6     -46.3   113       94   14 02 00
14 05 00  ---          01 47 44  70.6 117.0 -1.6     -45.7   180       97   14 02 01

14 07 00  3C84         01 49 45  70.9 117.8 -1.5     -45.3   113       97   14 07 00
14 20 00  ---          02 02 47  72.5 123.4 -1.3     -42.1   780      110   14 07 01

14 22 00  3C84         02 04 47  72.8 124.3 -1.3     -41.5   113      110   14 22 00
14 25 00  ---          02 07 48  73.2 125.8 -1.2     -40.6   180      112   14 22 01

14 27 00  3C84         02 09 48  73.4 126.8 -1.2     -40.0   113      112   14 27 00
14 40 00  ---          02 22 50  74.9 133.8 -1.0     -35.4   780      125   14 27 01

14 42 00  3C84         02 24 50  75.1 135.0 -0.9     -34.6   112      125   14 42 00
14 45 00  ---          02 27 51  75.4 136.9 -0.9     -33.3   180      128   14 42 01

14 47 00  3C84         02 29 51  75.6 138.1 -0.9     -32.4   112      128   14 47 00
15 00 00  ---          02 42 53  76.8 147.1 -0.6     -25.9   780      140   14 47 01



SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119.M128

   Setup group:    7         Station: TORUN            Total bit rate:   128
   Format: MARK5B            Bits per sample: 2        Sample rate:  4.000
   Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   5900.00   5900.00   5900.00   5900.00   5900.00   5900.00   5900.00   5900.00
            5900.00   5900.00   5900.00   5900.00   5900.00   5900.00   5900.00   5900.00
  Net SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF SB =         U         U         U         U         U         U         U         U
                  U         U         U         U         U         U         U         U
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
                RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
                  3         7         3         7         4         8         4         8
  BBC SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                 A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:   8  Setup file default.  Used with PCAL = off
  LO sum=   6661.49  6661.49  6661.49  6661.49  6665.49  6665.49  6665.49  6665.49
            6669.49  6669.49  6669.49  6669.49  6673.49  6673.49  6673.49  6673.49
  BBC fr=    761.49   761.49   761.49   761.49   765.49   765.49   765.49   765.49
             769.49   769.49   769.49   769.49   773.49   773.49   773.49   773.49
  Bandwd=      2.00     2.00     2.00     2.00     2.00     2.00     2.00     2.00
               2.00     2.00     2.00     2.00     2.00     2.00     2.00     2.00
   Matching frequency sets:   8

  Track assignments are:
   track1=  18, 26,  2, 10, 20, 28,  4, 12, 22, 30,  6, 14, 24, 32,  8, 16
   barrel=roll_off



POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                       (B1950)             (J2000)             (Date)             (mas)

  0235+164          02 35 52.630214   * 02 38 38.930106     02 39 41.216748       0.12
* J0238+1636        16 24 04.01612    * 16 36 59.27454      16 41 45.20975        0.16
  J0238+16          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,  64441 observations.

* 3C84              03 16 29.567265   * 03 19 48.160096     03 21 02.954757       1.50
  J0319+4130        41 19 51.91692    * 41 30 42.10404      41 34 48.52048        2.86
  0316+413          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
  J0319+41          GSFC 2016a X/S astro solution,  10291 observations.
```

# ed044tr

Methanol maser variability as a tracer of episodic accretion.
PI: *Michal Durjasz*

```
Observing mode: MKV, 256Mb/s
Schedule for TORUN     (Code Tr )                                    Page   2
               Methanol maser variability as a tracer of episodic accretion.
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-------------------------------------------------------------------------------------------
Start UT  Source                Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-------------------------------------------------------------------------------------------
 --- Thu  28 Feb 2019   Day  59 ---
 Next scan frequencies:  6661.48  6661.48  6661.48  6661.48  6669.47  6669.47  6669.47  6669.47
 Next BBC frequencies:    761.48   761.48   761.48   761.48   769.47   769.47   769.47   769.47
 Next scan bandwidths:      4.00     4.00     4.00     4.00     4.00     4.00     4.00     4.00

03 00 00  3C345        14 44 52  65.9 111.5 -2.0     -46.6     0        0   03 00 00
03 11 20  ---          14 56 14  67.4 115.3 -1.8     -44.9   680       11   03 00 01

03 21 35  J1825-0737   15 06 30  16.0 127.8 -3.3     -28.6   405       11   03 21 35
03 23 20  =1822-076    15 08 16  16.3 128.2 -3.3     -28.4   105       13   03 21 36

03 23 20  G24.493      15 08 16  15.1 125.8 -3.5     -29.4   -19       13   No stop
03 26 35  ---          15 11 31  15.5 126.5 -3.4     -29.1   176       16   03 23 21

03 26 35  J1825-0737   15 11 31  16.6 128.9 -3.3     -28.1   -19       16   No stop
03 28 20  =1822-076    15 13 16  16.8 129.3 -3.2     -28.0    86       17   03 26 36

03 28 20  G24.850      15 13 16  16.0 126.6 -3.4     -29.0   -19       17   No stop
03 31 35  ---          15 16 32  16.4 127.4 -3.3     -28.7   176       21   03 28 21

03 32 15  J1825-0737   15 17 12  17.3 130.2 -3.2     -27.6    20       21   03 32 15
03 34 00  =1822-076    15 18 57  17.5 130.6 -3.1     -27.4   105       22   03 32 16

03 34 00  G24.493      15 18 57  16.4 128.2 -3.3     -28.4   -19       22   No stop
03 37 15  ---          15 22 13  16.8 128.9 -3.2     -28.1   176       25   03 34 01

03 37 15  J1825-0737   15 22 13  17.9 131.4 -3.1     -27.0   -19       25   No stop
03 39 00  =1822-076    15 23 58  18.1 131.8 -3.0     -26.9    86       27   03 37 16

03 39 00  G24.850      15 23 58  17.3 129.1 -3.2     -28.0   -20       27   No stop
03 42 15  ---          15 27 14  17.6 129.8 -3.2     -27.7   175       30   03 39 01

03 42 55  J1825-0737   15 27 54  18.5 132.7 -3.0     -26.4    20       30   03 42 55
03 44 40  =1822-076    15 29 39  18.7 133.1 -2.9     -26.3   105       32   03 42 56

03 44 40  G24.493      15 29 39  17.6 130.6 -3.1     -27.4   -19       32   No stop
03 47 55  ---          15 32 55  18.0 131.4 -3.1     -27.0   176       35   03 44 41

03 47 55  J1825-0737   15 32 55  19.0 133.9 -2.9     -25.9   -19       35   No stop
03 49 40  =1822-076    15 34 40  19.2 134.3 -2.9     -25.7    86       37   03 47 56

03 49 40  G24.850      15 34 40  18.5 131.6 -3.0     -26.9   -20       37   No stop
03 52 55  ---          15 37 55  18.9 132.3 -3.0     -26.6   175       40   03 49 41
```

Schedule for TORUN (Code Tr ) Page 3

Methanol maser variability as a tracer of episodic accretion.

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Thu | 28 Feb 2019 | Day 59 --- | | | | | | | | |
| 03 53 35 | J1825-0737 | 15 38 35 | 19.7 | 135.2 | -2.8 | | -25.3 | 20 | 40 | 03 53 35 |
| 03 55 20 | =1822-076 | 15 40 21 | 19.8 | 135.6 | -2.8 | | -25.1 | 105 | 41 | 03 53 36 |
| 03 55 20 | G24.493 | 15 40 21 | 18.8 | 133.1 | -2.9 | | -26.2 | -19 | 41 | No stop |
| 03 58 35 | --- | 15 43 36 | 19.2 | 133.9 | -2.9 | | -25.9 | 176 | 45 | 03 55 21 |
| 03 58 35 | J1825-0737 | 15 43 36 | 20.2 | 136.4 | -2.7 | | -24.7 | -19 | 45 | No stop |
| 04 00 20 | =1822-076 | 15 45 22 | 20.4 | 136.8 | -2.7 | | -24.5 | 86 | 46 | 03 58 36 |
| 04 00 20 | G24.850 | 15 45 22 | 19.7 | 134.1 | -2.9 | | -25.8 | -20 | 46 | No stop |
| 04 03 35 | --- | 15 48 37 | 20.0 | 134.8 | -2.8 | | -25.4 | 175 | 49 | 04 00 21 |
| 04 04 15 | J1825-0737 | 15 49 17 | 20.8 | 137.8 | -2.6 | | -24.0 | 20 | 49 | 04 04 15 |
| 04 06 00 | =1822-076 | 15 51 03 | 20.9 | 138.2 | -2.6 | | -23.8 | 105 | 51 | 04 04 16 |
| 04 06 00 | J1848+0138 | 15 51 03 | 26.8 | 128.2 | -3.0 | | -28.2 | -36 | 51 | No stop |
| 04 07 45 | --- | 15 52 48 | 27.0 | 128.6 | -2.9 | | -28.0 | 69 | 53 | 04 06 01 |
| 04 07 45 | G32.082 | 15 52 48 | 24.8 | 129.6 | -3.0 | | -27.6 | -22 | 53 | No stop |
| 04 11 00 | --- | 15 56 03 | 25.1 | 130.3 | -2.9 | | -27.2 | 173 | 56 | 04 07 46 |
| 04 11 00 | J1848+0138 | 15 56 03 | 27.4 | 129.4 | -2.9 | | -27.6 | -22 | 56 | No stop |
| 04 12 45 | --- | 15 57 49 | 27.6 | 129.9 | -2.9 | | -27.4 | 83 | 58 | 04 11 01 |
| 04 12 45 | G32.082 | 15 57 49 | 25.3 | 130.8 | -2.9 | | -27.0 | -22 | 58 | No stop |
| 04 16 00 | --- | 16 01 04 | 25.7 | 131.6 | -2.8 | | -26.7 | 173 | 61 | 04 12 46 |
| 04 16 45 | J1848+0138 | 16 01 49 | 28.0 | 130.9 | -2.8 | | -27.0 | 23 | 61 | 04 16 45 |
| 04 18 30 | --- | 16 03 35 | 28.2 | 131.3 | -2.8 | | -26.8 | 105 | 62 | 04 16 46 |
| 04 18 30 | G32.082 | 16 03 35 | 26.0 | 132.2 | -2.8 | | -26.4 | -22 | 62 | No stop |
| 04 21 45 | --- | 16 06 50 | 26.3 | 133.0 | -2.7 | | -26.0 | 173 | 65 | 04 18 31 |
| 04 21 45 | J1848+0138 | 16 06 50 | 28.6 | 132.2 | -2.7 | | -26.4 | -22 | 65 | No stop |
| 04 23 30 | --- | 16 08 35 | 28.8 | 132.6 | -2.7 | | -26.2 | 83 | 67 | 04 21 46 |
| 04 23 30 | G32.082 | 16 08 35 | 26.5 | 133.5 | -2.7 | | -25.8 | -22 | 67 | No stop |
| 04 26 45 | --- | 16 11 51 | 26.9 | 134.3 | -2.6 | | -25.5 | 173 | 70 | 04 23 31 |
| 04 27 30 | J1848+0138 | 16 12 36 | 29.2 | 133.6 | -2.6 | | -25.8 | 22 | 70 | 04 27 30 |
| 04 29 15 | --- | 16 14 21 | 29.4 | 134.1 | -2.6 | | -25.6 | 105 | 72 | 04 27 31 |
| 04 29 15 | J1907+0127 | 16 14 21 | 27.2 | 129.4 | -2.9 | | -27.7 | -24 | 72 | No stop |
| 04 31 00 | =1904+013 | 16 16 07 | 27.4 | 129.8 | -2.9 | | -27.5 | 81 | 74 | 04 29 16 |
| 04 31 00 | G35.793 | 16 16 07 | 29.4 | 131.8 | -2.7 | | -26.6 | -22 | 74 | No stop |
| 04 34 15 | --- | 16 19 22 | 29.8 | 132.7 | -2.6 | | -26.2 | 173 | 77 | 04 31 01 |

Schedule for TORUN (Code Tr ) Page 4

Methanol maser variability as a tracer of episodic accretion.

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 28 Feb 2019 Day 59 --- | | | | | | | | | | |
| 04 34 15 | J1907+0127 | 16 19 22 | 27.7 | 130.7 | -2.8 | | -27.1 | -21 | 77 | No stop |
| 04 36 00 | =1904+013 | 16 21 07 | 27.9 | 131.1 | -2.8 | | -26.9 | 84 | 78 | 04 34 16 |
| 04 36 00 | G35.793 | 16 21 07 | 29.9 | 133.1 | -2.6 | | -26.0 | -21 | 78 | No stop |
| 04 39 15 | --- | 16 24 23 | 30.3 | 134.0 | -2.6 | | -25.6 | 174 | 82 | 04 36 01 |
| 04 39 55 | J1907+0127 | 16 25 03 | 28.4 | 132.1 | -2.7 | | -26.5 | 19 | 82 | 04 39 55 |
| 04 41 40 | =1904+013 | 16 26 48 | 28.6 | 132.5 | -2.7 | | -26.3 | 105 | 83 | 04 39 56 |
| 04 41 40 | G35.793 | 16 26 48 | 30.6 | 134.6 | -2.5 | | -25.3 | -21 | 83 | No stop |
| 04 44 55 | --- | 16 30 04 | 30.9 | 135.5 | -2.5 | | -24.9 | 174 | 86 | 04 41 41 |
| 04 44 55 | J1907+0127 | 16 30 04 | 28.9 | 133.4 | -2.6 | | -25.9 | -21 | 86 | No stop |
| 04 46 40 | =1904+013 | 16 31 49 | 29.1 | 133.8 | -2.6 | | -25.7 | 84 | 88 | 04 44 56 |
| 04 46 40 | G35.793 | 16 31 49 | 31.1 | 135.9 | -2.4 | | -24.7 | -21 | 88 | No stop |
| 04 49 55 | --- | 16 35 05 | 31.4 | 136.8 | -2.4 | | -24.3 | 174 | 91 | 04 46 41 |
| 04 50 35 | J1907+0127 | 16 35 45 | 29.5 | 134.8 | -2.5 | | -25.2 | 19 | 91 | 04 50 35 |
| 04 52 20 | =1904+013 | 16 37 30 | 29.7 | 135.3 | -2.5 | | -25.0 | 105 | 93 | 04 50 36 |
| 04 52 20 | J1825-0737 | 16 37 30 | 25.0 | 149.9 | -1.8 | | -17.7 | -45 | 93 | No stop |
| 04 54 05 | =1822-076 | 16 39 15 | 25.2 | 150.4 | -1.8 | | -17.4 | 60 | 95 | 04 52 21 |
| 04 54 05 | G24.493 | 16 39 15 | 24.4 | 147.6 | -2.0 | | -18.9 | -20 | 95 | No stop |
| 04 57 20 | --- | 16 42 31 | 24.7 | 148.5 | -1.9 | | -18.5 | 175 | 98 | 04 54 06 |
| 04 57 20 | J1825-0737 | 16 42 31 | 25.4 | 151.2 | -1.7 | | -17.0 | -20 | 98 | No stop |
| 04 59 05 | =1822-076 | 16 44 16 | 25.5 | 151.7 | -1.7 | | -16.7 | 85 | 99 | 04 57 21 |
| 04 59 05 | G24.850 | 16 44 16 | 25.2 | 148.7 | -1.9 | | -18.3 | -20 | 99 | No stop |
| 05 02 20 | --- | 16 47 32 | 25.4 | 149.6 | -1.8 | | -17.8 | 175 | 102 | 04 59 06 |
| 05 03 00 | J1825-0737 | 16 48 12 | 25.8 | 152.7 | -1.6 | | -16.1 | 19 | 102 | 05 03 00 |
| 05 04 45 | =1822-076 | 16 49 57 | 25.9 | 153.2 | -1.6 | | -15.9 | 105 | 104 | 05 03 01 |
| 05 04 45 | G24.493 | 16 49 57 | 25.3 | 150.4 | -1.8 | | -17.4 | -20 | 104 | No stop |
| 05 08 00 | --- | 16 53 13 | 25.5 | 151.2 | -1.7 | | -16.9 | 175 | 107 | 05 04 46 |
| 05 08 00 | J1825-0737 | 16 53 13 | 26.1 | 154.0 | -1.6 | | -15.4 | -20 | 107 | No stop |
| 05 09 45 | =1822-076 | 16 54 58 | 26.2 | 154.5 | -1.5 | | -15.1 | 85 | 109 | 05 08 01 |
| 05 09 45 | G24.850 | 16 54 58 | 26.0 | 151.5 | -1.7 | | -16.8 | -20 | 109 | No stop |
| 05 13 00 | --- | 16 58 14 | 26.2 | 152.4 | -1.7 | | -16.3 | 175 | 112 | 05 09 46 |

Schedule for TORUN (Code Tr ) Page 5

Methanol maser variability as a tracer of episodic accretion.

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Thu 28 Feb 2019 Day 59 --- | | | | | | | | | | |
| 05 13 40 | J1825-0737 | 16 58 54 | 26.5 | 155.6 | -1.5 | | -14.5 | 19 | 112 | 05 13 40 |
| 05 15 25 | =1822-076 | 17 00 39 | 26.6 | 156.0 | -1.4 | | -14.2 | 105 | 114 | 05 13 41 |
| 05 15 25 | G24.493 | 17 00 39 | 26.0 | 153.2 | -1.6 | | -15.8 | -20 | 114 | No stop |
| 05 18 40 | --- | 17 03 54 | 26.3 | 154.1 | -1.6 | | -15.4 | 175 | 117 | 05 15 26 |
| 05 18 40 | J1825-0737 | 17 03 54 | 26.8 | 156.9 | -1.4 | | -13.7 | -20 | 117 | No stop |
| 05 20 25 | =1822-076 | 17 05 40 | 26.9 | 157.4 | -1.3 | | -13.5 | 85 | 119 | 05 18 41 |
| 05 20 25 | G24.850 | 17 05 40 | 26.7 | 154.4 | -1.5 | | -15.2 | -20 | 119 | No stop |
| 05 23 40 | --- | 17 08 55 | 26.9 | 155.3 | -1.5 | | -14.7 | 175 | 122 | 05 20 26 |
| 05 24 20 | J1825-0737 | 17 09 35 | 27.1 | 158.4 | -1.3 | | -12.9 | 19 | 122 | 05 24 20 |
| 05 26 05 | =1822-076 | 17 11 21 | 27.2 | 158.9 | -1.3 | | -12.6 | 105 | 123 | 05 24 21 |
| 05 26 05 | G24.493 | 17 11 21 | 26.7 | 156.1 | -1.4 | | -14.2 | -20 | 123 | No stop |
| 05 29 20 | --- | 17 14 36 | 26.9 | 156.9 | -1.4 | | -13.7 | 175 | 127 | 05 26 06 |
| 05 29 20 | J1825-0737 | 17 14 36 | 27.4 | 159.8 | -1.2 | | -12.1 | -20 | 127 | No stop |
| 05 31 05 | =1822-076 | 17 16 22 | 27.5 | 160.3 | -1.2 | | -11.8 | 85 | 128 | 05 29 21 |
| 05 31 05 | G24.850 | 17 16 22 | 27.4 | 157.3 | -1.3 | | -13.5 | -20 | 128 | No stop |
| 05 34 20 | --- | 17 19 37 | 27.6 | 158.1 | -1.3 | | -13.0 | 175 | 131 | 05 31 06 |
| 05 35 00 | J1825-0737 | 17 20 17 | 27.7 | 161.4 | -1.1 | | -11.2 | 19 | 131 | 05 35 00 |
| 05 36 45 | =1822-076 | 17 22 02 | 27.8 | 161.8 | -1.1 | | -10.9 | 105 | 133 | 05 35 01 |
| 05 36 45 | J1848+0138 | 17 22 02 | 35.5 | 152.9 | -1.5 | | -15.9 | -43 | 133 | No stop |
| 05 38 30 | --- | 17 23 48 | 35.6 | 153.4 | -1.4 | | -15.6 | 62 | 135 | 05 36 46 |
| 05 38 30 | G32.082 | 17 23 48 | 33.2 | 153.8 | -1.4 | | -15.4 | -23 | 135 | No stop |
| 05 41 45 | --- | 17 27 03 | 33.5 | 154.7 | -1.4 | | -14.9 | 172 | 138 | 05 38 31 |
| 05 41 45 | J1848+0138 | 17 27 03 | 35.8 | 154.3 | -1.4 | | -15.1 | -23 | 138 | No stop |
| 05 43 30 | --- | 17 28 49 | 35.9 | 154.9 | -1.3 | | -14.8 | 82 | 140 | 05 41 46 |
| 05 43 30 | G32.082 | 17 28 49 | 33.6 | 155.2 | -1.4 | | -14.6 | -23 | 140 | No stop |
| 05 46 45 | --- | 17 32 04 | 33.8 | 156.2 | -1.3 | | -14.0 | 172 | 143 | 05 43 31 |
| 05 47 30 | J1848+0138 | 17 32 49 | 36.2 | 156.1 | -1.3 | | -14.1 | 22 | 143 | 05 47 30 |
| 05 49 15 | --- | 17 34 34 | 36.3 | 156.6 | -1.2 | | -13.8 | 105 | 144 | 05 47 31 |
| 05 49 15 | G32.082 | 17 34 34 | 33.9 | 156.9 | -1.3 | | -13.6 | -23 | 144 | No stop |
| 05 52 30 | --- | 17 37 50 | 34.1 | 157.9 | -1.2 | | -13.1 | 172 | 147 | 05 49 16 |

Schedule for TORUN (Code Tr ) Page 6

Methanol maser variability as a tracer of episodic accretion.

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Thu 28 Feb 2019 Day 59 --- | | | | | | | | | | |
| 05 52 30 | J1848+0138 | 17 37 50 | 36.5 | 157.6 | -1.2 | | -13.2 | -23 | 147 | No stop |
| 05 54 15 | --- | 17 39 35 | 36.6 | 158.1 | -1.2 | | -12.9 | 82 | 149 | 05 52 31 |
| 05 54 15 | G32.082 | 17 39 35 | 34.2 | 158.4 | -1.2 | | -12.8 | -23 | 149 | No stop |
| 05 57 30 | --- | 17 42 51 | 34.4 | 159.3 | -1.1 | | -12.2 | 172 | 152 | 05 54 16 |
| 05 58 15 | J1848+0138 | 17 43 36 | 36.8 | 159.3 | -1.1 | | -12.2 | 22 | 152 | 05 58 15 |
| 06 00 00 | --- | 17 45 21 | 36.9 | 159.9 | -1.1 | | -11.9 | 105 | 154 | 05 58 16 |
| 06 00 00 | J1907+0127 | 17 45 21 | 35.6 | 154.2 | -1.4 | | -15.1 | -26 | 154 | No stop |
| 06 01 45 | =1904+013 | 17 47 07 | 35.7 | 154.8 | -1.4 | | -14.8 | 79 | 156 | 06 00 01 |
| 06 01 45 | G35.793 | 17 47 07 | 37.3 | 157.5 | -1.2 | | -13.3 | -20 | 156 | No stop |
| 06 05 00 | --- | 17 50 22 | 37.5 | 158.4 | -1.1 | | -12.8 | 175 | 159 | 06 01 46 |
| 06 05 00 | J1907+0127 | 17 50 22 | 35.9 | 155.7 | -1.3 | | -14.3 | -20 | 159 | No stop |
| 06 06 45 | =1904+013 | 17 52 07 | 36.0 | 156.3 | -1.3 | | -14.0 | 85 | 160 | 06 05 01 |
| 06 06 45 | G35.793 | 17 52 07 | 37.6 | 159.0 | -1.1 | | -12.4 | -20 | 160 | No stop |
| 06 10 00 | --- | 17 55 23 | 37.8 | 160.0 | -1.0 | | -11.9 | 175 | 164 | 06 06 46 |
| 06 10 40 | J1907+0127 | 17 56 03 | 36.3 | 157.4 | -1.2 | | -13.3 | 20 | 164 | 06 10 40 |
| 06 12 25 | =1904+013 | 17 57 48 | 36.4 | 158.0 | -1.2 | | -13.0 | 105 | 165 | 06 10 41 |
| 06 12 25 | G35.793 | 17 57 48 | 37.9 | 160.7 | -1.0 | | -11.4 | -20 | 165 | No stop |
| 06 15 40 | --- | 18 01 04 | 38.0 | 161.8 | -1.0 | | -10.8 | 175 | 168 | 06 12 26 |
| 06 15 40 | J1907+0127 | 18 01 04 | 36.5 | 159.0 | -1.1 | | -12.5 | -20 | 168 | No stop |
| 06 17 25 | =1904+013 | 18 02 49 | 36.6 | 159.5 | -1.1 | | -12.1 | 85 | 170 | 06 15 41 |
| 06 17 25 | G35.793 | 18 02 49 | 38.1 | 162.3 | -0.9 | | -10.5 | -20 | 170 | No stop |
| 06 20 40 | --- | 18 06 05 | 38.3 | 163.3 | -0.9 | | -9.9 | 175 | 173 | 06 17 26 |
| 06 21 20 | J1907+0127 | 18 06 45 | 36.8 | 160.7 | -1.0 | | -11.5 | 20 | 173 | 06 21 20 |
| 06 23 05 | =1904+013 | 18 08 30 | 36.9 | 161.2 | -1.0 | | -11.1 | 105 | 175 | 06 21 21 |
| 06 23 05 | J1825-0737 | 18 08 30 | 29.2 | 174.9 | -0.3 | | -3.1 | -43 | 175 | No stop |
| 06 24 50 | =1822-076 | 18 10 15 | 29.2 | 175.3 | -0.3 | | -2.8 | 62 | 177 | 06 23 06 |
| 06 24 50 | G24.493 | 18 10 15 | 29.1 | 172.4 | -0.4 | | -4.6 | -20 | 177 | No stop |
| 06 28 05 | --- | 18 13 31 | 29.2 | 173.3 | -0.4 | | -4.1 | 175 | 180 | 06 24 51 |
| 06 28 05 | J1825-0737 | 18 13 31 | 29.2 | 176.3 | -0.2 | | -2.3 | -21 | 180 | No stop |
| 06 29 50 | =1822-076 | 18 15 16 | 29.2 | 176.8 | -0.2 | | -2.0 | 84 | 181 | 06 28 06 |

Schedule for TORUN (Code Tr ) Page 7

Methanol maser variability as a tracer of episodic accretion.

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Thu 28 Feb 2019 Day 59 --- | | | | | | | | | | |
| 06 29 50 | G24.850 | 18 15 16 | 29.6 | 173.7 | -0.4 | | -3.8 | -20 | 181 | No stop |
| 06 33 05 | --- | 18 18 32 | 29.6 | 174.6 | -0.3 | | -3.2 | 175 | 184 | 06 29 51 |
| 06 33 45 | J1825-0737 | 18 19 12 | 29.3 | 177.9 | -0.1 | | -1.3 | 19 | 184 | 06 33 45 |
| 06 35 30 | =1822-076 | 18 20 57 | 29.3 | 178.4 | -0.1 | | -1.0 | 105 | 186 | 06 33 46 |
| 06 35 30 | G24.493 | 18 20 57 | 29.3 | 175.4 | -0.3 | | -2.8 | -20 | 186 | No stop |
| 06 38 45 | --- | 18 24 13 | 29.3 | 176.3 | -0.2 | | -2.2 | 175 | 189 | 06 35 31 |
| 06 38 45 | J1825-0737 | 18 24 13 | 29.3 | 179.3 | -0.0 | | -0.4 | -21 | 189 | No stop |
| 06 40 30 | =1822-076 | 18 25 58 | 29.3 | 179.8 | -0.0 | | -0.1 | 84 | 191 | 06 38 46 |
| 06 40 30 | G24.850 | 18 25 58 | 29.7 | 176.8 | -0.2 | | -2.0 | -20 | 191 | No stop |
| 06 43 45 | --- | 18 29 13 | 29.7 | 177.7 | -0.1 | | -1.4 | 175 | 194 | 06 40 31 |
| 06 44 25 | J1825-0737 | 18 29 54 | 29.3 | 180.9 | 0.1 | | 0.6 | 19 | 194 | 06 44 25 |
| 06 46 10 | =1822-076 | 18 31 39 | 29.3 | 181.4 | 0.1 | | 0.9 | 105 | 196 | 06 44 26 |
| 06 46 10 | G24.493 | 18 31 39 | 29.4 | 178.4 | -0.1 | | -0.9 | -20 | 196 | No stop |
| 06 49 25 | --- | 18 34 54 | 29.4 | 179.4 | -0.0 | | -0.4 | 175 | 199 | 06 46 11 |
| 06 49 25 | J1825-0737 | 18 34 54 | 29.3 | 182.3 | 0.1 | | 1.4 | -21 | 199 | No stop |
| 06 51 10 | =1822-076 | 18 36 40 | 29.3 | 182.8 | 0.2 | | 1.7 | 84 | 201 | 06 49 26 |
| 06 51 10 | G24.850 | 18 36 40 | 29.8 | 179.8 | -0.0 | | -0.1 | -20 | 201 | No stop |
| 06 54 25 | --- | 18 39 55 | 29.8 | 180.7 | 0.0 | | 0.5 | 175 | 204 | 06 51 11 |
| 06 55 05 | J1825-0737 | 18 40 35 | 29.2 | 184.0 | 0.2 | | 2.4 | 19 | 204 | 06 55 05 |
| 06 56 50 | =1822-076 | 18 42 21 | 29.2 | 184.5 | 0.3 | | 2.7 | 105 | 205 | 06 55 06 |
| 06 56 50 | G24.493 | 18 42 21 | 29.4 | 181.5 | 0.1 | | 0.9 | -20 | 205 | No stop |
| 07 00 05 | --- | 18 45 36 | 29.4 | 182.4 | 0.1 | | 1.5 | 175 | 208 | 06 56 51 |
| 07 00 05 | J1825-0737 | 18 45 36 | 29.2 | 185.4 | 0.3 | | 3.3 | -21 | 208 | No stop |
| 07 01 50 | =1822-076 | 18 47 21 | 29.1 | 185.9 | 0.3 | | 3.6 | 84 | 210 | 07 00 06 |
| 07 01 50 | G24.850 | 18 47 21 | 29.7 | 182.9 | 0.2 | | 1.7 | -20 | 210 | No stop |
| 07 05 05 | --- | 18 50 37 | 29.7 | 183.8 | 0.2 | | 2.3 | 175 | 213 | 07 01 51 |
| 07 05 45 | J1825-0737 | 18 51 17 | 29.1 | 187.0 | 0.4 | | 4.2 | 19 | 213 | 07 05 45 |
| 07 07 30 | =1822-076 | 18 53 02 | 29.0 | 187.5 | 0.4 | | 4.5 | 105 | 215 | 07 05 46 |
| 07 07 30 | J1848+0138 | 18 53 02 | 38.6 | 181.2 | 0.1 | | 0.7 | -50 | 215 | No stop |
| 07 09 15 | --- | 18 54 48 | 38.6 | 181.8 | 0.1 | | 1.1 | 55 | 217 | 07 07 31 |

Schedule for TORUN (Code Tr ) Page 8

Methanol maser variability as a tracer of episodic accretion.

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

--- Thu 28 Feb 2019 Day 59 ---

| Start UT | Source | Start / Stop LST | EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| 07 09 15 | G32.082 | 18 54 48 | 36.2 | 181.3 | 0.1 | | 0.8 | -23 | 217 | No stop |
| 07 12 30 | --- | 18 58 03 | 36.2 | 182.3 | 0.1 | | 1.4 | 172 | 220 | 07 09 16 |
| 07 12 30 | J1848+0138 | 18 58 03 | 38.5 | 182.8 | 0.1 | | 1.7 | -23 | 220 | No stop |
| 07 14 15 | --- | 18 59 48 | 38.5 | 183.4 | 0.2 | | 2.0 | 82 | 221 | 07 12 31 |
| 07 14 15 | G32.082 | 18 59 48 | 36.2 | 182.9 | 0.2 | | 1.7 | -23 | 221 | No stop |
| 07 17 30 | --- | 19 03 04 | 36.1 | 183.9 | 0.2 | | 2.3 | 172 | 225 | 07 14 16 |
| 07 18 15 | J1848+0138 | 19 03 49 | 38.5 | 184.6 | 0.2 | | 2.8 | 22 | 225 | 07 18 15 |
| 07 20 00 | --- | 19 05 34 | 38.5 | 185.2 | 0.3 | | 3.1 | 105 | 226 | 07 18 16 |
| 07 20 00 | G32.082 | 19 05 34 | 36.1 | 184.6 | 0.3 | | 2.8 | -23 | 226 | No stop |
| 07 23 15 | --- | 19 08 50 | 36.1 | 185.7 | 0.3 | | 3.4 | 172 | 229 | 07 20 01 |
| 07 23 15 | J1848+0138 | 19 08 50 | 38.4 | 186.2 | 0.3 | | 3.7 | -23 | 229 | No stop |
| 07 25 00 | --- | 19 10 35 | 38.4 | 186.8 | 0.4 | | 4.1 | 82 | 231 | 07 23 16 |
| 07 25 00 | G32.082 | 19 10 35 | 36.0 | 186.2 | 0.3 | | 3.7 | -23 | 231 | No stop |
| 07 28 15 | --- | 19 13 51 | 36.0 | 187.2 | 0.4 | | 4.3 | 172 | 234 | 07 25 01 |
| 07 29 00 | J1848+0138 | 19 14 36 | 38.3 | 188.1 | 0.4 | | 4.8 | 22 | 234 | 07 29 00 |
| 07 30 45 | --- | 19 16 21 | 38.3 | 188.6 | 0.5 | | 5.2 | 105 | 236 | 07 29 01 |
| 07 30 45 | J1907+0127 | 19 16 21 | 38.4 | 182.6 | 0.1 | | 1.6 | -27 | 236 | No stop |
| 07 32 30 | =1904+013 | 19 18 06 | 38.3 | 183.2 | 0.2 | | 1.9 | 78 | 238 | 07 30 46 |
| 07 32 30 | G35.793 | 19 18 06 | 39.2 | 186.4 | 0.3 | | 3.9 | -21 | 238 | No stop |
| 07 35 45 | --- | 19 21 22 | 39.2 | 187.5 | 0.4 | | 4.5 | 174 | 241 | 07 32 31 |
| 07 35 45 | J1907+0127 | 19 21 22 | 38.3 | 184.2 | 0.2 | | 2.5 | -21 | 241 | No stop |
| 07 37 30 | =1904+013 | 19 23 07 | 38.3 | 184.8 | 0.2 | | 2.9 | 84 | 242 | 07 35 46 |
| 07 37 30 | G35.793 | 19 23 07 | 39.1 | 188.0 | 0.4 | | 4.8 | -21 | 242 | No stop |
| 07 40 45 | --- | 19 26 23 | 39.1 | 189.1 | 0.5 | | 5.4 | 174 | 246 | 07 37 31 |
| 07 41 25 | J1907+0127 | 19 27 03 | 38.2 | 186.0 | 0.3 | | 3.6 | 19 | 246 | 07 41 25 |
| 07 43 10 | =1904+013 | 19 28 48 | 38.2 | 186.6 | 0.3 | | 3.9 | 105 | 247 | 07 41 26 |
| 07 43 10 | G35.793 | 19 28 48 | 39.0 | 189.8 | 0.5 | | 5.9 | -21 | 247 | No stop |
| 07 46 25 | --- | 19 32 04 | 38.9 | 190.9 | 0.6 | | 6.5 | 174 | 250 | 07 43 11 |
| 07 46 25 | J1907+0127 | 19 32 04 | 38.1 | 187.6 | 0.4 | | 4.6 | -21 | 250 | No stop |
| 07 48 10 | =1904+013 | 19 33 49 | 38.1 | 188.2 | 0.4 | | 4.9 | 84 | 252 | 07 46 26 |

Schedule for TORUN (Code Tr ) Page 9

Methanol maser variability as a tracer of episodic accretion.

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Thu 28 Feb 2019 Day 59 --- | | | | | | | | | | |
| 07 48 10 | G35.793 | 19 33 49 | 38.9 | 191.4 | 0.6 | | 6.9 | -21 | 252 | No stop |
| 07 51 25 | --- | 19 37 05 | 38.8 | 192.5 | 0.6 | | 7.5 | 174 | 255 | 07 48 11 |
| 07 52 05 | J1907+0127 | 19 37 45 | 38.0 | 189.4 | 0.5 | | 5.6 | 19 | 255 | 07 52 05 |
| 07 53 50 | =1904+013 | 19 39 30 | 38.0 | 190.0 | 0.5 | | 6.0 | 105 | 257 | 07 52 06 |
| 07 53 50 | J1825-0737 | 19 39 30 | 27.3 | 200.4 | 1.2 | | 12.2 | -54 | 257 | No stop |
| 07 55 35 | =1822-076 | 19 41 15 | 27.3 | 200.9 | 1.2 | | 12.5 | 51 | 258 | 07 53 51 |
| 07 55 35 | G24.493 | 19 41 15 | 27.9 | 198.1 | 1.1 | | 10.8 | -20 | 258 | No stop |
| 07 58 50 | --- | 19 44 31 | 27.7 | 198.9 | 1.1 | | 11.3 | 175 | 262 | 07 55 36 |
| 07 58 50 | J1825-0737 | 19 44 31 | 27.1 | 201.8 | 1.3 | | 13.0 | -20 | 262 | No stop |
| 08 00 35 | =1822-076 | 19 46 16 | 27.0 | 202.3 | 1.3 | | 13.3 | 85 | 263 | 07 58 51 |
| 08 00 35 | G24.850 | 19 46 16 | 28.0 | 199.5 | 1.1 | | 11.6 | -20 | 263 | No stop |
| 08 03 50 | --- | 19 49 32 | 27.9 | 200.4 | 1.2 | | 12.2 | 175 | 266 | 08 00 36 |
| 08 04 30 | J1825-0737 | 19 50 12 | 26.8 | 203.3 | 1.4 | | 13.9 | 20 | 266 | 08 04 30 |
| 08 06 15 | =1822-076 | 19 51 57 | 26.6 | 203.8 | 1.4 | | 14.1 | 105 | 268 | 08 04 31 |
| 08 06 15 | G24.493 | 19 51 57 | 27.3 | 201.0 | 1.2 | | 12.5 | -20 | 268 | No stop |
| 08 09 30 | --- | 19 55 13 | 27.2 | 201.9 | 1.3 | | 13.0 | 175 | 271 | 08 06 16 |
| 08 09 30 | J1825-0737 | 19 55 13 | 26.4 | 204.7 | 1.5 | | 14.6 | -20 | 271 | No stop |
| 08 11 15 | =1822-076 | 19 56 58 | 26.3 | 205.1 | 1.5 | | 14.9 | 85 | 273 | 08 09 31 |
| 08 11 15 | G24.850 | 19 56 58 | 27.4 | 202.4 | 1.3 | | 13.3 | -20 | 273 | No stop |
| 08 14 30 | --- | 20 00 13 | 27.3 | 203.3 | 1.4 | | 13.8 | 175 | 276 | 08 11 16 |
| 08 15 10 | J1825-0737 | 20 00 53 | 26.1 | 206.2 | 1.6 | | 15.5 | 20 | 276 | 08 15 10 |
| 08 16 55 | =1822-076 | 20 02 39 | 26.0 | 206.6 | 1.6 | | 15.8 | 105 | 278 | 08 15 11 |
| 08 16 55 | G24.493 | 20 02 39 | 26.7 | 203.9 | 1.4 | | 14.2 | -20 | 278 | No stop |
| 08 20 10 | --- | 20 05 54 | 26.5 | 204.8 | 1.5 | | 14.7 | 175 | 281 | 08 16 56 |
| 08 20 10 | J1825-0737 | 20 05 54 | 25.7 | 207.5 | 1.7 | | 16.2 | -20 | 281 | No stop |
| 08 21 55 | =1822-076 | 20 07 40 | 25.6 | 208.0 | 1.7 | | 16.5 | 85 | 283 | 08 20 11 |
| 08 21 55 | G24.850 | 20 07 40 | 26.8 | 205.3 | 1.5 | | 15.0 | -19 | 283 | No stop |
| 08 25 10 | --- | 20 10 55 | 26.6 | 206.1 | 1.6 | | 15.5 | 176 | 286 | 08 21 56 |
| 08 25 50 | J1825-0737 | 20 11 35 | 25.3 | 209.0 | 1.7 | | 17.1 | 20 | 286 | 08 25 50 |
| 08 27 35 | =1822-076 | 20 13 20 | 25.2 | 209.5 | 1.8 | | 17.3 | 105 | 287 | 08 25 51 |

Schedule for TORUN (Code Tr ) Page 10

Methanol maser variability as a tracer of episodic accretion.

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 28 Feb 2019 Day 59 --- | | | | | | | | | | |
| 08 27 35 | G24.493 | 20 13 20 | 26.1 | 206.7 | 1.6 | | 15.8 | -20 | 287 | No stop |
| 08 30 50 | --- | 20 16 36 | 25.8 | 207.6 | 1.7 | | 16.3 | 175 | 290 | 08 27 36 |
| 08 30 50 | J1825-0737 | 20 16 36 | 25.0 | 210.3 | 1.8 | | 17.8 | -20 | 290 | No stop |
| 08 32 35 | =1822-076 | 20 18 21 | 24.8 | 210.8 | 1.9 | | 18.1 | 85 | 292 | 08 30 51 |
| 08 32 35 | G24.850 | 20 18 21 | 26.1 | 208.1 | 1.7 | | 16.6 | -19 | 292 | No stop |
| 08 35 50 | --- | 20 21 37 | 25.8 | 209.0 | 1.7 | | 17.1 | 176 | 295 | 08 32 36 |
| 08 36 30 | J1825-0737 | 20 22 17 | 24.5 | 211.8 | 1.9 | | 18.6 | 20 | 295 | 08 36 30 |
| 08 38 15 | =1822-076 | 20 24 02 | 24.4 | 212.2 | 2.0 | | 18.9 | 105 | 297 | 08 36 31 |
| 08 42 20 | 3C454.3 | 20 28 08 | 43.3 | 128.0 | -2.4 | | -29.5 | 61 | 297 | 08 42 20 |
| 08 46 20 | --- | 20 32 09 | 43.8 | 129.1 | -2.4 | | -29.0 | 240 | 301 | 08 42 21 |
| 08 50 20 | J1848+0138 | 20 36 09 | 34.0 | 212.8 | 1.8 | | 19.0 | 58 | 301 | 08 50 20 |
| 08 52 05 | --- | 20 37 55 | 33.9 | 213.3 | 1.8 | | 19.3 | 105 | 302 | 08 50 21 |
| 08 52 05 | G32.082 | 20 37 55 | 31.7 | 212.1 | 1.8 | | 18.6 | -22 | 302 | No stop |
| 08 55 20 | --- | 20 41 10 | 31.5 | 213.0 | 1.8 | | 19.1 | 173 | 306 | 08 52 06 |
| 08 55 20 | J1848+0138 | 20 41 10 | 33.6 | 214.2 | 1.9 | | 19.8 | -22 | 306 | No stop |
| 08 57 05 | --- | 20 42 55 | 33.4 | 214.7 | 1.9 | | 20.0 | 83 | 307 | 08 55 21 |
| 08 57 05 | G32.082 | 20 42 55 | 31.3 | 213.4 | 1.9 | | 19.3 | -22 | 307 | No stop |
| 09 00 20 | --- | 20 46 11 | 31.1 | 214.3 | 1.9 | | 19.8 | 173 | 310 | 08 57 06 |
| 09 01 05 | J1848+0138 | 20 46 56 | 33.1 | 215.9 | 2.0 | | 20.6 | 23 | 310 | 09 01 05 |
| 09 02 50 | --- | 20 48 41 | 32.9 | 216.4 | 2.0 | | 20.9 | 105 | 312 | 09 01 06 |
| 09 02 50 | G32.082 | 20 48 41 | 30.8 | 215.0 | 2.0 | | 20.2 | -22 | 312 | No stop |
| 09 06 05 | --- | 20 51 57 | 30.6 | 215.9 | 2.0 | | 20.6 | 173 | 315 | 09 02 51 |
| 09 06 05 | J1848+0138 | 20 51 57 | 32.7 | 217.3 | 2.0 | | 21.3 | -22 | 315 | No stop |
| 09 07 50 | --- | 20 53 42 | 32.5 | 217.7 | 2.1 | | 21.6 | 83 | 317 | 09 06 06 |
| 09 07 50 | G32.082 | 20 53 42 | 30.4 | 216.4 | 2.1 | | 20.9 | -22 | 317 | No stop |
| 09 11 05 | --- | 20 56 58 | 30.1 | 217.3 | 2.1 | | 21.3 | 173 | 320 | 09 07 51 |
| 09 11 50 | J1848+0138 | 20 57 43 | 32.1 | 218.8 | 2.1 | | 22.1 | 23 | 320 | 09 11 50 |
| 09 13 35 | --- | 20 59 28 | 32.0 | 219.3 | 2.2 | | 22.4 | 105 | 322 | 09 11 51 |
| 09 13 35 | J1907+0127 | 20 59 28 | 33.5 | 214.0 | 1.9 | | 19.6 | -25 | 322 | No stop |
| 09 15 20 | =1904+013 | 21 01 13 | 33.3 | 214.5 | 1.9 | | 19.9 | 80 | 323 | 09 13 36 |

Schedule for TORUN (Code Tr ) Page 11

Methanol maser variability as a tracer of episodic accretion.

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | Start / Stop LST | EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 28 Feb 2019 Day 59 --- | | | | | | | | | | |
| 09 15 20 | G35.793 | 21 01 13 | 33.4 | 217.7 | 2.1 | | 21.6 | -21 | 323 | No stop |
| 09 18 35 | --- | 21 04 29 | 33.1 | 218.6 | 2.1 | | 22.0 | 174 | 327 | 09 15 21 |
| 09 18 35 | J1907+0127 | 21 04 29 | 33.0 | 215.4 | 1.9 | | 20.4 | -21 | 327 | No stop |
| 09 20 20 | =1904+013 | 21 06 14 | 32.9 | 215.9 | 2.0 | | 20.6 | 84 | 328 | 09 18 36 |
| 09 20 20 | G35.793 | 21 06 14 | 32.9 | 219.1 | 2.1 | | 22.3 | -21 | 328 | No stop |
| 09 23 35 | --- | 21 09 30 | 32.6 | 220.0 | 2.2 | | 22.7 | 174 | 331 | 09 20 21 |
| 09 24 15 | J1907+0127 | 21 10 10 | 32.5 | 217.0 | 2.0 | | 21.2 | 19 | 331 | 09 24 15 |
| 09 26 00 | =1904+013 | 21 11 55 | 32.4 | 217.5 | 2.1 | | 21.4 | 105 | 333 | 09 24 16 |
| 09 26 00 | G35.793 | 21 11 55 | 32.4 | 220.7 | 2.2 | | 23.1 | -21 | 333 | No stop |
| 09 29 15 | --- | 21 15 11 | 32.1 | 221.5 | 2.3 | | 23.5 | 174 | 336 | 09 26 01 |
| 09 29 15 | J1907+0127 | 21 15 11 | 32.1 | 218.4 | 2.1 | | 21.9 | -21 | 336 | No stop |
| 09 31 00 | =1904+013 | 21 16 56 | 31.9 | 218.9 | 2.1 | | 22.1 | 84 | 338 | 09 29 16 |
| 09 31 00 | G35.793 | 21 16 56 | 31.9 | 222.0 | 2.3 | | 23.7 | -21 | 338 | No stop |
| 09 34 15 | --- | 21 20 11 | 31.5 | 222.9 | 2.4 | | 24.1 | 174 | 341 | 09 31 01 |
| 09 34 55 | J1907+0127 | 21 20 52 | 31.5 | 219.9 | 2.2 | | 22.7 | 19 | 341 | 09 34 55 |
| 09 36 40 | =1904+013 | 21 22 37 | 31.4 | 220.4 | 2.2 | | 22.9 | 105 | 343 | 09 34 56 |
| 09 36 40 | J1825-0737 | 21 22 37 | 18.8 | 226.7 | 2.9 | | 26.1 | -61 | 343 | No stop |
| 09 38 25 | =1822-076 | 21 24 22 | 18.6 | 227.1 | 3.0 | | 26.3 | 44 | 344 | 09 36 41 |
| 09 38 25 | G24.493 | 21 24 22 | 19.8 | 224.6 | 2.8 | | 25.2 | -19 | 344 | No stop |
| 09 41 40 | --- | 21 27 38 | 19.5 | 225.4 | 2.8 | | 25.6 | 176 | 347 | 09 38 26 |
| 09 41 40 | J1825-0737 | 21 27 38 | 18.2 | 227.8 | 3.0 | | 26.7 | -19 | 347 | No stop |
| 09 43 25 | =1822-076 | 21 29 23 | 18.1 | 228.2 | 3.0 | | 26.9 | 86 | 349 | 09 41 41 |
| 09 43 25 | G24.850 | 21 29 23 | 19.7 | 226.0 | 2.9 | | 25.8 | -20 | 349 | No stop |
| 09 46 40 | --- | 21 32 38 | 19.3 | 226.7 | 2.9 | | 26.1 | 175 | 352 | 09 43 26 |
| 09 47 20 | J1825-0737 | 21 33 19 | 17.6 | 229.1 | 3.1 | | 27.3 | 20 | 352 | 09 47 20 |
| 09 49 05 | =1822-076 | 21 35 04 | 17.4 | 229.6 | 3.1 | | 27.5 | 105 | 354 | 09 47 21 |
| 09 49 05 | G24.493 | 21 35 04 | 18.7 | 227.2 | 3.0 | | 26.4 | -19 | 354 | No stop |
| 09 52 20 | --- | 21 38 19 | 18.3 | 227.9 | 3.0 | | 26.7 | 176 | 357 | 09 49 06 |
| 09 52 20 | J1825-0737 | 21 38 19 | 17.0 | 230.3 | 3.2 | | 27.8 | -19 | 357 | No stop |
| 09 54 05 | =1822-076 | 21 40 05 | 16.8 | 230.7 | 3.2 | | 28.0 | 86 | 359 | 09 52 21 |

Schedule for TORUN (Code Tr ) Page 12

Methanol maser variability as a tracer of episodic accretion.

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | LST | Start / Stop EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 28 Feb 2019 Day 59 --- | | | | | | | | | | |
| 09 54 05 | G24.850 | 21 40 05 | 18.5 | 228.5 | 3.0 | | 26.9 | -20 | 359 | No stop |
| 09 57 20 | --- | 21 43 20 | 18.1 | 229.2 | 3.1 | | 27.3 | 175 | 362 | 09 54 06 |
| 09 58 00 | J1825-0737 | 21 44 00 | 16.4 | 231.6 | 3.3 | | 28.3 | 20 | 362 | 09 58 00 |
| 09 59 45 | =1822-076 | 21 45 46 | 16.2 | 232.0 | 3.3 | | 28.5 | 105 | 364 | 09 58 01 |
| 09 59 45 | G24.493 | 21 45 46 | 17.5 | 229.7 | 3.1 | | 27.5 | -19 | 364 | No stop |
| 10 03 00 | --- | 21 49 01 | 17.1 | 230.4 | 3.2 | | 27.8 | 176 | 367 | 09 59 46 |
| 10 03 00 | J1825-0737 | 21 49 01 | 15.8 | 232.7 | 3.4 | | 28.8 | -19 | 367 | No stop |
| 10 04 45 | =1822-076 | 21 50 46 | 15.6 | 233.1 | 3.4 | | 29.0 | 86 | 368 | 10 03 01 |
| 10 04 45 | G24.850 | 21 50 46 | 17.3 | 230.9 | 3.2 | | 28.0 | -20 | 368 | No stop |
| 10 08 00 | --- | 21 54 02 | 16.9 | 231.7 | 3.3 | | 28.4 | 175 | 371 | 10 04 46 |
| 10 08 40 | J1825-0737 | 21 54 42 | 15.1 | 234.0 | 3.5 | | 29.4 | 20 | 371 | 10 08 40 |
| 10 10 25 | =1822-076 | 21 56 27 | 14.9 | 234.4 | 3.5 | | 29.5 | 105 | 373 | 10 08 41 |
| 10 10 25 | G24.493 | 21 56 27 | 16.2 | 232.1 | 3.3 | | 28.6 | -18 | 373 | No stop |
| 10 13 40 | --- | 21 59 43 | 15.8 | 232.8 | 3.4 | | 28.9 | 177 | 376 | 10 10 26 |
| 10 13 40 | J1825-0737 | 21 59 43 | 14.5 | 235.1 | 3.6 | | 29.8 | -19 | 376 | No stop |
| 10 15 25 | =1822-076 | 22 01 28 | 14.3 | 235.5 | 3.6 | | 30.0 | 86 | 378 | 10 13 41 |
| 10 15 25 | G24.850 | 22 01 28 | 16.0 | 233.4 | 3.4 | | 29.1 | -20 | 378 | No stop |
| 10 18 40 | --- | 22 04 44 | 15.6 | 234.1 | 3.5 | | 29.4 | 175 | 381 | 10 15 26 |
| 10 19 20 | J1825-0737 | 22 05 24 | 13.8 | 236.4 | 3.6 | | 30.3 | 20 | 381 | 10 19 20 |
| 10 21 05 | =1822-076 | 22 07 09 | 13.6 | 236.8 | 3.7 | | 30.4 | 105 | 383 | 10 19 21 |
| 10 21 05 | J1848+0138 | 22 07 09 | 24.4 | 236.5 | 3.3 | | 30.1 | -54 | 383 | No stop |
| 10 22 50 | --- | 22 08 54 | 24.2 | 237.0 | 3.3 | | 30.2 | 51 | 384 | 10 21 06 |
| 10 22 50 | G32.082 | 22 08 54 | 22.3 | 235.4 | 3.3 | | 29.6 | -21 | 384 | No stop |
| 10 26 05 | --- | 22 12 10 | 21.9 | 236.1 | 3.4 | | 29.9 | 174 | 388 | 10 22 51 |
| 10 26 05 | J1848+0138 | 22 12 10 | 23.8 | 237.7 | 3.4 | | 30.5 | -21 | 388 | No stop |
| 10 27 50 | --- | 22 13 55 | 23.6 | 238.1 | 3.4 | | 30.7 | 84 | 389 | 10 26 06 |
| 10 27 50 | G32.082 | 22 13 55 | 21.7 | 236.5 | 3.4 | | 30.1 | -21 | 389 | No stop |
| 10 31 05 | --- | 22 17 11 | 21.3 | 237.3 | 3.4 | | 30.4 | 174 | 392 | 10 27 51 |
| 10 31 50 | J1848+0138 | 22 17 56 | 23.0 | 239.1 | 3.5 | | 31.0 | 24 | 392 | 10 31 50 |
| 10 33 35 | --- | 22 19 41 | 22.8 | 239.5 | 3.5 | | 31.2 | 105 | 394 | 10 31 51 |

Schedule for TORUN (Code Tr ) Page 13

Methanol maser variability as a tracer of episodic accretion.

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Thu 28 Feb 2019 Day 59 --- | | | | | | | | | | |
| 10 33 35 | G32.082 | 22 19 41 | 21.0 | 237.9 | 3.5 | | 30.6 | -21 | 394 | No stop |
| 10 36 50 | --- | 22 22 57 | 20.5 | 238.6 | 3.5 | | 30.8 | 174 | 397 | 10 33 36 |
| 10 36 50 | J1848+0138 | 22 22 57 | 22.4 | 240.2 | 3.6 | | 31.4 | -21 | 397 | No stop |
| 10 38 35 | --- | 22 24 42 | 22.2 | 240.6 | 3.6 | | 31.6 | 84 | 399 | 10 36 51 |
| 10 38 35 | G32.082 | 22 24 42 | 20.3 | 239.0 | 3.6 | | 31.0 | -21 | 399 | No stop |
| 10 41 50 | --- | 22 27 58 | 19.9 | 239.8 | 3.6 | | 31.3 | 174 | 402 | 10 38 36 |
| 10 42 35 | J1848+0138 | 22 28 43 | 21.6 | 241.6 | 3.7 | | 31.9 | 24 | 402 | 10 42 35 |
| 10 44 20 | --- | 22 30 28 | 21.4 | 242.0 | 3.7 | | 32.0 | 105 | 404 | 10 42 36 |
| 10 44 20 | J1907+0127 | 22 30 28 | 23.7 | 237.5 | 3.4 | | 30.4 | -24 | 404 | No stop |
| 10 46 05 | =1904+013 | 22 32 13 | 23.5 | 237.9 | 3.4 | | 30.6 | 81 | 405 | 10 44 21 |
| 10 46 05 | G35.793 | 22 32 13 | 23.1 | 240.8 | 3.6 | | 31.6 | -20 | 405 | No stop |
| 10 49 20 | --- | 22 35 29 | 22.6 | 241.5 | 3.6 | | 31.9 | 175 | 408 | 10 46 06 |
| 10 49 20 | J1907+0127 | 22 35 29 | 23.1 | 238.7 | 3.5 | | 30.9 | -20 | 408 | No stop |
| 10 51 05 | =1904+013 | 22 37 14 | 22.8 | 239.1 | 3.5 | | 31.0 | 85 | 410 | 10 49 21 |
| 10 51 05 | G35.793 | 22 37 14 | 22.4 | 241.9 | 3.7 | | 32.0 | -20 | 410 | No stop |
| 10 54 20 | --- | 22 40 30 | 22.0 | 242.7 | 3.7 | | 32.3 | 175 | 413 | 10 51 06 |
| 10 55 00 | J1907+0127 | 22 41 10 | 22.3 | 240.0 | 3.6 | | 31.3 | 20 | 413 | 10 55 00 |
| 10 56 45 | =1904+013 | 22 42 55 | 22.1 | 240.4 | 3.6 | | 31.5 | 105 | 415 | 10 55 01 |
| 10 56 45 | G35.793 | 22 42 55 | 21.6 | 243.2 | 3.7 | | 32.5 | -20 | 415 | No stop |
| 11 00 00 | --- | 22 46 11 | 21.2 | 244.0 | 3.8 | | 32.7 | 175 | 418 | 10 56 46 |
| 11 00 00 | J1907+0127 | 22 46 11 | 21.7 | 241.1 | 3.6 | | 31.7 | -20 | 418 | No stop |
| 11 01 45 | =1904+013 | 22 47 56 | 21.4 | 241.5 | 3.7 | | 31.9 | 85 | 420 | 11 00 01 |
| 11 01 45 | G35.793 | 22 47 56 | 21.0 | 244.4 | 3.8 | | 32.8 | -20 | 420 | No stop |
| 11 05 00 | --- | 22 51 11 | 20.5 | 245.1 | 3.9 | | 33.0 | 175 | 423 | 11 01 46 |
| 11 05 40 | J1907+0127 | 22 51 51 | 20.9 | 242.4 | 3.7 | | 32.2 | 20 | 423 | 11 05 40 |
| 11 07 25 | =1904+013 | 22 53 37 | 20.7 | 242.8 | 3.8 | | 32.3 | 105 | 425 | 11 05 41 |
| 11 07 25 | J1825-0737 | 22 53 37 | 7.4 | 246.7 | 4.4 | | 33.8 | -64 | 425 | No stop |
| 11 09 10 | =1822-076 | 22 55 22 | 7.2 | 247.0 | 4.5 | | 33.9 | 41 | 426 | 11 07 26 |
| 11 09 10 | G24.493 | 22 55 22 | 8.7 | 244.9 | 4.3 | | 33.3 | -19 | 426 | No stop |
| 11 12 25 | --- | 22 58 38 | 8.3 | 245.6 | 4.4 | | 33.5 | 176 | 429 | 11 09 11 |

```
Schedule for TORUN     (Code Tr )                                  Page  14
               Methanol maser variability as a tracer of episodic accretion.
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Thu  28 Feb 2019   Day  59 ---

11 12 25  J1825-0737   22 58 38   6.7 247.7  4.5      34.1   -19      429   No stop
11 14 10  =1822-076    23 00 23   6.5 248.1  4.6      34.2    86      431   11 12 26

11 14 10  G24.850      23 00 23   8.4 246.1  4.4      33.6   -21      431   No stop
11 17 25  ---          23 03 38   7.9 246.8  4.4      33.8   174      434   11 14 11

11 18 05  J1825-0737   23 04 19   5.9 248.9  4.6      34.4    19      434   11 18 05
11 19 50  =1822-076    23 06 04   5.7 249.3  4.7      34.5   105      436   11 18 06

11 55 50  3C454.3      23 42 10  52.0 198.6  0.8      11.5  1969      436   11 55 50
11 59 50  ---          23 46 10  51.8 200.2  0.9      12.4   240      440   11 55 51



SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119M1_4MHz

   Setup group:    7         Station: TORUN            Total bit rate:   128
   Format: MARK5B            Bits per sample: 2        Sample rate:  8.000
   Number of channels:  8    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
 1st LO=   5900.00   5900.00   5900.00   5900.00   5900.00   5900.00   5900.00   5900.00
 Net SB=         L         L         U         U         L         L         U         U
 IF SB =         U         U         U         U         U         U         U         U
 Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
 BBC   =         1         5         1         5         2         6         2         6
 BBC SB=         L         L         U         U         L         L         U         U
 IF    =        A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

 Frequency Set:   5  Based on FREQ, BW, and/or DOPPLER in schedule.  Used with PCAL = off
  LO sum=   6661.48  6661.48  6661.48  6661.48  6669.47  6669.47  6669.47  6669.47
  BBC fr=    761.48   761.48   761.48   761.48   769.47   769.47   769.47   769.47
  Bandwd=      4.00     4.00     4.00     4.00     4.00     4.00     4.00     4.00
   Matching frequency sets:   5

  Track assignments are:
   track1=  10, 14,  2,  6, 12, 16,  4,  8
   barrel=roll_off



POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                       (B1950)             (J2000)             (Date)             (mas)

* G24.493           18 33 23.196433   * 18 36 05.729800     18 37 06.313275       0.00
                   -07 33 50.55604    *-07 31 19.20120     -07 30 21.18898        0.00
                    Doppler based on LSR frame and radio definition.  Velocities:
                        87.50    87.50    87.50    87.50    87.50    87.50

* G24.850           18 33 36.294124   * 18 36 18.387500     18 37 18.804955       0.00
                   -07 11 23.08778    *-07 08 50.80510     -07 07 52.56464        0.00
                    Doppler based on other sources.

* G32.082           18 47 01.956336   * 18 49 36.600000     18 50 34.154299       0.00
                   -00 46 46.15787    *-00 43 16.40000     -00 41 58.56364        0.00
                    Doppler based on other sources.

* G35.793           18 54 45.856784   * 18 57 16.891200     18 58 13.052077       0.00
                    02 23 55.46196    * 02 27 58.02500      02 29 27.27951        0.00
                    Doppler based on other sources.

* J1848+0138        18 45 49.863248   * 18 48 21.810350     18 49 18.356925       0.00
                    01 35 02.11106    * 01 38 26.63220      01 39 41.81038        0.00
                    Doppler based on other sources.

* 3C345             16 41 17.606229   * 16 42 58.809967     16 43 36.799409       0.79
  J1642+3948        39 54 10.81492    * 39 48 36.99399      39 46 17.88184        0.59
  1641+399          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
  J1642+39          GSFC 2016a X/S astro solution,  53724 observations.
                    Doppler based on other sources.

  1822-076          18 22 54.910228   * 18 25 37.609521     18 26 38.312187       0.16
* J1825-0737       -07 39 15.96721    *-07 37 30.01329     -07 36 48.99193        0.24
                    /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,    113 observations.
                    Doppler based on other sources.

  1904+013          19 04 39.788403   * 19 07 11.996162     19 08 08.552606       0.25
```

```
* J1907+0127        01 22 24.59981    * 01 27 08.96179      01 28 54.20922        0.32
                    /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,     93 observations.
                    Doppler based on other sources.

* 3C454.3           22 51 29.519739   * 22 53 57.747939     22 54 52.423849       0.65
  J2253+1608        15 52 54.34808    * 16 08 53.56091      16 14 50.53327        0.73
  2251+158          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
  J2253+16          GSFC 2016a X/S astro solution,  41272 observations.
                    Doppler based on other sources.
```

# n19c1tr

## Network Monitoring Experiment

PI: *Benito Marcote*


```
Address:  JIVE
          Postbus 2
          7990 AA Dwingeloo
          The Netherlands

Phone:    +31-521-596508
EMAIL:    marcote@jive.eu
Fax:
Phone during observation: +31-521-596508
```


```
Observing mode:

Schedule for TORUN     (Code Tr )                                    Page   2
               Network Monitoring Experiment
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source                Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Fri   1 Mar 2019   Day  60 ---

 ---------- N18C1 ----------

 Next scan frequencies:  4966.49  4966.49  4966.49  4966.49  4982.49  4982.49  4982.49  4982.49
                         4998.49  4998.49  4998.49  4998.49  5014.49  5014.49  5014.49  5014.49
 Next BBC frequencies:    766.49   766.49   766.49   766.49   782.49   782.49   782.49   782.49
                          798.49   798.49   798.49   798.49   814.49   814.49   814.49   814.49
 Next scan bandwidths:      8.00     8.00     8.00     8.00     8.00     8.00     8.00     8.00
                            8.00     8.00     8.00     8.00     8.00     8.00     8.00     8.00

12 00 00  J0237+2848   23 50 17  50.9 111.3 -2.8     -39.7     0        0   12 00 00
12 10 00  =0234+285    00 00 19  52.3 114.0 -2.6     -38.8   600       38   12 00 01

12 13 00  J0237+2848   00 03 19  52.7 114.9 -2.6     -38.5   173       38   12 13 00
12 25 00  =0234+285    00 15 21  54.3 118.3 -2.4     -37.1   720       85   12 13 01

12 28 00  J0237+2848   00 18 22  54.7 119.3 -2.3     -36.7   173       85   12 28 00
12 40 00  =0234+285    00 30 24  56.2 123.0 -2.1     -35.1   720      131   12 28 01

12 43 00  J0237+2848   00 33 24  56.6 124.0 -2.1     -34.7   173      131   12 43 00
12 55 00  =0234+285    00 45 26  58.1 128.1 -1.9     -32.7   720      177   12 43 01

12 58 00  J0237+2848   00 48 26  58.4 129.1 -1.8     -32.1   173      177   12 58 00
13 10 00  =0234+285    01 00 28  59.8 133.5 -1.6     -29.8   720      223   12 58 01

13 13 00  J0237+2848   01 03 29  60.1 134.7 -1.6     -29.2   173      223   13 13 00
13 25 00  =0234+285    01 15 31  61.3 139.4 -1.4     -26.5   720      269   13 13 01

13 28 00  J0530+1331   01 18 31  26.7 103.4 -4.2     -36.9    36      269   13 28 00
13 40 00  =0528+134    01 30 33  28.4 106.1 -4.0     -36.4   720      315   13 28 01

13 43 00  J0530+1331   01 33 34  28.9 106.8 -4.0     -36.3   173      315   13 43 00
13 55 00  =0528+134    01 45 36  30.6 109.5 -3.8     -35.6   720      362   13 43 01

13 58 00  J0530+1331   01 48 36  31.0 110.2 -3.7     -35.4   173      362   13 58 00
```

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 14 10 00 | =0528+134 | 02 00 38 | 32.7 | 113.0 | -3.5 | -34.6 | 720 | 408 | 13 58 01 |
| 14 13 00 | J0530+1331 | 02 03 39 | 33.1 | 113.7 | -3.5 | -34.4 | 173 | 408 | 14 13 00 |
| 14 25 00 | =0528+134 | 02 15 41 | 34.7 | 116.6 | -3.3 | -33.5 | 720 | 454 | 14 13 01 |
| 14 28 00 | J0530+1331 | 02 18 41 | 35.1 | 117.4 | -3.2 | -33.3 | 173 | 454 | 14 28 00 |
| 14 40 00 | =0528+134 | 02 30 43 | 36.7 | 120.4 | -3.0 | -32.2 | 720 | 500 | 14 28 01 |
| 14 43 00 | J0530+1331 | 02 33 44 | 37.1 | 121.2 | -3.0 | -31.9 | 173 | 500 | 14 43 00 |
| 14 55 00 | =0528+134 | 02 45 46 | 38.6 | 124.4 | -2.8 | -30.7 | 720 | 546 | 14 43 01 |

```
Schedule for TORUN     (Code Tr )                                Page   3
               Network Monitoring Experiment
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Fri   1 Mar 2019   Day  60 ---

14 58 00  J0530+1331   02 48 46  39.0 125.2 -2.7     -30.3   173      546   14 58 00
15 00 00  =0528+134    02 50 47  39.2 125.7 -2.7     -30.1   120      554   14 58 01




SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119.C512

   Setup group:   12         Station: TORUN            Total bit rate:   512
   Format: MARK5B            Bits per sample: 2        Sample rate: 16.000
   Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
 1st LO=   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
           4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
 Net SB=         L         L         U         U         L         L         U         U
                 L         L         U         U         L         L         U         U
 IF SB =         U         U         U         U         U         U         U         U
                 U         U         U         U         U         U         U         U
 Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
               RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
 BBC   =         1         5         1         5         2         6         2         6
                 3         7         3         7         4         8         4         8
 BBC SB=         L         L         U         U         L         L         U         U
                 L         L         U         U         L         L         U         U
 IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

 Frequency Set:   9  Setup file default.  Used with PCAL = off
 LO sum=   4966.49  4966.49  4966.49  4966.49  4982.49  4982.49  4982.49  4982.49
           4998.49  4998.49  4998.49  4998.49  5014.49  5014.49  5014.49  5014.49
 BBC fr=    766.49   766.49   766.49   766.49   782.49   782.49   782.49   782.49
            798.49   798.49   798.49   798.49   814.49   814.49   814.49   814.49
 Bandwd=      8.00     8.00     8.00     8.00     8.00     8.00     8.00     8.00
              8.00     8.00     8.00     8.00     8.00     8.00     8.00     8.00
  Matching frequency sets:   9

 Track assignments are:
  track1=  18, 26,  2, 10, 20, 28,  4, 12, 22, 30,  6, 14, 24, 32,  8, 16
  barrel=roll_off
```

```
POSITIONS OF SOURCES USED IN RECORDING SCANS

 Source                          Source position (RA/Dec)                        Error
                       (B1950)             (J2000)             (Date)             (mas)

 0234+285          02 34 55.589590   * 02 37 52.405677     02 38 58.676424       0.00
* J0237+2848        28 35 11.40773    * 28 48 08.98999      28 52 59.57153        0.00
 J0237+28          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                   GSFC 2016a X/S astro solution,  58420 observations.

 0528+134          05 28 06.759216   * 05 30 56.416746     05 32 00.803103       0.21
* J0530+1331        13 29 42.28882    * 13 31 55.14948      13 32 35.58971        0.24
 J0530+13          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                   GSFC 2016a X/S astro solution, 138236 observations.
```

```
EFFECT OF SOLAR CORONA

 The solar corona can cause unstable phases for sources too close to the Sun.
 SCHED provides warnings at individual scans for distances less than 10 degrees.
 The distance from the Sun to each source in this schedule is:
  Source         Sun distance (deg)
 J0237+2848          66.3
 J0530+1331         102.2

 Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
 that the Sun will cause amplitude reductions on the  longest VLBA baselines
 at a solar distance of 60deg F^(-0.6) where F is in GHz.
```

```
For common VLBI bands, this is:
     1.6 GHz         45. deg
     2.3 GHz         36. deg
     5.0 GHz         23. deg
     8.4 GHz         17. deg
    15.0 GHz         12. deg
    22.0 GHz          9. deg
```

# ep115tr

## Zooming into the centre of the mysterious high-redshift quasar PMN

PI: *Krisztina Perger*


```
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          Hungary

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EMAIL:    pergertina@gmail.com
Fax:
Phone during observation: +36 20 9959334
```


```
Observing mode: 6 cm 1 Gb/s

Schedule for TORUN     (Code Tr )                                    Page   2
               Zooming into the centre of the mysterious high-redshift quasar PMN J0909
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Fri   1 Mar 2019   Day  60 ---

 Next scan frequencies:  4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
                         5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
 Next BBC frequencies:    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
                          806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
 Next scan bandwidths:     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
                           16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00

18 30 00  J0909+0121   06 21 21  27.6 130.8 -2.8     -27.1     0        0   18 30 00
18 40 00  =0906+015    06 31 23  28.7 133.3 -2.6     -25.9   600       77   18 30 01

18 41 30  J0909+0354   06 32 53  31.1 132.4 -2.6     -26.4    67       77   18 41 30
18 56 30  =0906+041    06 47 55  32.7 136.4 -2.4     -24.5   900      192   18 41 31

18 57 00  J0909+0354   06 48 25  32.8 136.5 -2.4     -24.5    24      192   18 57 00
19 12 00  =0906+041    07 03 28  34.3 140.6 -2.1     -22.4   900      308   18 57 01

19 12 30  J0909+0354   07 03 58  34.3 140.8 -2.1     -22.4    24      308   19 12 30
19 27 30  =0906+041    07 19 00  35.7 145.0 -1.9     -20.2   900      423   19 12 31

19 28 00  J0909+0354   07 19 31  35.7 145.2 -1.8     -20.1    24      423   19 28 00
19 43 00  =0906+041    07 34 33  36.9 149.6 -1.6     -17.7   900      538   19 28 01

19 43 30  J0909+0354   07 35 03  37.0 149.7 -1.6     -17.7    24      538   19 43 30
19 58 30  =0906+041    07 50 06  38.0 154.3 -1.3     -15.2   900      654   19 43 31

19 59 00  J0909+0354   07 50 36  38.1 154.4 -1.3     -15.1    24      654   19 59 00
20 14 00  =0906+041    08 05 38  39.0 159.1 -1.1     -12.4   900      769   19 59 01

20 22 30  J0909+0354   08 14 09  39.4 161.8 -0.9     -10.9   503      769   20 22 30
20 37 30  =0906+041    08 29 12  40.0 166.6 -0.7      -8.0   900      885   20 22 31

20 39 00  J0909+0835   08 30 42  44.7 166.2 -0.7      -8.3    59      885   20 39 00
20 44 00  =0906+087    08 35 43  44.9 167.9 -0.6      -7.3   300      923   20 39 01
```

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 20 45 30 | J0909+0354 | 08 37 13 | 40.3 | 169.2 | -0.6 | -6.5 | 59 | 923 | 20 45 30 |
| 21 00 30 | =0906+041 | 08 52 16 | 40.6 | 174.1 | -0.3 | -3.6 | 900 | 1038 | 20 45 31 |
| 21 01 00 | J0909+0354 | 08 52 46 | 40.6 | 174.2 | -0.3 | -3.5 | 24 | 1038 | 21 01 00 |
| 21 16 00 | =0906+041 | 09 07 48 | 40.7 | 179.2 | -0.0 | -0.5 | 900 | 1154 | 21 01 01 |
| 21 16 30 | J0909+0354 | 09 08 18 | 40.7 | 179.4 | -0.0 | -0.4 | 24 | 1154 | 21 16 30 |
| 21 31 30 | =0906+041 | 09 23 21 | 40.7 | 184.3 | 0.2 | 2.6 | 900 | 1269 | 21 16 31 |
| 21 32 00 | J0909+0354 | 09 23 51 | 40.7 | 184.5 | 0.2 | 2.7 | 24 | 1269 | 21 32 00 |
| 21 47 00 | =0906+041 | 09 38 53 | 40.4 | 189.4 | 0.5 | 5.6 | 900 | 1385 | 21 32 01 |

```
Schedule for TORUN     (Code Tr )                                  Page   3
              Zooming into the centre of the mysterious high-redshift quasar PMN J0909
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-------------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                  Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-------------------------------------------------------------------------------------------

 --- Fri   1 Mar 2019   Day  60 ---

21 48 30  J0909+0354   09 40 24  40.3 189.9  0.5       5.9    83     1385   21 48 30
22 03 30  =0906+041    09 55 26  39.9 194.7  0.8       8.8   900     1500   21 48 31

22 04 00  J0909+0354   09 55 56  39.8 194.9  0.8       8.9    24     1500   22 04 00
22 19 00  =0906+041    10 10 59  39.2 199.7  1.0      11.7   900     1615   22 04 01

22 19 30  J0909+0354   10 11 29  39.1 199.8  1.0      11.8    24     1615   22 19 30
22 34 30  =0906+041    10 26 31  38.3 204.5  1.3      14.5   900     1731   22 19 31

22 35 00  J0909+0354   10 27 01  38.3 204.7  1.3      14.6    24     1731   22 35 00
22 50 00  =0906+041    10 42 04  37.2 209.3  1.5      17.1   900     1846   22 35 01

22 50 30  J0909+0354   10 42 34  37.2 209.4  1.5      17.2    24     1846   22 50 30
23 05 30  =0906+041    10 57 36  36.0 213.8  1.8      19.6   900     1962   22 50 31

23 06 00  J0909+0354   10 58 06  36.0 214.0  1.8      19.7    24     1962   23 06 00
23 21 00  =0906+041    11 13 09  34.6 218.3  2.0      21.9   900     2077   23 06 01

23 21 30  J0909+0354   11 13 39  34.6 218.4  2.1      22.0    24     2077   23 21 30
23 36 30  =0906+041    11 28 41  33.1 222.6  2.3      24.0   900     2192   23 21 31

23 38 00  J0909+0835   11 30 12  37.2 225.4  2.3      25.6    60     2192   23 38 00
23 43 00  =0906+087    11 35 12  36.7 226.8  2.4      26.3   300     2231   23 38 01

23 44 30  J0909+0354   11 36 43  32.3 224.7  2.4      25.1    60     2231   23 44 30
23 59 30  =0906+041    11 51 45  30.7 228.7  2.7      26.9   900     2346   23 44 31

 --- Sat   2 Mar 2019   Day  61 ---

00 00 00  J0909+0354   11 52 15  30.6 228.8  2.7      26.9    24     2346   00 00 00
00 15 00  =0906+041    12 07 18  28.9 232.7  3.0      28.6   900     2462   00 00 01

00 15 30  J0909+0354   12 07 48  28.8 232.8  3.0      28.6    24     2462   00 15 30
00 30 00  =0906+041    12 22 20  27.0 236.4  3.2      30.1   870     2573   00 15 31



SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119.C1024

   Setup group:   12         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
   Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
            4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
  Net SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF SB =         U         U         U         U         U         U         U         U
                  U         U         U         U         U         U         U         U
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
                RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
                  3         7         3         7         4         8         4         8
  BBC SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                 A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:   9  Setup file default.  Used with PCAL = off
  LO sum=   4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
            5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
  BBC fr=    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
             806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
  Bandwd=     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
              16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
   Matching frequency sets:   9

  Track assignments are:
   track1=  18, 26,  2, 10, 20, 28,  4, 12, 22, 30,  6, 14, 24, 32,  8, 16
   barrel=roll_off



 POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                       (B1950)             (J2000)             (Date)             (mas)

  0906+015          09 06 35.181592   * 09 09 10.091598     09 10 09.697860       0.11
* J0909+0121        01 33 48.12918    * 01 21 35.61770      01 16 47.34205        0.11
                    /home/guest/rmc/SCHED/sched11.5/catalogs/sources.rfc
                    rfc_2018a Petrov and Kovalev, in preparation  1139 observations

  0906+087          09 06 31.437175   * 09 09 12.157509     09 10 13.928511       0.18
* J0909+0835        08 47 53.54414    * 08 35 41.09893      08 30 53.70712        0.28
                    /home/guest/rmc/SCHED/sched11.5/catalogs/sources.rfc
                    rfc_2018a Petrov and Kovalev, in preparation  222 observations

  0906+041          09 06 38.966604   * 09 09 15.910976     09 10 16.273447       0.36
* J0909+0354        04 06 55.50047    * 03 54 42.75896      03 49 54.68799        0.73
                    /home/guest/rmc/SCHED/sched11.5/catalogs/sources.rfc
                    rfc_2018a Petrov and Kovalev, in preparation  45 observations



EFFECT OF SOLAR CORONA

  The solar corona can cause unstable phases for sources too close to the Sun.
  SCHED provides warnings at individual scans for distances less than 10 degrees.
  The distance from the Sun to each source in this schedule is:
    Source         Sun distance (deg)
   J0909+0121         154.4
```

```
 J0909+0835         155.3
 J0909+0354         155.0

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
that the Sun will cause amplitude reductions on the  longest VLBA baselines
at a solar distance of 60deg F^(-0.6) where F is in GHz.
For common VLBI bands, this is:
     1.6 GHz         45. deg
     2.3 GHz         36. deg
     5.0 GHz         23. deg
     8.4 GHz         17. deg
    15.0 GHz         12. deg
    22.0 GHz          9. deg
```

# ec067atr

NEW UCD -6CM

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Valencia, Spain

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EMAIL: j.bautista.climent@uv.es
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Phone during observation: +34 963543078, +34629509130

Observing mode: Phase-referencing at 6cm (1024 Mb/s)

```
Schedule for TORUN     (Code Tr )                                    Page   2
               new UCD -6cm
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source                Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Sat   2 Mar 2019   Day  61 ---

 Next scan frequencies:  4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
                         5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
 Next BBC frequencies:    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
                          806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
 Next scan bandwidths:     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
                           16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00

02 00 00  1830+285     13 52 35  34.1  86.5 -4.7     -43.0     0        0   02 00 00
02 04 00  ---          13 56 36  34.7  87.3 -4.6     -43.1   240       31   02 00 01

02 04 50  J1848+3219   13 57 26  35.2  81.4 -4.9     -44.6    23       31   02 04 50
02 06 10  =1846+322    13 58 46  35.4  81.6 -4.8     -44.7    80       41   02 04 51

02 06 10  LSRJ1835     13 58 46  37.8  83.4 -4.6     -45.3   -23       41   No stop
02 10 10  ---          14 02 47  38.4  84.1 -4.6     -45.4   217       72   02 06 11

02 10 10  J1848+3219   14 02 47  36.0  82.4 -4.8     -44.8   -23       72   No stop
02 11 40  =1846+322    14 04 17  36.2  82.6 -4.7     -44.8    67       83   02 10 11

02 11 40  LSRJ1835     14 04 17  38.6  84.4 -4.5     -45.5   -23       83   No stop
02 15 40  ---          14 08 18  39.2  85.2 -4.5     -45.5   217      114   02 11 41

02 16 20  J1848+3219   14 08 58  36.9  83.5 -4.7     -44.9    17      114   02 16 20
02 17 30  =1846+322    14 10 08  37.1  83.7 -4.6     -44.9    70      123   02 16 21

02 17 30  LSRJ1835     14 10 08  39.5  85.5 -4.4     -45.6   -23      123   No stop
02 21 30  ---          14 14 08  40.1  86.3 -4.4     -45.6   217      154   02 17 31

02 21 30  J1848+3219   14 14 08  37.7  84.5 -4.6     -45.0   -23      154   No stop
02 23 00  =1846+322    14 15 39  37.9  84.8 -4.6     -45.1    67      165   02 21 31

02 23 00  LSRJ1835     14 15 39  40.3  86.6 -4.3     -45.6   -23      165   No stop
02 27 00  ---          14 19 39  40.9  87.3 -4.3     -45.7   217      196   02 23 01
```

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 02 27 40 | J1848+3219 | 14 20 19 | 38.6 | 85.7 | -4.5 | -45.1 | 17 | 196 | 02 27 40 |
| 02 28 50 | =1846+322 | 14 21 30 | 38.8 | 85.9 | -4.5 | -45.1 | 70 | 205 | 02 27 41 |
| | | | | | | | | | |
| 02 28 50 | LSRJ1835 | 14 21 30 | 41.2 | 87.7 | -4.2 | -45.7 | -23 | 205 | No stop |
| 02 32 50 | --- | 14 25 30 | 41.8 | 88.5 | -4.2 | -45.7 | 217 | 236 | 02 28 51 |
| | | | | | | | | | |
| 02 32 50 | J1848+3219 | 14 25 30 | 39.4 | 86.6 | -4.4 | -45.2 | -23 | 236 | No stop |
| 02 34 20 | =1846+322 | 14 27 01 | 39.6 | 86.9 | -4.4 | -45.2 | 67 | 247 | 02 32 51 |
| | | | | | | | | | |
| 02 34 20 | LSRJ1835 | 14 27 01 | 42.0 | 88.8 | -4.2 | -45.7 | -23 | 247 | No stop |
| 02 38 20 | --- | 14 31 01 | 42.6 | 89.6 | -4.1 | -45.7 | 217 | 278 | 02 34 21 |

Schedule for TORUN (Code Tr ) Page 3
new UCD -6cm

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | LST | Start / Stop EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 2 Mar 2019 Day 61 --- | | | | | | | | | | |
| 02 39 00 | J1848+3219 | 14 31 41 | 40.3 | 87.8 | -4.3 | | -45.3 | 17 | 278 | 02 39 00 |
| 02 40 10 | =1846+322 | 14 32 52 | 40.5 | 88.1 | -4.3 | | -45.3 | 70 | 287 | 02 39 01 |
| 02 40 10 | LSRJ1835 | 14 32 52 | 42.9 | 89.9 | -4.1 | | -45.7 | -23 | 287 | No stop |
| 02 44 10 | --- | 14 36 52 | 43.5 | 90.8 | -4.0 | | -45.7 | 217 | 318 | 02 40 11 |
| 02 44 10 | J1848+3219 | 14 36 52 | 41.1 | 88.9 | -4.2 | | -45.3 | -23 | 318 | No stop |
| 02 45 40 | =1846+322 | 14 38 22 | 41.3 | 89.2 | -4.2 | | -45.3 | 67 | 329 | 02 44 11 |
| 02 45 40 | LSRJ1835 | 14 38 22 | 43.7 | 91.1 | -4.0 | | -45.7 | -23 | 329 | No stop |
| 02 49 40 | --- | 14 42 23 | 44.3 | 91.9 | -3.9 | | -45.7 | 217 | 360 | 02 45 41 |
| 02 50 20 | J1848+3219 | 14 43 03 | 42.1 | 90.1 | -4.1 | | -45.3 | 17 | 360 | 02 50 20 |
| 02 51 30 | =1846+322 | 14 44 13 | 42.2 | 90.3 | -4.1 | | -45.3 | 70 | 369 | 02 50 21 |
| 02 51 30 | LSRJ1835 | 14 44 13 | 44.6 | 92.3 | -3.9 | | -45.7 | -23 | 369 | No stop |
| 02 55 30 | --- | 14 48 14 | 45.2 | 93.1 | -3.8 | | -45.6 | 217 | 400 | 02 51 31 |
| 02 55 30 | J1848+3219 | 14 48 14 | 42.8 | 91.1 | -4.0 | | -45.3 | -23 | 400 | No stop |
| 02 57 00 | =1846+322 | 14 49 44 | 43.1 | 91.4 | -4.0 | | -45.3 | 67 | 412 | 02 55 31 |
| 02 57 00 | LSRJ1835 | 14 49 44 | 45.4 | 93.4 | -3.8 | | -45.6 | -23 | 412 | No stop |
| 03 01 00 | --- | 14 53 45 | 46.0 | 94.2 | -3.7 | | -45.6 | 217 | 442 | 02 57 01 |
| 03 01 40 | J1848+3219 | 14 54 25 | 43.8 | 92.4 | -3.9 | | -45.2 | 17 | 442 | 03 01 40 |
| 03 02 50 | =1846+322 | 14 55 35 | 43.9 | 92.6 | -3.9 | | -45.2 | 70 | 451 | 03 01 41 |
| 03 02 50 | LSRJ1835 | 14 55 35 | 46.3 | 94.6 | -3.7 | | -45.5 | -23 | 451 | No stop |
| 03 06 50 | --- | 14 59 36 | 46.9 | 95.5 | -3.6 | | -45.5 | 217 | 482 | 03 02 51 |
| 03 06 50 | J1848+3219 | 14 59 36 | 44.5 | 93.5 | -3.8 | | -45.2 | -23 | 482 | No stop |
| 03 08 20 | =1846+322 | 15 01 06 | 44.8 | 93.8 | -3.8 | | -45.2 | 67 | 494 | 03 06 51 |
| 03 08 20 | LSRJ1835 | 15 01 06 | 47.1 | 95.8 | -3.6 | | -45.4 | -23 | 494 | No stop |
| 03 12 20 | --- | 15 05 07 | 47.7 | 96.7 | -3.5 | | -45.3 | 217 | 524 | 03 08 21 |
| 03 13 00 | J1848+3219 | 15 05 47 | 45.5 | 94.8 | -3.7 | | -45.1 | 17 | 524 | 03 13 00 |
| 03 14 10 | =1846+322 | 15 06 57 | 45.6 | 95.0 | -3.7 | | -45.1 | 70 | 533 | 03 13 01 |
| 03 14 10 | LSRJ1835 | 15 06 57 | 48.0 | 97.1 | -3.5 | | -45.3 | -23 | 533 | No stop |
| 03 18 10 | --- | 15 10 58 | 48.6 | 98.0 | -3.4 | | -45.2 | 217 | 564 | 03 14 11 |
| 03 18 10 | J1848+3219 | 15 10 58 | 46.2 | 95.9 | -3.6 | | -45.0 | -23 | 564 | No stop |
| 03 19 40 | =1846+322 | 15 12 28 | 46.5 | 96.2 | -3.6 | | -45.0 | 67 | 576 | 03 18 11 |

Schedule for TORUN (Code Tr ) Page 4
new UCD -6cm

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Sat 2 Mar 2019 Day 61 --- | | | | | | | | | | |
| 03 19 40 | LSRJ1835 | 15 12 28 | 48.8 | 98.3 | -3.4 | | -45.1 | -23 | 576 | No stop |
| 03 23 40 | --- | 15 16 29 | 49.4 | 99.2 | -3.3 | | -45.0 | 217 | 606 | 03 19 41 |
| 03 24 20 | J1848+3219 | 15 17 09 | 47.2 | 97.2 | -3.5 | | -44.8 | 17 | 606 | 03 24 20 |
| 03 25 30 | =1846+322 | 15 18 19 | 47.3 | 97.5 | -3.5 | | -44.8 | 70 | 615 | 03 24 21 |
| 03 25 30 | LSRJ1835 | 15 18 19 | 49.7 | 99.6 | -3.3 | | -44.9 | -23 | 615 | No stop |
| 03 29 30 | --- | 15 22 20 | 50.3 | 100.6 | -3.2 | | -44.7 | 217 | 646 | 03 25 31 |
| 03 29 30 | J1848+3219 | 15 22 20 | 47.9 | 98.4 | -3.4 | | -44.7 | -23 | 646 | No stop |
| 03 31 00 | =1846+322 | 15 23 50 | 48.1 | 98.7 | -3.4 | | -44.6 | 67 | 658 | 03 29 31 |
| 03 31 00 | LSRJ1835 | 15 23 50 | 50.5 | 100.9 | -3.2 | | -44.7 | -23 | 658 | No stop |
| 03 35 00 | --- | 15 27 51 | 51.1 | 101.9 | -3.1 | | -44.5 | 217 | 688 | 03 31 01 |
| 03 35 40 | J1848+3219 | 15 28 31 | 48.8 | 99.8 | -3.3 | | -44.5 | 17 | 688 | 03 35 40 |
| 03 36 50 | =1846+322 | 15 29 41 | 49.0 | 100.1 | -3.3 | | -44.4 | 70 | 697 | 03 35 41 |
| 03 36 50 | LSRJ1835 | 15 29 41 | 51.4 | 102.3 | -3.1 | | -44.4 | -23 | 697 | No stop |
| 03 40 50 | --- | 15 33 42 | 52.0 | 103.3 | -3.0 | | -44.2 | 217 | 728 | 03 36 51 |
| 03 40 50 | J1848+3219 | 15 33 42 | 49.6 | 101.0 | -3.3 | | -44.2 | -23 | 728 | No stop |
| 03 42 20 | =1846+322 | 15 35 12 | 49.8 | 101.3 | -3.2 | | -44.2 | 67 | 740 | 03 40 51 |
| 03 42 20 | LSRJ1835 | 15 35 12 | 52.2 | 103.6 | -3.0 | | -44.1 | -23 | 740 | No stop |
| 03 46 20 | --- | 15 39 12 | 52.8 | 104.6 | -3.0 | | -43.9 | 217 | 771 | 03 42 21 |
| 03 47 00 | J1848+3219 | 15 39 53 | 50.5 | 102.4 | -3.2 | | -43.9 | 17 | 771 | 03 47 00 |
| 03 48 10 | =1846+322 | 15 41 03 | 50.7 | 102.7 | -3.1 | | -43.9 | 70 | 779 | 03 47 01 |
| 03 48 10 | LSRJ1835 | 15 41 03 | 53.0 | 105.1 | -2.9 | | -43.7 | -23 | 779 | No stop |
| 03 52 10 | --- | 15 45 03 | 53.6 | 106.1 | -2.9 | | -43.5 | 217 | 810 | 03 48 11 |
| 03 52 10 | J1848+3219 | 15 45 03 | 51.3 | 103.7 | -3.1 | | -43.7 | -22 | 810 | No stop |
| 03 53 40 | =1846+322 | 15 46 34 | 51.5 | 104.1 | -3.0 | | -43.6 | 68 | 822 | 03 52 11 |
| 03 53 40 | LSRJ1835 | 15 46 34 | 53.8 | 106.5 | -2.8 | | -43.4 | -23 | 822 | No stop |
| 03 57 40 | --- | 15 50 34 | 54.4 | 107.6 | -2.8 | | -43.1 | 217 | 853 | 03 53 41 |
| 03 58 20 | J1848+3219 | 15 51 14 | 52.2 | 105.2 | -3.0 | | -43.3 | 18 | 853 | 03 58 20 |
| 03 59 30 | =1846+322 | 15 52 25 | 52.3 | 105.5 | -2.9 | | -43.2 | 70 | 862 | 03 58 21 |
| 03 59 30 | LSRJ1835 | 15 52 25 | 54.7 | 108.0 | -2.7 | | -42.9 | -23 | 862 | No stop |
| 04 03 30 | --- | 15 56 25 | 55.2 | 109.1 | -2.7 | | -42.6 | 217 | 892 | 03 59 31 |

```
Schedule for TORUN     (Code Tr )                                Page   5
               new UCD -6cm
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Sat   2 Mar 2019   Day  61 ---

04 03 30  J1848+3219   15 56 25  52.9 106.5 -2.9     -42.9   -22      892   No stop
04 05 00  =1846+322    15 57 55  53.1 106.9 -2.9     -42.8    68      904   04 03 31

04 05 00  LSRJ1835     15 57 55  55.5 109.5 -2.6     -42.4   -23      904   No stop
04 09 00  ---          16 01 56  56.0 110.6 -2.6     -42.1   217      935   04 05 01

04 09 40  J1848+3219   16 02 36  53.8 108.1 -2.8     -42.5    18      935   04 09 40
04 10 50  =1846+322    16 03 46  54.0 108.5 -2.8     -42.4    70      944   04 09 41

04 10 50  LSRJ1835     16 03 46  56.3 111.1 -2.5     -41.9   -23      944   No stop
04 14 50  ---          16 07 47  56.8 112.3 -2.5     -41.5   217      974   04 10 51

04 14 50  J1848+3219   16 07 47  54.5 109.5 -2.7     -42.1   -22      974   No stop
04 16 20  =1846+322    16 09 17  54.8 109.9 -2.7     -41.9    68      986   04 14 51

04 16 20  LSRJ1835     16 09 17  57.0 112.7 -2.5     -41.3   -23      986   No stop
04 20 20  ---          16 13 18  57.6 113.9 -2.4     -40.9   217     1017   04 16 21

04 21 00  J1848+3219   16 13 58  55.4 111.2 -2.6     -41.5    18     1017   04 21 00
04 22 10  =1846+322    16 15 08  55.6 111.6 -2.6     -41.4    70     1026   04 21 01

04 22 10  LSRJ1835     16 15 08  57.8 114.4 -2.4     -40.7   -23     1026   No stop
04 26 10  ---          16 19 09  58.4 115.6 -2.3     -40.2   217     1056   04 22 11

04 26 50  J1848+3219   16 19 49  56.2 112.9 -2.5     -40.9    18     1056   04 26 50
04 30 00  =1846+322    16 23 00  56.7 113.8 -2.4     -40.6   190     1081   04 26 51



SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119.C1024

   Setup group:   12         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
   Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
            4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
  Net SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF SB =         U         U         U         U         U         U         U         U
                  U         U         U         U         U         U         U         U
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
                RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
                  3         7         3         7         4         8         4         8
  BBC SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                 A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:   9  Setup file default.  Used with PCAL = off
  LO sum=   4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
            5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
  BBC fr=    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
             806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
  Bandwd=     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
              16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
   Matching frequency sets:   9

  Track assignments are:
   track1=  18, 26,  2, 10, 20, 28,  4, 12, 22, 30,  6, 14, 24, 32,  8, 16
   barrel=roll_off



 POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                        (B1950)             (J2000)             (Date)            (mas)

 * LSRJ1835          18 33 46.940176   * 18 35 37.880357     18 36 18.980635       0.00
                     32 57 22.09729    * 32 59 53.31134      33 00 40.23537        0.00

 * 1830+285          18 30 52.379792   * 18 32 50.185623     18 33 33.922477       0.03
   J1832+2833        28 31 17.07914    * 28 33 35.95525      28 34 19.10011        0.04
   J1832+28          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                     GSFC 2016a X/S astro solution,   1329 observations.

   1846+322          18 46 29.612030   * 18 48 22.088573     18 49 03.709096       0.00
 * J1848+3219        32 15 36.66044    * 32 19 02.60384      32 20 10.57522        0.00
                     /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                     GSFC 2016a X/S astro solution,  38727 observations.



EFFECT OF SOLAR CORONA

  The solar corona can cause unstable phases for sources too close to the Sun.
  SCHED provides warnings at individual scans for distances less than 10 degrees.
  The distance from the Sun to each source in this schedule is:
    Source         Sun distance (deg)
   LSRJ1835            72.5
   1830+285            71.6
   J1848+3219          69.8
```

```
Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
that the Sun will cause amplitude reductions on the  longest VLBA baselines
at a solar distance of 60deg F^(-0.6) where F is in GHz.
For common VLBI bands, this is:
     1.6 GHz         45. deg
     2.3 GHz         36. deg
     5.0 GHz         23. deg
     8.4 GHz         17. deg
    15.0 GHz         12. deg
    22.0 GHz          9. deg
```

# ec067btr

NEW UCD -6CM

PI: *Juan B. Climent*

Address: Dpto. Astronomia, Univ. Valencia
Dr. Moliner 50
E-46100 Burjassot
Valencia, Spain

Phone: +34 963543078
EMAIL: j.bautista.climent@uv.es
Fax: +34 963543084
Phone during observation: +34 963543078, +34629509130

Observing mode: Phase-referencing at 6cm (1024 Mb/s)

```
Schedule for TORUN     (Code Tr )                                    Page   2
               new UCD -6cm
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-------------------------------------------------------------------------------------------
Start UT  Source                Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-------------------------------------------------------------------------------------------

 --- Sat   2 Mar 2019   Day  61 ---

 Next scan frequencies:  4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
                         5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
 Next BBC frequencies:    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
                          806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
 Next scan bandwidths:     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
                           16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00

08 30 00  0017+200     20 23 39  34.6 102.1 -3.9     -38.8     0        0   08 30 00
08 34 00  ---          20 27 40  35.2 103.0 -3.9     -38.6   240       31   08 30 01

08 34 50  J0037+2141   20 28 30  33.7  98.3 -4.2     -39.8    25       31   08 34 50
08 36 10  ---          20 29 50  33.9  98.6 -4.1     -39.8    80       41   08 34 51

08 36 10  LP349-25     20 29 50  35.8 100.2 -4.0     -39.8   -21       41   No stop
08 40 10  ---          20 33 51  36.4 101.0 -3.9     -39.6   219       72   08 36 11

08 40 10  J0037+2141   20 33 51  34.5  99.5 -4.1     -39.6   -21       72   No stop
08 41 40  ---          20 35 21  34.7  99.8 -4.1     -39.6    69       83   08 40 11

08 41 40  LP349-25     20 35 21  36.6 101.4 -3.9     -39.6   -21       83   No stop
08 45 40  ---          20 39 22  37.2 102.3 -3.8     -39.4   219      114   08 41 41

08 46 20  J0037+2141   20 40 02  35.4 100.8 -4.0     -39.4    19      114   08 46 20
08 47 30  ---          20 41 12  35.6 101.1 -4.0     -39.4    70      123   08 46 21

08 47 30  LP349-25     20 41 12  37.4 102.7 -3.8     -39.3   -21      123   No stop
08 51 30  ---          20 45 13  38.0 103.6 -3.7     -39.2   219      154   08 47 31

08 51 30  J0037+2141   20 45 13  36.2 102.0 -3.9     -39.3   -21      154   No stop
08 53 00  ---          20 46 43  36.4 102.3 -3.9     -39.2    69      165   08 51 31

08 53 00  LP349-25     20 46 43  38.3 103.9 -3.7     -39.1   -21      165   No stop
08 57 00  ---          20 50 43  38.8 104.9 -3.6     -38.9   219      196   08 53 01
```

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 08 57 40 | J0037+2141 | 20 51 24 | 37.1 | 103.3 | -3.8 | -39.0 | 19 | 196 | 08 57 40 |
| 08 58 50 | --- | 20 52 34 | 37.2 | 103.6 | -3.8 | -38.9 | 70 | 205 | 08 57 41 |
| 08 58 50 | LP349-25 | 20 52 34 | 39.1 | 105.3 | -3.6 | -38.8 | -21 | 205 | No stop |
| 09 02 50 | --- | 20 56 34 | 39.7 | 106.2 | -3.5 | -38.6 | 219 | 236 | 08 58 51 |
| 09 02 50 | J0037+2141 | 20 56 34 | 37.8 | 104.5 | -3.7 | -38.8 | -21 | 236 | No stop |
| 09 04 20 | --- | 20 58 05 | 38.0 | 104.9 | -3.7 | -38.7 | 69 | 247 | 09 02 51 |
| 09 04 20 | LP349-25 | 20 58 05 | 39.9 | 106.6 | -3.5 | -38.5 | -21 | 247 | No stop |
| 09 08 20 | --- | 21 02 05 | 40.5 | 107.5 | -3.4 | -38.3 | 219 | 278 | 09 04 21 |

Schedule for TORUN (Code Tr ) Page 3

new UCD -6cm

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | LST | Start / Stop EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 2 Mar 2019 Day 61 --- | | | | | | | | | | |
| 09 09 00 | J0037+2141 | 21 02 45 | 38.7 | 105.9 | -3.6 | | -38.5 | 19 | 278 | 09 09 00 |
| 09 10 10 | --- | 21 03 56 | 38.9 | 106.2 | -3.6 | | -38.4 | 70 | 287 | 09 09 01 |
| 09 10 10 | LP349-25 | 21 03 56 | 40.7 | 108.0 | -3.4 | | -38.2 | -21 | 287 | No stop |
| 09 14 10 | --- | 21 07 56 | 41.3 | 108.9 | -3.3 | | -37.9 | 219 | 318 | 09 10 11 |
| 09 14 10 | J0037+2141 | 21 07 56 | 39.5 | 107.2 | -3.5 | | -38.2 | -21 | 318 | No stop |
| 09 15 40 | --- | 21 09 27 | 39.7 | 107.5 | -3.5 | | -38.1 | 69 | 329 | 09 14 11 |
| 09 15 40 | LP349-25 | 21 09 27 | 41.5 | 109.3 | -3.3 | | -37.8 | -21 | 329 | No stop |
| 09 19 40 | --- | 21 13 27 | 42.1 | 110.3 | -3.3 | | -37.5 | 219 | 360 | 09 15 41 |
| 09 20 20 | J0037+2141 | 21 14 07 | 40.3 | 108.6 | -3.4 | | -37.8 | 20 | 360 | 09 20 20 |
| 09 21 30 | --- | 21 15 17 | 40.5 | 108.9 | -3.4 | | -37.7 | 70 | 369 | 09 20 21 |
| 09 21 30 | LP349-25 | 21 15 17 | 42.3 | 110.7 | -3.2 | | -37.4 | -21 | 369 | No stop |
| 09 25 30 | --- | 21 19 18 | 42.9 | 111.7 | -3.2 | | -37.1 | 219 | 400 | 09 21 31 |
| 09 25 30 | J0037+2141 | 21 19 18 | 41.1 | 109.9 | -3.3 | | -37.5 | -20 | 400 | No stop |
| 09 27 00 | --- | 21 20 48 | 41.3 | 110.3 | -3.3 | | -37.4 | 70 | 412 | 09 25 31 |
| 09 27 00 | LP349-25 | 21 20 48 | 43.1 | 112.1 | -3.1 | | -37.0 | -21 | 412 | No stop |
| 09 31 00 | --- | 21 24 49 | 43.7 | 113.1 | -3.1 | | -36.7 | 219 | 442 | 09 27 01 |
| 09 31 40 | J0037+2141 | 21 25 29 | 41.9 | 111.4 | -3.2 | | -37.0 | 20 | 442 | 09 31 40 |
| 09 32 50 | --- | 21 26 39 | 42.1 | 111.7 | -3.2 | | -36.9 | 70 | 451 | 09 31 41 |
| 09 32 50 | LP349-25 | 21 26 39 | 43.9 | 113.6 | -3.0 | | -36.5 | -21 | 451 | No stop |
| 09 36 50 | --- | 21 30 40 | 44.5 | 114.6 | -3.0 | | -36.2 | 219 | 482 | 09 32 51 |
| 09 36 50 | J0037+2141 | 21 30 40 | 42.7 | 112.7 | -3.1 | | -36.6 | -20 | 482 | No stop |
| 09 38 20 | --- | 21 32 10 | 42.9 | 113.1 | -3.1 | | -36.5 | 70 | 494 | 09 36 51 |
| 09 38 20 | LP349-25 | 21 32 10 | 44.7 | 115.0 | -2.9 | | -36.1 | -21 | 494 | No stop |
| 09 42 20 | --- | 21 36 11 | 45.2 | 116.1 | -2.9 | | -35.7 | 219 | 524 | 09 38 21 |
| 09 43 00 | J0037+2141 | 21 36 51 | 43.5 | 114.3 | -3.0 | | -36.1 | 20 | 524 | 09 43 00 |
| 09 44 10 | --- | 21 38 01 | 43.7 | 114.6 | -3.0 | | -36.0 | 70 | 533 | 09 43 01 |
| 09 44 10 | LP349-25 | 21 38 01 | 45.5 | 116.6 | -2.8 | | -35.5 | -21 | 533 | No stop |
| 09 48 10 | --- | 21 42 02 | 46.0 | 117.7 | -2.8 | | -35.1 | 219 | 564 | 09 44 11 |
| 09 48 10 | J0037+2141 | 21 42 02 | 44.2 | 115.7 | -2.9 | | -35.7 | -20 | 564 | No stop |
| 09 49 40 | --- | 21 43 32 | 44.4 | 116.1 | -2.9 | | -35.5 | 70 | 576 | 09 48 11 |

Schedule for TORUN (Code Tr ) Page 4
new UCD -6cm

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 2 Mar 2019 Day 61 --- | | | | | | | | | | |
| 09 49 40 | LP349-25 | 21 43 32 | 46.2 | 118.1 | -2.8 | | -35.0 | -21 | 576 | No stop |
| 09 53 40 | --- | 21 47 33 | 46.7 | 119.2 | -2.7 | | -34.5 | 219 | 606 | 09 49 41 |
| 09 54 20 | J0037+2141 | 21 48 13 | 45.1 | 117.3 | -2.8 | | -35.1 | 20 | 606 | 09 54 20 |
| 09 55 30 | --- | 21 49 23 | 45.2 | 117.6 | -2.8 | | -35.0 | 70 | 615 | 09 54 21 |
| 09 55 30 | LP349-25 | 21 49 23 | 47.0 | 119.7 | -2.7 | | -34.4 | -20 | 615 | No stop |
| 09 59 30 | --- | 21 53 24 | 47.5 | 120.8 | -2.6 | | -33.9 | 220 | 646 | 09 55 31 |
| 09 59 30 | J0037+2141 | 21 53 24 | 45.7 | 118.7 | -2.7 | | -34.6 | -20 | 646 | No stop |
| 10 01 00 | --- | 21 54 54 | 45.9 | 119.1 | -2.7 | | -34.4 | 70 | 658 | 09 59 31 |
| 10 01 00 | LP349-25 | 21 54 54 | 47.7 | 121.3 | -2.6 | | -33.7 | -20 | 658 | No stop |
| 10 05 00 | --- | 21 58 55 | 48.2 | 122.4 | -2.5 | | -33.3 | 220 | 688 | 10 01 01 |
| 10 05 40 | J0037+2141 | 21 59 35 | 46.5 | 120.4 | -2.6 | | -33.9 | 20 | 688 | 10 05 40 |
| 10 06 50 | --- | 22 00 45 | 46.7 | 120.8 | -2.6 | | -33.8 | 70 | 697 | 10 05 41 |
| 10 06 50 | LP349-25 | 22 00 45 | 48.4 | 123.0 | -2.5 | | -33.0 | -20 | 697 | No stop |
| 10 10 50 | --- | 22 04 46 | 48.9 | 124.1 | -2.4 | | -32.5 | 220 | 728 | 10 06 51 |
| 10 10 50 | J0037+2141 | 22 04 46 | 47.2 | 121.9 | -2.6 | | -33.3 | -20 | 728 | No stop |
| 10 12 20 | --- | 22 06 16 | 47.4 | 122.3 | -2.5 | | -33.1 | 70 | 740 | 10 10 51 |
| 10 12 20 | LP349-25 | 22 06 16 | 49.1 | 124.6 | -2.4 | | -32.3 | -20 | 740 | No stop |
| 10 16 20 | --- | 22 10 16 | 49.6 | 125.8 | -2.3 | | -31.8 | 220 | 771 | 10 12 21 |
| 10 17 00 | J0037+2141 | 22 10 57 | 48.0 | 123.7 | -2.5 | | -32.6 | 20 | 771 | 10 17 00 |
| 10 18 10 | --- | 22 12 07 | 48.1 | 124.0 | -2.4 | | -32.4 | 70 | 779 | 10 17 01 |
| 10 18 10 | LP349-25 | 22 12 07 | 49.8 | 126.3 | -2.3 | | -31.6 | -20 | 779 | No stop |
| 10 22 10 | --- | 22 16 07 | 50.3 | 127.6 | -2.2 | | -31.0 | 220 | 810 | 10 18 11 |
| 10 22 10 | J0037+2141 | 22 16 07 | 48.6 | 125.2 | -2.4 | | -31.9 | -20 | 810 | No stop |
| 10 23 40 | --- | 22 17 38 | 48.8 | 125.7 | -2.3 | | -31.7 | 70 | 822 | 10 22 11 |
| 10 23 40 | LP349-25 | 22 17 38 | 50.5 | 128.0 | -2.2 | | -30.8 | -20 | 822 | No stop |
| 10 27 40 | --- | 22 21 38 | 51.0 | 129.3 | -2.1 | | -30.2 | 220 | 853 | 10 23 41 |
| 10 28 20 | J0037+2141 | 22 22 18 | 49.4 | 127.1 | -2.3 | | -31.1 | 20 | 853 | 10 28 20 |
| 10 29 30 | --- | 22 23 29 | 49.5 | 127.4 | -2.2 | | -30.9 | 70 | 862 | 10 28 21 |
| 10 29 30 | LP349-25 | 22 23 29 | 51.2 | 129.9 | -2.1 | | -29.9 | -20 | 862 | No stop |
| 10 33 30 | --- | 22 27 29 | 51.6 | 131.2 | -2.0 | | -29.3 | 220 | 892 | 10 29 31 |

Schedule for TORUN (Code Tr ) Page 5
new UCD -6cm

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 2 Mar 2019 Day 61 --- | | | | | | | | | | |
| 10 33 30 | J0037+2141 | 22 27 29 | 50.0 | 128.7 | -2.2 | | -30.3 | -20 | 892 | No stop |
| 10 35 00 | --- | 22 29 00 | 50.2 | 129.1 | -2.2 | | -30.1 | 70 | 904 | 10 33 31 |
| 10 35 00 | LP349-25 | 22 29 00 | 51.8 | 131.7 | -2.0 | | -29.0 | -20 | 904 | No stop |
| 10 39 00 | --- | 22 33 00 | 52.2 | 133.0 | -1.9 | | -28.4 | 220 | 935 | 10 35 01 |
| 10 39 40 | J0037+2141 | 22 33 40 | 50.7 | 130.6 | -2.1 | | -29.4 | 20 | 935 | 10 39 40 |
| 10 40 50 | --- | 22 34 50 | 50.8 | 131.0 | -2.1 | | -29.2 | 70 | 944 | 10 39 41 |
| 10 40 50 | LP349-25 | 22 34 50 | 52.4 | 133.6 | -1.9 | | -28.1 | -20 | 944 | No stop |
| 10 44 50 | --- | 22 38 51 | 52.9 | 135.0 | -1.8 | | -27.4 | 220 | 974 | 10 40 51 |
| 10 44 50 | J0037+2141 | 22 38 51 | 51.3 | 132.3 | -2.0 | | -28.6 | -19 | 974 | No stop |
| 10 46 20 | --- | 22 40 21 | 51.5 | 132.8 | -2.0 | | -28.3 | 71 | 986 | 10 44 51 |
| 10 46 20 | LP349-25 | 22 40 21 | 53.0 | 135.5 | -1.8 | | -27.1 | -20 | 986 | No stop |
| 10 50 20 | --- | 22 44 22 | 53.5 | 136.9 | -1.7 | | -26.4 | 220 | 1017 | 10 46 21 |
| 10 51 00 | J0037+2141 | 22 45 02 | 52.0 | 134.3 | -1.9 | | -27.6 | 20 | 1017 | 10 51 00 |
| 10 52 10 | --- | 22 46 12 | 52.1 | 134.7 | -1.9 | | -27.4 | 70 | 1026 | 10 51 01 |
| 10 52 10 | LP349-25 | 22 46 12 | 53.6 | 137.5 | -1.7 | | -26.0 | -20 | 1026 | No stop |
| 10 56 10 | --- | 22 50 13 | 54.0 | 138.9 | -1.6 | | -25.3 | 220 | 1056 | 10 52 11 |
| 10 56 50 | J0037+2141 | 22 50 53 | 52.6 | 136.3 | -1.8 | | -26.5 | 20 | 1056 | 10 56 50 |
| 11 00 00 | --- | 22 54 04 | 52.9 | 137.4 | -1.7 | | -26.0 | 190 | 1081 | 10 56 51 |

SETUP FILE INFORMATION:
NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

======== Setup file: sess119.C1024

Setup group: 12 Station: TORUN Total bit rate: 1024
Format: MARK5B Bits per sample: 2 Sample rate: 32.000
Number of channels: 16 DBE type: DBBC_DDC Speedup factor: 1.00

Disk used to record data.

```
  1st LO=   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
            4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
  Net SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF SB =         U         U         U         U         U         U         U         U
                  U         U         U         U         U         U         U         U
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
                RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
                  3         7         3         7         4         8         4         8
  BBC SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                 A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:   9  Setup file default.  Used with PCAL = off
  LO sum=   4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
            5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
  BBC fr=    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
             806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
  Bandwd=     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
              16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
   Matching frequency sets:   9

  Track assignments are:
   track1=  18, 26,  2, 10, 20, 28,  4, 12, 22, 30,  6, 14, 24, 32,  8, 16
   barrel=roll_off



 POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                        (B1950)             (J2000)             (Date)             (mas)

 * LP349-25          00 25 19.000426   * 00 27 55.926000     00 28 54.109595       0.00
                     22 02 57.56469    * 22 19 32.84000      22 25 44.00927        0.00

 * J0037+2141        00 34 45.636140   * 00 37 23.540800     00 38 22.125554       0.00
                     21 25 23.48404    * 21 41 53.12700      21 48 02.03990        0.00

 * 0017+200          00 17 02.119554   * 00 19 37.854497     00 20 35.561991       0.01
   J0019+2021        20 05 06.80760    * 20 21 45.64456      20 27 57.78150        0.00
   J0019+20          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                     GSFC 2016a X/S astro solution,  23452 observations.


EFFECT OF SOLAR CORONA

  The solar corona can cause unstable phases for sources too close to the Sun.
  SCHED provides warnings at individual scans for distances less than 10 degrees.
  The distance from the Sun to each source in this schedule is:
    Source         Sun distance (deg)
   LP349-25            38.0
   J0037+2141          39.1
   0017+200            35.3

  Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
```

```
that the Sun will cause amplitude reductions on the  longest VLBA baselines
at a solar distance of 60deg F^(-0.6) where F is in GHz.
For common VLBI bands, this is:
     1.6 GHz         45. deg
     2.3 GHz         36. deg
     5.0 GHz         23. deg
     8.4 GHz         17. deg
    15.0 GHz         12. deg
    22.0 GHz          9. deg
```

**eb068tr**

NGC3079 March 02-03,2019

PI: *Willem Baan*


```
Address:  ASTRON
          Postbus 2
          Dwingeloo
          The Netherlands

Phone:    +31-521-595-100
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Fax:
Phone during observation: +31-593-522-009
```


```
Observing mode: h2co line

Schedule for TORUN     (Code Tr )                                   Page   2
               NGC3079 March 02-03,2019
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Sat   2 Mar 2019   Day  61 ---

 Next scan frequencies:  4800.31  4800.31  4800.31  4800.31  4806.55  4806.55  4806.55  4806.55
                         4832.35  4832.35  4832.35  4832.35  4858.15  4858.15  4858.15  4858.15
 Next BBC frequencies:    600.31   600.31   600.31   600.31   606.55   606.55   606.55   606.55
                          632.35   632.35   632.35   632.35   658.15   658.15   658.15   658.15
 Next scan bandwidths:     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
                           16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00

16 30 00  J0957+5522   04 24 58  44.1  52.0 -5.6     -56.2     0        0   16 30 00
16 31 30  =4C55.17     04 26 28  44.3  52.2 -5.5     -56.4    90       12   16 30 01

16 31 30  NGC3079      04 26 28  43.9  51.3 -5.6     -56.1   -13       12   No stop
16 35 30  ---          04 30 29  44.4  51.8 -5.5     -56.6   227       42   16 31 31

16 35 30  J0957+5522   04 30 29  44.8  52.6 -5.5     -56.9   -13       42   No stop
16 37 00  =4C55.17     04 31 59  44.9  52.8 -5.4     -57.1    77       54   16 35 31

16 37 00  NGC3079      04 31 59  44.6  51.9 -5.5     -56.8   -13       54   No stop
16 41 00  ---          04 36 00  45.1  52.4 -5.5     -57.3   227       85   16 37 01

16 41 25  J0957+5522   04 36 25  45.5  53.3 -5.4     -57.7    12       85   16 41 25
16 42 55  =4C55.17     04 37 55  45.7  53.4 -5.4     -57.9    90       96   16 41 26

16 42 55  NGC3079      04 37 55  45.3  52.6 -5.4     -57.6   -13       96   No stop
16 46 55  ---          04 41 56  45.8  53.0 -5.4     -58.1   227      127   16 42 56

16 46 55  J0957+5522   04 41 56  46.1  53.8 -5.3     -58.4   -13      127   No stop
16 48 25  =4C55.17     04 43 26  46.3  54.0 -5.3     -58.6    77      138   16 46 56

16 48 25  NGC3079      04 43 26  46.0  53.2 -5.3     -58.3   -13      138   No stop
16 52 25  ---          04 47 27  46.4  53.6 -5.3     -58.8   227      169   16 48 26

16 52 50  J0957+5522   04 47 52  46.9  54.5 -5.2     -59.1    12      169   16 52 50
16 54 20  =4C55.17     04 49 22  47.1  54.6 -5.2     -59.3    90      181   16 52 51
```

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 54 20 | NGC3079 | 04 49 22 | 46.7 | 53.8 | -5.2 | -59.0 | -13 | 181 | No stop |
| 16 58 20 | --- | 04 53 23 | 47.2 | 54.2 | -5.2 | -59.6 | 227 | 212 | 16 54 21 |
| 16 58 20 | J0957+5522 | 04 53 23 | 47.5 | 55.1 | -5.1 | -59.8 | -13 | 212 | No stop |
| 16 59 50 | =4C55.17 | 04 54 53 | 47.7 | 55.2 | -5.1 | -60.0 | 77 | 223 | 16 58 21 |
| 16 59 50 | NGC3079 | 04 54 53 | 47.3 | 54.4 | -5.1 | -59.8 | -13 | 223 | No stop |
| 17 03 50 | --- | 04 58 53 | 47.8 | 54.8 | -5.1 | -60.3 | 227 | 254 | 16 59 51 |
| 17 04 15 | J0957+5522 | 04 59 18 | 48.3 | 55.7 | -5.0 | -60.6 | 12 | 254 | 17 04 15 |
| 17 05 45 | =4C55.17 | 05 00 49 | 48.5 | 55.9 | -5.0 | -60.8 | 90 | 265 | 17 04 16 |

Schedule for TORUN (Code Tr ) Page 3

NGC3079 March 02-03,2019

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Sat 2 Mar 2019 Day 61 --- | | | | | | | | | | |
| 17 05 45 | NGC3079 | 05 00 49 | 48.1 | 55.0 | -5.0 | | -60.5 | -13 | 265 | No stop |
| 17 09 45 | --- | 05 04 49 | 48.6 | 55.4 | -5.0 | | -61.0 | 227 | 296 | 17 05 46 |
| 17 09 45 | J0957+5522 | 05 04 49 | 49.0 | 56.3 | -4.9 | | -61.3 | -13 | 296 | No stop |
| 17 11 15 | =4C55.17 | 05 06 20 | 49.2 | 56.4 | -4.9 | | -61.5 | 77 | 308 | 17 09 46 |
| 17 11 15 | NGC3079 | 05 06 20 | 48.8 | 55.6 | -4.9 | | -61.2 | -13 | 308 | No stop |
| 17 15 15 | --- | 05 10 20 | 49.3 | 56.0 | -4.9 | | -61.7 | 227 | 338 | 17 11 16 |
| 17 15 40 | J0957+5522 | 05 10 45 | 49.7 | 56.9 | -4.8 | | -62.0 | 12 | 338 | 17 15 40 |
| 17 17 10 | =4C55.17 | 05 12 16 | 49.9 | 57.0 | -4.8 | | -62.2 | 90 | 350 | 17 15 41 |
| 17 17 10 | NGC3079 | 05 12 16 | 49.5 | 56.2 | -4.9 | | -62.0 | -13 | 350 | No stop |
| 17 21 10 | --- | 05 16 16 | 50.0 | 56.6 | -4.8 | | -62.5 | 227 | 381 | 17 17 11 |
| 17 21 10 | J0957+5522 | 05 16 16 | 50.4 | 57.5 | -4.7 | | -62.7 | -13 | 381 | No stop |
| 17 22 40 | =4C55.17 | 05 17 47 | 50.6 | 57.6 | -4.7 | | -62.9 | 77 | 392 | 17 21 11 |
| 17 22 40 | NGC3079 | 05 17 47 | 50.2 | 56.8 | -4.8 | | -62.7 | -13 | 392 | No stop |
| 17 26 40 | --- | 05 21 47 | 50.7 | 57.2 | -4.7 | | -63.2 | 227 | 423 | 17 22 41 |
| 17 27 05 | J0957+5522 | 05 22 12 | 51.2 | 58.1 | -4.6 | | -63.5 | 12 | 423 | 17 27 05 |
| 17 28 35 | =4C55.17 | 05 23 42 | 51.3 | 58.2 | -4.6 | | -63.7 | 90 | 435 | 17 27 06 |
| 17 28 35 | NGC3079 | 05 23 42 | 50.9 | 57.4 | -4.7 | | -63.5 | -13 | 435 | No stop |
| 17 32 35 | --- | 05 27 43 | 51.4 | 57.8 | -4.6 | | -64.0 | 227 | 465 | 17 28 36 |
| 17 32 35 | J0957+5522 | 05 27 43 | 51.9 | 58.6 | -4.5 | | -64.2 | -13 | 465 | No stop |
| 17 34 05 | =4C55.17 | 05 29 13 | 52.1 | 58.8 | -4.5 | | -64.4 | 77 | 477 | 17 32 36 |
| 17 34 05 | NGC3079 | 05 29 13 | 51.6 | 57.9 | -4.6 | | -64.2 | -13 | 477 | No stop |
| 17 38 05 | --- | 05 33 14 | 52.1 | 58.3 | -4.5 | | -64.7 | 227 | 508 | 17 34 06 |
| 17 38 30 | J0957+5522 | 05 33 39 | 52.6 | 59.2 | -4.4 | | -64.9 | 12 | 508 | 17 38 30 |
| 17 40 00 | =4C55.17 | 05 35 09 | 52.8 | 59.4 | -4.4 | | -65.1 | 90 | 519 | 17 38 31 |
| 17 40 00 | NGC3079 | 05 35 09 | 52.4 | 58.5 | -4.5 | | -64.9 | -13 | 519 | No stop |
| 17 44 00 | --- | 05 39 10 | 52.9 | 58.9 | -4.4 | | -65.5 | 227 | 550 | 17 40 01 |
| 17 44 00 | J0957+5522 | 05 39 10 | 53.3 | 59.8 | -4.3 | | -65.6 | -13 | 550 | No stop |
| 17 45 30 | =4C55.17 | 05 40 40 | 53.5 | 59.9 | -4.3 | | -65.8 | 77 | 562 | 17 44 01 |
| 17 45 30 | NGC3079 | 05 40 40 | 53.1 | 59.0 | -4.4 | | -65.6 | -13 | 562 | No stop |
| 17 49 30 | --- | 05 44 41 | 53.6 | 59.4 | -4.3 | | -66.2 | 227 | 592 | 17 45 31 |

Schedule for TORUN (Code Tr ) Page 4

NGC3079 March 02-03,2019

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | LST | Start / Stop EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 2 Mar 2019 Day 61 --- | | | | | | | | | | |
| 17 49 55 | J0957+5522 | 05 45 06 | 54.1 | 60.3 | -4.2 | | -66.4 | 12 | 592 | 17 49 55 |
| 17 51 25 | =4C55.17 | 05 46 36 | 54.3 | 60.5 | -4.2 | | -66.6 | 90 | 604 | 17 49 56 |
| 17 51 25 | NGC3079 | 05 46 36 | 53.9 | 59.6 | -4.3 | | -66.4 | -13 | 604 | No stop |
| 17 55 25 | --- | 05 50 37 | 54.4 | 60.0 | -4.2 | | -66.9 | 227 | 635 | 17 51 26 |
| 17 55 25 | J0957+5522 | 05 50 37 | 54.8 | 60.9 | -4.1 | | -67.1 | -13 | 635 | No stop |
| 17 56 55 | =4C55.17 | 05 52 07 | 55.0 | 61.0 | -4.1 | | -67.3 | 77 | 646 | 17 55 26 |
| 17 56 55 | NGC3079 | 05 52 07 | 54.6 | 60.1 | -4.2 | | -67.1 | -13 | 646 | No stop |
| 18 00 55 | --- | 05 56 08 | 55.1 | 60.5 | -4.1 | | -67.6 | 227 | 677 | 17 56 56 |
| 18 01 20 | J0957+5522 | 05 56 33 | 55.6 | 61.4 | -4.0 | | -67.8 | 11 | 677 | 18 01 20 |
| 18 02 50 | =4C55.17 | 05 58 03 | 55.8 | 61.6 | -4.0 | | -68.0 | 90 | 688 | 18 01 21 |
| 18 02 50 | NGC3079 | 05 58 03 | 55.4 | 60.7 | -4.1 | | -67.9 | -13 | 688 | No stop |
| 18 06 50 | --- | 06 02 04 | 55.9 | 61.1 | -4.0 | | -68.4 | 227 | 719 | 18 02 51 |
| 18 06 50 | J0957+5522 | 06 02 04 | 56.3 | 62.0 | -3.9 | | -68.5 | -14 | 719 | No stop |
| 18 08 20 | =4C55.17 | 06 03 34 | 56.5 | 62.1 | -3.9 | | -68.7 | 76 | 731 | 18 06 51 |
| 18 08 20 | NGC3079 | 06 03 34 | 56.1 | 61.2 | -4.0 | | -68.6 | -13 | 731 | No stop |
| 18 12 20 | --- | 06 07 35 | 56.6 | 61.6 | -3.9 | | -69.1 | 227 | 762 | 18 08 21 |
| 18 12 45 | J0957+5522 | 06 08 00 | 57.1 | 62.5 | -3.8 | | -69.3 | 11 | 762 | 18 12 45 |
| 18 14 15 | =4C55.17 | 06 09 30 | 57.3 | 62.6 | -3.8 | | -69.5 | 90 | 773 | 18 12 46 |
| 18 14 15 | NGC3079 | 06 09 30 | 56.9 | 61.7 | -3.9 | | -69.4 | -13 | 773 | No stop |
| 18 18 15 | --- | 06 13 31 | 57.4 | 62.1 | -3.8 | | -69.9 | 227 | 804 | 18 14 16 |
| 18 18 15 | J0957+5522 | 06 13 31 | 57.9 | 63.0 | -3.8 | | -70.0 | -14 | 804 | No stop |
| 18 19 45 | =4C55.17 | 06 15 01 | 58.1 | 63.2 | -3.7 | | -70.2 | 76 | 815 | 18 18 16 |
| 18 19 45 | NGC3079 | 06 15 01 | 57.6 | 62.2 | -3.8 | | -70.1 | -13 | 815 | No stop |
| 18 23 45 | --- | 06 19 02 | 58.1 | 62.6 | -3.7 | | -70.6 | 227 | 846 | 18 19 46 |
| 18 24 10 | J0957+5522 | 06 19 27 | 58.7 | 63.6 | -3.7 | | -70.8 | 11 | 846 | 18 24 10 |
| 18 25 40 | =4C55.17 | 06 20 57 | 58.9 | 63.7 | -3.6 | | -71.0 | 90 | 858 | 18 24 11 |
| 18 25 40 | NGC3079 | 06 20 57 | 58.4 | 62.8 | -3.7 | | -70.9 | -14 | 858 | No stop |
| 18 29 40 | --- | 06 24 58 | 58.9 | 63.1 | -3.6 | | -71.4 | 226 | 888 | 18 25 41 |
| 18 29 40 | J0957+5522 | 06 24 58 | 59.4 | 64.0 | -3.6 | | -71.5 | -14 | 888 | No stop |
| 18 31 10 | =4C55.17 | 06 26 28 | 59.6 | 64.2 | -3.5 | | -71.7 | 76 | 900 | 18 29 41 |

Schedule for TORUN (Code Tr ) Page 5

NGC3079 March 02-03,2019

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | LST | Start / Stop EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 2 Mar 2019 Day 61 --- | | | | | | | | | | |
| 18 31 10 | NGC3079 | 06 26 28 | 59.1 | 63.2 | -3.6 | | -71.6 | -14 | 900 | No stop |
| 18 35 10 | --- | 06 30 28 | 59.7 | 63.6 | -3.5 | | -72.1 | 226 | 931 | 18 31 11 |
| 18 35 35 | J0957+5522 | 06 30 53 | 60.2 | 64.6 | -3.5 | | -72.2 | 11 | 931 | 18 35 35 |
| 18 37 05 | =4C55.17 | 06 32 24 | 60.4 | 64.7 | -3.4 | | -72.4 | 90 | 942 | 18 35 36 |
| 18 37 05 | NGC3079 | 06 32 24 | 59.9 | 63.8 | -3.5 | | -72.4 | -14 | 942 | No stop |
| 18 41 05 | --- | 06 36 24 | 60.5 | 64.1 | -3.4 | | -72.9 | 226 | 973 | 18 37 06 |
| 18 41 05 | J0957+5522 | 06 36 24 | 61.0 | 65.0 | -3.4 | | -73.0 | -14 | 973 | No stop |
| 18 42 35 | =4C55.17 | 06 37 55 | 61.2 | 65.2 | -3.4 | | -73.2 | 76 | 985 | 18 41 06 |
| 18 42 35 | NGC3079 | 06 37 55 | 60.7 | 64.2 | -3.4 | | -73.1 | -14 | 985 | No stop |
| 18 46 35 | --- | 06 41 55 | 61.2 | 64.6 | -3.4 | | -73.6 | 226 | 1015 | 18 42 36 |
| 18 47 00 | J0957+5522 | 06 42 20 | 61.8 | 65.6 | -3.3 | | -73.7 | 11 | 1015 | 18 47 00 |
| 18 48 30 | =4C55.17 | 06 43 51 | 62.0 | 65.7 | -3.3 | | -73.9 | 90 | 1027 | 18 47 01 |
| 18 48 30 | NGC3079 | 06 43 51 | 61.5 | 64.7 | -3.3 | | -73.9 | -14 | 1027 | No stop |
| 18 52 30 | --- | 06 47 51 | 62.0 | 65.0 | -3.3 | | -74.4 | 226 | 1058 | 18 48 31 |
| 18 52 30 | J0957+5522 | 06 47 51 | 62.5 | 66.0 | -3.2 | | -74.5 | -14 | 1058 | No stop |
| 18 54 00 | =4C55.17 | 06 49 22 | 62.7 | 66.1 | -3.2 | | -74.7 | 76 | 1069 | 18 52 31 |
| 18 54 00 | NGC3079 | 06 49 22 | 62.2 | 65.2 | -3.2 | | -74.6 | -14 | 1069 | No stop |
| 18 58 00 | --- | 06 53 22 | 62.8 | 65.5 | -3.2 | | -75.2 | 226 | 1100 | 18 54 01 |
| 18 58 25 | J0957+5522 | 06 53 47 | 63.3 | 66.5 | -3.1 | | -75.3 | 11 | 1100 | 18 58 25 |
| 18 59 55 | =4C55.17 | 06 55 17 | 63.5 | 66.6 | -3.1 | | -75.5 | 90 | 1112 | 18 58 26 |
| 18 59 55 | NGC3079 | 06 55 17 | 63.0 | 65.6 | -3.1 | | -75.4 | -14 | 1112 | No stop |
| 19 03 55 | --- | 06 59 18 | 63.6 | 65.9 | -3.1 | | -76.0 | 226 | 1142 | 18 59 56 |
| 19 03 55 | J0957+5522 | 06 59 18 | 64.1 | 66.9 | -3.0 | | -76.0 | -14 | 1142 | No stop |
| 19 05 25 | =4C55.17 | 07 00 48 | 64.3 | 67.1 | -3.0 | | -76.2 | 76 | 1154 | 19 03 56 |
| 19 05 25 | NGC3079 | 07 00 48 | 63.8 | 66.1 | -3.0 | | -76.2 | -14 | 1154 | No stop |
| 19 09 25 | --- | 07 04 49 | 64.3 | 66.4 | -3.0 | | -76.8 | 226 | 1185 | 19 05 26 |
| 19 09 50 | J0957+5522 | 07 05 14 | 64.9 | 67.4 | -2.9 | | -76.8 | 11 | 1185 | 19 09 50 |
| 19 11 20 | =4C55.17 | 07 06 44 | 65.1 | 67.5 | -2.9 | | -77.0 | 90 | 1196 | 19 09 51 |
| 19 11 20 | NGC3079 | 07 06 44 | 64.6 | 66.5 | -2.9 | | -77.0 | -14 | 1196 | No stop |
| 19 15 20 | --- | 07 10 45 | 65.1 | 66.8 | -2.9 | | -77.6 | 226 | 1227 | 19 11 21 |

Schedule for TORUN (Code Tr ) Page 6

NGC3079 March 02-03,2019

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | LST | Start / Stop EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 2 Mar 2019 Day 61 --- | | | | | | | | | | |
| 19 15 20 | J0957+5522 | 07 10 45 | 65.7 | 67.8 | -2.8 | | -77.6 | -14 | 1227 | No stop |
| 19 16 50 | =4C55.17 | 07 12 15 | 65.9 | 67.9 | -2.8 | | -77.8 | 76 | 1238 | 19 15 21 |
| 19 16 50 | NGC3079 | 07 12 15 | 65.4 | 66.9 | -2.9 | | -77.8 | -14 | 1238 | No stop |
| 19 20 50 | --- | 07 16 16 | 65.9 | 67.2 | -2.8 | | -78.4 | 226 | 1269 | 19 16 51 |
| 19 21 15 | J0957+5522 | 07 16 41 | 66.5 | 68.2 | -2.7 | | -78.4 | 11 | 1269 | 19 21 15 |
| 19 22 45 | =4C55.17 | 07 18 11 | 66.7 | 68.4 | -2.7 | | -78.6 | 90 | 1281 | 19 21 16 |
| 19 22 45 | NGC3079 | 07 18 11 | 66.2 | 67.3 | -2.8 | | -78.6 | -14 | 1281 | No stop |
| 19 26 45 | --- | 07 22 12 | 66.7 | 67.6 | -2.7 | | -79.2 | 226 | 1312 | 19 22 46 |
| 19 26 45 | J0957+5522 | 07 22 12 | 67.3 | 68.6 | -2.6 | | -79.2 | -14 | 1312 | No stop |
| 19 28 15 | =4C55.17 | 07 23 42 | 67.5 | 68.7 | -2.6 | | -79.4 | 76 | 1323 | 19 26 46 |
| 19 28 15 | NGC3079 | 07 23 42 | 66.9 | 67.7 | -2.7 | | -79.4 | -14 | 1323 | No stop |
| 19 32 15 | --- | 07 27 43 | 67.5 | 68.0 | -2.6 | | -80.0 | 226 | 1354 | 19 28 16 |
| 19 38 25 | 4C39.25 | 07 33 54 | 65.9 | 114.4 | -1.9 | | -44.7 | 265 | 1354 | 19 38 25 |
| 19 43 25 | --- | 07 38 55 | 66.6 | 116.1 | -1.8 | | -43.9 | 300 | 1392 | 19 38 26 |
| 19 45 30 | J0957+5522 | 07 41 00 | 69.9 | 69.8 | -2.3 | | -81.9 | 17 | 1392 | 19 45 30 |
| 19 47 00 | =4C55.17 | 07 42 30 | 70.1 | 69.9 | -2.3 | | -82.1 | 90 | 1404 | 19 45 31 |
| 19 47 00 | NGC3079 | 07 42 30 | 69.6 | 68.8 | -2.3 | | -82.3 | -14 | 1404 | No stop |
| 19 51 00 | --- | 07 46 31 | 70.1 | 69.1 | -2.3 | | -82.9 | 226 | 1435 | 19 47 01 |
| 19 51 00 | J0957+5522 | 07 46 31 | 70.7 | 70.2 | -2.2 | | -82.7 | -14 | 1435 | No stop |
| 19 52 30 | =4C55.17 | 07 48 01 | 70.9 | 70.2 | -2.2 | | -83.0 | 76 | 1446 | 19 51 01 |
| 19 52 30 | NGC3079 | 07 48 01 | 70.3 | 69.1 | -2.3 | | -83.1 | -14 | 1446 | No stop |
| 19 56 30 | --- | 07 52 02 | 70.9 | 69.3 | -2.2 | | -83.8 | 226 | 1477 | 19 52 31 |
| 19 56 55 | J0957+5522 | 07 52 27 | 71.5 | 70.5 | -2.1 | | -83.7 | 10 | 1477 | 19 56 55 |
| 19 58 25 | =4C55.17 | 07 53 57 | 71.7 | 70.5 | -2.1 | | -83.9 | 90 | 1488 | 19 56 56 |
| 19 58 25 | NGC3079 | 07 53 57 | 71.2 | 69.4 | -2.2 | | -84.1 | -14 | 1488 | No stop |
| 20 02 25 | --- | 07 57 58 | 71.7 | 69.6 | -2.1 | | -84.7 | 226 | 1519 | 19 58 26 |
| 20 02 25 | J0957+5522 | 07 57 58 | 72.3 | 70.7 | -2.0 | | -84.5 | -15 | 1519 | No stop |
| 20 03 55 | =4C55.17 | 07 59 28 | 72.5 | 70.8 | -2.0 | | -84.8 | 75 | 1531 | 20 02 26 |
| 20 03 55 | NGC3079 | 07 59 28 | 71.9 | 69.6 | -2.1 | | -85.0 | -15 | 1531 | No stop |
| 20 07 55 | --- | 08 03 29 | 72.5 | 69.8 | -2.0 | | -85.7 | 225 | 1562 | 20 03 56 |

Schedule for TORUN (Code Tr ) Page 7

NGC3079 March 02-03,2019

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | LST | Start / Stop EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 2 Mar 2019 Day 61 --- | | | | | | | | | | |
| 20 08 20 | J0957+5522 | 08 03 54 | 73.2 | 71.0 | -1.9 | | -85.5 | 10 | 1562 | 20 08 20 |
| 20 09 50 | =4C55.17 | 08 05 24 | 73.4 | 71.0 | -1.9 | | -85.8 | 90 | 1573 | 20 08 21 |
| 20 09 50 | NGC3079 | 08 05 24 | 72.8 | 69.9 | -2.0 | | -86.0 | -15 | 1573 | No stop |
| 20 13 50 | --- | 08 09 25 | 73.3 | 70.0 | -1.9 | | -86.7 | 225 | 1604 | 20 09 51 |
| 20 13 50 | J0957+5522 | 08 09 25 | 73.9 | 71.2 | -1.8 | | -86.5 | -15 | 1604 | No stop |
| 20 15 20 | =4C55.17 | 08 10 55 | 74.1 | 71.2 | -1.8 | | -86.7 | 75 | 1615 | 20 13 51 |
| 20 15 20 | NGC3079 | 08 10 55 | 73.6 | 70.0 | -1.9 | | -87.0 | -15 | 1615 | No stop |
| 20 19 20 | --- | 08 14 56 | 74.1 | 70.1 | -1.8 | | -87.7 | 225 | 1646 | 20 15 21 |
| 20 19 45 | J0957+5522 | 08 15 21 | 74.8 | 71.3 | -1.7 | | -87.5 | 10 | 1646 | 20 19 45 |
| 20 21 15 | =4C55.17 | 08 16 51 | 75.0 | 71.4 | -1.7 | | -87.8 | 90 | 1658 | 20 19 46 |
| 20 21 15 | NGC3079 | 08 16 51 | 74.4 | 70.2 | -1.8 | | -88.1 | -15 | 1658 | No stop |
| 20 25 15 | --- | 08 20 52 | 75.0 | 70.2 | -1.7 | | -88.9 | 225 | 1688 | 20 21 16 |
| 20 25 15 | J0957+5522 | 08 20 52 | 75.6 | 71.4 | -1.6 | | -88.6 | -15 | 1688 | No stop |
| 20 26 45 | =4C55.17 | 08 22 22 | 75.8 | 71.5 | -1.6 | | -88.9 | 75 | 1700 | 20 25 16 |
| 20 26 45 | NGC3079 | 08 22 22 | 75.2 | 70.2 | -1.7 | | -89.2 | -15 | 1700 | No stop |
| 20 30 45 | --- | 08 26 22 | 75.7 | 70.2 | -1.6 | | -90.0 | 225 | 1731 | 20 26 46 |
| 20 31 15 | J0957+5522 | 08 26 52 | 76.4 | 71.5 | -1.5 | | -89.8 | 15 | 1731 | 20 31 15 |
| 20 32 45 | =4C55.17 | 08 28 23 | 76.6 | 71.5 | -1.5 | | -90.1 | 90 | 1742 | 20 31 16 |
| 20 32 45 | NGC3079 | 08 28 23 | 76.0 | 70.2 | -1.6 | | -90.4 | -15 | 1742 | No stop |
| 20 36 45 | --- | 08 32 23 | 76.6 | 70.2 | -1.5 | | -91.2 | 225 | 1773 | 20 32 46 |
| 20 36 45 | J0957+5522 | 08 32 23 | 77.2 | 71.5 | -1.4 | | -90.9 | -15 | 1773 | No stop |
| 20 38 15 | =4C55.17 | 08 33 54 | 77.4 | 71.4 | -1.4 | | -91.2 | 75 | 1785 | 20 36 46 |
| 20 38 15 | NGC3079 | 08 33 54 | 76.8 | 70.2 | -1.5 | | -91.6 | -15 | 1785 | No stop |
| 20 42 15 | --- | 08 37 54 | 77.4 | 70.1 | -1.4 | | -92.5 | 225 | 1815 | 20 38 16 |
| 20 42 45 | J0957+5522 | 08 38 24 | 78.1 | 71.4 | -1.3 | | -92.3 | 15 | 1815 | 20 42 45 |
| 20 44 15 | =4C55.17 | 08 39 55 | 78.3 | 71.3 | -1.3 | | -92.6 | 90 | 1827 | 20 42 46 |
| 20 44 15 | NGC3079 | 08 39 55 | 77.6 | 70.0 | -1.4 | | -93.0 | -15 | 1827 | No stop |
| 20 48 15 | --- | 08 43 55 | 78.2 | 69.9 | -1.3 | | -94.0 | 225 | 1858 | 20 44 16 |
| 20 48 15 | J0957+5522 | 08 43 55 | 78.8 | 71.2 | -1.3 | | -93.6 | -15 | 1858 | No stop |
| 20 49 45 | =4C55.17 | 08 45 26 | 79.1 | 71.1 | -1.2 | | -94.0 | 75 | 1869 | 20 48 16 |

Schedule for TORUN (Code Tr ) Page 8

NGC3079 March 02-03,2019

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | LST | Start / Stop EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 2 Mar 2019 Day 61 --- | | | | | | | | | | |
| 20 49 45 | NGC3079 | 08 45 26 | 78.4 | 69.8 | -1.3 | | -94.3 | -15 | 1869 | No stop |
| 20 53 45 | --- | 08 49 26 | 79.0 | 69.5 | -1.2 | | -95.4 | 225 | 1900 | 20 49 46 |
| 20 54 15 | J0957+5522 | 08 49 56 | 79.7 | 70.8 | -1.2 | | -95.2 | 15 | 1900 | 20 54 15 |
| 20 55 45 | =4C55.17 | 08 51 27 | 79.9 | 70.7 | -1.1 | | -95.6 | 90 | 1912 | 20 54 16 |
| 20 55 45 | NGC3079 | 08 51 27 | 79.3 | 69.4 | -1.2 | | -96.0 | -15 | 1912 | No stop |
| 20 59 45 | --- | 08 55 27 | 79.8 | 69.0 | -1.1 | | -97.1 | 225 | 1942 | 20 55 46 |
| 20 59 45 | J0957+5522 | 08 55 27 | 80.5 | 70.3 | -1.1 | | -96.8 | -15 | 1942 | No stop |
| 21 01 15 | =4C55.17 | 08 56 57 | 80.7 | 70.2 | -1.0 | | -97.2 | 75 | 1954 | 20 59 46 |
| 21 01 15 | NGC3079 | 08 56 57 | 80.0 | 68.9 | -1.1 | | -97.6 | -15 | 1954 | No stop |
| 21 05 15 | --- | 09 00 58 | 80.6 | 68.4 | -1.0 | | -98.9 | 225 | 1985 | 21 01 16 |
| 21 05 45 | J0957+5522 | 09 01 28 | 81.3 | 69.6 | -1.0 | | -98.7 | 15 | 1985 | 21 05 45 |
| 21 07 15 | =4C55.17 | 09 02 58 | 81.5 | 69.4 | -0.9 | | -99.3 | 90 | 1996 | 21 05 46 |
| 21 07 15 | NGC3079 | 09 02 58 | 80.9 | 68.1 | -1.0 | | -99.6 | -15 | 1996 | No stop |
| 21 11 15 | --- | 09 06 59 | 81.4 | 67.5 | -0.9 | | -101.1 | 225 | 2027 | 21 07 16 |
| 21 11 15 | J0957+5522 | 09 06 59 | 82.1 | 68.7 | -0.9 | | -100.8 | -15 | 2027 | No stop |
| 21 12 45 | =4C55.17 | 09 08 29 | 82.3 | 68.4 | -0.8 | | -101.4 | 75 | 2038 | 21 11 16 |
| 21 12 45 | NGC3079 | 09 08 29 | 81.7 | 67.2 | -0.9 | | -101.7 | -15 | 2038 | No stop |
| 21 16 45 | --- | 09 12 30 | 82.2 | 66.3 | -0.8 | | -103.4 | 225 | 2069 | 21 12 46 |
| 21 17 15 | J0957+5522 | 09 13 00 | 82.9 | 67.3 | -0.8 | | -103.4 | 15 | 2069 | 21 17 15 |
| 21 18 45 | =4C55.17 | 09 14 30 | 83.1 | 66.9 | -0.7 | | -104.1 | 90 | 2081 | 21 17 16 |
| 21 18 45 | NGC3079 | 09 14 30 | 82.5 | 65.8 | -0.8 | | -104.3 | -15 | 2081 | No stop |
| 21 22 45 | --- | 09 18 31 | 83.0 | 64.6 | -0.7 | | -106.3 | 225 | 2112 | 21 18 46 |
| 21 22 45 | J0957+5522 | 09 18 31 | 83.7 | 65.6 | -0.7 | | -106.2 | -15 | 2112 | No stop |
| 21 24 15 | =4C55.17 | 09 20 01 | 83.9 | 65.0 | -0.6 | | -107.1 | 75 | 2123 | 21 22 46 |
| 21 24 15 | NGC3079 | 09 20 01 | 83.2 | 64.1 | -0.7 | | -107.1 | -14 | 2123 | No stop |
| 21 28 15 | --- | 09 24 02 | 83.8 | 62.5 | -0.7 | | -109.5 | 226 | 2154 | 21 24 16 |
| 21 28 45 | J0957+5522 | 09 24 32 | 84.5 | 63.0 | -0.6 | | -110.0 | 15 | 2154 | 21 28 45 |
| 21 30 15 | =4C55.17 | 09 26 02 | 84.7 | 62.2 | -0.5 | | -111.1 | 90 | 2165 | 21 28 46 |
| 21 30 15 | NGC3079 | 09 26 02 | 84.0 | 61.6 | -0.6 | | -110.8 | -14 | 2165 | No stop |
| 21 34 15 | --- | 09 30 03 | 84.6 | 59.4 | -0.6 | | -113.8 | 226 | 2196 | 21 30 16 |

Schedule for TORUN (Code Tr ) Page 9

NGC3079 March 02-03,2019

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Sat 2 Mar 2019 Day 61 --- | | | | | | | | | | |
| 21 34 15 | J0957+5522 | 09 30 03 | 85.2 | 59.6 | -0.5 | | -114.5 | -15 | 2196 | No stop |
| 21 35 45 | =4C55.17 | 09 31 33 | 85.4 | 58.5 | -0.5 | | -115.9 | 75 | 2208 | 21 34 16 |
| 21 35 45 | NGC3079 | 09 31 33 | 84.8 | 58.5 | -0.5 | | -115.1 | -14 | 2208 | No stop |
| 21 39 45 | --- | 09 35 34 | 85.3 | 55.5 | -0.5 | | -118.8 | 226 | 2238 | 21 35 46 |
| 21 40 15 | J0957+5522 | 09 36 04 | 86.0 | 54.4 | -0.4 | | -120.9 | 15 | 2238 | 21 40 15 |
| 21 41 45 | =4C55.17 | 09 37 34 | 86.2 | 52.8 | -0.4 | | -122.9 | 90 | 2250 | 21 40 16 |
| 21 41 45 | NGC3079 | 09 37 34 | 85.5 | 53.8 | -0.4 | | -121.0 | -14 | 2250 | No stop |
| 21 45 45 | --- | 09 41 35 | 86.0 | 49.6 | -0.4 | | -126.0 | 226 | 2281 | 21 41 46 |
| 21 45 45 | J0957+5522 | 09 41 35 | 86.6 | 47.4 | -0.3 | | -129.1 | -19 | 2281 | No stop |
| 21 47 15 | =4C55.17 | 09 43 05 | 86.8 | 45.0 | -0.3 | | -131.8 | 71 | 2292 | 21 45 46 |
| 21 47 15 | NGC3079 | 09 43 05 | 86.1 | 47.7 | -0.3 | | -128.2 | -19 | 2292 | No stop |
| 21 51 15 | --- | 09 47 06 | 86.6 | 41.8 | -0.3 | | -134.9 | 221 | 2323 | 21 47 16 |
| 21 51 45 | J0957+5522 | 09 47 36 | 87.2 | 35.9 | -0.2 | | -141.8 | 4 | 2323 | 21 51 45 |
| 21 53 15 | =4C55.17 | 09 49 06 | 87.4 | 32.3 | -0.2 | | -145.7 | 90 | 2335 | 21 51 46 |
| 21 53 15 | NGC3079 | 09 49 06 | 86.8 | 38.2 | -0.2 | | -138.9 | -26 | 2335 | No stop |
| 21 57 15 | --- | 09 53 07 | 87.1 | 29.7 | -0.2 | | -148.3 | 214 | 2365 | 21 53 16 |
| 21 57 15 | J0957+5522 | 09 53 07 | 87.6 | 20.6 | -0.1 | | -158.2 | -36 | 2365 | No stop |
| 21 58 45 | =4C55.17 | 09 54 37 | 87.7 | 15.6 | -0.1 | | -163.5 | 54 | 2377 | 21 57 16 |
| 21 58 45 | NGC3079 | 09 54 37 | 87.2 | 26.0 | -0.1 | | -152.3 | -33 | 2377 | No stop |
| 22 02 45 | --- | 09 58 38 | 87.4 | 14.7 | -0.1 | | -164.3 | 207 | 2408 | 21 58 46 |
| 22 03 15 | J0957+5522 | 09 59 08 | 87.8 | -0.7 | 0.0 | | 179.3 | -17 | 2408 | 22 03 15 |
| 22 04 45 | =4C55.17 | 10 00 38 | 87.8 | -6.2 | 0.0 | | 173.4 | 73 | 2419 | 22 03 16 |
| 22 04 45 | NGC3079 | 10 00 38 | 87.5 | 8.5 | -0.0 | | -171.0 | -40 | 2419 | No stop |
| 22 08 45 | --- | 10 04 39 | 87.5 | -4.5 | 0.0 | | 175.3 | 200 | 2450 | 22 04 46 |
| 22 08 45 | J0957+5522 | 10 04 39 | 87.7 | -20.2 | 0.1 | | 158.6 | -51 | 2450 | No stop |
| 22 10 15 | =4C55.17 | 10 06 09 | 87.6 | -24.9 | 0.1 | | 153.6 | 39 | 2462 | 22 08 46 |
| 22 10 15 | NGC3079 | 10 06 09 | 87.5 | -9.3 | 0.0 | | 170.1 | -42 | 2462 | No stop |
| 22 14 15 | --- | 10 10 09 | 87.3 | -21.3 | 0.1 | | 157.3 | 198 | 2492 | 22 10 16 |
| 22 14 45 | J0957+5522 | 10 10 39 | 87.2 | -36.8 | 0.2 | | 140.8 | -17 | 2492 | 22 14 45 |
| 22 16 15 | =4C55.17 | 10 12 10 | 87.1 | -40.0 | 0.2 | | 137.3 | 73 | 2504 | 22 14 46 |

Schedule for TORUN (Code Tr ) Page 10

NGC3079 March 02-03,2019

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 2 Mar 2019 Day 61 --- | | | | | | | | | | |
| 22 16 15 | NGC3079 | 10 12 10 | 87.2 | -26.6 | 0.1 | | 151.6 | -39 | 2504 | No stop |
| 22 20 15 | --- | 10 16 10 | 86.9 | -35.8 | 0.2 | | 141.6 | 201 | 2535 | 22 16 16 |
| 22 20 15 | J0957+5522 | 10 16 10 | 86.7 | -47.2 | 0.3 | | 129.3 | -40 | 2535 | No stop |
| 22 21 45 | =4C55.17 | 10 17 41 | 86.5 | -49.4 | 0.3 | | 126.8 | 50 | 2546 | 22 20 16 |
| 22 21 45 | NGC3079 | 10 17 41 | 86.7 | -38.7 | 0.2 | | 138.4 | -35 | 2546 | No stop |
| 22 25 45 | --- | 10 21 41 | 86.3 | -45.3 | 0.3 | | 131.0 | 205 | 2577 | 22 21 46 |
| 22 26 15 | J0957+5522 | 10 22 11 | 86.0 | -54.8 | 0.4 | | 120.5 | -4 | 2577 | 22 26 15 |
| 22 27 45 | =4C55.17 | 10 23 42 | 85.8 | -56.3 | 0.4 | | 118.7 | 86 | 2588 | 22 26 16 |
| 22 27 45 | NGC3079 | 10 23 42 | 86.1 | -48.0 | 0.3 | | 127.8 | -30 | 2588 | No stop |
| 22 31 45 | --- | 10 27 42 | 85.7 | -52.6 | 0.4 | | 122.5 | 210 | 2619 | 22 27 46 |
| 22 31 45 | J0957+5522 | 10 27 42 | 85.3 | -59.6 | 0.5 | | 114.6 | -30 | 2619 | No stop |
| 22 33 15 | =4C55.17 | 10 29 13 | 85.1 | -60.6 | 0.5 | | 113.3 | 60 | 2631 | 22 31 46 |
| 22 33 15 | NGC3079 | 10 29 13 | 85.5 | -54.0 | 0.4 | | 120.7 | -27 | 2631 | No stop |
| 22 37 15 | --- | 10 33 13 | 85.0 | -57.3 | 0.5 | | 116.6 | 213 | 2662 | 22 33 16 |
| 22 37 45 | J0957+5522 | 10 33 43 | 84.5 | -63.2 | 0.6 | | 109.8 | 3 | 2662 | 22 37 45 |
| 22 39 15 | =4C55.17 | 10 35 14 | 84.3 | -63.9 | 0.6 | | 108.8 | 90 | 2673 | 22 37 46 |
| 22 39 15 | NGC3079 | 10 35 14 | 84.7 | -58.6 | 0.5 | | 114.9 | -25 | 2673 | No stop |
| 22 43 15 | --- | 10 39 14 | 84.2 | -61.0 | 0.6 | | 111.7 | 215 | 2704 | 22 39 16 |
| 22 43 15 | J0957+5522 | 10 39 14 | 83.7 | -65.5 | 0.7 | | 106.3 | -24 | 2704 | No stop |
| 22 44 45 | =4C55.17 | 10 40 44 | 83.5 | -66.1 | 0.7 | | 105.5 | 66 | 2715 | 22 43 16 |
| 22 44 45 | NGC3079 | 10 40 44 | 84.0 | -61.7 | 0.6 | | 110.7 | -23 | 2715 | No stop |
| 22 48 45 | --- | 10 44 45 | 83.5 | -63.4 | 0.7 | | 108.1 | 217 | 2746 | 22 44 46 |
| 22 54 35 | 3C345 | 10 50 36 | 31.7 | 64.6 | -5.9 | | -44.9 | 79 | 2746 | 22 54 35 |
| 22 59 35 | --- | 10 55 37 | 32.4 | 65.4 | -5.8 | | -45.2 | 300 | 2785 | 22 54 36 |
| 23 05 35 | J0957+5522 | 11 01 38 | 80.6 | -70.2 | 1.0 | | 97.0 | 74 | 2785 | 23 05 35 |
| 23 07 05 | =4C55.17 | 11 03 08 | 80.4 | -70.4 | 1.1 | | 96.6 | 90 | 2796 | 23 05 36 |
| 23 07 05 | NGC3079 | 11 03 08 | 80.9 | -68.1 | 1.0 | | 99.8 | -19 | 2796 | No stop |
| 23 11 05 | --- | 11 07 09 | 80.4 | -68.6 | 1.1 | | 98.4 | 221 | 2827 | 23 07 06 |
| 23 11 05 | J0957+5522 | 11 07 09 | 79.8 | -70.7 | 1.1 | | 95.4 | -18 | 2827 | No stop |
| 23 12 35 | =4C55.17 | 11 08 39 | 79.6 | -70.9 | 1.2 | | 95.0 | 72 | 2838 | 23 11 06 |

Schedule for TORUN (Code Tr ) Page 11

NGC3079 March 02-03,2019

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | LST | Start / Stop EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 2 Mar 2019 Day 61 --- | | | | | | | | | | |
| 23 12 35 | NGC3079 | 11 08 39 | 80.2 | -68.8 | 1.1 | | 97.9 | -18 | 2838 | No stop |
| 23 16 35 | --- | 11 12 40 | 79.6 | -69.2 | 1.2 | | 96.7 | 222 | 2869 | 23 12 36 |
| 23 16 50 | J0957+5522 | 11 12 55 | 79.0 | -71.1 | 1.2 | | 93.9 | -2 | 2869 | 23 16 50 |
| 23 18 20 | =4C55.17 | 11 14 25 | 78.8 | -71.2 | 1.3 | | 93.5 | 88 | 2881 | 23 16 51 |
| 23 18 20 | NGC3079 | 11 14 25 | 79.4 | -69.3 | 1.2 | | 96.2 | -17 | 2881 | No stop |
| 23 22 20 | --- | 11 18 26 | 78.8 | -69.6 | 1.3 | | 95.0 | 223 | 2912 | 23 18 21 |
| 23 22 20 | J0957+5522 | 11 18 26 | 78.2 | -71.3 | 1.3 | | 92.5 | -17 | 2912 | No stop |
| 23 23 50 | =4C55.17 | 11 19 56 | 78.0 | -71.4 | 1.3 | | 92.2 | 73 | 2923 | 23 22 21 |
| 23 23 50 | NGC3079 | 11 19 56 | 78.6 | -69.7 | 1.3 | | 94.6 | -16 | 2923 | No stop |
| 23 27 50 | --- | 11 23 56 | 78.0 | -69.9 | 1.3 | | 93.6 | 224 | 2954 | 23 23 51 |
| 23 28 05 | J0957+5522 | 11 24 12 | 77.4 | -71.4 | 1.4 | | 91.2 | -1 | 2954 | 23 28 05 |
| 23 29 35 | =4C55.17 | 11 25 42 | 77.2 | -71.5 | 1.4 | | 90.9 | 89 | 2965 | 23 28 06 |
| 23 29 35 | NGC3079 | 11 25 42 | 77.8 | -70.0 | 1.4 | | 93.2 | -16 | 2965 | No stop |
| 23 33 35 | --- | 11 29 42 | 77.2 | -70.1 | 1.4 | | 92.2 | 224 | 2996 | 23 29 36 |
| 23 33 35 | J0957+5522 | 11 29 42 | 76.6 | -71.5 | 1.5 | | 90.0 | -15 | 2996 | No stop |
| 23 35 05 | =4C55.17 | 11 31 13 | 76.4 | -71.5 | 1.5 | | 89.7 | 75 | 3008 | 23 33 36 |
| 23 35 05 | NGC3079 | 11 31 13 | 77.0 | -70.2 | 1.5 | | 91.9 | -15 | 3008 | No stop |
| 23 39 05 | --- | 11 35 13 | 76.4 | -70.2 | 1.5 | | 91.0 | 225 | 3038 | 23 35 06 |
| 23 39 20 | J0957+5522 | 11 35 28 | 75.8 | -71.5 | 1.6 | | 88.9 | 0 | 3038 | 23 39 20 |
| 23 40 50 | =4C55.17 | 11 36 59 | 75.6 | -71.4 | 1.6 | | 88.6 | 90 | 3050 | 23 39 21 |
| 23 40 50 | NGC3079 | 11 36 59 | 76.2 | -70.2 | 1.6 | | 90.6 | -15 | 3050 | No stop |
| 23 44 50 | --- | 11 40 59 | 75.6 | -70.2 | 1.6 | | 89.8 | 225 | 3081 | 23 40 51 |
| 23 44 50 | J0957+5522 | 11 40 59 | 75.0 | -71.4 | 1.7 | | 87.8 | -14 | 3081 | No stop |
| 23 46 20 | =4C55.17 | 11 42 30 | 74.8 | -71.3 | 1.7 | | 87.5 | 76 | 3092 | 23 44 51 |
| 23 46 20 | NGC3079 | 11 42 30 | 75.4 | -70.2 | 1.7 | | 89.5 | -14 | 3092 | No stop |
| 23 50 20 | --- | 11 46 30 | 74.8 | -70.2 | 1.7 | | 88.7 | 226 | 3123 | 23 46 21 |
| 23 50 35 | J0957+5522 | 11 46 45 | 74.2 | -71.2 | 1.8 | | 86.8 | 1 | 3123 | 23 50 35 |
| 23 52 05 | =4C55.17 | 11 48 15 | 74.0 | -71.2 | 1.8 | | 86.5 | 90 | 3135 | 23 50 36 |
| 23 52 05 | NGC3079 | 11 48 15 | 74.6 | -70.2 | 1.7 | | 88.4 | -14 | 3135 | No stop |
| 23 56 05 | --- | 11 52 16 | 74.0 | -70.1 | 1.8 | | 87.6 | 226 | 3165 | 23 52 06 |

```
Schedule for TORUN     (Code Tr )                                Page  12
               NGC3079 March 02-03,2019
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Sat   2 Mar 2019   Day  61 ---

23 56 05  J0957+5522   11 52 16  73.4 -71.0  1.9      85.8   -14     3165   No stop
23 57 35  =4C55.17     11 53 46  73.2 -71.0  1.9      85.6    76     3177   23 56 06

 --- Start: Sat   2 Mar 2019   Day  61 -- Stop: Sun   3 Mar 2019   Day  62 ---

23 57 35  NGC3079      11 53 46  73.8 -70.1  1.8      87.3   -14     3177   No stop
00 01 35  ---          11 57 47  73.2 -70.0  1.9      86.6   226     3208   23 57 36

00 01 50  J0957+5522   11 58 02  72.6 -70.8  2.0      84.9     1     3208   00 01 50
00 03 20  =4C55.17     11 59 32  72.4 -70.7  2.0      84.6    90     3219   00 01 51

00 03 20  NGC3079      11 59 32  73.0 -69.9  1.9      86.3   -14     3219   No stop
00 07 20  ---          12 03 33  72.4 -69.8  2.0      85.6   226     3250   00 03 21

00 07 20  J0957+5522   12 03 33  71.8 -70.6  2.1      84.0   -14     3250   No stop
00 08 50  =4C55.17     12 05 03  71.6 -70.5  2.1      83.7    76     3262   00 07 21

00 08 50  NGC3079      12 05 03  72.2 -69.7  2.0      85.3   -14     3262   No stop
00 12 50  ---          12 09 04  71.7 -69.6  2.1      84.7   226     3292   00 08 51

00 13 05  J0957+5522   12 09 19  71.0 -70.3  2.2      83.1     1     3292   00 13 05
00 14 35  =4C55.17     12 10 49  70.8 -70.2  2.2      82.8    90     3304   00 13 06

00 14 35  NGC3079      12 10 49  71.4 -69.5  2.1      84.4   -14     3304   No stop
00 18 35  ---          12 14 50  70.8 -69.3  2.2      83.7   226     3335   00 14 36

00 18 35  J0957+5522   12 14 50  70.2 -70.0  2.3      82.2   -14     3335   No stop
00 20 05  =4C55.17     12 16 20  70.0 -69.9  2.3      82.0    76     3346   00 18 36

00 20 05  NGC3079      12 16 20  70.6 -69.2  2.2      83.5   -14     3346   No stop
00 24 05  ---          12 20 21  70.1 -69.0  2.3      82.8   226     3377   00 20 06

00 24 20  J0957+5522   12 20 36  69.4 -69.6  2.4      81.3     1     3377   00 24 20
00 25 50  =4C55.17     12 22 06  69.2 -69.5  2.4      81.1    90     3388   00 24 21

00 25 50  NGC3079      12 22 06  69.8 -68.9  2.3      82.6   -14     3388   No stop
00 29 50  ---          12 26 07  69.3 -68.7  2.4      81.9   226     3419   00 25 51

00 29 50  J0957+5522   12 26 07  68.6 -69.3  2.5      80.5   -14     3419   No stop
00 31 20  =4C55.17     12 27 37  68.4 -69.2  2.5      80.3    76     3431   00 29 51

00 31 20  NGC3079      12 27 37  69.1 -68.6  2.4      81.7   -14     3431   No stop
00 35 20  ---          12 31 38  68.5 -68.4  2.5      81.1   226     3462   00 31 21
```

Schedule for TORUN (Code Tr ) Page 13

NGC3079 March 02-03,2019

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | LST | Start / Stop EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sun 3 Mar 2019 Day 62 --- | | | | | | | | | | |
| 00 35 50 | J0957+5522 | 12 32 08 | 67.8 | -68.9 | 2.6 | | 79.7 | 16 | 3462 | 00 35 50 |
| 00 37 20 | =4C55.17 | 12 33 38 | 67.6 | -68.8 | 2.6 | | 79.4 | 90 | 3473 | 00 35 51 |
| 00 37 20 | NGC3079 | 12 33 38 | 68.2 | -68.3 | 2.5 | | 80.8 | -14 | 3473 | No stop |
| 00 41 20 | --- | 12 37 39 | 67.7 | -68.0 | 2.6 | | 80.2 | 226 | 3504 | 00 37 21 |
| 00 41 20 | J0957+5522 | 12 37 39 | 67.0 | -68.5 | 2.6 | | 78.9 | -15 | 3504 | No stop |
| 00 42 50 | =4C55.17 | 12 39 09 | 66.8 | -68.4 | 2.7 | | 78.7 | 75 | 3515 | 00 41 21 |
| 00 42 50 | NGC3079 | 12 39 09 | 67.4 | -67.9 | 2.6 | | 80.0 | -14 | 3515 | No stop |
| 00 46 50 | --- | 12 43 09 | 66.9 | -67.7 | 2.7 | | 79.4 | 226 | 3546 | 00 42 51 |
| 00 47 20 | J0957+5522 | 12 43 40 | 66.2 | -68.1 | 2.7 | | 78.0 | 15 | 3546 | 00 47 20 |
| 00 48 50 | =4C55.17 | 12 45 10 | 66.0 | -68.0 | 2.8 | | 77.8 | 90 | 3558 | 00 47 21 |
| 00 48 50 | NGC3079 | 12 45 10 | 66.6 | -67.5 | 2.7 | | 79.1 | -14 | 3558 | No stop |
| 00 52 50 | --- | 12 49 10 | 66.1 | -67.3 | 2.8 | | 78.5 | 226 | 3588 | 00 48 51 |
| 00 52 50 | J0957+5522 | 12 49 10 | 65.4 | -67.7 | 2.8 | | 77.3 | -15 | 3588 | No stop |
| 00 54 20 | =4C55.17 | 12 50 41 | 65.2 | -67.5 | 2.9 | | 77.1 | 75 | 3600 | 00 52 51 |
| 00 54 20 | NGC3079 | 12 50 41 | 65.8 | -67.2 | 2.8 | | 78.3 | -14 | 3600 | No stop |
| 00 58 20 | --- | 12 54 41 | 65.3 | -66.9 | 2.9 | | 77.7 | 226 | 3631 | 00 54 21 |
| 00 58 50 | J0957+5522 | 12 55 11 | 64.6 | -67.2 | 2.9 | | 76.5 | 15 | 3631 | 00 58 50 |
| 01 00 20 | =4C55.17 | 12 56 42 | 64.4 | -67.1 | 3.0 | | 76.3 | 90 | 3642 | 00 58 51 |
| 01 00 20 | NGC3079 | 12 56 42 | 65.0 | -66.7 | 2.9 | | 77.5 | -14 | 3642 | No stop |
| 01 04 20 | --- | 13 00 42 | 64.5 | -66.4 | 3.0 | | 76.9 | 226 | 3673 | 01 00 21 |
| 01 04 20 | J0957+5522 | 13 00 42 | 63.8 | -66.8 | 3.0 | | 75.7 | -15 | 3673 | No stop |
| 01 05 50 | =4C55.17 | 13 02 13 | 63.6 | -66.6 | 3.1 | | 75.5 | 75 | 3685 | 01 04 21 |
| 01 05 50 | NGC3079 | 13 02 13 | 64.3 | -66.3 | 3.0 | | 76.7 | -14 | 3685 | No stop |
| 01 09 50 | --- | 13 06 13 | 63.7 | -66.0 | 3.0 | | 76.1 | 226 | 3715 | 01 05 51 |
| 01 10 20 | J0957+5522 | 13 06 43 | 63.0 | -66.3 | 3.1 | | 74.9 | 15 | 3715 | 01 10 20 |
| 01 11 50 | =4C55.17 | 13 08 14 | 62.8 | -66.2 | 3.2 | | 74.7 | 90 | 3727 | 01 10 21 |
| 01 11 50 | NGC3079 | 13 08 14 | 63.4 | -65.9 | 3.1 | | 75.9 | -14 | 3727 | No stop |
| 01 15 50 | --- | 13 12 14 | 62.9 | -65.6 | 3.1 | | 75.3 | 226 | 3758 | 01 11 51 |
| 01 15 50 | J0957+5522 | 13 12 14 | 62.2 | -65.8 | 3.2 | | 74.2 | -15 | 3758 | No stop |
| 01 17 20 | =4C55.17 | 13 13 44 | 62.0 | -65.7 | 3.2 | | 74.0 | 75 | 3769 | 01 15 51 |

Schedule for TORUN (Code Tr ) Page 14

NGC3079 March 02-03,2019

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sun 3 Mar 2019 Day 62 --- | | | | | | | | | | |
| 01 17 20 | NGC3079 | 13 13 44 | 62.7 | -65.4 | 3.2 | | 75.1 | -14 | 3769 | No stop |
| 01 21 20 | --- | 13 17 45 | 62.1 | -65.1 | 3.2 | | 74.6 | 226 | 3800 | 01 17 21 |
| 01 21 45 | J0957+5522 | 13 18 10 | 61.4 | -65.3 | 3.3 | | 73.4 | 10 | 3800 | 01 21 45 |
| 01 23 15 | =4C55.17 | 13 19 40 | 61.2 | -65.2 | 3.3 | | 73.2 | 90 | 3812 | 01 21 46 |
| 01 23 15 | NGC3079 | 13 19 40 | 61.9 | -65.0 | 3.3 | | 74.3 | -14 | 3812 | No stop |
| 01 27 15 | --- | 13 23 41 | 61.3 | -64.6 | 3.3 | | 73.8 | 226 | 3842 | 01 23 16 |
| 01 27 15 | J0957+5522 | 13 23 41 | 60.7 | -64.9 | 3.4 | | 72.7 | -15 | 3842 | No stop |
| 01 28 45 | =4C55.17 | 13 25 11 | 60.4 | -64.7 | 3.4 | | 72.5 | 75 | 3854 | 01 27 16 |
| 01 28 45 | NGC3079 | 13 25 11 | 61.1 | -64.5 | 3.4 | | 73.6 | -14 | 3854 | No stop |
| 01 32 45 | --- | 13 29 12 | 60.6 | -64.2 | 3.4 | | 73.0 | 226 | 3885 | 01 28 46 |
| 01 33 10 | J0957+5522 | 13 29 37 | 59.8 | -64.3 | 3.5 | | 71.9 | 10 | 3885 | 01 33 10 |
| 01 34 40 | =4C55.17 | 13 31 07 | 59.6 | -64.2 | 3.5 | | 71.7 | 90 | 3896 | 01 33 11 |
| 01 34 40 | NGC3079 | 13 31 07 | 60.3 | -64.0 | 3.5 | | 72.8 | -14 | 3896 | No stop |
| 01 38 40 | --- | 13 35 08 | 59.8 | -63.7 | 3.5 | | 72.2 | 226 | 3927 | 01 34 41 |
| 01 38 40 | J0957+5522 | 13 35 08 | 59.1 | -63.9 | 3.6 | | 71.2 | -15 | 3927 | No stop |
| 01 40 10 | =4C55.17 | 13 36 38 | 58.9 | -63.7 | 3.6 | | 71.0 | 75 | 3938 | 01 38 41 |
| 01 40 10 | NGC3079 | 13 36 38 | 59.6 | -63.5 | 3.6 | | 72.0 | -14 | 3938 | No stop |
| 01 44 10 | --- | 13 40 39 | 59.0 | -63.2 | 3.6 | | 71.5 | 226 | 3969 | 01 40 11 |
| 01 44 35 | J0957+5522 | 13 41 04 | 58.3 | -63.3 | 3.7 | | 70.4 | 10 | 3969 | 01 44 35 |
| 01 46 05 | =4C55.17 | 13 42 34 | 58.1 | -63.2 | 3.7 | | 70.2 | 90 | 3981 | 01 44 36 |
| 01 46 05 | NGC3079 | 13 42 34 | 58.8 | -63.0 | 3.7 | | 71.3 | -14 | 3981 | No stop |
| 01 50 05 | --- | 13 46 35 | 58.2 | -62.7 | 3.7 | | 70.7 | 226 | 4012 | 01 46 06 |
| 01 50 05 | J0957+5522 | 13 46 35 | 57.6 | -62.8 | 3.8 | | 69.7 | -15 | 4012 | No stop |
| 01 51 35 | =4C55.17 | 13 48 05 | 57.4 | -62.7 | 3.8 | | 69.5 | 75 | 4023 | 01 50 06 |
| 01 51 35 | NGC3079 | 13 48 05 | 58.0 | -62.5 | 3.7 | | 70.5 | -14 | 4023 | No stop |
| 01 55 35 | --- | 13 52 06 | 57.5 | -62.2 | 3.8 | | 70.0 | 226 | 4054 | 01 51 36 |
| 01 56 00 | J0957+5522 | 13 52 31 | 56.8 | -62.3 | 3.9 | | 69.0 | 10 | 4054 | 01 56 00 |
| 01 57 30 | =4C55.17 | 13 54 01 | 56.6 | -62.1 | 3.9 | | 68.8 | 90 | 4065 | 01 56 01 |
| 01 57 30 | NGC3079 | 13 54 01 | 57.3 | -62.0 | 3.8 | | 69.8 | -14 | 4065 | No stop |
| 02 01 30 | --- | 13 58 02 | 56.7 | -61.6 | 3.9 | | 69.2 | 226 | 4096 | 01 57 31 |

Schedule for TORUN (Code Tr ) Page 15

NGC3079 March 02-03,2019

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sun 3 Mar 2019 Day 62 --- | | | | | | | | | | |
| 02 01 30 | J0957+5522 | 13 58 02 | 56.0 | -61.7 | 4.0 | | 68.3 | -15 | 4096 | No stop |
| 02 03 00 | =4C55.17 | 13 59 32 | 55.8 | -61.6 | 4.0 | | 68.1 | 75 | 4108 | 02 01 31 |
| 02 03 00 | NGC3079 | 13 59 32 | 56.5 | -61.5 | 3.9 | | 69.0 | -14 | 4108 | No stop |
| 02 07 00 | --- | 14 03 33 | 56.0 | -61.1 | 4.0 | | 68.5 | 226 | 4138 | 02 03 01 |
| 02 15 10 | 3C345 | 14 11 44 | 61.1 | 102.0 | -2.5 | | -49.8 | 150 | 4138 | 02 15 10 |
| 02 20 10 | --- | 14 16 45 | 61.8 | 103.3 | -2.4 | | -49.5 | 300 | 4177 | 02 15 11 |
| 02 28 20 | J0957+5522 | 14 24 56 | 52.5 | -59.1 | 4.4 | | 64.9 | 150 | 4177 | 02 28 20 |
| 02 29 50 | =4C55.17 | 14 26 26 | 52.3 | -59.0 | 4.5 | | 64.7 | 90 | 4188 | 02 28 21 |
| 02 29 50 | NGC3079 | 14 26 26 | 53.0 | -59.0 | 4.4 | | 65.6 | -14 | 4188 | No stop |
| 02 33 50 | --- | 14 30 27 | 52.5 | -58.6 | 4.5 | | 65.1 | 226 | 4219 | 02 29 51 |
| 02 33 50 | J0957+5522 | 14 30 27 | 51.8 | -58.6 | 4.5 | | 64.2 | -15 | 4219 | No stop |
| 02 35 20 | =4C55.17 | 14 31 57 | 51.6 | -58.4 | 4.6 | | 64.0 | 75 | 4231 | 02 33 51 |
| 02 35 20 | NGC3079 | 14 31 57 | 52.3 | -58.4 | 4.5 | | 64.9 | -14 | 4231 | No stop |
| 02 39 20 | --- | 14 35 58 | 51.8 | -58.0 | 4.5 | | 64.3 | 226 | 4262 | 02 35 21 |
| 02 39 45 | J0957+5522 | 14 36 23 | 51.1 | -58.0 | 4.6 | | 63.4 | 10 | 4262 | 02 39 45 |
| 02 41 15 | =4C55.17 | 14 37 53 | 50.9 | -57.8 | 4.6 | | 63.2 | 90 | 4273 | 02 39 46 |
| 02 41 15 | NGC3079 | 14 37 53 | 51.6 | -57.8 | 4.6 | | 64.1 | -14 | 4273 | No stop |
| 02 45 15 | --- | 14 41 54 | 51.0 | -57.4 | 4.6 | | 63.6 | 226 | 4304 | 02 41 16 |
| 02 45 15 | J0957+5522 | 14 41 54 | 50.4 | -57.4 | 4.7 | | 62.7 | -15 | 4304 | No stop |
| 02 46 45 | =4C55.17 | 14 43 24 | 50.2 | -57.3 | 4.7 | | 62.5 | 75 | 4315 | 02 45 16 |
| 02 46 45 | NGC3079 | 14 43 24 | 50.9 | -57.3 | 4.7 | | 63.4 | -14 | 4315 | No stop |
| 02 50 45 | --- | 14 47 25 | 50.4 | -56.9 | 4.7 | | 62.9 | 226 | 4346 | 02 46 46 |
| 02 51 10 | J0957+5522 | 14 47 50 | 49.6 | -56.8 | 4.8 | | 62.0 | 10 | 4346 | 02 51 10 |
| 02 52 40 | =4C55.17 | 14 49 20 | 49.4 | -56.7 | 4.8 | | 61.8 | 90 | 4358 | 02 51 11 |
| 02 52 40 | NGC3079 | 14 49 20 | 50.1 | -56.7 | 4.8 | | 62.6 | -14 | 4358 | No stop |
| 02 56 40 | --- | 14 53 21 | 49.6 | -56.3 | 4.8 | | 62.1 | 226 | 4388 | 02 52 41 |
| 02 56 40 | J0957+5522 | 14 53 21 | 48.9 | -56.2 | 4.9 | | 61.3 | -15 | 4388 | No stop |
| 02 58 10 | =4C55.17 | 14 54 51 | 48.7 | -56.1 | 4.9 | | 61.1 | 75 | 4400 | 02 56 41 |
| 02 58 10 | NGC3079 | 14 54 51 | 49.4 | -56.1 | 4.9 | | 61.9 | -14 | 4400 | No stop |
| 03 02 10 | --- | 14 58 52 | 48.9 | -55.7 | 4.9 | | 61.4 | 226 | 4431 | 02 58 11 |

Schedule for TORUN (Code Tr ) Page 16

NGC3079 March 02-03,2019

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | LST | Start / Stop<br>EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sun 3 Mar 2019 Day 62 --- | | | | | | | | | | |
| 03 02 35 | J0957+5522 | 14 59 17 | 48.2 | -55.6 | 5.0 | | 60.5 | 10 | 4431 | 03 02 35 |
| 03 04 05 | =4C55.17 | 15 00 47 | 48.0 | -55.5 | 5.0 | | 60.3 | 90 | 4442 | 03 02 36 |
| 03 04 05 | NGC3079 | 15 00 47 | 48.7 | -55.5 | 5.0 | | 61.2 | -14 | 4442 | No stop |
| 03 08 05 | --- | 15 04 48 | 48.2 | -55.1 | 5.0 | | 60.6 | 226 | 4473 | 03 04 06 |
| 03 08 05 | J0957+5522 | 15 04 48 | 47.5 | -55.0 | 5.1 | | 59.8 | -15 | 4473 | No stop |
| 03 09 35 | =4C55.17 | 15 06 18 | 47.3 | -54.9 | 5.1 | | 59.6 | 75 | 4485 | 03 08 06 |
| 03 09 35 | NGC3079 | 15 06 18 | 48.0 | -55.0 | 5.1 | | 60.4 | -14 | 4485 | No stop |
| 03 13 35 | --- | 15 10 19 | 47.5 | -54.5 | 5.1 | | 59.9 | 226 | 4515 | 03 09 36 |
| 03 14 00 | J0957+5522 | 15 10 44 | 46.8 | -54.4 | 5.2 | | 59.0 | 10 | 4515 | 03 14 00 |
| 03 15 30 | =4C55.17 | 15 12 14 | 46.6 | -54.2 | 5.2 | | 58.9 | 90 | 4527 | 03 14 01 |
| 03 15 30 | NGC3079 | 15 12 14 | 47.3 | -54.3 | 5.1 | | 59.7 | -14 | 4527 | No stop |
| 03 19 30 | --- | 15 16 15 | 46.8 | -53.9 | 5.2 | | 59.2 | 226 | 4558 | 03 15 31 |
| 03 19 30 | J0957+5522 | 15 16 15 | 46.1 | -53.8 | 5.3 | | 58.3 | -15 | 4558 | No stop |
| 03 21 00 | =4C55.17 | 15 17 45 | 45.9 | -53.7 | 5.3 | | 58.1 | 75 | 4569 | 03 19 31 |
| 03 21 00 | NGC3079 | 15 17 45 | 46.6 | -53.8 | 5.2 | | 59.0 | -14 | 4569 | No stop |
| 03 25 00 | --- | 15 21 45 | 46.1 | -53.3 | 5.3 | | 58.4 | 226 | 4600 | 03 21 01 |
| 03 25 25 | J0957+5522 | 15 22 11 | 45.4 | -53.2 | 5.4 | | 57.6 | 10 | 4600 | 03 25 25 |
| 03 26 55 | =4C55.17 | 15 23 41 | 45.2 | -53.0 | 5.4 | | 57.4 | 90 | 4612 | 03 25 26 |
| 03 26 55 | NGC3079 | 15 23 41 | 45.9 | -53.1 | 5.3 | | 58.2 | -14 | 4612 | No stop |
| 03 30 55 | --- | 15 27 41 | 45.4 | -52.7 | 5.4 | | 57.7 | 226 | 4642 | 03 26 56 |
| 03 30 55 | J0957+5522 | 15 27 41 | 44.7 | -52.6 | 5.5 | | 56.9 | -15 | 4642 | No stop |
| 03 32 25 | =4C55.17 | 15 29 12 | 44.6 | -52.4 | 5.5 | | 56.7 | 75 | 4654 | 03 30 56 |
| 03 32 25 | NGC3079 | 15 29 12 | 45.2 | -52.5 | 5.4 | | 57.5 | -14 | 4654 | No stop |
| 03 36 25 | --- | 15 33 12 | 44.8 | -52.1 | 5.5 | | 57.0 | 226 | 4685 | 03 32 26 |
| 03 36 50 | J0957+5522 | 15 33 37 | 44.0 | -51.9 | 5.6 | | 56.1 | 10 | 4685 | 03 36 50 |
| 03 38 20 | =4C55.17 | 15 35 08 | 43.9 | -51.8 | 5.6 | | 55.9 | 90 | 4696 | 03 36 51 |
| 03 38 20 | NGC3079 | 15 35 08 | 44.5 | -51.9 | 5.5 | | 56.7 | -14 | 4696 | No stop |
| 03 42 20 | --- | 15 39 08 | 44.1 | -51.4 | 5.6 | | 56.2 | 226 | 4727 | 03 38 21 |
| 03 42 20 | J0957+5522 | 15 39 08 | 43.4 | -51.3 | 5.7 | | 55.4 | -15 | 4727 | No stop |
| 03 43 50 | =4C55.17 | 15 40 39 | 43.2 | -51.1 | 5.7 | | 55.2 | 75 | 4738 | 03 42 21 |

Schedule for TORUN (Code Tr ) Page 17

NGC3079 March 02-03,2019

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sun 3 Mar 2019 Day 62 --- | | | | | | | | | | |
| 03 43 50 | NGC3079 | 15 40 39 | 43.9 | -51.3 | 5.6 | | 56.0 | -14 | 4738 | No stop |
| 03 47 50 | --- | 15 44 39 | 43.4 | -50.8 | 5.7 | | 55.5 | 226 | 4769 | 03 43 51 |
| 03 48 15 | J0957+5522 | 15 45 04 | 42.7 | -50.6 | 5.8 | | 54.6 | 10 | 4769 | 03 48 15 |
| 03 49 45 | =4C55.17 | 15 46 35 | 42.5 | -50.5 | 5.8 | | 54.4 | 90 | 4781 | 03 48 16 |
| 03 49 45 | NGC3079 | 15 46 35 | 43.2 | -50.6 | 5.7 | | 55.2 | -14 | 4781 | No stop |
| 03 53 45 | --- | 15 50 35 | 42.7 | -50.2 | 5.8 | | 54.7 | 226 | 4812 | 03 49 46 |
| 03 53 45 | J0957+5522 | 15 50 35 | 42.1 | -50.0 | 5.9 | | 53.9 | -15 | 4812 | No stop |
| 03 55 15 | =4C55.17 | 15 52 05 | 41.9 | -49.9 | 5.9 | | 53.7 | 75 | 4823 | 03 53 46 |
| 03 55 15 | NGC3079 | 15 52 05 | 42.5 | -50.0 | 5.8 | | 54.5 | -14 | 4823 | No stop |
| 03 59 15 | --- | 15 56 06 | 42.1 | -49.6 | 5.9 | | 54.0 | 226 | 4854 | 03 55 16 |
| 03 59 40 | J0957+5522 | 15 56 31 | 41.4 | -49.4 | 6.0 | | 53.1 | 10 | 4854 | 03 59 40 |
| 04 01 10 | =4C55.17 | 15 58 01 | 41.2 | -49.2 | 6.0 | | 52.9 | 90 | 4865 | 03 59 41 |
| 04 01 10 | NGC3079 | 15 58 01 | 41.9 | -49.4 | 5.9 | | 53.7 | -14 | 4865 | No stop |
| 04 05 10 | --- | 16 02 02 | 41.4 | -48.9 | 6.0 | | 53.2 | 226 | 4896 | 04 01 11 |
| 04 05 10 | J0957+5522 | 16 02 02 | 40.7 | -48.7 | 6.1 | | 52.4 | -15 | 4896 | No stop |
| 04 06 40 | =4C55.17 | 16 03 32 | 40.6 | -48.6 | 6.1 | | 52.2 | 75 | 4908 | 04 05 11 |
| 04 06 40 | NGC3079 | 16 03 32 | 41.2 | -48.7 | 6.0 | | 53.0 | -14 | 4908 | No stop |
| 04 10 40 | --- | 16 07 33 | 40.8 | -48.3 | 6.1 | | 52.5 | 226 | 4938 | 04 06 41 |
| 04 11 05 | J0957+5522 | 16 07 58 | 40.1 | -48.0 | 6.2 | | 51.6 | 10 | 4938 | 04 11 05 |
| 04 12 35 | =4C55.17 | 16 09 28 | 39.9 | -47.9 | 6.2 | | 51.5 | 90 | 4950 | 04 11 06 |
| 04 12 35 | NGC3079 | 16 09 28 | 40.6 | -48.1 | 6.1 | | 52.2 | -14 | 4950 | No stop |
| 04 16 35 | --- | 16 13 29 | 40.1 | -47.6 | 6.2 | | 51.7 | 226 | 4981 | 04 12 36 |
| 04 16 35 | J0957+5522 | 16 13 29 | 39.5 | -47.4 | 6.2 | | 50.9 | -15 | 4981 | No stop |
| 04 18 05 | =4C55.17 | 16 14 59 | 39.3 | -47.2 | 6.3 | | 50.7 | 75 | 4992 | 04 16 36 |
| 04 18 05 | NGC3079 | 16 14 59 | 40.0 | -47.4 | 6.2 | | 51.5 | -14 | 4992 | No stop |
| 04 22 05 | --- | 16 19 00 | 39.5 | -47.0 | 6.3 | | 51.0 | 226 | 5023 | 04 18 06 |
| 04 22 30 | J0957+5522 | 16 19 25 | 38.8 | -46.7 | 6.3 | | 50.1 | 10 | 5023 | 04 22 30 |
| 04 24 00 | =4C55.17 | 16 20 55 | 38.7 | -46.5 | 6.4 | | 49.9 | 90 | 5035 | 04 22 31 |
| 04 24 00 | NGC3079 | 16 20 55 | 39.3 | -46.7 | 6.3 | | 50.7 | -14 | 5035 | No stop |
| 04 28 00 | --- | 16 24 56 | 38.9 | -46.3 | 6.4 | | 50.2 | 226 | 5065 | 04 24 01 |

Schedule for TORUN (Code Tr ) Page 18

NGC3079 March 02-03,2019

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | LST | Start / Stop EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sun 3 Mar 2019 Day 62 --- | | | | | | | | | | |
| 04 28 00 | J0957+5522 | 16 24 56 | 38.2 | -46.1 | 6.4 | | 49.4 | -14 | 5065 | No stop |
| 04 29 30 | =4C55.17 | 16 26 26 | 38.1 | -45.9 | 6.5 | | 49.2 | 76 | 5077 | 04 28 01 |
| 04 29 30 | NGC3079 | 16 26 26 | 38.7 | -46.1 | 6.4 | | 50.0 | -14 | 5077 | No stop |
| 04 33 30 | --- | 16 30 27 | 38.3 | -45.6 | 6.5 | | 49.4 | 226 | 5108 | 04 29 31 |
| 04 33 55 | J0957+5522 | 16 30 52 | 37.6 | -45.4 | 6.5 | | 48.6 | 11 | 5108 | 04 33 55 |
| 04 35 25 | =4C55.17 | 16 32 22 | 37.4 | -45.2 | 6.6 | | 48.4 | 90 | 5119 | 04 33 56 |
| 04 35 25 | NGC3079 | 16 32 22 | 38.1 | -45.4 | 6.5 | | 49.2 | -14 | 5119 | No stop |
| 04 39 25 | --- | 16 36 23 | 37.6 | -44.9 | 6.6 | | 48.6 | 226 | 5150 | 04 35 26 |
| 04 39 25 | J0957+5522 | 16 36 23 | 37.0 | -44.7 | 6.6 | | 47.9 | -14 | 5150 | No stop |
| 04 40 55 | =4C55.17 | 16 37 53 | 36.8 | -44.5 | 6.6 | | 47.7 | 76 | 5162 | 04 39 26 |
| 04 40 55 | NGC3079 | 16 37 53 | 37.5 | -44.8 | 6.6 | | 48.4 | -14 | 5162 | No stop |
| 04 44 55 | --- | 16 41 54 | 37.1 | -44.3 | 6.6 | | 47.9 | 226 | 5192 | 04 40 56 |
| 04 45 20 | J0957+5522 | 16 42 19 | 36.4 | -44.0 | 6.7 | | 47.1 | 11 | 5192 | 04 45 20 |
| 04 46 50 | =4C55.17 | 16 43 49 | 36.2 | -43.8 | 6.7 | | 46.9 | 90 | 5204 | 04 45 21 |
| 04 46 50 | NGC3079 | 16 43 49 | 36.9 | -44.1 | 6.7 | | 47.6 | -14 | 5204 | No stop |
| 04 50 50 | --- | 16 47 50 | 36.4 | -43.6 | 6.7 | | 47.1 | 226 | 5235 | 04 46 51 |
| 04 50 50 | J0957+5522 | 16 47 50 | 35.8 | -43.3 | 6.8 | | 46.4 | -14 | 5235 | No stop |
| 04 52 20 | =4C55.17 | 16 49 20 | 35.6 | -43.1 | 6.8 | | 46.1 | 76 | 5246 | 04 50 51 |
| 04 52 20 | NGC3079 | 16 49 20 | 36.3 | -43.4 | 6.8 | | 46.9 | -14 | 5246 | No stop |
| 04 56 20 | --- | 16 53 20 | 35.9 | -42.9 | 6.8 | | 46.3 | 226 | 5277 | 04 52 21 |
| 04 56 45 | J0957+5522 | 16 53 46 | 35.2 | -42.6 | 6.9 | | 45.6 | 11 | 5277 | 04 56 45 |
| 04 58 15 | =4C55.17 | 16 55 16 | 35.0 | -42.4 | 6.9 | | 45.3 | 90 | 5288 | 04 56 46 |
| 04 58 15 | NGC3079 | 16 55 16 | 35.7 | -42.7 | 6.9 | | 46.1 | -14 | 5288 | No stop |
| 05 02 15 | --- | 16 59 16 | 35.3 | -42.2 | 6.9 | | 45.5 | 226 | 5319 | 04 58 16 |
| 05 02 15 | J0957+5522 | 16 59 16 | 34.6 | -41.9 | 7.0 | | 44.8 | -14 | 5319 | No stop |
| 05 03 45 | =4C55.17 | 17 00 47 | 34.5 | -41.7 | 7.0 | | 44.6 | 76 | 5331 | 05 02 16 |
| 05 03 45 | NGC3079 | 17 00 47 | 35.1 | -42.0 | 7.0 | | 45.3 | -14 | 5331 | No stop |
| 05 07 45 | --- | 17 04 47 | 34.7 | -41.5 | 7.0 | | 44.8 | 226 | 5362 | 05 03 46 |
| 05 08 10 | J0957+5522 | 17 05 12 | 34.0 | -41.2 | 7.1 | | 44.0 | 11 | 5362 | 05 08 10 |
| 05 09 40 | =4C55.17 | 17 06 43 | 33.9 | -41.0 | 7.1 | | 43.8 | 90 | 5373 | 05 08 11 |

```
Schedule for TORUN     (Code Tr )                                Page  19
               NGC3079 March 02-03,2019
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-------------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-------------------------------------------------------------------------------------------

 --- Sun   3 Mar 2019   Day  62 ---

05 09 40  NGC3079      17 06 43  34.5 -41.3  7.1      44.5   -14     5373   No stop
05 13 40  ---          17 10 43  34.1 -40.8  7.1      44.0   226     5404   05 09 41

05 13 40  J0957+5522   17 10 43  33.5 -40.5  7.2      43.2   -14     5404   No stop
05 15 10  =4C55.17     17 12 14  33.4 -40.3  7.2      43.0    76     5415   05 13 41

05 15 10  NGC3079      17 12 14  34.0 -40.6  7.1      43.8   -14     5415   No stop
05 19 10  ---          17 16 14  33.6 -40.1  7.2      43.2   226     5446   05 15 11

05 19 35  J0957+5522   17 16 39  32.9 -39.8  7.3      42.4    11     5446   05 19 35
05 21 05  =4C55.17     17 18 10  32.8 -39.6  7.3      42.2    90     5458   05 19 36

05 21 05  NGC3079      17 18 10  33.4 -39.9  7.2      42.9   -14     5458   No stop
05 25 05  ---          17 22 10  33.0 -39.4  7.3      42.4   226     5488   05 21 06

05 25 25  J0957+5522   17 22 30  32.4 -39.0  7.4      41.6     6     5488   05 25 25
05 29 55  =4C55.17     17 27 01  31.9 -38.5  7.5      41.0   270     5523   05 25 26



SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119.C1024

   Setup group:   11         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
   Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
            4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
  Net SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF SB =         U         U         U         U         U         U         U         U
                  U         U         U         U         U         U         U         U
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
                RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
                  3         7         3         7         4         8         4         8
  BBC SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                 A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:   8  Setup file default.  Used with PCAL = off
  LO sum=   4800.31  4800.31  4800.31  4800.31  4806.55  4806.55  4806.55  4806.55
            4832.35  4832.35  4832.35  4832.35  4858.15  4858.15  4858.15  4858.15
  BBC fr=    600.31   600.31   600.31   600.31   606.55   606.55   606.55   606.55
             632.35   632.35   632.35   632.35   658.15   658.15   658.15   658.15
  Bandwd=     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
              16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
   Matching frequency sets:   8

  Track assignments are:
   track1=  18, 26,  2, 10, 20, 28,  4, 12, 22, 30,  6, 14, 24, 32,  8, 16
   barrel=roll_off


 POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                       (B1950)             (J2000)             (Date)             (mas)

 * NGC3079           09 58 35.012628   * 10 01 57.803419     10 03 15.858851       0.00
                     55 55 15.48398    * 55 40 47.24281      55 35 13.90963        0.00

 * 4C39.25           09 23 55.319216   * 09 27 03.013937     09 28 15.065747       0.31
   J0927+3902        39 15 23.56644    * 39 02 20.85185      38 57 18.67273        0.16
   0923+392          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
   J0927+39          GSFC 2016a X/S astro solution, 250526 observations.

   4C55.17           09 54 14.354509   * 09 57 38.184585     09 58 56.619867       1.57
 * J0957+5522        55 37 16.39941    * 55 22 57.76831      55 17 28.18840        0.96
   0954+556          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
   J0957+55          GSFC 2016a X/S astro solution,     46 observations.

 * 3C345             16 41 17.606229   * 16 42 58.809967     16 43 36.896625       0.79
   J1642+3948        39 54 10.81492    * 39 48 36.99399      39 46 17.67258        0.59
   1641+399          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
   J1642+39          GSFC 2016a X/S astro solution,  53724 observations.


EFFECT OF SOLAR CORONA

  The solar corona can cause unstable phases for sources too close to the Sun.
  SCHED provides warnings at individual scans for distances less than 10 degrees.
```

```
The distance from the Sun to each source in this schedule is:
  Source         Sun distance (deg)
 NGC3079            130.4
 4C39.25            142.7
 J0957+5522         130.5
 3C345               96.5

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
that the Sun will cause amplitude reductions on the  longest VLBA baselines
at a solar distance of 60deg F^(-0.6) where F is in GHz.
For common VLBI bands, this is:
     1.6 GHz         45. deg
     2.3 GHz         36. deg
     5.0 GHz         23. deg
     8.4 GHz         17. deg
    15.0 GHz         12. deg
    22.0 GHz          9. deg
```

# ec067ctr

NEW UCD -6CM

PI: *Juan B. Climent*


```
Address:  Dpto. Astronomia, Univ. Valencia
          Dr. Moliner 50
          E-46100 Burjassot
          Valencia, Spain

Phone:    +34 963543078
EMAIL:    j.bautista.climent@uv.es
Fax:      +34 963543084
Phone during observation: +34 963543078, +34629509130
```


```
Observing mode: Phase-referencing at 6cm (1024 Mb/s)

Schedule for TORUN     (Code Tr )                                    Page   2
               new UCD -6cm
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-------------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-------------------------------------------------------------------------------------------

 --- Sun   3 Mar 2019   Day  62 ---

 Next scan frequencies:  4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
                         5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
 Next BBC frequencies:    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
                          806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
 Next scan bandwidths:     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
                           16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00

08 30 00  0017+200     20 27 36  35.1 103.0 -3.9     -38.6     0        0   08 30 00
08 34 00  ---          20 31 36  35.7 103.9 -3.8     -38.5   240       31   08 30 01

08 34 50  J0038+1856   20 32 26  32.0 101.0 -4.1     -38.6    22       31   08 34 50
08 36 10  ---          20 33 47  32.2 101.3 -4.1     -38.5    80       41   08 34 51

08 36 10  LSPMJ0036    20 33 47  32.0 102.2 -4.1     -38.2   -14       41   No stop
08 40 10  ---          20 37 47  32.6 103.1 -4.0     -38.1   226       72   08 36 11

08 40 10  J0038+1856   20 37 47  32.8 102.2 -4.0     -38.4   -13       72   No stop
08 41 40  ---          20 39 17  33.0 102.5 -4.0     -38.3    77       83   08 40 11

08 41 40  LSPMJ0036    20 39 17  32.8 103.4 -4.0     -38.0   -14       83   No stop
08 45 40  ---          20 43 18  33.4 104.3 -3.9     -37.8   226      114   08 41 41

08 46 20  J0038+1856   20 43 58  33.7 103.5 -3.9     -38.1    27      114   08 46 20
08 47 30  ---          20 45 08  33.8 103.8 -3.9     -38.1    70      123   08 46 21

08 47 30  LSPMJ0036    20 45 08  33.7 104.7 -3.9     -37.8   -14      123   No stop
08 51 30  ---          20 49 09  34.3 105.6 -3.8     -37.6   226      154   08 47 31

08 51 30  J0038+1856   20 49 09  34.4 104.7 -3.8     -37.9   -14      154   No stop
08 53 00  ---          20 50 39  34.6 105.0 -3.8     -37.8    76      165   08 51 31

08 53 00  LSPMJ0036    20 50 39  34.5 106.0 -3.8     -37.5   -14      165   No stop
08 57 00  ---          20 54 40  35.1 106.9 -3.7     -37.3   226      196   08 53 01
```

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 08 57 40 | J0038+1856 | 20 55 20 | 35.3 | 106.1 | -3.7 | -37.6 | 26 | 196 | 08 57 40 |
| 08 58 50 | --- | 20 56 30 | 35.5 | 106.4 | -3.7 | -37.5 | 70 | 205 | 08 57 41 |
| 08 58 50 | LSPMJ0036 | 20 56 30 | 35.3 | 107.3 | -3.7 | -37.2 | -14 | 205 | No stop |
| 09 02 50 | --- | 21 00 31 | 35.9 | 108.3 | -3.6 | -37.0 | 226 | 236 | 08 58 51 |
| 09 02 50 | J0038+1856 | 21 00 31 | 36.1 | 107.3 | -3.6 | -37.3 | -14 | 236 | No stop |
| 09 04 20 | --- | 21 02 01 | 36.3 | 107.7 | -3.6 | -37.3 | 76 | 247 | 09 02 51 |
| 09 04 20 | LSPMJ0036 | 21 02 01 | 36.1 | 108.6 | -3.6 | -36.9 | -14 | 247 | No stop |
| 09 08 20 | --- | 21 06 02 | 36.7 | 109.6 | -3.5 | -36.6 | 226 | 278 | 09 04 21 |

Schedule for TORUN (Code Tr ) Page 3
new UCD -6cm

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Sun 3 Mar 2019 Day 62 --- | | | | | | | | | | |
| 09 09 00 | J0038+1856 | 21 06 42 | 36.9 | 108.8 | -3.5 | | -37.0 | 26 | 278 | 09 09 00 |
| 09 10 10 | --- | 21 07 52 | 37.1 | 109.0 | -3.5 | | -36.9 | 70 | 287 | 09 09 01 |
| 09 10 10 | LSPMJ0036 | 21 07 52 | 37.0 | 110.0 | -3.5 | | -36.5 | -14 | 287 | No stop |
| 09 14 10 | --- | 21 11 53 | 37.5 | 111.0 | -3.4 | | -36.2 | 226 | 318 | 09 10 11 |
| 09 14 10 | J0038+1856 | 21 11 53 | 37.7 | 110.0 | -3.5 | | -36.7 | -14 | 318 | No stop |
| 09 15 40 | --- | 21 13 23 | 37.9 | 110.4 | -3.4 | | -36.6 | 76 | 329 | 09 14 11 |
| 09 15 40 | LSPMJ0036 | 21 13 23 | 37.7 | 111.3 | -3.4 | | -36.1 | -14 | 329 | No stop |
| 09 19 40 | --- | 21 17 24 | 38.3 | 112.3 | -3.3 | | -35.9 | 226 | 360 | 09 15 41 |
| 09 20 20 | J0038+1856 | 21 18 04 | 38.5 | 111.5 | -3.4 | | -36.2 | 26 | 360 | 09 20 20 |
| 09 21 30 | --- | 21 19 14 | 38.7 | 111.8 | -3.3 | | -36.2 | 70 | 369 | 09 20 21 |
| 09 21 30 | LSPMJ0036 | 21 19 14 | 38.5 | 112.8 | -3.3 | | -35.7 | -14 | 369 | No stop |
| 09 25 30 | --- | 21 23 15 | 39.1 | 113.7 | -3.2 | | -35.4 | 226 | 400 | 09 21 31 |
| 09 25 30 | J0038+1856 | 21 23 15 | 39.3 | 112.8 | -3.3 | | -35.9 | -14 | 400 | No stop |
| 09 27 00 | --- | 21 24 45 | 39.5 | 113.1 | -3.2 | | -35.7 | 76 | 412 | 09 25 31 |
| 09 27 00 | LSPMJ0036 | 21 24 45 | 39.3 | 114.1 | -3.2 | | -35.3 | -14 | 412 | No stop |
| 09 31 00 | --- | 21 28 46 | 39.8 | 115.1 | -3.1 | | -35.0 | 226 | 442 | 09 27 01 |
| 09 31 40 | J0038+1856 | 21 29 26 | 40.1 | 114.3 | -3.2 | | -35.4 | 26 | 442 | 09 31 40 |
| 09 32 50 | --- | 21 30 36 | 40.3 | 114.6 | -3.1 | | -35.3 | 70 | 451 | 09 31 41 |
| 09 32 50 | LSPMJ0036 | 21 30 36 | 40.1 | 115.6 | -3.1 | | -34.8 | -14 | 451 | No stop |
| 09 36 50 | --- | 21 34 37 | 40.6 | 116.6 | -3.0 | | -34.5 | 226 | 482 | 09 32 51 |
| 09 36 50 | J0038+1856 | 21 34 37 | 40.8 | 115.6 | -3.1 | | -34.9 | -14 | 482 | No stop |
| 09 38 20 | --- | 21 36 07 | 41.0 | 116.0 | -3.1 | | -34.8 | 76 | 494 | 09 36 51 |
| 09 38 20 | LSPMJ0036 | 21 36 07 | 40.8 | 117.0 | -3.0 | | -34.3 | -14 | 494 | No stop |
| 09 42 20 | --- | 21 40 07 | 41.4 | 118.1 | -3.0 | | -34.0 | 226 | 524 | 09 38 21 |
| 09 43 00 | J0038+1856 | 21 40 48 | 41.7 | 117.2 | -3.0 | | -34.4 | 26 | 524 | 09 43 00 |
| 09 44 10 | --- | 21 41 58 | 41.8 | 117.5 | -3.0 | | -34.3 | 70 | 533 | 09 43 01 |
| 09 44 10 | LSPMJ0036 | 21 41 58 | 41.6 | 118.5 | -2.9 | | -33.8 | -14 | 533 | No stop |
| 09 48 10 | --- | 21 45 58 | 42.1 | 119.6 | -2.9 | | -33.4 | 226 | 564 | 09 44 11 |
| 09 48 10 | J0038+1856 | 21 45 58 | 42.3 | 118.6 | -2.9 | | -33.9 | -14 | 564 | No stop |
| 09 49 40 | --- | 21 47 29 | 42.5 | 119.0 | -2.9 | | -33.8 | 76 | 576 | 09 48 11 |

Schedule for TORUN (Code Tr ) Page 4
new UCD -6cm

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Sun 3 Mar 2019 Day 62 --- | | | | | | | | | | |
| 09 49 40 | LSPMJ0036 | 21 47 29 | 42.3 | 120.0 | -2.8 | | -33.2 | -14 | 576 | No stop |
| 09 53 40 | --- | 21 51 29 | 42.9 | 121.1 | -2.8 | | -32.8 | 226 | 606 | 09 49 41 |
| 09 54 20 | J0038+1856 | 21 52 09 | 43.1 | 120.2 | -2.8 | | -33.3 | 26 | 606 | 09 54 20 |
| 09 55 30 | --- | 21 53 20 | 43.3 | 120.6 | -2.8 | | -33.2 | 70 | 615 | 09 54 21 |
| 09 55 30 | LSPMJ0036 | 21 53 20 | 43.1 | 121.6 | -2.7 | | -32.6 | -14 | 615 | No stop |
| 09 59 30 | --- | 21 57 20 | 43.6 | 122.7 | -2.7 | | -32.2 | 226 | 646 | 09 55 31 |
| 09 59 30 | J0038+1856 | 21 57 20 | 43.8 | 121.6 | -2.7 | | -32.7 | -14 | 646 | No stop |
| 10 01 00 | --- | 21 58 51 | 44.0 | 122.1 | -2.7 | | -32.6 | 76 | 658 | 09 59 31 |
| 10 01 00 | LSPMJ0036 | 21 58 51 | 43.8 | 123.1 | -2.6 | | -32.0 | -14 | 658 | No stop |
| 10 05 00 | --- | 22 02 51 | 44.3 | 124.2 | -2.6 | | -31.6 | 226 | 688 | 10 01 01 |
| 10 05 40 | J0038+1856 | 22 03 31 | 44.6 | 123.4 | -2.6 | | -32.0 | 26 | 688 | 10 05 40 |
| 10 06 50 | --- | 22 04 41 | 44.7 | 123.7 | -2.6 | | -31.9 | 70 | 697 | 10 05 41 |
| 10 06 50 | LSPMJ0036 | 22 04 41 | 44.5 | 124.8 | -2.5 | | -31.3 | -14 | 697 | No stop |
| 10 10 50 | --- | 22 08 42 | 45.0 | 125.9 | -2.5 | | -30.8 | 226 | 728 | 10 06 51 |
| 10 10 50 | J0038+1856 | 22 08 42 | 45.2 | 124.8 | -2.5 | | -31.4 | -14 | 728 | No stop |
| 10 12 20 | --- | 22 10 12 | 45.4 | 125.3 | -2.5 | | -31.2 | 76 | 740 | 10 10 51 |
| 10 12 20 | LSPMJ0036 | 22 10 12 | 45.2 | 126.3 | -2.5 | | -30.7 | -14 | 740 | No stop |
| 10 16 20 | --- | 22 14 13 | 45.7 | 127.5 | -2.4 | | -30.1 | 226 | 771 | 10 12 21 |
| 10 17 00 | J0038+1856 | 22 14 53 | 46.0 | 126.6 | -2.4 | | -30.6 | 26 | 771 | 10 17 00 |
| 10 18 10 | --- | 22 16 03 | 46.1 | 127.0 | -2.4 | | -30.5 | 70 | 779 | 10 17 01 |
| 10 18 10 | LSPMJ0036 | 22 16 03 | 45.9 | 128.1 | -2.4 | | -29.9 | -14 | 779 | No stop |
| 10 22 10 | --- | 22 20 04 | 46.4 | 129.2 | -2.3 | | -29.4 | 226 | 810 | 10 18 11 |
| 10 22 10 | J0038+1856 | 22 20 04 | 46.6 | 128.2 | -2.3 | | -30.0 | -14 | 810 | No stop |
| 10 23 40 | --- | 22 21 34 | 46.8 | 128.6 | -2.3 | | -29.8 | 76 | 822 | 10 22 11 |
| 10 23 40 | LSPMJ0036 | 22 21 34 | 46.5 | 129.7 | -2.3 | | -29.1 | -15 | 822 | No stop |
| 10 27 40 | --- | 22 25 35 | 47.0 | 130.9 | -2.2 | | -28.6 | 225 | 853 | 10 23 41 |
| 10 28 20 | J0038+1856 | 22 26 15 | 47.3 | 130.0 | -2.2 | | -29.1 | 26 | 853 | 10 28 20 |
| 10 29 30 | --- | 22 27 25 | 47.5 | 130.4 | -2.2 | | -28.9 | 70 | 862 | 10 28 21 |
| 10 29 30 | LSPMJ0036 | 22 27 25 | 47.2 | 131.5 | -2.2 | | -28.3 | -15 | 862 | No stop |
| 10 33 30 | --- | 22 31 26 | 47.7 | 132.7 | -2.1 | | -27.7 | 225 | 892 | 10 29 31 |

```
Schedule for TORUN     (Code Tr )                                Page   5
               new UCD -6cm
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Sun   3 Mar 2019   Day  62 ---

10 33 30  J0038+1856   22 31 26  47.9 131.6 -2.1     -28.4   -14      892   No stop
10 35 00  ---          22 32 56  48.1 132.1 -2.1     -28.1    76      904   10 33 31

10 35 00  LSPMJ0036    22 32 56  47.8 133.2 -2.1     -27.5   -15      904   No stop
10 39 00  ---          22 36 57  48.3 134.5 -2.0     -26.9   225      935   10 35 01

10 39 40  J0038+1856   22 37 37  48.6 133.6 -2.0     -27.4    26      935   10 39 40
10 40 50  ---          22 38 47  48.7 133.9 -2.0     -27.2    70      944   10 39 41

10 40 50  LSPMJ0036    22 38 47  48.4 135.0 -2.0     -26.6   -15      944   No stop
10 44 50  ---          22 42 48  48.9 136.3 -1.9     -25.9   225      974   10 40 51

10 44 50  J0038+1856   22 42 48  49.2 135.2 -1.9     -26.6   -14      974   No stop
10 46 20  ---          22 44 18  49.3 135.7 -1.9     -26.3    76      986   10 44 51

10 46 20  LSPMJ0036    22 44 18  49.0 136.8 -1.9     -25.7   -15      986   No stop
10 50 20  ---          22 48 19  49.4 138.1 -1.8     -25.0   225     1017   10 46 21

10 51 00  J0038+1856   22 48 59  49.8 137.2 -1.8     -25.6    26     1017   10 51 00
10 52 10  ---          22 50 09  49.9 137.6 -1.8     -25.3    70     1026   10 51 01

10 52 10  LSPMJ0036    22 50 09  49.6 138.7 -1.8     -24.7   -15     1026   No stop
10 56 10  ---          22 54 10  50.0 140.1 -1.7     -24.0   225     1056   10 52 11

10 56 50  J0038+1856   22 54 50  50.4 139.2 -1.7     -24.5    26     1056   10 56 50
11 00 00  ---          22 58 00  50.7 140.3 -1.7     -24.0   190     1081   10 56 51



SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119.C1024

   Setup group:   12         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
   Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
            4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
  Net SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF SB =         U         U         U         U         U         U         U         U
                  U         U         U         U         U         U         U         U
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
                RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
                  3         7         3         7         4         8         4         8
  BBC SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                 A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:   9  Setup file default.  Used with PCAL = off
  LO sum=   4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
            5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
  BBC fr=    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
             806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
  Bandwd=     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
              16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
   Matching frequency sets:   9

  Track assignments are:
   track1=  18, 26,  2, 10, 20, 28,  4, 12, 22, 30,  6, 14, 24, 32,  8, 16
   barrel=roll_off



 POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                       (B1950)             (J2000)             (Date)             (mas)

 * LSPMJ0036         00 33 39.004842   * 00 36 16.111913     00 37 14.384838       0.00
                     18 04 39.87570    * 18 21 10.29200      18 27 18.72245        0.00

 * J0038+1856        00 35 51.452939   * 00 38 28.891800     00 39 27.297958       0.00
                     18 39 48.73267    * 18 56 17.63100      19 02 25.59738        0.00

 * 0017+200          00 17 02.119554   * 00 19 37.854497     00 20 35.559613       0.01
   J0019+2021        20 05 06.80760    * 20 21 45.64456      20 27 57.68090        0.00
   J0019+20          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                     GSFC 2016a X/S astro solution,  23452 observations.


EFFECT OF SOLAR CORONA

  The solar corona can cause unstable phases for sources too close to the Sun.
  SCHED provides warnings at individual scans for distances less than 10 degrees.
  The distance from the Sun to each source in this schedule is:
    Source         Sun distance (deg)
   LSPMJ0036           35.6
   J0038+1856          36.4
   0017+200            34.4

  Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
```

```
that the Sun will cause amplitude reductions on the  longest VLBA baselines
at a solar distance of 60deg F^(-0.6) where F is in GHz.
For common VLBI bands, this is:
     1.6 GHz         45. deg
     2.3 GHz         36. deg
     5.0 GHz         23. deg
     8.4 GHz         17. deg
    15.0 GHz         12. deg
    22.0 GHz          9. deg
```

**ec067dtr**

NEW UCD -6CM

PI: *Juan B. Climent*


```
Address:  Dpto. Astronomia, Univ. Valencia
          Dr. Moliner 50
          E-46100 Burjassot
          Valencia, Spain

Phone:    +34 963543078
EMAIL:    j.bautista.climent@uv.es
Fax:      +34 963543084
Phone during observation: +34 963543078, +34629509130
```


```
Observing mode: Phase-referencing at 6cm (1024 Mb/s)

Schedule for TORUN     (Code Tr )                                    Page   2
               new UCD -6cm
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-------------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-------------------------------------------------------------------------------------------

 --- Sun   3 Mar 2019   Day  62 ---

 Next scan frequencies:  4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
                         5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
 Next BBC frequencies:    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
                          806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
 Next scan bandwidths:     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
                           16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00

19 30 00  1123+264     07 29 24  38.8  97.5 -4.0     -41.5     0        0   19 30 00
19 34 00  ---          07 33 25  39.4  98.4 -3.9     -41.4   240       31   19 30 01

19 34 50  J1125+2610   07 34 15  39.5  98.6 -3.9     -41.4    44       31   19 34 50
19 36 10  =1123+264    07 35 35  39.7  98.9 -3.9     -41.3    80       41   19 34 51

19 36 10  EQJ1122      07 35 35  39.9  99.8 -3.8     -41.1   -14       41   No stop
19 40 10  ---          07 39 36  40.5 100.7 -3.7     -40.9   226       72   19 36 11

19 40 10  J1125+2610   07 39 36  40.3  99.7 -3.8     -41.2   -14       72   No stop
19 41 40  =1123+264    07 41 06  40.5 100.1 -3.8     -41.2    76       83   19 40 11

19 41 40  EQJ1122      07 41 06  40.7 101.0 -3.7     -40.9   -14       83   No stop
19 45 40  ---          07 45 07  41.3 101.9 -3.6     -40.7   226      114   19 41 41

19 46 20  J1125+2610   07 45 47  41.2 101.1 -3.7     -41.0    26      114   19 46 20
19 47 30  =1123+264    07 46 57  41.4 101.4 -3.7     -40.9    70      123   19 46 21

19 47 30  EQJ1122      07 46 57  41.5 102.4 -3.6     -40.6   -14      123   No stop
19 51 30  ---          07 50 58  42.1 103.3 -3.5     -40.4   226      154   19 47 31

19 51 30  J1125+2610   07 50 58  42.0 102.3 -3.6     -40.8   -14      154   No stop
19 53 00  =1123+264    07 52 28  42.2 102.6 -3.6     -40.7    76      165   19 51 31

19 53 00  EQJ1122      07 52 28  42.4 103.6 -3.5     -40.4   -14      165   No stop
19 57 00  ---          07 56 28  42.9 104.6 -3.5     -40.2   226      196   19 53 01
```

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 19 57 40 | J1125+2610 | 07 57 09 | 42.9 | 103.7 | -3.5 | -40.5 | 26 | 196 | 19 57 40 |
| 19 58 50 | =1123+264 | 07 58 19 | 43.0 | 104.0 | -3.5 | -40.4 | 70 | 205 | 19 57 41 |
| 19 58 50 | EQJ1122 | 07 58 19 | 43.2 | 105.0 | -3.4 | -40.1 | -14 | 205 | No stop |
| 20 02 50 | --- | 08 02 19 | 43.8 | 106.0 | -3.4 | -39.9 | 226 | 236 | 19 58 51 |
| 20 02 50 | J1125+2610 | 08 02 19 | 43.6 | 104.9 | -3.4 | -40.2 | -14 | 236 | No stop |
| 20 04 20 | =1123+264 | 08 03 50 | 43.8 | 105.3 | -3.4 | -40.1 | 76 | 247 | 20 02 51 |
| 20 04 20 | EQJ1122 | 08 03 50 | 44.0 | 106.3 | -3.3 | -39.8 | -14 | 247 | No stop |
| 20 08 20 | --- | 08 07 50 | 44.6 | 107.3 | -3.3 | -39.5 | 226 | 278 | 20 04 21 |

Schedule for TORUN (Code Tr ) Page 3

new UCD -6cm

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | Start / Stop LST | EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sun 3 Mar 2019 Day 62 --- | | | | | | | | | | |
| 20 09 00 | J1125+2610 | 08 08 30 | 44.5 | 106.4 | -3.3 | | -39.9 | 26 | 278 | 20 09 00 |
| 20 10 10 | =1123+264 | 08 09 41 | 44.7 | 106.7 | -3.3 | | -39.8 | 70 | 287 | 20 09 01 |
| 20 10 10 | EQJ1122 | 08 09 41 | 44.8 | 107.7 | -3.2 | | -39.4 | -14 | 287 | No stop |
| 20 14 10 | --- | 08 13 41 | 45.4 | 108.7 | -3.2 | | -39.1 | 226 | 318 | 20 10 11 |
| 20 14 10 | J1125+2610 | 08 13 41 | 45.2 | 107.7 | -3.2 | | -39.6 | -14 | 318 | No stop |
| 20 15 40 | =1123+264 | 08 15 11 | 45.5 | 108.1 | -3.2 | | -39.5 | 76 | 329 | 20 14 11 |
| 20 15 40 | EQJ1122 | 08 15 11 | 45.6 | 109.1 | -3.1 | | -39.0 | -14 | 329 | No stop |
| 20 19 40 | --- | 08 19 12 | 46.2 | 110.1 | -3.1 | | -38.8 | 226 | 360 | 20 15 41 |
| 20 20 20 | J1125+2610 | 08 19 52 | 46.1 | 109.2 | -3.1 | | -39.1 | 26 | 360 | 20 20 20 |
| 20 21 30 | =1123+264 | 08 21 02 | 46.3 | 109.5 | -3.1 | | -39.1 | 70 | 369 | 20 20 21 |
| 20 21 30 | EQJ1122 | 08 21 02 | 46.5 | 110.6 | -3.0 | | -38.6 | -14 | 369 | No stop |
| 20 25 30 | --- | 08 25 03 | 47.0 | 111.6 | -3.0 | | -38.3 | 226 | 400 | 20 21 31 |
| 20 25 30 | J1125+2610 | 08 25 03 | 46.9 | 110.5 | -3.0 | | -38.8 | -14 | 400 | No stop |
| 20 27 00 | =1123+264 | 08 26 33 | 47.1 | 110.9 | -3.0 | | -38.6 | 76 | 412 | 20 25 31 |
| 20 27 00 | EQJ1122 | 08 26 33 | 47.2 | 112.0 | -3.0 | | -38.2 | -14 | 412 | No stop |
| 20 31 00 | --- | 08 30 34 | 47.8 | 113.1 | -2.9 | | -37.8 | 226 | 442 | 20 27 01 |
| 20 31 40 | J1125+2610 | 08 31 14 | 47.7 | 112.1 | -2.9 | | -38.3 | 26 | 442 | 20 31 40 |
| 20 32 50 | =1123+264 | 08 32 24 | 47.9 | 112.4 | -2.9 | | -38.2 | 70 | 451 | 20 31 41 |
| 20 32 50 | EQJ1122 | 08 32 24 | 48.0 | 113.5 | -2.9 | | -37.7 | -15 | 451 | No stop |
| 20 36 50 | --- | 08 36 25 | 48.6 | 114.6 | -2.8 | | -37.3 | 225 | 482 | 20 32 51 |
| 20 36 50 | J1125+2610 | 08 36 25 | 48.4 | 113.5 | -2.8 | | -37.8 | -14 | 482 | No stop |
| 20 38 20 | =1123+264 | 08 37 55 | 48.6 | 113.9 | -2.8 | | -37.7 | 76 | 494 | 20 36 51 |
| 20 38 20 | EQJ1122 | 08 37 55 | 48.8 | 115.0 | -2.8 | | -37.2 | -15 | 494 | No stop |
| 20 42 20 | --- | 08 41 56 | 49.3 | 116.1 | -2.7 | | -36.8 | 225 | 524 | 20 38 21 |
| 20 43 00 | J1125+2610 | 08 42 36 | 49.3 | 115.2 | -2.7 | | -37.2 | 26 | 524 | 20 43 00 |
| 20 44 10 | =1123+264 | 08 43 46 | 49.4 | 115.5 | -2.7 | | -37.1 | 70 | 533 | 20 43 01 |
| 20 44 10 | EQJ1122 | 08 43 46 | 49.6 | 116.6 | -2.7 | | -36.6 | -15 | 533 | No stop |
| 20 48 10 | --- | 08 47 47 | 50.1 | 117.8 | -2.6 | | -36.1 | 225 | 564 | 20 44 11 |
| 20 48 10 | J1125+2610 | 08 47 47 | 50.0 | 116.6 | -2.7 | | -36.7 | -14 | 564 | No stop |
| 20 49 40 | =1123+264 | 08 49 17 | 50.2 | 117.0 | -2.6 | | -36.5 | 76 | 576 | 20 48 11 |

Schedule for TORUN (Code Tr ) Page 4
new UCD -6cm

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | Start / Stop LST | EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sun 3 Mar 2019 Day 62 --- | | | | | | | | | | |
| 20 49 40 | EQJ1122 | 08 49 17 | 50.3 | 118.2 | -2.6 | | -36.0 | -15 | 576 | No stop |
| 20 53 40 | --- | 08 53 18 | 50.8 | 119.4 | -2.5 | | -35.5 | 225 | 606 | 20 49 41 |
| 20 54 20 | J1125+2610 | 08 53 58 | 50.8 | 118.4 | -2.5 | | -36.0 | 26 | 606 | 20 54 20 |
| 20 55 30 | =1123+264 | 08 55 08 | 51.0 | 118.7 | -2.5 | | -35.9 | 70 | 615 | 20 54 21 |
| 20 55 30 | EQJ1122 | 08 55 08 | 51.1 | 119.9 | -2.5 | | -35.3 | -15 | 615 | No stop |
| 20 59 30 | --- | 08 59 09 | 51.6 | 121.1 | -2.4 | | -34.8 | 225 | 646 | 20 55 31 |
| 20 59 30 | J1125+2610 | 08 59 09 | 51.5 | 119.9 | -2.5 | | -35.4 | -15 | 646 | No stop |
| 21 01 00 | =1123+264 | 09 00 39 | 51.7 | 120.3 | -2.4 | | -35.2 | 75 | 658 | 20 59 31 |
| 21 01 00 | EQJ1122 | 09 00 39 | 51.8 | 121.5 | -2.4 | | -34.6 | -15 | 658 | No stop |
| 21 05 00 | --- | 09 04 40 | 52.3 | 122.7 | -2.3 | | -34.1 | 225 | 688 | 21 01 01 |
| 21 05 40 | J1125+2610 | 09 05 20 | 52.3 | 121.7 | -2.4 | | -34.7 | 25 | 688 | 21 05 40 |
| 21 06 50 | =1123+264 | 09 06 30 | 52.4 | 122.1 | -2.3 | | -34.5 | 70 | 697 | 21 05 41 |
| 21 06 50 | EQJ1122 | 09 06 30 | 52.5 | 123.3 | -2.3 | | -33.9 | -15 | 697 | No stop |
| 21 10 50 | --- | 09 10 31 | 53.0 | 124.5 | -2.2 | | -33.3 | 225 | 728 | 21 06 51 |
| 21 10 50 | J1125+2610 | 09 10 31 | 52.9 | 123.3 | -2.3 | | -34.0 | -15 | 728 | No stop |
| 21 12 20 | =1123+264 | 09 12 01 | 53.1 | 123.8 | -2.2 | | -33.8 | 75 | 740 | 21 10 51 |
| 21 12 20 | EQJ1122 | 09 12 01 | 53.2 | 125.0 | -2.2 | | -33.1 | -15 | 740 | No stop |
| 21 16 20 | --- | 09 16 01 | 53.7 | 126.3 | -2.1 | | -32.5 | 225 | 771 | 21 12 21 |
| 21 17 00 | J1125+2610 | 09 16 42 | 53.7 | 125.2 | -2.2 | | -33.1 | 25 | 771 | 21 17 00 |
| 21 18 10 | =1123+264 | 09 17 52 | 53.9 | 125.6 | -2.2 | | -32.9 | 70 | 779 | 21 17 01 |
| 21 18 10 | EQJ1122 | 09 17 52 | 53.9 | 126.9 | -2.1 | | -32.2 | -15 | 779 | No stop |
| 21 22 10 | --- | 09 21 52 | 54.4 | 128.2 | -2.0 | | -31.6 | 225 | 810 | 21 18 11 |
| 21 22 10 | J1125+2610 | 09 21 52 | 54.3 | 126.9 | -2.1 | | -32.3 | -15 | 810 | No stop |
| 21 23 40 | =1123+264 | 09 23 23 | 54.5 | 127.4 | -2.1 | | -32.1 | 75 | 822 | 21 22 11 |
| 21 23 40 | EQJ1122 | 09 23 23 | 54.6 | 128.7 | -2.0 | | -31.4 | -15 | 822 | No stop |
| 21 27 40 | --- | 09 27 23 | 55.1 | 130.0 | -1.9 | | -30.7 | 225 | 853 | 21 23 41 |
| 21 28 20 | J1125+2610 | 09 28 03 | 55.1 | 129.0 | -2.0 | | -31.3 | 25 | 853 | 21 28 20 |
| 21 29 30 | =1123+264 | 09 29 14 | 55.2 | 129.3 | -2.0 | | -31.1 | 70 | 862 | 21 28 21 |
| 21 29 30 | EQJ1122 | 09 29 14 | 55.3 | 130.7 | -1.9 | | -30.4 | -15 | 862 | No stop |
| 21 33 30 | --- | 09 33 14 | 55.7 | 132.0 | -1.8 | | -29.7 | 225 | 892 | 21 29 31 |

```
Schedule for TORUN     (Code Tr )                                Page   5
               new UCD -6cm
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Sun   3 Mar 2019   Day  62 ---

21 33 30  J1125+2610   09 33 14  55.7 130.7 -1.9     -30.4   -15      892   No stop
21 35 00  =1123+264    09 34 45  55.8 131.2 -1.9     -30.2    75      904   21 33 31

21 35 00  EQJ1122      09 34 45  55.9 132.6 -1.8     -29.4   -16      904   No stop
21 39 00  ---          09 38 45  56.3 134.0 -1.8     -28.7   224      935   21 35 01

21 39 40  J1125+2610   09 39 25  56.4 132.9 -1.8     -29.3    25      935   21 39 40
21 40 50  =1123+264    09 40 35  56.5 133.3 -1.8     -29.1    70      944   21 39 41

21 40 50  EQJ1122      09 40 35  56.5 134.6 -1.7     -28.3   -16      944   No stop
21 44 50  ---          09 44 36  56.9 136.1 -1.7     -27.5   224      974   21 40 51

21 44 50  J1125+2610   09 44 36  56.9 134.7 -1.7     -28.4   -15      974   No stop
21 46 20  =1123+264    09 46 06  57.1 135.3 -1.7     -28.1    75      986   21 44 51

21 46 20  EQJ1122      09 46 06  57.1 136.6 -1.6     -27.2   -16      986   No stop
21 50 20  ---          09 50 07  57.5 138.1 -1.6     -26.4   224     1017   21 46 21

21 51 00  J1125+2610   09 50 47  57.6 137.0 -1.6     -27.1    25     1017   21 51 00
21 52 10  =1123+264    09 51 57  57.7 137.4 -1.6     -26.9    70     1026   21 51 01

21 52 10  EQJ1122      09 51 57  57.7 138.8 -1.5     -26.0   -16     1026   No stop
21 56 10  ---          09 55 58  58.1 140.4 -1.5     -25.2   224     1056   21 52 11

21 56 50  J1125+2610   09 56 38  58.2 139.2 -1.5     -25.9    25     1056   21 56 50
22 00 00  =1123+264    09 59 49  58.5 140.4 -1.5     -25.2   190     1081   21 56 51



SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119.C1024

   Setup group:   12         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
   Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
            4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
  Net SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF SB =         U         U         U         U         U         U         U         U
                  U         U         U         U         U         U         U         U
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
                RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
                  3         7         3         7         4         8         4         8
  BBC SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                 A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:   9  Setup file default.  Used with PCAL = off
  LO sum=   4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
            5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
  BBC fr=    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
             806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
  Bandwd=     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
              16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
   Matching frequency sets:   9

  Track assignments are:
   track1=  18, 26,  2, 10, 20, 28,  4, 12, 22, 30,  6, 14, 24, 32,  8, 16
   barrel=roll_off



 POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                        (B1950)             (J2000)             (Date)            (mas)

 * EQJ1122           11 20 15.543304   * 11 22 54.730001     11 23 55.993940       0.00
                     26 06 49.42045    * 25 50 21.50002      25 43 58.97343        0.00

 * 1123+264          11 23 14.869296   * 11 25 53.711916     11 26 54.844378       0.01
 * J1125+2610        26 26 49.99114    * 26 10 19.97874      26 03 56.63775        0.01
   J1125+26          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                     GSFC 2016a X/S astro solution,  11249 observations.


EFFECT OF SOLAR CORONA

  The solar corona can cause unstable phases for sources too close to the Sun.
  SCHED provides warnings at individual scans for distances less than 10 degrees.
  The distance from the Sun to each source in this schedule is:
    Source         Sun distance (deg)
   EQJ1122            159.9
   1123+264           159.4
   J1125+2610         159.4

  Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
  that the Sun will cause amplitude reductions on the  longest VLBA baselines
  at a solar distance of 60deg F^(-0.6) where F is in GHz.
  For common VLBI bands, this is:
```

```
  1.6 GHz          45. deg
  2.3 GHz          36. deg
  5.0 GHz          23. deg
  8.4 GHz          17. deg
 15.0 GHz          12. deg
 22.0 GHz           9. deg
```

**ec063ctr**

## Dual Frequency Observation of 8 FR 0 Galaxies

PI: *Xiaopeng Cheng*


```
Address:  Shanghai Astronomical Observatory
          Nandan Road 80
          Shanghai 200030
          China

Phone:    +86-18317079386
EMAIL:    xcheng@shao.ac.cn
Fax:
Phone during observation:
```


```
Observing mode:

Schedule for TORUN     (Code Tr )                                    Page   2
               Dual Frequency Observation of 8 FR 0 Galaxies
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Sun   3 Mar 2019   Day  62 ---

 Next scan frequencies:  4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
                         5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
 Next BBC frequencies:    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
                          806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
 Next scan bandwidths:     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
                           16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00

23 00 00  4C39.25      10 59 58  68.9 237.2  1.5      40.5     0        0   23 00 00
23 00 30  ---          11 00 29  68.8 237.4  1.5      40.6    30        4   23 00 01

23 01 30  4C39.25      11 01 29  68.7 237.8  1.6      40.8    53        4   23 01 30
23 04 30  ---          11 04 29  68.3 239.0  1.6      41.5   180       27   23 01 31

23 10 14  J1205+2031   11 10 15  55.5 156.1 -0.9     -15.0   161       27   23 10 14
23 20 14  ---          11 20 16  56.1 160.2 -0.8     -12.6   600      104   23 10 15

23 23 17  J1213+5044   11 23 20  81.7 102.2 -0.9     -67.7    51      104   23 23 17
23 33 17  ---          11 33 21  83.2 107.1 -0.7     -64.8   600      181   23 23 18

23 34 23  J1230+4700   11 34 27  79.0 118.6 -0.9     -50.5    28      181   23 34 23
23 44 23  ---          11 44 29  80.3 125.0 -0.8     -46.1   600      258   23 34 24

23 46 56  J1246+1153   11 47 02  47.0 158.0 -1.0     -13.3    14      258   23 46 56
23 56 56  ---          11 57 04  47.5 161.6 -0.8     -11.2   600      335   23 46 57

 --- Start: Sun   3 Mar 2019   Day  62 -- Stop: Mon   4 Mar 2019   Day  63 ---

23 58 12  J1205+2031   11 58 20  57.3 176.3 -0.1      -2.4    25      335   23 58 12
00 08 12  ---          12 08 21  57.3 180.7  0.0       0.4   600      412   23 58 13

00 11 55  J1213+5044   12 12 05  87.5 171.3 -0.0      -8.2    96      412   00 11 55
00 21 55  ---          12 22 07  87.3 206.4  0.1      24.9   600      488   00 11 56

00 23 26  J1230+4700   12 23 38  83.7 168.3 -0.1     -10.3     0      488   00 23 26
```

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 00 33 26 | --- | 12 33 40 | 83.8 | 184.0 | 0.0 | 3.5 | 600 | 565 | 00 23 27 |
| 00 37 04 | J1246+1153 | 12 37 18 | 48.6 | 176.2 | -0.2 | -2.3 | 72 | 565 | 00 37 04 |
| 00 47 04 | --- | 12 47 20 | 48.7 | 179.9 | -0.0 | -0.0 | 600 | 642 | 00 37 05 |
| 00 52 19 | 4C39.25 | 12 52 36 | 52.8 | 268.8 | 3.4 | 50.5 | 123 | 642 | 00 52 19 |
| 00 55 19 | --- | 12 55 36 | 52.3 | 269.4 | 3.5 | 50.5 | 180 | 665 | 00 52 20 |
| 00 59 46 | J1205+2031 | 13 00 04 | 55.7 | 202.5 | 0.9 | 14.2 | 117 | 665 | 00 59 46 |
| 01 09 46 | --- | 13 10 06 | 55.1 | 206.5 | 1.1 | 16.6 | 600 | 742 | 00 59 47 |

```
Schedule for TORUN     (Code Tr )                                  Page   3
              Dual Frequency Observation of 8 FR 0 Galaxies
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Mon   4 Mar 2019   Day  63 ---

01 13 53  J1213+5044   13 14 13  80.5 261.0  1.0      69.3   124      742   01 13 53
01 23 53  ---          13 24 15  79.0 264.1  1.2      70.3   600      819   01 13 54

01 27 17  J1230+4700   13 27 40  79.0 241.3  0.9      50.4   141      819   01 27 17
01 37 17  ---          13 37 41  77.7 246.5  1.1      53.7   600      896   01 27 18

01 40 04  J1246+1153   13 40 29  47.4 199.3  0.9      11.7    40      896   01 40 04
01 50 04  ---          13 50 31  46.8 202.8  1.0      13.8   600      973   01 40 05

01 51 31  J1205+2031   13 51 58  51.6 221.9  1.8      25.3    34      973   01 51 31
02 01 31  ---          14 01 59  50.5 225.3  1.9      27.1   600     1050   01 51 32

02 04 50  J1213+5044   14 05 18  72.8 273.0  1.8      71.0    89     1050   02 04 50
02 14 50  ---          14 15 20  71.3 274.7  2.0      70.7   600     1127   02 04 51

02 17 03  J1230+4700   14 17 34  71.9 260.7  1.8      60.1    90     1127   02 17 03
02 27 03  ---          14 27 36  70.4 263.3  1.9      60.8   600     1204   02 17 04

02 30 01  J1246+1153   14 30 34  43.9 216.2  1.7      21.2    65     1204   02 30 01
02 40 01  ---          14 40 35  42.9 219.3  1.9      22.9   600     1281   02 30 02

02 43 58  J1213+5044   14 44 34  67.0 279.1  2.5      69.2   103     1281   02 43 58
02 45 58  ---          14 46 34  66.7 279.4  2.5      69.1   120     1296   02 43 59

02 48 53  J1205+2031   14 49 29  44.9 239.5  2.7      33.5    79     1296   02 48 53
02 50 53  ---          14 51 29  44.6 240.1  2.7      33.7   120     1312   02 48 54

02 57 15  3C345        14 57 52  67.6 115.9 -1.8     -44.6   117     1312   02 57 15
03 00 15  ---          15 00 53  68.0 117.0 -1.7     -44.1   180     1335   02 57 16



SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119.C1024

   Setup group:   12         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
   Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
            4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
  Net SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF SB =         U         U         U         U         U         U         U         U
                  U         U         U         U         U         U         U         U
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
                RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
                  3         7         3         7         4         8         4         8
  BBC SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                 A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:   7  Setup file default.  Used with PCAL = off
  LO sum=   4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
            5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
  BBC fr=    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
             806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
  Bandwd=     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
              16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
   Matching frequency sets:   7

  Track assignments are:
   track1=  18, 26,  2, 10, 20, 28,  4, 12, 22, 30,  6, 14, 24, 32,  8, 16
   barrel=roll_off



POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                       (B1950)             (J2000)             (Date)             (mas)

* J1205+2031        12 03 18.216104   * 12 05 51.473530     12 06 50.441803       0.00
                    20 48 00.83641    * 20 31 19.05185      20 24 51.28474        0.00

* J1213+5044        12 10 59.906608   * 12 13 29.280157     12 14 27.032875       0.00
                    51 01 09.80346    * 50 44 29.38276      50 38 01.28922        0.00

* J1230+4700        12 27 47.173563   * 12 30 11.851810     12 31 07.722592       0.00
                    47 16 56.49043    * 47 00 22.63664      46 53 56.47042        0.00

* J1246+1153        12 44 02.787715   * 12 46 33.756100     12 47 31.787561       0.00
                    12 10 10.44371    * 11 53 47.92900      11 47 28.57132        0.00

* 4C39.25           09 23 55.319216   * 09 27 03.013937     09 28 15.065241       0.31
  J0927+3902        39 15 23.56644    * 39 02 20.85185      38 57 18.88591        0.16
  0923+392          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
  J0927+39          GSFC 2016a X/S astro solution, 250526 observations.

* 3C345             16 41 17.606229   * 16 42 58.809967     16 43 36.943150       0.79
  J1642+3948        39 54 10.81492    * 39 48 36.99399      39 46 17.56565        0.59
  1641+399          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
  J1642+39          GSFC 2016a X/S astro solution,  53724 observations.
```

EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun.
SCHED provides warnings at individual scans for distances less than 10 degrees.
The distance from the Sun to each source in this schedule is:

| Source | Sun distance (deg) |
|---|---|
| J1205+2031 | 158.3 |
| J1213+5044 | 133.2 |
| J1230+4700 | 135.0 |
| J1246+1153 | 152.5 |
| 4C39.25 | 141.9 |
| 3C345 | 97.0 |

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
that the Sun will cause amplitude reductions on the longest VLBA baselines
at a solar distance of 60deg F^(-0.6) where F is in GHz.
For common VLBI bands, this is:

| | |
|---|---|
| 1.6 GHz | 45. deg |
| 2.3 GHz | 36. deg |
| 5.0 GHz | 23. deg |
| 8.4 GHz | 17. deg |
| 15.0 GHz | 12. deg |
| 22.0 GHz | 9. deg |

# rsm03tr

RSM03

PI: *Marcote*


```
Address:  JIVE
          Oude Hoogeveensedijk 4
          Dwingeloo
          Netherlands

Phone:    +31 521 596 508
EMAIL:    marcote@jive.eu
Fax:      +31 521 596 539
Phone during observation: +31 521 596 530
```


```
Observing mode: evn

Schedule for TORUN     (Code Tr )                                    Page   2
               RSM03
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source                Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Mon   4 Mar 2019   Day  63 ---

 Next scan frequencies:  4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
                         5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
 Next BBC frequencies:    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
                          806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
 Next scan bandwidths:     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
                           16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00

04 00 00  J2031+1219   16 00 48  23.0 100.2 -4.5     -37.2     0        0   04 00 00
04 03 00  =2029+121    16 03 48  23.5 100.9 -4.5     -37.1   180       23   04 00 01

04 04 50  J2015+3710   16 05 39  44.7  84.3 -4.2     -48.6    17       23   04 04 50
04 06 50  =2013+370    16 07 39  45.0  84.7 -4.1     -48.7   120       38   04 04 51

04 06 50  HD190864     16 07 39  45.4  88.2 -4.0     -47.6   -22       38   No stop
04 10 20  ---          16 11 09  46.0  88.9 -3.9     -47.6   188       65   04 06 51

04 10 20  J2015+3710   16 11 09  45.5  85.3 -4.1     -48.7   -22       65   No stop
04 11 50  =2013+370    16 12 40  45.8  85.6 -4.1     -48.8    68       77   04 10 21

04 11 50  HD190864     16 12 40  46.2  89.2 -3.9     -47.6   -22       77   No stop
04 15 20  ---          16 16 10  46.7  89.9 -3.8     -47.7   188      104   04 11 51

04 16 00  J2015+3710   16 16 50  46.4  86.4 -4.0     -48.8    18      104   04 16 00
04 17 20  =2013+370    16 18 11  46.6  86.6 -4.0     -48.8    80      114   04 16 01

04 17 20  HD190864     16 18 11  47.0  90.3 -3.8     -47.7   -22      114   No stop
04 20 50  ---          16 21 41  47.5  91.0 -3.7     -47.6   188      141   04 17 21

04 20 50  J2015+3710   16 21 41  47.1  87.3 -3.9     -48.9   -22      141   No stop
04 22 20  =2013+370    16 23 11  47.3  87.6 -3.9     -48.9    68      153   04 20 51

04 22 20  J2016+3600   16 23 11  46.4  88.6 -3.9     -48.0   -16      153   No stop
04 25 50  =2014+358    16 26 42  46.9  89.3 -3.8     -48.0   194      179   04 22 21
```

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 04 26 30 | J2015+3710 | 16 27 22 | 48.0 | 88.4 | -3.8 | -48.9 | 23 | 179 | 04 26 30 |
| 04 27 50 | =2013+370 | 16 28 42 | 48.2 | 88.7 | -3.8 | -48.9 | 80 | 190 | 04 26 31 |
| 04 27 50 | HD190864 | 16 28 42 | 48.6 | 92.4 | -3.6 | -47.6 | -22 | 190 | No stop |
| 04 31 20 | --- | 16 32 13 | 49.1 | 93.2 | -3.6 | -47.6 | 188 | 217 | 04 27 51 |
| 04 31 20 | J2015+3710 | 16 32 13 | 48.7 | 89.4 | -3.7 | -49.0 | -22 | 217 | No stop |
| 04 32 50 | =2013+370 | 16 33 43 | 48.9 | 89.7 | -3.7 | -49.0 | 68 | 228 | 04 31 21 |
| 04 32 50 | HD190864 | 16 33 43 | 49.3 | 93.5 | -3.5 | -47.5 | -23 | 228 | No stop |
| 04 36 20 | --- | 16 37 14 | 49.9 | 94.2 | -3.5 | -47.5 | 187 | 255 | 04 32 51 |

Schedule for TORUN (Code Tr ) Page 3

RSM03

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Mon 4 Mar 2019 Day 63 --- | | | | | | | | | | |
| 04 37 00 | J2015+3710 | 16 37 54 | 49.6 | 90.5 | -3.6 | | -49.0 | 18 | 255 | 04 37 00 |
| 04 38 20 | =2013+370 | 16 39 14 | 49.8 | 90.8 | -3.6 | | -49.0 | 80 | 265 | 04 37 01 |
| 04 38 20 | HD190864 | 16 39 14 | 50.2 | 94.6 | -3.5 | | -47.4 | -23 | 265 | No stop |
| 04 41 50 | --- | 16 42 45 | 50.7 | 95.4 | -3.4 | | -47.4 | 187 | 292 | 04 38 21 |
| 04 41 50 | J2015+3710 | 16 42 45 | 50.3 | 91.5 | -3.6 | | -48.9 | -23 | 292 | No stop |
| 04 43 20 | =2013+370 | 16 44 15 | 50.5 | 91.8 | -3.5 | | -48.9 | 67 | 304 | 04 41 51 |
| 04 43 20 | J2016+3600 | 16 44 15 | 49.5 | 92.9 | -3.6 | | -47.9 | -16 | 304 | No stop |
| 04 46 50 | =2014+358 | 16 47 45 | 50.1 | 93.6 | -3.5 | | -47.8 | 194 | 331 | 04 43 21 |
| 04 47 30 | J2015+3710 | 16 48 26 | 51.1 | 92.7 | -3.5 | | -48.9 | 23 | 331 | 04 47 30 |
| 04 48 50 | =2013+370 | 16 49 46 | 51.3 | 92.9 | -3.4 | | -48.9 | 80 | 341 | 04 47 31 |
| 04 48 50 | HD190864 | 16 49 46 | 51.7 | 96.9 | -3.3 | | -47.2 | -23 | 341 | No stop |
| 04 52 20 | --- | 16 53 16 | 52.3 | 97.7 | -3.2 | | -47.1 | 187 | 368 | 04 48 51 |
| 04 52 20 | J2015+3710 | 16 53 16 | 51.9 | 93.7 | -3.4 | | -48.8 | -23 | 368 | No stop |
| 04 53 50 | =2013+370 | 16 54 47 | 52.1 | 94.0 | -3.4 | | -48.8 | 67 | 379 | 04 52 21 |
| 04 53 50 | HD190864 | 16 54 47 | 52.5 | 98.1 | -3.2 | | -47.0 | -23 | 379 | No stop |
| 04 57 20 | --- | 16 58 17 | 53.0 | 98.9 | -3.1 | | -46.9 | 187 | 406 | 04 53 51 |
| 04 58 00 | J2015+3710 | 16 58 57 | 52.7 | 94.9 | -3.3 | | -48.7 | 17 | 406 | 04 58 00 |
| 04 59 20 | =2013+370 | 17 00 18 | 52.9 | 95.2 | -3.3 | | -48.7 | 80 | 417 | 04 58 01 |
| 04 59 20 | HD190864 | 17 00 18 | 53.3 | 99.3 | -3.1 | | -46.8 | -23 | 417 | No stop |
| 05 02 50 | --- | 17 03 48 | 53.8 | 100.2 | -3.0 | | -46.7 | 187 | 444 | 04 59 21 |
| 05 02 50 | J2015+3710 | 17 03 48 | 53.4 | 96.0 | -3.2 | | -48.6 | -23 | 444 | No stop |
| 05 04 20 | =2013+370 | 17 05 18 | 53.7 | 96.3 | -3.2 | | -48.6 | 67 | 455 | 05 02 51 |
| 05 04 20 | J2016+3600 | 17 05 18 | 52.7 | 97.5 | -3.2 | | -47.4 | -16 | 455 | No stop |
| 05 07 50 | =2014+358 | 17 08 49 | 53.2 | 98.3 | -3.1 | | -47.3 | 194 | 482 | 05 04 21 |
| 05 08 30 | J2015+3710 | 17 09 29 | 54.3 | 97.2 | -3.1 | | -48.4 | 23 | 482 | 05 08 30 |
| 05 09 50 | =2013+370 | 17 10 49 | 54.5 | 97.5 | -3.1 | | -48.4 | 80 | 492 | 05 08 31 |
| 05 09 50 | HD190864 | 17 10 49 | 54.9 | 101.9 | -2.9 | | -46.3 | -24 | 492 | No stop |
| 05 13 20 | --- | 17 14 20 | 55.4 | 102.7 | -2.9 | | -46.1 | 186 | 519 | 05 09 51 |
| 05 13 20 | J2015+3710 | 17 14 20 | 55.0 | 98.3 | -3.0 | | -48.3 | -24 | 519 | No stop |
| 05 14 50 | =2013+370 | 17 15 50 | 55.2 | 98.7 | -3.0 | | -48.2 | 66 | 531 | 05 13 21 |

Schedule for TORUN (Code Tr ) Page 4
RSM03

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Mon 4 Mar 2019 Day 63 --- | | | | | | | | | | |
| 05 14 50 | HD190864 | 17 15 50 | 55.6 | 103.1 | -2.8 | | -46.0 | -24 | 531 | No stop |
| 05 18 20 | --- | 17 19 21 | 56.1 | 104.0 | -2.8 | | -45.8 | 186 | 558 | 05 14 51 |
| 05 19 00 | J2015+3710 | 17 20 01 | 55.8 | 99.7 | -2.9 | | -48.0 | 16 | 558 | 05 19 00 |
| 05 20 20 | =2013+370 | 17 21 21 | 56.0 | 100.0 | -2.9 | | -48.0 | 80 | 568 | 05 19 01 |
| 05 20 20 | HD190864 | 17 21 21 | 56.4 | 104.5 | -2.8 | | -45.7 | -24 | 568 | No stop |
| 05 23 50 | --- | 17 24 52 | 56.9 | 105.4 | -2.7 | | -45.4 | 186 | 595 | 05 20 21 |
| 05 23 50 | J2015+3710 | 17 24 52 | 56.6 | 100.8 | -2.9 | | -47.8 | -24 | 595 | No stop |
| 05 25 20 | =2013+370 | 17 26 22 | 56.8 | 101.2 | -2.8 | | -47.7 | 66 | 606 | 05 23 51 |
| 05 25 20 | J2016+3600 | 17 26 22 | 55.8 | 102.4 | -2.9 | | -46.5 | -16 | 606 | No stop |
| 05 28 50 | =2014+358 | 17 29 52 | 56.3 | 103.3 | -2.8 | | -46.3 | 194 | 633 | 05 25 21 |
| 05 29 30 | J2015+3710 | 17 30 32 | 57.4 | 102.2 | -2.8 | | -47.5 | 23 | 633 | 05 29 30 |
| 05 30 50 | =2013+370 | 17 31 53 | 57.6 | 102.6 | -2.7 | | -47.4 | 80 | 644 | 05 29 31 |
| 05 30 50 | HD190864 | 17 31 53 | 57.9 | 107.3 | -2.6 | | -44.9 | -25 | 644 | No stop |
| 05 34 20 | --- | 17 35 23 | 58.4 | 108.2 | -2.5 | | -44.6 | 185 | 671 | 05 30 51 |
| 05 34 20 | J2015+3710 | 17 35 23 | 58.1 | 103.5 | -2.7 | | -47.2 | -24 | 671 | No stop |
| 05 35 50 | =2013+370 | 17 36 54 | 58.3 | 103.8 | -2.7 | | -47.1 | 66 | 682 | 05 34 21 |
| 05 35 50 | HD190864 | 17 36 54 | 58.6 | 108.6 | -2.5 | | -44.5 | -25 | 682 | No stop |
| 05 39 20 | --- | 17 40 24 | 59.1 | 109.6 | -2.4 | | -44.1 | 185 | 709 | 05 35 51 |
| 05 40 00 | J2015+3710 | 17 41 04 | 58.9 | 104.9 | -2.6 | | -46.8 | 15 | 709 | 05 40 00 |
| 05 41 20 | =2013+370 | 17 42 24 | 59.1 | 105.3 | -2.6 | | -46.7 | 80 | 719 | 05 40 01 |
| 05 41 20 | HD190864 | 17 42 24 | 59.4 | 110.2 | -2.4 | | -43.9 | -25 | 719 | No stop |
| 05 44 50 | --- | 17 45 55 | 59.9 | 111.2 | -2.3 | | -43.5 | 185 | 746 | 05 41 21 |
| 05 44 50 | J2015+3710 | 17 45 55 | 59.6 | 106.2 | -2.5 | | -46.4 | -25 | 746 | No stop |
| 05 46 20 | =2013+370 | 17 47 25 | 59.9 | 106.6 | -2.5 | | -46.3 | 65 | 758 | 05 44 51 |
| 05 46 20 | J2016+3600 | 17 47 25 | 58.8 | 107.9 | -2.5 | | -45.0 | -16 | 758 | No stop |
| 05 49 50 | =2014+358 | 17 50 56 | 59.3 | 108.9 | -2.4 | | -44.6 | 194 | 785 | 05 46 21 |
| 05 50 30 | J2015+3710 | 17 51 36 | 60.5 | 107.8 | -2.4 | | -45.9 | 23 | 785 | 05 50 30 |
| 05 51 50 | =2013+370 | 17 52 56 | 60.6 | 108.2 | -2.4 | | -45.8 | 80 | 795 | 05 50 31 |
| 05 51 50 | HD190864 | 17 52 56 | 60.9 | 113.3 | -2.2 | | -42.7 | -26 | 795 | No stop |
| 05 55 20 | --- | 17 56 27 | 61.4 | 114.4 | -2.2 | | -42.3 | 184 | 822 | 05 51 51 |

Schedule for TORUN (Code Tr ) Page 5

RSM03

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Mon 4 Mar 2019 Day 63 --- | | | | | | | | | | |
| 05 55 20 | J2015+3710 | 17 56 27 | 61.1 | 109.2 | -2.3 | | -45.4 | -25 | 822 | No stop |
| 05 56 50 | =2013+370 | 17 57 57 | 61.4 | 109.6 | -2.3 | | -45.3 | 65 | 833 | 05 55 21 |
| 05 56 50 | HD190864 | 17 57 57 | 61.6 | 114.9 | -2.1 | | -42.1 | -26 | 833 | No stop |
| 06 00 20 | --- | 18 01 28 | 62.1 | 116.0 | -2.1 | | -41.6 | 184 | 860 | 05 56 51 |
| 06 01 00 | J2015+3710 | 18 02 08 | 61.9 | 110.9 | -2.2 | | -44.8 | 14 | 860 | 06 01 00 |
| 06 02 20 | =2013+370 | 18 03 28 | 62.1 | 111.3 | -2.2 | | -44.7 | 80 | 871 | 06 01 01 |
| 06 02 20 | HD190864 | 18 03 28 | 62.3 | 116.7 | -2.0 | | -41.3 | -26 | 871 | No stop |
| 06 05 50 | --- | 18 06 58 | 62.8 | 117.8 | -2.0 | | -40.8 | 184 | 897 | 06 02 21 |
| 06 05 50 | J2015+3710 | 18 06 58 | 62.6 | 112.3 | -2.2 | | -44.2 | -26 | 897 | No stop |
| 06 07 20 | =2013+370 | 18 08 29 | 62.8 | 112.8 | -2.1 | | -44.1 | 64 | 909 | 06 05 51 |
| 06 07 20 | J2016+3600 | 18 08 29 | 61.8 | 114.1 | -2.1 | | -42.7 | -17 | 909 | No stop |
| 06 10 50 | =2014+358 | 18 11 59 | 62.3 | 115.2 | -2.1 | | -42.2 | 193 | 936 | 06 07 21 |
| 06 11 30 | J2015+3710 | 18 12 39 | 63.4 | 114.1 | -2.1 | | -43.5 | 23 | 936 | 06 11 30 |
| 06 12 50 | =2013+370 | 18 14 00 | 63.6 | 114.6 | -2.0 | | -43.3 | 80 | 946 | 06 11 31 |
| 06 12 50 | HD190864 | 18 14 00 | 63.7 | 120.2 | -1.9 | | -39.7 | -27 | 946 | No stop |
| 06 16 20 | --- | 18 17 30 | 64.2 | 121.5 | -1.8 | | -39.1 | 183 | 973 | 06 12 51 |
| 06 16 20 | J2015+3710 | 18 17 30 | 64.1 | 115.7 | -2.0 | | -42.8 | -26 | 973 | No stop |
| 06 17 50 | =2013+370 | 18 19 00 | 64.3 | 116.2 | -2.0 | | -42.6 | 64 | 985 | 06 16 21 |
| 06 17 50 | HD190864 | 18 19 00 | 64.4 | 122.1 | -1.8 | | -38.8 | -27 | 985 | No stop |
| 06 21 20 | --- | 18 22 31 | 64.8 | 123.4 | -1.7 | | -38.1 | 183 | 1012 | 06 17 51 |
| 06 22 00 | J2015+3710 | 18 23 11 | 64.8 | 117.7 | -1.9 | | -41.9 | 13 | 1012 | 06 22 00 |
| 06 23 20 | =2013+370 | 18 24 31 | 65.0 | 118.1 | -1.9 | | -41.7 | 80 | 1022 | 06 22 01 |
| 06 23 20 | HD190864 | 18 24 31 | 65.1 | 124.1 | -1.7 | | -37.7 | -27 | 1022 | No stop |
| 06 26 50 | --- | 18 28 02 | 65.5 | 125.5 | -1.6 | | -37.0 | 183 | 1049 | 06 23 21 |
| 06 26 50 | J2015+3710 | 18 28 02 | 65.5 | 119.4 | -1.8 | | -41.1 | -27 | 1049 | No stop |
| 06 28 20 | =2013+370 | 18 29 32 | 65.7 | 119.9 | -1.8 | | -40.8 | 63 | 1060 | 06 26 51 |
| 06 28 20 | J2016+3600 | 18 29 32 | 64.6 | 121.2 | -1.8 | | -39.4 | -17 | 1060 | No stop |
| 06 31 50 | =2014+358 | 18 33 03 | 65.0 | 122.5 | -1.7 | | -38.8 | 193 | 1087 | 06 28 21 |
| 06 32 30 | J2015+3710 | 18 33 43 | 66.2 | 121.5 | -1.7 | | -40.0 | 23 | 1087 | 06 32 30 |
| 06 33 50 | =2013+370 | 18 35 03 | 66.4 | 122.0 | -1.7 | | -39.8 | 80 | 1097 | 06 32 31 |

Schedule for TORUN (Code Tr ) Page 6

RSM03

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Mon 4 Mar 2019 Day 63 --- | | | | | | | | | | |
| 06 33 50 | HD190864 | 18 35 03 | 66.3 | 128.3 | -1.5 | | -35.5 | -28 | 1097 | No stop |
| 06 37 20 | --- | 18 38 34 | 66.7 | 129.7 | -1.5 | | -34.6 | 182 | 1124 | 06 33 51 |
| 06 37 20 | J2015+3710 | 18 38 34 | 66.8 | 123.3 | -1.6 | | -39.1 | -28 | 1124 | No stop |
| 06 38 50 | =2013+370 | 18 40 04 | 67.0 | 123.9 | -1.6 | | -38.7 | 62 | 1136 | 06 37 21 |
| 06 38 50 | HD190864 | 18 40 04 | 66.9 | 130.4 | -1.4 | | -34.3 | -28 | 1136 | No stop |
| 06 42 20 | --- | 18 43 34 | 67.3 | 131.9 | -1.4 | | -33.4 | 182 | 1163 | 06 38 51 |
| 06 43 00 | J2015+3710 | 18 44 15 | 67.5 | 125.6 | -1.5 | | -37.8 | 12 | 1163 | 06 43 00 |
| 06 44 20 | =2013+370 | 18 45 35 | 67.7 | 126.2 | -1.5 | | -37.5 | 80 | 1173 | 06 43 01 |
| 06 44 20 | HD190864 | 18 45 35 | 67.5 | 132.8 | -1.3 | | -32.8 | -29 | 1173 | No stop |
| 06 47 50 | --- | 18 49 05 | 67.9 | 134.4 | -1.3 | | -31.9 | 181 | 1200 | 06 44 21 |
| 06 47 50 | J2015+3710 | 18 49 05 | 68.1 | 127.7 | -1.5 | | -36.7 | -28 | 1200 | No stop |
| 06 49 20 | =2013+370 | 18 50 36 | 68.3 | 128.3 | -1.4 | | -36.3 | 62 | 1212 | 06 47 51 |
| 06 49 20 | J2016+3600 | 18 50 36 | 67.2 | 129.6 | -1.4 | | -34.9 | -17 | 1212 | No stop |
| 06 52 50 | =2014+358 | 18 54 06 | 67.6 | 131.1 | -1.4 | | -34.1 | 193 | 1238 | 06 49 21 |
| 06 53 30 | J2015+3710 | 18 54 46 | 68.8 | 130.1 | -1.4 | | -35.2 | 23 | 1238 | 06 53 30 |
| 06 54 50 | =2013+370 | 18 56 06 | 68.9 | 130.8 | -1.3 | | -34.8 | 80 | 1249 | 06 53 31 |
| 06 54 50 | HD190864 | 18 56 06 | 68.6 | 137.7 | -1.2 | | -29.8 | -29 | 1249 | No stop |
| 06 58 20 | --- | 18 59 37 | 69.0 | 139.4 | -1.1 | | -28.7 | 181 | 1276 | 06 54 51 |
| 06 58 20 | J2015+3710 | 18 59 37 | 69.3 | 132.4 | -1.3 | | -33.9 | -29 | 1276 | No stop |
| 06 59 50 | =2013+370 | 19 01 07 | 69.5 | 133.1 | -1.3 | | -33.4 | 61 | 1287 | 06 58 21 |
| 06 59 50 | HD190864 | 19 01 07 | 69.1 | 140.2 | -1.1 | | -28.3 | -30 | 1287 | No stop |
| 07 03 20 | --- | 19 04 38 | 69.5 | 142.0 | -1.0 | | -27.1 | 180 | 1314 | 06 59 51 |
| 07 04 00 | J2015+3710 | 19 05 18 | 69.9 | 135.1 | -1.2 | | -32.2 | 11 | 1314 | 07 04 00 |
| 07 05 20 | =2013+370 | 19 06 38 | 70.1 | 135.8 | -1.2 | | -31.8 | 80 | 1324 | 07 04 01 |
| 07 05 20 | HD190864 | 19 06 38 | 69.6 | 143.0 | -1.0 | | -26.4 | -30 | 1324 | No stop |
| 07 08 50 | --- | 19 10 09 | 70.0 | 144.9 | -0.9 | | -25.2 | 180 | 1351 | 07 05 21 |
| 07 08 50 | J2015+3710 | 19 10 09 | 70.4 | 137.5 | -1.1 | | -30.6 | -29 | 1351 | No stop |
| 07 10 20 | =2013+370 | 19 11 39 | 70.6 | 138.3 | -1.1 | | -30.1 | 61 | 1363 | 07 08 51 |
| 07 10 20 | J2016+3600 | 19 11 39 | 69.4 | 139.3 | -1.1 | | -29.0 | -17 | 1363 | No stop |
| 07 13 50 | =2014+358 | 19 15 10 | 69.8 | 141.1 | -1.0 | | -27.8 | 193 | 1390 | 07 10 21 |

Schedule for TORUN (Code Tr ) Page 7

RSM03

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Mon 4 Mar 2019 Day 63 --- | | | | | | | | | | |
| 07 14 30 | J2015+3710 | 19 15 50 | 71.0 | 140.5 | -1.0 | | -28.7 | 22 | 1390 | 07 14 30 |
| 07 15 50 | =2013+370 | 19 17 10 | 71.1 | 141.2 | -1.0 | | -28.2 | 80 | 1400 | 07 14 31 |
| 07 15 50 | HD190864 | 19 17 10 | 70.5 | 148.7 | -0.8 | | -22.6 | -30 | 1400 | No stop |
| 07 19 20 | --- | 19 20 41 | 70.8 | 150.7 | -0.8 | | -21.2 | 180 | 1427 | 07 15 51 |
| 07 19 20 | J2015+3710 | 19 20 41 | 71.4 | 143.1 | -0.9 | | -26.9 | -30 | 1427 | No stop |
| 07 20 50 | =2013+370 | 19 22 11 | 71.6 | 144.0 | -0.9 | | -26.3 | 60 | 1438 | 07 19 21 |
| 07 20 50 | HD190864 | 19 22 11 | 70.9 | 151.6 | -0.7 | | -20.6 | -31 | 1438 | No stop |
| 07 24 20 | --- | 19 25 41 | 71.2 | 153.6 | -0.7 | | -19.2 | 179 | 1465 | 07 20 51 |
| 07 25 00 | J2015+3710 | 19 26 21 | 71.9 | 146.4 | -0.8 | | -24.7 | 10 | 1465 | 07 25 00 |
| 07 26 20 | =2013+370 | 19 27 42 | 72.0 | 147.2 | -0.8 | | -24.1 | 80 | 1476 | 07 25 01 |
| 07 26 20 | HD190864 | 19 27 42 | 71.3 | 154.8 | -0.6 | | -18.3 | -31 | 1476 | No stop |
| 07 29 50 | --- | 19 31 12 | 71.5 | 157.0 | -0.6 | | -16.8 | 179 | 1503 | 07 26 21 |
| 07 29 50 | J2015+3710 | 19 31 12 | 72.3 | 149.3 | -0.7 | | -22.7 | -30 | 1503 | No stop |
| 07 31 20 | =2013+370 | 19 32 42 | 72.4 | 150.2 | -0.7 | | -22.0 | 60 | 1514 | 07 29 51 |
| 07 31 20 | J2016+3600 | 19 32 42 | 71.2 | 150.8 | -0.7 | | -21.2 | -17 | 1514 | No stop |
| 07 34 50 | =2014+358 | 19 36 13 | 71.5 | 152.9 | -0.7 | | -19.8 | 193 | 1541 | 07 31 21 |
| 07 35 30 | J2015+3710 | 19 36 53 | 72.7 | 152.8 | -0.7 | | -20.2 | 22 | 1541 | 07 35 30 |
| 07 36 50 | =2013+370 | 19 38 13 | 72.8 | 153.6 | -0.6 | | -19.6 | 80 | 1551 | 07 35 31 |
| 07 36 50 | HD190864 | 19 38 13 | 71.9 | 161.3 | -0.5 | | -13.7 | -31 | 1551 | No stop |
| 07 40 20 | --- | 19 41 44 | 72.0 | 163.6 | -0.4 | | -12.0 | 179 | 1578 | 07 36 51 |
| 07 40 20 | J2015+3710 | 19 41 44 | 73.1 | 155.9 | -0.6 | | -18.0 | -30 | 1578 | No stop |
| 07 41 50 | =2013+370 | 19 43 14 | 73.1 | 156.9 | -0.5 | | -17.2 | 60 | 1590 | 07 40 21 |
| 07 41 50 | HD190864 | 19 43 14 | 72.1 | 164.6 | -0.4 | | -11.3 | -31 | 1590 | No stop |
| 07 45 20 | --- | 19 46 45 | 72.2 | 166.9 | -0.3 | | -9.7 | 179 | 1617 | 07 41 51 |
| 07 46 00 | J2015+3710 | 19 47 25 | 73.4 | 159.6 | -0.5 | | -15.2 | 10 | 1617 | 07 46 00 |
| 07 47 10 | =2013+370 | 19 48 35 | 73.4 | 160.4 | -0.5 | | -14.6 | 70 | 1626 | 07 46 01 |
| 07 47 10 | HD190864 | 19 48 35 | 72.3 | 168.1 | -0.3 | | -8.8 | -31 | 1626 | No stop |
| 07 50 40 | --- | 19 52 06 | 72.4 | 170.4 | -0.2 | | -7.1 | 179 | 1653 | 07 47 11 |
| 07 50 40 | J2015+3710 | 19 52 06 | 73.6 | 162.8 | -0.4 | | -12.9 | -30 | 1653 | No stop |
| 07 52 10 | =2013+370 | 19 53 36 | 73.7 | 163.8 | -0.4 | | -12.1 | 60 | 1664 | 07 50 41 |

```
Schedule for TORUN     (Code Tr )                                  Page   8
               RSM03
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Mon   4 Mar 2019   Day  63 ---

07 52 10  HD190864     19 53 36  72.4 171.4 -0.2      -6.4   -31     1664   No stop
07 55 30  ---          19 56 56  72.5 173.6 -0.2      -4.7   169     1690   07 52 11

07 55 30  J2015+3710   19 56 56  73.8 166.2 -0.3     -10.4   -29     1690   No stop
07 57 00  =2013+370    19 58 27  73.8 167.2 -0.3      -9.6    61     1701   07 55 31

07 57 00  J2115+2933   19 58 27  62.6 141.1 -1.3     -25.7   -66     1701   No stop
08 00 00  =2113+293    20 01 27  62.8 142.4 -1.2     -25.0   114     1724   07 57 01



SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119.C1024

   Setup group:   12         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
   Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
            4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
  Net SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF SB =         U         U         U         U         U         U         U         U
                  U         U         U         U         U         U         U         U
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
                RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
                  3         7         3         7         4         8         4         8
  BBC SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                 A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:   9  Setup file default.  Used with PCAL = off
  LO sum=   4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
            5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
  BBC fr=    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
             806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
  Bandwd=     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
              16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
   Matching frequency sets:   9

  Track assignments are:
   track1=  18, 26,  2, 10, 20, 28,  4, 12, 22, 30,  6, 14, 24, 32,  8, 16
   barrel=roll_off



POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                       (B1950)             (J2000)             (Date)             (mas)

* HD190864          20 03 46.830099   * 20 05 39.797765     20 06 21.290862       0.00
                    35 27 49.06758    * 35 36 27.86415      35 39 34.87561        0.00

  2013+370          20 13 37.014517   * 20 15 28.729803     20 16 09.695221       0.09
* J2015+3710        37 01 44.45878    * 37 10 59.51466      37 14 20.32248        0.12
                    /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,    131 observations.

  2014+358          20 14 51.989521   * 20 16 45.618699     20 17 27.318198       0.37
* J2016+3600        35 51 13.71776    * 36 00 33.37371      36 03 56.07456        0.42
                    /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,     58 observations.

  2029+121          20 29 32.681260   * 20 31 54.994267     20 32 47.614743       0.01
* J2031+1219        12 09 28.75299    * 12 19 41.34015      12 23 27.39316        0.02
  J2031+12          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,   4314 observations.

  2113+293          21 13 20.577467   * 21 15 29.413455     21 16 16.779895       0.00
* J2115+2933        29 21 06.68461    * 29 33 38.36692      29 38 15.54949        0.01
  J2115+29          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,  47145 observations.
```

EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun.
SCHED provides warnings at individual scans for distances less than 10 degrees.
The distance from the Sun to each source in this schedule is:

| Source | Sun distance (deg) |
|---|---|
| HD190864 | 58.5 |
| J2015+3710 | 57.9 |
| J2016+3600 | 56.9 |
| J2031+1219 | 40.9 |
| J2115+2933 | 43.7 |

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
that the Sun will cause amplitude reductions on the longest VLBA baselines
at a solar distance of 60deg F^(-0.6) where F is in GHz.
For common VLBI bands, this is:

| | |
|---|---|
| 1.6 GHz | 45. deg |
| 2.3 GHz | 36. deg |
| 5.0 GHz | 23. deg |
| 8.4 GHz | 17. deg |
| 15.0 GHz | 12. deg |
| 22.0 GHz | 9. deg |

# gv025tr

## 6cm global VLBI observations of IC860

PI: *Eskil Varenius*


```
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          Cheshire, SK11 9DL
          UK

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```


```
Observing mode: 6cm 1Gbps global VLBI (EVN+VLBA+eMERLIN)

Schedule for TORUN     (Code Tr )                                  Page   2
               6cm global VLBI observations of IC860
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Mon   4 Mar 2019   Day  63 ---

 Next scan frequencies:  4884.00  4884.00  4884.00  4884.00  4916.00  4916.00  4916.00  4916.00
                         4948.00  4948.00  4948.00  4948.00  4980.00  4980.00  4980.00  4980.00
 Next BBC frequencies:    684.00   684.00   684.00   684.00   716.00   716.00   716.00   716.00
                          748.00   748.00   748.00   748.00   780.00   780.00   780.00   780.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
                           16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00

20 00 00  J1327+2210   08 03 25  22.7  83.1 -5.4     -40.0     0        0   20 00 00
20 06 00  =1324+224    08 09 26  23.6  84.2 -5.3     -40.1   360       46   20 00 01

20 06 35  J1314+2348   08 10 01  26.8  85.5 -5.1     -40.8     9       46   20 06 35
20 08 35  =1312+240    08 12 02  27.1  85.9 -5.1     -40.9   120       62   20 06 36

20 09 02  IC860        08 12 29  27.7  85.4 -5.1     -41.1    14       62   20 09 02
20 13 02  ---          08 16 30  28.3  86.1 -5.0     -41.2   240       92   20 09 03

20 13 31  J1314+2348   08 16 58  27.8  86.9 -5.0     -40.9    15       92   20 13 31
20 15 31  =1312+240    08 18 59  28.1  87.3 -4.9     -40.9   120      108   20 13 32

20 15 58  IC860        08 19 27  28.8  86.7 -4.9     -41.2    14      108   20 15 58
20 19 58  ---          08 23 27  29.4  87.5 -4.9     -41.3   240      138   20 15 59

20 20 27  J1314+2348   08 23 56  28.9  88.3 -4.9     -41.0    15      138   20 20 27
20 22 27  =1312+240    08 25 56  29.2  88.7 -4.8     -41.0   120      154   20 20 28

20 22 55  IC860        08 26 24  29.8  88.1 -4.8     -41.3    14      154   20 22 55
20 26 55  ---          08 30 24  30.4  88.9 -4.8     -41.3   240      185   20 22 56

20 27 23  J1314+2348   08 30 53  29.9  89.6 -4.7     -41.0    15      185   20 27 23
20 29 23  =1312+240    08 32 53  30.2  90.0 -4.7     -41.0   120      200   20 27 24

20 29 51  IC860        08 33 21  30.8  89.5 -4.7     -41.3    14      200   20 29 51
20 33 51  ---          08 37 22  31.5  90.3 -4.6     -41.3   240      231   20 29 52
```

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 20 34 19 | J1314+2348 | 08 37 50 | 31.0 | 91.0 | -4.6 | -41.0 | 15 | 231 | 20 34 19 |
| 20 36 19 | =1312+240 | 08 39 51 | 31.3 | 91.4 | -4.6 | -41.0 | 120 | 246 | 20 34 20 |
| 20 36 47 | IC860 | 08 40 19 | 31.9 | 90.8 | -4.6 | -41.3 | 14 | 246 | 20 36 47 |
| 20 40 47 | --- | 08 44 19 | 32.5 | 91.7 | -4.5 | -41.3 | 240 | 277 | 20 36 48 |
| 20 41 16 | J1314+2348 | 08 44 48 | 32.0 | 92.5 | -4.5 | -40.9 | 15 | 277 | 20 41 16 |
| 20 43 16 | =1312+240 | 08 46 48 | 32.3 | 92.9 | -4.5 | -40.9 | 120 | 292 | 20 41 17 |
| 20 43 44 | IC860 | 08 47 16 | 32.9 | 92.3 | -4.5 | -41.3 | 14 | 292 | 20 43 44 |
| 20 47 44 | --- | 08 51 17 | 33.5 | 93.1 | -4.4 | -41.2 | 240 | 323 | 20 43 45 |

Schedule for TORUN (Code Tr ) Page 3

6cm global VLBI observations of IC860

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Mon 4 Mar 2019 Day 63 --- | | | | | | | | | | |
| 20 48 12 | J1314+2348 | 08 51 46 | 33.0 | 93.9 | -4.4 | | -40.9 | 15 | 323 | 20 48 12 |
| 20 50 12 | =1312+240 | 08 53 46 | 33.3 | 94.3 | -4.4 | | -40.8 | 120 | 338 | 20 48 13 |
| 20 50 40 | IC860 | 08 54 14 | 34.0 | 93.7 | -4.4 | | -41.2 | 14 | 338 | 20 50 40 |
| 20 54 40 | --- | 08 58 15 | 34.6 | 94.5 | -4.3 | | -41.1 | 240 | 369 | 20 50 41 |
| 20 55 09 | J1314+2348 | 08 58 44 | 34.1 | 95.3 | -4.3 | | -40.8 | 15 | 369 | 20 55 09 |
| 20 57 09 | =1312+240 | 09 00 44 | 34.4 | 95.7 | -4.2 | | -40.7 | 120 | 385 | 20 55 10 |
| 20 57 37 | IC860 | 09 01 12 | 35.0 | 95.1 | -4.2 | | -41.1 | 14 | 385 | 20 57 37 |
| 21 01 37 | --- | 09 05 13 | 35.6 | 96.0 | -4.2 | | -41.0 | 240 | 415 | 20 57 38 |
| 21 02 06 | J1314+2348 | 09 05 42 | 35.1 | 96.8 | -4.2 | | -40.6 | 15 | 415 | 21 02 06 |
| 21 04 06 | =1312+240 | 09 07 42 | 35.4 | 97.2 | -4.1 | | -40.6 | 120 | 431 | 21 02 07 |
| 21 04 34 | IC860 | 09 08 10 | 36.1 | 96.6 | -4.1 | | -41.0 | 14 | 431 | 21 04 34 |
| 21 08 34 | --- | 09 12 11 | 36.7 | 97.5 | -4.1 | | -40.9 | 240 | 462 | 21 04 35 |
| ---------- End of block 1 ---------- | | | | | | | | | | |
| 21 09 18 | J1327+2210 | 09 12 55 | 33.1 | 97.0 | -4.3 | | -40.0 | 17 | 462 | 21 09 18 |
| 21 14 18 | =1324+224 | 09 17 56 | 33.9 | 98.1 | -4.2 | | -39.9 | 300 | 500 | 21 09 19 |
| 21 15 01 | J1314+2348 | 09 18 39 | 37.1 | 99.6 | -4.0 | | -40.3 | 17 | 500 | 21 15 01 |
| 21 17 01 | =1312+240 | 09 20 39 | 37.4 | 100.0 | -3.9 | | -40.2 | 120 | 515 | 21 15 02 |
| 21 17 29 | IC860 | 09 21 07 | 38.0 | 99.4 | -3.9 | | -40.6 | 14 | 515 | 21 17 29 |
| 21 21 29 | --- | 09 25 08 | 38.6 | 100.3 | -3.8 | | -40.5 | 240 | 546 | 21 17 30 |
| 21 21 58 | J1314+2348 | 09 25 37 | 38.1 | 101.1 | -3.8 | | -40.1 | 15 | 546 | 21 21 58 |
| 21 23 58 | =1312+240 | 09 27 38 | 38.4 | 101.6 | -3.8 | | -40.0 | 120 | 562 | 21 21 59 |
| 21 24 27 | IC860 | 09 28 06 | 39.0 | 100.9 | -3.8 | | -40.4 | 14 | 562 | 21 24 27 |
| 21 28 27 | --- | 09 32 07 | 39.6 | 101.8 | -3.7 | | -40.2 | 240 | 592 | 21 24 28 |
| 21 28 56 | J1314+2348 | 09 32 36 | 39.1 | 102.7 | -3.7 | | -39.8 | 16 | 592 | 21 28 56 |
| 21 30 56 | =1312+240 | 09 34 36 | 39.4 | 103.1 | -3.7 | | -39.7 | 120 | 608 | 21 28 57 |
| 21 31 24 | IC860 | 09 35 05 | 40.0 | 102.5 | -3.7 | | -40.1 | 14 | 608 | 21 31 24 |
| 21 35 24 | --- | 09 39 05 | 40.6 | 103.4 | -3.6 | | -39.9 | 240 | 638 | 21 31 25 |
| 21 35 53 | J1314+2348 | 09 39 35 | 40.1 | 104.3 | -3.6 | | -39.5 | 16 | 638 | 21 35 53 |
| 21 37 53 | =1312+240 | 09 41 35 | 40.4 | 104.8 | -3.6 | | -39.4 | 120 | 654 | 21 35 54 |

Schedule for TORUN (Code Tr ) Page 4

6cm global VLBI observations of IC860

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Mon 4 Mar 2019 Day 63 --- | | | | | | | | | | |
| 21 38 22 | IC860 | 09 42 04 | 41.1 | 104.1 | -3.6 | | -39.8 | 15 | 654 | 21 38 22 |
| 21 42 22 | --- | 09 46 04 | 41.6 | 105.0 | -3.5 | | -39.6 | 240 | 685 | 21 38 23 |
| 21 42 51 | J1314+2348 | 09 46 34 | 41.1 | 105.9 | -3.5 | | -39.1 | 16 | 685 | 21 42 51 |
| 21 44 51 | =1312+240 | 09 48 34 | 41.4 | 106.4 | -3.5 | | -39.0 | 120 | 700 | 21 42 52 |
| 21 45 20 | IC860 | 09 49 03 | 42.1 | 105.7 | -3.4 | | -39.4 | 15 | 700 | 21 45 20 |
| 21 49 20 | --- | 09 53 03 | 42.7 | 106.7 | -3.4 | | -39.2 | 240 | 731 | 21 45 21 |
| 21 49 49 | J1314+2348 | 09 53 33 | 42.1 | 107.6 | -3.4 | | -38.7 | 16 | 731 | 21 49 49 |
| 21 51 49 | =1312+240 | 09 55 33 | 42.4 | 108.1 | -3.3 | | -38.6 | 120 | 746 | 21 49 50 |
| 21 52 18 | IC860 | 09 56 02 | 43.1 | 107.4 | -3.3 | | -39.0 | 15 | 746 | 21 52 18 |
| 21 56 18 | --- | 10 00 02 | 43.7 | 108.4 | -3.3 | | -38.8 | 240 | 777 | 21 52 19 |
| 21 56 47 | J1314+2348 | 10 00 32 | 43.1 | 109.3 | -3.3 | | -38.2 | 16 | 777 | 21 56 47 |
| 21 58 47 | =1312+240 | 10 02 32 | 43.4 | 109.8 | -3.2 | | -38.1 | 120 | 792 | 21 56 48 |
| 21 59 16 | IC860 | 10 03 01 | 44.1 | 109.1 | -3.2 | | -38.6 | 15 | 792 | 21 59 16 |
| 22 03 16 | --- | 10 07 02 | 44.6 | 110.1 | -3.1 | | -38.3 | 240 | 823 | 21 59 17 |
| 22 03 45 | J1314+2348 | 10 07 31 | 44.1 | 111.0 | -3.1 | | -37.7 | 16 | 823 | 22 03 45 |
| 22 05 45 | =1312+240 | 10 09 32 | 44.4 | 111.5 | -3.1 | | -37.6 | 120 | 838 | 22 03 46 |
| 22 06 14 | IC860 | 10 10 00 | 45.1 | 110.9 | -3.1 | | -38.1 | 15 | 838 | 22 06 14 |
| 22 10 14 | --- | 10 14 01 | 45.6 | 111.9 | -3.0 | | -37.8 | 240 | 869 | 22 06 15 |
| ---------- End of block 2 ---------- | | | | | | | | | | |
| 22 10 58 | J1327+2210 | 10 14 45 | 42.1 | 111.1 | -3.2 | | -37.2 | 17 | 869 | 22 10 58 |
| 22 15 58 | =1324+224 | 10 19 46 | 42.8 | 112.4 | -3.1 | | -36.8 | 300 | 908 | 22 10 59 |
| 22 16 41 | J1314+2348 | 10 20 29 | 45.9 | 114.4 | -2.9 | | -36.7 | 17 | 908 | 22 16 41 |
| 22 18 41 | =1312+240 | 10 22 29 | 46.2 | 114.9 | -2.9 | | -36.5 | 120 | 923 | 22 16 42 |
| 22 19 10 | IC860 | 10 22 58 | 46.9 | 114.2 | -2.9 | | -37.0 | 15 | 923 | 22 19 10 |
| 22 23 10 | --- | 10 26 59 | 47.4 | 115.3 | -2.8 | | -36.6 | 240 | 954 | 22 19 11 |
| 22 23 40 | J1314+2348 | 10 27 29 | 46.9 | 116.2 | -2.8 | | -36.0 | 16 | 954 | 22 23 40 |
| 22 25 40 | =1312+240 | 10 29 29 | 47.1 | 116.8 | -2.8 | | -35.8 | 120 | 969 | 22 23 41 |
| 22 26 09 | IC860 | 10 29 58 | 47.8 | 116.1 | -2.8 | | -36.3 | 15 | 969 | 22 26 09 |
| 22 30 09 | --- | 10 33 59 | 48.4 | 117.2 | -2.7 | | -35.9 | 240 | 1000 | 22 26 10 |

Schedule for TORUN (Code Tr ) Page 5

6cm global VLBI observations of IC860

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Mon 4 Mar 2019 Day 63 --- | | | | | | | | | | |
| 22 30 39 | J1314+2348 | 10 34 29 | 47.8 | 118.2 | -2.7 | | -35.3 | 16 | 1000 | 22 30 39 |
| 22 32 39 | =1312+240 | 10 36 29 | 48.1 | 118.7 | -2.7 | | -35.1 | 120 | 1015 | 22 30 40 |
| 22 33 08 | IC860 | 10 36 58 | 48.8 | 118.1 | -2.7 | | -35.6 | 15 | 1015 | 22 33 08 |
| 22 37 08 | --- | 10 40 59 | 49.3 | 119.2 | -2.6 | | -35.2 | 240 | 1046 | 22 33 09 |
| 22 37 38 | J1314+2348 | 10 41 29 | 48.7 | 120.1 | -2.6 | | -34.6 | 16 | 1046 | 22 37 38 |
| 22 39 38 | =1312+240 | 10 43 29 | 49.0 | 120.7 | -2.5 | | -34.3 | 120 | 1062 | 22 37 39 |
| 22 40 07 | IC860 | 10 43 59 | 49.7 | 120.1 | -2.5 | | -34.8 | 15 | 1062 | 22 40 07 |
| 22 44 07 | --- | 10 47 59 | 50.2 | 121.2 | -2.5 | | -34.4 | 240 | 1092 | 22 40 08 |
| 22 44 37 | J1314+2348 | 10 48 29 | 49.6 | 122.2 | -2.5 | | -33.7 | 16 | 1092 | 22 44 37 |
| 22 46 37 | =1312+240 | 10 50 30 | 49.9 | 122.8 | -2.4 | | -33.5 | 120 | 1108 | 22 44 38 |
| 22 47 06 | IC860 | 10 50 59 | 50.6 | 122.1 | -2.4 | | -34.0 | 15 | 1108 | 22 47 06 |
| 22 51 06 | --- | 10 55 00 | 51.1 | 123.3 | -2.3 | | -33.5 | 240 | 1138 | 22 47 07 |
| 22 51 36 | J1314+2348 | 10 55 30 | 50.5 | 124.3 | -2.3 | | -32.8 | 16 | 1138 | 22 51 36 |
| 22 53 36 | =1312+240 | 10 57 30 | 50.7 | 124.9 | -2.3 | | -32.6 | 120 | 1154 | 22 51 37 |
| 22 54 05 | IC860 | 10 57 59 | 51.5 | 124.2 | -2.3 | | -33.1 | 15 | 1154 | 22 54 05 |
| 22 58 05 | --- | 11 02 00 | 51.9 | 125.5 | -2.2 | | -32.5 | 240 | 1185 | 22 54 06 |
| 22 58 36 | J1314+2348 | 11 02 30 | 51.4 | 126.4 | -2.2 | | -31.9 | 16 | 1185 | 22 58 36 |
| 23 00 36 | =1312+240 | 11 04 31 | 51.6 | 127.0 | -2.2 | | -31.6 | 120 | 1200 | 22 58 37 |
| 23 01 05 | IC860 | 11 05 00 | 52.3 | 126.4 | -2.2 | | -32.1 | 15 | 1200 | 23 01 05 |
| 23 05 05 | --- | 11 09 01 | 52.8 | 127.7 | -2.1 | | -31.5 | 240 | 1231 | 23 01 06 |
| 23 05 35 | J1314+2348 | 11 09 31 | 52.2 | 128.6 | -2.1 | | -30.8 | 16 | 1231 | 23 05 35 |
| 23 07 35 | =1312+240 | 11 11 31 | 52.4 | 129.3 | -2.1 | | -30.5 | 120 | 1246 | 23 05 36 |
| 23 08 05 | IC860 | 11 12 01 | 53.1 | 128.6 | -2.1 | | -31.0 | 15 | 1246 | 23 08 05 |
| 23 12 05 | --- | 11 16 02 | 53.6 | 130.0 | -2.0 | | -30.4 | 240 | 1277 | 23 08 06 |
| ---------- End of block 3 ---------- | | | | | | | | | | |
| 23 12 49 | J1327+2210 | 11 16 46 | 50.2 | 128.4 | -2.2 | | -30.5 | 17 | 1277 | 23 12 49 |
| 23 17 49 | =1324+224 | 11 21 47 | 50.8 | 129.9 | -2.1 | | -29.8 | 300 | 1315 | 23 12 50 |
| 23 18 31 | J1314+2348 | 11 22 29 | 53.7 | 132.9 | -1.9 | | -28.7 | 18 | 1315 | 23 18 31 |
| 23 20 31 | =1312+240 | 11 24 29 | 53.9 | 133.6 | -1.9 | | -28.4 | 120 | 1331 | 23 18 32 |

Schedule for TORUN (Code Tr ) Page 6

6cm global VLBI observations of IC860

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Mon 4 Mar 2019 Day 63 --- | | | | | | | | | | |
| 23 21 00 | IC860 | 11 24 59 | 54.6 | 133.0 | -1.9 | | -28.9 | 15 | 1331 | 23 21 00 |
| 23 25 00 | --- | 11 28 59 | 55.1 | 134.4 | -1.8 | | -28.2 | 240 | 1362 | 23 21 01 |
| 23 25 31 | J1314+2348 | 11 29 30 | 54.4 | 135.3 | -1.8 | | -27.5 | 16 | 1362 | 23 25 31 |
| 23 27 31 | =1312+240 | 11 31 30 | 54.6 | 136.0 | -1.7 | | -27.1 | 120 | 1377 | 23 25 32 |
| 23 28 00 | IC860 | 11 32 00 | 55.4 | 135.4 | -1.7 | | -27.6 | 15 | 1377 | 23 28 00 |
| 23 32 00 | --- | 11 36 01 | 55.8 | 136.9 | -1.7 | | -26.8 | 240 | 1408 | 23 28 01 |
| 23 32 31 | J1314+2348 | 11 36 31 | 55.2 | 137.8 | -1.7 | | -26.1 | 16 | 1408 | 23 32 31 |
| 23 34 31 | =1312+240 | 11 38 32 | 55.4 | 138.5 | -1.6 | | -25.7 | 120 | 1423 | 23 32 32 |
| 23 35 00 | IC860 | 11 39 01 | 56.1 | 138.0 | -1.6 | | -26.2 | 15 | 1423 | 23 35 00 |
| 23 39 00 | --- | 11 43 02 | 56.5 | 139.4 | -1.5 | | -25.4 | 240 | 1454 | 23 35 01 |
| 23 39 31 | J1314+2348 | 11 43 32 | 55.8 | 140.4 | -1.5 | | -24.7 | 16 | 1454 | 23 39 31 |
| 23 41 31 | =1312+240 | 11 45 33 | 56.0 | 141.1 | -1.5 | | -24.3 | 120 | 1469 | 23 39 32 |
| 23 42 00 | IC860 | 11 46 02 | 56.8 | 140.6 | -1.5 | | -24.8 | 15 | 1469 | 23 42 00 |
| 23 46 00 | --- | 11 50 03 | 57.2 | 142.1 | -1.4 | | -23.9 | 240 | 1500 | 23 42 01 |
| 23 46 31 | J1314+2348 | 11 50 34 | 56.5 | 143.0 | -1.4 | | -23.2 | 16 | 1500 | 23 46 31 |
| 23 48 31 | =1312+240 | 11 52 34 | 56.7 | 143.8 | -1.4 | | -22.8 | 120 | 1515 | 23 46 32 |
| 23 49 00 | IC860 | 11 53 04 | 57.4 | 143.2 | -1.4 | | -23.3 | 15 | 1515 | 23 49 00 |
| 23 53 00 | --- | 11 57 04 | 57.8 | 144.8 | -1.3 | | -22.3 | 240 | 1546 | 23 49 01 |
| 23 53 31 | J1314+2348 | 11 57 35 | 57.1 | 145.7 | -1.3 | | -21.7 | 16 | 1546 | 23 53 31 |
| 23 55 31 | =1312+240 | 11 59 35 | 57.3 | 146.5 | -1.3 | | -21.2 | 120 | 1562 | 23 53 32 |
| 23 56 00 | IC860 | 12 00 05 | 58.0 | 146.0 | -1.3 | | -21.6 | 14 | 1562 | 23 56 00 |
| 23 59 59 | --- | 12 04 05 | 58.4 | 147.6 | -1.2 | | -20.7 | 239 | 1592 | 23 56 01 |
| --- Tue 5 Mar 2019 Day 64 --- | | | | | | | | | | |
| 00 00 31 | J1314+2348 | 12 04 36 | 57.7 | 148.5 | -1.2 | | -20.0 | 16 | 1592 | 00 00 31 |
| 00 02 31 | =1312+240 | 12 06 36 | 57.8 | 149.3 | -1.2 | | -19.6 | 120 | 1608 | 00 00 32 |
| 00 03 01 | IC860 | 12 07 06 | 58.6 | 148.9 | -1.1 | | -20.0 | 14 | 1608 | 00 03 01 |
| 00 07 01 | --- | 12 11 07 | 58.9 | 150.5 | -1.1 | | -19.0 | 240 | 1638 | 00 03 02 |
| 00 07 31 | J1314+2348 | 12 11 37 | 58.2 | 151.4 | -1.1 | | -18.3 | 16 | 1638 | 00 07 31 |
| 00 09 31 | =1312+240 | 12 13 38 | 58.4 | 152.2 | -1.0 | | -17.8 | 120 | 1654 | 00 07 32 |

```
Schedule for TORUN     (Code Tr )                                  Page   7
              6cm global VLBI observations of IC860
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Tue   5 Mar 2019   Day  64 ---

00 10 00  IC860        12 14 07  59.1 151.8 -1.0     -18.2    14     1654   00 10 00
00 14 00  ---          12 18 08  59.4 153.5 -1.0     -17.1   240     1685   00 10 01

 ---------- End of block 4 ----------

00 14 44  J1327+2210   12 18 51  56.3 150.3 -1.2     -18.7    18     1685   00 14 44
00 19 44  =1324+224    12 23 52  56.7 152.3 -1.1     -17.5   300     1723   00 14 45

00 20 26  J1314+2348   12 24 35  59.1 156.8 -0.9     -15.0    18     1723   00 20 26
00 22 26  =1312+240    12 26 35  59.2 157.7 -0.8     -14.4   120     1738   00 20 27

00 22 46  J1314+2348   12 26 55  59.2 157.8 -0.8     -14.3    14     1738   00 22 46
00 24 46  =1312+240    12 28 55  59.3 158.7 -0.8     -13.8   120     1754   00 22 47

00 25 06  J1314+2348   12 29 15  59.3 158.8 -0.8     -13.7    14     1754   00 25 06
00 27 06  =1312+240    12 31 16  59.4 159.7 -0.7     -13.1   120     1769   00 25 07

00 27 26  J1314+2348   12 31 36  59.4 159.9 -0.7     -13.0    14     1769   00 27 26
00 29 26  =1312+240    12 33 36  59.5 160.8 -0.7     -12.5   120     1785   00 27 27

00 29 46  J1314+2348   12 33 56  59.6 160.9 -0.7     -12.4    14     1785   00 29 46
00 31 46  =1312+240    12 35 56  59.7 161.8 -0.7     -11.8   120     1800   00 29 47

00 32 06  J1314+2348   12 36 16  59.7 161.9 -0.7     -11.7    14     1800   00 32 06
00 34 06  =1312+240    12 38 17  59.8 162.8 -0.6     -11.2   120     1815   00 32 07

 ---------- T6 leaves ----------

00 34 35  IC860        12 38 46  60.6 162.6 -0.6     -11.4    14     1815   00 34 35
00 38 35  ---          12 42 46  60.7 164.4 -0.6     -10.2   240     1846   00 34 36

00 39 05  J1314+2348   12 43 17  60.0 165.1 -0.5      -9.7    15     1846   00 39 05
00 41 05  =1312+240    12 45 17  60.1 166.0 -0.5      -9.1   120     1862   00 39 06

00 41 34  IC860        12 45 46  60.9 165.8 -0.5      -9.3    13     1862   00 41 34
00 45 34  ---          12 49 46  61.0 167.6 -0.4      -8.1   240     1892   00 41 35

00 46 04  J1314+2348   12 50 16  60.2 168.2 -0.4      -7.7    15     1892   00 46 04
00 48 04  =1312+240    12 52 17  60.3 169.2 -0.4      -7.1   120     1908   00 46 05

00 48 33  IC860        12 52 46  61.1 169.0 -0.4      -7.2    13     1908   00 48 33
00 52 33  ---          12 56 46  61.2 170.9 -0.3      -6.0   240     1938   00 48 34

00 53 02  J1314+2348   12 57 16  60.4 171.5 -0.3      -5.6    14     1938   00 53 02
00 55 02  =1312+240    12 59 16  60.4 172.4 -0.3      -5.0   120     1954   00 53 03
```

Schedule for TORUN (Code Tr ) Page 8

6cm global VLBI observations of IC860

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Tue 5 Mar 2019 Day 64 --- | | | | | | | | | | |
| 00 55 31 | IC860 | 12 59 45 | 61.3 | 172.3 | -0.3 | | -5.1 | 14 | 1954 | 00 55 31 |
| 00 59 31 | --- | 13 03 46 | 61.3 | 174.2 | -0.2 | | -3.8 | 240 | 1985 | 00 55 32 |
| 01 00 01 | J1314+2348 | 13 04 15 | 60.5 | 174.7 | -0.2 | | -3.5 | 14 | 1985 | 01 00 01 |
| 01 02 01 | =1312+240 | 13 06 16 | 60.6 | 175.6 | -0.2 | | -2.9 | 120 | 2000 | 01 00 02 |
| 01 02 30 | IC860 | 13 06 45 | 61.4 | 175.6 | -0.2 | | -2.9 | 14 | 2000 | 01 02 30 |
| 01 06 30 | --- | 13 10 45 | 61.4 | 177.5 | -0.1 | | -1.6 | 240 | 2031 | 01 02 31 |
| ---------- End of block 5 ---------- | | | | | | | | | | |
| 01 07 13 | J1327+2210 | 13 11 29 | 58.8 | 172.6 | -0.3 | | -4.8 | 19 | 2031 | 01 07 13 |
| 01 12 13 | =1324+224 | 13 16 30 | 58.9 | 174.9 | -0.2 | | -3.3 | 300 | 2069 | 01 07 14 |
| 01 13 02 | J1314+2348 | 13 17 19 | 60.6 | 180.8 | 0.0 | | 0.5 | 22 | 2069 | 01 13 02 |
| 01 15 02 | =1312+240 | 13 19 19 | 60.6 | 181.7 | 0.1 | | 1.1 | 120 | 2085 | 01 13 03 |
| 01 15 31 | IC860 | 13 19 49 | 61.4 | 181.8 | 0.1 | | 1.2 | 14 | 2085 | 01 15 31 |
| 01 19 31 | --- | 13 23 49 | 61.4 | 183.7 | 0.1 | | 2.5 | 240 | 2115 | 01 15 32 |
| 01 20 00 | J1314+2348 | 13 24 18 | 60.6 | 184.0 | 0.1 | | 2.6 | 14 | 2115 | 01 20 00 |
| 01 22 00 | =1312+240 | 13 26 19 | 60.5 | 185.0 | 0.2 | | 3.3 | 120 | 2131 | 01 20 01 |
| 01 22 30 | IC860 | 13 26 48 | 61.3 | 185.1 | 0.2 | | 3.4 | 14 | 2131 | 01 22 30 |
| 01 26 30 | --- | 13 30 49 | 61.3 | 187.0 | 0.2 | | 4.6 | 240 | 2162 | 01 22 31 |
| 01 26 59 | J1314+2348 | 13 31 18 | 60.5 | 187.3 | 0.3 | | 4.8 | 14 | 2162 | 01 26 59 |
| 01 28 59 | =1312+240 | 13 33 18 | 60.4 | 188.2 | 0.3 | | 5.4 | 120 | 2177 | 01 27 00 |
| 01 29 28 | IC860 | 13 33 47 | 61.2 | 188.4 | 0.3 | | 5.6 | 14 | 2177 | 01 29 28 |
| 01 33 28 | --- | 13 37 48 | 61.1 | 190.3 | 0.4 | | 6.8 | 240 | 2208 | 01 29 29 |
| 01 33 57 | J1314+2348 | 13 38 17 | 60.3 | 190.5 | 0.4 | | 6.9 | 14 | 2208 | 01 33 57 |
| 01 35 57 | =1312+240 | 13 40 18 | 60.2 | 191.4 | 0.4 | | 7.5 | 120 | 2223 | 01 33 58 |
| 01 36 26 | IC860 | 13 40 47 | 61.0 | 191.7 | 0.4 | | 7.7 | 14 | 2223 | 01 36 26 |
| 01 40 26 | --- | 13 44 48 | 60.9 | 193.6 | 0.5 | | 8.9 | 240 | 2254 | 01 36 27 |
| 01 40 56 | J1314+2348 | 13 45 17 | 60.1 | 193.7 | 0.5 | | 8.9 | 14 | 2254 | 01 40 56 |
| 01 42 56 | =1312+240 | 13 47 17 | 60.0 | 194.6 | 0.5 | | 9.5 | 120 | 2269 | 01 40 57 |
| 01 43 25 | IC860 | 13 47 47 | 60.8 | 194.9 | 0.5 | | 9.8 | 14 | 2269 | 01 43 25 |
| 01 47 25 | --- | 13 51 48 | 60.6 | 196.8 | 0.6 | | 11.0 | 240 | 2300 | 01 43 26 |

```
Schedule for TORUN     (Code Tr )                                  Page   9
              6cm global VLBI observations of IC860
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Tue   5 Mar 2019   Day  64 ---

01 47 54  J1314+2348   13 52 17  59.8 196.8  0.6      11.0    14     2300   01 47 54
01 49 54  =1312+240    13 54 17  59.7 197.7  0.6      11.5   120     2315   01 47 55

01 50 24  IC860        13 54 47  60.5 198.1  0.6      11.9    14     2315   01 50 24
01 54 24  ---          13 58 48  60.3 199.9  0.7      13.0   240     2346   01 50 25

01 54 53  J1314+2348   13 59 17  59.5 199.9  0.7      12.9    14     2346   01 54 53
01 56 53  =1312+240    14 01 17  59.4 200.8  0.8      13.5   120     2362   01 54 54

01 57 23  IC860        14 01 47  60.1 201.3  0.8      13.9    14     2362   01 57 23
02 01 23  ---          14 05 47  59.9 203.0  0.8      15.0   240     2392   01 57 24

02 01 52  J1314+2348   14 06 17  59.1 203.0  0.8      14.8    14     2392   02 01 52
02 03 52  =1312+240    14 08 17  59.0 203.8  0.9      15.4   120     2408   02 01 53

 ---------- End of block 6, VLBA_NL, VLBA_SC, VLBA_HN join ----------

02 04 12  J1314+2348   14 08 37  58.9 204.0  0.9      15.5    14     2408   02 04 12
02 06 12  =1312+240    14 10 38  58.8 204.8  0.9      16.0   120     2423   02 04 13

02 06 42  IC860        14 11 07  59.6 205.4  0.9      16.4    14     2423   02 06 42
02 10 42  ---          14 15 08  59.3 207.1  1.0      17.5   240     2454   02 06 43

 ---------- End of block 6, ----------

02 11 34  J1327+2210   14 16 00  57.7 201.1  0.8      13.5    25     2454   02 11 34
02 16 34  =1324+224    14 21 01  57.4 203.2  0.9      14.8   300     2492   02 11 35

02 17 28  J1314+2348   14 21 56  58.0 209.6  1.1      18.9    27     2492   02 17 28
02 19 28  =1312+240    14 23 56  57.9 210.4  1.1      19.4   120     2508   02 17 29

02 19 58  IC860        14 24 25  58.6 211.0  1.1      19.8    14     2508   02 19 58
02 23 58  ---          14 28 26  58.3 212.6  1.2      20.8   240     2538   02 19 59

02 24 27  J1314+2348   14 28 56  57.5 212.4  1.2      20.6    14     2538   02 24 27
02 26 27  =1312+240    14 30 56  57.3 213.2  1.3      21.0   120     2554   02 24 28

02 26 56  IC860        14 31 25  58.1 213.8  1.3      21.5    14     2554   02 26 56
02 30 56  ---          14 35 26  57.7 215.4  1.3      22.5   240     2585   02 26 57

02 31 26  J1314+2348   14 35 56  56.9 215.1  1.3      22.2    14     2585   02 31 26
02 33 26  =1312+240    14 37 56  56.7 215.9  1.4      22.6   120     2600   02 31 27
```

```
Schedule for TORUN     (Code Tr )                                  Page  10
              6cm global VLBI observations of IC860
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Tue   5 Mar 2019   Day  64 ---

 ---------- Bd leaves ----------

02 33 55  IC860        14 38 25  57.5 216.6  1.4      23.2    14     2600   02 33 55
02 37 55  ---          14 42 26  57.1 218.1  1.4      24.0   240     2631   02 33 56

02 38 25  J1314+2348   14 42 56  56.3 217.8  1.5      23.7    14     2631   02 38 25
02 40 25  =1312+240    14 44 56  56.1 218.6  1.5      24.1   120     2646   02 38 26

02 40 54  IC860        14 45 25  56.8 219.2  1.5      24.7    14     2646   02 40 54
02 44 54  ---          14 49 26  56.4 220.8  1.6      25.5   240     2677   02 40 55

02 45 23  J1314+2348   14 49 55  55.6 220.4  1.6      25.2    14     2677   02 45 23
02 47 23  =1312+240    14 51 56  55.4 221.2  1.6      25.6   120     2692   02 45 24

02 47 53  IC860        14 52 25  56.2 221.9  1.6      26.1    14     2692   02 47 53
02 51 53  ---          14 56 26  55.7 223.3  1.7      26.9   240     2723   02 47 54

02 52 22  J1314+2348   14 56 55  54.9 223.0  1.7      26.5    14     2723   02 52 22
02 54 22  =1312+240    14 58 56  54.7 223.7  1.7      26.9   120     2738   02 52 23

02 54 51  IC860        14 59 25  55.4 224.4  1.7      27.5    14     2738   02 54 51
02 58 51  ---          15 03 25  55.0 225.8  1.8      28.2   240     2769   02 54 52

02 59 21  J1314+2348   15 03 55  54.2 225.4  1.8      27.8    14     2769   02 59 21
03 01 21  =1312+240    15 05 55  54.0 226.1  1.8      28.2   120     2785   02 59 22

03 01 50  IC860        15 06 24  54.7 226.8  1.8      28.8    14     2785   03 01 50
03 05 50  ---          15 10 25  54.2 228.2  1.9      29.5   240     2815   03 01 51



SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119.C2048glob

   Setup group:   22         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
   Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
            4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
  Net SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF SB =         U         U         U         U         U         U         U         U
                  U         U         U         U         U         U         U         U
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
                RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
                  3         7         3         7         4         8         4         8
  BBC SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                 A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:  13  Setup file default.  Used with PCAL = off
  LO sum=   4884.00  4884.00  4884.00  4884.00  4916.00  4916.00  4916.00  4916.00
            4948.00  4948.00  4948.00  4948.00  4980.00  4980.00  4980.00  4980.00
  BBC fr=    684.00   684.00   684.00   684.00   716.00   716.00   716.00   716.00
             748.00   748.00   748.00   748.00   780.00   780.00   780.00   780.00
  Bandwd=     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
              16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
   Matching frequency sets:  13

  Track assignments are:
   track1=  18, 26,  2, 10, 20, 28,  4, 12, 22, 30,  6, 14, 24, 32,  8, 16
   barrel=roll_off


 POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                       (B1950)             (J2000)             (Date)             (mas)

* IC860             13 12 39.491919   * 13 15 03.505200     13 15 58.838854       0.00
                    24 52 58.11061    * 24 37 07.73800      24 30 58.85718        0.00
                    Position from EVN project EP055.

  1312+240          13 12 19.391286   * 13 14 43.806206     13 15 39.291242       0.35
* J1314+2348        24 04 17.61682    * 23 48 26.78172      23 42 17.83530        0.41
                    /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,     56 observations.

  1324+224          13 24 37.118627   * 13 27 00.861311     13 27 56.051955       0.00
* J1327+2210        22 26 22.70245    * 22 10 50.16289      22 04 48.33664        0.00
  J1327+22          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,  46958 observations.


EFFECT OF SOLAR CORONA

  The solar corona can cause unstable phases for sources too close to the Sun.
  SCHED provides warnings at individual scans for distances less than 10 degrees.
  The distance from the Sun to each source in this schedule is:
    Source         Sun distance (deg)
   IC860              143.1
   J1314+2348         143.5
```

```
 J1327+2210         141.4

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
that the Sun will cause amplitude reductions on the  longest VLBA baselines
at a solar distance of 60deg F^(-0.6) where F is in GHz.
For common VLBI bands, this is:
     1.6 GHz         45. deg
     2.3 GHz         36. deg
     5.0 GHz         23. deg
     8.4 GHz         17. deg
    15.0 GHz         12. deg
    22.0 GHz          9. deg
```

**ey033btr**

## Revealing the radio structure in AT2018cow

PI: *Jun Yang, contact person*


```
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          SE-439 92 Onsala
          Sweden


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Phone during observation: +46 31 7725531
```


```
Observing mode: 1024-16-2

Schedule for TORUN     (Code Tr )                                   Page   2
               Revealing the radio structure in AT2018cow
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-------------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-------------------------------------------------------------------------------------------

 --- Tue   5 Mar 2019   Day  64 ---

 ---------- Fringe finder ----------

 Next scan frequencies:  4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
                         5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
 Next BBC frequencies:    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
                          806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
 Next scan bandwidths:     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
                           16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00

23 00 00  J1642+3948   11 07 52  34.1  67.3 -5.6     -46.1     0        0   23 00 00
23 03 00  =3C345       11 10 52  34.5  67.8 -5.5     -46.3   180       23   23 00 01

 ---------- Main phase-referencing calibrator ----------

23 04 30  J1619+2247   11 12 22  25.8  85.8 -5.1     -40.5    39       23   23 04 30
23 06 30  ---          11 14 23  26.1  86.2 -5.1     -40.5   120       38   23 04 31

23 06 50  VLA1         11 14 43  26.2  87.4 -5.0     -40.4     6       38   23 06 50
23 08 50  ---          11 16 43  26.5  87.8 -5.0     -40.4   120       54   23 06 51

23 09 10  J1619+2247   11 17 03  26.5  86.8 -5.1     -40.5     6       54   23 09 10
23 10 10  ---          11 18 03  26.6  87.0 -5.0     -40.6    60       62   23 09 11

23 10 10  AT2018       11 18 03  26.7  88.0 -5.0     -40.4   -14       62   No stop
23 13 10  ---          11 21 04  27.1  88.6 -4.9     -40.4   166       85   23 10 11

23 13 10  J1619+2247   11 21 04  27.1  87.5 -5.0     -40.6   -14       85   No stop
23 14 10  ---          11 22 04  27.2  87.7 -5.0     -40.6    46       92   23 13 11

23 14 10  AT2018       11 22 04  27.3  88.8 -4.9     -40.4   -14       92   No stop
23 17 10  ---          11 25 04  27.7  89.4 -4.9     -40.4   166      115   23 14 11

23 17 45  J1619+2247   11 25 40  27.7  88.4 -4.9     -40.6    21      115   23 17 45
```

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 23 18 45 | --- | 11 26 40 | 27.9 | 88.6 | -4.9 | -40.6 | 60 | 123 | 23 17 46 |
| 23 18 45 | VLA1 | 11 26 40 | 28.0 | 89.7 | -4.8 | -40.4 | -14 | 123 | No stop |
| 23 20 45 | --- | 11 28 40 | 28.3 | 90.1 | -4.8 | -40.4 | 106 | 138 | 23 18 46 |
| 23 20 45 | J1619+2247 | 11 28 40 | 28.2 | 89.0 | -4.9 | -40.6 | -14 | 138 | No stop |
| 23 21 45 | --- | 11 29 40 | 28.3 | 89.2 | -4.8 | -40.6 | 46 | 146 | 23 20 46 |
| 23 21 45 | AT2018 | 11 29 40 | 28.4 | 90.3 | -4.8 | -40.4 | -14 | 146 | No stop |
| 23 24 45 | --- | 11 32 41 | 28.9 | 90.9 | -4.7 | -40.4 | 166 | 169 | 23 21 46 |
| 23 24 45 | J1619+2247 | 11 32 41 | 28.8 | 89.8 | -4.8 | -40.6 | -14 | 169 | No stop |
| 23 25 45 | --- | 11 33 41 | 29.0 | 90.0 | -4.8 | -40.6 | 46 | 177 | 23 24 46 |

Schedule for TORUN (Code Tr ) Page 3

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Tue 5 Mar 2019 Day 64 --- | | | | | | | | | | |
| 23 25 45 | AT2018 | 11 33 41 | 29.0 | 91.1 | -4.7 | | -40.4 | -14 | 177 | No stop |
| 23 27 45 | --- | 11 35 41 | 29.3 | 91.5 | -4.7 | | -40.4 | 106 | 192 | 23 25 46 |
| 23 27 45 | VLA2 | 11 35 41 | 29.3 | 91.3 | -4.7 | | -40.4 | -9 | 192 | No stop |
| 23 28 45 | --- | 11 36 41 | 29.4 | 91.5 | -4.7 | | -40.4 | 51 | 200 | 23 27 46 |
| 23 29 20 | J1619+2247 | 11 37 16 | 29.5 | 90.8 | -4.7 | | -40.6 | 22 | 200 | 23 29 20 |
| 23 30 20 | --- | 11 38 17 | 29.6 | 91.0 | -4.7 | | -40.6 | 60 | 208 | 23 29 21 |
| 23 30 20 | AT2018 | 11 38 17 | 29.7 | 92.0 | -4.6 | | -40.4 | -14 | 208 | No stop |
| 23 33 20 | --- | 11 41 17 | 30.2 | 92.6 | -4.6 | | -40.4 | 166 | 231 | 23 30 21 |
| 23 33 20 | J1619+2247 | 11 41 17 | 30.1 | 91.6 | -4.6 | | -40.6 | -14 | 231 | No stop |
| 23 34 20 | --- | 11 42 17 | 30.2 | 91.8 | -4.6 | | -40.6 | 46 | 238 | 23 33 21 |
| 23 34 20 | AT2018 | 11 42 17 | 30.3 | 92.8 | -4.6 | | -40.4 | -14 | 238 | No stop |
| 23 37 20 | --- | 11 45 18 | 30.8 | 93.4 | -4.5 | | -40.4 | 166 | 262 | 23 34 21 |
| 23 37 55 | J1619+2247 | 11 45 53 | 30.8 | 92.5 | -4.6 | | -40.6 | 21 | 262 | 23 37 55 |
| 23 38 55 | --- | 11 46 53 | 30.9 | 92.7 | -4.6 | | -40.6 | 60 | 269 | 23 37 56 |
| 23 38 55 | VLA1 | 11 46 53 | 31.1 | 93.8 | -4.5 | | -40.3 | -15 | 269 | No stop |
| 23 40 55 | --- | 11 48 53 | 31.4 | 94.2 | -4.5 | | -40.3 | 105 | 285 | 23 38 56 |
| 23 40 55 | J1619+2247 | 11 48 53 | 31.2 | 93.1 | -4.5 | | -40.6 | -14 | 285 | No stop |
| 23 41 55 | --- | 11 49 53 | 31.4 | 93.3 | -4.5 | | -40.5 | 46 | 292 | 23 40 56 |
| 23 41 55 | AT2018 | 11 49 53 | 31.5 | 94.4 | -4.4 | | -40.3 | -14 | 292 | No stop |
| 23 44 55 | --- | 11 52 54 | 31.9 | 95.0 | -4.4 | | -40.3 | 166 | 315 | 23 41 56 |
| 23 44 55 | J1619+2247 | 11 52 54 | 31.8 | 93.9 | -4.5 | | -40.5 | -14 | 315 | No stop |
| 23 45 55 | --- | 11 53 54 | 32.0 | 94.2 | -4.4 | | -40.5 | 46 | 323 | 23 44 56 |
| 23 45 55 | AT2018 | 11 53 54 | 32.1 | 95.2 | -4.4 | | -40.2 | -14 | 323 | No stop |
| 23 47 55 | --- | 11 55 54 | 32.4 | 95.6 | -4.3 | | -40.2 | 106 | 338 | 23 45 56 |
| 23 47 55 | VLA2 | 11 55 54 | 32.3 | 95.5 | -4.4 | | -40.2 | -9 | 338 | No stop |
| 23 48 55 | --- | 11 56 55 | 32.5 | 95.7 | -4.3 | | -40.2 | 51 | 346 | 23 47 56 |
| 23 49 30 | J1619+2247 | 11 57 30 | 32.5 | 94.9 | -4.4 | | -40.4 | 22 | 346 | 23 49 30 |
| 23 50 30 | --- | 11 58 30 | 32.7 | 95.1 | -4.4 | | -40.4 | 60 | 354 | 23 49 31 |
| 23 50 30 | AT2018 | 11 58 30 | 32.8 | 96.2 | -4.3 | | -40.2 | -14 | 354 | No stop |
| 23 53 30 | --- | 12 01 30 | 33.2 | 96.8 | -4.3 | | -40.1 | 166 | 377 | 23 50 31 |

Schedule for TORUN (Code Tr ) Page 4

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Tue 5 Mar 2019 Day 64 --- | | | | | | | | | | |
| 23 53 30 | J1619+2247 | 12 01 30 | 33.1 | 95.7 | -4.3 | | -40.4 | -14 | 377 | No stop |
| 23 54 30 | --- | 12 02 31 | 33.3 | 95.9 | -4.3 | | -40.4 | 46 | 385 | 23 53 31 |
| 23 54 30 | AT2018 | 12 02 31 | 33.3 | 97.0 | -4.2 | | -40.1 | -14 | 385 | No stop |
| 23 57 30 | --- | 12 05 31 | 33.8 | 97.7 | -4.2 | | -40.0 | 166 | 408 | 23 54 31 |
| 23 58 05 | J1619+2247 | 12 06 06 | 33.8 | 96.7 | -4.2 | | -40.3 | 21 | 408 | 23 58 05 |
| 23 59 05 | --- | 12 07 06 | 34.0 | 96.9 | -4.2 | | -40.3 | 60 | 415 | 23 58 06 |
| --- Start: Tue 5 Mar 2019 Day 64 -- Stop: Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 23 59 05 | VLA1 | 12 07 06 | 34.1 | 98.1 | -4.2 | | -40.0 | -15 | 415 | No stop |
| 00 01 05 | --- | 12 09 07 | 34.4 | 98.5 | -4.1 | | -39.9 | 105 | 431 | 23 59 06 |
| 00 01 05 | J1619+2247 | 12 09 07 | 34.3 | 97.3 | -4.2 | | -40.2 | -15 | 431 | No stop |
| 00 02 05 | --- | 12 10 07 | 34.4 | 97.6 | -4.2 | | -40.2 | 45 | 438 | 00 01 06 |
| 00 02 05 | AT2018 | 12 10 07 | 34.5 | 98.7 | -4.1 | | -39.9 | -15 | 438 | No stop |
| 00 05 05 | --- | 12 13 07 | 34.9 | 99.3 | -4.1 | | -39.8 | 165 | 462 | 00 02 06 |
| 00 05 05 | J1619+2247 | 12 13 07 | 34.9 | 98.2 | -4.1 | | -40.1 | -14 | 462 | No stop |
| 00 06 05 | --- | 12 14 07 | 35.0 | 98.4 | -4.1 | | -40.1 | 46 | 469 | 00 05 06 |
| 00 06 05 | AT2018 | 12 14 07 | 35.1 | 99.5 | -4.0 | | -39.8 | -15 | 469 | No stop |
| 00 08 05 | --- | 12 16 08 | 35.4 | 100.0 | -4.0 | | -39.7 | 105 | 485 | 00 06 06 |
| 00 08 05 | VLA2 | 12 16 08 | 35.3 | 99.8 | -4.0 | | -39.7 | -9 | 485 | No stop |
| 00 09 05 | --- | 12 17 08 | 35.5 | 100.0 | -4.0 | | -39.7 | 51 | 492 | 00 08 06 |
| 00 09 40 | J1619+2247 | 12 17 43 | 35.5 | 99.2 | -4.0 | | -40.0 | 21 | 492 | 00 09 40 |
| 00 10 40 | --- | 12 18 43 | 35.7 | 99.4 | -4.0 | | -40.0 | 60 | 500 | 00 09 41 |
| 00 10 40 | AT2018 | 12 18 43 | 35.8 | 100.5 | -4.0 | | -39.6 | -15 | 500 | No stop |
| 00 13 40 | --- | 12 21 44 | 36.2 | 101.2 | -3.9 | | -39.5 | 165 | 523 | 00 10 41 |
| 00 13 40 | J1619+2247 | 12 21 44 | 36.1 | 100.1 | -4.0 | | -39.9 | -14 | 523 | No stop |
| 00 14 40 | --- | 12 22 44 | 36.3 | 100.3 | -4.0 | | -39.8 | 46 | 531 | 00 13 41 |
| 00 14 40 | AT2018 | 12 22 44 | 36.3 | 101.4 | -3.9 | | -39.5 | -15 | 531 | No stop |
| 00 17 40 | --- | 12 25 44 | 36.8 | 102.1 | -3.9 | | -39.4 | 165 | 554 | 00 14 41 |
| 00 18 15 | J1619+2247 | 12 26 19 | 36.8 | 101.1 | -3.9 | | -39.7 | 21 | 554 | 00 18 15 |
| 00 19 15 | --- | 12 27 20 | 37.0 | 101.3 | -3.9 | | -39.7 | 60 | 562 | 00 18 16 |

Schedule for TORUN (Code Tr ) Page 5

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 00 19 15 | VLA1 | 12 27 20 | 37.1 | 102.5 | -3.8 | | -39.3 | -15 | 562 | No stop |
| 00 21 15 | --- | 12 29 20 | 37.4 | 103.0 | -3.8 | | -39.2 | 105 | 577 | 00 19 16 |
| 00 21 15 | J1619+2247 | 12 29 20 | 37.2 | 101.7 | -3.8 | | -39.6 | -15 | 577 | No stop |
| 00 22 15 | --- | 12 30 20 | 37.4 | 102.0 | -3.8 | | -39.6 | 45 | 585 | 00 21 16 |
| 00 22 15 | AT2018 | 12 30 20 | 37.5 | 103.1 | -3.8 | | -39.2 | -15 | 585 | No stop |
| 00 25 15 | --- | 12 33 21 | 37.9 | 103.8 | -3.7 | | -39.0 | 165 | 608 | 00 22 16 |
| 00 25 15 | J1619+2247 | 12 33 21 | 37.8 | 102.6 | -3.8 | | -39.4 | -14 | 608 | No stop |
| 00 26 15 | --- | 12 34 21 | 38.0 | 102.9 | -3.8 | | -39.4 | 46 | 615 | 00 25 16 |
| 00 26 15 | AT2018 | 12 34 21 | 38.0 | 104.0 | -3.7 | | -39.0 | -15 | 615 | No stop |
| 00 28 15 | --- | 12 36 21 | 38.3 | 104.5 | -3.7 | | -38.9 | 105 | 631 | 00 26 16 |
| 00 28 15 | VLA2 | 12 36 21 | 38.3 | 104.3 | -3.7 | | -39.0 | -9 | 631 | No stop |
| 00 29 15 | --- | 12 37 21 | 38.4 | 104.5 | -3.7 | | -38.9 | 51 | 638 | 00 28 16 |
| 00 29 50 | J1619+2247 | 12 37 56 | 38.5 | 103.7 | -3.7 | | -39.2 | 21 | 638 | 00 29 50 |
| 00 30 50 | --- | 12 38 57 | 38.7 | 103.9 | -3.7 | | -39.2 | 60 | 646 | 00 29 51 |
| 00 30 50 | AT2018 | 12 38 57 | 38.7 | 105.1 | -3.6 | | -38.8 | -15 | 646 | No stop |
| 00 33 50 | --- | 12 41 57 | 39.1 | 105.8 | -3.6 | | -38.6 | 165 | 669 | 00 30 51 |
| 00 33 50 | J1619+2247 | 12 41 57 | 39.1 | 104.6 | -3.6 | | -39.1 | -15 | 669 | No stop |
| 00 34 50 | --- | 12 42 57 | 39.2 | 104.8 | -3.6 | | -39.0 | 45 | 677 | 00 33 51 |
| 00 34 50 | AT2018 | 12 42 57 | 39.3 | 106.0 | -3.6 | | -38.6 | -15 | 677 | No stop |
| 00 37 50 | --- | 12 45 58 | 39.7 | 106.7 | -3.5 | | -38.4 | 165 | 700 | 00 34 51 |
| 00 38 25 | J1619+2247 | 12 46 33 | 39.8 | 105.7 | -3.6 | | -38.8 | 20 | 700 | 00 38 25 |
| 00 39 25 | --- | 12 47 33 | 39.9 | 105.9 | -3.5 | | -38.8 | 60 | 708 | 00 38 26 |
| 00 39 25 | VLA1 | 12 47 33 | 40.0 | 107.2 | -3.5 | | -38.3 | -15 | 708 | No stop |
| 00 41 25 | --- | 12 49 33 | 40.3 | 107.6 | -3.4 | | -38.2 | 105 | 723 | 00 39 26 |
| 00 41 25 | J1619+2247 | 12 49 33 | 40.2 | 106.4 | -3.5 | | -38.7 | -15 | 723 | No stop |
| 00 42 25 | --- | 12 50 33 | 40.3 | 106.6 | -3.5 | | -38.6 | 45 | 731 | 00 41 26 |
| 00 42 25 | AT2018 | 12 50 33 | 40.4 | 107.8 | -3.4 | | -38.1 | -15 | 731 | No stop |
| 00 45 25 | --- | 12 53 34 | 40.8 | 108.5 | -3.4 | | -38.0 | 165 | 754 | 00 42 26 |
| 00 45 25 | J1619+2247 | 12 53 34 | 40.8 | 107.3 | -3.4 | | -38.4 | -15 | 754 | No stop |
| 00 46 25 | --- | 12 54 34 | 40.9 | 107.6 | -3.4 | | -38.4 | 45 | 762 | 00 45 26 |

Schedule for TORUN (Code Tr ) Page 6

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 00 46 25 | AT2018 | 12 54 34 | 41.0 | 108.8 | -3.4 | | -37.9 | -15 | 762 | No stop |
| 00 48 25 | --- | 12 56 34 | 41.2 | 109.3 | -3.3 | | -37.8 | 105 | 777 | 00 46 26 |
| 00 48 25 | VLA2 | 12 56 34 | 41.2 | 109.1 | -3.3 | | -37.8 | -9 | 777 | No stop |
| 00 49 25 | --- | 12 57 35 | 41.3 | 109.3 | -3.3 | | -37.8 | 51 | 785 | 00 48 26 |
| 00 50 00 | J1619+2247 | 12 58 10 | 41.4 | 108.4 | -3.4 | | -38.1 | 21 | 785 | 00 50 00 |
| 00 51 00 | --- | 12 59 10 | 41.6 | 108.7 | -3.3 | | -38.1 | 60 | 792 | 00 50 01 |
| 00 51 00 | AT2018 | 12 59 10 | 41.6 | 109.9 | -3.3 | | -37.6 | -15 | 792 | No stop |
| 00 54 00 | --- | 13 02 10 | 42.0 | 110.6 | -3.2 | | -37.4 | 165 | 815 | 00 51 01 |
| 00 54 00 | J1619+2247 | 13 02 10 | 42.0 | 109.4 | -3.3 | | -37.9 | -15 | 815 | No stop |
| 00 55 00 | --- | 13 03 10 | 42.1 | 109.7 | -3.3 | | -37.8 | 45 | 823 | 00 54 01 |
| 00 55 00 | AT2018 | 13 03 10 | 42.2 | 110.9 | -3.2 | | -37.3 | -15 | 823 | No stop |
| 00 58 00 | --- | 13 06 11 | 42.6 | 111.6 | -3.2 | | -37.1 | 165 | 846 | 00 55 01 |
| 00 58 35 | J1619+2247 | 13 06 46 | 42.6 | 110.5 | -3.2 | | -37.6 | 20 | 846 | 00 58 35 |
| 00 59 35 | --- | 13 07 46 | 42.8 | 110.8 | -3.2 | | -37.5 | 60 | 854 | 00 58 36 |
| 00 59 35 | VLA1 | 13 07 46 | 42.9 | 112.1 | -3.1 | | -36.9 | -15 | 854 | No stop |
| 01 01 35 | --- | 13 09 47 | 43.1 | 112.6 | -3.1 | | -36.8 | 105 | 869 | 00 59 36 |
| 01 01 35 | J1619+2247 | 13 09 47 | 43.1 | 111.3 | -3.2 | | -37.3 | -15 | 869 | No stop |
| 01 02 35 | --- | 13 10 47 | 43.2 | 111.5 | -3.2 | | -37.3 | 45 | 877 | 01 01 36 |
| 01 02 35 | AT2018 | 13 10 47 | 43.2 | 112.8 | -3.1 | | -36.7 | -15 | 877 | No stop |
| 01 05 35 | --- | 13 13 47 | 43.6 | 113.6 | -3.1 | | -36.5 | 165 | 900 | 01 02 36 |
| 01 05 35 | J1619+2247 | 13 13 47 | 43.6 | 112.3 | -3.1 | | -37.0 | -15 | 900 | No stop |
| 01 06 35 | --- | 13 14 47 | 43.8 | 112.6 | -3.1 | | -37.0 | 45 | 908 | 01 05 36 |
| 01 06 35 | AT2018 | 13 14 47 | 43.8 | 113.8 | -3.0 | | -36.4 | -15 | 908 | No stop |
| 01 08 35 | --- | 13 16 48 | 44.1 | 114.4 | -3.0 | | -36.2 | 105 | 923 | 01 06 36 |
| 01 08 35 | VLA2 | 13 16 48 | 44.0 | 114.1 | -3.0 | | -36.3 | -9 | 923 | No stop |
| 01 09 35 | --- | 13 17 48 | 44.1 | 114.4 | -3.0 | | -36.2 | 51 | 931 | 01 08 36 |
| 01 10 10 | J1619+2247 | 13 18 23 | 44.3 | 113.5 | -3.0 | | -36.7 | 21 | 931 | 01 10 10 |
| 01 11 10 | --- | 13 19 23 | 44.4 | 113.7 | -3.0 | | -36.6 | 60 | 938 | 01 10 11 |
| 01 11 10 | AT2018 | 13 19 23 | 44.4 | 115.0 | -3.0 | | -36.0 | -15 | 938 | No stop |
| 01 14 10 | --- | 13 22 24 | 44.8 | 115.8 | -2.9 | | -35.7 | 165 | 962 | 01 11 11 |

Schedule for TORUN (Code Tr ) Page 7

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 01 14 10 | J1619+2247 | 13 22 24 | 44.8 | 114.5 | -3.0 | | -36.3 | -15 | 962 | No stop |
| 01 15 10 | --- | 13 23 24 | 44.9 | 114.8 | -2.9 | | -36.2 | 45 | 969 | 01 14 11 |
| 01 15 10 | AT2018 | 13 23 24 | 45.0 | 116.1 | -2.9 | | -35.6 | -15 | 969 | No stop |
| 01 18 10 | --- | 13 26 24 | 45.4 | 116.9 | -2.8 | | -35.3 | 165 | 992 | 01 15 11 |
| 01 18 45 | J1619+2247 | 13 26 59 | 45.4 | 115.7 | -2.9 | | -35.9 | 20 | 992 | 01 18 45 |
| 01 19 45 | --- | 13 28 00 | 45.6 | 116.0 | -2.9 | | -35.8 | 60 | 1000 | 01 18 46 |
| 01 19 45 | VLA1 | 13 28 00 | 45.6 | 117.4 | -2.8 | | -35.2 | -16 | 1000 | No stop |
| 01 21 45 | --- | 13 30 00 | 45.9 | 117.9 | -2.8 | | -35.0 | 104 | 1015 | 01 19 46 |
| 01 21 45 | J1619+2247 | 13 30 00 | 45.8 | 116.5 | -2.8 | | -35.6 | -15 | 1015 | No stop |
| 01 22 45 | --- | 13 31 00 | 46.0 | 116.8 | -2.8 | | -35.5 | 45 | 1023 | 01 21 46 |
| 01 22 45 | AT2018 | 13 31 00 | 46.0 | 118.1 | -2.8 | | -34.9 | -15 | 1023 | No stop |
| 01 25 45 | --- | 13 34 01 | 46.4 | 119.0 | -2.7 | | -34.6 | 165 | 1046 | 01 22 46 |
| 01 25 45 | J1619+2247 | 13 34 01 | 46.4 | 117.6 | -2.8 | | -35.2 | -15 | 1046 | No stop |
| 01 26 45 | --- | 13 35 01 | 46.5 | 117.9 | -2.8 | | -35.1 | 45 | 1054 | 01 25 46 |
| 01 26 45 | AT2018 | 13 35 01 | 46.5 | 119.2 | -2.7 | | -34.5 | -16 | 1054 | No stop |
| 01 28 45 | --- | 13 37 01 | 46.8 | 119.8 | -2.7 | | -34.3 | 104 | 1069 | 01 26 46 |
| 01 28 45 | VLA2 | 13 37 01 | 46.7 | 119.6 | -2.7 | | -34.4 | -9 | 1069 | No stop |
| 01 29 45 | --- | 13 38 01 | 46.8 | 119.8 | -2.7 | | -34.2 | 51 | 1077 | 01 28 46 |
| 01 30 20 | J1619+2247 | 13 38 36 | 47.0 | 118.9 | -2.7 | | -34.8 | 21 | 1077 | 01 30 20 |
| 01 31 20 | --- | 13 39 36 | 47.1 | 119.2 | -2.7 | | -34.6 | 60 | 1085 | 01 30 21 |
| 01 31 20 | AT2018 | 13 39 36 | 47.1 | 120.5 | -2.6 | | -34.0 | -16 | 1085 | No stop |
| 01 34 20 | --- | 13 42 37 | 47.5 | 121.4 | -2.6 | | -33.6 | 164 | 1108 | 01 31 21 |
| 01 34 20 | J1619+2247 | 13 42 37 | 47.5 | 120.0 | -2.6 | | -34.3 | -15 | 1108 | No stop |
| 01 35 20 | --- | 13 43 37 | 47.6 | 120.3 | -2.6 | | -34.2 | 45 | 1115 | 01 34 21 |
| 01 35 20 | AT2018 | 13 43 37 | 47.6 | 121.7 | -2.6 | | -33.5 | -16 | 1115 | No stop |
| 01 38 20 | --- | 13 46 38 | 48.0 | 122.5 | -2.5 | | -33.2 | 164 | 1138 | 01 35 21 |
| 01 38 55 | J1619+2247 | 13 47 13 | 48.1 | 121.3 | -2.5 | | -33.8 | 20 | 1138 | 01 38 55 |
| 01 39 55 | --- | 13 48 13 | 48.2 | 121.6 | -2.5 | | -33.7 | 60 | 1146 | 01 38 56 |
| 01 39 55 | VLA1 | 13 48 13 | 48.2 | 123.1 | -2.5 | | -32.9 | -16 | 1146 | No stop |
| 01 41 55 | --- | 13 50 13 | 48.5 | 123.7 | -2.4 | | -32.7 | 104 | 1162 | 01 39 56 |

Schedule for TORUN (Code Tr ) Page 8

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 01 41 55 | J1619+2247 | 13 50 13 | 48.5 | 122.2 | -2.5 | | -33.4 | -16 | 1162 | No stop |
| 01 42 55 | --- | 13 51 13 | 48.6 | 122.5 | -2.5 | | -33.3 | 44 | 1169 | 01 41 56 |
| 01 42 55 | AT2018 | 13 51 13 | 48.6 | 123.9 | -2.4 | | -32.6 | -16 | 1169 | No stop |
| 01 45 55 | --- | 13 54 14 | 48.9 | 124.8 | -2.4 | | -32.2 | 164 | 1192 | 01 42 56 |
| 01 45 55 | J1619+2247 | 13 54 14 | 49.0 | 123.4 | -2.4 | | -32.9 | -15 | 1192 | No stop |
| 01 46 55 | --- | 13 55 14 | 49.1 | 123.7 | -2.4 | | -32.8 | 45 | 1200 | 01 45 56 |
| 01 46 55 | AT2018 | 13 55 14 | 49.1 | 125.1 | -2.4 | | -32.1 | -16 | 1200 | No stop |
| 01 48 55 | --- | 13 57 14 | 49.3 | 125.7 | -2.3 | | -31.8 | 104 | 1215 | 01 46 56 |
| 01 48 55 | VLA2 | 13 57 14 | 49.3 | 125.4 | -2.3 | | -31.9 | -9 | 1215 | No stop |
| 01 49 55 | --- | 13 58 15 | 49.4 | 125.7 | -2.3 | | -31.8 | 51 | 1223 | 01 48 56 |
| 01 50 30 | J1619+2247 | 13 58 50 | 49.6 | 124.7 | -2.4 | | -32.3 | 21 | 1223 | 01 50 30 |
| 01 51 30 | --- | 13 59 50 | 49.7 | 125.0 | -2.3 | | -32.2 | 60 | 1231 | 01 50 31 |
| 01 51 30 | AT2018 | 13 59 50 | 49.6 | 126.5 | -2.3 | | -31.4 | -16 | 1231 | No stop |
| 01 54 30 | --- | 14 02 50 | 50.0 | 127.4 | -2.2 | | -31.0 | 164 | 1254 | 01 51 31 |
| 01 54 30 | J1619+2247 | 14 02 50 | 50.1 | 126.0 | -2.3 | | -31.8 | -15 | 1254 | No stop |
| 01 55 30 | --- | 14 03 50 | 50.2 | 126.3 | -2.3 | | -31.7 | 45 | 1262 | 01 54 31 |
| 01 55 30 | AT2018 | 14 03 50 | 50.1 | 127.7 | -2.2 | | -30.9 | -16 | 1262 | No stop |
| 01 58 30 | --- | 14 06 51 | 50.5 | 128.6 | -2.2 | | -30.4 | 164 | 1285 | 01 55 31 |
| 01 59 05 | J1619+2247 | 14 07 26 | 50.6 | 127.4 | -2.2 | | -31.2 | 19 | 1285 | 01 59 05 |
| 02 00 05 | --- | 14 08 26 | 50.7 | 127.7 | -2.2 | | -31.0 | 60 | 1292 | 01 59 06 |
| 02 00 05 | VLA1 | 14 08 26 | 50.7 | 129.2 | -2.1 | | -30.2 | -16 | 1292 | No stop |
| 02 02 05 | --- | 14 10 26 | 50.9 | 129.8 | -2.1 | | -29.9 | 104 | 1308 | 02 00 06 |
| 02 02 05 | J1619+2247 | 14 10 26 | 51.0 | 128.3 | -2.2 | | -30.7 | -16 | 1308 | No stop |
| 02 03 05 | --- | 14 11 27 | 51.1 | 128.6 | -2.1 | | -30.6 | 44 | 1315 | 02 02 06 |
| 02 03 05 | AT2018 | 14 11 27 | 51.0 | 130.1 | -2.1 | | -29.8 | -16 | 1315 | No stop |
| 02 06 05 | --- | 14 14 27 | 51.3 | 131.0 | -2.0 | | -29.3 | 164 | 1338 | 02 03 06 |
| 02 06 05 | J1619+2247 | 14 14 27 | 51.4 | 129.6 | -2.1 | | -30.1 | -16 | 1338 | No stop |
| 02 07 05 | --- | 14 15 27 | 51.5 | 129.9 | -2.1 | | -30.0 | 44 | 1346 | 02 06 06 |
| 02 07 05 | AT2018 | 14 15 27 | 51.5 | 131.4 | -2.0 | | -29.1 | -16 | 1346 | No stop |
| 02 09 05 | --- | 14 17 28 | 51.7 | 132.0 | -2.0 | | -28.8 | 104 | 1362 | 02 07 06 |

Schedule for TORUN (Code Tr ) Page 9

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT / Stop UT | Source | LST | Start / Stop EL | AZ | HA | UP | ParA | Early / Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 02 09 05 | VLA2 | 14 17 28 | 51.6 | 131.8 | -2.0 | | -28.9 | -9 | 1362 | No stop |
| 02 10 05 | --- | 14 18 28 | 51.8 | 132.1 | -2.0 | | -28.8 | 51 | 1369 | 02 09 06 |
| 02 10 40 | J1619+2247 | 14 19 03 | 52.0 | 131.1 | -2.0 | | -29.4 | 20 | 1369 | 02 10 40 |
| 02 11 40 | --- | 14 20 03 | 52.1 | 131.4 | -2.0 | | -29.2 | 60 | 1377 | 02 10 41 |
| 02 11 40 | AT2018 | 14 20 03 | 52.0 | 132.9 | -1.9 | | -28.4 | -16 | 1377 | No stop |
| 02 14 40 | --- | 14 23 04 | 52.3 | 133.9 | -1.9 | | -27.9 | 164 | 1400 | 02 11 41 |
| 02 14 40 | J1619+2247 | 14 23 04 | 52.4 | 132.4 | -1.9 | | -28.7 | -16 | 1400 | No stop |
| 02 15 40 | --- | 14 24 04 | 52.5 | 132.7 | -1.9 | | -28.6 | 44 | 1408 | 02 14 41 |
| 02 15 40 | AT2018 | 14 24 04 | 52.4 | 134.2 | -1.9 | | -27.7 | -16 | 1408 | No stop |
| 02 18 40 | --- | 14 27 04 | 52.7 | 135.2 | -1.8 | | -27.2 | 164 | 1431 | 02 15 41 |
| 02 19 15 | J1619+2247 | 14 27 39 | 52.9 | 133.9 | -1.9 | | -28.0 | 19 | 1431 | 02 19 15 |
| 02 20 15 | --- | 14 28 39 | 53.0 | 134.3 | -1.9 | | -27.8 | 60 | 1438 | 02 19 16 |
| 02 20 15 | VLA1 | 14 28 39 | 52.9 | 135.9 | -1.8 | | -26.9 | -17 | 1438 | No stop |
| 02 22 15 | --- | 14 30 40 | 53.1 | 136.6 | -1.8 | | -26.5 | 103 | 1454 | 02 20 16 |
| 02 22 15 | J1619+2247 | 14 30 40 | 53.2 | 134.9 | -1.8 | | -27.4 | -16 | 1454 | No stop |
| 02 23 15 | --- | 14 31 40 | 53.3 | 135.3 | -1.8 | | -27.3 | 44 | 1462 | 02 22 16 |
| 02 23 15 | AT2018 | 14 31 40 | 53.2 | 136.8 | -1.8 | | -26.4 | -16 | 1462 | No stop |
| 02 26 15 | --- | 14 34 40 | 53.5 | 137.8 | -1.7 | | -25.8 | 164 | 1485 | 02 23 16 |
| 02 26 15 | J1619+2247 | 14 34 40 | 53.7 | 136.3 | -1.8 | | -26.7 | -16 | 1485 | No stop |
| 02 27 15 | --- | 14 35 41 | 53.8 | 136.7 | -1.7 | | -26.5 | 44 | 1492 | 02 26 16 |
| 02 27 15 | AT2018 | 14 35 41 | 53.6 | 138.2 | -1.7 | | -25.6 | -16 | 1492 | No stop |
| 02 29 15 | --- | 14 37 41 | 53.8 | 138.9 | -1.7 | | -25.2 | 104 | 1508 | 02 27 16 |
| 02 29 15 | VLA2 | 14 37 41 | 53.8 | 138.6 | -1.7 | | -25.4 | -9 | 1508 | No stop |
| 02 30 15 | --- | 14 38 41 | 53.9 | 139.0 | -1.6 | | -25.2 | 51 | 1515 | 02 29 16 |
| 02 30 50 | J1619+2247 | 14 39 16 | 54.1 | 137.9 | -1.7 | | -25.9 | 20 | 1515 | 02 30 50 |
| 02 31 50 | --- | 14 40 16 | 54.2 | 138.3 | -1.7 | | -25.7 | 60 | 1523 | 02 30 51 |
| 02 31 50 | AT2018 | 14 40 16 | 54.1 | 139.8 | -1.6 | | -24.7 | -16 | 1523 | No stop |
| 02 34 50 | --- | 14 43 17 | 54.4 | 140.9 | -1.6 | | -24.1 | 164 | 1546 | 02 31 51 |
| 02 34 50 | J1619+2247 | 14 43 17 | 54.5 | 139.4 | -1.6 | | -25.1 | -16 | 1546 | No stop |
| 02 35 50 | --- | 14 44 17 | 54.6 | 139.7 | -1.6 | | -24.9 | 44 | 1554 | 02 34 51 |

Schedule for TORUN (Code Tr ) Page 10

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 02 35 50 | AT2018 | 14 44 17 | 54.4 | 141.3 | -1.5 | | -23.9 | -16 | 1554 | No stop |
| 02 38 50 | --- | 14 47 18 | 54.7 | 142.4 | -1.5 | | -23.3 | 164 | 1577 | 02 35 51 |
| 02 39 25 | J1619+2247 | 14 47 53 | 55.0 | 141.0 | -1.5 | | -24.2 | 19 | 1577 | 02 39 25 |
| 02 40 25 | --- | 14 48 53 | 55.1 | 141.4 | -1.5 | | -24.0 | 60 | 1585 | 02 39 26 |
| 02 40 25 | VLA1 | 14 48 53 | 54.9 | 143.1 | -1.5 | | -22.9 | -17 | 1585 | No stop |
| 02 42 25 | --- | 14 50 53 | 55.1 | 143.8 | -1.4 | | -22.5 | 103 | 1600 | 02 40 26 |
| 02 42 25 | J1619+2247 | 14 50 53 | 55.2 | 142.1 | -1.5 | | -23.6 | -16 | 1600 | No stop |
| 02 43 25 | --- | 14 51 53 | 55.3 | 142.5 | -1.5 | | -23.3 | 44 | 1608 | 02 42 26 |
| 02 43 25 | AT2018 | 14 51 53 | 55.1 | 144.1 | -1.4 | | -22.4 | -16 | 1608 | No stop |
| 02 46 25 | --- | 14 54 54 | 55.4 | 145.2 | -1.4 | | -21.7 | 164 | 1631 | 02 43 26 |
| 02 46 25 | J1619+2247 | 14 54 54 | 55.6 | 143.6 | -1.4 | | -22.7 | -16 | 1631 | No stop |
| 02 47 25 | --- | 14 55 54 | 55.7 | 144.0 | -1.4 | | -22.5 | 44 | 1638 | 02 46 26 |
| 02 47 25 | AT2018 | 14 55 54 | 55.5 | 145.6 | -1.3 | | -21.5 | -16 | 1638 | No stop |
| 02 49 25 | --- | 14 57 54 | 55.7 | 146.4 | -1.3 | | -21.1 | 104 | 1654 | 02 47 26 |
| 02 49 25 | VLA2 | 14 57 54 | 55.6 | 146.1 | -1.3 | | -21.2 | -10 | 1654 | No stop |
| 02 50 25 | --- | 14 58 54 | 55.7 | 146.5 | -1.3 | | -21.0 | 50 | 1662 | 02 49 26 |
| 02 51 00 | J1619+2247 | 14 59 30 | 56.0 | 145.4 | -1.3 | | -21.7 | 20 | 1662 | 02 51 00 |
| 02 52 00 | --- | 15 00 30 | 56.1 | 145.8 | -1.3 | | -21.5 | 60 | 1669 | 02 51 01 |
| 02 52 00 | AT2018 | 15 00 30 | 55.9 | 147.4 | -1.3 | | -20.5 | -17 | 1669 | No stop |
| 02 55 00 | --- | 15 03 30 | 56.1 | 148.5 | -1.2 | | -19.8 | 163 | 1692 | 02 52 01 |
| 02 55 00 | J1619+2247 | 15 03 30 | 56.3 | 146.9 | -1.3 | | -20.8 | -16 | 1692 | No stop |
| 02 56 00 | --- | 15 04 30 | 56.4 | 147.3 | -1.3 | | -20.6 | 44 | 1700 | 02 55 01 |
| 02 56 00 | AT2018 | 15 04 30 | 56.2 | 148.9 | -1.2 | | -19.6 | -17 | 1700 | No stop |
| 02 59 00 | --- | 15 07 31 | 56.4 | 150.1 | -1.2 | | -18.9 | 163 | 1723 | 02 56 01 |
| 02 59 35 | J1619+2247 | 15 08 06 | 56.7 | 148.7 | -1.2 | | -19.7 | 19 | 1723 | 02 59 35 |
| 03 00 35 | --- | 15 09 06 | 56.8 | 149.1 | -1.2 | | -19.5 | 60 | 1731 | 02 59 36 |
| 03 00 35 | VLA1 | 15 09 06 | 56.6 | 150.9 | -1.1 | | -18.4 | -17 | 1731 | No stop |
| 03 02 35 | --- | 15 11 06 | 56.7 | 151.7 | -1.1 | | -17.9 | 103 | 1746 | 03 00 36 |
| 03 02 35 | J1619+2247 | 15 11 06 | 56.9 | 149.9 | -1.1 | | -19.0 | -16 | 1746 | No stop |
| 03 03 35 | --- | 15 12 07 | 57.0 | 150.3 | -1.1 | | -18.8 | 44 | 1754 | 03 02 36 |

```
Schedule for TORUN     (Code Tr )                                  Page  11
              Revealing the radio structure in AT2018cow
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Wed   6 Mar 2019   Day  65 ---

03 03 35  AT2018       15 12 07  56.7 151.9 -1.1     -17.8   -17     1754   No stop
03 06 35  ---          15 15 07  57.0 153.2 -1.0     -17.0   163     1777   03 03 36

03 06 35  J1619+2247   15 15 07  57.2 151.5 -1.1     -18.1   -16     1777   No stop
03 07 35  ---          15 16 07  57.3 152.0 -1.1     -17.8    44     1785   03 06 36

03 07 35  AT2018       15 16 07  57.0 153.6 -1.0     -16.8   -17     1785   No stop
03 09 35  ---          15 18 08  57.2 154.4 -1.0     -16.3   103     1800   03 07 36

03 09 35  VLA2         15 18 08  57.2 154.1 -1.0     -16.5   -10     1800   No stop
03 10 35  ---          15 19 08  57.2 154.5 -1.0     -16.2    50     1808   03 09 36

03 11 10  J1619+2247   15 19 43  57.6 153.4 -1.0     -16.9    20     1808   03 11 10
03 12 10  ---          15 20 43  57.6 153.8 -1.0     -16.7    60     1815   03 11 11

 ---------- Ef is out for a pointing check ----------

03 12 10  AT2018       15 20 43  57.3 155.4 -0.9     -15.6   -17     1815   No stop
03 15 10  ---          15 23 44  57.5 156.7 -0.9     -14.9   163     1838   03 12 11

03 15 10  J1619+2247   15 23 44  57.8 155.1 -0.9     -15.9   -16     1838   No stop
03 16 10  ---          15 24 44  57.9 155.5 -0.9     -15.7    44     1846   03 15 11

03 16 10  AT2018       15 24 44  57.6 157.1 -0.9     -14.6   -17     1846   No stop
03 19 10  ---          15 27 44  57.7 158.4 -0.8     -13.8   163     1869   03 16 11

03 19 10  J1619+2247   15 27 44  58.1 156.8 -0.9     -14.9   -16     1869   No stop
03 20 10  ---          15 28 44  58.1 157.2 -0.9     -14.6    44     1877   03 19 11

 ---------- Ef is in ----------

03 20 45  VLA1         15 29 19  57.8 159.2 -0.8     -13.3    18     1877   03 20 45
03 22 45  ---          15 31 20  57.9 160.0 -0.8     -12.8   120     1892   03 20 46

03 22 45  J1619+2247   15 31 20  58.3 158.3 -0.8     -13.9   -17     1892   No stop
03 23 45  ---          15 32 20  58.3 158.7 -0.8     -13.7    43     1900   03 22 46

03 23 45  AT2018       15 32 20  58.0 160.3 -0.7     -12.6   -17     1900   No stop
03 26 45  ---          15 35 20  58.1 161.6 -0.7     -11.8   163     1923   03 23 46

03 26 45  J1619+2247   15 35 20  58.5 160.0 -0.7     -12.9   -16     1923   No stop
03 27 45  ---          15 36 21  58.5 160.4 -0.7     -12.6    44     1931   03 26 46

03 27 45  AT2018       15 36 21  58.2 162.0 -0.7     -11.5   -17     1931   No stop
03 29 45  ---          15 38 21  58.3 162.9 -0.6     -11.0   103     1946   03 27 46
```

Schedule for TORUN (Code Tr ) Page 12

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 03 29 45 | VLA2 | 15 38 21 | 58.3 | 162.6 | -0.7 | | -11.2 | -10 | 1946 | No stop |
| 03 30 45 | --- | 15 39 21 | 58.3 | 163.0 | -0.6 | | -10.9 | 50 | 1954 | 03 29 46 |
| 03 31 20 | J1619+2247 | 15 39 56 | 58.7 | 162.0 | -0.7 | | -11.6 | 20 | 1954 | 03 31 20 |
| 03 32 20 | --- | 15 40 56 | 58.8 | 162.4 | -0.7 | | -11.3 | 60 | 1962 | 03 31 21 |
| 03 34 20 | J1642+3948 | 15 42 57 | 73.1 | 136.1 | -1.0 | | -32.8 | 51 | 1962 | 03 34 20 |
| 03 37 00 | =3C345 | 15 45 37 | 73.4 | 137.6 | -1.0 | | -31.8 | 160 | 1982 | 03 34 21 |
| ---------- Main phase-referencing calibrator ---------- | | | | | | | | | | |
| 03 38 30 | J1619+2247 | 15 47 07 | 59.0 | 165.1 | -0.5 | | -9.6 | 20 | 1982 | 03 38 30 |
| 03 40 00 | --- | 15 48 38 | 59.1 | 165.8 | -0.5 | | -9.2 | 90 | 1994 | 03 38 31 |
| 03 40 00 | AT2018 | 15 48 38 | 58.7 | 167.4 | -0.5 | | -8.1 | -17 | 1994 | No stop |
| 03 43 00 | --- | 15 51 38 | 58.8 | 168.7 | -0.4 | | -7.3 | 163 | 2017 | 03 40 01 |
| 03 43 00 | J1619+2247 | 15 51 38 | 59.2 | 167.1 | -0.5 | | -8.3 | -16 | 2017 | No stop |
| 03 44 00 | --- | 15 52 38 | 59.2 | 167.6 | -0.5 | | -8.0 | 44 | 2024 | 03 43 01 |
| 03 44 00 | AT2018 | 15 52 38 | 58.8 | 169.2 | -0.4 | | -7.0 | -17 | 2024 | No stop |
| 03 47 00 | --- | 15 55 39 | 58.9 | 170.5 | -0.4 | | -6.1 | 163 | 2047 | 03 44 01 |
| 03 47 00 | J1619+2247 | 15 55 39 | 59.3 | 168.9 | -0.4 | | -7.2 | -16 | 2047 | No stop |
| 03 48 00 | --- | 15 56 39 | 59.3 | 169.4 | -0.4 | | -6.9 | 44 | 2055 | 03 47 01 |
| 03 48 30 | VLA1 | 15 57 09 | 58.9 | 171.3 | -0.3 | | -5.6 | 13 | 2055 | 03 48 30 |
| 03 50 30 | --- | 15 59 09 | 59.0 | 172.2 | -0.3 | | -5.1 | 120 | 2071 | 03 48 31 |
| 03 50 30 | J1619+2247 | 15 59 09 | 59.4 | 170.5 | -0.3 | | -6.2 | -16 | 2071 | No stop |
| 03 51 30 | --- | 16 00 09 | 59.4 | 171.0 | -0.3 | | -5.9 | 44 | 2078 | 03 50 31 |
| 03 51 30 | AT2018 | 16 00 09 | 59.0 | 172.5 | -0.3 | | -4.9 | -16 | 2078 | No stop |
| 03 54 30 | --- | 16 03 10 | 59.0 | 173.9 | -0.2 | | -4.0 | 164 | 2101 | 03 51 31 |
| 03 54 30 | J1619+2247 | 16 03 10 | 59.5 | 172.3 | -0.3 | | -5.0 | -16 | 2101 | No stop |
| 03 55 30 | --- | 16 04 10 | 59.5 | 172.8 | -0.3 | | -4.7 | 44 | 2109 | 03 54 31 |
| 03 55 30 | AT2018 | 16 04 10 | 59.0 | 174.3 | -0.2 | | -3.7 | -16 | 2109 | No stop |
| 03 57 30 | --- | 16 06 10 | 59.1 | 175.2 | -0.2 | | -3.1 | 104 | 2124 | 03 55 31 |
| 03 57 30 | VLA2 | 16 06 10 | 59.1 | 174.9 | -0.2 | | -3.3 | -10 | 2124 | No stop |
| 03 58 30 | --- | 16 07 11 | 59.1 | 175.3 | -0.2 | | -3.0 | 50 | 2132 | 03 57 31 |

Schedule for TORUN (Code Tr ) Page 13

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 03 59 00 | J1619+2247 | 16 07 41 | 59.6 | 174.4 | -0.2 | | -3.7 | 15 | 2132 | 03 59 00 |
| 04 00 00 | --- | 16 08 41 | 59.6 | 174.8 | -0.2 | | -3.4 | 60 | 2140 | 03 59 01 |
| 04 00 00 | AT2018 | 16 08 41 | 59.1 | 176.3 | -0.1 | | -2.4 | -16 | 2140 | No stop |
| 04 03 00 | --- | 16 11 41 | 59.1 | 177.7 | -0.1 | | -1.5 | 164 | 2163 | 04 00 01 |
| 04 03 00 | J1619+2247 | 16 11 41 | 59.6 | 176.2 | -0.1 | | -2.5 | -16 | 2163 | No stop |
| 04 04 00 | --- | 16 12 42 | 59.6 | 176.6 | -0.1 | | -2.2 | 44 | 2171 | 04 03 01 |
| 04 04 00 | AT2018 | 16 12 42 | 59.1 | 178.1 | -0.1 | | -1.2 | -16 | 2171 | No stop |
| 04 07 00 | --- | 16 15 42 | 59.1 | 179.5 | -0.0 | | -0.3 | 164 | 2194 | 04 04 01 |
| 04 07 00 | J1619+2247 | 16 15 42 | 59.6 | 178.0 | -0.1 | | -1.3 | -16 | 2194 | No stop |
| 04 08 00 | --- | 16 16 42 | 59.6 | 178.5 | -0.1 | | -1.0 | 44 | 2201 | 04 07 01 |
| 04 08 30 | VLA1 | 16 17 12 | 59.1 | 180.3 | 0.0 | | 0.2 | 13 | 2201 | 04 08 30 |
| 04 10 30 | --- | 16 19 13 | 59.1 | 181.2 | 0.0 | | 0.8 | 120 | 2217 | 04 08 31 |
| 04 10 30 | J1619+2247 | 16 19 13 | 59.7 | 179.6 | -0.0 | | -0.3 | -16 | 2217 | No stop |
| 04 11 30 | --- | 16 20 13 | 59.7 | 180.1 | 0.0 | | 0.0 | 44 | 2224 | 04 10 31 |
| 04 11 30 | AT2018 | 16 20 13 | 59.1 | 181.5 | 0.1 | | 1.0 | -16 | 2224 | No stop |
| 04 14 30 | --- | 16 23 13 | 59.1 | 182.9 | 0.1 | | 1.9 | 164 | 2247 | 04 11 31 |
| 04 14 30 | J1619+2247 | 16 23 13 | 59.6 | 181.4 | 0.1 | | 0.9 | -15 | 2247 | No stop |
| 04 15 30 | --- | 16 24 13 | 59.6 | 181.9 | 0.1 | | 1.2 | 45 | 2255 | 04 14 31 |
| 04 15 30 | AT2018 | 16 24 13 | 59.1 | 183.3 | 0.1 | | 2.2 | -16 | 2255 | No stop |
| 04 17 30 | --- | 16 26 14 | 59.1 | 184.2 | 0.2 | | 2.7 | 104 | 2271 | 04 15 31 |
| 04 17 30 | VLA2 | 16 26 14 | 59.1 | 183.9 | 0.1 | | 2.6 | -10 | 2271 | No stop |
| 04 18 30 | --- | 16 27 14 | 59.1 | 184.4 | 0.2 | | 2.8 | 50 | 2278 | 04 17 31 |
| 04 19 00 | J1619+2247 | 16 27 44 | 59.6 | 183.5 | 0.1 | | 2.3 | 16 | 2278 | 04 19 00 |
| 04 20 00 | --- | 16 28 44 | 59.6 | 184.0 | 0.1 | | 2.6 | 60 | 2286 | 04 19 01 |
| 04 20 00 | AT2018 | 16 28 44 | 59.0 | 185.4 | 0.2 | | 3.5 | -16 | 2286 | No stop |
| 04 23 00 | --- | 16 31 45 | 59.0 | 186.7 | 0.2 | | 4.4 | 164 | 2309 | 04 20 01 |
| 04 23 00 | J1619+2247 | 16 31 45 | 59.6 | 185.3 | 0.2 | | 3.5 | -15 | 2309 | No stop |
| 04 24 00 | --- | 16 32 45 | 59.6 | 185.8 | 0.2 | | 3.8 | 45 | 2317 | 04 23 01 |
| 04 24 00 | AT2018 | 16 32 45 | 59.0 | 187.2 | 0.3 | | 4.6 | -16 | 2317 | No stop |
| 04 27 00 | --- | 16 35 45 | 58.9 | 188.5 | 0.3 | | 5.5 | 164 | 2340 | 04 24 01 |

Schedule for TORUN (Code Tr ) Page 14

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 04 27 00 | J1619+2247 | 16 35 45 | 59.5 | 187.1 | 0.3 | | 4.6 | -15 | 2340 | No stop |
| 04 28 00 | --- | 16 36 45 | 59.5 | 187.6 | 0.3 | | 4.9 | 45 | 2347 | 04 27 01 |
| 04 28 30 | VLA1 | 16 37 16 | 58.9 | 189.3 | 0.3 | | 6.0 | 14 | 2347 | 04 28 30 |
| 04 30 30 | --- | 16 39 16 | 58.8 | 190.2 | 0.4 | | 6.6 | 120 | 2363 | 04 28 31 |
| 04 30 30 | J1619+2247 | 16 39 16 | 59.4 | 188.7 | 0.3 | | 5.7 | -16 | 2363 | No stop |
| 04 31 30 | --- | 16 40 16 | 59.4 | 189.2 | 0.3 | | 6.0 | 44 | 2371 | 04 30 31 |
| 04 31 30 | AT2018 | 16 40 16 | 58.8 | 190.5 | 0.4 | | 6.8 | -16 | 2371 | No stop |
| 04 34 30 | --- | 16 43 17 | 58.7 | 191.8 | 0.4 | | 7.7 | 164 | 2394 | 04 31 31 |
| 04 34 30 | J1619+2247 | 16 43 17 | 59.3 | 190.5 | 0.4 | | 6.8 | -15 | 2394 | No stop |
| 04 35 30 | --- | 16 44 17 | 59.3 | 191.0 | 0.4 | | 7.1 | 45 | 2401 | 04 34 31 |
| 04 35 30 | AT2018 | 16 44 17 | 58.7 | 192.3 | 0.5 | | 7.9 | -16 | 2401 | No stop |
| 04 37 30 | --- | 16 46 17 | 58.6 | 193.2 | 0.5 | | 8.5 | 104 | 2417 | 04 35 31 |
| 04 37 30 | VLA2 | 16 46 17 | 58.7 | 192.9 | 0.5 | | 8.3 | -9 | 2417 | No stop |
| 04 38 30 | --- | 16 47 17 | 58.7 | 193.3 | 0.5 | | 8.6 | 51 | 2424 | 04 37 31 |
| 04 39 00 | J1619+2247 | 16 47 47 | 59.2 | 192.6 | 0.5 | | 8.1 | 16 | 2424 | 04 39 00 |
| 04 40 00 | --- | 16 48 47 | 59.2 | 193.0 | 0.5 | | 8.4 | 60 | 2432 | 04 39 01 |
| 04 40 00 | AT2018 | 16 48 47 | 58.5 | 194.3 | 0.5 | | 9.2 | -15 | 2432 | No stop |
| 04 43 00 | --- | 16 51 48 | 58.4 | 195.6 | 0.6 | | 10.0 | 165 | 2455 | 04 40 01 |
| 04 43 00 | J1619+2247 | 16 51 48 | 59.1 | 194.3 | 0.5 | | 9.3 | -15 | 2455 | No stop |
| 04 44 00 | --- | 16 52 48 | 59.0 | 194.8 | 0.5 | | 9.6 | 45 | 2463 | 04 43 01 |
| 04 44 00 | AT2018 | 16 52 48 | 58.4 | 196.0 | 0.6 | | 10.3 | -15 | 2463 | No stop |
| 04 47 00 | --- | 16 55 49 | 58.2 | 197.3 | 0.6 | | 11.1 | 165 | 2486 | 04 44 01 |
| 04 47 00 | J1619+2247 | 16 55 49 | 58.9 | 196.1 | 0.6 | | 10.4 | -15 | 2486 | No stop |
| 04 48 00 | --- | 16 56 49 | 58.9 | 196.5 | 0.6 | | 10.7 | 45 | 2494 | 04 47 01 |
| 04 48 30 | VLA1 | 16 57 19 | 58.2 | 198.1 | 0.7 | | 11.6 | 14 | 2494 | 04 48 30 |
| 04 50 30 | --- | 16 59 19 | 58.1 | 199.0 | 0.7 | | 12.2 | 120 | 2509 | 04 48 31 |
| 04 50 30 | J1619+2247 | 16 59 19 | 58.7 | 197.6 | 0.7 | | 11.4 | -15 | 2509 | No stop |
| 04 51 30 | --- | 17 00 19 | 58.7 | 198.1 | 0.7 | | 11.7 | 45 | 2517 | 04 50 31 |
| 04 51 30 | AT2018 | 17 00 19 | 58.0 | 199.3 | 0.7 | | 12.4 | -15 | 2517 | No stop |
| 04 54 30 | --- | 17 03 20 | 57.9 | 200.5 | 0.8 | | 13.2 | 165 | 2540 | 04 51 31 |

Schedule for TORUN (Code Tr ) Page 15

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 04 54 30 | J1619+2247 | 17 03 20 | 58.6 | 199.4 | 0.7 | | 12.5 | -14 | 2540 | No stop |
| 04 55 30 | --- | 17 04 20 | 58.5 | 199.8 | 0.7 | | 12.7 | 46 | 2547 | 04 54 31 |
| 04 55 30 | AT2018 | 17 04 20 | 57.8 | 201.0 | 0.8 | | 13.4 | -15 | 2547 | No stop |
| 04 57 30 | --- | 17 06 20 | 57.7 | 201.8 | 0.8 | | 13.9 | 105 | 2563 | 04 55 31 |
| 04 57 30 | VLA2 | 17 06 20 | 57.8 | 201.5 | 0.8 | | 13.8 | -9 | 2563 | No stop |
| 04 58 30 | --- | 17 07 20 | 57.7 | 202.0 | 0.8 | | 14.0 | 51 | 2571 | 04 57 31 |
| 04 59 00 | J1619+2247 | 17 07 51 | 58.3 | 201.3 | 0.8 | | 13.7 | 16 | 2571 | 04 59 00 |
| 05 00 00 | --- | 17 08 51 | 58.3 | 201.7 | 0.8 | | 14.0 | 60 | 2578 | 04 59 01 |
| 05 00 00 | AT2018 | 17 08 51 | 57.6 | 202.9 | 0.9 | | 14.6 | -15 | 2578 | No stop |
| 05 03 00 | --- | 17 11 51 | 57.4 | 204.1 | 0.9 | | 15.4 | 165 | 2601 | 05 00 01 |
| 05 03 00 | J1619+2247 | 17 11 51 | 58.1 | 203.0 | 0.9 | | 14.7 | -15 | 2601 | No stop |
| 05 04 00 | --- | 17 12 51 | 58.0 | 203.4 | 0.9 | | 15.0 | 45 | 2609 | 05 03 01 |
| 05 04 00 | AT2018 | 17 12 51 | 57.3 | 204.5 | 0.9 | | 15.6 | -15 | 2609 | No stop |
| 05 07 00 | --- | 17 15 52 | 57.1 | 205.8 | 1.0 | | 16.4 | 165 | 2632 | 05 04 01 |
| 05 07 00 | J1619+2247 | 17 15 52 | 57.8 | 204.7 | 0.9 | | 15.8 | -15 | 2632 | No stop |
| 05 08 00 | --- | 17 16 52 | 57.8 | 205.1 | 0.9 | | 16.0 | 45 | 2640 | 05 07 01 |
| 05 08 30 | VLA1 | 17 17 22 | 57.0 | 206.5 | 1.0 | | 16.8 | 15 | 2640 | 05 08 30 |
| 05 10 30 | --- | 17 19 22 | 56.9 | 207.3 | 1.0 | | 17.3 | 120 | 2655 | 05 08 31 |
| 05 10 30 | J1619+2247 | 17 19 22 | 57.6 | 206.2 | 1.0 | | 16.7 | -15 | 2655 | No stop |
| 05 11 30 | --- | 17 20 23 | 57.6 | 206.6 | 1.0 | | 16.9 | 45 | 2663 | 05 10 31 |
| 05 11 30 | AT2018 | 17 20 23 | 56.8 | 207.6 | 1.1 | | 17.5 | -15 | 2663 | No stop |
| 05 14 30 | --- | 17 23 23 | 56.6 | 208.8 | 1.1 | | 18.2 | 165 | 2686 | 05 11 31 |
| 05 14 30 | J1619+2247 | 17 23 23 | 57.3 | 207.8 | 1.1 | | 17.7 | -15 | 2686 | No stop |
| 05 15 30 | --- | 17 24 23 | 57.3 | 208.2 | 1.1 | | 17.9 | 45 | 2694 | 05 14 31 |
| 05 15 30 | AT2018 | 17 24 23 | 56.5 | 209.2 | 1.1 | | 18.5 | -15 | 2694 | No stop |
| 05 17 30 | --- | 17 26 24 | 56.4 | 210.0 | 1.2 | | 18.9 | 105 | 2709 | 05 15 31 |
| 05 17 30 | VLA2 | 17 26 24 | 56.5 | 209.8 | 1.1 | | 18.8 | -9 | 2709 | No stop |
| 05 18 30 | --- | 17 27 24 | 56.4 | 210.2 | 1.2 | | 19.0 | 51 | 2717 | 05 17 31 |
| 05 19 00 | J1619+2247 | 17 27 54 | 57.0 | 209.6 | 1.1 | | 18.8 | 16 | 2717 | 05 19 00 |
| 05 20 00 | --- | 17 28 54 | 56.9 | 210.0 | 1.1 | | 19.0 | 60 | 2724 | 05 19 01 |

Schedule for TORUN (Code Tr ) Page 16

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 05 20 00 | AT2018 | 17 28 54 | 56.2 | 211.0 | 1.2 | | 19.5 | -15 | 2724 | No stop |
| 05 23 00 | --- | 17 31 55 | 56.0 | 212.2 | 1.3 | | 20.2 | 165 | 2747 | 05 20 01 |
| 05 23 00 | J1619+2247 | 17 31 55 | 56.7 | 211.2 | 1.2 | | 19.7 | -15 | 2747 | No stop |
| 05 24 00 | --- | 17 32 55 | 56.6 | 211.6 | 1.2 | | 20.0 | 45 | 2755 | 05 23 01 |
| 05 24 00 | AT2018 | 17 32 55 | 55.9 | 212.5 | 1.3 | | 20.4 | -15 | 2755 | No stop |
| 05 27 00 | --- | 17 35 55 | 55.6 | 213.7 | 1.3 | | 21.1 | 165 | 2778 | 05 24 01 |
| 05 27 00 | J1619+2247 | 17 35 55 | 56.4 | 212.8 | 1.3 | | 20.6 | -15 | 2778 | No stop |
| 05 28 00 | --- | 17 36 55 | 56.3 | 213.2 | 1.3 | | 20.9 | 45 | 2786 | 05 27 01 |
| 05 28 30 | VLA1 | 17 37 25 | 55.5 | 214.4 | 1.3 | | 21.5 | 15 | 2786 | 05 28 30 |
| 05 30 30 | --- | 17 39 26 | 55.3 | 215.2 | 1.4 | | 21.9 | 120 | 2801 | 05 28 31 |
| 05 30 30 | J1619+2247 | 17 39 26 | 56.1 | 214.2 | 1.3 | | 21.4 | -15 | 2801 | No stop |
| 05 31 30 | --- | 17 40 26 | 56.0 | 214.5 | 1.3 | | 21.7 | 45 | 2809 | 05 30 31 |
| 05 31 30 | AT2018 | 17 40 26 | 55.3 | 215.4 | 1.4 | | 22.1 | -15 | 2809 | No stop |
| 05 34 30 | --- | 17 43 26 | 55.0 | 216.5 | 1.4 | | 22.7 | 165 | 2832 | 05 31 31 |
| 05 34 30 | J1619+2247 | 17 43 26 | 55.8 | 215.7 | 1.4 | | 22.3 | -15 | 2832 | No stop |
| 05 35 30 | --- | 17 44 27 | 55.7 | 216.1 | 1.4 | | 22.5 | 45 | 2840 | 05 34 31 |
| 05 35 30 | AT2018 | 17 44 27 | 54.9 | 216.9 | 1.5 | | 22.9 | -15 | 2840 | No stop |
| 05 37 30 | --- | 17 46 27 | 54.7 | 217.7 | 1.5 | | 23.3 | 105 | 2855 | 05 35 31 |
| 05 37 30 | VLA2 | 17 46 27 | 54.8 | 217.4 | 1.5 | | 23.2 | -9 | 2855 | No stop |
| 05 38 30 | --- | 17 47 27 | 54.7 | 217.8 | 1.5 | | 23.4 | 51 | 2863 | 05 37 31 |
| 05 39 00 | J1619+2247 | 17 47 57 | 55.4 | 217.4 | 1.5 | | 23.3 | 16 | 2863 | 05 39 00 |
| 05 40 00 | --- | 17 48 57 | 55.3 | 217.8 | 1.5 | | 23.5 | 60 | 2871 | 05 39 01 |
| 05 40 00 | AT2018 | 17 48 57 | 54.5 | 218.6 | 1.5 | | 23.9 | -15 | 2871 | No stop |
| 05 43 00 | --- | 17 51 58 | 54.2 | 219.7 | 1.6 | | 24.5 | 165 | 2894 | 05 40 01 |
| 05 43 00 | J1619+2247 | 17 51 58 | 55.0 | 218.9 | 1.5 | | 24.1 | -15 | 2894 | No stop |
| 05 44 00 | --- | 17 52 58 | 54.9 | 219.2 | 1.5 | | 24.3 | 45 | 2901 | 05 43 01 |
| 05 44 00 | AT2018 | 17 52 58 | 54.1 | 220.0 | 1.6 | | 24.7 | -15 | 2901 | No stop |
| 05 47 00 | --- | 17 55 58 | 53.8 | 221.1 | 1.7 | | 25.2 | 165 | 2924 | 05 44 01 |
| 05 47 00 | J1619+2247 | 17 55 58 | 54.6 | 220.3 | 1.6 | | 24.9 | -15 | 2924 | No stop |
| 05 48 00 | --- | 17 56 59 | 54.5 | 220.7 | 1.6 | | 25.1 | 45 | 2932 | 05 47 01 |

Schedule for TORUN (Code Tr ) Page 17

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 05 48 30 | VLA1 | 17 57 29 | 53.6 | 221.7 | 1.7 | | 25.6 | 14 | 2932 | 05 48 30 |
| 05 50 30 | --- | 17 59 29 | 53.4 | 222.4 | 1.7 | | 26.0 | 120 | 2947 | 05 48 31 |
| 05 50 30 | J1619+2247 | 17 59 29 | 54.3 | 221.6 | 1.7 | | 25.6 | -15 | 2947 | No stop |
| 05 51 30 | --- | 18 00 29 | 54.2 | 221.9 | 1.7 | | 25.8 | 45 | 2955 | 05 50 31 |
| 05 51 30 | AT2018 | 18 00 29 | 53.4 | 222.7 | 1.7 | | 26.1 | -15 | 2955 | No stop |
| 05 54 30 | --- | 18 03 30 | 53.0 | 223.7 | 1.8 | | 26.6 | 165 | 2978 | 05 51 31 |
| 05 54 30 | J1619+2247 | 18 03 30 | 53.9 | 223.0 | 1.7 | | 26.4 | -15 | 2978 | No stop |
| 05 55 30 | --- | 18 04 30 | 53.8 | 223.3 | 1.7 | | 26.5 | 45 | 2986 | 05 54 31 |
| 05 55 30 | AT2018 | 18 04 30 | 52.9 | 224.1 | 1.8 | | 26.8 | -16 | 2986 | No stop |
| 05 57 30 | --- | 18 06 30 | 52.7 | 224.8 | 1.8 | | 27.2 | 104 | 3001 | 05 55 31 |
| 05 57 30 | VLA2 | 18 06 30 | 52.8 | 224.6 | 1.8 | | 27.1 | -9 | 3001 | No stop |
| 05 58 30 | --- | 18 07 30 | 52.7 | 224.9 | 1.8 | | 27.3 | 51 | 3009 | 05 57 31 |
| 05 59 00 | J1619+2247 | 18 08 00 | 53.4 | 224.6 | 1.8 | | 27.2 | 15 | 3009 | 05 59 00 |
| 06 00 00 | --- | 18 09 01 | 53.3 | 224.9 | 1.8 | | 27.4 | 60 | 3017 | 05 59 01 |
| 06 00 00 | AT2018 | 18 09 01 | 52.5 | 225.6 | 1.9 | | 27.6 | -16 | 3017 | No stop |
| 06 03 00 | --- | 18 12 01 | 52.1 | 226.6 | 1.9 | | 28.1 | 164 | 3040 | 06 00 01 |
| 06 03 00 | J1619+2247 | 18 12 01 | 53.0 | 225.9 | 1.9 | | 27.9 | -15 | 3040 | No stop |
| 06 04 00 | --- | 18 13 01 | 52.9 | 226.3 | 1.9 | | 28.1 | 45 | 3047 | 06 03 01 |
| 06 04 00 | AT2018 | 18 13 01 | 52.0 | 226.9 | 1.9 | | 28.3 | -16 | 3047 | No stop |
| 06 07 00 | --- | 18 16 02 | 51.7 | 227.9 | 2.0 | | 28.8 | 164 | 3071 | 06 04 01 |
| 06 07 00 | J1619+2247 | 18 16 02 | 52.5 | 227.3 | 1.9 | | 28.6 | -15 | 3071 | No stop |
| 06 08 00 | --- | 18 17 02 | 52.4 | 227.6 | 1.9 | | 28.7 | 45 | 3078 | 06 07 01 |
| 06 08 30 | VLA1 | 18 17 32 | 51.5 | 228.5 | 2.0 | | 29.1 | 14 | 3078 | 06 08 30 |
| 06 10 30 | --- | 18 19 32 | 51.3 | 229.2 | 2.1 | | 29.4 | 120 | 3094 | 06 08 31 |
| 06 10 30 | J1619+2247 | 18 19 32 | 52.1 | 228.4 | 2.0 | | 29.2 | -16 | 3094 | No stop |
| 06 11 30 | --- | 18 20 32 | 52.0 | 228.8 | 2.0 | | 29.3 | 44 | 3101 | 06 10 31 |
| 06 11 30 | AT2018 | 18 20 32 | 51.2 | 229.4 | 2.1 | | 29.5 | -16 | 3101 | No stop |
| 06 14 30 | --- | 18 23 33 | 50.8 | 230.4 | 2.1 | | 30.0 | 164 | 3124 | 06 11 31 |
| 06 14 30 | J1619+2247 | 18 23 33 | 51.7 | 229.7 | 2.1 | | 29.8 | -15 | 3124 | No stop |
| 06 15 30 | --- | 18 24 33 | 51.6 | 230.1 | 2.1 | | 30.0 | 45 | 3132 | 06 14 31 |

Schedule for TORUN (Code Tr ) Page 18

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 06 15 30 | AT2018 | 18 24 33 | 50.7 | 230.7 | 2.1 | | 30.1 | -16 | 3132 | No stop |
| 06 17 30 | --- | 18 26 33 | 50.5 | 231.3 | 2.2 | | 30.4 | 104 | 3147 | 06 15 31 |
| 06 17 30 | VLA2 | 18 26 33 | 50.6 | 231.1 | 2.2 | | 30.3 | -9 | 3147 | No stop |
| 06 18 30 | --- | 18 27 34 | 50.5 | 231.4 | 2.2 | | 30.5 | 51 | 3155 | 06 17 31 |
| 06 19 00 | J1619+2247 | 18 28 04 | 51.2 | 231.2 | 2.1 | | 30.5 | 15 | 3155 | 06 19 00 |
| 06 20 00 | --- | 18 29 04 | 51.0 | 231.5 | 2.2 | | 30.6 | 60 | 3163 | 06 19 01 |
| 06 20 00 | AT2018 | 18 29 04 | 50.2 | 232.1 | 2.2 | | 30.8 | -16 | 3163 | No stop |
| 06 23 00 | --- | 18 32 04 | 49.8 | 233.0 | 2.3 | | 31.2 | 164 | 3186 | 06 20 01 |
| 06 23 00 | J1619+2247 | 18 32 04 | 50.7 | 232.4 | 2.2 | | 31.1 | -15 | 3186 | No stop |
| 06 24 00 | --- | 18 33 05 | 50.6 | 232.8 | 2.2 | | 31.2 | 45 | 3194 | 06 23 01 |
| 06 24 00 | AT2018 | 18 33 05 | 49.7 | 233.3 | 2.3 | | 31.3 | -16 | 3194 | No stop |
| 06 27 00 | --- | 18 36 05 | 49.4 | 234.2 | 2.3 | | 31.8 | 164 | 3217 | 06 24 01 |
| 06 27 00 | J1619+2247 | 18 36 05 | 50.2 | 233.7 | 2.3 | | 31.6 | -15 | 3217 | No stop |
| 06 28 00 | --- | 18 37 05 | 50.1 | 234.0 | 2.3 | | 31.8 | 45 | 3224 | 06 27 01 |
| 06 28 30 | VLA1 | 18 37 35 | 49.1 | 234.8 | 2.4 | | 32.0 | 14 | 3224 | 06 28 30 |
| 06 30 30 | --- | 18 39 36 | 48.9 | 235.4 | 2.4 | | 32.3 | 120 | 3240 | 06 28 31 |
| 06 30 30 | J1619+2247 | 18 39 36 | 49.8 | 234.8 | 2.3 | | 32.1 | -16 | 3240 | No stop |
| 06 31 30 | --- | 18 40 36 | 49.6 | 235.1 | 2.3 | | 32.3 | 44 | 3247 | 06 30 31 |
| 06 31 30 | AT2018 | 18 40 36 | 48.8 | 235.6 | 2.4 | | 32.4 | -16 | 3247 | No stop |
| 06 34 30 | --- | 18 43 36 | 48.4 | 236.5 | 2.4 | | 32.7 | 164 | 3271 | 06 31 31 |
| 06 34 30 | J1619+2247 | 18 43 36 | 49.3 | 236.0 | 2.4 | | 32.7 | -16 | 3271 | No stop |
| 06 35 30 | --- | 18 44 36 | 49.2 | 236.3 | 2.4 | | 32.8 | 44 | 3278 | 06 34 31 |
| 06 35 30 | AT2018 | 18 44 36 | 48.3 | 236.8 | 2.5 | | 32.9 | -16 | 3278 | No stop |
| 06 37 30 | --- | 18 46 37 | 48.0 | 237.4 | 2.5 | | 33.1 | 104 | 3294 | 06 35 31 |
| 06 37 30 | VLA2 | 18 46 37 | 48.2 | 237.2 | 2.5 | | 33.1 | -9 | 3294 | No stop |
| 06 38 30 | --- | 18 47 37 | 48.0 | 237.5 | 2.5 | | 33.2 | 51 | 3301 | 06 37 31 |
| 06 39 00 | J1619+2247 | 18 48 07 | 48.7 | 237.3 | 2.5 | | 33.2 | 15 | 3301 | 06 39 00 |
| 06 40 00 | --- | 18 49 07 | 48.6 | 237.6 | 2.5 | | 33.3 | 60 | 3309 | 06 39 01 |
| 06 40 00 | AT2018 | 18 49 07 | 47.7 | 238.1 | 2.5 | | 33.4 | -16 | 3309 | No stop |
| 06 43 00 | --- | 18 52 08 | 47.3 | 238.9 | 2.6 | | 33.8 | 164 | 3332 | 06 40 01 |

Schedule for TORUN (Code Tr ) Page 19

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 06 43 00 | J1619+2247 | 18 52 08 | 48.2 | 238.4 | 2.5 | | 33.7 | -16 | 3332 | No stop |
| 06 44 00 | --- | 18 53 08 | 48.1 | 238.7 | 2.6 | | 33.8 | 44 | 3340 | 06 43 01 |
| 06 44 00 | AT2018 | 18 53 08 | 47.2 | 239.2 | 2.6 | | 33.9 | -16 | 3340 | No stop |
| 06 47 00 | --- | 18 56 08 | 46.8 | 240.1 | 2.7 | | 34.2 | 164 | 3363 | 06 44 01 |
| 06 47 00 | J1619+2247 | 18 56 08 | 47.7 | 239.6 | 2.6 | | 34.2 | -16 | 3363 | No stop |
| 06 48 00 | --- | 18 57 08 | 47.6 | 239.9 | 2.6 | | 34.3 | 44 | 3371 | 06 47 01 |
| 06 48 30 | VLA1 | 18 57 39 | 46.6 | 240.6 | 2.7 | | 34.4 | 14 | 3371 | 06 48 30 |
| 06 50 30 | --- | 18 59 39 | 46.3 | 241.1 | 2.7 | | 34.6 | 120 | 3386 | 06 48 31 |
| 06 50 30 | J1619+2247 | 18 59 39 | 47.2 | 240.6 | 2.7 | | 34.6 | -16 | 3386 | No stop |
| 06 51 30 | --- | 19 00 39 | 47.1 | 240.9 | 2.7 | | 34.7 | 44 | 3394 | 06 50 31 |
| 06 51 30 | AT2018 | 19 00 39 | 46.2 | 241.3 | 2.7 | | 34.7 | -16 | 3394 | No stop |
| 06 54 30 | --- | 19 03 40 | 45.8 | 242.1 | 2.8 | | 35.0 | 164 | 3417 | 06 51 31 |
| 06 54 30 | J1619+2247 | 19 03 40 | 46.7 | 241.7 | 2.7 | | 35.0 | -16 | 3417 | No stop |
| 06 55 30 | --- | 19 04 40 | 46.6 | 242.0 | 2.7 | | 35.1 | 44 | 3424 | 06 54 31 |
| 06 55 30 | AT2018 | 19 04 40 | 45.7 | 242.4 | 2.8 | | 35.1 | -16 | 3424 | No stop |
| 06 57 30 | --- | 19 06 40 | 45.4 | 243.0 | 2.8 | | 35.3 | 104 | 3440 | 06 55 31 |
| 06 57 30 | VLA2 | 19 06 40 | 45.6 | 242.8 | 2.8 | | 35.3 | -9 | 3440 | No stop |
| 06 58 30 | --- | 19 07 40 | 45.4 | 243.1 | 2.8 | | 35.4 | 51 | 3447 | 06 57 31 |
| 06 59 00 | J1619+2247 | 19 08 10 | 46.1 | 242.9 | 2.8 | | 35.4 | 15 | 3447 | 06 59 00 |
| 07 00 00 | --- | 19 09 10 | 46.0 | 243.2 | 2.8 | | 35.5 | 60 | 3455 | 06 59 01 |
| 07 00 00 | AT2018 | 19 09 10 | 45.1 | 243.6 | 2.9 | | 35.5 | -16 | 3455 | No stop |
| 07 03 00 | --- | 19 12 11 | 44.7 | 244.4 | 2.9 | | 35.8 | 164 | 3478 | 07 00 01 |
| 07 03 00 | J1619+2247 | 19 12 11 | 45.6 | 244.0 | 2.9 | | 35.8 | -16 | 3478 | No stop |
| 07 04 00 | --- | 19 13 11 | 45.4 | 244.3 | 2.9 | | 35.9 | 44 | 3486 | 07 03 01 |
| 07 04 00 | AT2018 | 19 13 11 | 44.6 | 244.7 | 2.9 | | 35.9 | -16 | 3486 | No stop |
| 07 07 00 | --- | 19 16 12 | 44.1 | 245.5 | 3.0 | | 36.2 | 164 | 3509 | 07 04 01 |
| 07 07 00 | J1619+2247 | 19 16 12 | 45.0 | 245.1 | 2.9 | | 36.2 | -16 | 3509 | No stop |
| 07 08 00 | --- | 19 17 12 | 44.9 | 245.3 | 3.0 | | 36.3 | 44 | 3517 | 07 07 01 |
| 07 08 30 | VLA1 | 19 17 42 | 43.9 | 246.0 | 3.0 | | 36.3 | 14 | 3517 | 07 08 30 |
| 07 10 30 | --- | 19 19 42 | 43.6 | 246.5 | 3.1 | | 36.5 | 120 | 3532 | 07 08 31 |

Schedule for TORUN (Code Tr ) Page 20

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 07 10 30 | J1619+2247 | 19 19 42 | 44.5 | 246.0 | 3.0 | | 36.5 | -16 | 3532 | No stop |
| 07 11 30 | --- | 19 20 42 | 44.4 | 246.2 | 3.0 | | 36.6 | 44 | 3540 | 07 10 31 |
| 07 11 30 | AT2018 | 19 20 42 | 43.5 | 246.6 | 3.1 | | 36.5 | -16 | 3540 | No stop |
| 07 14 30 | --- | 19 23 43 | 43.1 | 247.4 | 3.1 | | 36.8 | 164 | 3563 | 07 11 31 |
| 07 14 30 | J1619+2247 | 19 23 43 | 44.0 | 247.0 | 3.1 | | 36.8 | -16 | 3563 | No stop |
| 07 15 30 | --- | 19 24 43 | 43.8 | 247.3 | 3.1 | | 36.9 | 44 | 3571 | 07 14 31 |
| 07 15 30 | AT2018 | 19 24 43 | 43.0 | 247.7 | 3.1 | | 36.9 | -16 | 3571 | No stop |
| 07 17 30 | --- | 19 26 43 | 42.7 | 248.2 | 3.2 | | 37.0 | 104 | 3586 | 07 15 31 |
| 07 17 30 | VLA2 | 19 26 43 | 42.8 | 248.0 | 3.2 | | 37.0 | -9 | 3586 | No stop |
| 07 18 30 | --- | 19 27 43 | 42.7 | 248.3 | 3.2 | | 37.1 | 51 | 3594 | 07 17 31 |
| 07 19 00 | J1619+2247 | 19 28 14 | 43.4 | 248.2 | 3.1 | | 37.2 | 15 | 3594 | 07 19 00 |
| 07 20 00 | --- | 19 29 14 | 43.2 | 248.4 | 3.2 | | 37.3 | 60 | 3601 | 07 19 01 |
| ---------- Ef is out for a pointing check ---------- | | | | | | | | | | |
| 07 20 00 | AT2018 | 19 29 14 | 42.3 | 248.8 | 3.2 | | 37.2 | -16 | 3601 | No stop |
| 07 23 00 | --- | 19 32 14 | 41.9 | 249.5 | 3.3 | | 37.4 | 164 | 3624 | 07 20 01 |
| 07 23 00 | J1619+2247 | 19 32 14 | 42.8 | 249.2 | 3.2 | | 37.5 | -16 | 3624 | No stop |
| 07 24 00 | --- | 19 33 14 | 42.7 | 249.4 | 3.2 | | 37.6 | 44 | 3632 | 07 23 01 |
| 07 24 00 | AT2018 | 19 33 14 | 41.8 | 249.8 | 3.3 | | 37.5 | -16 | 3632 | No stop |
| 07 27 00 | --- | 19 36 15 | 41.4 | 250.5 | 3.3 | | 37.7 | 164 | 3655 | 07 24 01 |
| 07 27 00 | J1619+2247 | 19 36 15 | 42.2 | 250.2 | 3.3 | | 37.8 | -16 | 3655 | No stop |
| 07 28 00 | --- | 19 37 15 | 42.1 | 250.4 | 3.3 | | 37.8 | 44 | 3663 | 07 27 01 |
| ---------- Ef is in ---------- | | | | | | | | | | |
| 07 28 30 | VLA1 | 19 37 45 | 41.1 | 251.0 | 3.4 | | 37.8 | 14 | 3663 | 07 28 30 |
| 07 30 30 | --- | 19 39 45 | 40.8 | 251.5 | 3.4 | | 38.0 | 120 | 3678 | 07 28 31 |
| 07 30 30 | J1619+2247 | 19 39 45 | 41.7 | 251.0 | 3.3 | | 38.0 | -16 | 3678 | No stop |
| 07 31 30 | --- | 19 40 46 | 41.6 | 251.3 | 3.3 | | 38.1 | 44 | 3686 | 07 30 31 |
| 07 31 30 | AT2018 | 19 40 46 | 40.7 | 251.6 | 3.4 | | 38.0 | -16 | 3686 | No stop |
| 07 34 30 | --- | 19 43 46 | 40.3 | 252.3 | 3.4 | | 38.2 | 164 | 3709 | 07 31 31 |
| 07 34 30 | J1619+2247 | 19 43 46 | 41.2 | 252.0 | 3.4 | | 38.3 | -16 | 3709 | No stop |
| 07 35 30 | --- | 19 44 46 | 41.0 | 252.2 | 3.4 | | 38.3 | 44 | 3717 | 07 34 31 |

Schedule for TORUN (Code Tr ) Page 21

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 07 35 30 | AT2018 | 19 44 46 | 40.1 | 252.6 | 3.5 | | 38.2 | -16 | 3717 | No stop |
| 07 37 30 | --- | 19 46 47 | 39.9 | 253.1 | 3.5 | | 38.4 | 104 | 3732 | 07 35 31 |
| 07 37 30 | VLA2 | 19 46 47 | 40.0 | 252.9 | 3.5 | | 38.3 | -9 | 3732 | No stop |
| 07 38 30 | --- | 19 47 47 | 39.8 | 253.2 | 3.5 | | 38.4 | 51 | 3740 | 07 37 31 |
| 07 39 00 | J1619+2247 | 19 48 17 | 40.5 | 253.1 | 3.5 | | 38.5 | 15 | 3740 | 07 39 00 |
| 07 40 00 | --- | 19 49 17 | 40.4 | 253.3 | 3.5 | | 38.6 | 60 | 3747 | 07 39 01 |
| 07 40 00 | AT2018 | 19 49 17 | 39.5 | 253.6 | 3.5 | | 38.5 | -16 | 3747 | No stop |
| 07 43 00 | --- | 19 52 18 | 39.1 | 254.4 | 3.6 | | 38.7 | 164 | 3771 | 07 40 01 |
| 07 43 00 | J1619+2247 | 19 52 18 | 39.9 | 254.0 | 3.5 | | 38.8 | -16 | 3771 | No stop |
| 07 44 00 | --- | 19 53 18 | 39.8 | 254.3 | 3.6 | | 38.8 | 44 | 3778 | 07 43 01 |
| 07 44 00 | AT2018 | 19 53 18 | 38.9 | 254.6 | 3.6 | | 38.7 | -16 | 3778 | No stop |
| 07 47 00 | --- | 19 56 18 | 38.5 | 255.3 | 3.7 | | 38.9 | 164 | 3801 | 07 44 01 |
| 07 47 00 | J1619+2247 | 19 56 18 | 39.4 | 255.0 | 3.6 | | 39.0 | -16 | 3801 | No stop |
| 07 48 00 | --- | 19 57 18 | 39.2 | 255.2 | 3.6 | | 39.0 | 44 | 3809 | 07 47 01 |
| 07 48 30 | VLA1 | 19 57 48 | 38.2 | 255.7 | 3.7 | | 38.9 | 14 | 3809 | 07 48 30 |
| 07 50 30 | --- | 19 59 49 | 37.9 | 256.2 | 3.7 | | 39.0 | 120 | 3824 | 07 48 31 |
| 07 50 30 | J1619+2247 | 19 59 49 | 38.9 | 255.8 | 3.7 | | 39.1 | -16 | 3824 | No stop |
| 07 51 30 | --- | 20 00 49 | 38.7 | 256.0 | 3.7 | | 39.2 | 44 | 3832 | 07 50 31 |
| 07 51 30 | AT2018 | 20 00 49 | 37.8 | 256.3 | 3.7 | | 39.1 | -16 | 3832 | No stop |
| 07 54 30 | --- | 20 03 49 | 37.4 | 257.0 | 3.8 | | 39.2 | 164 | 3855 | 07 51 31 |
| 07 54 30 | J1619+2247 | 20 03 49 | 38.3 | 256.7 | 3.7 | | 39.3 | -16 | 3855 | No stop |
| 07 55 30 | --- | 20 04 50 | 38.1 | 256.9 | 3.7 | | 39.4 | 44 | 3863 | 07 54 31 |
| 07 55 30 | AT2018 | 20 04 50 | 37.2 | 257.2 | 3.8 | | 39.2 | -16 | 3863 | No stop |
| 07 57 30 | --- | 20 06 50 | 36.9 | 257.7 | 3.8 | | 39.3 | 104 | 3878 | 07 55 31 |
| 07 57 30 | VLA2 | 20 06 50 | 37.1 | 257.6 | 3.8 | | 39.3 | -9 | 3878 | No stop |
| 07 58 30 | --- | 20 07 50 | 36.9 | 257.8 | 3.8 | | 39.4 | 51 | 3886 | 07 57 31 |
| 07 59 00 | J1619+2247 | 20 08 20 | 37.6 | 257.7 | 3.8 | | 39.5 | 15 | 3886 | 07 59 00 |
| 08 00 00 | --- | 20 09 20 | 37.5 | 257.9 | 3.8 | | 39.5 | 60 | 3894 | 07 59 01 |
| 08 00 00 | AT2018 | 20 09 20 | 36.6 | 258.2 | 3.9 | | 39.4 | -16 | 3894 | No stop |
| 08 03 00 | --- | 20 12 21 | 36.1 | 258.9 | 3.9 | | 39.5 | 164 | 3917 | 08 00 01 |

Schedule for TORUN (Code Tr ) Page 22

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 08 03 00 | J1619+2247 | 20 12 21 | 37.0 | 258.6 | 3.9 | | 39.7 | -16 | 3917 | No stop |
| 08 04 00 | --- | 20 13 21 | 36.9 | 258.8 | 3.9 | | 39.7 | 44 | 3924 | 08 03 01 |
| 08 04 00 | AT2018 | 20 13 21 | 36.0 | 259.1 | 3.9 | | 39.6 | -16 | 3924 | No stop |
| 08 07 00 | --- | 20 16 21 | 35.5 | 259.8 | 4.0 | | 39.7 | 164 | 3947 | 08 04 01 |
| 08 07 00 | J1619+2247 | 20 16 21 | 36.4 | 259.5 | 3.9 | | 39.8 | -16 | 3947 | No stop |
| 08 08 00 | --- | 20 17 22 | 36.3 | 259.7 | 4.0 | | 39.8 | 44 | 3955 | 08 07 01 |
| 08 08 30 | VLA1 | 20 17 52 | 35.3 | 260.2 | 4.0 | | 39.7 | 14 | 3955 | 08 08 30 |
| 08 10 30 | --- | 20 19 52 | 35.0 | 260.6 | 4.1 | | 39.8 | 120 | 3971 | 08 08 31 |
| 08 10 30 | J1619+2247 | 20 19 52 | 35.9 | 260.3 | 4.0 | | 39.9 | -16 | 3971 | No stop |
| 08 11 30 | --- | 20 20 52 | 35.8 | 260.5 | 4.0 | | 40.0 | 44 | 3978 | 08 10 31 |
| 08 11 30 | AT2018 | 20 20 52 | 34.9 | 260.8 | 4.1 | | 39.8 | -16 | 3978 | No stop |
| 08 14 30 | --- | 20 23 53 | 34.4 | 261.4 | 4.1 | | 39.9 | 164 | 4001 | 08 11 31 |
| 08 14 30 | J1619+2247 | 20 23 53 | 35.3 | 261.1 | 4.1 | | 40.0 | -16 | 4001 | No stop |
| 08 15 30 | --- | 20 24 53 | 35.2 | 261.3 | 4.1 | | 40.1 | 44 | 4009 | 08 14 31 |
| 08 15 30 | AT2018 | 20 24 53 | 34.3 | 261.6 | 4.1 | | 39.9 | -16 | 4009 | No stop |
| 08 17 30 | --- | 20 26 53 | 34.0 | 262.1 | 4.2 | | 40.0 | 104 | 4024 | 08 15 31 |
| 08 17 30 | VLA2 | 20 26 53 | 34.1 | 262.0 | 4.2 | | 40.0 | -9 | 4024 | No stop |
| 08 18 30 | --- | 20 27 53 | 34.0 | 262.2 | 4.2 | | 40.0 | 51 | 4032 | 08 17 31 |
| 08 19 00 | J1619+2247 | 20 28 23 | 34.6 | 262.1 | 4.1 | | 40.2 | 15 | 4032 | 08 19 00 |
| 08 20 00 | --- | 20 29 24 | 34.5 | 262.3 | 4.2 | | 40.2 | 60 | 4040 | 08 19 01 |
| 08 20 00 | AT2018 | 20 29 24 | 33.6 | 262.6 | 4.2 | | 40.0 | -16 | 4040 | No stop |
| 08 23 00 | --- | 20 32 24 | 33.2 | 263.2 | 4.3 | | 40.1 | 164 | 4063 | 08 20 01 |
| 08 23 00 | J1619+2247 | 20 32 24 | 34.0 | 263.0 | 4.2 | | 40.3 | -16 | 4063 | No stop |
| 08 24 00 | --- | 20 33 24 | 33.9 | 263.2 | 4.2 | | 40.3 | 44 | 4071 | 08 23 01 |
| 08 24 00 | AT2018 | 20 33 24 | 33.0 | 263.4 | 4.3 | | 40.1 | -16 | 4071 | No stop |
| 08 27 00 | --- | 20 36 25 | 32.6 | 264.1 | 4.3 | | 40.2 | 164 | 4094 | 08 24 01 |
| 08 27 00 | J1619+2247 | 20 36 25 | 33.4 | 263.8 | 4.3 | | 40.3 | -16 | 4094 | No stop |
| 08 28 00 | --- | 20 37 25 | 33.3 | 264.0 | 4.3 | | 40.4 | 44 | 4101 | 08 27 01 |
| 08 28 30 | VLA1 | 20 37 55 | 32.3 | 264.5 | 4.4 | | 40.2 | 14 | 4101 | 08 28 30 |
| 08 30 30 | --- | 20 39 55 | 32.0 | 264.9 | 4.4 | | 40.2 | 120 | 4117 | 08 28 31 |

Schedule for TORUN (Code Tr ) Page 23

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 08 30 30 | J1619+2247 | 20 39 55 | 32.9 | 264.5 | 4.3 | | 40.4 | -16 | 4117 | No stop |
| 08 31 30 | --- | 20 40 55 | 32.8 | 264.8 | 4.3 | | 40.4 | 44 | 4124 | 08 30 31 |
| 08 31 30 | AT2018 | 20 40 55 | 31.9 | 265.0 | 4.4 | | 40.3 | -16 | 4124 | No stop |
| 08 34 30 | --- | 20 43 56 | 31.4 | 265.6 | 4.5 | | 40.3 | 164 | 4147 | 08 31 31 |
| 08 34 30 | J1619+2247 | 20 43 56 | 32.3 | 265.4 | 4.4 | | 40.5 | -16 | 4147 | No stop |
| 08 35 30 | --- | 20 44 56 | 32.2 | 265.6 | 4.4 | | 40.5 | 44 | 4155 | 08 34 31 |
| 08 35 30 | AT2018 | 20 44 56 | 31.3 | 265.9 | 4.5 | | 40.3 | -16 | 4155 | No stop |
| 08 37 30 | --- | 20 46 56 | 31.0 | 266.3 | 4.5 | | 40.3 | 104 | 4171 | 08 35 31 |
| 08 37 30 | VLA2 | 20 46 56 | 31.1 | 266.2 | 4.5 | | 40.3 | -9 | 4171 | No stop |
| 08 38 30 | --- | 20 47 57 | 31.0 | 266.4 | 4.5 | | 40.4 | 51 | 4178 | 08 37 31 |
| 08 39 00 | J1619+2247 | 20 48 27 | 31.6 | 266.3 | 4.5 | | 40.5 | 15 | 4178 | 08 39 00 |
| 08 40 00 | --- | 20 49 27 | 31.5 | 266.5 | 4.5 | | 40.5 | 60 | 4186 | 08 39 01 |
| 08 40 00 | AT2018 | 20 49 27 | 30.6 | 266.8 | 4.5 | | 40.4 | -16 | 4186 | No stop |
| 08 43 00 | --- | 20 52 27 | 30.2 | 267.4 | 4.6 | | 40.4 | 164 | 4209 | 08 40 01 |
| 08 43 00 | J1619+2247 | 20 52 27 | 31.0 | 267.1 | 4.5 | | 40.6 | -16 | 4209 | No stop |
| 08 44 00 | --- | 20 53 28 | 30.9 | 267.3 | 4.6 | | 40.6 | 44 | 4217 | 08 43 01 |
| 08 44 00 | AT2018 | 20 53 28 | 30.0 | 267.6 | 4.6 | | 40.4 | -16 | 4217 | No stop |
| 08 47 00 | --- | 20 56 28 | 29.6 | 268.2 | 4.7 | | 40.4 | 164 | 4240 | 08 44 01 |
| 08 47 00 | J1619+2247 | 20 56 28 | 30.4 | 267.9 | 4.6 | | 40.6 | -16 | 4240 | No stop |
| 08 48 00 | --- | 20 57 28 | 30.3 | 268.2 | 4.6 | | 40.6 | 44 | 4247 | 08 47 01 |
| 08 48 30 | VLA1 | 20 57 58 | 29.3 | 268.6 | 4.7 | | 40.4 | 14 | 4247 | 08 48 30 |
| 08 50 30 | --- | 20 59 59 | 29.0 | 269.0 | 4.7 | | 40.4 | 120 | 4263 | 08 48 31 |
| 08 50 30 | J1619+2247 | 20 59 59 | 29.9 | 268.7 | 4.7 | | 40.6 | -16 | 4263 | No stop |
| 08 51 30 | --- | 21 00 59 | 29.8 | 268.9 | 4.7 | | 40.6 | 44 | 4271 | 08 50 31 |
| 08 51 30 | AT2018 | 21 00 59 | 28.9 | 269.1 | 4.7 | | 40.4 | -16 | 4271 | No stop |
| 08 54 30 | --- | 21 03 59 | 28.4 | 269.7 | 4.8 | | 40.4 | 164 | 4294 | 08 51 31 |
| 08 54 30 | J1619+2247 | 21 03 59 | 29.3 | 269.5 | 4.7 | | 40.6 | -16 | 4294 | No stop |
| 08 55 30 | --- | 21 04 59 | 29.2 | 269.7 | 4.7 | | 40.6 | 44 | 4301 | 08 54 31 |
| 08 55 30 | AT2018 | 21 04 59 | 28.3 | 269.9 | 4.8 | | 40.4 | -16 | 4301 | No stop |
| 08 57 30 | --- | 21 07 00 | 28.0 | 270.3 | 4.8 | | 40.4 | 104 | 4317 | 08 55 31 |

Schedule for TORUN (Code Tr ) Page 24

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 08 57 30 | VLA2 | 21 07 00 | 28.1 | 270.2 | 4.8 | | 40.5 | -9 | 4317 | No stop |
| 08 58 30 | --- | 21 08 00 | 28.0 | 270.4 | 4.8 | | 40.5 | 51 | 4324 | 08 57 31 |
| 08 59 00 | J1619+2247 | 21 08 30 | 28.6 | 270.4 | 4.8 | | 40.6 | 15 | 4324 | 08 59 00 |
| 09 00 00 | --- | 21 09 30 | 28.5 | 270.6 | 4.8 | | 40.6 | 60 | 4332 | 08 59 01 |
| 09 00 00 | AT2018 | 21 09 30 | 27.6 | 270.8 | 4.9 | | 40.4 | -16 | 4332 | No stop |
| 09 03 00 | --- | 21 12 31 | 27.2 | 271.4 | 4.9 | | 40.4 | 164 | 4355 | 09 00 01 |
| 09 03 00 | J1619+2247 | 21 12 31 | 28.0 | 271.2 | 4.9 | | 40.6 | -16 | 4355 | No stop |
| 09 04 00 | --- | 21 13 31 | 27.9 | 271.4 | 4.9 | | 40.6 | 44 | 4363 | 09 03 01 |
| 09 04 00 | AT2018 | 21 13 31 | 27.0 | 271.6 | 4.9 | | 40.4 | -16 | 4363 | No stop |
| 09 07 00 | --- | 21 16 31 | 26.5 | 272.2 | 5.0 | | 40.4 | 164 | 4386 | 09 04 01 |
| 09 07 00 | J1619+2247 | 21 16 31 | 27.4 | 272.0 | 4.9 | | 40.6 | -16 | 4386 | No stop |
| 09 08 00 | --- | 21 17 31 | 27.3 | 272.2 | 5.0 | | 40.6 | 44 | 4394 | 09 07 01 |
| 09 08 30 | VLA1 | 21 18 02 | 26.3 | 272.6 | 5.0 | | 40.4 | 14 | 4394 | 09 08 30 |
| 09 10 30 | --- | 21 20 02 | 26.0 | 273.0 | 5.1 | | 40.4 | 120 | 4409 | 09 08 31 |
| 09 10 30 | J1619+2247 | 21 20 02 | 26.9 | 272.7 | 5.0 | | 40.6 | -16 | 4409 | No stop |
| 09 11 30 | --- | 21 21 02 | 26.8 | 272.8 | 5.0 | | 40.6 | 44 | 4417 | 09 10 31 |
| 09 11 30 | AT2018 | 21 21 02 | 25.9 | 273.1 | 5.1 | | 40.4 | -16 | 4417 | No stop |
| 09 14 30 | --- | 21 24 03 | 25.4 | 273.7 | 5.1 | | 40.3 | 164 | 4440 | 09 11 31 |
| 09 14 30 | J1619+2247 | 21 24 03 | 26.3 | 273.4 | 5.1 | | 40.5 | -16 | 4440 | No stop |
| 09 15 30 | --- | 21 25 03 | 26.2 | 273.6 | 5.1 | | 40.5 | 44 | 4447 | 09 14 31 |
| 09 15 30 | AT2018 | 21 25 03 | 25.3 | 273.9 | 5.1 | | 40.3 | -16 | 4447 | No stop |
| 09 17 30 | --- | 21 27 03 | 25.0 | 274.3 | 5.2 | | 40.3 | 104 | 4463 | 09 15 31 |
| 09 17 30 | VLA2 | 21 27 03 | 25.1 | 274.2 | 5.2 | | 40.3 | -9 | 4463 | No stop |
| 09 18 30 | --- | 21 28 03 | 25.0 | 274.4 | 5.2 | | 40.3 | 51 | 4471 | 09 17 31 |
| 09 19 00 | J1619+2247 | 21 28 33 | 25.6 | 274.3 | 5.1 | | 40.5 | 15 | 4471 | 09 19 00 |
| 09 20 00 | --- | 21 29 33 | 25.5 | 274.5 | 5.2 | | 40.5 | 60 | 4478 | 09 19 01 |
| 09 20 00 | AT2018 | 21 29 33 | 24.6 | 274.8 | 5.2 | | 40.3 | -16 | 4478 | No stop |
| 09 23 00 | --- | 21 32 34 | 24.1 | 275.3 | 5.3 | | 40.2 | 164 | 4501 | 09 20 01 |
| 09 23 00 | J1619+2247 | 21 32 34 | 25.0 | 275.1 | 5.2 | | 40.4 | -16 | 4501 | No stop |
| 09 24 00 | --- | 21 33 34 | 24.9 | 275.3 | 5.2 | | 40.4 | 44 | 4509 | 09 23 01 |

Schedule for TORUN (Code Tr ) Page 25

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 09 24 00 | AT2018 | 21 33 34 | 24.0 | 275.5 | 5.3 | | 40.2 | -16 | 4509 | No stop |
| 09 27 00 | --- | 21 36 35 | 23.5 | 276.1 | 5.3 | | 40.2 | 164 | 4532 | 09 24 01 |
| 09 27 00 | J1619+2247 | 21 36 35 | 24.4 | 275.9 | 5.3 | | 40.4 | -16 | 4532 | No stop |
| 09 28 00 | --- | 21 37 35 | 24.3 | 276.1 | 5.3 | | 40.4 | 44 | 4540 | 09 27 01 |
| 09 28 30 | VLA1 | 21 38 05 | 23.3 | 276.5 | 5.4 | | 40.1 | 14 | 4540 | 09 28 30 |
| 09 30 30 | --- | 21 40 05 | 23.0 | 276.9 | 5.4 | | 40.1 | 120 | 4555 | 09 28 31 |
| 09 30 30 | J1619+2247 | 21 40 05 | 23.9 | 276.5 | 5.3 | | 40.3 | -16 | 4555 | No stop |
| 09 31 30 | --- | 21 41 05 | 23.8 | 276.7 | 5.4 | | 40.3 | 44 | 4563 | 09 30 31 |
| 09 31 30 | AT2018 | 21 41 05 | 22.9 | 277.0 | 5.4 | | 40.1 | -16 | 4563 | No stop |
| 09 34 30 | --- | 21 44 06 | 22.4 | 277.6 | 5.5 | | 40.0 | 164 | 4586 | 09 31 31 |
| 09 34 30 | J1619+2247 | 21 44 06 | 23.3 | 277.3 | 5.4 | | 40.2 | -16 | 4586 | No stop |
| 09 35 30 | --- | 21 45 06 | 23.2 | 277.5 | 5.4 | | 40.2 | 44 | 4594 | 09 34 31 |
| 09 35 30 | AT2018 | 21 45 06 | 22.3 | 277.8 | 5.5 | | 40.0 | -16 | 4594 | No stop |
| 09 37 30 | --- | 21 47 06 | 22.0 | 278.1 | 5.5 | | 39.9 | 104 | 4609 | 09 35 31 |
| 09 37 30 | VLA2 | 21 47 06 | 22.1 | 278.0 | 5.5 | | 40.0 | -9 | 4609 | No stop |
| 09 38 30 | --- | 21 48 06 | 22.0 | 278.2 | 5.5 | | 40.0 | 51 | 4617 | 09 37 31 |
| 09 39 00 | J1619+2247 | 21 48 37 | 22.6 | 278.2 | 5.5 | | 40.1 | 15 | 4617 | 09 39 00 |
| 09 40 00 | --- | 21 49 37 | 22.5 | 278.4 | 5.5 | | 40.1 | 60 | 4624 | 09 39 01 |
| 09 40 00 | AT2018 | 21 49 37 | 21.6 | 278.6 | 5.5 | | 39.9 | -16 | 4624 | No stop |
| 09 43 00 | --- | 21 52 37 | 21.2 | 279.2 | 5.6 | | 39.8 | 164 | 4647 | 09 40 01 |
| 09 43 00 | J1619+2247 | 21 52 37 | 22.0 | 278.9 | 5.5 | | 40.0 | -16 | 4647 | No stop |
| 09 44 00 | --- | 21 53 37 | 21.9 | 279.1 | 5.6 | | 40.0 | 44 | 4655 | 09 43 01 |
| 09 44 00 | AT2018 | 21 53 37 | 21.0 | 279.4 | 5.6 | | 39.8 | -16 | 4655 | No stop |
| 09 47 00 | --- | 21 56 38 | 20.6 | 280.0 | 5.7 | | 39.7 | 164 | 4678 | 09 44 01 |
| 09 47 00 | J1619+2247 | 21 56 38 | 21.5 | 279.7 | 5.6 | | 39.9 | -16 | 4678 | No stop |
| 09 48 00 | --- | 21 57 38 | 21.3 | 279.9 | 5.6 | | 39.9 | 44 | 4686 | 09 47 01 |
| 09 48 30 | VLA1 | 21 58 08 | 20.3 | 280.3 | 5.7 | | 39.7 | 14 | 4686 | 09 48 30 |
| 09 50 30 | --- | 22 00 08 | 20.0 | 280.7 | 5.7 | | 39.6 | 120 | 4701 | 09 48 31 |
| 09 50 30 | J1619+2247 | 22 00 08 | 20.9 | 280.4 | 5.7 | | 39.8 | -16 | 4701 | No stop |
| 09 51 30 | --- | 22 01 09 | 20.8 | 280.6 | 5.7 | | 39.8 | 44 | 4709 | 09 50 31 |

Schedule for TORUN (Code Tr ) Page 26

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 09 51 30 | AT2018 | 22 01 09 | 19.9 | 280.8 | 5.7 | | 39.6 | -16 | 4709 | No stop |
| 09 54 30 | --- | 22 04 09 | 19.5 | 281.4 | 5.8 | | 39.5 | 164 | 4732 | 09 51 31 |
| 09 54 30 | J1619+2247 | 22 04 09 | 20.3 | 281.1 | 5.7 | | 39.7 | -16 | 4732 | No stop |
| 09 55 30 | --- | 22 05 09 | 20.2 | 281.3 | 5.8 | | 39.7 | 44 | 4740 | 09 54 31 |
| 09 55 30 | AT2018 | 22 05 09 | 19.3 | 281.6 | 5.8 | | 39.5 | -16 | 4740 | No stop |
| 09 57 30 | --- | 22 07 10 | 19.0 | 282.0 | 5.8 | | 39.4 | 104 | 4755 | 09 55 31 |
| 09 57 30 | VLA2 | 22 07 10 | 19.2 | 281.9 | 5.8 | | 39.4 | -9 | 4755 | No stop |
| 09 58 30 | --- | 22 08 10 | 19.0 | 282.1 | 5.8 | | 39.4 | 51 | 4763 | 09 57 31 |
| 09 59 00 | J1619+2247 | 22 08 40 | 19.7 | 282.0 | 5.8 | | 39.6 | 15 | 4763 | 09 59 00 |
| 10 00 00 | --- | 22 09 40 | 19.5 | 282.2 | 5.8 | | 39.5 | 60 | 4771 | 09 59 01 |
| 10 00 00 | AT2018 | 22 09 40 | 18.6 | 282.4 | 5.9 | | 39.3 | -16 | 4771 | No stop |
| 10 03 00 | --- | 22 12 41 | 18.2 | 283.0 | 5.9 | | 39.2 | 164 | 4794 | 10 00 01 |
| 10 03 00 | J1619+2247 | 22 12 41 | 19.1 | 282.7 | 5.9 | | 39.4 | -16 | 4794 | No stop |
| 10 04 00 | --- | 22 13 41 | 18.9 | 282.9 | 5.9 | | 39.4 | 44 | 4801 | 10 03 01 |
| 10 04 00 | AT2018 | 22 13 41 | 18.1 | 283.2 | 5.9 | | 39.2 | -16 | 4801 | No stop |
| 10 07 00 | --- | 22 16 41 | 17.6 | 283.8 | 6.0 | | 39.1 | 164 | 4824 | 10 04 01 |
| 10 07 00 | J1619+2247 | 22 16 41 | 18.5 | 283.5 | 5.9 | | 39.3 | -16 | 4824 | No stop |
| 10 08 00 | --- | 22 17 41 | 18.4 | 283.7 | 6.0 | | 39.2 | 44 | 4832 | 10 07 01 |
| 10 08 30 | VLA1 | 22 18 11 | 17.4 | 284.1 | 6.0 | | 39.0 | 14 | 4832 | 10 08 30 |
| 10 10 30 | --- | 22 20 12 | 17.1 | 284.5 | 6.1 | | 38.9 | 120 | 4847 | 10 08 31 |
| 10 10 30 | J1619+2247 | 22 20 12 | 18.0 | 284.2 | 6.0 | | 39.2 | -16 | 4847 | No stop |
| 10 11 30 | --- | 22 21 12 | 17.8 | 284.3 | 6.0 | | 39.1 | 44 | 4855 | 10 10 31 |
| 10 11 30 | AT2018 | 22 21 12 | 17.0 | 284.6 | 6.1 | | 38.9 | -16 | 4855 | No stop |
| 10 14 30 | --- | 22 24 12 | 16.5 | 285.2 | 6.1 | | 38.8 | 164 | 4878 | 10 11 31 |
| 10 14 30 | J1619+2247 | 22 24 12 | 17.4 | 284.9 | 6.1 | | 39.0 | -16 | 4878 | No stop |
| 10 15 30 | --- | 22 25 13 | 17.3 | 285.1 | 6.1 | | 39.0 | 44 | 4886 | 10 14 31 |
| 10 15 30 | AT2018 | 22 25 13 | 16.4 | 285.4 | 6.1 | | 38.7 | -16 | 4886 | No stop |
| 10 17 30 | --- | 22 27 13 | 16.1 | 285.7 | 6.2 | | 38.6 | 104 | 4901 | 10 15 31 |
| 10 17 30 | VLA2 | 22 27 13 | 16.2 | 285.6 | 6.2 | | 38.7 | -9 | 4901 | No stop |
| 10 18 30 | --- | 22 28 13 | 16.1 | 285.8 | 6.2 | | 38.6 | 51 | 4909 | 10 17 31 |

Schedule for TORUN (Code Tr ) Page 27

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | LST | Start / Stop<br>EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 10 19 00 | J1619+2247 | 22 28 43 | 16.8 | 285.8 | 6.1 | | 38.8 | 15 | 4909 | 10 19 00 |
| 10 20 00 | --- | 22 29 43 | 16.6 | 285.9 | 6.2 | | 38.8 | 60 | 4917 | 10 19 01 |
| 10 20 00 | AT2018 | 22 29 43 | 15.7 | 286.2 | 6.2 | | 38.5 | -16 | 4917 | No stop |
| 10 23 00 | --- | 22 32 44 | 15.3 | 286.8 | 6.3 | | 38.4 | 164 | 4940 | 10 20 01 |
| 10 23 00 | J1619+2247 | 22 32 44 | 16.2 | 286.5 | 6.2 | | 38.6 | -16 | 4940 | No stop |
| 10 24 00 | --- | 22 33 44 | 16.0 | 286.7 | 6.2 | | 38.6 | 44 | 4947 | 10 23 01 |
| 10 24 00 | AT2018 | 22 33 44 | 15.2 | 287.0 | 6.3 | | 38.3 | -16 | 4947 | No stop |
| 10 27 00 | --- | 22 36 44 | 14.7 | 287.5 | 6.3 | | 38.2 | 164 | 4971 | 10 24 01 |
| 10 27 00 | J1619+2247 | 22 36 44 | 15.6 | 287.3 | 6.3 | | 38.4 | -16 | 4971 | No stop |
| 10 28 00 | --- | 22 37 45 | 15.5 | 287.5 | 6.3 | | 38.4 | 44 | 4978 | 10 27 01 |
| 10 28 30 | VLA1 | 22 38 15 | 14.5 | 287.9 | 6.4 | | 38.1 | 14 | 4978 | 10 28 30 |
| 10 30 30 | --- | 22 40 15 | 14.2 | 288.3 | 6.4 | | 38.0 | 120 | 4994 | 10 28 31 |
| 10 30 30 | J1619+2247 | 22 40 15 | 15.1 | 287.9 | 6.3 | | 38.3 | -16 | 4994 | No stop |
| 10 31 30 | --- | 22 41 15 | 15.0 | 288.1 | 6.4 | | 38.2 | 44 | 5001 | 10 30 31 |
| 10 31 30 | AT2018 | 22 41 15 | 14.1 | 288.4 | 6.4 | | 38.0 | -16 | 5001 | No stop |
| 10 34 30 | --- | 22 44 16 | 13.6 | 288.9 | 6.5 | | 37.8 | 164 | 5024 | 10 31 31 |
| 10 34 30 | J1619+2247 | 22 44 16 | 14.5 | 288.7 | 6.4 | | 38.1 | -16 | 5024 | No stop |
| 10 35 30 | --- | 22 45 16 | 14.4 | 288.9 | 6.4 | | 38.0 | 44 | 5032 | 10 34 31 |
| 10 35 30 | AT2018 | 22 45 16 | 13.5 | 289.1 | 6.5 | | 37.8 | -16 | 5032 | No stop |
| 10 37 30 | --- | 22 47 16 | 13.2 | 289.5 | 6.5 | | 37.7 | 104 | 5047 | 10 35 31 |
| 10 37 30 | VLA2 | 22 47 16 | 13.4 | 289.4 | 6.5 | | 37.7 | -9 | 5047 | No stop |
| 10 38 30 | --- | 22 48 16 | 13.2 | 289.6 | 6.5 | | 37.7 | 51 | 5055 | 10 37 31 |
| 10 39 00 | J1619+2247 | 22 48 46 | 13.9 | 289.5 | 6.5 | | 37.9 | 15 | 5055 | 10 39 00 |
| 10 40 00 | --- | 22 49 47 | 13.7 | 289.7 | 6.5 | | 37.8 | 60 | 5063 | 10 39 01 |
| 10 40 00 | AT2018 | 22 49 47 | 12.9 | 290.0 | 6.5 | | 37.6 | -16 | 5063 | No stop |
| 10 43 00 | --- | 22 52 47 | 12.4 | 290.5 | 6.6 | | 37.4 | 164 | 5086 | 10 40 01 |
| 10 43 00 | J1619+2247 | 22 52 47 | 13.3 | 290.3 | 6.5 | | 37.6 | -16 | 5086 | No stop |
| 10 44 00 | --- | 22 53 47 | 13.2 | 290.5 | 6.6 | | 37.6 | 44 | 5094 | 10 43 01 |
| 10 44 00 | AT2018 | 22 53 47 | 12.3 | 290.7 | 6.6 | | 37.3 | -16 | 5094 | No stop |
| 10 47 00 | --- | 22 56 48 | 11.9 | 291.3 | 6.7 | | 37.2 | 164 | 5117 | 10 44 01 |

Schedule for TORUN (Code Tr ) Page 28

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 10 47 00 | J1619+2247 | 22 56 48 | 12.8 | 291.0 | 6.6 | | 37.4 | -16 | 5117 | No stop |
| 10 48 00 | --- | 22 57 48 | 12.6 | 291.2 | 6.6 | | 37.4 | 44 | 5124 | 10 47 01 |
| 10 48 30 | VLA1 | 22 58 18 | 11.6 | 291.7 | 6.7 | | 37.1 | 14 | 5124 | 10 48 30 |
| 10 50 30 | --- | 23 00 18 | 11.4 | 292.0 | 6.7 | | 37.0 | 120 | 5140 | 10 48 31 |
| 10 50 30 | J1619+2247 | 23 00 18 | 12.3 | 291.7 | 6.7 | | 37.2 | -16 | 5140 | No stop |
| 10 51 30 | --- | 23 01 18 | 12.1 | 291.9 | 6.7 | | 37.2 | 44 | 5147 | 10 50 31 |
| 10 51 30 | AT2018 | 23 01 18 | 11.3 | 292.2 | 6.7 | | 36.9 | -16 | 5147 | No stop |
| 10 54 30 | --- | 23 04 19 | 10.8 | 292.7 | 6.8 | | 36.7 | 164 | 5171 | 10 51 31 |
| 10 54 30 | J1619+2247 | 23 04 19 | 11.7 | 292.4 | 6.7 | | 37.0 | -16 | 5171 | No stop |
| 10 55 30 | --- | 23 05 19 | 11.6 | 292.6 | 6.8 | | 36.9 | 44 | 5178 | 10 54 31 |
| 10 55 30 | AT2018 | 23 05 19 | 10.7 | 292.9 | 6.8 | | 36.7 | -16 | 5178 | No stop |
| 10 57 30 | --- | 23 07 19 | 10.4 | 293.3 | 6.8 | | 36.6 | 104 | 5194 | 10 55 31 |
| 10 57 30 | VLA2 | 23 07 19 | 10.6 | 293.2 | 6.8 | | 36.6 | -9 | 5194 | No stop |
| 10 58 30 | --- | 23 08 20 | 10.4 | 293.4 | 6.8 | | 36.6 | 51 | 5201 | 10 57 31 |
| 10 59 00 | J1619+2247 | 23 08 50 | 11.1 | 293.3 | 6.8 | | 36.7 | 15 | 5201 | 10 59 00 |
| 11 00 00 | --- | 23 09 50 | 10.9 | 293.5 | 6.8 | | 36.7 | 60 | 5209 | 10 59 01 |

SETUP FILE INFORMATION:
NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

======== Setup file: sess119.C1024

Setup group: 12 Station: TORUN Total bit rate: 1024
Format: MARK5B Bits per sample: 2 Sample rate: 32.000
Number of channels: 16 DBE type: DBBC_DDC Speedup factor: 1.00

Disk used to record data.

```
  1st LO=   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
            4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
  Net SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF SB =         U         U         U         U         U         U         U         U
                  U         U         U         U         U         U         U         U
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
                RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
                  3         7         3         7         4         8         4         8
  BBC SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                 A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:   8  Setup file default.  Used with PCAL = off
  LO sum=   4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
            5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
  BBC fr=    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
             806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
  Bandwd=     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
              16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
   Matching frequency sets:   8

  Track assignments are:
   track1=  18, 26,  2, 10, 20, 28,  4, 12, 22, 30,  6, 14, 24, 32,  8, 16
   barrel=roll_off



 POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                        (B1950)             (J2000)             (Date)             (mas)

 * AT2018            16 13 51.046576   * 16 16 00.224400     16 16 49.160021       0.00
                     22 23 28.30125    * 22 16 04.89000      22 13 08.03505        0.00

 * VLA1              16 13 32.504723   * 16 15 41.690800     16 16 30.631262       0.00
                     22 23 52.84715    * 22 16 28.22500      22 13 30.90954        0.00

 * VLA2              16 14 31.729582   * 16 16 40.813800     16 17 29.710239       0.00
                     22 26 17.16485    * 22 18 56.41100      22 16 00.54967        0.00

 * J1619+2247        16 17 06.466942   * 16 19 14.824599     16 20 03.431813       0.00
                     22 54 58.47384    * 22 47 47.85108      22 44 55.69583        0.00

   3C345             16 41 17.606229   * 16 42 58.809967     16 43 37.011993       0.79
 * J1642+3948        39 54 10.81492    * 39 48 36.99399      39 46 17.42654        0.59
   1641+399          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
   J1642+39          GSFC 2016a X/S astro solution,  53724 observations.


EFFECT OF SOLAR CORONA

  The solar corona can cause unstable phases for sources too close to the Sun.
  SCHED provides warnings at individual scans for distances less than 10 degrees.
  The distance from the Sun to each source in this schedule is:
```

```
 Source         Sun distance (deg)
AT2018             103.5
VLA1               103.6
VLA2               103.4
J1619+2247         102.8
J1642+3948          98.0

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
that the Sun will cause amplitude reductions on the  longest VLBA baselines
at a solar distance of 60deg F^(-0.6) where F is in GHz.
For common VLBI bands, this is:
     1.6 GHz         45. deg
     2.3 GHz         36. deg
     5.0 GHz         23. deg
     8.4 GHz         17. deg
    15.0 GHz         12. deg
    22.0 GHz          9. deg
```

**ey033ctr**

## Revealing the radio structure in AT2018cow

PI: *Jun Yang, contact person*


```
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          SE-439 92 Onsala
          Sweden


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Phone during observation: +46 31 7725531
```


```
Observing mode: 1024-16-2

Schedule for TORUN     (Code Tr )                                  Page   2
               Revealing the radio structure in AT2018cow
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-------------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-------------------------------------------------------------------------------------------

 --- Wed   6 Mar 2019   Day  65 ---

 ---------- Fringe finder ----------

 Next scan frequencies:  4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
                         5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
 Next BBC frequencies:    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
                          806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
 Next scan bandwidths:     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
                           16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00

23 00 00  J1642+3948   11 11 48  34.6  68.0 -5.5     -46.4     0        0   23 00 00
23 03 00  =3C345       11 14 49  35.0  68.4 -5.5     -46.6   180       23   23 00 01

 ---------- Main phase-referencing calibrator ----------

23 04 30  J1619+2247   11 16 19  26.3  86.6 -5.1     -40.5    39       23   23 04 30
23 06 30  ---          11 18 19  26.6  87.0 -5.0     -40.6   120       38   23 04 31

23 06 50  VLA1         11 18 39  26.8  88.1 -5.0     -40.4     6       38   23 06 50
23 08 50  ---          11 20 40  27.1  88.5 -4.9     -40.4   120       54   23 06 51

23 09 10  J1619+2247   11 21 00  27.0  87.5 -5.0     -40.6     6       54   23 09 10
23 10 10  ---          11 22 00  27.2  87.7 -5.0     -40.6    60       62   23 09 11

23 10 10  AT2018       11 22 00  27.3  88.8 -4.9     -40.4   -14       62   No stop
23 13 10  ---          11 25 00  27.7  89.3 -4.9     -40.4   166       85   23 10 11

23 13 10  J1619+2247   11 25 00  27.6  88.3 -4.9     -40.6   -14       85   No stop
23 14 10  ---          11 26 00  27.8  88.5 -4.9     -40.6    46       92   23 13 11

23 14 10  AT2018       11 26 00  27.9  89.5 -4.8     -40.4   -14       92   No stop
23 17 10  ---          11 29 01  28.3  90.1 -4.8     -40.4   166      115   23 14 11

23 17 45  J1619+2247   11 29 36  28.3  89.2 -4.8     -40.6    21      115   23 17 45
```

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 23 18 45 | --- | 11 30 36 | 28.5 | 89.4 | -4.8 | -40.6 | 60 | 123 | 23 17 46 |
| 23 18 45 | VLA1 | 11 30 36 | 28.6 | 90.5 | -4.8 | -40.4 | -14 | 123 | No stop |
| 23 20 45 | --- | 11 32 37 | 28.9 | 90.9 | -4.7 | -40.4 | 106 | 138 | 23 18 46 |
| 23 20 45 | J1619+2247 | 11 32 37 | 28.8 | 89.8 | -4.8 | -40.6 | -14 | 138 | No stop |
| 23 21 45 | --- | 11 33 37 | 28.9 | 90.0 | -4.8 | -40.6 | 46 | 146 | 23 20 46 |
| 23 21 45 | AT2018 | 11 33 37 | 29.0 | 91.1 | -4.7 | -40.4 | -14 | 146 | No stop |
| 23 24 45 | --- | 11 36 37 | 29.5 | 91.7 | -4.7 | -40.4 | 166 | 169 | 23 21 46 |
| 23 24 45 | J1619+2247 | 11 36 37 | 29.4 | 90.6 | -4.7 | -40.6 | -14 | 169 | No stop |
| 23 25 45 | --- | 11 37 37 | 29.5 | 90.8 | -4.7 | -40.6 | 46 | 177 | 23 24 46 |

Schedule for TORUN (Code Tr ) Page 3

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
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Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 23 25 45 | AT2018 | 11 37 37 | 29.6 | 91.9 | -4.7 | | -40.4 | -14 | 177 | No stop |
| 23 27 45 | --- | 11 39 38 | 29.9 | 92.3 | -4.6 | | -40.4 | 106 | 192 | 23 25 46 |
| 23 27 45 | VLA2 | 11 39 38 | 29.9 | 92.1 | -4.6 | | -40.4 | -9 | 192 | No stop |
| 23 28 45 | --- | 11 40 38 | 30.0 | 92.3 | -4.6 | | -40.4 | 51 | 200 | 23 27 46 |
| 23 29 20 | J1619+2247 | 11 41 13 | 30.1 | 91.6 | -4.6 | | -40.6 | 22 | 200 | 23 29 20 |
| 23 30 20 | --- | 11 42 13 | 30.2 | 91.8 | -4.6 | | -40.6 | 60 | 208 | 23 29 21 |
| 23 30 20 | AT2018 | 11 42 13 | 30.3 | 92.8 | -4.6 | | -40.4 | -14 | 208 | No stop |
| 23 33 20 | --- | 11 45 14 | 30.8 | 93.4 | -4.5 | | -40.4 | 166 | 231 | 23 30 21 |
| 23 33 20 | J1619+2247 | 11 45 14 | 30.7 | 92.4 | -4.6 | | -40.6 | -14 | 231 | No stop |
| 23 34 20 | --- | 11 46 14 | 30.8 | 92.6 | -4.6 | | -40.6 | 46 | 238 | 23 33 21 |
| 23 34 20 | AT2018 | 11 46 14 | 30.9 | 93.6 | -4.5 | | -40.3 | -14 | 238 | No stop |
| 23 37 20 | --- | 11 49 14 | 31.4 | 94.3 | -4.5 | | -40.3 | 166 | 262 | 23 34 21 |
| 23 37 55 | J1619+2247 | 11 49 49 | 31.4 | 93.3 | -4.5 | | -40.5 | 21 | 262 | 23 37 55 |
| 23 38 55 | --- | 11 50 50 | 31.5 | 93.5 | -4.5 | | -40.5 | 60 | 269 | 23 37 56 |
| 23 38 55 | VLA1 | 11 50 50 | 31.7 | 94.6 | -4.4 | | -40.3 | -15 | 269 | No stop |
| 23 40 55 | --- | 11 52 50 | 32.0 | 95.1 | -4.4 | | -40.3 | 105 | 285 | 23 38 56 |
| 23 40 55 | J1619+2247 | 11 52 50 | 31.8 | 93.9 | -4.5 | | -40.5 | -14 | 285 | No stop |
| 23 41 55 | --- | 11 53 50 | 32.0 | 94.1 | -4.4 | | -40.5 | 46 | 292 | 23 40 56 |
| 23 41 55 | AT2018 | 11 53 50 | 32.1 | 95.2 | -4.4 | | -40.2 | -14 | 292 | No stop |
| 23 44 55 | --- | 11 56 51 | 32.5 | 95.8 | -4.3 | | -40.2 | 166 | 315 | 23 41 56 |
| 23 44 55 | J1619+2247 | 11 56 51 | 32.4 | 94.8 | -4.4 | | -40.5 | -14 | 315 | No stop |
| 23 45 55 | --- | 11 57 51 | 32.6 | 95.0 | -4.4 | | -40.4 | 46 | 323 | 23 44 56 |
| 23 45 55 | AT2018 | 11 57 51 | 32.7 | 96.1 | -4.3 | | -40.2 | -14 | 323 | No stop |
| 23 47 55 | --- | 11 59 51 | 33.0 | 96.5 | -4.3 | | -40.1 | 106 | 338 | 23 45 56 |
| 23 47 55 | VLA2 | 11 59 51 | 32.9 | 96.3 | -4.3 | | -40.2 | -9 | 338 | No stop |
| 23 48 55 | --- | 12 00 51 | 33.0 | 96.5 | -4.3 | | -40.1 | 51 | 346 | 23 47 56 |
| 23 49 30 | J1619+2247 | 12 01 26 | 33.1 | 95.7 | -4.3 | | -40.4 | 22 | 346 | 23 49 30 |
| 23 50 30 | --- | 12 02 26 | 33.3 | 95.9 | -4.3 | | -40.4 | 60 | 354 | 23 49 31 |
| 23 50 30 | AT2018 | 12 02 26 | 33.3 | 97.0 | -4.2 | | -40.1 | -14 | 354 | No stop |
| 23 53 30 | --- | 12 05 27 | 33.8 | 97.7 | -4.2 | | -40.0 | 166 | 377 | 23 50 31 |

Schedule for TORUN (Code Tr ) Page 4

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Wed 6 Mar 2019 Day 65 --- | | | | | | | | | | |
| 23 53 30 | J1619+2247 | 12 05 27 | 33.7 | 96.6 | -4.2 | | -40.3 | -14 | 377 | No stop |
| 23 54 30 | --- | 12 06 27 | 33.9 | 96.8 | -4.2 | | -40.3 | 46 | 385 | 23 53 31 |
| 23 54 30 | AT2018 | 12 06 27 | 33.9 | 97.9 | -4.2 | | -40.0 | -15 | 385 | No stop |
| 23 57 30 | --- | 12 09 28 | 34.4 | 98.5 | -4.1 | | -39.9 | 165 | 408 | 23 54 31 |
| 23 58 05 | J1619+2247 | 12 10 03 | 34.4 | 97.5 | -4.2 | | -40.2 | 21 | 408 | 23 58 05 |
| 23 59 05 | --- | 12 11 03 | 34.5 | 97.8 | -4.2 | | -40.2 | 60 | 415 | 23 58 06 |
| --- Start: Wed 6 Mar 2019 Day 65 -- Stop: Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 23 59 05 | VLA1 | 12 11 03 | 34.7 | 98.9 | -4.1 | | -39.9 | -15 | 415 | No stop |
| 00 01 05 | --- | 12 13 03 | 35.0 | 99.4 | -4.1 | | -39.8 | 105 | 431 | 23 59 06 |
| 00 01 05 | J1619+2247 | 12 13 03 | 34.8 | 98.2 | -4.1 | | -40.1 | -15 | 431 | No stop |
| 00 02 05 | --- | 12 14 03 | 35.0 | 98.4 | -4.1 | | -40.1 | 45 | 438 | 00 01 06 |
| 00 02 05 | AT2018 | 12 14 03 | 35.1 | 99.5 | -4.0 | | -39.8 | -15 | 438 | No stop |
| 00 05 05 | --- | 12 17 04 | 35.5 | 100.2 | -4.0 | | -39.7 | 165 | 462 | 00 02 06 |
| 00 05 05 | J1619+2247 | 12 17 04 | 35.4 | 99.0 | -4.0 | | -40.0 | -14 | 462 | No stop |
| 00 06 05 | --- | 12 18 04 | 35.6 | 99.3 | -4.0 | | -40.0 | 46 | 469 | 00 05 06 |
| 00 06 05 | AT2018 | 12 18 04 | 35.7 | 100.4 | -4.0 | | -39.6 | -15 | 469 | No stop |
| 00 08 05 | --- | 12 20 04 | 36.0 | 100.8 | -3.9 | | -39.6 | 105 | 485 | 00 06 06 |
| 00 08 05 | VLA2 | 12 20 04 | 35.9 | 100.6 | -4.0 | | -39.6 | -9 | 485 | No stop |
| 00 09 05 | --- | 12 21 04 | 36.0 | 100.9 | -3.9 | | -39.6 | 51 | 492 | 00 08 06 |
| 00 09 40 | J1619+2247 | 12 21 40 | 36.1 | 100.1 | -4.0 | | -39.9 | 21 | 492 | 00 09 40 |
| 00 10 40 | --- | 12 22 40 | 36.3 | 100.3 | -4.0 | | -39.8 | 60 | 500 | 00 09 41 |
| 00 10 40 | AT2018 | 12 22 40 | 36.3 | 101.4 | -3.9 | | -39.5 | -15 | 500 | No stop |
| 00 13 40 | --- | 12 25 40 | 36.8 | 102.1 | -3.9 | | -39.4 | 165 | 523 | 00 10 41 |
| 00 13 40 | J1619+2247 | 12 25 40 | 36.7 | 100.9 | -3.9 | | -39.7 | -14 | 523 | No stop |
| 00 14 40 | --- | 12 26 40 | 36.9 | 101.2 | -3.9 | | -39.7 | 46 | 531 | 00 13 41 |
| 00 14 40 | AT2018 | 12 26 40 | 36.9 | 102.3 | -3.8 | | -39.3 | -15 | 531 | No stop |
| 00 17 40 | --- | 12 29 41 | 37.4 | 103.0 | -3.8 | | -39.2 | 165 | 554 | 00 14 41 |
| 00 18 15 | J1619+2247 | 12 30 16 | 37.4 | 102.0 | -3.8 | | -39.6 | 21 | 554 | 00 18 15 |
| 00 19 15 | --- | 12 31 16 | 37.5 | 102.2 | -3.8 | | -39.5 | 60 | 562 | 00 18 16 |

Schedule for TORUN (Code Tr ) Page 5

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 00 19 15 | VLA1 | 12 31 16 | 37.6 | 103.4 | -3.8 | | -39.1 | -15 | 562 | No stop |
| 00 21 15 | --- | 12 33 16 | 37.9 | 103.9 | -3.7 | | -39.0 | 105 | 577 | 00 19 16 |
| 00 21 15 | J1619+2247 | 12 33 16 | 37.8 | 102.6 | -3.8 | | -39.4 | -15 | 577 | No stop |
| 00 22 15 | --- | 12 34 17 | 38.0 | 102.9 | -3.8 | | -39.4 | 45 | 585 | 00 21 16 |
| 00 22 15 | AT2018 | 12 34 17 | 38.0 | 104.0 | -3.7 | | -39.0 | -15 | 585 | No stop |
| 00 25 15 | --- | 12 37 17 | 38.5 | 104.7 | -3.7 | | -38.9 | 165 | 608 | 00 22 16 |
| 00 25 15 | J1619+2247 | 12 37 17 | 38.4 | 103.5 | -3.7 | | -39.3 | -15 | 608 | No stop |
| 00 26 15 | --- | 12 38 17 | 38.6 | 103.8 | -3.7 | | -39.2 | 45 | 615 | 00 25 16 |
| 00 26 15 | AT2018 | 12 38 17 | 38.6 | 104.9 | -3.6 | | -38.8 | -15 | 615 | No stop |
| 00 28 15 | --- | 12 40 18 | 38.9 | 105.4 | -3.6 | | -38.7 | 105 | 631 | 00 26 16 |
| 00 28 15 | VLA2 | 12 40 18 | 38.8 | 105.2 | -3.6 | | -38.8 | -9 | 631 | No stop |
| 00 29 15 | --- | 12 41 18 | 39.0 | 105.4 | -3.6 | | -38.7 | 51 | 638 | 00 28 16 |
| 00 29 50 | J1619+2247 | 12 41 53 | 39.1 | 104.6 | -3.6 | | -39.1 | 21 | 638 | 00 29 50 |
| 00 30 50 | --- | 12 42 53 | 39.2 | 104.8 | -3.6 | | -39.0 | 60 | 646 | 00 29 51 |
| 00 30 50 | AT2018 | 12 42 53 | 39.3 | 106.0 | -3.6 | | -38.6 | -15 | 646 | No stop |
| 00 33 50 | --- | 12 45 54 | 39.7 | 106.7 | -3.5 | | -38.4 | 165 | 669 | 00 30 51 |
| 00 33 50 | J1619+2247 | 12 45 54 | 39.7 | 105.5 | -3.6 | | -38.9 | -15 | 669 | No stop |
| 00 34 50 | --- | 12 46 54 | 39.8 | 105.8 | -3.6 | | -38.8 | 45 | 677 | 00 33 51 |
| 00 34 50 | AT2018 | 12 46 54 | 39.9 | 106.9 | -3.5 | | -38.4 | -15 | 677 | No stop |
| 00 37 50 | --- | 12 49 54 | 40.3 | 107.7 | -3.4 | | -38.2 | 165 | 700 | 00 34 51 |
| 00 38 25 | J1619+2247 | 12 50 29 | 40.3 | 106.6 | -3.5 | | -38.6 | 20 | 700 | 00 38 25 |
| 00 39 25 | --- | 12 51 29 | 40.5 | 106.8 | -3.5 | | -38.6 | 60 | 708 | 00 38 26 |
| 00 39 25 | VLA1 | 12 51 29 | 40.6 | 108.1 | -3.4 | | -38.1 | -15 | 708 | No stop |
| 00 41 25 | --- | 12 53 30 | 40.9 | 108.6 | -3.4 | | -37.9 | 105 | 723 | 00 39 26 |
| 00 41 25 | J1619+2247 | 12 53 30 | 40.8 | 107.3 | -3.4 | | -38.4 | -15 | 723 | No stop |
| 00 42 25 | --- | 12 54 30 | 40.9 | 107.6 | -3.4 | | -38.4 | 45 | 731 | 00 41 26 |
| 00 42 25 | AT2018 | 12 54 30 | 40.9 | 108.8 | -3.4 | | -37.9 | -15 | 731 | No stop |
| 00 45 25 | --- | 12 57 30 | 41.4 | 109.5 | -3.3 | | -37.7 | 165 | 754 | 00 42 26 |
| 00 45 25 | J1619+2247 | 12 57 30 | 41.3 | 108.3 | -3.4 | | -38.2 | -15 | 754 | No stop |
| 00 46 25 | --- | 12 58 31 | 41.5 | 108.5 | -3.4 | | -38.1 | 45 | 762 | 00 45 26 |

Schedule for TORUN (Code Tr ) Page 6

Revealing the radio structure in AT2018cow

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Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 00 46 25 | AT2018 | 12 58 31 | 41.5 | 109.7 | -3.3 | | -37.6 | -15 | 762 | No stop |
| 00 48 25 | --- | 13 00 31 | 41.8 | 110.2 | -3.3 | | -37.5 | 105 | 777 | 00 46 26 |
| 00 48 25 | VLA2 | 13 00 31 | 41.7 | 110.0 | -3.3 | | -37.6 | -9 | 777 | No stop |
| 00 49 25 | --- | 13 01 31 | 41.9 | 110.3 | -3.3 | | -37.5 | 51 | 785 | 00 48 26 |
| 00 50 00 | J1619+2247 | 13 02 06 | 42.0 | 109.4 | -3.3 | | -37.9 | 21 | 785 | 00 50 00 |
| 00 51 00 | --- | 13 03 06 | 42.1 | 109.6 | -3.3 | | -37.8 | 60 | 792 | 00 50 01 |
| 00 51 00 | AT2018 | 13 03 06 | 42.2 | 110.9 | -3.2 | | -37.3 | -15 | 792 | No stop |
| 00 54 00 | --- | 13 06 07 | 42.6 | 111.6 | -3.2 | | -37.1 | 165 | 815 | 00 51 01 |
| 00 54 00 | J1619+2247 | 13 06 07 | 42.6 | 110.4 | -3.2 | | -37.6 | -15 | 815 | No stop |
| 00 55 00 | --- | 13 07 07 | 42.7 | 110.6 | -3.2 | | -37.5 | 45 | 823 | 00 54 01 |
| 00 55 00 | AT2018 | 13 07 07 | 42.7 | 111.9 | -3.2 | | -37.0 | -15 | 823 | No stop |
| 00 58 00 | --- | 13 10 08 | 43.1 | 112.6 | -3.1 | | -36.8 | 165 | 846 | 00 55 01 |
| 00 58 35 | J1619+2247 | 13 10 43 | 43.2 | 111.5 | -3.2 | | -37.3 | 20 | 846 | 00 58 35 |
| 00 59 35 | --- | 13 11 43 | 43.3 | 111.8 | -3.1 | | -37.2 | 60 | 854 | 00 58 36 |
| 00 59 35 | VLA1 | 13 11 43 | 43.4 | 113.1 | -3.1 | | -36.6 | -15 | 854 | No stop |
| 01 01 35 | --- | 13 13 43 | 43.7 | 113.6 | -3.0 | | -36.5 | 105 | 869 | 00 59 36 |
| 01 01 35 | J1619+2247 | 13 13 43 | 43.6 | 112.3 | -3.1 | | -37.0 | -15 | 869 | No stop |
| 01 02 35 | --- | 13 14 43 | 43.8 | 112.5 | -3.1 | | -37.0 | 45 | 877 | 01 01 36 |
| 01 02 35 | AT2018 | 13 14 43 | 43.8 | 113.8 | -3.0 | | -36.4 | -15 | 877 | No stop |
| 01 05 35 | --- | 13 17 44 | 44.2 | 114.6 | -3.0 | | -36.1 | 165 | 900 | 01 02 36 |
| 01 05 35 | J1619+2247 | 13 17 44 | 44.2 | 113.3 | -3.0 | | -36.7 | -15 | 900 | No stop |
| 01 06 35 | --- | 13 18 44 | 44.3 | 113.6 | -3.0 | | -36.6 | 45 | 908 | 01 05 36 |
| 01 06 35 | AT2018 | 13 18 44 | 44.3 | 114.9 | -3.0 | | -36.1 | -15 | 908 | No stop |
| 01 08 35 | --- | 13 20 44 | 44.6 | 115.4 | -2.9 | | -35.9 | 105 | 923 | 01 06 36 |
| 01 08 35 | VLA2 | 13 20 44 | 44.5 | 115.2 | -2.9 | | -36.0 | -9 | 923 | No stop |
| 01 09 35 | --- | 13 21 44 | 44.7 | 115.4 | -2.9 | | -35.9 | 51 | 931 | 01 08 36 |
| 01 10 10 | J1619+2247 | 13 22 20 | 44.8 | 114.5 | -3.0 | | -36.3 | 21 | 931 | 01 10 10 |
| 01 11 10 | --- | 13 23 20 | 44.9 | 114.8 | -2.9 | | -36.2 | 60 | 938 | 01 10 11 |
| 01 11 10 | AT2018 | 13 23 20 | 44.9 | 116.1 | -2.9 | | -35.6 | -15 | 938 | No stop |
| 01 14 10 | --- | 13 26 20 | 45.4 | 116.9 | -2.8 | | -35.4 | 165 | 962 | 01 11 11 |

Schedule for TORUN (Code Tr ) Page 7

Revealing the radio structure in AT2018cow

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Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 01 14 10 | J1619+2247 | 13 26 20 | 45.3 | 115.6 | -2.9 | | -36.0 | -15 | 962 | No stop |
| 01 15 10 | --- | 13 27 20 | 45.5 | 115.8 | -2.9 | | -35.9 | 45 | 969 | 01 14 11 |
| 01 15 10 | AT2018 | 13 27 20 | 45.5 | 117.1 | -2.8 | | -35.3 | -15 | 969 | No stop |
| 01 18 10 | --- | 13 30 21 | 45.9 | 118.0 | -2.8 | | -35.0 | 165 | 992 | 01 15 11 |
| 01 18 45 | J1619+2247 | 13 30 56 | 46.0 | 116.8 | -2.8 | | -35.5 | 20 | 992 | 01 18 45 |
| 01 19 45 | --- | 13 31 56 | 46.1 | 117.1 | -2.8 | | -35.4 | 60 | 1000 | 01 18 46 |
| 01 19 45 | VLA1 | 13 31 56 | 46.1 | 118.5 | -2.7 | | -34.8 | -16 | 1000 | No stop |
| 01 21 45 | --- | 13 33 56 | 46.4 | 119.0 | -2.7 | | -34.6 | 104 | 1015 | 01 19 46 |
| 01 21 45 | J1619+2247 | 13 33 56 | 46.4 | 117.6 | -2.8 | | -35.2 | -15 | 1015 | No stop |
| 01 22 45 | --- | 13 34 57 | 46.5 | 117.9 | -2.8 | | -35.1 | 45 | 1023 | 01 21 46 |
| 01 22 45 | AT2018 | 13 34 57 | 46.5 | 119.2 | -2.7 | | -34.5 | -16 | 1023 | No stop |
| 01 25 45 | --- | 13 37 57 | 46.9 | 120.1 | -2.6 | | -34.2 | 164 | 1046 | 01 22 46 |
| 01 25 45 | J1619+2247 | 13 37 57 | 46.9 | 118.7 | -2.7 | | -34.8 | -15 | 1046 | No stop |
| 01 26 45 | --- | 13 38 57 | 47.0 | 119.0 | -2.7 | | -34.7 | 45 | 1054 | 01 25 46 |
| 01 26 45 | AT2018 | 13 38 57 | 47.0 | 120.3 | -2.6 | | -34.0 | -16 | 1054 | No stop |
| 01 28 45 | --- | 13 40 58 | 47.3 | 120.9 | -2.6 | | -33.8 | 104 | 1069 | 01 26 46 |
| 01 28 45 | VLA2 | 13 40 58 | 47.2 | 120.7 | -2.6 | | -33.9 | -9 | 1069 | No stop |
| 01 29 45 | --- | 13 41 58 | 47.4 | 121.0 | -2.6 | | -33.8 | 51 | 1077 | 01 28 46 |
| 01 30 20 | J1619+2247 | 13 42 33 | 47.5 | 120.0 | -2.6 | | -34.3 | 21 | 1077 | 01 30 20 |
| 01 31 20 | --- | 13 43 33 | 47.6 | 120.3 | -2.6 | | -34.2 | 60 | 1085 | 01 30 21 |
| 01 31 20 | AT2018 | 13 43 33 | 47.6 | 121.6 | -2.6 | | -33.5 | -16 | 1085 | No stop |
| 01 34 20 | --- | 13 46 33 | 48.0 | 122.5 | -2.5 | | -33.2 | 164 | 1108 | 01 31 21 |
| 01 34 20 | J1619+2247 | 13 46 33 | 48.0 | 121.1 | -2.6 | | -33.9 | -15 | 1108 | No stop |
| 01 35 20 | --- | 13 47 34 | 48.1 | 121.4 | -2.5 | | -33.8 | 45 | 1115 | 01 34 21 |
| 01 35 20 | AT2018 | 13 47 34 | 48.1 | 122.8 | -2.5 | | -33.0 | -16 | 1115 | No stop |
| 01 38 20 | --- | 13 50 34 | 48.5 | 123.7 | -2.4 | | -32.7 | 164 | 1138 | 01 35 21 |
| 01 38 55 | J1619+2247 | 13 51 09 | 48.6 | 122.5 | -2.5 | | -33.3 | 20 | 1138 | 01 38 55 |
| 01 39 55 | --- | 13 52 09 | 48.7 | 122.8 | -2.5 | | -33.2 | 60 | 1146 | 01 38 56 |
| 01 39 55 | VLA1 | 13 52 09 | 48.7 | 124.2 | -2.4 | | -32.4 | -16 | 1146 | No stop |
| 01 41 55 | --- | 13 54 10 | 49.0 | 124.8 | -2.4 | | -32.2 | 104 | 1162 | 01 39 56 |

Schedule for TORUN (Code Tr ) Page 8

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 01 41 55 | J1619+2247 | 13 54 10 | 49.0 | 123.3 | -2.4 | | -33.0 | -16 | 1162 | No stop |
| 01 42 55 | --- | 13 55 10 | 49.1 | 123.6 | -2.4 | | -32.8 | 44 | 1169 | 01 41 56 |
| 01 42 55 | AT2018 | 13 55 10 | 49.1 | 125.0 | -2.4 | | -32.1 | -16 | 1169 | No stop |
| 01 45 55 | --- | 13 58 10 | 49.4 | 125.9 | -2.3 | | -31.7 | 164 | 1192 | 01 42 56 |
| 01 45 55 | J1619+2247 | 13 58 10 | 49.5 | 124.5 | -2.4 | | -32.4 | -15 | 1192 | No stop |
| 01 46 55 | --- | 13 59 11 | 49.6 | 124.8 | -2.3 | | -32.3 | 45 | 1200 | 01 45 56 |
| 01 46 55 | AT2018 | 13 59 11 | 49.6 | 126.3 | -2.3 | | -31.5 | -16 | 1200 | No stop |
| 01 48 55 | --- | 14 01 11 | 49.8 | 126.9 | -2.3 | | -31.3 | 104 | 1215 | 01 46 56 |
| 01 48 55 | VLA2 | 14 01 11 | 49.8 | 126.6 | -2.3 | | -31.4 | -9 | 1215 | No stop |
| 01 49 55 | --- | 14 02 11 | 49.9 | 126.9 | -2.3 | | -31.2 | 51 | 1223 | 01 48 56 |
| 01 50 30 | J1619+2247 | 14 02 46 | 50.0 | 125.9 | -2.3 | | -31.8 | 20 | 1223 | 01 50 30 |
| 01 51 30 | --- | 14 03 46 | 50.2 | 126.2 | -2.3 | | -31.7 | 60 | 1231 | 01 50 31 |
| 01 51 30 | AT2018 | 14 03 46 | 50.1 | 127.7 | -2.2 | | -30.9 | -16 | 1231 | No stop |
| 01 54 30 | --- | 14 06 47 | 50.5 | 128.6 | -2.2 | | -30.5 | 164 | 1254 | 01 51 31 |
| 01 54 30 | J1619+2247 | 14 06 47 | 50.5 | 127.2 | -2.2 | | -31.3 | -16 | 1254 | No stop |
| 01 55 30 | --- | 14 07 47 | 50.6 | 127.5 | -2.2 | | -31.1 | 44 | 1262 | 01 54 31 |
| 01 55 30 | AT2018 | 14 07 47 | 50.6 | 128.9 | -2.2 | | -30.3 | -16 | 1262 | No stop |
| 01 58 30 | --- | 14 10 47 | 50.9 | 129.9 | -2.1 | | -29.9 | 164 | 1285 | 01 55 31 |
| 01 59 05 | J1619+2247 | 14 11 23 | 51.1 | 128.6 | -2.1 | | -30.6 | 19 | 1285 | 01 59 05 |
| 02 00 05 | --- | 14 12 23 | 51.2 | 128.9 | -2.1 | | -30.4 | 60 | 1292 | 01 59 06 |
| 02 00 05 | VLA1 | 14 12 23 | 51.1 | 130.5 | -2.1 | | -29.6 | -16 | 1292 | No stop |
| 02 02 05 | --- | 14 14 23 | 51.4 | 131.1 | -2.0 | | -29.3 | 104 | 1308 | 02 00 06 |
| 02 02 05 | J1619+2247 | 14 14 23 | 51.4 | 129.6 | -2.1 | | -30.1 | -16 | 1308 | No stop |
| 02 03 05 | --- | 14 15 23 | 51.5 | 129.9 | -2.1 | | -30.0 | 44 | 1315 | 02 02 06 |
| 02 03 05 | AT2018 | 14 15 23 | 51.4 | 131.3 | -2.0 | | -29.1 | -16 | 1315 | No stop |
| 02 06 05 | --- | 14 18 24 | 51.8 | 132.3 | -2.0 | | -28.7 | 164 | 1338 | 02 03 06 |
| 02 06 05 | J1619+2247 | 14 18 24 | 51.9 | 130.9 | -2.0 | | -29.5 | -16 | 1338 | No stop |
| 02 07 05 | --- | 14 19 24 | 52.0 | 131.2 | -2.0 | | -29.3 | 44 | 1346 | 02 06 06 |
| 02 07 05 | AT2018 | 14 19 24 | 51.9 | 132.7 | -2.0 | | -28.5 | -16 | 1346 | No stop |
| 02 09 05 | --- | 14 21 24 | 52.1 | 133.3 | -1.9 | | -28.2 | 104 | 1362 | 02 07 06 |

Schedule for TORUN (Code Tr ) Page 9

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 02 09 05 | VLA2 | 14 21 24 | 52.1 | 133.1 | -1.9 | | -28.3 | -9 | 1362 | No stop |
| 02 10 05 | --- | 14 22 24 | 52.2 | 133.4 | -1.9 | | -28.1 | 51 | 1369 | 02 09 06 |
| 02 10 40 | J1619+2247 | 14 22 59 | 52.4 | 132.4 | -2.0 | | -28.8 | 20 | 1369 | 02 10 40 |
| 02 11 40 | --- | 14 24 00 | 52.5 | 132.7 | -1.9 | | -28.6 | 60 | 1377 | 02 10 41 |
| 02 11 40 | AT2018 | 14 24 00 | 52.4 | 134.2 | -1.9 | | -27.7 | -16 | 1377 | No stop |
| 02 14 40 | --- | 14 27 00 | 52.7 | 135.2 | -1.8 | | -27.2 | 164 | 1400 | 02 11 41 |
| 02 14 40 | J1619+2247 | 14 27 00 | 52.8 | 133.7 | -1.9 | | -28.1 | -16 | 1400 | No stop |
| 02 15 40 | --- | 14 28 00 | 52.9 | 134.0 | -1.9 | | -27.9 | 44 | 1408 | 02 14 41 |
| 02 15 40 | AT2018 | 14 28 00 | 52.8 | 135.5 | -1.8 | | -27.0 | -16 | 1408 | No stop |
| 02 18 40 | --- | 14 31 01 | 53.1 | 136.6 | -1.8 | | -26.5 | 164 | 1431 | 02 15 41 |
| 02 19 15 | J1619+2247 | 14 31 36 | 53.3 | 135.3 | -1.8 | | -27.3 | 19 | 1431 | 02 19 15 |
| 02 20 15 | --- | 14 32 36 | 53.4 | 135.6 | -1.8 | | -27.1 | 60 | 1438 | 02 19 16 |
| 02 20 15 | VLA1 | 14 32 36 | 53.3 | 137.2 | -1.7 | | -26.1 | -17 | 1438 | No stop |
| 02 22 15 | --- | 14 34 36 | 53.5 | 137.9 | -1.7 | | -25.8 | 103 | 1454 | 02 20 16 |
| 02 22 15 | J1619+2247 | 14 34 36 | 53.6 | 136.3 | -1.8 | | -26.7 | -16 | 1454 | No stop |
| 02 23 15 | --- | 14 35 37 | 53.8 | 136.6 | -1.7 | | -26.5 | 44 | 1462 | 02 22 16 |
| 02 23 15 | AT2018 | 14 35 37 | 53.6 | 138.2 | -1.7 | | -25.6 | -16 | 1462 | No stop |
| 02 26 15 | --- | 14 38 37 | 53.9 | 139.2 | -1.6 | | -25.1 | 164 | 1485 | 02 23 16 |
| 02 26 15 | J1619+2247 | 14 38 37 | 54.1 | 137.7 | -1.7 | | -26.0 | -16 | 1485 | No stop |
| 02 27 15 | --- | 14 39 37 | 54.2 | 138.1 | -1.7 | | -25.8 | 44 | 1492 | 02 26 16 |
| 02 27 15 | AT2018 | 14 39 37 | 54.0 | 139.6 | -1.6 | | -24.9 | -16 | 1492 | No stop |
| 02 29 15 | --- | 14 41 38 | 54.2 | 140.3 | -1.6 | | -24.5 | 104 | 1508 | 02 27 16 |
| 02 29 15 | VLA2 | 14 41 38 | 54.2 | 140.0 | -1.6 | | -24.6 | -9 | 1508 | No stop |
| 02 30 15 | --- | 14 42 38 | 54.3 | 140.4 | -1.6 | | -24.4 | 51 | 1515 | 02 29 16 |
| 02 30 50 | J1619+2247 | 14 43 13 | 54.5 | 139.3 | -1.6 | | -25.1 | 20 | 1515 | 02 30 50 |
| 02 31 50 | --- | 14 44 13 | 54.6 | 139.7 | -1.6 | | -24.9 | 60 | 1523 | 02 30 51 |
| 02 31 50 | AT2018 | 14 44 13 | 54.4 | 141.3 | -1.5 | | -24.0 | -16 | 1523 | No stop |
| 02 34 50 | --- | 14 47 13 | 54.7 | 142.4 | -1.5 | | -23.3 | 164 | 1546 | 02 31 51 |
| 02 34 50 | J1619+2247 | 14 47 13 | 54.9 | 140.8 | -1.5 | | -24.3 | -16 | 1546 | No stop |
| 02 35 50 | --- | 14 48 14 | 55.0 | 141.2 | -1.5 | | -24.1 | 44 | 1554 | 02 34 51 |

Schedule for TORUN (Code Tr ) Page 10

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 02 35 50 | AT2018 | 14 48 14 | 54.8 | 142.7 | -1.5 | | -23.1 | -16 | 1554 | No stop |
| 02 38 50 | --- | 14 51 14 | 55.1 | 143.8 | -1.4 | | -22.5 | 164 | 1577 | 02 35 51 |
| 02 39 25 | J1619+2247 | 14 51 49 | 55.3 | 142.5 | -1.5 | | -23.4 | 19 | 1577 | 02 39 25 |
| 02 40 25 | --- | 14 52 49 | 55.4 | 142.9 | -1.5 | | -23.1 | 60 | 1585 | 02 39 26 |
| 02 40 25 | VLA1 | 14 52 49 | 55.3 | 144.5 | -1.4 | | -22.1 | -17 | 1585 | No stop |
| 02 42 25 | --- | 14 54 50 | 55.4 | 145.3 | -1.4 | | -21.7 | 103 | 1600 | 02 40 26 |
| 02 42 25 | J1619+2247 | 14 54 50 | 55.6 | 143.6 | -1.4 | | -22.7 | -16 | 1600 | No stop |
| 02 43 25 | --- | 14 55 50 | 55.7 | 144.0 | -1.4 | | -22.5 | 44 | 1608 | 02 42 26 |
| 02 43 25 | AT2018 | 14 55 50 | 55.5 | 145.6 | -1.3 | | -21.5 | -16 | 1608 | No stop |
| 02 46 25 | --- | 14 58 50 | 55.7 | 146.7 | -1.3 | | -20.8 | 164 | 1631 | 02 43 26 |
| 02 46 25 | J1619+2247 | 14 58 50 | 56.0 | 145.1 | -1.4 | | -21.8 | -16 | 1631 | No stop |
| 02 47 25 | --- | 14 59 51 | 56.0 | 145.5 | -1.3 | | -21.6 | 44 | 1638 | 02 46 26 |
| 02 47 25 | AT2018 | 14 59 51 | 55.8 | 147.1 | -1.3 | | -20.6 | -17 | 1638 | No stop |
| 02 49 25 | --- | 15 01 51 | 56.0 | 147.9 | -1.2 | | -20.2 | 103 | 1654 | 02 47 26 |
| 02 49 25 | VLA2 | 15 01 51 | 56.0 | 147.6 | -1.3 | | -20.3 | -10 | 1654 | No stop |
| 02 50 25 | --- | 15 02 51 | 56.0 | 148.0 | -1.2 | | -20.1 | 50 | 1662 | 02 49 26 |
| 02 51 00 | J1619+2247 | 15 03 26 | 56.3 | 146.9 | -1.3 | | -20.8 | 20 | 1662 | 02 51 00 |
| 02 52 00 | --- | 15 04 26 | 56.4 | 147.3 | -1.3 | | -20.6 | 60 | 1669 | 02 51 01 |
| 02 52 00 | AT2018 | 15 04 26 | 56.2 | 148.9 | -1.2 | | -19.6 | -17 | 1669 | No stop |
| 02 55 00 | --- | 15 07 27 | 56.4 | 150.1 | -1.2 | | -18.9 | 163 | 1692 | 02 52 01 |
| 02 55 00 | J1619+2247 | 15 07 27 | 56.7 | 148.5 | -1.2 | | -19.9 | -16 | 1692 | No stop |
| 02 56 00 | --- | 15 08 27 | 56.7 | 148.9 | -1.2 | | -19.7 | 44 | 1700 | 02 55 01 |
| 02 56 00 | AT2018 | 15 08 27 | 56.5 | 150.5 | -1.1 | | -18.6 | -17 | 1700 | No stop |
| 02 59 00 | --- | 15 11 27 | 56.7 | 151.7 | -1.1 | | -17.9 | 163 | 1723 | 02 56 01 |
| 02 59 35 | J1619+2247 | 15 12 03 | 57.0 | 150.3 | -1.1 | | -18.8 | 19 | 1723 | 02 59 35 |
| 03 00 35 | --- | 15 13 03 | 57.1 | 150.7 | -1.1 | | -18.6 | 60 | 1731 | 02 59 36 |
| 03 00 35 | VLA1 | 15 13 03 | 56.8 | 152.4 | -1.1 | | -17.5 | -17 | 1731 | No stop |
| 03 02 35 | --- | 15 15 03 | 57.0 | 153.2 | -1.0 | | -17.0 | 103 | 1746 | 03 00 36 |
| 03 02 35 | J1619+2247 | 15 15 03 | 57.2 | 151.5 | -1.1 | | -18.1 | -16 | 1746 | No stop |
| 03 03 35 | --- | 15 16 03 | 57.3 | 151.9 | -1.1 | | -17.8 | 44 | 1754 | 03 02 36 |

Schedule for TORUN (Code Tr ) Page 11

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 03 03 35 | AT2018 | 15 16 03 | 57.0 | 153.5 | -1.0 | | -16.8 | -17 | 1754 | No stop |
| 03 06 35 | --- | 15 19 04 | 57.2 | 154.8 | -1.0 | | -16.1 | 163 | 1777 | 03 03 36 |
| 03 06 35 | J1619+2247 | 15 19 04 | 57.5 | 153.2 | -1.0 | | -17.1 | -16 | 1777 | No stop |
| 03 07 35 | --- | 15 20 04 | 57.6 | 153.6 | -1.0 | | -16.8 | 44 | 1785 | 03 06 36 |
| 03 07 35 | AT2018 | 15 20 04 | 57.3 | 155.2 | -0.9 | | -15.8 | -17 | 1785 | No stop |
| 03 09 35 | --- | 15 22 04 | 57.4 | 156.0 | -0.9 | | -15.3 | 103 | 1800 | 03 07 36 |
| 03 09 35 | VLA2 | 15 22 04 | 57.4 | 155.7 | -0.9 | | -15.5 | -10 | 1800 | No stop |
| 03 10 35 | --- | 15 23 04 | 57.5 | 156.1 | -0.9 | | -15.2 | 50 | 1808 | 03 09 36 |
| 03 11 10 | J1619+2247 | 15 23 39 | 57.8 | 155.1 | -0.9 | | -15.9 | 20 | 1808 | 03 11 10 |
| 03 12 10 | --- | 15 24 40 | 57.9 | 155.5 | -0.9 | | -15.7 | 60 | 1815 | 03 11 11 |
| ---------- Ef is out for a pointing check ---------- | | | | | | | | | | |
| 03 12 10 | AT2018 | 15 24 40 | 57.6 | 157.1 | -0.9 | | -14.6 | -17 | 1815 | No stop |
| 03 15 10 | --- | 15 27 40 | 57.7 | 158.3 | -0.8 | | -13.8 | 163 | 1838 | 03 12 11 |
| 03 15 10 | J1619+2247 | 15 27 40 | 58.1 | 156.7 | -0.9 | | -14.9 | -16 | 1838 | No stop |
| 03 16 10 | --- | 15 28 40 | 58.1 | 157.2 | -0.9 | | -14.6 | 44 | 1846 | 03 15 11 |
| 03 16 10 | AT2018 | 15 28 40 | 57.8 | 158.8 | -0.8 | | -13.6 | -17 | 1846 | No stop |
| 03 19 10 | --- | 15 31 41 | 57.9 | 160.0 | -0.8 | | -12.8 | 163 | 1869 | 03 16 11 |
| 03 19 10 | J1619+2247 | 15 31 41 | 58.3 | 158.4 | -0.8 | | -13.8 | -16 | 1869 | No stop |
| 03 20 10 | --- | 15 32 41 | 58.3 | 158.9 | -0.8 | | -13.6 | 44 | 1877 | 03 19 11 |
| ---------- Ef is in ---------- | | | | | | | | | | |
| 03 20 45 | VLA1 | 15 33 16 | 58.0 | 160.8 | -0.7 | | -12.3 | 18 | 1877 | 03 20 45 |
| 03 22 45 | --- | 15 35 16 | 58.1 | 161.7 | -0.7 | | -11.7 | 120 | 1892 | 03 20 46 |
| 03 22 45 | J1619+2247 | 15 35 16 | 58.5 | 160.0 | -0.7 | | -12.9 | -16 | 1892 | No stop |
| 03 23 45 | --- | 15 36 16 | 58.5 | 160.4 | -0.7 | | -12.6 | 44 | 1900 | 03 22 46 |
| 03 23 45 | AT2018 | 15 36 16 | 58.2 | 162.0 | -0.7 | | -11.6 | -17 | 1900 | No stop |
| 03 26 45 | --- | 15 39 17 | 58.3 | 163.3 | -0.6 | | -10.7 | 163 | 1923 | 03 23 46 |
| 03 26 45 | J1619+2247 | 15 39 17 | 58.7 | 161.7 | -0.7 | | -11.8 | -16 | 1923 | No stop |
| 03 27 45 | --- | 15 40 17 | 58.7 | 162.1 | -0.7 | | -11.5 | 44 | 1931 | 03 26 46 |
| 03 27 45 | AT2018 | 15 40 17 | 58.3 | 163.7 | -0.6 | | -10.5 | -17 | 1931 | No stop |
| 03 29 45 | --- | 15 42 17 | 58.4 | 164.6 | -0.6 | | -9.9 | 103 | 1946 | 03 27 46 |

Schedule for TORUN (Code Tr ) Page 12

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 03 29 45 | VLA2 | 15 42 17 | 58.4 | 164.3 | -0.6 | | -10.1 | -10 | 1946 | No stop |
| 03 30 45 | --- | 15 43 18 | 58.5 | 164.7 | -0.6 | | -9.8 | 50 | 1954 | 03 29 46 |
| 03 31 20 | J1619+2247 | 15 43 53 | 58.9 | 163.7 | -0.6 | | -10.5 | 20 | 1954 | 03 31 20 |
| 03 32 20 | --- | 15 44 53 | 58.9 | 164.1 | -0.6 | | -10.2 | 60 | 1962 | 03 31 21 |
| ---------- Fringe finder ---------- | | | | | | | | | | |
| 03 34 20 | J1642+3948 | 15 46 53 | 73.5 | 138.3 | -0.9 | | -31.3 | 52 | 1962 | 03 34 20 |
| 03 37 00 | =3C345 | 15 49 34 | 73.8 | 139.9 | -0.9 | | -30.2 | 160 | 1982 | 03 34 21 |
| ---------- Main phase-referencing calibrator ---------- | | | | | | | | | | |
| 03 38 30 | J1619+2247 | 15 51 04 | 59.2 | 166.9 | -0.5 | | -8.5 | 21 | 1982 | 03 38 30 |
| 03 40 00 | --- | 15 52 34 | 59.2 | 167.6 | -0.5 | | -8.1 | 90 | 1994 | 03 38 31 |
| 03 40 00 | AT2018 | 15 52 34 | 58.8 | 169.1 | -0.4 | | -7.0 | -17 | 1994 | No stop |
| 03 43 00 | --- | 15 55 35 | 58.9 | 170.5 | -0.4 | | -6.2 | 163 | 2017 | 03 40 01 |
| 03 43 00 | J1619+2247 | 15 55 35 | 59.3 | 168.9 | -0.4 | | -7.2 | -16 | 2017 | No stop |
| 03 44 00 | --- | 15 56 35 | 59.3 | 169.3 | -0.4 | | -6.9 | 44 | 2024 | 03 43 01 |
| 03 44 00 | AT2018 | 15 56 35 | 58.9 | 170.9 | -0.3 | | -5.9 | -16 | 2024 | No stop |
| 03 47 00 | --- | 15 59 35 | 58.9 | 172.3 | -0.3 | | -5.0 | 164 | 2047 | 03 44 01 |
| 03 47 00 | J1619+2247 | 15 59 35 | 59.4 | 170.7 | -0.3 | | -6.0 | -16 | 2047 | No stop |
| 03 48 00 | --- | 16 00 35 | 59.4 | 171.2 | -0.3 | | -5.7 | 44 | 2055 | 03 47 01 |
| 03 48 30 | VLA1 | 16 01 06 | 59.0 | 173.1 | -0.3 | | -4.5 | 13 | 2055 | 03 48 30 |
| 03 50 30 | --- | 16 03 06 | 59.0 | 174.0 | -0.2 | | -3.9 | 120 | 2071 | 03 48 31 |
| 03 50 30 | J1619+2247 | 16 03 06 | 59.5 | 172.3 | -0.3 | | -5.0 | -16 | 2071 | No stop |
| 03 51 30 | --- | 16 04 06 | 59.5 | 172.7 | -0.3 | | -4.7 | 44 | 2078 | 03 50 31 |
| 03 51 30 | AT2018 | 16 04 06 | 59.0 | 174.3 | -0.2 | | -3.7 | -16 | 2078 | No stop |
| 03 54 30 | --- | 16 07 07 | 59.1 | 175.6 | -0.2 | | -2.8 | 164 | 2101 | 03 51 31 |
| 03 54 30 | J1619+2247 | 16 07 07 | 59.6 | 174.1 | -0.2 | | -3.8 | -16 | 2101 | No stop |
| 03 55 30 | --- | 16 08 07 | 59.6 | 174.6 | -0.2 | | -3.5 | 44 | 2109 | 03 54 31 |
| 03 55 30 | AT2018 | 16 08 07 | 59.1 | 176.1 | -0.1 | | -2.5 | -16 | 2109 | No stop |
| 03 57 30 | --- | 16 10 07 | 59.1 | 177.0 | -0.1 | | -2.0 | 104 | 2124 | 03 55 31 |
| 03 57 30 | VLA2 | 16 10 07 | 59.1 | 176.7 | -0.1 | | -2.2 | -10 | 2124 | No stop |
| 03 58 30 | --- | 16 11 07 | 59.1 | 177.1 | -0.1 | | -1.9 | 50 | 2132 | 03 57 31 |

Schedule for TORUN (Code Tr ) Page 13

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 03 59 00 | J1619+2247 | 16 11 37 | 59.6 | 176.2 | -0.1 | | -2.5 | 15 | 2132 | 03 59 00 |
| 04 00 00 | --- | 16 12 37 | 59.6 | 176.6 | -0.1 | | -2.2 | 60 | 2140 | 03 59 01 |
| 04 00 00 | AT2018 | 16 12 37 | 59.1 | 178.1 | -0.1 | | -1.2 | -16 | 2140 | No stop |
| 04 03 00 | --- | 16 15 38 | 59.1 | 179.5 | -0.0 | | -0.3 | 164 | 2163 | 04 00 01 |
| 04 03 00 | J1619+2247 | 16 15 38 | 59.6 | 178.0 | -0.1 | | -1.3 | -16 | 2163 | No stop |
| 04 04 00 | --- | 16 16 38 | 59.6 | 178.4 | -0.1 | | -1.0 | 44 | 2171 | 04 03 01 |
| 04 04 00 | AT2018 | 16 16 38 | 59.1 | 179.9 | -0.0 | | -0.1 | -16 | 2171 | No stop |
| 04 07 00 | --- | 16 19 39 | 59.1 | 181.3 | 0.0 | | 0.8 | 164 | 2194 | 04 04 01 |
| 04 07 00 | J1619+2247 | 16 19 39 | 59.7 | 179.8 | -0.0 | | -0.1 | -16 | 2194 | No stop |
| 04 08 00 | --- | 16 20 39 | 59.7 | 180.3 | 0.0 | | 0.2 | 44 | 2201 | 04 07 01 |
| 04 08 30 | VLA1 | 16 21 09 | 59.1 | 182.1 | 0.1 | | 1.4 | 13 | 2201 | 04 08 30 |
| 04 10 30 | --- | 16 23 09 | 59.1 | 183.0 | 0.1 | | 1.9 | 120 | 2217 | 04 08 31 |
| 04 10 30 | J1619+2247 | 16 23 09 | 59.6 | 181.4 | 0.1 | | 0.9 | -16 | 2217 | No stop |
| 04 11 30 | --- | 16 24 09 | 59.6 | 181.9 | 0.1 | | 1.2 | 44 | 2224 | 04 10 31 |
| 04 11 30 | AT2018 | 16 24 09 | 59.1 | 183.3 | 0.1 | | 2.1 | -16 | 2224 | No stop |
| 04 14 30 | --- | 16 27 10 | 59.1 | 184.7 | 0.2 | | 3.0 | 164 | 2247 | 04 11 31 |
| 04 14 30 | J1619+2247 | 16 27 10 | 59.6 | 183.2 | 0.1 | | 2.1 | -15 | 2247 | No stop |
| 04 15 30 | --- | 16 28 10 | 59.6 | 183.7 | 0.1 | | 2.4 | 45 | 2255 | 04 14 31 |
| 04 15 30 | AT2018 | 16 28 10 | 59.0 | 185.1 | 0.2 | | 3.3 | -16 | 2255 | No stop |
| 04 17 30 | --- | 16 30 10 | 59.0 | 186.0 | 0.2 | | 3.9 | 104 | 2271 | 04 15 31 |
| 04 17 30 | VLA2 | 16 30 10 | 59.1 | 185.7 | 0.2 | | 3.7 | -10 | 2271 | No stop |
| 04 18 30 | --- | 16 31 10 | 59.1 | 186.2 | 0.2 | | 4.0 | 50 | 2278 | 04 17 31 |
| 04 19 00 | J1619+2247 | 16 31 41 | 59.6 | 185.3 | 0.2 | | 3.4 | 16 | 2278 | 04 19 00 |
| 04 20 00 | --- | 16 32 41 | 59.6 | 185.7 | 0.2 | | 3.7 | 60 | 2286 | 04 19 01 |
| 04 20 00 | AT2018 | 16 32 41 | 59.0 | 187.1 | 0.3 | | 4.6 | -16 | 2286 | No stop |
| 04 23 00 | --- | 16 35 41 | 58.9 | 188.5 | 0.3 | | 5.5 | 164 | 2309 | 04 20 01 |
| 04 23 00 | J1619+2247 | 16 35 41 | 59.5 | 187.1 | 0.3 | | 4.6 | -15 | 2309 | No stop |
| 04 24 00 | --- | 16 36 41 | 59.5 | 187.6 | 0.3 | | 4.9 | 45 | 2317 | 04 23 01 |
| 04 24 00 | AT2018 | 16 36 41 | 58.9 | 188.9 | 0.3 | | 5.8 | -16 | 2317 | No stop |
| 04 27 00 | --- | 16 39 42 | 58.8 | 190.3 | 0.4 | | 6.6 | 164 | 2340 | 04 24 01 |

Schedule for TORUN (Code Tr ) Page 14

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 04 27 00 | J1619+2247 | 16 39 42 | 59.4 | 188.9 | 0.3 | | 5.8 | -15 | 2340 | No stop |
| 04 28 00 | --- | 16 40 42 | 59.4 | 189.4 | 0.3 | | 6.1 | 45 | 2347 | 04 27 01 |
| 04 28 30 | VLA1 | 16 41 12 | 58.8 | 191.1 | 0.4 | | 7.2 | 14 | 2347 | 04 28 30 |
| 04 30 30 | --- | 16 43 12 | 58.7 | 192.0 | 0.4 | | 7.7 | 120 | 2363 | 04 28 31 |
| 04 30 30 | J1619+2247 | 16 43 12 | 59.3 | 190.5 | 0.4 | | 6.8 | -15 | 2363 | No stop |
| 04 31 30 | --- | 16 44 13 | 59.3 | 191.0 | 0.4 | | 7.1 | 45 | 2371 | 04 30 31 |
| 04 31 30 | AT2018 | 16 44 13 | 58.7 | 192.3 | 0.5 | | 7.9 | -16 | 2371 | No stop |
| 04 34 30 | --- | 16 47 13 | 58.6 | 193.6 | 0.5 | | 8.8 | 164 | 2394 | 04 31 31 |
| 04 34 30 | J1619+2247 | 16 47 13 | 59.2 | 192.3 | 0.5 | | 8.0 | -15 | 2394 | No stop |
| 04 35 30 | --- | 16 48 13 | 59.2 | 192.7 | 0.5 | | 8.3 | 45 | 2401 | 04 34 31 |
| 04 35 30 | AT2018 | 16 48 13 | 58.5 | 194.0 | 0.5 | | 9.0 | -15 | 2401 | No stop |
| 04 37 30 | --- | 16 50 14 | 58.5 | 194.9 | 0.6 | | 9.6 | 105 | 2417 | 04 35 31 |
| 04 37 30 | VLA2 | 16 50 14 | 58.5 | 194.6 | 0.5 | | 9.4 | -9 | 2417 | No stop |
| 04 38 30 | --- | 16 51 14 | 58.5 | 195.1 | 0.6 | | 9.7 | 51 | 2424 | 04 37 31 |
| 04 39 00 | J1619+2247 | 16 51 44 | 59.1 | 194.3 | 0.5 | | 9.3 | 16 | 2424 | 04 39 00 |
| 04 40 00 | --- | 16 52 44 | 59.0 | 194.7 | 0.5 | | 9.5 | 60 | 2432 | 04 39 01 |
| 04 40 00 | AT2018 | 16 52 44 | 58.4 | 196.0 | 0.6 | | 10.3 | -15 | 2432 | No stop |
| 04 43 00 | --- | 16 55 44 | 58.2 | 197.3 | 0.6 | | 11.1 | 165 | 2455 | 04 40 01 |
| 04 43 00 | J1619+2247 | 16 55 44 | 58.9 | 196.1 | 0.6 | | 10.4 | -15 | 2455 | No stop |
| 04 44 00 | --- | 16 56 45 | 58.9 | 196.5 | 0.6 | | 10.7 | 45 | 2463 | 04 43 01 |
| 04 44 00 | AT2018 | 16 56 45 | 58.2 | 197.7 | 0.7 | | 11.4 | -15 | 2463 | No stop |
| 04 47 00 | --- | 16 59 45 | 58.1 | 199.0 | 0.7 | | 12.2 | 165 | 2486 | 04 44 01 |
| 04 47 00 | J1619+2247 | 16 59 45 | 58.7 | 197.8 | 0.7 | | 11.5 | -14 | 2486 | No stop |
| 04 48 00 | --- | 17 00 45 | 58.7 | 198.3 | 0.7 | | 11.8 | 46 | 2494 | 04 47 01 |
| 04 48 30 | VLA1 | 17 01 15 | 58.0 | 199.8 | 0.7 | | 12.7 | 14 | 2494 | 04 48 30 |
| 04 50 30 | --- | 17 03 16 | 57.9 | 200.6 | 0.8 | | 13.2 | 120 | 2509 | 04 48 31 |
| 04 50 30 | J1619+2247 | 17 03 16 | 58.6 | 199.3 | 0.7 | | 12.5 | -15 | 2509 | No stop |
| 04 51 30 | --- | 17 04 16 | 58.5 | 199.8 | 0.7 | | 12.7 | 45 | 2517 | 04 50 31 |
| 04 51 30 | AT2018 | 17 04 16 | 57.8 | 200.9 | 0.8 | | 13.4 | -15 | 2517 | No stop |
| 04 54 30 | --- | 17 07 16 | 57.7 | 202.2 | 0.8 | | 14.2 | 165 | 2540 | 04 51 31 |

Schedule for TORUN (Code Tr ) Page 15

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 04 54 30 | J1619+2247 | 17 07 16 | 58.4 | 201.1 | 0.8 | | 13.5 | -15 | 2540 | No stop |
| 04 55 30 | --- | 17 08 17 | 58.3 | 201.5 | 0.8 | | 13.8 | 45 | 2547 | 04 54 31 |
| 04 55 30 | AT2018 | 17 08 17 | 57.6 | 202.6 | 0.9 | | 14.4 | -15 | 2547 | No stop |
| 04 57 30 | --- | 17 10 17 | 57.5 | 203.5 | 0.9 | | 15.0 | 105 | 2563 | 04 55 31 |
| 04 57 30 | VLA2 | 17 10 17 | 57.6 | 203.2 | 0.9 | | 14.8 | -9 | 2563 | No stop |
| 04 58 30 | --- | 17 11 17 | 57.5 | 203.6 | 0.9 | | 15.1 | 51 | 2571 | 04 57 31 |
| 04 59 00 | J1619+2247 | 17 11 47 | 58.1 | 203.0 | 0.9 | | 14.7 | 16 | 2571 | 04 59 00 |
| 05 00 00 | --- | 17 12 47 | 58.0 | 203.4 | 0.9 | | 15.0 | 60 | 2578 | 04 59 01 |
| 05 00 00 | AT2018 | 17 12 47 | 57.3 | 204.5 | 0.9 | | 15.6 | -15 | 2578 | No stop |
| 05 03 00 | --- | 17 15 48 | 57.1 | 205.7 | 1.0 | | 16.4 | 165 | 2601 | 05 00 01 |
| 05 03 00 | J1619+2247 | 17 15 48 | 57.9 | 204.7 | 0.9 | | 15.8 | -15 | 2601 | No stop |
| 05 04 00 | --- | 17 16 48 | 57.8 | 205.1 | 0.9 | | 16.0 | 45 | 2609 | 05 03 01 |
| 05 04 00 | AT2018 | 17 16 48 | 57.1 | 206.1 | 1.0 | | 16.6 | -15 | 2609 | No stop |
| 05 07 00 | --- | 17 19 48 | 56.9 | 207.4 | 1.0 | | 17.3 | 165 | 2632 | 05 04 01 |
| 05 07 00 | J1619+2247 | 17 19 48 | 57.6 | 206.3 | 1.0 | | 16.8 | -15 | 2632 | No stop |
| 05 08 00 | --- | 17 20 49 | 57.5 | 206.7 | 1.0 | | 17.0 | 45 | 2640 | 05 07 01 |
| 05 08 30 | VLA1 | 17 21 19 | 56.7 | 208.1 | 1.1 | | 17.8 | 15 | 2640 | 05 08 30 |
| 05 10 30 | --- | 17 23 19 | 56.6 | 208.9 | 1.1 | | 18.3 | 120 | 2655 | 05 08 31 |
| 05 10 30 | J1619+2247 | 17 23 19 | 57.4 | 207.8 | 1.1 | | 17.7 | -15 | 2655 | No stop |
| 05 11 30 | --- | 17 24 19 | 57.3 | 208.2 | 1.1 | | 17.9 | 45 | 2663 | 05 10 31 |
| 05 11 30 | AT2018 | 17 24 19 | 56.5 | 209.2 | 1.1 | | 18.4 | -15 | 2663 | No stop |
| 05 14 30 | --- | 17 27 20 | 56.3 | 210.4 | 1.2 | | 19.1 | 165 | 2686 | 05 11 31 |
| 05 14 30 | J1619+2247 | 17 27 20 | 57.1 | 209.4 | 1.1 | | 18.6 | -15 | 2686 | No stop |
| 05 15 30 | --- | 17 28 20 | 57.0 | 209.8 | 1.1 | | 18.9 | 45 | 2694 | 05 14 31 |
| 05 15 30 | AT2018 | 17 28 20 | 56.2 | 210.8 | 1.2 | | 19.4 | -15 | 2694 | No stop |
| 05 17 30 | --- | 17 30 20 | 56.1 | 211.5 | 1.2 | | 19.8 | 105 | 2709 | 05 15 31 |
| 05 17 30 | VLA2 | 17 30 20 | 56.2 | 211.3 | 1.2 | | 19.7 | -9 | 2709 | No stop |
| 05 18 30 | --- | 17 31 20 | 56.1 | 211.7 | 1.2 | | 19.9 | 51 | 2717 | 05 17 31 |
| 05 19 00 | J1619+2247 | 17 31 50 | 56.7 | 211.2 | 1.2 | | 19.7 | 16 | 2717 | 05 19 00 |
| 05 20 00 | --- | 17 32 51 | 56.6 | 211.6 | 1.2 | | 19.9 | 60 | 2724 | 05 19 01 |

Schedule for TORUN (Code Tr ) Page 16

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 05 20 00 | AT2018 | 17 32 51 | 55.9 | 212.5 | 1.3 | | 20.4 | -15 | 2724 | No stop |
| 05 23 00 | --- | 17 35 51 | 55.6 | 213.7 | 1.3 | | 21.1 | 165 | 2747 | 05 20 01 |
| 05 23 00 | J1619+2247 | 17 35 51 | 56.4 | 212.8 | 1.3 | | 20.6 | -15 | 2747 | No stop |
| 05 24 00 | --- | 17 36 51 | 56.3 | 213.2 | 1.3 | | 20.9 | 45 | 2755 | 05 23 01 |
| 05 24 00 | AT2018 | 17 36 51 | 55.6 | 214.1 | 1.3 | | 21.3 | -15 | 2755 | No stop |
| 05 27 00 | --- | 17 39 52 | 55.3 | 215.2 | 1.4 | | 22.0 | 165 | 2778 | 05 24 01 |
| 05 27 00 | J1619+2247 | 17 39 52 | 56.1 | 214.3 | 1.3 | | 21.5 | -15 | 2778 | No stop |
| 05 28 00 | --- | 17 40 52 | 56.0 | 214.7 | 1.3 | | 21.8 | 45 | 2786 | 05 27 01 |
| 05 28 30 | VLA1 | 17 41 22 | 55.2 | 215.9 | 1.4 | | 22.3 | 15 | 2786 | 05 28 30 |
| 05 30 30 | --- | 17 43 22 | 55.0 | 216.6 | 1.4 | | 22.8 | 120 | 2801 | 05 28 31 |
| 05 30 30 | J1619+2247 | 17 43 22 | 55.8 | 215.7 | 1.4 | | 22.3 | -15 | 2801 | No stop |
| 05 31 30 | --- | 17 44 22 | 55.7 | 216.0 | 1.4 | | 22.5 | 45 | 2809 | 05 30 31 |
| 05 31 30 | AT2018 | 17 44 22 | 54.9 | 216.9 | 1.5 | | 22.9 | -15 | 2809 | No stop |
| 05 34 30 | --- | 17 47 23 | 54.6 | 218.0 | 1.5 | | 23.5 | 165 | 2832 | 05 31 31 |
| 05 34 30 | J1619+2247 | 17 47 23 | 55.4 | 217.2 | 1.5 | | 23.2 | -15 | 2832 | No stop |
| 05 35 30 | --- | 17 48 23 | 55.3 | 217.5 | 1.5 | | 23.4 | 45 | 2840 | 05 34 31 |
| 05 35 30 | AT2018 | 17 48 23 | 54.5 | 218.4 | 1.5 | | 23.7 | -15 | 2840 | No stop |
| 05 37 30 | --- | 17 50 23 | 54.3 | 219.1 | 1.6 | | 24.1 | 105 | 2855 | 05 35 31 |
| 05 37 30 | VLA2 | 17 50 23 | 54.5 | 218.9 | 1.5 | | 24.0 | -9 | 2855 | No stop |
| 05 38 30 | --- | 17 51 24 | 54.4 | 219.2 | 1.6 | | 24.2 | 51 | 2863 | 05 37 31 |
| 05 39 00 | J1619+2247 | 17 51 54 | 55.0 | 218.8 | 1.5 | | 24.1 | 16 | 2863 | 05 39 00 |
| 05 40 00 | --- | 17 52 54 | 54.9 | 219.2 | 1.5 | | 24.3 | 60 | 2871 | 05 39 01 |
| 05 40 00 | AT2018 | 17 52 54 | 54.1 | 220.0 | 1.6 | | 24.6 | -15 | 2871 | No stop |
| 05 43 00 | --- | 17 55 54 | 53.8 | 221.1 | 1.7 | | 25.2 | 165 | 2894 | 05 40 01 |
| 05 43 00 | J1619+2247 | 17 55 54 | 54.6 | 220.3 | 1.6 | | 24.9 | -15 | 2894 | No stop |
| 05 44 00 | --- | 17 56 55 | 54.5 | 220.7 | 1.6 | | 25.1 | 45 | 2901 | 05 43 01 |
| 05 44 00 | AT2018 | 17 56 55 | 53.7 | 221.4 | 1.7 | | 25.4 | -15 | 2901 | No stop |
| 05 47 00 | --- | 17 59 55 | 53.4 | 222.5 | 1.7 | | 26.0 | 165 | 2924 | 05 44 01 |
| 05 47 00 | J1619+2247 | 17 59 55 | 54.2 | 221.7 | 1.7 | | 25.7 | -15 | 2924 | No stop |
| 05 48 00 | --- | 18 00 55 | 54.1 | 222.1 | 1.7 | | 25.9 | 45 | 2932 | 05 47 01 |

Schedule for TORUN (Code Tr ) Page 17

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | LST | Start / Stop<br>EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 05 48 30 | VLA1 | 18 01 25 | 53.2 | 223.1 | 1.7 | | 26.3 | 14 | 2932 | 05 48 30 |
| 05 50 30 | --- | 18 03 26 | 53.0 | 223.8 | 1.8 | | 26.7 | 120 | 2947 | 05 48 31 |
| 05 50 30 | J1619+2247 | 18 03 26 | 53.9 | 223.0 | 1.7 | | 26.3 | -15 | 2947 | No stop |
| 05 51 30 | --- | 18 04 26 | 53.8 | 223.3 | 1.7 | | 26.5 | 45 | 2955 | 05 50 31 |
| 05 51 30 | AT2018 | 18 04 26 | 53.0 | 224.0 | 1.8 | | 26.8 | -16 | 2955 | No stop |
| 05 54 30 | --- | 18 07 26 | 52.6 | 225.1 | 1.8 | | 27.3 | 164 | 2978 | 05 51 31 |
| 05 54 30 | J1619+2247 | 18 07 26 | 53.4 | 224.4 | 1.8 | | 27.1 | -15 | 2978 | No stop |
| 05 55 30 | --- | 18 08 26 | 53.3 | 224.7 | 1.8 | | 27.3 | 45 | 2986 | 05 54 31 |
| 05 55 30 | AT2018 | 18 08 26 | 52.5 | 225.4 | 1.9 | | 27.5 | -16 | 2986 | No stop |
| 05 57 30 | --- | 18 10 27 | 52.3 | 226.1 | 1.9 | | 27.9 | 104 | 3001 | 05 55 31 |
| 05 57 30 | VLA2 | 18 10 27 | 52.4 | 225.9 | 1.9 | | 27.8 | -9 | 3001 | No stop |
| 05 58 30 | --- | 18 11 27 | 52.3 | 226.2 | 1.9 | | 27.9 | 51 | 3009 | 05 57 31 |
| 05 59 00 | J1619+2247 | 18 11 57 | 53.0 | 225.9 | 1.9 | | 27.9 | 15 | 3009 | 05 59 00 |
| 06 00 00 | --- | 18 12 57 | 52.9 | 226.2 | 1.9 | | 28.1 | 60 | 3017 | 05 59 01 |
| 06 00 00 | AT2018 | 18 12 57 | 52.0 | 226.9 | 1.9 | | 28.3 | -16 | 3017 | No stop |
| 06 03 00 | --- | 18 15 58 | 51.7 | 227.9 | 2.0 | | 28.8 | 164 | 3040 | 06 00 01 |
| 06 03 00 | J1619+2247 | 18 15 58 | 52.5 | 227.3 | 1.9 | | 28.6 | -15 | 3040 | No stop |
| 06 04 00 | --- | 18 16 58 | 52.4 | 227.6 | 1.9 | | 28.7 | 45 | 3047 | 06 03 01 |
| 06 04 00 | AT2018 | 18 16 58 | 51.6 | 228.2 | 2.0 | | 28.9 | -16 | 3047 | No stop |
| 06 07 00 | --- | 18 19 58 | 51.3 | 229.2 | 2.1 | | 29.4 | 164 | 3071 | 06 04 01 |
| 06 07 00 | J1619+2247 | 18 19 58 | 52.1 | 228.6 | 2.0 | | 29.2 | -15 | 3071 | No stop |
| 06 08 00 | --- | 18 20 58 | 52.0 | 228.9 | 2.0 | | 29.4 | 45 | 3078 | 06 07 01 |
| 06 08 30 | VLA1 | 18 21 29 | 51.1 | 229.8 | 2.1 | | 29.7 | 14 | 3078 | 06 08 30 |
| 06 10 30 | --- | 18 23 29 | 50.8 | 230.4 | 2.1 | | 30.0 | 120 | 3094 | 06 08 31 |
| 06 10 30 | J1619+2247 | 18 23 29 | 51.7 | 229.7 | 2.1 | | 29.8 | -16 | 3094 | No stop |
| 06 11 30 | --- | 18 24 29 | 51.6 | 230.0 | 2.1 | | 29.9 | 44 | 3101 | 06 10 31 |
| 06 11 30 | AT2018 | 18 24 29 | 50.7 | 230.7 | 2.1 | | 30.1 | -16 | 3101 | No stop |
| 06 14 30 | --- | 18 27 30 | 50.4 | 231.6 | 2.2 | | 30.6 | 164 | 3124 | 06 11 31 |
| 06 14 30 | J1619+2247 | 18 27 30 | 51.2 | 231.0 | 2.1 | | 30.4 | -15 | 3124 | No stop |
| 06 15 30 | --- | 18 28 30 | 51.1 | 231.3 | 2.1 | | 30.6 | 45 | 3132 | 06 14 31 |

Schedule for TORUN (Code Tr ) Page 18

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 06 15 30 | AT2018 | 18 28 30 | 50.3 | 231.9 | 2.2 | | 30.7 | -16 | 3132 | No stop |
| 06 17 30 | --- | 18 30 30 | 50.0 | 232.5 | 2.2 | | 31.0 | 104 | 3147 | 06 15 31 |
| 06 17 30 | VLA2 | 18 30 30 | 50.1 | 232.4 | 2.2 | | 30.9 | -9 | 3147 | No stop |
| 06 18 30 | --- | 18 31 30 | 50.0 | 232.7 | 2.2 | | 31.1 | 51 | 3155 | 06 17 31 |
| 06 19 00 | J1619+2247 | 18 32 00 | 50.7 | 232.4 | 2.2 | | 31.1 | 15 | 3155 | 06 19 00 |
| 06 20 00 | --- | 18 33 00 | 50.6 | 232.7 | 2.2 | | 31.2 | 60 | 3163 | 06 19 01 |
| 06 20 00 | AT2018 | 18 33 00 | 49.7 | 233.3 | 2.3 | | 31.3 | -16 | 3163 | No stop |
| 06 23 00 | --- | 18 36 01 | 49.4 | 234.2 | 2.3 | | 31.7 | 164 | 3186 | 06 20 01 |
| 06 23 00 | J1619+2247 | 18 36 01 | 50.2 | 233.7 | 2.3 | | 31.6 | -15 | 3186 | No stop |
| 06 24 00 | --- | 18 37 01 | 50.1 | 234.0 | 2.3 | | 31.8 | 45 | 3194 | 06 23 01 |
| 06 24 00 | AT2018 | 18 37 01 | 49.2 | 234.5 | 2.3 | | 31.9 | -16 | 3194 | No stop |
| 06 27 00 | --- | 18 40 02 | 48.9 | 235.4 | 2.4 | | 32.3 | 164 | 3217 | 06 24 01 |
| 06 27 00 | J1619+2247 | 18 40 02 | 49.7 | 234.9 | 2.3 | | 32.2 | -15 | 3217 | No stop |
| 06 28 00 | --- | 18 41 02 | 49.6 | 235.2 | 2.3 | | 32.3 | 45 | 3224 | 06 27 01 |
| 06 28 30 | VLA1 | 18 41 32 | 48.7 | 236.0 | 2.4 | | 32.5 | 14 | 3224 | 06 28 30 |
| 06 30 30 | --- | 18 43 32 | 48.4 | 236.6 | 2.5 | | 32.8 | 120 | 3240 | 06 28 31 |
| 06 30 30 | J1619+2247 | 18 43 32 | 49.3 | 235.9 | 2.4 | | 32.6 | -16 | 3240 | No stop |
| 06 31 30 | --- | 18 44 32 | 49.2 | 236.2 | 2.4 | | 32.8 | 44 | 3247 | 06 30 31 |
| 06 31 30 | AT2018 | 18 44 32 | 48.3 | 236.7 | 2.5 | | 32.9 | -16 | 3247 | No stop |
| 06 34 30 | --- | 18 47 33 | 47.9 | 237.6 | 2.5 | | 33.2 | 164 | 3271 | 06 31 31 |
| 06 34 30 | J1619+2247 | 18 47 33 | 48.8 | 237.1 | 2.5 | | 33.1 | -16 | 3271 | No stop |
| 06 35 30 | --- | 18 48 33 | 48.7 | 237.4 | 2.5 | | 33.3 | 44 | 3278 | 06 34 31 |
| 06 35 30 | AT2018 | 18 48 33 | 47.8 | 237.9 | 2.5 | | 33.3 | -16 | 3278 | No stop |
| 06 37 30 | --- | 18 50 33 | 47.5 | 238.5 | 2.6 | | 33.6 | 104 | 3294 | 06 35 31 |
| 06 37 30 | VLA2 | 18 50 33 | 47.7 | 238.3 | 2.6 | | 33.5 | -9 | 3294 | No stop |
| 06 38 30 | --- | 18 51 33 | 47.5 | 238.6 | 2.6 | | 33.6 | 51 | 3301 | 06 37 31 |
| 06 39 00 | J1619+2247 | 18 52 04 | 48.2 | 238.4 | 2.5 | | 33.7 | 15 | 3301 | 06 39 00 |
| 06 40 00 | --- | 18 53 04 | 48.1 | 238.7 | 2.6 | | 33.8 | 60 | 3309 | 06 39 01 |
| 06 40 00 | AT2018 | 18 53 04 | 47.2 | 239.2 | 2.6 | | 33.9 | -16 | 3309 | No stop |
| 06 43 00 | --- | 18 56 04 | 46.8 | 240.0 | 2.7 | | 34.2 | 164 | 3332 | 06 40 01 |

Schedule for TORUN (Code Tr ) Page 19

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | LST | Start / Stop<br>EL | <br>AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 06 43 00 | J1619+2247 | 18 56 04 | 47.7 | 239.6 | 2.6 | | 34.2 | -16 | 3332 | No stop |
| 06 44 00 | --- | 18 57 04 | 47.6 | 239.9 | 2.6 | | 34.3 | 44 | 3340 | 06 43 01 |
| 06 44 00 | AT2018 | 18 57 04 | 46.7 | 240.3 | 2.7 | | 34.3 | -16 | 3340 | No stop |
| 06 47 00 | --- | 19 00 05 | 46.3 | 241.2 | 2.7 | | 34.6 | 164 | 3363 | 06 44 01 |
| 06 47 00 | J1619+2247 | 19 00 05 | 47.2 | 240.7 | 2.7 | | 34.6 | -16 | 3363 | No stop |
| 06 48 00 | --- | 19 01 05 | 47.0 | 241.0 | 2.7 | | 34.7 | 44 | 3371 | 06 47 01 |
| 06 48 30 | VLA1 | 19 01 35 | 46.1 | 241.7 | 2.8 | | 34.8 | 14 | 3371 | 06 48 30 |
| 06 50 30 | --- | 19 03 35 | 45.8 | 242.2 | 2.8 | | 35.0 | 120 | 3386 | 06 48 31 |
| 06 50 30 | J1619+2247 | 19 03 35 | 46.7 | 241.7 | 2.7 | | 35.0 | -16 | 3386 | No stop |
| 06 51 30 | --- | 19 04 36 | 46.6 | 242.0 | 2.7 | | 35.1 | 44 | 3394 | 06 50 31 |
| 06 51 30 | AT2018 | 19 04 36 | 45.7 | 242.4 | 2.8 | | 35.1 | -16 | 3394 | No stop |
| 06 54 30 | --- | 19 07 36 | 45.3 | 243.2 | 2.8 | | 35.4 | 164 | 3417 | 06 51 31 |
| 06 54 30 | J1619+2247 | 19 07 36 | 46.2 | 242.8 | 2.8 | | 35.4 | -16 | 3417 | No stop |
| 06 55 30 | --- | 19 08 36 | 46.0 | 243.0 | 2.8 | | 35.5 | 44 | 3424 | 06 54 31 |
| 06 55 30 | AT2018 | 19 08 36 | 45.2 | 243.5 | 2.9 | | 35.5 | -16 | 3424 | No stop |
| 06 57 30 | --- | 19 10 37 | 44.9 | 244.0 | 2.9 | | 35.7 | 104 | 3440 | 06 55 31 |
| 06 57 30 | VLA2 | 19 10 37 | 45.0 | 243.9 | 2.9 | | 35.6 | -9 | 3440 | No stop |
| 06 58 30 | --- | 19 11 37 | 44.9 | 244.1 | 2.9 | | 35.7 | 51 | 3447 | 06 57 31 |
| 06 59 00 | J1619+2247 | 19 12 07 | 45.6 | 244.0 | 2.9 | | 35.8 | 15 | 3447 | 06 59 00 |
| 07 00 00 | --- | 19 13 07 | 45.4 | 244.3 | 2.9 | | 35.9 | 60 | 3455 | 06 59 01 |
| 07 00 00 | AT2018 | 19 13 07 | 44.6 | 244.7 | 2.9 | | 35.9 | -16 | 3455 | No stop |
| 07 03 00 | --- | 19 16 07 | 44.2 | 245.5 | 3.0 | | 36.2 | 164 | 3478 | 07 00 01 |
| 07 03 00 | J1619+2247 | 19 16 07 | 45.0 | 245.1 | 2.9 | | 36.2 | -16 | 3478 | No stop |
| 07 04 00 | --- | 19 17 08 | 44.9 | 245.3 | 3.0 | | 36.3 | 44 | 3486 | 07 03 01 |
| 07 04 00 | AT2018 | 19 17 08 | 44.0 | 245.7 | 3.0 | | 36.2 | -16 | 3486 | No stop |
| 07 07 00 | --- | 19 20 08 | 43.6 | 246.5 | 3.1 | | 36.5 | 164 | 3509 | 07 04 01 |
| 07 07 00 | J1619+2247 | 19 20 08 | 44.5 | 246.1 | 3.0 | | 36.5 | -16 | 3509 | No stop |
| 07 08 00 | --- | 19 21 08 | 44.3 | 246.4 | 3.0 | | 36.6 | 44 | 3517 | 07 07 01 |
| 07 08 30 | VLA1 | 19 21 38 | 43.4 | 247.0 | 3.1 | | 36.7 | 14 | 3517 | 07 08 30 |
| 07 10 30 | --- | 19 23 39 | 43.1 | 247.5 | 3.1 | | 36.8 | 120 | 3532 | 07 08 31 |

Schedule for TORUN (Code Tr ) Page 20

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 07 10 30 | J1619+2247 | 19 23 39 | 44.0 | 247.0 | 3.1 | | 36.8 | -16 | 3532 | No stop |
| 07 11 30 | --- | 19 24 39 | 43.9 | 247.3 | 3.1 | | 36.9 | 44 | 3540 | 07 10 31 |
| 07 11 30 | AT2018 | 19 24 39 | 43.0 | 247.6 | 3.1 | | 36.9 | -16 | 3540 | No stop |
| 07 14 30 | --- | 19 27 39 | 42.6 | 248.4 | 3.2 | | 37.1 | 164 | 3563 | 07 11 31 |
| 07 14 30 | J1619+2247 | 19 27 39 | 43.4 | 248.0 | 3.1 | | 37.1 | -16 | 3563 | No stop |
| 07 15 30 | --- | 19 28 40 | 43.3 | 248.3 | 3.1 | | 37.2 | 44 | 3571 | 07 14 31 |
| 07 15 30 | AT2018 | 19 28 40 | 42.4 | 248.7 | 3.2 | | 37.2 | -16 | 3571 | No stop |
| 07 17 30 | --- | 19 30 40 | 42.1 | 249.2 | 3.2 | | 37.3 | 104 | 3586 | 07 15 31 |
| 07 17 30 | VLA2 | 19 30 40 | 42.3 | 249.0 | 3.2 | | 37.3 | -9 | 3586 | No stop |
| 07 18 30 | --- | 19 31 40 | 42.1 | 249.3 | 3.2 | | 37.4 | 51 | 3594 | 07 17 31 |
| 07 19 00 | J1619+2247 | 19 32 10 | 42.8 | 249.2 | 3.2 | | 37.5 | 15 | 3594 | 07 19 00 |
| 07 20 00 | --- | 19 33 10 | 42.7 | 249.4 | 3.2 | | 37.6 | 60 | 3601 | 07 19 01 |
| ---------- Ef is out for a pointing check ---------- | | | | | | | | | | |
| 07 20 00 | AT2018 | 19 33 10 | 41.8 | 249.8 | 3.3 | | 37.5 | -16 | 3601 | No stop |
| 07 23 00 | --- | 19 36 11 | 41.4 | 250.5 | 3.3 | | 37.7 | 164 | 3624 | 07 20 01 |
| 07 23 00 | J1619+2247 | 19 36 11 | 42.2 | 250.2 | 3.3 | | 37.8 | -16 | 3624 | No stop |
| 07 24 00 | --- | 19 37 11 | 42.1 | 250.4 | 3.3 | | 37.8 | 44 | 3632 | 07 23 01 |
| 07 24 00 | AT2018 | 19 37 11 | 41.2 | 250.8 | 3.3 | | 37.8 | -16 | 3632 | No stop |
| 07 27 00 | --- | 19 40 11 | 40.8 | 251.5 | 3.4 | | 38.0 | 164 | 3655 | 07 24 01 |
| 07 27 00 | J1619+2247 | 19 40 11 | 41.7 | 251.1 | 3.3 | | 38.0 | -16 | 3655 | No stop |
| 07 28 00 | --- | 19 41 12 | 41.5 | 251.4 | 3.4 | | 38.1 | 44 | 3663 | 07 27 01 |
| ---------- Ef is in ---------- | | | | | | | | | | |
| 07 28 30 | VLA1 | 19 41 42 | 40.5 | 251.9 | 3.4 | | 38.1 | 14 | 3663 | 07 28 30 |
| 07 30 30 | --- | 19 43 42 | 40.3 | 252.4 | 3.5 | | 38.2 | 120 | 3678 | 07 28 31 |
| 07 30 30 | J1619+2247 | 19 43 42 | 41.2 | 252.0 | 3.4 | | 38.3 | -16 | 3678 | No stop |
| 07 31 30 | --- | 19 44 42 | 41.0 | 252.2 | 3.4 | | 38.3 | 44 | 3686 | 07 30 31 |
| 07 31 30 | AT2018 | 19 44 42 | 40.2 | 252.6 | 3.5 | | 38.2 | -16 | 3686 | No stop |
| 07 34 30 | --- | 19 47 43 | 39.7 | 253.3 | 3.5 | | 38.4 | 164 | 3709 | 07 31 31 |
| 07 34 30 | J1619+2247 | 19 47 43 | 40.6 | 252.9 | 3.5 | | 38.5 | -16 | 3709 | No stop |
| 07 35 30 | --- | 19 48 43 | 40.5 | 253.2 | 3.5 | | 38.6 | 44 | 3717 | 07 34 31 |

Schedule for TORUN (Code Tr ) Page 21

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 07 35 30 | AT2018 | 19 48 43 | 39.6 | 253.5 | 3.5 | | 38.5 | -16 | 3717 | No stop |
| 07 37 30 | --- | 19 50 43 | 39.3 | 254.0 | 3.6 | | 38.6 | 104 | 3732 | 07 35 31 |
| 07 37 30 | VLA2 | 19 50 43 | 39.4 | 253.9 | 3.6 | | 38.6 | -9 | 3732 | No stop |
| 07 38 30 | --- | 19 51 43 | 39.3 | 254.1 | 3.6 | | 38.6 | 51 | 3740 | 07 37 31 |
| 07 39 00 | J1619+2247 | 19 52 13 | 40.0 | 254.0 | 3.5 | | 38.8 | 15 | 3740 | 07 39 00 |
| 07 40 00 | --- | 19 53 14 | 39.8 | 254.2 | 3.6 | | 38.8 | 60 | 3747 | 07 39 01 |
| 07 40 00 | AT2018 | 19 53 14 | 38.9 | 254.6 | 3.6 | | 38.7 | -16 | 3747 | No stop |
| 07 43 00 | --- | 19 56 14 | 38.5 | 255.3 | 3.7 | | 38.9 | 164 | 3771 | 07 40 01 |
| 07 43 00 | J1619+2247 | 19 56 14 | 39.4 | 254.9 | 3.6 | | 39.0 | -16 | 3771 | No stop |
| 07 44 00 | --- | 19 57 14 | 39.2 | 255.2 | 3.6 | | 39.0 | 44 | 3778 | 07 43 01 |
| 07 44 00 | AT2018 | 19 57 14 | 38.3 | 255.5 | 3.7 | | 38.9 | -16 | 3778 | No stop |
| 07 47 00 | --- | 20 00 15 | 37.9 | 256.2 | 3.7 | | 39.0 | 164 | 3801 | 07 44 01 |
| 07 47 00 | J1619+2247 | 20 00 15 | 38.8 | 255.9 | 3.7 | | 39.2 | -16 | 3801 | No stop |
| 07 48 00 | --- | 20 01 15 | 38.6 | 256.1 | 3.7 | | 39.2 | 44 | 3809 | 07 47 01 |
| 07 48 30 | VLA1 | 20 01 45 | 37.6 | 256.6 | 3.8 | | 39.1 | 14 | 3809 | 07 48 30 |
| 07 50 30 | --- | 20 03 45 | 37.4 | 257.1 | 3.8 | | 39.2 | 120 | 3824 | 07 48 31 |
| 07 50 30 | J1619+2247 | 20 03 45 | 38.3 | 256.7 | 3.7 | | 39.3 | -16 | 3824 | No stop |
| 07 51 30 | --- | 20 04 45 | 38.1 | 256.9 | 3.7 | | 39.4 | 44 | 3832 | 07 50 31 |
| 07 51 30 | AT2018 | 20 04 45 | 37.2 | 257.2 | 3.8 | | 39.2 | -16 | 3832 | No stop |
| 07 54 30 | --- | 20 07 46 | 36.8 | 257.9 | 3.8 | | 39.4 | 164 | 3855 | 07 51 31 |
| 07 54 30 | J1619+2247 | 20 07 46 | 37.7 | 257.6 | 3.8 | | 39.5 | -16 | 3855 | No stop |
| 07 55 30 | --- | 20 08 46 | 37.5 | 257.8 | 3.8 | | 39.5 | 44 | 3863 | 07 54 31 |
| 07 55 30 | AT2018 | 20 08 46 | 36.7 | 258.1 | 3.9 | | 39.4 | -16 | 3863 | No stop |
| 07 57 30 | --- | 20 10 46 | 36.4 | 258.6 | 3.9 | | 39.5 | 104 | 3878 | 07 55 31 |
| 07 57 30 | VLA2 | 20 10 46 | 36.5 | 258.4 | 3.9 | | 39.5 | -9 | 3878 | No stop |
| 07 58 30 | --- | 20 11 47 | 36.4 | 258.7 | 3.9 | | 39.5 | 51 | 3886 | 07 57 31 |
| 07 59 00 | J1619+2247 | 20 12 17 | 37.0 | 258.6 | 3.9 | | 39.7 | 15 | 3886 | 07 59 00 |
| 08 00 00 | --- | 20 13 17 | 36.9 | 258.8 | 3.9 | | 39.7 | 60 | 3894 | 07 59 01 |
| 08 00 00 | AT2018 | 20 13 17 | 36.0 | 259.1 | 3.9 | | 39.6 | -16 | 3894 | No stop |
| 08 03 00 | --- | 20 16 17 | 35.6 | 259.8 | 4.0 | | 39.7 | 164 | 3917 | 08 00 01 |

Schedule for TORUN (Code Tr ) Page 22

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 08 03 00 | J1619+2247 | 20 16 17 | 36.4 | 259.5 | 3.9 | | 39.8 | -16 | 3917 | No stop |
| 08 04 00 | --- | 20 17 18 | 36.3 | 259.7 | 4.0 | | 39.8 | 44 | 3924 | 08 03 01 |
| 08 04 00 | AT2018 | 20 17 18 | 35.4 | 260.0 | 4.0 | | 39.7 | -16 | 3924 | No stop |
| 08 07 00 | --- | 20 20 18 | 35.0 | 260.6 | 4.1 | | 39.8 | 164 | 3947 | 08 04 01 |
| 08 07 00 | J1619+2247 | 20 20 18 | 35.8 | 260.4 | 4.0 | | 39.9 | -16 | 3947 | No stop |
| 08 08 00 | --- | 20 21 18 | 35.7 | 260.6 | 4.0 | | 40.0 | 44 | 3955 | 08 07 01 |
| 08 08 30 | VLA1 | 20 21 48 | 34.7 | 261.0 | 4.1 | | 39.8 | 14 | 3955 | 08 08 30 |
| 08 10 30 | --- | 20 23 49 | 34.4 | 261.5 | 4.1 | | 39.9 | 120 | 3971 | 08 08 31 |
| 08 10 30 | J1619+2247 | 20 23 49 | 35.3 | 261.1 | 4.1 | | 40.0 | -16 | 3971 | No stop |
| 08 11 30 | --- | 20 24 49 | 35.2 | 261.3 | 4.1 | | 40.1 | 44 | 3978 | 08 10 31 |
| 08 11 30 | AT2018 | 20 24 49 | 34.3 | 261.6 | 4.1 | | 39.9 | -16 | 3978 | No stop |
| 08 14 30 | --- | 20 27 49 | 33.8 | 262.3 | 4.2 | | 40.0 | 164 | 4001 | 08 11 31 |
| 08 14 30 | J1619+2247 | 20 27 49 | 34.7 | 262.0 | 4.1 | | 40.1 | -16 | 4001 | No stop |
| 08 15 30 | --- | 20 28 49 | 34.6 | 262.2 | 4.1 | | 40.2 | 44 | 4009 | 08 14 31 |
| 08 15 30 | AT2018 | 20 28 49 | 33.7 | 262.5 | 4.2 | | 40.0 | -16 | 4009 | No stop |
| 08 17 30 | --- | 20 30 50 | 33.4 | 262.9 | 4.2 | | 40.1 | 104 | 4024 | 08 15 31 |
| 08 17 30 | VLA2 | 20 30 50 | 33.5 | 262.8 | 4.2 | | 40.1 | -9 | 4024 | No stop |
| 08 18 30 | --- | 20 31 50 | 33.4 | 263.0 | 4.2 | | 40.1 | 51 | 4032 | 08 17 31 |
| 08 19 00 | J1619+2247 | 20 32 20 | 34.1 | 262.9 | 4.2 | | 40.3 | 15 | 4032 | 08 19 00 |
| 08 20 00 | --- | 20 33 20 | 33.9 | 263.2 | 4.2 | | 40.3 | 60 | 4040 | 08 19 01 |
| 08 20 00 | AT2018 | 20 33 20 | 33.0 | 263.4 | 4.3 | | 40.1 | -16 | 4040 | No stop |
| 08 23 00 | --- | 20 36 21 | 32.6 | 264.1 | 4.3 | | 40.2 | 164 | 4063 | 08 20 01 |
| 08 23 00 | J1619+2247 | 20 36 21 | 33.5 | 263.8 | 4.3 | | 40.3 | -16 | 4063 | No stop |
| 08 24 00 | --- | 20 37 21 | 33.3 | 264.0 | 4.3 | | 40.4 | 44 | 4071 | 08 23 01 |
| 08 24 00 | AT2018 | 20 37 21 | 32.4 | 264.3 | 4.3 | | 40.2 | -16 | 4071 | No stop |
| 08 27 00 | --- | 20 40 21 | 32.0 | 264.9 | 4.4 | | 40.2 | 164 | 4094 | 08 24 01 |
| 08 27 00 | J1619+2247 | 20 40 21 | 32.9 | 264.6 | 4.3 | | 40.4 | -16 | 4094 | No stop |
| 08 28 00 | --- | 20 41 21 | 32.7 | 264.8 | 4.4 | | 40.4 | 44 | 4101 | 08 27 01 |
| 08 28 30 | VLA1 | 20 41 52 | 31.7 | 265.3 | 4.4 | | 40.3 | 14 | 4101 | 08 28 30 |
| 08 30 30 | --- | 20 43 52 | 31.4 | 265.7 | 4.5 | | 40.3 | 120 | 4117 | 08 28 31 |

Schedule for TORUN (Code Tr ) Page 23

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | LST | Start / Stop<br>EL | <br>AZ | <br>HA | <br>UP | <br>ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 08 30 30 | J1619+2247 | 20 43 52 | 32.3 | 265.4 | 4.4 | | 40.5 | -16 | 4117 | No stop |
| 08 31 30 | --- | 20 44 52 | 32.2 | 265.6 | 4.4 | | 40.5 | 44 | 4124 | 08 30 31 |
| 08 31 30 | AT2018 | 20 44 52 | 31.3 | 265.8 | 4.5 | | 40.3 | -16 | 4124 | No stop |
| 08 34 30 | --- | 20 47 53 | 30.8 | 266.5 | 4.5 | | 40.3 | 164 | 4147 | 08 31 31 |
| 08 34 30 | J1619+2247 | 20 47 53 | 31.7 | 266.2 | 4.5 | | 40.5 | -16 | 4147 | No stop |
| 08 35 30 | --- | 20 48 53 | 31.6 | 266.4 | 4.5 | | 40.5 | 44 | 4155 | 08 34 31 |
| 08 35 30 | AT2018 | 20 48 53 | 30.7 | 266.7 | 4.5 | | 40.4 | -16 | 4155 | No stop |
| 08 37 30 | --- | 20 50 53 | 30.4 | 267.1 | 4.6 | | 40.4 | 104 | 4171 | 08 35 31 |
| 08 37 30 | VLA2 | 20 50 53 | 30.5 | 267.0 | 4.6 | | 40.4 | -9 | 4171 | No stop |
| 08 38 30 | --- | 20 51 53 | 30.4 | 267.2 | 4.6 | | 40.4 | 51 | 4178 | 08 37 31 |
| 08 39 00 | J1619+2247 | 20 52 23 | 31.1 | 267.1 | 4.5 | | 40.6 | 15 | 4178 | 08 39 00 |
| 08 40 00 | --- | 20 53 23 | 30.9 | 267.3 | 4.6 | | 40.6 | 60 | 4186 | 08 39 01 |
| 08 40 00 | AT2018 | 20 53 23 | 30.0 | 267.6 | 4.6 | | 40.4 | -16 | 4186 | No stop |
| 08 43 00 | --- | 20 56 24 | 29.6 | 268.2 | 4.7 | | 40.4 | 164 | 4209 | 08 40 01 |
| 08 43 00 | J1619+2247 | 20 56 24 | 30.5 | 267.9 | 4.6 | | 40.6 | -16 | 4209 | No stop |
| 08 44 00 | --- | 20 57 24 | 30.3 | 268.1 | 4.6 | | 40.6 | 44 | 4217 | 08 43 01 |
| 08 44 00 | AT2018 | 20 57 24 | 29.4 | 268.4 | 4.7 | | 40.4 | -16 | 4217 | No stop |
| 08 47 00 | --- | 21 00 25 | 29.0 | 269.0 | 4.7 | | 40.4 | 164 | 4240 | 08 44 01 |
| 08 47 00 | J1619+2247 | 21 00 25 | 29.9 | 268.7 | 4.7 | | 40.6 | -16 | 4240 | No stop |
| 08 48 00 | --- | 21 01 25 | 29.7 | 269.0 | 4.7 | | 40.6 | 44 | 4247 | 08 47 01 |
| 08 48 30 | VLA1 | 21 01 55 | 28.7 | 269.4 | 4.8 | | 40.4 | 14 | 4247 | 08 48 30 |
| 08 50 30 | --- | 21 03 55 | 28.4 | 269.8 | 4.8 | | 40.4 | 120 | 4263 | 08 48 31 |
| 08 50 30 | J1619+2247 | 21 03 55 | 29.3 | 269.5 | 4.7 | | 40.6 | -16 | 4263 | No stop |
| 08 51 30 | --- | 21 04 55 | 29.2 | 269.7 | 4.7 | | 40.6 | 44 | 4271 | 08 50 31 |
| 08 51 30 | AT2018 | 21 04 55 | 28.3 | 269.9 | 4.8 | | 40.4 | -16 | 4271 | No stop |
| 08 54 30 | --- | 21 07 56 | 27.8 | 270.5 | 4.9 | | 40.4 | 164 | 4294 | 08 51 31 |
| 08 54 30 | J1619+2247 | 21 07 56 | 28.7 | 270.3 | 4.8 | | 40.6 | -16 | 4294 | No stop |
| 08 55 30 | --- | 21 08 56 | 28.6 | 270.5 | 4.8 | | 40.6 | 44 | 4301 | 08 54 31 |
| 08 55 30 | AT2018 | 21 08 56 | 27.7 | 270.7 | 4.9 | | 40.4 | -16 | 4301 | No stop |
| 08 57 30 | --- | 21 10 56 | 27.4 | 271.1 | 4.9 | | 40.4 | 104 | 4317 | 08 55 31 |

Schedule for TORUN (Code Tr ) Page 24

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 08 57 30 | VLA2 | 21 10 56 | 27.5 | 271.0 | 4.9 | | 40.4 | -9 | 4317 | No stop |
| 08 58 30 | --- | 21 11 56 | 27.4 | 271.2 | 4.9 | | 40.4 | 51 | 4324 | 08 57 31 |
| 08 59 00 | J1619+2247 | 21 12 27 | 28.0 | 271.2 | 4.9 | | 40.6 | 15 | 4324 | 08 59 00 |
| 09 00 00 | --- | 21 13 27 | 27.9 | 271.4 | 4.9 | | 40.6 | 60 | 4332 | 08 59 01 |
| 09 00 00 | AT2018 | 21 13 27 | 27.0 | 271.6 | 4.9 | | 40.4 | -16 | 4332 | No stop |
| 09 03 00 | --- | 21 16 27 | 26.6 | 272.2 | 5.0 | | 40.4 | 164 | 4355 | 09 00 01 |
| 09 03 00 | J1619+2247 | 21 16 27 | 27.4 | 271.9 | 4.9 | | 40.6 | -16 | 4355 | No stop |
| 09 04 00 | --- | 21 17 27 | 27.3 | 272.1 | 5.0 | | 40.6 | 44 | 4363 | 09 03 01 |
| 09 04 00 | AT2018 | 21 17 27 | 26.4 | 272.4 | 5.0 | | 40.4 | -16 | 4363 | No stop |
| 09 07 00 | --- | 21 20 28 | 26.0 | 273.0 | 5.1 | | 40.4 | 164 | 4386 | 09 04 01 |
| 09 07 00 | J1619+2247 | 21 20 28 | 26.8 | 272.7 | 5.0 | | 40.6 | -16 | 4386 | No stop |
| 09 08 00 | --- | 21 21 28 | 26.7 | 272.9 | 5.0 | | 40.6 | 44 | 4394 | 09 07 01 |
| 09 08 30 | VLA1 | 21 21 58 | 25.7 | 273.3 | 5.1 | | 40.4 | 14 | 4394 | 09 08 30 |
| 09 10 30 | --- | 21 23 58 | 25.4 | 273.7 | 5.1 | | 40.3 | 120 | 4409 | 09 08 31 |
| 09 10 30 | J1619+2247 | 21 23 58 | 26.3 | 273.4 | 5.1 | | 40.5 | -16 | 4409 | No stop |
| 09 11 30 | --- | 21 24 59 | 26.2 | 273.6 | 5.1 | | 40.5 | 44 | 4417 | 09 10 31 |
| 09 11 30 | AT2018 | 21 24 59 | 25.3 | 273.9 | 5.1 | | 40.3 | -16 | 4417 | No stop |
| 09 14 30 | --- | 21 27 59 | 24.8 | 274.5 | 5.2 | | 40.3 | 164 | 4440 | 09 11 31 |
| 09 14 30 | J1619+2247 | 21 27 59 | 25.7 | 274.2 | 5.1 | | 40.5 | -16 | 4440 | No stop |
| 09 15 30 | --- | 21 28 59 | 25.6 | 274.4 | 5.1 | | 40.5 | 44 | 4447 | 09 14 31 |
| 09 15 30 | AT2018 | 21 28 59 | 24.7 | 274.7 | 5.2 | | 40.3 | -16 | 4447 | No stop |
| 09 17 30 | --- | 21 31 00 | 24.4 | 275.0 | 5.2 | | 40.3 | 104 | 4463 | 09 15 31 |
| 09 17 30 | VLA2 | 21 31 00 | 24.5 | 274.9 | 5.2 | | 40.3 | -9 | 4463 | No stop |
| 09 18 30 | --- | 21 32 00 | 24.4 | 275.1 | 5.2 | | 40.3 | 51 | 4471 | 09 17 31 |
| 09 19 00 | J1619+2247 | 21 32 30 | 25.0 | 275.1 | 5.2 | | 40.4 | 15 | 4471 | 09 19 00 |
| 09 20 00 | --- | 21 33 30 | 24.9 | 275.3 | 5.2 | | 40.4 | 60 | 4478 | 09 19 01 |
| 09 20 00 | AT2018 | 21 33 30 | 24.0 | 275.5 | 5.3 | | 40.2 | -16 | 4478 | No stop |
| 09 23 00 | --- | 21 36 30 | 23.6 | 276.1 | 5.3 | | 40.2 | 164 | 4501 | 09 20 01 |
| 09 23 00 | J1619+2247 | 21 36 30 | 24.4 | 275.9 | 5.3 | | 40.4 | -16 | 4501 | No stop |
| 09 24 00 | --- | 21 37 31 | 24.3 | 276.1 | 5.3 | | 40.4 | 44 | 4509 | 09 23 01 |

Schedule for TORUN (Code Tr ) Page 25

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 09 24 00 | AT2018 | 21 37 31 | 23.4 | 276.3 | 5.3 | | 40.1 | -16 | 4509 | No stop |
| 09 27 00 | --- | 21 40 31 | 23.0 | 276.9 | 5.4 | | 40.1 | 164 | 4532 | 09 24 01 |
| 09 27 00 | J1619+2247 | 21 40 31 | 23.8 | 276.6 | 5.3 | | 40.3 | -16 | 4532 | No stop |
| 09 28 00 | --- | 21 41 31 | 23.7 | 276.8 | 5.4 | | 40.3 | 44 | 4540 | 09 27 01 |
| 09 28 30 | VLA1 | 21 42 01 | 22.7 | 277.2 | 5.4 | | 40.1 | 14 | 4540 | 09 28 30 |
| 09 30 30 | --- | 21 44 02 | 22.4 | 277.6 | 5.5 | | 40.0 | 120 | 4555 | 09 28 31 |
| 09 30 30 | J1619+2247 | 21 44 02 | 23.3 | 277.3 | 5.4 | | 40.2 | -16 | 4555 | No stop |
| 09 31 30 | --- | 21 45 02 | 23.2 | 277.5 | 5.4 | | 40.2 | 44 | 4563 | 09 30 31 |
| 09 31 30 | AT2018 | 21 45 02 | 22.3 | 277.7 | 5.5 | | 40.0 | -16 | 4563 | No stop |
| 09 34 30 | --- | 21 48 02 | 21.8 | 278.3 | 5.5 | | 39.9 | 164 | 4586 | 09 31 31 |
| 09 34 30 | J1619+2247 | 21 48 02 | 22.7 | 278.1 | 5.5 | | 40.1 | -16 | 4586 | No stop |
| 09 35 30 | --- | 21 49 03 | 22.6 | 278.3 | 5.5 | | 40.1 | 44 | 4594 | 09 34 31 |
| 09 35 30 | AT2018 | 21 49 03 | 21.7 | 278.5 | 5.5 | | 39.9 | -16 | 4594 | No stop |
| 09 37 30 | --- | 21 51 03 | 21.4 | 278.9 | 5.6 | | 39.9 | 104 | 4609 | 09 35 31 |
| 09 37 30 | VLA2 | 21 51 03 | 21.5 | 278.8 | 5.6 | | 39.9 | -9 | 4609 | No stop |
| 09 38 30 | --- | 21 52 03 | 21.4 | 279.0 | 5.6 | | 39.9 | 51 | 4617 | 09 37 31 |
| 09 39 00 | J1619+2247 | 21 52 33 | 22.1 | 278.9 | 5.5 | | 40.0 | 15 | 4617 | 09 39 00 |
| 09 40 00 | --- | 21 53 33 | 21.9 | 279.1 | 5.6 | | 40.0 | 60 | 4624 | 09 39 01 |
| 09 40 00 | AT2018 | 21 53 33 | 21.0 | 279.4 | 5.6 | | 39.8 | -16 | 4624 | No stop |
| 09 43 00 | --- | 21 56 34 | 20.6 | 279.9 | 5.7 | | 39.7 | 164 | 4647 | 09 40 01 |
| 09 43 00 | J1619+2247 | 21 56 34 | 21.5 | 279.7 | 5.6 | | 39.9 | -16 | 4647 | No stop |
| 09 44 00 | --- | 21 57 34 | 21.3 | 279.9 | 5.6 | | 39.9 | 44 | 4655 | 09 43 01 |
| 09 44 00 | AT2018 | 21 57 34 | 20.4 | 280.1 | 5.7 | | 39.7 | -16 | 4655 | No stop |
| 09 47 00 | --- | 22 00 34 | 20.0 | 280.7 | 5.7 | | 39.6 | 164 | 4678 | 09 44 01 |
| 09 47 00 | J1619+2247 | 22 00 34 | 20.9 | 280.5 | 5.7 | | 39.8 | -16 | 4678 | No stop |
| 09 48 00 | --- | 22 01 35 | 20.7 | 280.6 | 5.7 | | 39.8 | 44 | 4686 | 09 47 01 |
| 09 48 30 | VLA1 | 22 02 05 | 19.7 | 281.1 | 5.8 | | 39.5 | 14 | 4686 | 09 48 30 |
| 09 50 30 | --- | 22 04 05 | 19.4 | 281.4 | 5.8 | | 39.5 | 120 | 4701 | 09 48 31 |
| 09 50 30 | J1619+2247 | 22 04 05 | 20.4 | 281.1 | 5.7 | | 39.7 | -16 | 4701 | No stop |
| 09 51 30 | --- | 22 05 05 | 20.2 | 281.3 | 5.8 | | 39.7 | 44 | 4709 | 09 50 31 |

Schedule for TORUN (Code Tr ) Page 26

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 09 51 30 | AT2018 | 22 05 05 | 19.3 | 281.6 | 5.8 | | 39.5 | -16 | 4709 | No stop |
| 09 54 30 | --- | 22 08 06 | 18.9 | 282.1 | 5.9 | | 39.4 | 164 | 4732 | 09 51 31 |
| 09 54 30 | J1619+2247 | 22 08 06 | 19.8 | 281.9 | 5.8 | | 39.6 | -16 | 4732 | No stop |
| 09 55 30 | --- | 22 09 06 | 19.6 | 282.1 | 5.8 | | 39.5 | 44 | 4740 | 09 54 31 |
| 09 55 30 | AT2018 | 22 09 06 | 18.7 | 282.3 | 5.9 | | 39.3 | -16 | 4740 | No stop |
| 09 57 30 | --- | 22 11 06 | 18.4 | 282.7 | 5.9 | | 39.3 | 104 | 4755 | 09 55 31 |
| 09 57 30 | VLA2 | 22 11 06 | 18.6 | 282.6 | 5.9 | | 39.3 | -9 | 4755 | No stop |
| 09 58 30 | --- | 22 12 06 | 18.4 | 282.8 | 5.9 | | 39.3 | 51 | 4763 | 09 57 31 |
| 09 59 00 | J1619+2247 | 22 12 36 | 19.1 | 282.7 | 5.9 | | 39.4 | 15 | 4763 | 09 59 00 |
| 10 00 00 | --- | 22 13 37 | 19.0 | 282.9 | 5.9 | | 39.4 | 60 | 4771 | 09 59 01 |
| 10 00 00 | AT2018 | 22 13 37 | 18.1 | 283.2 | 5.9 | | 39.2 | -16 | 4771 | No stop |
| 10 03 00 | --- | 22 16 37 | 17.6 | 283.7 | 6.0 | | 39.1 | 164 | 4794 | 10 00 01 |
| 10 03 00 | J1619+2247 | 22 16 37 | 18.5 | 283.5 | 5.9 | | 39.3 | -16 | 4794 | No stop |
| 10 04 00 | --- | 22 17 37 | 18.4 | 283.7 | 6.0 | | 39.2 | 44 | 4801 | 10 03 01 |
| 10 04 00 | AT2018 | 22 17 37 | 17.5 | 283.9 | 6.0 | | 39.0 | -16 | 4801 | No stop |
| 10 07 00 | --- | 22 20 38 | 17.0 | 284.5 | 6.1 | | 38.9 | 164 | 4824 | 10 04 01 |
| 10 07 00 | J1619+2247 | 22 20 38 | 17.9 | 284.2 | 6.0 | | 39.1 | -16 | 4824 | No stop |
| 10 08 00 | --- | 22 21 38 | 17.8 | 284.4 | 6.0 | | 39.1 | 44 | 4832 | 10 07 01 |
| 10 08 30 | VLA1 | 22 22 08 | 16.8 | 284.8 | 6.1 | | 38.8 | 14 | 4832 | 10 08 30 |
| 10 10 30 | --- | 22 24 08 | 16.5 | 285.2 | 6.1 | | 38.7 | 120 | 4847 | 10 08 31 |
| 10 10 30 | J1619+2247 | 22 24 08 | 17.4 | 284.9 | 6.1 | | 39.0 | -16 | 4847 | No stop |
| 10 11 30 | --- | 22 25 08 | 17.3 | 285.1 | 6.1 | | 39.0 | 44 | 4855 | 10 10 31 |
| 10 11 30 | AT2018 | 22 25 08 | 16.4 | 285.3 | 6.1 | | 38.7 | -16 | 4855 | No stop |
| 10 14 30 | --- | 22 28 09 | 16.0 | 285.9 | 6.2 | | 38.6 | 164 | 4878 | 10 11 31 |
| 10 14 30 | J1619+2247 | 22 28 09 | 16.8 | 285.7 | 6.1 | | 38.8 | -16 | 4878 | No stop |
| 10 15 30 | --- | 22 29 09 | 16.7 | 285.8 | 6.2 | | 38.8 | 44 | 4886 | 10 14 31 |
| 10 15 30 | AT2018 | 22 29 09 | 15.8 | 286.1 | 6.2 | | 38.5 | -16 | 4886 | No stop |
| 10 17 30 | --- | 22 31 09 | 15.5 | 286.5 | 6.2 | | 38.5 | 104 | 4901 | 10 15 31 |
| 10 17 30 | VLA2 | 22 31 09 | 15.7 | 286.4 | 6.2 | | 38.5 | -9 | 4901 | No stop |
| 10 18 30 | --- | 22 32 10 | 15.5 | 286.6 | 6.2 | | 38.5 | 51 | 4909 | 10 17 31 |

Schedule for TORUN (Code Tr ) Page 27

Revealing the radio structure in AT2018cow

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | LST | Start / Stop<br>EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Thu 7 Mar 2019 Day 66 --- | | | | | | | | | | |
| 10 19 00 | J1619+2247 | 22 32 40 | 16.2 | 286.5 | 6.2 | | 38.6 | 15 | 4909 | 10 19 00 |
| 10 20 00 | --- | 22 33 40 | 16.0 | 286.7 | 6.2 | | 38.6 | 60 | 4917 | 10 19 01 |
| 10 20 00 | AT2018 | 22 33 40 | 15.2 | 287.0 | 6.3 | | 38.3 | -16 | 4917 | No stop |
| 10 23 00 | --- | 22 36 40 | 14.7 | 287.5 | 6.3 | | 38.2 | 164 | 4940 | 10 20 01 |
| 10 23 00 | J1619+2247 | 22 36 40 | 15.6 | 287.3 | 6.3 | | 38.5 | -16 | 4940 | No stop |
| 10 24 00 | --- | 22 37 41 | 15.5 | 287.4 | 6.3 | | 38.4 | 44 | 4947 | 10 23 01 |
| 10 24 00 | AT2018 | 22 37 41 | 14.6 | 287.7 | 6.3 | | 38.2 | -16 | 4947 | No stop |
| 10 27 00 | --- | 22 40 41 | 14.2 | 288.3 | 6.4 | | 38.0 | 164 | 4971 | 10 24 01 |
| 10 27 00 | J1619+2247 | 22 40 41 | 15.0 | 288.0 | 6.3 | | 38.3 | -16 | 4971 | No stop |
| 10 28 00 | --- | 22 41 41 | 14.9 | 288.2 | 6.4 | | 38.2 | 44 | 4978 | 10 27 01 |
| 10 28 30 | VLA1 | 22 42 11 | 13.9 | 288.6 | 6.4 | | 37.9 | 14 | 4978 | 10 28 30 |
| 10 30 30 | --- | 22 44 12 | 13.6 | 289.0 | 6.5 | | 37.8 | 120 | 4994 | 10 28 31 |
| 10 30 30 | J1619+2247 | 22 44 12 | 14.5 | 288.7 | 6.4 | | 38.1 | -16 | 4994 | No stop |
| 10 31 30 | --- | 22 45 12 | 14.4 | 288.8 | 6.4 | | 38.0 | 44 | 5001 | 10 30 31 |
| 10 31 30 | AT2018 | 22 45 12 | 13.5 | 289.1 | 6.5 | | 37.8 | -16 | 5001 | No stop |
| 10 34 30 | --- | 22 48 12 | 13.1 | 289.7 | 6.5 | | 37.6 | 164 | 5024 | 10 31 31 |
| 10 34 30 | J1619+2247 | 22 48 12 | 14.0 | 289.4 | 6.5 | | 37.9 | -16 | 5024 | No stop |
| 10 35 30 | --- | 22 49 12 | 13.8 | 289.6 | 6.5 | | 37.8 | 44 | 5032 | 10 34 31 |
| 10 35 30 | AT2018 | 22 49 12 | 12.9 | 289.9 | 6.5 | | 37.6 | -16 | 5032 | No stop |
| 10 37 30 | --- | 22 51 13 | 12.7 | 290.3 | 6.6 | | 37.5 | 104 | 5047 | 10 35 31 |
| 10 37 30 | VLA2 | 22 51 13 | 12.8 | 290.2 | 6.6 | | 37.5 | -9 | 5047 | No stop |
| 10 38 30 | --- | 22 52 13 | 12.7 | 290.3 | 6.6 | | 37.5 | 51 | 5055 | 10 37 31 |
| 10 39 00 | J1619+2247 | 22 52 43 | 13.3 | 290.3 | 6.5 | | 37.7 | 15 | 5055 | 10 39 00 |
| 10 40 00 | --- | 22 53 43 | 13.2 | 290.4 | 6.6 | | 37.6 | 60 | 5063 | 10 39 01 |
| 10 40 00 | AT2018 | 22 53 43 | 12.3 | 290.7 | 6.6 | | 37.3 | -16 | 5063 | No stop |
| 10 43 00 | --- | 22 56 44 | 11.9 | 291.3 | 6.7 | | 37.2 | 164 | 5086 | 10 40 01 |
| 10 43 00 | J1619+2247 | 22 56 44 | 12.8 | 291.0 | 6.6 | | 37.4 | -16 | 5086 | No stop |
| 10 44 00 | --- | 22 57 44 | 12.6 | 291.2 | 6.6 | | 37.4 | 44 | 5094 | 10 43 01 |
| 10 44 00 | AT2018 | 22 57 44 | 11.8 | 291.5 | 6.7 | | 37.1 | -16 | 5094 | No stop |
| 10 47 00 | --- | 23 00 44 | 11.3 | 292.0 | 6.7 | | 37.0 | 164 | 5117 | 10 44 01 |

```
Schedule for TORUN     (Code Tr )                                Page  28
              Revealing the radio structure in AT2018cow
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Thu   7 Mar 2019   Day  66 ---

10 47 00  J1619+2247   23 00 44  12.2 291.8  6.7      37.2   -16     5117   No stop
10 48 00  ---          23 01 44  12.1 292.0  6.7      37.2    44     5124   10 47 01

10 48 30  VLA1         23 02 15  11.1 292.4  6.8      36.9    14     5124   10 48 30
10 50 30  ---          23 04 15  10.8 292.8  6.8      36.7   120     5140   10 48 31

10 50 30  J1619+2247   23 04 15  11.7 292.4  6.7      37.0   -16     5140   No stop
10 51 30  ---          23 05 15  11.6 292.6  6.8      36.9    44     5147   10 50 31

10 51 30  AT2018       23 05 15  10.7 292.9  6.8      36.7   -16     5147   No stop
10 54 30  ---          23 08 16  10.3 293.5  6.9      36.5   164     5171   10 51 31

10 54 30  J1619+2247   23 08 16  11.2 293.2  6.8      36.8   -16     5171   No stop
10 55 30  ---          23 09 16  11.0 293.4  6.8      36.7    44     5178   10 54 31

10 55 30  AT2018       23 09 16  10.2 293.7  6.9      36.5   -16     5178   No stop
10 57 30  ---          23 11 16   9.9 294.0  6.9      36.3   104     5194   10 55 31

10 57 30  VLA2         23 11 16  10.0 293.9  6.9      36.4    -9     5194   No stop
10 58 30  ---          23 12 16   9.9 294.1  6.9      36.3    51     5201   10 57 31

10 59 00  J1619+2247   23 12 46  10.5 294.0  6.9      36.5    15     5201   10 59 00
11 00 00  ---          23 13 46  10.4 294.2  6.9      36.4    60     5209   10 59 01



SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119.C1024

   Setup group:   12         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
   Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
            4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
  Net SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF SB =         U         U         U         U         U         U         U         U
                  U         U         U         U         U         U         U         U
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
                RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
                  3         7         3         7         4         8         4         8
  BBC SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                 A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:   8  Setup file default.  Used with PCAL = off
  LO sum=   4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
            5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
  BBC fr=    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
             806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
  Bandwd=     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
              16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
   Matching frequency sets:   8

  Track assignments are:
   track1=  18, 26,  2, 10, 20, 28,  4, 12, 22, 30,  6, 14, 24, 32,  8, 16
   barrel=roll_off



 POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                        (B1950)             (J2000)             (Date)             (mas)

 * AT2018            16 13 51.046576   * 16 16 00.224400     16 16 49.186523       0.00
                     22 23 28.30125    * 22 16 04.89000      22 13 07.99131        0.00

 * VLA1              16 13 32.504723   * 16 15 41.690800     16 16 30.657759       0.00
                     22 23 52.84715    * 22 16 28.22500      22 13 30.86601        0.00

 * VLA2              16 14 31.729582   * 16 16 40.813800     16 17 29.736764       0.00
                     22 26 17.16485    * 22 18 56.41100      22 16 00.50558        0.00

 * J1619+2247        16 17 06.466942   * 16 19 14.824599     16 20 03.458482       0.00
                     22 54 58.47384    * 22 47 47.85108      22 44 55.65081        0.00

   3C345             16 41 17.606229   * 16 42 58.809967     16 43 37.044297       0.79
 * J1642+3948        39 54 10.81492    * 39 48 36.99399      39 46 17.38117        0.59
   1641+399          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
   J1642+39          GSFC 2016a X/S astro solution,  53724 observations.


EFFECT OF SOLAR CORONA

  The solar corona can cause unstable phases for sources too close to the Sun.
  SCHED provides warnings at individual scans for distances less than 10 degrees.
  The distance from the Sun to each source in this schedule is:
```

```
 Source         Sun distance (deg)
AT2018             104.3
VLA1               104.3
VLA2               104.1
J1619+2247         103.5
J1642+3948          98.5

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
that the Sun will cause amplitude reductions on the  longest VLBA baselines
at a solar distance of 60deg F^(-0.6) where F is in GHz.
For common VLBI bands, this is:
     1.6 GHz         45. deg
     2.3 GHz         36. deg
     5.0 GHz         23. deg
     8.4 GHz         17. deg
    15.0 GHz         12. deg
    22.0 GHz          9. deg
```

# ec063dtr

## Dual Frequency Observation of 8 FR 0 Galaxies

PI: *Xiaopeng Cheng*


```
Address:  Shanghai Astronomical Observatory
          Nandan Road 80
          Shanghai 200030
          China

Phone:    +86-18317079386
EMAIL:    xcheng@shao.ac.cn
Fax:
Phone during observation:
```


```
Observing mode:

Schedule for TORUN     (Code Tr )                                    Page   2
               Dual Frequency Observation of 8 FR 0 Galaxies
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Thu   7 Mar 2019   Day  66 ---

 Next scan frequencies:  4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
                         5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
 Next BBC frequencies:    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
                          806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
 Next scan bandwidths:     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
                           16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00

20 30 00  4C39.25      08 45 20  74.1 148.2 -0.7     -24.0     0        0   20 30 00
20 30 30  ---          08 45 50  74.1 148.5 -0.7     -23.8    30        4   20 30 01

20 31 30  4C39.25      08 46 50  74.2 149.2 -0.7     -23.3    52        4   20 31 30
20 34 30  ---          08 49 51  74.4 151.2 -0.6     -21.9   180       27   20 31 31

20 35 18  J0906+4124   08 50 39  77.9 164.2 -0.3     -12.6     7       27   20 35 18
20 45 18  ---          09 00 40  78.2 173.2 -0.1      -5.5   600      104   20 35 19

20 51 26  J0909+1928   09 06 50  56.3 178.3 -0.1      -1.1   272      104   20 51 26
21 01 26  ---          09 16 51  56.3 182.6  0.1       1.7   600      181   20 51 27

21 02 59  J1025+1022   09 18 25  45.0 155.9 -1.1     -14.5    24      181   21 02 59
21 12 59  ---          09 28 26  45.6 159.3 -1.0     -12.5   600      258   21 03 00

21 15 24  J1037+4335   09 30 52  75.3 123.9 -1.1     -43.4    20      258   21 15 24
21 25 24  ---          09 40 54  76.5 129.5 -1.0     -39.7   600      335   21 15 25

21 28 41  J0906+4124   09 44 11  76.8 210.9  0.6      24.3    19      335   21 28 41
21 38 41  ---          09 54 12  75.9 218.0  0.8      29.5   600      412   21 28 42

21 44 43  J0909+1928   10 00 15  55.0 200.6  0.8      13.0   270      412   21 44 43
21 54 43  ---          10 10 17  54.4 204.6  1.0      15.4   600      488   21 44 44

21 56 31  J1025+1022   10 12 05  47.1 174.7 -0.2      -3.2    33      488   21 56 31
22 06 31  ---          10 22 07  47.2 178.3 -0.1      -1.0   600      565   21 56 32
```

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 22 09 39 | J1037+4335 | 10 25 15 | 80.1 | 165.9 | -0.2 | -11.7 | 51 | 565 | 22 09 39 |
| 22 19 39 | --- | 10 35 17 | 80.4 | 176.6 | -0.1 | -2.9 | 600 | 642 | 22 09 40 |
| 22 23 23 | 4C39.25 | 10 39 02 | 71.4 | 227.7 | 1.2 | 34.8 | 109 | 642 | 22 23 23 |
| 22 26 23 | --- | 10 42 02 | 71.0 | 229.2 | 1.2 | 35.8 | 180 | 665 | 22 23 24 |
| 22 27 55 | J0906+4124 | 10 43 34 | 70.1 | 243.3 | 1.6 | 45.6 | 49 | 665 | 22 27 55 |
| 22 37 55 | --- | 10 53 36 | 68.8 | 247.0 | 1.8 | 47.4 | 600 | 742 | 22 27 56 |
| 22 45 03 | J0909+1928 | 11 00 45 | 50.2 | 222.9 | 1.8 | 25.7 | 347 | 742 | 22 45 03 |
| 22 55 03 | --- | 11 10 47 | 49.1 | 226.1 | 2.0 | 27.3 | 600 | 819 | 22 45 04 |

```
Schedule for TORUN     (Code Tr )                                  Page   3
              Dual Frequency Observation of 8 FR 0 Galaxies
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Thu   7 Mar 2019   Day  66 ---

22 56 59  J1025+1022   11 12 44  46.2 196.5  0.8      10.0    41      819   22 56 59
23 06 59  ---          11 22 45  45.7 199.9  0.9      12.0   600      896   22 57 00

23 09 45  J1037+4335   11 25 31  77.6 223.7  0.8      34.9    31      896   23 09 45
23 19 45  ---          11 35 33  76.5 230.2  1.0      39.5   600      973   23 09 46

23 24 00  J0906+4124   11 39 48  62.1 260.5  2.5      52.1   181      973   23 24 00
23 34 00  ---          11 49 50  60.6 262.9  2.7      52.5   600     1050   23 24 01

23 35 51  J0909+1928   11 51 41  44.3 238.3  2.7      32.8    36     1050   23 35 51
23 45 51  ---          12 01 43  43.0 241.0  2.9      33.8   600     1127   23 35 52

23 47 44  J1025+1022   12 03 37  43.0 213.5  1.6      19.7    43     1127   23 47 44
23 57 44  ---          12 13 38  42.1 216.6  1.8      21.3   600     1204   23 47 45

 --- Fri   8 Mar 2019   Day  67 ---

00 00 18  J1037+4335   12 16 13  71.3 249.0  1.6      50.6    30     1204   00 00 18
00 10 18  ---          12 26 14  69.8 252.5  1.8      52.1   600     1281   00 00 19

00 12 58  J0906+4124   12 28 55  54.8 271.2  3.3      53.1    91     1281   00 12 58
00 17 13  ---          12 33 11  54.1 272.0  3.4      53.1   255     1313   00 12 59

00 26 44  3C345        12 42 43  47.8  83.3 -4.0     -50.9   177     1313   00 26 44
00 29 59  ---          12 45 59  48.3  83.8 -4.0     -51.0   195     1338   00 26 45



SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119.C1024

   Setup group:   12         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
   Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
            4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00   4200.00
  Net SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF SB =         U         U         U         U         U         U         U         U
                  U         U         U         U         U         U         U         U
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
                RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
                  3         7         3         7         4         8         4         8
  BBC SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                 A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:   9  Setup file default.  Used with PCAL = off
  LO sum=   4942.49  4942.49  4942.49  4942.49  4974.49  4974.49  4974.49  4974.49
            5006.49  5006.49  5006.49  5006.49  5038.49  5038.49  5038.49  5038.49
  BBC fr=    742.49   742.49   742.49   742.49   774.49   774.49   774.49   774.49
             806.49   806.49   806.49   806.49   838.49   838.49   838.49   838.49
  Bandwd=     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
              16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
   Matching frequency sets:   9

  Track assignments are:
   track1=  18, 26,  2, 10, 20, 28,  4, 12, 22, 30,  6, 14, 24, 32,  8, 16
   barrel=roll_off



POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                       (B1950)             (J2000)             (Date)             (mas)

* J0906+4124        09 03 38.214851   * 09 06 52.793400     09 08 07.388462       0.00
                    41 36 34.18271    * 41 24 29.64900      41 19 51.31275        0.00

* J0909+1928        09 06 47.515268   * 09 09 37.443466     09 10 42.640605       0.00
                    19 40 21.72915    * 19 28 08.29122      19 23 22.46509        0.00

* J1025+1022        10 23 05.443442   * 10 25 44.212390     10 26 45.331151       0.00
                    10 37 46.62320    * 10 22 30.47649      10 16 34.77852        0.00

* J1037+4335        10 34 22.661119   * 10 37 19.342127     10 38 27.354921       0.00
                    43 50 50.41904    * 43 35 15.30447      43 29 15.34514        0.00

* 4C39.25           09 23 55.319216   * 09 27 03.013937     09 28 15.033955       0.31
  J0927+3902        39 15 23.56644    * 39 02 20.85185      38 57 19.63356        0.16
  0923+392          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
  J0927+39          GSFC 2016a X/S astro solution, 250526 observations.

* 3C345             16 41 17.606229   * 16 42 58.809967     16 43 37.072282       0.79
  J1642+3948        39 54 10.81492    * 39 48 36.99399      39 46 17.35787        0.59
  1641+399          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
  J1642+39          GSFC 2016a X/S astro solution,  53724 observations.
```

EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun.
SCHED provides warnings at individual scans for distances less than 10 degrees.
The distance from the Sun to each source in this schedule is:

| Source | Sun distance (deg) |
|---|---|
| J0906+4124 | 134.4 |
| J0909+1928 | 147.1 |
| J1025+1022 | 167.6 |
| J1037+4335 | 140.9 |
| 4C39.25 | 138.8 |
| 3C345 | 98.8 |

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
that the Sun will cause amplitude reductions on the longest VLBA baselines
at a solar distance of 60deg F^(-0.6) where F is in GHz.
For common VLBI bands, this is:

| | |
|---|---|
| 1.6 GHz | 45. deg |
| 2.3 GHz | 36. deg |
| 5.0 GHz | 23. deg |
| 8.4 GHz | 17. deg |
| 15.0 GHz | 12. deg |
| 22.0 GHz | 9. deg |

# n19l1tr

## Network Monitoring Experiment

PI: *Benito Marcote*


```
Address:  JIVE
          Postbus 2
          7990 AA Dwingeloo
          The Netherlands

Phone:    +31-521-596508
EMAIL:    marcote@jive.eu
Fax:
Phone during observation: +31-521-596508
```


```
Observing mode:

Schedule for TORUN     (Code Tr )                                    Page   2
               Network Monitoring Experiment
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-------------------------------------------------------------------------------------------
Start UT  Source                Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-------------------------------------------------------------------------------------------

 --- Fri   8 Mar 2019   Day  67 ---

 ---------- N18L1 ----------

 Next scan frequencies:  1634.49  1634.49  1634.49  1634.49  1650.49  1650.49  1650.49  1650.49
                         1666.49  1666.49  1666.49  1666.49  1682.49  1682.49  1682.49  1682.49
 Next BBC frequencies:    665.51   665.51   665.51   665.51   649.51   649.51   649.51   649.51
                          633.51   633.51   633.51   633.51   617.51   617.51   617.51   617.51
 Next scan bandwidths:      8.00     8.00     8.00     8.00     8.00     8.00     8.00     8.00
                            8.00     8.00     8.00     8.00     8.00     8.00     8.00     8.00

12 00 00  J1824+1044   00 17 53   9.6 275.1  5.9      37.5     0        0   12 00 00
12 10 00  =1821+107    00 27 54   8.1 277.1  6.0      37.3   600       38   12 00 01

12 13 00  J1824+1044   00 30 55   7.7 277.7  6.1      37.3   173       38   12 13 00
12 25 00  =1821+107    00 42 57   5.9 280.1  6.3      37.0   720       85   12 13 01

12 35 00  J1824+1044   00 52 59   4.4 282.0  6.5      36.7   593       85   12 35 00
12 40 00  =1821+107    00 57 59   3.7 283.0  6.6      36.5   300      104   12 35 01

12 43 00  J1824+1044   01 01 00   3.2 283.6  6.6      36.4   173      104   12 43 00
12 55 00  =1821+107    01 13 02   1.5 286.0  6.8  D   36.0     0      150   12 43 01

13 05 00  J1850+2825   01 23 04  17.9 293.8  6.5      38.7   526      150   13 05 00
13 10 00  =1848+283    01 28 04  17.2 294.7  6.6      38.4   300      169   13 05 01

13 13 00  J1850+2825   01 31 05  16.8 295.2  6.7      38.2   174      169   13 13 00
13 25 00  =1848+283    01 43 07  15.2 297.4  6.9      37.3   720      215   13 13 01

13 32 00  J0530+1331   01 50 08  31.2 110.5 -3.7     -35.3    31      215   13 32 00
13 40 00  =0528+134    01 58 09  32.3 112.4 -3.6     -34.8   480      246   13 32 01

13 43 00  J0530+1331   02 01 10  32.7 113.1 -3.5     -34.6   173      246   13 43 00
13 47 00  =0528+134    02 05 10  33.3 114.1 -3.4     -34.3   240      262   13 43 01

13 52 00  J0530+1331   02 10 11  34.0 115.3 -3.4     -33.9   293      262   13 52 00
```

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 14 02 00 | =0528+134 | 02 20 13 | 35.3 | 117.8 | -3.2 | -33.1 | 600 | 300 | 13 52 01 |
| 14 05 00 | J0530+1331 | 02 23 13 | 35.7 | 118.5 | -3.1 | -32.9 | 173 | 300 | 14 05 00 |
| 14 17 00 | =0528+134 | 02 35 15 | 37.3 | 121.6 | -2.9 | -31.7 | 720 | 346 | 14 05 01 |
| 14 20 00 | J0530+1331 | 02 38 16 | 37.7 | 122.4 | -2.9 | -31.4 | 173 | 346 | 14 20 00 |
| 14 32 00 | =0528+134 | 02 50 18 | 39.2 | 125.6 | -2.7 | -30.2 | 720 | 392 | 14 20 01 |
| 14 35 00 | J0530+1331 | 02 53 18 | 39.5 | 126.4 | -2.6 | -29.8 | 173 | 392 | 14 35 00 |
| 14 47 00 | =0528+134 | 03 05 20 | 41.0 | 129.8 | -2.4 | -28.3 | 720 | 438 | 14 35 01 |

```
Schedule for TORUN     (Code Tr )                                Page   3
               Network Monitoring Experiment
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Fri   8 Mar 2019   Day  67 ---

14 50 00  J0530+1331   03 08 21  41.3 130.6 -2.4     -28.0   173      438   14 50 00
15 00 00  =0528+134    03 18 22  42.4 133.5 -2.2     -26.6   600      477   14 50 01



SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119.L512

   Setup group:   11         Station: TORUN            Total bit rate:   512
   Format: MARK5B            Bits per sample: 2        Sample rate: 16.000
   Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00
            2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00
  Net SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF SB =         L         L         L         L         L         L         L         L
                  L         L         L         L         L         L         L         L
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
                RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
                  3         7         3         7         4         8         4         8
  BBC SB=         U         U         L         L         U         U         L         L
                  U         U         L         L         U         U         L         L
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                 A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:   6  Setup file default.  Used with PCAL = off
  LO sum=   1634.49  1634.49  1634.49  1634.49  1650.49  1650.49  1650.49  1650.49
            1666.49  1666.49  1666.49  1666.49  1682.49  1682.49  1682.49  1682.49
  BBC fr=    665.51   665.51   665.51   665.51   649.51   649.51   649.51   649.51
             633.51   633.51   633.51   633.51   617.51   617.51   617.51   617.51
  Bandwd=      8.00     8.00     8.00     8.00     8.00     8.00     8.00     8.00
               8.00     8.00     8.00     8.00     8.00     8.00     8.00     8.00
   Matching frequency sets:   6

  Track assignments are:
   track1=   2, 10, 18, 26,  4, 12, 20, 28,  6, 14, 22, 30,  8, 16, 24, 32
   barrel=roll_off



 POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                       (B1950)             (J2000)             (Date)             (mas)

  0528+134          05 28 06.759216   * 05 30 56.416746     05 32 00.663842       0.21
* J0530+1331        13 29 42.28882    * 13 31 55.14948      13 32 35.70768        0.24
  J0530+13          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution, 138236 observations.

  1821+107          18 21 41.659100   * 18 24 02.855250     18 24 55.691399       0.02
* J1824+1044        10 42 43.89908    * 10 44 23.77396      10 44 56.01307        0.04
  J1824+10          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,   1628 observations.

  1848+283          18 48 29.069764   * 18 50 27.589822     18 51 11.679757       0.12
* J1850+2825        28 21 38.48517    * 28 25 13.15540      28 26 24.29237        0.18
  J1850+28          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,     71 observations.


EFFECT OF SOLAR CORONA

  The solar corona can cause unstable phases for sources too close to the Sun.
  SCHED provides warnings at individual scans for distances less than 10 degrees.
  The distance from the Sun to each source in this schedule is:
    Source         Sun distance (deg)
  J0530+1331          95.3
```

```
 J1824+1044          73.8
 J1850+2825          71.5

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
that the Sun will cause amplitude reductions on the  longest VLBA baselines
at a solar distance of 60deg F^(-0.6) where F is in GHz.
For common VLBI bands, this is:
     1.6 GHz         45. deg
     2.3 GHz         36. deg
     5.0 GHz         23. deg
     8.4 GHz         17. deg
    15.0 GHz         12. deg
    22.0 GHz          9. deg
```

# er047atr

## EVN-COSMOS - Taming AGN and star-formation across cosmic time

PI: *Jack Radcliffe*


```
Address:  Kapteyn Astronomical Institute,
          University of Groningen
          9747 AD Groningen
          The Netherlands

Phone:    00447950524280
EMAIL:    j.f.radcliffe@rug.nl
Fax:
Phone during observation:
```


```
Observing mode:

Schedule for TORUN     (Code Tr )                                    Page   2
               EVN-COSMOS - Taming AGN and star-formation across cosmic time
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-------------------------------------------------------------------------------------------
Start UT  Source                Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-------------------------------------------------------------------------------------------

 --- Fri   8 Mar 2019   Day  67 ---

 Next scan frequencies:  1610.49  1610.49  1610.49  1610.49  1642.49  1642.49  1642.49  1642.49
                         1674.49  1674.49  1674.49  1674.49  1706.49  1706.49  1706.49  1706.49
 Next BBC frequencies:    689.51   689.51   689.51   689.51   657.51   657.51   657.51   657.51
                          625.51   625.51   625.51   625.51   593.51   593.51   593.51   593.51
 Next scan bandwidths:     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
                           16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00

17 00 00  J1011+0106   05 18 42  10.7 102.8 -4.9     -35.8     0        0   17 00 00
17 06 00  =1008+013    05 24 43  11.6 104.1 -4.8     -35.6   360       46   17 00 01

17 06 40  J0959+0243   05 25 23  14.8 105.8 -4.6     -35.3    14       46   17 06 40
17 08 10  ---          05 26 53  15.0 106.1 -4.6     -35.3    90       58   17 06 41

17 08 10  COSMOS-DEEP  05 26 53  14.6 105.9 -4.6     -35.3   -11       58   No stop
17 14 10  ---          05 32 54  15.5 107.2 -4.5     -35.0   349      104   17 08 11

17 14 10  J0959+0243   05 32 54  15.8 107.4 -4.5     -35.0   -12      104   No stop
17 16 10  ---          05 34 55  16.1 107.8 -4.4     -34.9   108      119   17 14 11

17 16 10  COSMOS-DEEP  05 34 55  15.8 107.6 -4.4     -34.9   -11      119   No stop
17 24 10  ---          05 42 56  16.9 109.3 -4.3     -34.6   469      181   17 16 11

17 24 40  J0959+0243   05 43 26  17.3 109.6 -4.3     -34.5    18      181   17 24 40
17 26 10  ---          05 44 56  17.5 109.9 -4.3     -34.4    90      192   17 24 41

17 26 10  COSMOS-DEEP  05 44 56  17.2 109.8 -4.3     -34.4   -11      192   No stop
17 34 10  ---          05 52 58  18.4 111.5 -4.1     -34.0   469      254   17 26 11

17 34 10  J1011+0106   05 52 58  15.6 110.0 -4.3     -34.4   -24      254   No stop
17 36 00  =1008+013    05 54 48  15.9 110.4 -4.3     -34.3    86      268   17 34 11

17 36 40  J0959+0243   05 55 28  19.0 112.2 -4.1     -33.8    15      268   17 36 40
17 38 10  ---          05 56 58  19.2 112.6 -4.1     -33.7    90      279   17 36 41
```

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 17 38 10 | COSMOS-DEEP | 05 56 58 | 18.9 | 112.4 | -4.1 | -33.8 | -11 | 279 | No stop |
| 17 44 10 | --- | 06 02 59 | 19.7 | 113.7 | -4.0 | -33.4 | 349 | 326 | 17 38 11 |
| 17 44 10 | J0959+0243 | 06 02 59 | 20.1 | 113.9 | -4.0 | -33.3 | -12 | 326 | No stop |
| 17 46 10 | --- | 06 05 00 | 20.3 | 114.3 | -3.9 | -33.2 | 108 | 341 | 17 44 11 |
| 17 46 10 | COSMOS-DEEP | 06 05 00 | 20.0 | 114.2 | -3.9 | -33.3 | -11 | 341 | No stop |
| 17 54 10 | --- | 06 13 01 | 21.1 | 115.9 | -3.8 | -32.7 | 469 | 403 | 17 46 11 |
| 17 54 40 | J0959+0243 | 06 13 31 | 21.5 | 116.3 | -3.8 | -32.6 | 18 | 403 | 17 54 40 |
| 17 56 10 | --- | 06 15 01 | 21.7 | 116.6 | -3.8 | -32.5 | 90 | 414 | 17 54 41 |

Schedule for TORUN (Code Tr ) Page 3

EVN-COSMOS - Taming AGN and star-formation across cosmic time

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Fri 8 Mar 2019 Day 67 --- | | | | | | | | | | |
| 17 56 10 | COSMOS-DEEP | 06 15 01 | 21.4 | 116.4 | -3.8 | | -32.6 | -11 | 414 | No stop |
| 18 04 10 | --- | 06 23 03 | 22.4 | 118.2 | -3.6 | | -32.0 | 469 | 476 | 17 56 11 |
| 18 04 10 | J1011+0106 | 06 23 03 | 19.8 | 116.6 | -3.8 | | -32.5 | -24 | 476 | No stop |
| 18 06 00 | =1008+013 | 06 24 53 | 20.0 | 117.0 | -3.8 | | -32.3 | 86 | 490 | 18 04 11 |
| 18 08 00 | J0956+2515 | 06 26 53 | 42.0 | 104.2 | -3.5 | | -40.0 | 24 | 490 | 18 08 00 |
| 18 14 00 | =OK290 | 06 32 54 | 42.9 | 105.6 | -3.4 | | -39.7 | 360 | 536 | 18 08 01 |
| 18 19 00 | J1011+0106 | 06 37 55 | 21.8 | 120.0 | -3.6 | | -31.4 | 205 | 536 | 18 19 00 |
| 18 20 30 | =1008+013 | 06 39 25 | 21.9 | 120.3 | -3.5 | | -31.2 | 90 | 547 | 18 19 01 |
| 18 20 30 | J0959+0243 | 06 39 25 | 24.9 | 122.2 | -3.3 | | -30.6 | -25 | 547 | No stop |
| 18 22 00 | --- | 06 40 56 | 25.1 | 122.6 | -3.3 | | -30.4 | 65 | 559 | 18 20 31 |
| 18 22 00 | COSMOS-DEEP | 06 40 56 | 24.8 | 122.4 | -3.3 | | -30.5 | -11 | 559 | No stop |
| 18 28 00 | --- | 06 46 57 | 25.5 | 123.8 | -3.2 | | -30.0 | 349 | 605 | 18 22 01 |
| 18 28 30 | J0959+0243 | 06 47 27 | 25.9 | 124.2 | -3.2 | | -29.8 | 18 | 605 | 18 28 30 |
| 18 30 00 | --- | 06 48 57 | 26.1 | 124.5 | -3.2 | | -29.7 | 90 | 617 | 18 28 31 |
| 18 30 00 | COSMOS-DEEP | 06 48 57 | 25.8 | 124.3 | -3.2 | | -29.8 | -11 | 617 | No stop |
| 18 36 00 | --- | 06 54 58 | 26.5 | 125.8 | -3.1 | | -29.2 | 349 | 663 | 18 30 01 |
| 18 36 00 | J0959+0243 | 06 54 58 | 26.8 | 126.0 | -3.1 | | -29.1 | -11 | 663 | No stop |
| 18 38 00 | --- | 06 56 58 | 27.1 | 126.5 | -3.1 | | -28.9 | 109 | 678 | 18 36 01 |
| 18 38 00 | COSMOS-DEEP | 06 56 58 | 26.8 | 126.3 | -3.1 | | -29.0 | -11 | 678 | No stop |
| 18 45 30 | --- | 07 04 29 | 27.7 | 128.1 | -2.9 | | -28.2 | 439 | 736 | 18 38 01 |
| 18 46 10 | J1011+0106 | 07 05 10 | 25.2 | 126.4 | -3.1 | | -28.9 | 17 | 736 | 18 46 10 |
| 18 47 40 | =1008+013 | 07 06 40 | 25.4 | 126.8 | -3.1 | | -28.8 | 90 | 747 | 18 46 11 |
| 18 47 40 | J0959+0243 | 07 06 40 | 28.2 | 128.9 | -2.9 | | -27.9 | -25 | 747 | No stop |
| 18 49 30 | --- | 07 08 30 | 28.4 | 129.3 | -2.9 | | -27.7 | 85 | 762 | 18 47 41 |
| 18 49 30 | COSMOS-DEEP | 07 08 30 | 28.1 | 129.1 | -2.9 | | -27.8 | -11 | 762 | No stop |
| 18 55 30 | --- | 07 14 31 | 28.8 | 130.6 | -2.8 | | -27.1 | 349 | 808 | 18 49 31 |
| 18 56 00 | J0959+0243 | 07 15 01 | 29.2 | 131.0 | -2.8 | | -27.0 | 19 | 808 | 18 56 00 |
| 18 58 00 | --- | 07 17 01 | 29.4 | 131.5 | -2.7 | | -26.8 | 120 | 823 | 18 56 01 |
| 18 58 00 | COSMOS-DEEP | 07 17 01 | 29.1 | 131.3 | -2.7 | | -26.9 | -11 | 823 | No stop |
| 19 06 00 | --- | 07 25 03 | 30.0 | 133.3 | -2.6 | | -25.9 | 469 | 885 | 18 58 01 |

Schedule for TORUN (Code Tr ) Page 4

EVN-COSMOS - Taming AGN and star-formation across cosmic time

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Fri 8 Mar 2019 Day 67 --- | | | | | | | | | | |
| 19 06 00 | J0959+0243 | 07 25 03 | 30.3 | 133.6 | -2.6 | | -25.8 | -11 | 885 | No stop |
| 19 08 00 | --- | 07 27 03 | 30.5 | 134.1 | -2.6 | | -25.6 | 109 | 900 | 19 06 01 |
| 19 08 00 | COSMOS-DEEP | 07 27 03 | 30.2 | 133.9 | -2.6 | | -25.7 | -11 | 900 | No stop |
| 19 16 00 | --- | 07 35 04 | 31.1 | 136.0 | -2.4 | | -24.7 | 469 | 962 | 19 08 01 |
| 19 16 40 | J1011+0106 | 07 35 45 | 28.7 | 134.0 | -2.6 | | -25.6 | 17 | 962 | 19 16 40 |
| 19 18 10 | =1008+013 | 07 37 15 | 28.8 | 134.4 | -2.6 | | -25.4 | 90 | 973 | 19 16 41 |
| 19 18 10 | J0959+0243 | 07 37 15 | 31.6 | 136.8 | -2.4 | | -24.3 | -24 | 973 | No stop |
| 19 20 00 | --- | 07 39 05 | 31.8 | 137.3 | -2.4 | | -24.1 | 86 | 987 | 19 18 11 |
| 19 20 00 | COSMOS-DEEP | 07 39 05 | 31.5 | 137.0 | -2.4 | | -24.2 | -11 | 987 | No stop |
| 19 26 00 | --- | 07 45 06 | 32.1 | 138.6 | -2.3 | | -23.4 | 349 | 1033 | 19 20 01 |
| 19 26 30 | J0959+0243 | 07 45 36 | 32.4 | 139.0 | -2.2 | | -23.2 | 19 | 1033 | 19 26 30 |
| 19 28 30 | --- | 07 47 37 | 32.6 | 139.6 | -2.2 | | -22.9 | 120 | 1049 | 19 26 31 |
| 19 28 30 | COSMOS-DEEP | 07 47 37 | 32.3 | 139.3 | -2.2 | | -23.1 | -11 | 1049 | No stop |
| 19 36 30 | --- | 07 55 38 | 33.1 | 141.5 | -2.1 | | -22.0 | 469 | 1110 | 19 28 31 |
| 19 36 30 | J0959+0243 | 07 55 38 | 33.4 | 141.8 | -2.1 | | -21.8 | -11 | 1110 | No stop |
| 19 38 30 | --- | 07 57 38 | 33.6 | 142.4 | -2.0 | | -21.5 | 109 | 1126 | 19 36 31 |
| 19 38 30 | COSMOS-DEEP | 07 57 38 | 33.3 | 142.1 | -2.1 | | -21.7 | -11 | 1126 | No stop |
| 19 46 30 | --- | 08 05 39 | 34.0 | 144.3 | -1.9 | | -20.5 | 469 | 1187 | 19 38 31 |
| 19 47 10 | J1011+0106 | 08 06 20 | 31.7 | 142.1 | -2.1 | | -21.6 | 18 | 1187 | 19 47 10 |
| 19 48 40 | =1008+013 | 08 07 50 | 31.9 | 142.5 | -2.1 | | -21.4 | 90 | 1199 | 19 47 11 |
| 19 48 40 | J0959+0243 | 08 07 50 | 34.5 | 145.2 | -1.9 | | -20.0 | -24 | 1199 | No stop |
| 19 50 30 | --- | 08 09 40 | 34.6 | 145.8 | -1.8 | | -19.8 | 86 | 1213 | 19 48 41 |
| 19 50 30 | COSMOS-DEEP | 08 09 40 | 34.4 | 145.5 | -1.9 | | -19.9 | -11 | 1213 | No stop |
| 19 56 30 | --- | 08 15 41 | 34.9 | 147.2 | -1.8 | | -19.0 | 349 | 1259 | 19 50 31 |
| 19 57 00 | J0959+0243 | 08 16 11 | 35.2 | 147.6 | -1.7 | | -18.8 | 19 | 1259 | 19 57 00 |
| 19 59 00 | --- | 08 18 12 | 35.3 | 148.2 | -1.7 | | -18.5 | 120 | 1274 | 19 57 01 |
| 19 59 00 | COSMOS-DEEP | 08 18 12 | 35.1 | 147.9 | -1.7 | | -18.6 | -11 | 1274 | No stop |
| 20 07 00 | --- | 08 26 13 | 35.7 | 150.2 | -1.6 | | -17.4 | 469 | 1336 | 19 59 01 |
| 20 07 00 | J0959+0243 | 08 26 13 | 35.9 | 150.6 | -1.6 | | -17.2 | -11 | 1336 | No stop |
| 20 09 00 | --- | 08 28 13 | 36.1 | 151.1 | -1.5 | | -16.9 | 109 | 1351 | 20 07 01 |

Schedule for TORUN (Code Tr ) Page 5

EVN-COSMOS - Taming AGN and star-formation across cosmic time

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Fri 8 Mar 2019 Day 67 --- | | | | | | | | | | |
| 20 09 00 | COSMOS-DEEP | 08 28 13 | 35.8 | 150.8 | -1.6 | | -17.0 | -11 | 1351 | No stop |
| 20 17 00 | --- | 08 36 14 | 36.4 | 153.2 | -1.4 | | -15.7 | 469 | 1413 | 20 09 01 |
| 20 17 40 | J1011+0106 | 08 36 55 | 34.3 | 150.7 | -1.6 | | -17.1 | 18 | 1413 | 20 17 40 |
| 20 19 10 | =1008+013 | 08 38 25 | 34.4 | 151.2 | -1.6 | | -16.8 | 90 | 1424 | 20 17 41 |
| 20 19 10 | J0959+0243 | 08 38 25 | 36.8 | 154.2 | -1.4 | | -15.2 | -23 | 1424 | No stop |
| 20 21 00 | --- | 08 40 15 | 36.9 | 154.7 | -1.3 | | -14.9 | 87 | 1438 | 20 19 11 |
| 20 21 00 | COSMOS-DEEP | 08 40 15 | 36.7 | 154.4 | -1.4 | | -15.0 | -11 | 1438 | No stop |
| 20 27 00 | --- | 08 46 16 | 37.0 | 156.2 | -1.3 | | -14.0 | 349 | 1485 | 20 21 01 |
| 20 27 30 | J0959+0243 | 08 46 46 | 37.3 | 156.7 | -1.2 | | -13.7 | 19 | 1485 | 20 27 30 |
| 20 29 30 | --- | 08 48 47 | 37.4 | 157.3 | -1.2 | | -13.4 | 120 | 1500 | 20 27 31 |
| 20 29 30 | COSMOS-DEEP | 08 48 47 | 37.2 | 157.0 | -1.2 | | -13.6 | -11 | 1500 | No stop |
| 20 37 30 | --- | 08 56 48 | 37.6 | 159.5 | -1.1 | | -12.2 | 469 | 1562 | 20 29 31 |
| 20 37 30 | J0959+0243 | 08 56 48 | 37.9 | 159.8 | -1.1 | | -12.0 | -11 | 1562 | No stop |
| 20 39 30 | --- | 08 58 48 | 38.0 | 160.4 | -1.0 | | -11.6 | 109 | 1577 | 20 37 31 |
| 20 39 30 | COSMOS-DEEP | 08 58 48 | 37.7 | 160.1 | -1.0 | | -11.8 | -10 | 1577 | No stop |
| 20 47 30 | --- | 09 06 49 | 38.1 | 162.6 | -0.9 | | -10.4 | 470 | 1638 | 20 39 31 |
| 20 48 10 | J1011+0106 | 09 07 30 | 36.2 | 159.8 | -1.1 | | -12.0 | 19 | 1638 | 20 48 10 |
| 20 49 40 | =1008+013 | 09 09 00 | 36.3 | 160.2 | -1.1 | | -11.7 | 90 | 1650 | 20 48 11 |
| 20 49 40 | J0959+0243 | 09 09 00 | 38.4 | 163.6 | -0.9 | | -9.8 | -22 | 1650 | No stop |
| 20 51 30 | --- | 09 10 50 | 38.5 | 164.2 | -0.8 | | -9.4 | 88 | 1664 | 20 49 41 |
| 20 51 30 | COSMOS-DEEP | 09 10 50 | 38.3 | 163.8 | -0.8 | | -9.6 | -10 | 1664 | No stop |
| 20 57 30 | --- | 09 16 51 | 38.5 | 165.7 | -0.7 | | -8.5 | 350 | 1710 | 20 51 31 |
| 20 58 00 | J0959+0243 | 09 17 21 | 38.8 | 166.2 | -0.7 | | -8.2 | 19 | 1710 | 20 58 00 |
| 21 00 00 | --- | 09 19 22 | 38.8 | 166.9 | -0.7 | | -7.8 | 120 | 1726 | 20 58 01 |
| 21 00 00 | COSMOS-DEEP | 09 19 22 | 38.6 | 166.5 | -0.7 | | -8.1 | -10 | 1726 | No stop |
| 21 08 00 | --- | 09 27 23 | 38.9 | 169.1 | -0.6 | | -6.6 | 470 | 1787 | 21 00 01 |
| 21 08 00 | J0959+0243 | 09 27 23 | 39.1 | 169.4 | -0.5 | | -6.3 | -11 | 1787 | No stop |
| 21 10 00 | --- | 09 29 23 | 39.1 | 170.1 | -0.5 | | -5.9 | 109 | 1803 | 21 08 01 |
| 21 10 00 | COSMOS-DEEP | 09 29 23 | 38.9 | 169.7 | -0.5 | | -6.2 | -10 | 1803 | No stop |
| 21 18 00 | --- | 09 37 24 | 39.1 | 172.3 | -0.4 | | -4.6 | 470 | 1864 | 21 10 01 |

Schedule for TORUN (Code Tr ) Page 6

EVN-COSMOS - Taming AGN and star-formation across cosmic time

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT / Stop UT | Source | LST | Start / Stop EL | AZ | HA | UP | ParA | Early / Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Fri 8 Mar 2019 Day 67 --- | | | | | | | | | | |
| 21 18 40 | J1011+0106 | 09 38 05 | 37.4 | 169.2 | -0.6 | | -6.5 | 19 | 1864 | 21 18 40 |
| 21 20 10 | =1008+013 | 09 39 35 | 37.5 | 169.7 | -0.5 | | -6.2 | 90 | 1876 | 21 18 41 |
| 21 20 10 | J0959+0243 | 09 39 35 | 39.4 | 173.4 | -0.3 | | -4.0 | -22 | 1876 | No stop |
| 21 22 00 | --- | 09 41 25 | 39.4 | 173.9 | -0.3 | | -3.6 | 88 | 1890 | 21 20 11 |
| 21 22 00 | COSMOS-DEEP | 09 41 25 | 39.2 | 173.6 | -0.3 | | -3.9 | -10 | 1890 | No stop |
| 21 28 00 | --- | 09 47 26 | 39.3 | 175.5 | -0.2 | | -2.7 | 350 | 1936 | 21 22 01 |
| 21 28 30 | J0959+0243 | 09 47 56 | 39.5 | 176.1 | -0.2 | | -2.4 | 19 | 1936 | 21 28 30 |
| 21 30 30 | --- | 09 49 57 | 39.5 | 176.7 | -0.2 | | -2.0 | 120 | 1951 | 21 28 31 |
| 21 30 30 | COSMOS-DEEP | 09 49 57 | 39.3 | 176.3 | -0.2 | | -2.2 | -10 | 1951 | No stop |
| 21 38 30 | --- | 09 57 58 | 39.4 | 178.9 | -0.1 | | -0.7 | 470 | 2013 | 21 30 31 |
| 21 38 30 | J0959+0243 | 09 57 58 | 39.5 | 179.3 | -0.0 | | -0.4 | -11 | 2013 | No stop |
| 21 40 30 | --- | 09 59 58 | 39.5 | 179.9 | -0.0 | | -0.0 | 109 | 2028 | 21 38 31 |
| 21 40 30 | COSMOS-DEEP | 09 59 58 | 39.4 | 179.5 | -0.0 | | -0.3 | -11 | 2028 | No stop |
| 21 48 30 | --- | 10 08 00 | 39.3 | 182.1 | 0.1 | | 1.3 | 469 | 2090 | 21 40 31 |
| 21 49 10 | J1011+0106 | 10 08 40 | 37.9 | 178.9 | -0.1 | | -0.7 | 19 | 2090 | 21 49 10 |
| 21 50 40 | =1008+013 | 10 10 10 | 37.9 | 179.3 | -0.0 | | -0.4 | 90 | 2101 | 21 49 11 |
| 21 50 40 | J0959+0243 | 10 10 10 | 39.5 | 183.2 | 0.2 | | 2.0 | -23 | 2101 | No stop |
| 21 52 30 | --- | 10 12 00 | 39.5 | 183.8 | 0.2 | | 2.3 | 87 | 2115 | 21 50 41 |
| 21 52 30 | COSMOS-DEEP | 10 12 00 | 39.3 | 183.4 | 0.2 | | 2.1 | -11 | 2115 | No stop |
| 21 58 30 | --- | 10 18 01 | 39.2 | 185.4 | 0.3 | | 3.2 | 349 | 2162 | 21 52 31 |
| 21 59 00 | J0959+0243 | 10 18 31 | 39.4 | 185.9 | 0.3 | | 3.6 | 19 | 2162 | 21 59 00 |
| 22 01 00 | --- | 10 20 32 | 39.4 | 186.6 | 0.3 | | 4.0 | 120 | 2177 | 21 59 01 |
| 22 01 00 | COSMOS-DEEP | 10 20 32 | 39.2 | 186.2 | 0.3 | | 3.7 | -11 | 2177 | No stop |
| 22 09 00 | --- | 10 28 33 | 39.1 | 188.7 | 0.5 | | 5.2 | 469 | 2238 | 22 01 01 |
| 22 09 00 | J0959+0243 | 10 28 33 | 39.2 | 189.2 | 0.5 | | 5.5 | -11 | 2238 | No stop |
| 22 11 00 | --- | 10 30 33 | 39.1 | 189.8 | 0.5 | | 5.9 | 109 | 2254 | 22 09 01 |
| 22 11 00 | COSMOS-DEEP | 10 30 33 | 39.0 | 189.4 | 0.5 | | 5.6 | -11 | 2254 | No stop |
| 22 19 00 | --- | 10 38 35 | 38.8 | 191.9 | 0.6 | | 7.1 | 469 | 2315 | 22 11 01 |
| 22 19 40 | J1011+0106 | 10 39 15 | 37.6 | 188.5 | 0.4 | | 5.1 | 18 | 2315 | 22 19 40 |
| 22 21 10 | =1008+013 | 10 40 45 | 37.6 | 189.0 | 0.5 | | 5.4 | 90 | 2327 | 22 19 41 |

Schedule for TORUN (Code Tr ) Page 7

EVN-COSMOS - Taming AGN and star-formation across cosmic time

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Fri 8 Mar 2019 Day 67 --- | | | | | | | | | | |
| 22 21 10 | J0959+0243 | 10 40 45 | 38.8 | 193.1 | 0.7 | | 7.8 | -23 | 2327 | No stop |
| 22 23 00 | --- | 10 42 35 | 38.8 | 193.6 | 0.7 | | 8.2 | 87 | 2341 | 22 21 11 |
| 22 23 00 | COSMOS-DEEP | 10 42 35 | 38.6 | 193.2 | 0.7 | | 7.9 | -11 | 2341 | No stop |
| 22 29 00 | --- | 10 48 36 | 38.4 | 195.1 | 0.8 | | 9.0 | 349 | 2387 | 22 23 01 |
| 22 29 30 | J0959+0243 | 10 49 06 | 38.5 | 195.7 | 0.8 | | 9.4 | 19 | 2387 | 22 29 30 |
| 22 31 30 | --- | 10 51 07 | 38.4 | 196.3 | 0.8 | | 9.7 | 120 | 2403 | 22 29 31 |
| 22 31 30 | COSMOS-DEEP | 10 51 07 | 38.3 | 195.9 | 0.8 | | 9.5 | -11 | 2403 | No stop |
| 22 39 30 | --- | 10 59 08 | 38.0 | 198.4 | 1.0 | | 10.9 | 469 | 2464 | 22 31 31 |
| 22 39 30 | J0959+0243 | 10 59 08 | 38.1 | 198.8 | 1.0 | | 11.2 | -11 | 2464 | No stop |
| 22 41 30 | --- | 11 01 08 | 38.0 | 199.5 | 1.0 | | 11.6 | 109 | 2479 | 22 39 31 |
| 22 41 30 | COSMOS-DEEP | 11 01 08 | 37.9 | 199.0 | 1.0 | | 11.3 | -11 | 2479 | No stop |
| 22 49 30 | --- | 11 09 10 | 37.5 | 201.5 | 1.1 | | 12.7 | 469 | 2541 | 22 41 31 |
| 22 50 10 | J1011+0106 | 11 09 50 | 36.6 | 198.0 | 1.0 | | 10.7 | 18 | 2541 | 22 50 10 |
| 22 51 40 | =1008+013 | 11 11 20 | 36.5 | 198.5 | 1.0 | | 11.0 | 90 | 2553 | 22 50 11 |
| 22 51 40 | J0959+0243 | 11 11 20 | 37.4 | 202.6 | 1.2 | | 13.4 | -23 | 2553 | No stop |
| 22 53 30 | --- | 11 13 10 | 37.3 | 203.2 | 1.2 | | 13.7 | 87 | 2567 | 22 51 41 |
| 22 53 30 | COSMOS-DEEP | 11 13 10 | 37.2 | 202.7 | 1.2 | | 13.4 | -11 | 2567 | No stop |
| 22 59 30 | --- | 11 19 11 | 36.9 | 204.6 | 1.3 | | 14.5 | 349 | 2613 | 22 53 31 |
| 23 00 00 | J0959+0243 | 11 19 41 | 36.9 | 205.2 | 1.3 | | 14.8 | 19 | 2613 | 23 00 00 |
| 23 02 00 | --- | 11 21 42 | 36.8 | 205.8 | 1.4 | | 15.1 | 120 | 2628 | 23 00 01 |
| 23 02 00 | COSMOS-DEEP | 11 21 42 | 36.7 | 205.3 | 1.3 | | 14.9 | -11 | 2628 | No stop |
| 23 10 00 | --- | 11 29 43 | 36.2 | 207.7 | 1.5 | | 16.2 | 469 | 2690 | 23 02 01 |
| 23 10 00 | J0959+0243 | 11 29 43 | 36.2 | 208.2 | 1.5 | | 16.5 | -11 | 2690 | No stop |
| 23 12 00 | --- | 11 31 43 | 36.1 | 208.8 | 1.5 | | 16.8 | 109 | 2705 | 23 10 01 |
| 23 12 00 | COSMOS-DEEP | 11 31 43 | 36.0 | 208.3 | 1.5 | | 16.6 | -11 | 2705 | No stop |
| 23 20 00 | --- | 11 39 45 | 35.4 | 210.7 | 1.6 | | 17.9 | 469 | 2767 | 23 12 01 |
| 23 20 40 | J1011+0106 | 11 40 25 | 34.8 | 207.2 | 1.5 | | 15.9 | 18 | 2767 | 23 20 40 |
| 23 22 10 | =1008+013 | 11 41 55 | 34.7 | 207.6 | 1.5 | | 16.2 | 90 | 2778 | 23 20 41 |
| 23 22 10 | J0959+0243 | 11 41 55 | 35.3 | 211.7 | 1.7 | | 18.4 | -23 | 2778 | No stop |
| 23 24 00 | --- | 11 43 45 | 35.2 | 212.3 | 1.7 | | 18.7 | 87 | 2792 | 23 22 11 |

Schedule for TORUN (Code Tr ) Page 8

EVN-COSMOS - Taming AGN and star-formation across cosmic time

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Fri 8 Mar 2019 Day 67 --- | | | | | | | | | | |
| 23 24 00 | COSMOS-DEEP | 11 43 45 | 35.1 | 211.8 | 1.7 | | 18.5 | -11 | 2792 | No stop |
| 23 30 00 | --- | 11 49 46 | 34.6 | 213.6 | 1.8 | | 19.4 | 349 | 2838 | 23 24 01 |
| 23 30 30 | J0959+0243 | 11 50 16 | 34.6 | 214.1 | 1.8 | | 19.7 | 19 | 2838 | 23 30 30 |
| 23 32 30 | --- | 11 52 17 | 34.5 | 214.7 | 1.9 | | 20.0 | 120 | 2854 | 23 30 31 |
| 23 32 30 | COSMOS-DEEP | 11 52 17 | 34.4 | 214.3 | 1.8 | | 19.8 | -11 | 2854 | No stop |
| 23 40 30 | --- | 12 00 18 | 33.7 | 216.6 | 2.0 | | 21.0 | 469 | 2915 | 23 32 31 |
| 23 40 30 | J0959+0243 | 12 00 18 | 33.8 | 217.0 | 2.0 | | 21.2 | -11 | 2915 | No stop |
| 23 42 30 | --- | 12 02 18 | 33.6 | 217.5 | 2.0 | | 21.5 | 109 | 2931 | 23 40 31 |
| 23 42 30 | COSMOS-DEEP | 12 02 18 | 33.5 | 217.1 | 2.0 | | 21.3 | -11 | 2931 | No stop |
| 23 50 30 | --- | 12 10 20 | 32.8 | 219.3 | 2.1 | | 22.4 | 469 | 2992 | 23 42 31 |
| 23 51 10 | J1011+0106 | 12 11 00 | 32.4 | 215.9 | 2.0 | | 20.6 | 18 | 2992 | 23 51 10 |
| 23 52 40 | =1008+013 | 12 12 30 | 32.3 | 216.3 | 2.0 | | 20.8 | 90 | 3004 | 23 51 11 |
| 23 52 40 | J0959+0243 | 12 12 30 | 32.6 | 220.4 | 2.2 | | 22.9 | -23 | 3004 | No stop |
| 23 54 30 | --- | 12 14 20 | 32.4 | 220.9 | 2.2 | | 23.2 | 87 | 3018 | 23 52 41 |
| --- Start: Fri 8 Mar 2019 Day 67 -- Stop: Sat 9 Mar 2019 Day 68 --- | | | | | | | | | | |
| 23 54 30 | COSMOS-DEEP | 12 14 20 | 32.4 | 220.4 | 2.2 | | 22.9 | -11 | 3018 | No stop |
| 00 00 30 | --- | 12 20 21 | 31.8 | 222.1 | 2.3 | | 23.7 | 349 | 3064 | 23 54 31 |
| 00 01 00 | J0959+0243 | 12 20 51 | 31.8 | 222.6 | 2.3 | | 24.0 | 19 | 3064 | 00 01 00 |
| 00 03 00 | --- | 12 22 52 | 31.6 | 223.2 | 2.4 | | 24.3 | 120 | 3079 | 00 01 01 |
| 00 03 00 | COSMOS-DEEP | 12 22 52 | 31.6 | 222.7 | 2.4 | | 24.1 | -11 | 3079 | No stop |
| 00 11 00 | --- | 12 30 53 | 30.7 | 224.9 | 2.5 | | 25.1 | 469 | 3141 | 00 03 01 |
| 00 11 00 | J0959+0243 | 12 30 53 | 30.8 | 225.3 | 2.5 | | 25.3 | -11 | 3141 | No stop |
| 00 13 00 | --- | 12 32 53 | 30.5 | 225.8 | 2.5 | | 25.5 | 109 | 3156 | 00 11 01 |
| 00 13 00 | COSMOS-DEEP | 12 32 53 | 30.5 | 225.4 | 2.5 | | 25.3 | -11 | 3156 | No stop |
| 00 21 00 | --- | 12 40 55 | 29.6 | 227.5 | 2.7 | | 26.3 | 469 | 3218 | 00 13 01 |
| 00 23 00 | J0956+2515 | 12 42 55 | 48.5 | 244.2 | 2.7 | | 36.7 | 35 | 3218 | 00 23 00 |
| 00 29 00 | =OK290 | 12 48 56 | 47.7 | 245.8 | 2.9 | | 37.2 | 360 | 3264 | 00 23 01 |
| 00 30 30 | COSMOS-DEEP | 12 50 26 | 28.6 | 229.9 | 2.8 | | 27.4 | 5 | 3264 | 00 30 30 |
| 00 37 00 | --- | 12 56 57 | 27.8 | 231.5 | 2.9 | | 28.1 | 390 | 3314 | 00 30 31 |

Schedule for TORUN (Code Tr ) Page 9

EVN-COSMOS - Taming AGN and star-formation across cosmic time

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 9 Mar 2019 Day 68 --- | | | | | | | | | | |
| 00 37 30 | J0959+0243 | 12 57 27 | 27.8 | 232.1 | 3.0 | | 28.3 | 19 | 3314 | 00 37 30 |
| 00 39 00 | --- | 12 58 58 | 27.6 | 232.4 | 3.0 | | 28.5 | 90 | 3326 | 00 37 31 |
| 00 39 00 | COSMOS-DEEP | 12 58 58 | 27.6 | 232.0 | 3.0 | | 28.3 | -11 | 3326 | No stop |
| 00 46 00 | --- | 13 05 59 | 26.7 | 233.8 | 3.1 | | 29.0 | 409 | 3379 | 00 39 01 |
| 00 46 00 | J0959+0243 | 13 05 59 | 26.7 | 234.2 | 3.1 | | 29.2 | -11 | 3379 | No stop |
| 00 48 00 | --- | 13 07 59 | 26.5 | 234.7 | 3.1 | | 29.4 | 109 | 3395 | 00 46 01 |
| 00 48 40 | J1011+0106 | 13 08 39 | 26.4 | 231.0 | 2.9 | | 27.8 | 18 | 3395 | 00 48 40 |
| 00 50 10 | =1008+013 | 13 10 09 | 26.3 | 231.4 | 3.0 | | 28.0 | 90 | 3406 | 00 48 41 |
| 00 50 10 | J0959+0243 | 13 10 09 | 26.2 | 235.2 | 3.2 | | 29.6 | -23 | 3406 | No stop |
| 00 52 00 | --- | 13 12 00 | 26.0 | 235.6 | 3.2 | | 29.7 | 87 | 3421 | 00 50 11 |
| 00 52 00 | COSMOS-DEEP | 13 12 00 | 26.0 | 235.2 | 3.2 | | 29.6 | -11 | 3421 | No stop |
| 00 58 00 | --- | 13 18 01 | 25.3 | 236.7 | 3.3 | | 30.1 | 349 | 3467 | 00 52 01 |
| 00 58 30 | J0959+0243 | 13 18 31 | 25.2 | 237.2 | 3.3 | | 30.3 | 19 | 3467 | 00 58 30 |
| 01 00 00 | --- | 13 20 01 | 25.0 | 237.6 | 3.3 | | 30.5 | 90 | 3478 | 00 58 31 |
| 01 00 00 | COSMOS-DEEP | 13 20 01 | 25.0 | 237.2 | 3.3 | | 30.3 | -10 | 3478 | No stop |
| 01 08 00 | --- | 13 28 02 | 24.0 | 239.1 | 3.4 | | 31.0 | 470 | 3540 | 01 00 01 |
| 01 08 00 | J0959+0243 | 13 28 02 | 24.0 | 239.4 | 3.5 | | 31.2 | -11 | 3540 | No stop |
| 01 10 00 | --- | 13 30 03 | 23.7 | 239.9 | 3.5 | | 31.3 | 109 | 3555 | 01 08 01 |
| 01 10 00 | COSMOS-DEEP | 13 30 03 | 23.7 | 239.5 | 3.5 | | 31.2 | -10 | 3555 | No stop |
| 01 18 00 | --- | 13 38 04 | 22.7 | 241.4 | 3.6 | | 31.8 | 470 | 3617 | 01 10 01 |
| 01 18 40 | J1011+0106 | 13 38 44 | 22.8 | 238.2 | 3.4 | | 30.7 | 19 | 3617 | 01 18 40 |
| 01 20 10 | =1008+013 | 13 40 14 | 22.6 | 238.6 | 3.5 | | 30.8 | 90 | 3628 | 01 18 41 |
| 01 20 10 | J0959+0243 | 13 40 14 | 22.4 | 242.3 | 3.7 | | 32.1 | -22 | 3628 | No stop |
| 01 22 00 | --- | 13 42 05 | 22.1 | 242.7 | 3.7 | | 32.3 | 88 | 3642 | 01 20 11 |
| 01 22 00 | COSMOS-DEEP | 13 42 05 | 22.1 | 242.3 | 3.7 | | 32.1 | -10 | 3642 | No stop |
| 01 28 00 | --- | 13 48 06 | 21.3 | 243.7 | 3.8 | | 32.6 | 350 | 3688 | 01 22 01 |
| 01 28 30 | J0959+0243 | 13 48 36 | 21.2 | 244.2 | 3.8 | | 32.8 | 19 | 3688 | 01 28 30 |
| 01 30 00 | --- | 13 50 06 | 21.0 | 244.5 | 3.8 | | 32.9 | 90 | 3700 | 01 28 31 |
| 01 30 00 | COSMOS-DEEP | 13 50 06 | 21.1 | 244.1 | 3.8 | | 32.7 | -10 | 3700 | No stop |
| 01 38 00 | --- | 13 58 07 | 20.0 | 245.9 | 3.9 | | 33.3 | 470 | 3762 | 01 30 01 |

Schedule for TORUN (Code Tr ) Page 10

EVN-COSMOS - Taming AGN and star-formation across cosmic time

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 9 Mar 2019 Day 68 --- | | | | | | | | | | |
| 01 38 00 | J0959+0243 | 13 58 07 | 19.9 | 246.3 | 4.0 | | 33.4 | -11 | 3762 | No stop |
| 01 40 00 | --- | 14 00 08 | 19.7 | 246.7 | 4.0 | | 33.5 | 109 | 3777 | 01 38 01 |
| 01 40 00 | COSMOS-DEEP | 14 00 08 | 19.7 | 246.4 | 4.0 | | 33.4 | -10 | 3777 | No stop |
| 01 48 00 | --- | 14 08 09 | 18.6 | 248.1 | 4.1 | | 33.9 | 470 | 3838 | 01 40 01 |
| 01 48 40 | J1011+0106 | 14 08 49 | 18.8 | 245.0 | 3.9 | | 33.0 | 19 | 3838 | 01 48 40 |
| 01 50 10 | =1008+013 | 14 10 19 | 18.6 | 245.4 | 4.0 | | 33.1 | 90 | 3850 | 01 48 41 |
| 01 50 10 | J0959+0243 | 14 10 19 | 18.3 | 249.0 | 4.2 | | 34.1 | -22 | 3850 | No stop |
| 01 52 00 | --- | 14 12 10 | 18.0 | 249.4 | 4.2 | | 34.2 | 88 | 3864 | 01 50 11 |
| 01 52 00 | COSMOS-DEEP | 14 12 10 | 18.0 | 249.0 | 4.2 | | 34.1 | -10 | 3864 | No stop |
| 01 58 00 | --- | 14 18 10 | 17.2 | 250.3 | 4.3 | | 34.5 | 350 | 3910 | 01 52 01 |
| 01 58 30 | J0959+0243 | 14 18 41 | 17.1 | 250.8 | 4.3 | | 34.6 | 19 | 3910 | 01 58 30 |
| 02 00 00 | --- | 14 20 11 | 16.9 | 251.1 | 4.3 | | 34.7 | 90 | 3922 | 01 58 31 |
| 02 00 00 | COSMOS-DEEP | 14 20 11 | 16.9 | 250.7 | 4.3 | | 34.6 | -10 | 3922 | No stop |
| 02 08 00 | --- | 14 28 12 | 15.8 | 252.4 | 4.4 | | 35.0 | 470 | 3983 | 02 00 01 |
| 02 08 00 | J0959+0243 | 14 28 12 | 15.7 | 252.8 | 4.5 | | 35.0 | -11 | 3983 | No stop |
| 02 10 00 | --- | 14 30 12 | 15.4 | 253.2 | 4.5 | | 35.1 | 109 | 3999 | 02 08 01 |
| 02 10 00 | COSMOS-DEEP | 14 30 12 | 15.5 | 252.9 | 4.5 | | 35.1 | -10 | 3999 | No stop |
| 02 18 00 | --- | 14 38 14 | 14.3 | 254.6 | 4.6 | | 35.4 | 470 | 4060 | 02 10 01 |
| 02 18 40 | J1011+0106 | 14 38 54 | 14.6 | 251.6 | 4.4 | | 34.7 | 19 | 4060 | 02 18 40 |
| 02 20 10 | =1008+013 | 14 40 24 | 14.4 | 251.9 | 4.5 | | 34.8 | 90 | 4072 | 02 18 41 |
| 02 20 10 | J0959+0243 | 14 40 24 | 14.0 | 255.4 | 4.7 | | 35.6 | -22 | 4072 | No stop |
| 02 22 00 | --- | 14 42 14 | 13.7 | 255.8 | 4.7 | | 35.6 | 88 | 4086 | 02 20 11 |
| 02 22 00 | COSMOS-DEEP | 14 42 14 | 13.7 | 255.4 | 4.7 | | 35.6 | -10 | 4086 | No stop |
| 02 28 00 | --- | 14 48 15 | 12.9 | 256.7 | 4.8 | | 35.8 | 350 | 4132 | 02 22 01 |
| 02 28 30 | J0959+0243 | 14 48 46 | 12.7 | 257.1 | 4.8 | | 35.9 | 19 | 4132 | 02 28 30 |
| 02 30 00 | --- | 14 50 16 | 12.5 | 257.4 | 4.8 | | 35.9 | 90 | 4144 | 02 28 31 |
| 02 30 00 | COSMOS-DEEP | 14 50 16 | 12.6 | 257.1 | 4.8 | | 35.9 | -10 | 4144 | No stop |
| 02 38 00 | --- | 14 58 17 | 11.4 | 258.7 | 4.9 | | 36.1 | 470 | 4205 | 02 30 01 |
| 02 38 00 | J0959+0243 | 14 58 17 | 11.3 | 259.1 | 5.0 | | 36.2 | -11 | 4205 | No stop |
| 02 40 00 | --- | 15 00 17 | 11.0 | 259.5 | 5.0 | | 36.2 | 109 | 4221 | 02 38 01 |

```
Schedule for TORUN     (Code Tr )                                  Page  11
               EVN-COSMOS - Taming AGN and star-formation across cosmic time
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-------------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-------------------------------------------------------------------------------------------

 --- Sat   9 Mar 2019   Day  68 ---

02 40 00  COSMOS-DEEP  15 00 17  11.1 259.1  5.0      36.2   -10     4221   No stop
02 48 00  ---          15 08 19   9.9 260.8  5.1      36.4   470     4282   02 40 01

02 48 40  J1011+0106   15 08 59  10.2 257.8  4.9      36.0    19     4282   02 48 40
02 50 10  =1008+013    15 10 29  10.0 258.1  5.0      36.0    90     4294   02 48 41

02 50 10  J0959+0243   15 10 29   9.5 261.6  5.2      36.5   -22     4294   No stop
02 52 00  ---          15 12 19   9.3 262.0  5.2      36.5    88     4308   02 50 11

02 52 00  COSMOS-DEEP  15 12 19   9.3 261.6  5.2      36.5   -10     4308   No stop
02 58 00  ---          15 18 20   8.4 262.8  5.3      36.6   350     4354   02 52 01

02 58 30  J0959+0243   15 18 50   8.3 263.3  5.3      36.7    19     4354   02 58 30
03 00 00  ---          15 20 21   8.1 263.6  5.3      36.7    90     4365   02 58 31

03 00 00  COSMOS-DEEP  15 20 21   8.1 263.2  5.3      36.6   -10     4365   No stop
03 08 00  ---          15 28 22   6.9 264.9  5.4      36.8   470     4427   03 00 01

03 08 00  J0959+0243   15 28 22   6.9 265.2  5.5      36.8   -10     4427   No stop
03 10 00  ---          15 30 22   6.6 265.6  5.5      36.8   110     4442   03 08 01

03 10 00  COSMOS-DEEP  15 30 22   6.6 265.3  5.5      36.8   -10     4442   No stop
03 18 00  ---          15 38 24   5.4 266.9  5.6      36.9   470     4504   03 10 01

03 20 00  J1015+0109   15 40 24   6.3 263.3  5.4      36.6    97     4504   03 20 00
03 26 00  =1013+014    15 46 25   5.4 264.5  5.5      36.7   360     4550   03 20 01

03 26 30  J1011+0106   15 46 55   4.6 265.5  5.6      36.8    15     4550   03 26 30
03 28 30  =1008+013    15 48 55   4.3 265.9  5.6      36.8   120     4565   03 26 31

03 29 00  J0959+0243   15 49 25   3.7 269.4  5.8      36.9     8     4565   03 29 00
03 30 30  ---          15 50 56   3.5 269.7  5.8      36.9    90     4577   03 29 01

03 30 30  COSMOS-DEEP  15 50 56   3.5 269.4  5.8      36.9   -10     4577   No stop
03 37 00  ---          15 57 27   2.6 270.7  5.9  D   36.9     0     4627   03 30 31



SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119.L1024

   Setup group:   12         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
   Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00
```

Disk used to record data.

```
  1st LO=   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00
            2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00
  Net SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF SB =         L         L         L         L         L         L         L         L
                  L         L         L         L         L         L         L         L
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
                RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
                  3         7         3         7         4         8         4         8
  BBC SB=         U         U         L         L         U         U         L         L
                  U         U         L         L         U         U         L         L
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                 A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:   6  Setup file default.  Used with PCAL = off
  LO sum=   1610.49  1610.49  1610.49  1610.49  1642.49  1642.49  1642.49  1642.49
            1674.49  1674.49  1674.49  1674.49  1706.49  1706.49  1706.49  1706.49
  BBC fr=    689.51   689.51   689.51   689.51   657.51   657.51   657.51   657.51
             625.51   625.51   625.51   625.51   593.51   593.51   593.51   593.51
  Bandwd=     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
              16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
   Matching frequency sets:   6

  Track assignments are:
   track1=   2, 10, 18, 26,  4, 12, 20, 28,  6, 14, 22, 30,  8, 16, 24, 32
   barrel=roll_off



POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                       (B1950)             (J2000)             (Date)             (mas)

* J0959+0243        09 56 32.884578   * 09 59 08.318200     10 00 08.169823       0.00
                    02 57 32.68843    * 02 43 09.61320      02 37 32.97979        0.00
                    approx 18 mJy from VLBA-COSMOS

* COSMOS-DEEP       09 57 49.681612   * 10 00 25.000000     10 01 24.811059       0.00
                    02 47 25.90418    * 02 33 00.00000      02 27 22.30826        0.00
                    Center of COSMOS-deep

  OK290             09 53 59.738482   * 09 56 49.875376     09 57 55.239091       0.41
* J0956+2515        25 29 33.58581    * 25 15 16.04991      25 09 44.07143        0.37
  0953+254          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
  J0956+25          GSFC 2016a X/S astro solution,  26975 observations.

  1008+013          10 08 41.222914   * 10 11 15.639202     10 12 15.133915       0.12
* J1011+0106        01 21 31.32520    * 01 06 42.51240      01 00 56.28329        0.26
                    /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,    112 observations.

  1013+014          10 13 22.642260   * 10 15 57.055034     10 16 56.554476       0.12
* J1015+0109        01 24 11.84444    * 01 09 13.74671      01 03 24.11827        0.21
                    /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,    122 observations.
```

EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun.
SCHED provides warnings at individual scans for distances less than 10 degrees.
The distance from the Sun to each source in this schedule is:

| Source | Sun distance (deg) |
|---|---|
| J0959+0243 | 160.9 |
| COSMOS-DEEP | 161.2 |
| J0956+2515 | 152.2 |
| J1011+0106 | 163.6 |
| J1015+0109 | 164.8 |

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
that the Sun will cause amplitude reductions on the longest VLBA baselines
at a solar distance of 60deg F^(-0.6) where F is in GHz.
For common VLBI bands, this is:

| | |
|---|---|
| 1.6 GHz | 45. deg |
| 2.3 GHz | 36. deg |
| 5.0 GHz | 23. deg |
| 8.4 GHz | 17. deg |
| 15.0 GHz | 12. deg |
| 22.0 GHz | 9. deg |

**ep106ftr**

Mrk1018 at 1 Gb/s - L band

PI: *Miguel A. Perez-Torres*


```
Address:  IAA - CSIC
          Glorieta de la Astronomia s/n
          18008 Granada, Spain


Phone:    +34-665252538
EMAIL:    torres@iaa.es
Fax:
Phone during observation: +34-665252538
```


```
Observing mode: 1024 Mbps

Schedule for TORUN     (Code Tr )                                   Page   2
               Mrk1018 at 1 Gb/s - L band
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-------------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-------------------------------------------------------------------------------------------

 --- Sat   9 Mar 2019   Day  68 ---

 Next scan frequencies:  1610.49  1610.49  1610.49  1610.49  1642.49  1642.49  1642.49  1642.49
                         1674.49  1674.49  1674.49  1674.49  1706.49  1706.49  1706.49  1706.49
 Next BBC frequencies:    689.51   689.51   689.51   689.51   657.51   657.51   657.51   657.51
                          625.51   625.51   625.51   625.51   593.51   593.51   593.51   593.51
 Next scan bandwidths:     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
                           16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00

10 30 00  0149+218     22 51 35  43.8 113.9 -3.0     -36.4     0        0   10 30 00
10 33 30  ---          22 55 05  44.3 114.8 -3.0     -36.1   210       27   10 30 01

10 33 30  0205-010     22 55 05  22.8 125.6 -3.2     -29.2   -94       27   No stop
10 37 30  ---          22 59 06  23.3 126.5 -3.2     -28.8   146       58   10 33 31

10 37 30  MRK1018      22 59 06  24.0 126.8 -3.1     -28.7   -15       58   No stop
10 41 20  ---          23 02 56  24.4 127.7 -3.1     -28.4   215       87   10 37 31

10 41 50  0205-010     23 03 27  23.8 127.6 -3.1     -28.4    15       87   10 41 50
10 43 00  ---          23 04 37  23.9 127.9 -3.1     -28.3    70       96   10 41 51

10 43 00  MRK1018      23 04 37  24.6 128.1 -3.0     -28.2   -15       96   No stop
10 46 50  ---          23 08 27  25.1 129.1 -3.0     -27.8   215      126   10 43 01

10 46 50  0205-010     23 08 27  24.4 128.8 -3.0     -27.9   -15      126   No stop
10 48 00  ---          23 09 38  24.5 129.1 -3.0     -27.8    55      135   10 46 51

10 48 00  MRK1018      23 09 38  25.2 129.3 -3.0     -27.7   -15      135   No stop
10 51 50  ---          23 13 28  25.7 130.3 -2.9     -27.3   215      164   10 48 01

10 52 20  0205-010     23 13 58  25.0 130.1 -2.9     -27.3    15      164   10 52 20
10 53 30  ---          23 15 08  25.2 130.4 -2.9     -27.2    70      173   10 52 21

10 53 30  MRK1018      23 15 08  25.9 130.7 -2.9     -27.1   -15      173   No stop
10 57 20  ---          23 18 59  26.3 131.7 -2.8     -26.7   215      203   10 53 31
```

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 10 57 20 | 0205-010 | 23 18 59 | 25.6 | 131.4 | -2.8 | -26.8 | -14 | 203 | No stop |
| 10 58 30 | --- | 23 20 09 | 25.7 | 131.7 | -2.8 | -26.7 | 56 | 212 | 10 57 21 |
| 10 58 30 | MRK1018 | 23 20 09 | 26.4 | 131.9 | -2.8 | -26.5 | -15 | 212 | No stop |
| 11 02 20 | --- | 23 24 00 | 26.9 | 132.9 | -2.7 | -26.1 | 215 | 241 | 10 58 31 |
| 11 02 50 | 0205-010 | 23 24 30 | 26.2 | 132.7 | -2.7 | -26.2 | 16 | 241 | 11 02 50 |
| 11 04 00 | --- | 23 25 40 | 26.3 | 133.0 | -2.7 | -26.0 | 70 | 250 | 11 02 51 |
| 11 04 00 | MRK1018 | 23 25 40 | 27.0 | 133.3 | -2.7 | -25.9 | -15 | 250 | No stop |
| 11 07 50 | --- | 23 29 31 | 27.5 | 134.3 | -2.6 | -25.5 | 215 | 279 | 11 04 01 |

Schedule for TORUN (Code Tr ) Page 3

Mrk1018 at 1 Gb/s - L band

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 9 Mar 2019 Day 68 --- | | | | | | | | | | |
| 11 07 50 | 0205-010 | 23 29 31 | 26.8 | 134.0 | -2.7 | | -25.6 | -14 | 279 | No stop |
| 11 09 00 | --- | 23 30 41 | 26.9 | 134.3 | -2.6 | | -25.5 | 56 | 288 | 11 07 51 |
| 11 09 00 | MRK1018 | 23 30 41 | 27.6 | 134.6 | -2.6 | | -25.3 | -15 | 288 | No stop |
| 11 12 50 | --- | 23 34 32 | 28.0 | 135.6 | -2.5 | | -24.9 | 215 | 318 | 11 09 01 |
| 11 13 20 | 0205-010 | 23 35 02 | 27.3 | 135.4 | -2.6 | | -24.9 | 16 | 318 | 11 13 20 |
| 11 14 30 | --- | 23 36 12 | 27.5 | 135.7 | -2.6 | | -24.8 | 70 | 327 | 11 13 21 |
| 11 14 30 | MRK1018 | 23 36 12 | 28.2 | 136.0 | -2.5 | | -24.6 | -15 | 327 | No stop |
| 11 18 20 | --- | 23 40 03 | 28.6 | 137.0 | -2.5 | | -24.2 | 215 | 356 | 11 14 31 |
| 11 18 20 | 0205-010 | 23 40 03 | 27.9 | 136.7 | -2.5 | | -24.3 | -14 | 356 | No stop |
| 11 19 30 | --- | 23 41 13 | 28.0 | 137.0 | -2.5 | | -24.2 | 56 | 365 | 11 18 21 |
| 11 19 30 | MRK1018 | 23 41 13 | 28.7 | 137.3 | -2.4 | | -24.0 | -15 | 365 | No stop |
| 11 23 20 | --- | 23 45 03 | 29.1 | 138.3 | -2.4 | | -23.5 | 215 | 395 | 11 19 31 |
| 11 23 50 | 0205-010 | 23 45 33 | 28.4 | 138.1 | -2.4 | | -23.6 | 16 | 395 | 11 23 50 |
| 11 25 00 | --- | 23 46 44 | 28.5 | 138.4 | -2.4 | | -23.5 | 70 | 404 | 11 23 51 |
| 11 25 00 | MRK1018 | 23 46 44 | 29.2 | 138.8 | -2.3 | | -23.3 | -15 | 404 | No stop |
| 11 28 50 | --- | 23 50 34 | 29.6 | 139.8 | -2.3 | | -22.8 | 215 | 433 | 11 25 01 |
| 11 28 50 | 0205-010 | 23 50 34 | 28.9 | 139.4 | -2.3 | | -23.0 | -14 | 433 | No stop |
| 11 30 00 | --- | 23 51 44 | 29.0 | 139.7 | -2.3 | | -22.8 | 56 | 442 | 11 28 51 |
| 11 30 00 | MRK1018 | 23 51 44 | 29.7 | 140.1 | -2.3 | | -22.7 | -15 | 442 | No stop |
| 11 33 50 | --- | 23 55 35 | 30.1 | 141.1 | -2.2 | | -22.1 | 215 | 472 | 11 30 01 |
| 11 34 20 | 0205-010 | 23 56 05 | 29.5 | 140.9 | -2.2 | | -22.3 | 16 | 472 | 11 34 20 |
| 11 35 30 | --- | 23 57 15 | 29.6 | 141.2 | -2.2 | | -22.1 | 70 | 481 | 11 34 21 |
| 11 35 30 | MRK1018 | 23 57 15 | 30.2 | 141.6 | -2.2 | | -21.9 | -15 | 481 | No stop |
| 11 39 20 | --- | 00 01 06 | 30.6 | 142.6 | -2.1 | | -21.4 | 215 | 510 | 11 35 31 |
| 11 39 20 | 0205-010 | 00 01 06 | 29.9 | 142.2 | -2.1 | | -21.6 | -14 | 510 | No stop |
| 11 40 30 | --- | 00 02 16 | 30.0 | 142.5 | -2.1 | | -21.4 | 56 | 519 | 11 39 21 |
| 11 40 30 | MRK1018 | 00 02 16 | 30.7 | 142.9 | -2.1 | | -21.2 | -15 | 519 | No stop |
| 11 44 20 | --- | 00 06 07 | 31.0 | 144.0 | -2.0 | | -20.7 | 215 | 549 | 11 40 31 |
| 11 44 50 | 0205-010 | 00 06 37 | 30.4 | 143.7 | -2.0 | | -20.8 | 16 | 549 | 11 44 50 |
| 11 46 00 | --- | 00 07 47 | 30.5 | 144.0 | -2.0 | | -20.7 | 70 | 558 | 11 44 51 |

```
Schedule for TORUN     (Code Tr )                                  Page   4
               Mrk1018 at 1 Gb/s - L band
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Sat   9 Mar 2019   Day  68 ---

11 46 00  MRK1018      00 07 47  31.2 144.4 -2.0     -20.5   -14      558   No stop
11 49 50  ---          00 11 38  31.5 145.5 -1.9     -19.9   216      587   11 46 01

11 49 50  0205-010     00 11 38  30.9 145.1 -2.0     -20.1   -14      587   No stop
11 51 00  ---          00 12 48  31.0 145.4 -1.9     -19.9    56      596   11 49 51

11 51 00  MRK1018      00 12 48  31.6 145.8 -1.9     -19.7   -14      596   No stop
11 54 50  ---          00 16 39  31.9 146.9 -1.8     -19.2   216      626   11 51 01

11 55 20  0205-010     00 17 09  31.3 146.6 -1.9     -19.3    16      626   11 55 20
11 56 30  ---          00 18 19  31.4 146.9 -1.9     -19.1    70      635   11 55 21

11 56 30  MRK1018      00 18 19  32.1 147.3 -1.8     -18.9   -14      635   No stop
12 00 20  ---          00 22 09  32.4 148.4 -1.8     -18.3   216      664   11 56 31

12 00 20  0205-010     00 22 09  31.7 148.0 -1.8     -18.6   -14      664   No stop
12 01 30  ---          00 23 20  31.8 148.3 -1.8     -18.4    56      673   12 00 21

12 01 30  MRK1018      00 23 20  32.5 148.7 -1.7     -18.2   -14      673   No stop
12 05 20  ---          00 27 10  32.8 149.8 -1.7     -17.6   216      703   12 01 31

12 05 50  0205-010     00 27 40  32.2 149.5 -1.7     -17.7    16      703   12 05 50
12 07 00  ---          00 28 51  32.3 149.9 -1.7     -17.6    70      712   12 05 51

12 07 00  MRK1018      00 28 51  32.9 150.3 -1.6     -17.3   -14      712   No stop
12 10 50  ---          00 32 41  33.2 151.4 -1.6     -16.7   216      741   12 07 01

12 10 50  0205-010     00 32 41  32.5 150.9 -1.6     -17.0   -14      741   No stop
12 12 00  ---          00 33 51  32.6 151.3 -1.6     -16.8    56      750   12 10 51

12 12 00  MRK1018      00 33 51  33.3 151.7 -1.6     -16.5   -14      750   No stop
12 15 50  ---          00 37 42  33.5 152.8 -1.5     -15.9   216      779   12 12 01

12 16 20  0205-010     00 38 12  32.9 152.5 -1.5     -16.1    16      779   12 16 20
12 17 30  ---          00 39 22  33.0 152.8 -1.5     -15.9    70      788   12 16 21

12 17 30  MRK1018      00 39 22  33.6 153.3 -1.5     -15.7   -14      788   No stop
12 21 20  ---          00 43 13  33.9 154.4 -1.4     -15.0   216      818   12 17 31

12 21 20  0205-010     00 43 13  33.3 153.9 -1.4     -15.3   -14      818   No stop
12 22 30  ---          00 44 23  33.3 154.3 -1.4     -15.1    56      827   12 21 21

12 22 30  MRK1018      00 44 23  34.0 154.8 -1.4     -14.8   -14      827   No stop
12 26 20  ---          00 48 14  34.2 155.9 -1.3     -14.2   216      856   12 22 31
```

Schedule for TORUN (Code Tr ) Page 5

Mrk1018 at 1 Gb/s - L band

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 9 Mar 2019 Day 68 --- | | | | | | | | | | |
| 12 26 50 | 0205-010 | 00 48 44 | 33.6 | 155.5 | -1.3 | | -14.4 | 16 | 856 | 12 26 50 |
| 12 28 00 | --- | 00 49 54 | 33.7 | 155.9 | -1.3 | | -14.2 | 70 | 865 | 12 26 51 |
| 12 28 00 | MRK1018 | 00 49 54 | 34.3 | 156.4 | -1.3 | | -13.9 | -14 | 865 | No stop |
| 12 31 50 | --- | 00 53 45 | 34.5 | 157.5 | -1.2 | | -13.3 | 216 | 895 | 12 28 01 |
| 12 31 50 | 0205-010 | 00 53 45 | 33.9 | 157.0 | -1.3 | | -13.6 | -14 | 895 | No stop |
| 12 33 00 | --- | 00 54 55 | 34.0 | 157.4 | -1.2 | | -13.4 | 56 | 904 | 12 31 51 |
| 12 33 00 | MRK1018 | 00 54 55 | 34.6 | 157.9 | -1.2 | | -13.1 | -14 | 904 | No stop |
| 12 36 50 | --- | 00 58 45 | 34.8 | 159.0 | -1.1 | | -12.4 | 216 | 933 | 12 33 01 |
| 12 37 20 | 0205-010 | 00 59 16 | 34.2 | 158.6 | -1.2 | | -12.6 | 16 | 933 | 12 37 20 |
| 12 38 30 | --- | 01 00 26 | 34.3 | 159.0 | -1.1 | | -12.4 | 70 | 942 | 12 37 21 |
| 12 38 30 | MRK1018 | 01 00 26 | 34.9 | 159.5 | -1.1 | | -12.1 | -14 | 942 | No stop |
| 12 42 20 | --- | 01 04 16 | 35.1 | 160.6 | -1.0 | | -11.5 | 216 | 972 | 12 38 31 |
| 12 42 20 | 0205-010 | 01 04 16 | 34.5 | 160.1 | -1.1 | | -11.8 | -14 | 972 | No stop |
| 12 43 30 | --- | 01 05 27 | 34.6 | 160.5 | -1.1 | | -11.6 | 56 | 981 | 12 42 21 |
| 12 43 30 | MRK1018 | 01 05 27 | 35.2 | 161.0 | -1.0 | | -11.3 | -14 | 981 | No stop |
| 12 47 20 | --- | 01 09 17 | 35.3 | 162.1 | -1.0 | | -10.6 | 216 | 1010 | 12 43 31 |
| 12 47 50 | 0205-010 | 01 09 47 | 34.8 | 161.8 | -1.0 | | -10.8 | 16 | 1010 | 12 47 50 |
| 12 49 00 | --- | 01 10 57 | 34.8 | 162.1 | -1.0 | | -10.6 | 70 | 1019 | 12 47 51 |
| 12 49 00 | MRK1018 | 01 10 57 | 35.4 | 162.6 | -0.9 | | -10.3 | -14 | 1019 | No stop |
| 12 52 50 | --- | 01 14 48 | 35.6 | 163.8 | -0.9 | | -9.6 | 216 | 1049 | 12 49 01 |
| 12 52 50 | 0205-010 | 01 14 48 | 35.0 | 163.3 | -0.9 | | -10.0 | -14 | 1049 | No stop |
| 12 54 00 | --- | 01 15 58 | 35.1 | 163.6 | -0.9 | | -9.8 | 56 | 1058 | 12 52 51 |
| 12 54 00 | MRK1018 | 01 15 58 | 35.6 | 164.2 | -0.9 | | -9.4 | -14 | 1058 | No stop |
| 12 57 50 | --- | 01 19 49 | 35.8 | 165.3 | -0.8 | | -8.7 | 216 | 1087 | 12 54 01 |
| 12 58 20 | 0205-010 | 01 20 19 | 35.2 | 164.9 | -0.8 | | -9.0 | 16 | 1087 | 12 58 20 |
| 12 59 30 | --- | 01 21 29 | 35.3 | 165.3 | -0.8 | | -8.8 | 70 | 1096 | 12 58 21 |
| 12 59 30 | MRK1018 | 01 21 29 | 35.9 | 165.8 | -0.8 | | -8.4 | -14 | 1096 | No stop |
| 13 03 20 | --- | 01 25 20 | 36.0 | 167.0 | -0.7 | | -7.8 | 216 | 1126 | 12 59 31 |
| 13 03 20 | 0205-010 | 01 25 20 | 35.4 | 166.4 | -0.7 | | -8.1 | -14 | 1126 | No stop |
| 13 04 30 | --- | 01 26 30 | 35.5 | 166.8 | -0.7 | | -7.9 | 56 | 1135 | 13 03 21 |

Schedule for TORUN (Code Tr ) Page 6

Mrk1018 at 1 Gb/s - L band

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 9 Mar 2019 Day 68 --- | | | | | | | | | | |
| 13 04 30 | MRK1018 | 01 26 30 | 36.0 | 167.4 | -0.7 | | -7.5 | -14 | 1135 | No stop |
| 13 08 20 | --- | 01 30 21 | 36.1 | 168.6 | -0.6 | | -6.8 | 216 | 1164 | 13 04 31 |
| 13 08 50 | 0205-010 | 01 30 51 | 35.6 | 168.1 | -0.6 | | -7.1 | 16 | 1164 | 13 08 50 |
| 13 10 00 | --- | 01 32 01 | 35.6 | 168.5 | -0.6 | | -6.9 | 70 | 1173 | 13 08 51 |
| 13 10 00 | MRK1018 | 01 32 01 | 36.2 | 169.1 | -0.6 | | -6.5 | -14 | 1173 | No stop |
| 13 13 50 | --- | 01 35 52 | 36.3 | 170.3 | -0.5 | | -5.8 | 216 | 1203 | 13 10 01 |
| 13 13 50 | 0205-010 | 01 35 52 | 35.7 | 169.7 | -0.6 | | -6.2 | -14 | 1203 | No stop |
| 13 15 00 | --- | 01 37 02 | 35.8 | 170.0 | -0.5 | | -6.0 | 56 | 1212 | 13 13 51 |
| 13 15 00 | 0154-000 | 01 37 02 | 37.0 | 173.4 | -0.4 | | -4.0 | -22 | 1212 | No stop |
| 13 17 00 | --- | 01 39 02 | 37.0 | 174.0 | -0.3 | | -3.6 | 98 | 1227 | 13 15 01 |
| 13 17 00 | MRK1018 | 01 39 02 | 36.4 | 171.2 | -0.5 | | -5.2 | -20 | 1227 | No stop |
| 13 20 50 | --- | 01 42 53 | 36.5 | 172.4 | -0.4 | | -4.5 | 210 | 1256 | 13 17 01 |
| 13 21 20 | 0205-010 | 01 43 23 | 35.9 | 172.0 | -0.4 | | -4.8 | 16 | 1256 | 13 21 20 |
| 13 22 30 | --- | 01 44 33 | 35.9 | 172.3 | -0.4 | | -4.6 | 70 | 1265 | 13 21 21 |
| 13 22 30 | MRK1018 | 01 44 33 | 36.5 | 172.9 | -0.4 | | -4.2 | -14 | 1265 | No stop |
| 13 26 20 | --- | 01 48 24 | 36.6 | 174.1 | -0.3 | | -3.5 | 216 | 1295 | 13 22 31 |
| 13 26 20 | 0205-010 | 01 48 24 | 36.0 | 173.5 | -0.3 | | -3.9 | -13 | 1295 | No stop |
| 13 27 30 | --- | 01 49 34 | 36.0 | 173.9 | -0.3 | | -3.7 | 57 | 1304 | 13 26 21 |
| 13 27 30 | MRK1018 | 01 49 34 | 36.6 | 174.5 | -0.3 | | -3.3 | -13 | 1304 | No stop |
| 13 31 20 | --- | 01 53 24 | 36.6 | 175.7 | -0.2 | | -2.6 | 217 | 1333 | 13 27 31 |
| 13 31 50 | 0205-010 | 01 53 54 | 36.1 | 175.2 | -0.3 | | -2.9 | 17 | 1333 | 13 31 50 |
| 13 33 00 | --- | 01 55 05 | 36.1 | 175.6 | -0.2 | | -2.7 | 70 | 1342 | 13 31 51 |
| 13 33 00 | MRK1018 | 01 55 05 | 36.6 | 176.2 | -0.2 | | -2.3 | -13 | 1342 | No stop |
| 13 36 50 | --- | 01 58 55 | 36.7 | 177.4 | -0.1 | | -1.6 | 217 | 1372 | 13 33 01 |
| 13 36 50 | 0205-010 | 01 58 55 | 36.2 | 176.8 | -0.2 | | -1.9 | -13 | 1372 | No stop |
| 13 38 00 | --- | 02 00 05 | 36.2 | 177.1 | -0.2 | | -1.7 | 57 | 1381 | 13 36 51 |
| 13 38 00 | MRK1018 | 02 00 05 | 36.7 | 177.8 | -0.1 | | -1.3 | -13 | 1381 | No stop |
| 13 41 50 | --- | 02 03 56 | 36.7 | 179.0 | -0.1 | | -0.6 | 217 | 1410 | 13 38 01 |
| 13 42 20 | 0205-010 | 02 04 26 | 36.2 | 178.5 | -0.1 | | -0.9 | 17 | 1410 | 13 42 20 |
| 13 43 30 | --- | 02 05 36 | 36.2 | 178.8 | -0.1 | | -0.7 | 70 | 1419 | 13 42 21 |

Schedule for TORUN (Code Tr ) Page 7

Mrk1018 at 1 Gb/s - L band

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Sat 9 Mar 2019 Day 68 --- | | | | | | | | | | |
| 13 43 30 | MRK1018 | 02 05 36 | 36.7 | 179.5 | -0.0 | | -0.3 | -13 | 1419 | No stop |
| 13 47 20 | --- | 02 09 27 | 36.7 | 180.7 | 0.0 | | 0.4 | 217 | 1449 | 13 43 31 |
| 13 47 20 | 0205-010 | 02 09 27 | 36.2 | 180.0 | 0.0 | | 0.0 | -13 | 1449 | No stop |
| 13 48 30 | --- | 02 10 37 | 36.2 | 180.4 | 0.0 | | 0.2 | 57 | 1458 | 13 47 21 |
| 13 48 30 | MRK1018 | 02 10 37 | 36.7 | 181.1 | 0.1 | | 0.6 | -13 | 1458 | No stop |
| 13 52 20 | --- | 02 14 28 | 36.7 | 182.3 | 0.1 | | 1.4 | 217 | 1487 | 13 48 31 |
| 13 52 50 | 0205-010 | 02 14 58 | 36.2 | 181.7 | 0.1 | | 1.0 | 17 | 1487 | 13 52 50 |
| 13 54 00 | --- | 02 16 08 | 36.2 | 182.1 | 0.1 | | 1.3 | 70 | 1496 | 13 52 51 |
| 13 54 00 | MRK1018 | 02 16 08 | 36.7 | 182.8 | 0.1 | | 1.7 | -13 | 1496 | No stop |
| 13 57 50 | --- | 02 19 59 | 36.6 | 184.0 | 0.2 | | 2.4 | 217 | 1526 | 13 54 01 |
| 13 57 50 | 0205-010 | 02 19 59 | 36.1 | 183.3 | 0.2 | | 2.0 | -13 | 1526 | No stop |
| 13 59 00 | --- | 02 21 09 | 36.1 | 183.6 | 0.2 | | 2.2 | 57 | 1535 | 13 57 51 |
| 13 59 00 | MRK1018 | 02 21 09 | 36.6 | 184.3 | 0.2 | | 2.6 | -13 | 1535 | No stop |
| 14 02 50 | --- | 02 25 00 | 36.6 | 185.5 | 0.3 | | 3.3 | 217 | 1564 | 13 59 01 |
| 14 03 20 | 0205-010 | 02 25 30 | 36.1 | 185.0 | 0.3 | | 3.0 | 17 | 1564 | 14 03 20 |
| 14 04 30 | --- | 02 26 40 | 36.1 | 185.3 | 0.3 | | 3.2 | 70 | 1573 | 14 03 21 |
| 14 04 30 | MRK1018 | 02 26 40 | 36.5 | 186.1 | 0.3 | | 3.6 | -13 | 1573 | No stop |
| 14 08 20 | --- | 02 30 30 | 36.5 | 187.2 | 0.4 | | 4.3 | 217 | 1603 | 14 04 31 |
| 14 08 20 | 0205-010 | 02 30 30 | 36.0 | 186.5 | 0.4 | | 3.9 | -13 | 1603 | No stop |
| 14 09 30 | --- | 02 31 41 | 36.0 | 186.9 | 0.4 | | 4.1 | 57 | 1612 | 14 08 21 |
| 14 09 30 | MRK1018 | 02 31 41 | 36.5 | 187.6 | 0.4 | | 4.6 | -13 | 1612 | No stop |
| 14 13 20 | --- | 02 35 31 | 36.4 | 188.8 | 0.5 | | 5.3 | 217 | 1641 | 14 09 31 |
| 14 13 50 | 0205-010 | 02 36 01 | 35.9 | 188.2 | 0.4 | | 4.9 | 17 | 1641 | 14 13 50 |
| 14 15 00 | --- | 02 37 12 | 35.9 | 188.6 | 0.5 | | 5.1 | 70 | 1650 | 14 13 51 |
| 14 15 00 | MRK1018 | 02 37 12 | 36.3 | 189.3 | 0.5 | | 5.6 | -13 | 1650 | No stop |
| 14 18 50 | --- | 02 41 02 | 36.2 | 190.5 | 0.6 | | 6.3 | 217 | 1679 | 14 15 01 |
| 14 18 50 | 0205-010 | 02 41 02 | 35.8 | 189.8 | 0.5 | | 5.8 | -13 | 1679 | No stop |
| 14 20 00 | --- | 02 42 12 | 35.8 | 190.1 | 0.5 | | 6.1 | 57 | 1688 | 14 18 51 |
| 14 20 00 | MRK1018 | 02 42 12 | 36.2 | 190.9 | 0.6 | | 6.5 | -13 | 1688 | No stop |
| 14 23 50 | --- | 02 46 03 | 36.1 | 192.0 | 0.6 | | 7.2 | 217 | 1718 | 14 20 01 |

Schedule for TORUN (Code Tr ) Page 8

Mrk1018 at 1 Gb/s - L band

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 9 Mar 2019 Day 68 --- | | | | | | | | | | |
| 14 24 20 | 0205-010 | 02 46 33 | 35.6 | 191.5 | 0.6 | | 6.9 | 17 | 1718 | 14 24 20 |
| 14 25 30 | --- | 02 47 43 | 35.6 | 191.8 | 0.6 | | 7.1 | 70 | 1727 | 14 24 21 |
| 14 25 30 | MRK1018 | 02 47 43 | 36.0 | 192.6 | 0.7 | | 7.5 | -13 | 1727 | No stop |
| 14 29 20 | --- | 02 51 34 | 35.9 | 193.7 | 0.7 | | 8.2 | 217 | 1756 | 14 25 31 |
| 14 29 20 | 0205-010 | 02 51 34 | 35.5 | 193.0 | 0.7 | | 7.8 | -13 | 1756 | No stop |
| 14 30 30 | --- | 02 52 44 | 35.4 | 193.3 | 0.7 | | 8.0 | 57 | 1765 | 14 29 21 |
| 14 30 30 | MRK1018 | 02 52 44 | 35.9 | 194.1 | 0.8 | | 8.4 | -13 | 1765 | No stop |
| 14 34 20 | --- | 02 56 35 | 35.7 | 195.3 | 0.8 | | 9.1 | 217 | 1795 | 14 30 31 |
| 14 34 50 | 0205-010 | 02 57 05 | 35.3 | 194.7 | 0.8 | | 8.7 | 17 | 1795 | 14 34 50 |
| 14 36 00 | --- | 02 58 15 | 35.2 | 195.0 | 0.8 | | 8.9 | 70 | 1804 | 14 34 51 |
| 14 36 00 | MRK1018 | 02 58 15 | 35.6 | 195.8 | 0.9 | | 9.4 | -13 | 1804 | No stop |
| 14 39 50 | --- | 03 02 06 | 35.5 | 196.9 | 0.9 | | 10.1 | 217 | 1833 | 14 36 01 |
| 14 39 50 | 0205-010 | 03 02 06 | 35.1 | 196.2 | 0.9 | | 9.6 | -13 | 1833 | No stop |
| 14 41 00 | --- | 03 03 16 | 35.0 | 196.5 | 0.9 | | 9.8 | 57 | 1842 | 14 39 51 |
| 14 41 00 | MRK1018 | 03 03 16 | 35.4 | 197.3 | 0.9 | | 10.3 | -13 | 1842 | No stop |
| 14 44 50 | --- | 03 07 06 | 35.3 | 198.4 | 1.0 | | 11.0 | 217 | 1872 | 14 41 01 |
| 14 45 20 | 0205-010 | 03 07 37 | 34.8 | 197.8 | 1.0 | | 10.6 | 17 | 1872 | 14 45 20 |
| 14 46 30 | --- | 03 08 47 | 34.8 | 198.2 | 1.0 | | 10.8 | 70 | 1881 | 14 45 21 |
| 14 46 30 | MRK1018 | 03 08 47 | 35.2 | 198.9 | 1.0 | | 11.2 | -13 | 1881 | No stop |
| 14 50 20 | --- | 03 12 37 | 35.0 | 200.1 | 1.1 | | 11.9 | 217 | 1910 | 14 46 31 |
| 14 50 20 | 0205-010 | 03 12 37 | 34.6 | 199.3 | 1.1 | | 11.5 | -13 | 1910 | No stop |
| 14 51 30 | --- | 03 13 48 | 34.5 | 199.7 | 1.1 | | 11.7 | 57 | 1919 | 14 50 21 |
| 14 51 30 | MRK1018 | 03 13 48 | 34.9 | 200.4 | 1.1 | | 12.1 | -13 | 1919 | No stop |
| 14 55 20 | --- | 03 17 38 | 34.7 | 201.6 | 1.2 | | 12.8 | 217 | 1949 | 14 51 31 |
| 14 55 50 | 0205-010 | 03 18 08 | 34.3 | 201.0 | 1.1 | | 12.4 | 17 | 1949 | 14 55 50 |
| 14 57 00 | --- | 03 19 18 | 34.3 | 201.3 | 1.2 | | 12.6 | 70 | 1958 | 14 55 51 |
| 14 57 00 | MRK1018 | 03 19 18 | 34.6 | 202.1 | 1.2 | | 13.0 | -13 | 1958 | No stop |
| 15 00 50 | --- | 03 23 09 | 34.4 | 203.2 | 1.3 | | 13.7 | 217 | 1987 | 14 57 01 |
| 15 00 50 | 0205-010 | 03 23 09 | 34.0 | 202.4 | 1.2 | | 13.3 | -13 | 1987 | No stop |
| 15 02 00 | --- | 03 24 19 | 34.0 | 202.8 | 1.2 | | 13.4 | 57 | 1996 | 15 00 51 |

Schedule for TORUN (Code Tr ) Page 9

Mrk1018 at 1 Gb/s - L band

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | Start / Stop LST | EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 9 Mar 2019 Day 68 --- | | | | | | | | | | |
| 15 02 00 | MRK1018 | 03 24 19 | 34.3 | 203.6 | 1.3 | | 13.9 | -13 | 1996 | No stop |
| 15 05 50 | --- | 03 28 10 | 34.1 | 204.7 | 1.3 | | 14.5 | 217 | 2026 | 15 02 01 |
| 15 06 20 | 0205-010 | 03 28 40 | 33.7 | 204.1 | 1.3 | | 14.2 | 17 | 2026 | 15 06 20 |
| 15 07 30 | --- | 03 29 50 | 33.6 | 204.4 | 1.3 | | 14.4 | 70 | 2035 | 15 06 21 |
| 15 07 30 | MRK1018 | 03 29 50 | 34.0 | 205.2 | 1.4 | | 14.8 | -13 | 2035 | No stop |
| 15 11 20 | --- | 03 33 41 | 33.7 | 206.3 | 1.4 | | 15.4 | 217 | 2064 | 15 07 31 |
| 15 11 20 | 0205-010 | 03 33 41 | 33.4 | 205.5 | 1.4 | | 15.0 | -13 | 2064 | No stop |
| 15 12 30 | --- | 03 34 51 | 33.3 | 205.8 | 1.4 | | 15.2 | 57 | 2073 | 15 11 21 |
| 15 12 30 | MRK1018 | 03 34 51 | 33.7 | 206.6 | 1.5 | | 15.6 | -13 | 2073 | No stop |
| 15 16 20 | --- | 03 38 42 | 33.4 | 207.7 | 1.5 | | 16.2 | 217 | 2103 | 15 12 31 |
| 15 16 50 | 0205-010 | 03 39 12 | 33.0 | 207.1 | 1.5 | | 15.9 | 17 | 2103 | 15 16 50 |
| 15 18 00 | --- | 03 40 22 | 32.9 | 207.4 | 1.5 | | 16.1 | 70 | 2112 | 15 16 51 |
| 15 18 00 | MRK1018 | 03 40 22 | 33.3 | 208.2 | 1.6 | | 16.5 | -13 | 2112 | No stop |
| 15 21 50 | --- | 03 44 13 | 33.0 | 209.3 | 1.6 | | 17.1 | 217 | 2141 | 15 18 01 |
| 15 21 50 | 0205-010 | 03 44 13 | 32.7 | 208.5 | 1.6 | | 16.7 | -13 | 2141 | No stop |
| 15 23 00 | --- | 03 45 23 | 32.6 | 208.9 | 1.6 | | 16.8 | 57 | 2150 | 15 21 51 |
| 15 23 00 | MRK1018 | 03 45 23 | 32.9 | 209.7 | 1.6 | | 17.3 | -13 | 2150 | No stop |
| 15 26 50 | --- | 03 49 13 | 32.6 | 210.7 | 1.7 | | 17.9 | 217 | 2179 | 15 23 01 |
| 15 27 20 | 0205-010 | 03 49 43 | 32.3 | 210.1 | 1.7 | | 17.5 | 17 | 2179 | 15 27 20 |
| 15 28 30 | --- | 03 50 54 | 32.2 | 210.4 | 1.7 | | 17.7 | 70 | 2188 | 15 27 21 |
| 15 28 30 | MRK1018 | 03 50 54 | 32.5 | 211.2 | 1.7 | | 18.1 | -13 | 2188 | No stop |
| 15 32 20 | --- | 03 54 44 | 32.2 | 212.3 | 1.8 | | 18.7 | 217 | 2218 | 15 28 31 |
| 15 32 20 | 0205-010 | 03 54 44 | 31.9 | 211.5 | 1.8 | | 18.3 | -13 | 2218 | No stop |
| 15 33 30 | --- | 03 55 54 | 31.8 | 211.8 | 1.8 | | 18.5 | 57 | 2227 | 15 32 21 |
| 15 33 30 | MRK1018 | 03 55 54 | 32.1 | 212.6 | 1.8 | | 18.9 | -13 | 2227 | No stop |
| 15 37 20 | --- | 03 59 45 | 31.8 | 213.7 | 1.9 | | 19.5 | 217 | 2256 | 15 33 31 |
| 15 37 50 | 0205-010 | 04 00 15 | 31.4 | 213.0 | 1.8 | | 19.1 | 17 | 2256 | 15 37 50 |
| 15 39 00 | --- | 04 01 25 | 31.3 | 213.4 | 1.9 | | 19.3 | 70 | 2265 | 15 37 51 |
| 15 39 00 | MRK1018 | 04 01 25 | 31.6 | 214.2 | 1.9 | | 19.7 | -13 | 2265 | No stop |
| 15 42 50 | --- | 04 05 16 | 31.3 | 215.2 | 2.0 | | 20.3 | 217 | 2295 | 15 39 01 |

Schedule for TORUN (Code Tr ) Page 10

Mrk1018 at 1 Gb/s - L band

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | Start / Stop LST | EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 9 Mar 2019 Day 68 --- | | | | | | | | | | |
| 15 42 50 | 0205-010 | 04 05 16 | 31.0 | 214.4 | 1.9 | | 19.8 | -13 | 2295 | No stop |
| 15 44 00 | --- | 04 06 26 | 30.9 | 214.7 | 2.0 | | 20.0 | 57 | 2304 | 15 42 51 |
| 15 44 00 | MRK1018 | 04 06 26 | 31.2 | 215.5 | 2.0 | | 20.4 | -13 | 2304 | No stop |
| 15 47 50 | --- | 04 10 17 | 30.9 | 216.6 | 2.1 | | 21.0 | 217 | 2333 | 15 44 01 |
| 15 48 20 | 0205-010 | 04 10 47 | 30.5 | 215.9 | 2.0 | | 20.6 | 17 | 2333 | 15 48 20 |
| 15 49 30 | --- | 04 11 57 | 30.4 | 216.2 | 2.0 | | 20.8 | 70 | 2342 | 15 48 21 |
| 15 49 30 | MRK1018 | 04 11 57 | 30.7 | 217.0 | 2.1 | | 21.2 | -13 | 2342 | No stop |
| 15 53 20 | --- | 04 15 48 | 30.4 | 218.1 | 2.1 | | 21.7 | 217 | 2372 | 15 49 31 |
| 15 53 20 | 0205-010 | 04 15 48 | 30.1 | 217.3 | 2.1 | | 21.3 | -13 | 2372 | No stop |
| 15 54 30 | --- | 04 16 58 | 30.0 | 217.6 | 2.1 | | 21.5 | 57 | 2381 | 15 53 21 |
| 15 54 30 | 0154-000 | 04 16 58 | 29.8 | 221.0 | 2.3 | | 23.2 | -22 | 2381 | No stop |
| 15 56 30 | --- | 04 18 58 | 29.6 | 221.6 | 2.3 | | 23.5 | 98 | 2396 | 15 54 31 |
| 15 56 30 | MRK1018 | 04 18 58 | 30.1 | 218.9 | 2.2 | | 22.2 | -19 | 2396 | No stop |
| 16 00 20 | --- | 04 22 49 | 29.7 | 219.9 | 2.3 | | 22.7 | 211 | 2426 | 15 56 31 |
| 16 00 50 | 0205-010 | 04 23 19 | 29.4 | 219.3 | 2.2 | | 22.3 | 17 | 2426 | 16 00 50 |
| 16 02 00 | --- | 04 24 29 | 29.3 | 219.6 | 2.3 | | 22.5 | 70 | 2435 | 16 00 51 |
| 16 02 00 | MRK1018 | 04 24 29 | 29.5 | 220.4 | 2.3 | | 22.9 | -13 | 2435 | No stop |
| 16 05 50 | --- | 04 28 20 | 29.2 | 221.4 | 2.4 | | 23.4 | 217 | 2464 | 16 02 01 |
| 16 05 50 | 0205-010 | 04 28 20 | 28.9 | 220.6 | 2.3 | | 23.0 | -13 | 2464 | No stop |
| 16 07 00 | --- | 04 29 30 | 28.8 | 220.9 | 2.3 | | 23.2 | 57 | 2473 | 16 05 51 |
| 16 07 00 | MRK1018 | 04 29 30 | 29.0 | 221.7 | 2.4 | | 23.6 | -13 | 2473 | No stop |
| 16 10 50 | --- | 04 33 21 | 28.7 | 222.7 | 2.4 | | 24.0 | 217 | 2503 | 16 07 01 |
| 16 11 20 | 0205-010 | 04 33 51 | 28.4 | 222.1 | 2.4 | | 23.7 | 17 | 2503 | 16 11 20 |
| 16 12 30 | --- | 04 35 01 | 28.3 | 222.4 | 2.4 | | 23.9 | 70 | 2512 | 16 11 21 |
| 16 12 30 | MRK1018 | 04 35 01 | 28.5 | 223.2 | 2.5 | | 24.2 | -13 | 2512 | No stop |
| 16 16 20 | --- | 04 38 51 | 28.1 | 224.1 | 2.5 | | 24.7 | 217 | 2541 | 16 12 31 |
| 16 16 20 | 0205-010 | 04 38 51 | 27.9 | 223.3 | 2.5 | | 24.3 | -13 | 2541 | No stop |
| 16 17 30 | --- | 04 40 02 | 27.7 | 223.6 | 2.5 | | 24.5 | 57 | 2550 | 16 16 21 |
| 16 17 30 | MRK1018 | 04 40 02 | 28.0 | 224.4 | 2.5 | | 24.9 | -13 | 2550 | No stop |
| 16 21 20 | --- | 04 43 52 | 27.6 | 225.4 | 2.6 | | 25.3 | 217 | 2579 | 16 17 31 |

Schedule for TORUN (Code Tr ) Page 11

Mrk1018 at 1 Gb/s - L band

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | Start / Stop LST | EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 9 Mar 2019 Day 68 --- | | | | | | | | | | |
| 16 21 50 | 0205-010 | 04 44 22 | 27.3 | 224.8 | 2.6 | | 25.0 | 17 | 2579 | 16 21 50 |
| 16 23 00 | --- | 04 45 33 | 27.2 | 225.1 | 2.6 | | 25.2 | 70 | 2588 | 16 21 51 |
| 16 23 00 | MRK1018 | 04 45 33 | 27.4 | 225.9 | 2.6 | | 25.5 | -13 | 2588 | No stop |
| 16 26 50 | --- | 04 49 23 | 27.0 | 226.8 | 2.7 | | 26.0 | 217 | 2618 | 16 23 01 |
| 16 26 50 | 0205-010 | 04 49 23 | 26.7 | 226.0 | 2.7 | | 25.6 | -13 | 2618 | No stop |
| 16 28 00 | --- | 04 50 33 | 26.6 | 226.3 | 2.7 | | 25.7 | 57 | 2627 | 16 26 51 |
| 16 28 00 | MRK1018 | 04 50 33 | 26.8 | 227.1 | 2.7 | | 26.1 | -13 | 2627 | No stop |
| 16 31 50 | --- | 04 54 24 | 26.4 | 228.1 | 2.8 | | 26.5 | 217 | 2656 | 16 28 01 |
| 16 32 20 | 0205-010 | 04 54 54 | 26.1 | 227.4 | 2.8 | | 26.2 | 17 | 2656 | 16 32 20 |
| 16 33 30 | --- | 04 56 04 | 26.0 | 227.7 | 2.8 | | 26.4 | 70 | 2665 | 16 32 21 |
| 16 33 30 | MRK1018 | 04 56 04 | 26.2 | 228.5 | 2.8 | | 26.7 | -13 | 2665 | No stop |
| 16 37 20 | --- | 04 59 55 | 25.8 | 229.5 | 2.9 | | 27.1 | 217 | 2695 | 16 33 31 |
| 16 37 20 | 0205-010 | 04 59 55 | 25.6 | 228.7 | 2.8 | | 26.8 | -13 | 2695 | No stop |
| 16 38 30 | --- | 05 01 05 | 25.5 | 229.0 | 2.9 | | 26.9 | 57 | 2704 | 16 37 21 |
| 16 38 30 | MRK1018 | 05 01 05 | 25.7 | 229.7 | 2.9 | | 27.3 | -13 | 2704 | No stop |
| 16 42 20 | --- | 05 04 56 | 25.2 | 230.7 | 3.0 | | 27.7 | 217 | 2733 | 16 38 31 |
| 16 42 50 | 0205-010 | 05 05 26 | 25.0 | 230.0 | 2.9 | | 27.4 | 17 | 2733 | 16 42 50 |
| 16 44 00 | --- | 05 06 36 | 24.8 | 230.3 | 3.0 | | 27.5 | 70 | 2742 | 16 42 51 |
| 16 44 00 | MRK1018 | 05 06 36 | 25.0 | 231.1 | 3.0 | | 27.9 | -13 | 2742 | No stop |
| 16 47 50 | --- | 05 10 27 | 24.6 | 232.0 | 3.1 | | 28.3 | 217 | 2772 | 16 44 01 |
| 16 47 50 | 0205-010 | 05 10 27 | 24.4 | 231.2 | 3.0 | | 27.9 | -13 | 2772 | No stop |
| 16 49 00 | --- | 05 11 37 | 24.2 | 231.5 | 3.0 | | 28.0 | 57 | 2781 | 16 47 51 |
| 16 49 00 | MRK1018 | 05 11 37 | 24.4 | 232.3 | 3.1 | | 28.4 | -13 | 2781 | No stop |
| 16 52 50 | --- | 05 15 27 | 24.0 | 233.2 | 3.1 | | 28.8 | 217 | 2810 | 16 49 01 |
| 16 53 20 | 0205-010 | 05 15 58 | 23.7 | 232.6 | 3.1 | | 28.5 | 17 | 2810 | 16 53 20 |
| 16 54 30 | --- | 05 17 08 | 23.6 | 232.9 | 3.1 | | 28.6 | 70 | 2819 | 16 53 21 |
| 16 54 30 | MRK1018 | 05 17 08 | 23.8 | 233.6 | 3.2 | | 28.9 | -13 | 2819 | No stop |
| 16 58 20 | --- | 05 20 58 | 23.3 | 234.6 | 3.2 | | 29.3 | 217 | 2849 | 16 54 31 |
| 16 58 20 | 0205-010 | 05 20 58 | 23.1 | 233.8 | 3.2 | | 29.0 | -13 | 2849 | No stop |
| 16 59 30 | --- | 05 22 09 | 23.0 | 234.0 | 3.2 | | 29.1 | 57 | 2858 | 16 58 21 |

Schedule for TORUN (Code Tr ) Page 12

Mrk1018 at 1 Gb/s - L band

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 9 Mar 2019 Day 68 --- | | | | | | | | | | |
| 16 59 30 | MRK1018 | 05 22 09 | 23.2 | 234.8 | 3.2 | | 29.4 | -13 | 2858 | No stop |
| 17 03 20 | --- | 05 25 59 | 22.7 | 235.7 | 3.3 | | 29.8 | 217 | 2887 | 16 59 31 |
| 17 03 50 | 0205-010 | 05 26 29 | 22.4 | 235.1 | 3.3 | | 29.5 | 17 | 2887 | 17 03 50 |
| 17 05 00 | --- | 05 27 39 | 22.3 | 235.4 | 3.3 | | 29.6 | 70 | 2896 | 17 03 51 |
| 17 05 00 | MRK1018 | 05 27 39 | 22.5 | 236.1 | 3.3 | | 29.9 | -13 | 2896 | No stop |
| 17 08 50 | --- | 05 31 30 | 22.0 | 237.0 | 3.4 | | 30.3 | 217 | 2926 | 17 05 01 |
| 17 08 50 | 0205-010 | 05 31 30 | 21.8 | 236.3 | 3.4 | | 30.0 | -13 | 2926 | No stop |
| 17 10 00 | --- | 05 32 40 | 21.7 | 236.5 | 3.4 | | 30.1 | 57 | 2935 | 17 08 51 |
| 17 10 00 | MRK1018 | 05 32 40 | 21.8 | 237.3 | 3.4 | | 30.4 | -13 | 2935 | No stop |
| 17 13 50 | --- | 05 36 31 | 21.4 | 238.2 | 3.5 | | 30.7 | 217 | 2964 | 17 10 01 |
| 17 14 20 | 0205-010 | 05 37 01 | 21.1 | 237.5 | 3.5 | | 30.4 | 17 | 2964 | 17 14 20 |
| 17 15 30 | --- | 05 38 11 | 21.0 | 237.8 | 3.5 | | 30.5 | 70 | 2973 | 17 14 21 |
| 17 15 30 | MRK1018 | 05 38 11 | 21.1 | 238.6 | 3.5 | | 30.8 | -13 | 2973 | No stop |
| 17 19 20 | --- | 05 42 02 | 20.6 | 239.5 | 3.6 | | 31.1 | 217 | 3003 | 17 15 31 |
| 17 19 20 | 0205-010 | 05 42 02 | 20.5 | 238.7 | 3.5 | | 30.9 | -13 | 3003 | No stop |
| 17 20 30 | --- | 05 43 12 | 20.3 | 239.0 | 3.6 | | 31.0 | 57 | 3012 | 17 19 21 |
| 17 20 30 | MRK1018 | 05 43 12 | 20.5 | 239.7 | 3.6 | | 31.2 | -13 | 3012 | No stop |
| 17 24 20 | --- | 05 47 03 | 20.0 | 240.6 | 3.7 | | 31.5 | 217 | 3041 | 17 20 31 |
| 17 24 50 | 0205-010 | 05 47 33 | 19.8 | 239.9 | 3.6 | | 31.3 | 17 | 3041 | 17 24 50 |
| 17 26 00 | --- | 05 48 43 | 19.6 | 240.2 | 3.7 | | 31.4 | 70 | 3050 | 17 24 51 |
| 17 26 00 | MRK1018 | 05 48 43 | 19.8 | 241.0 | 3.7 | | 31.7 | -13 | 3050 | No stop |
| 17 29 50 | --- | 05 52 34 | 19.3 | 241.8 | 3.8 | | 32.0 | 217 | 3079 | 17 26 01 |
| 17 29 50 | 0205-010 | 05 52 34 | 19.1 | 241.1 | 3.7 | | 31.7 | -13 | 3079 | No stop |
| 17 31 00 | --- | 05 53 44 | 19.0 | 241.3 | 3.7 | | 31.8 | 57 | 3088 | 17 29 51 |
| 17 31 00 | MRK1018 | 05 53 44 | 19.1 | 242.1 | 3.8 | | 32.1 | -13 | 3088 | No stop |
| 17 34 50 | --- | 05 57 34 | 18.6 | 243.0 | 3.8 | | 32.3 | 217 | 3118 | 17 31 01 |
| 17 35 20 | 0205-010 | 05 58 04 | 18.4 | 242.3 | 3.8 | | 32.1 | 17 | 3118 | 17 35 20 |
| 17 36 30 | --- | 05 59 15 | 18.2 | 242.6 | 3.8 | | 32.2 | 70 | 3127 | 17 35 21 |
| 17 36 30 | MRK1018 | 05 59 15 | 18.4 | 243.3 | 3.9 | | 32.5 | -13 | 3127 | No stop |
| 17 40 20 | --- | 06 03 05 | 17.9 | 244.2 | 3.9 | | 32.7 | 217 | 3156 | 17 36 31 |

Schedule for TORUN (Code Tr ) Page 13

Mrk1018 at 1 Gb/s - L band

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 9 Mar 2019 Day 68 --- | | | | | | | | | | |
| 17 40 20 | 0205-010 | 06 03 05 | 17.7 | 243.4 | 3.9 | | 32.5 | -13 | 3156 | No stop |
| 17 41 30 | --- | 06 04 15 | 17.6 | 243.7 | 3.9 | | 32.6 | 57 | 3165 | 17 40 21 |
| 17 41 30 | MRK1018 | 06 04 15 | 17.7 | 244.5 | 4.0 | | 32.8 | -13 | 3165 | No stop |
| 17 45 20 | --- | 06 08 06 | 17.2 | 245.3 | 4.0 | | 33.1 | 217 | 3195 | 17 41 31 |
| 17 45 50 | 0205-010 | 06 08 36 | 17.0 | 244.6 | 4.0 | | 32.9 | 17 | 3195 | 17 45 50 |
| 17 47 00 | --- | 06 09 46 | 16.8 | 244.9 | 4.0 | | 32.9 | 70 | 3204 | 17 45 51 |
| 17 47 00 | MRK1018 | 06 09 46 | 17.0 | 245.7 | 4.0 | | 33.2 | -13 | 3204 | No stop |
| 17 50 50 | --- | 06 13 37 | 16.4 | 246.5 | 4.1 | | 33.4 | 217 | 3233 | 17 47 01 |
| 17 50 50 | 0205-010 | 06 13 37 | 16.3 | 245.7 | 4.1 | | 33.2 | -13 | 3233 | No stop |
| 17 52 00 | --- | 06 14 47 | 16.1 | 246.0 | 4.1 | | 33.3 | 57 | 3242 | 17 50 51 |
| 17 52 00 | MRK1018 | 06 14 47 | 16.3 | 246.8 | 4.1 | | 33.5 | -13 | 3242 | No stop |
| 17 55 50 | --- | 06 18 38 | 15.7 | 247.6 | 4.2 | | 33.7 | 217 | 3272 | 17 52 01 |
| 17 56 20 | 0205-010 | 06 19 08 | 15.5 | 246.9 | 4.2 | | 33.5 | 17 | 3272 | 17 56 20 |
| 17 57 30 | --- | 06 20 18 | 15.4 | 247.2 | 4.2 | | 33.6 | 70 | 3281 | 17 56 21 |
| 17 57 30 | MRK1018 | 06 20 18 | 15.5 | 247.9 | 4.2 | | 33.8 | -13 | 3281 | No stop |
| 18 01 20 | --- | 06 24 09 | 15.0 | 248.8 | 4.3 | | 34.0 | 217 | 3310 | 17 57 31 |
| 18 01 20 | 0205-010 | 06 24 09 | 14.8 | 248.0 | 4.2 | | 33.8 | -13 | 3310 | No stop |
| 18 02 30 | --- | 06 25 19 | 14.7 | 248.3 | 4.3 | | 33.9 | 57 | 3319 | 18 01 21 |
| 18 02 30 | MRK1018 | 06 25 19 | 14.8 | 249.0 | 4.3 | | 34.1 | -13 | 3319 | No stop |
| 18 06 20 | --- | 06 29 10 | 14.3 | 249.8 | 4.4 | | 34.3 | 217 | 3349 | 18 02 31 |
| 18 06 50 | 0205-010 | 06 29 40 | 14.1 | 249.2 | 4.3 | | 34.2 | 17 | 3349 | 18 06 50 |
| 18 08 00 | --- | 06 30 50 | 13.9 | 249.4 | 4.4 | | 34.2 | 70 | 3358 | 18 06 51 |
| 18 08 00 | MRK1018 | 06 30 50 | 14.0 | 250.2 | 4.4 | | 34.4 | -13 | 3358 | No stop |
| 18 11 50 | --- | 06 34 40 | 13.5 | 251.0 | 4.5 | | 34.6 | 217 | 3387 | 18 08 01 |
| 18 11 50 | 0205-010 | 06 34 40 | 13.4 | 250.3 | 4.4 | | 34.4 | -13 | 3387 | No stop |
| 18 13 00 | --- | 06 35 51 | 13.2 | 250.5 | 4.4 | | 34.5 | 57 | 3396 | 18 11 51 |
| 18 13 00 | MRK1018 | 06 35 51 | 13.3 | 251.3 | 4.5 | | 34.7 | -13 | 3396 | No stop |
| 18 16 00 | --- | 06 38 51 | 12.9 | 251.9 | 4.5 | | 34.8 | 167 | 3419 | 18 13 01 |
| 18 16 30 | 0205-010 | 06 39 21 | 12.7 | 251.3 | 4.5 | | 34.7 | 17 | 3419 | 18 16 30 |
| 18 17 30 | --- | 06 40 21 | 12.6 | 251.5 | 4.5 | | 34.7 | 60 | 3427 | 18 16 31 |

```
Schedule for TORUN     (Code Tr )                                Page  14
               Mrk1018 at 1 Gb/s - L band
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-------------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-------------------------------------------------------------------------------------------

 --- Sat   9 Mar 2019   Day  68 ---

18 22 30  J0811+0146   06 45 22  35.6 152.9 -1.5     -15.9    87     3427   18 22 30
18 30 00  =0808+019    06 52 53  36.0 155.1 -1.3     -14.6   450     3485   18 22 31




SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119LG.L1024

   Setup group:   10         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
   Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00
            2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00
  Net SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF SB =         L         L         L         L         L         L         L         L
                  L         L         L         L         L         L         L         L
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
                RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
                  3         7         3         7         4         8         4         8
  BBC SB=         U         U         L         L         U         U         L         L
                  U         U         L         L         U         U         L         L
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                 A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:   8  Setup file default.  Used with PCAL = off
  LO sum=   1610.49  1610.49  1610.49  1610.49  1642.49  1642.49  1642.49  1642.49
            1674.49  1674.49  1674.49  1674.49  1706.49  1706.49  1706.49  1706.49
  BBC fr=    689.51   689.51   689.51   689.51   657.51   657.51   657.51   657.51
             625.51   625.51   625.51   625.51   593.51   593.51   593.51   593.51
  Bandwd=     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
              16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
   Matching frequency sets:   8

  Track assignments are:
   track1=   2, 10, 18, 26,  4, 12, 20, 28,  6, 14, 22, 30,  8, 16, 24, 32
   barrel=roll_off



POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                       (B1950)             (J2000)             (Date)             (mas)

* MRK1018            02 03 42.480768   * 02 06 15.990000     02 07 13.085367       0.00
                    -00 31 46.69524    *-00 17 29.90000     -00 12 17.65954        0.00

* 0149+218           01 49 31.744135   * 01 52 18.059046     01 53 20.013561       0.01
  J0152+2207         21 52 20.74786    * 22 07 07.69973      22 12 37.00741        0.02
  J0152+22           /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                     GSFC 2016a X/S astro solution,   2491 observations.

* 0154-000           01 54 36.737815   * 01 57 10.534897     01 58 07.704920       0.09
  J0157+0011        -00 03 12.25378    * 00 11 24.48436      00 16 44.56847        0.20
                     /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                     GSFC 2016a X/S astro solution,    161 observations.

* 0205-010           02 05 53.149978   * 02 08 26.345914     02 09 23.328979       0.09
  J0208-0047        -01 01 56.12008    *-00 47 44.29431     -00 42 34.09604        0.16
                     /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                     GSFC 2016a X/S astro solution,    142 observations.

  0808+019           08 08 51.138133   * 08 11 26.707316     08 12 26.318059       0.01
* J0811+0146         01 55 51.17953    * 01 46 52.22022      01 43 16.05185        0.01
  J0811+01           /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                     GSFC 2016a X/S astro solution,  18603 observations.
```

EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun.
SCHED provides warnings at individual scans for distances less than 10 degrees.
The distance from the Sun to each source in this schedule is:

| Source | Sun distance (deg) |
|---|---|
| MRK1018 | 42.3 |
| 0149+218 | 46.3 |
| 0154-000 | 40.1 |
| 0205-010 | 42.8 |
| J0811+0146 | 133.5 |

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
that the Sun will cause amplitude reductions on the longest VLBA baselines
at a solar distance of 60deg F^(-0.6) where F is in GHz.
For common VLBI bands, this is:

| | |
|---|---|
| 1.6 GHz | 45. deg |
| 2.3 GHz | 36. deg |
| 5.0 GHz | 23. deg |
| 8.4 GHz | 17. deg |
| 15.0 GHz | 12. deg |
| 22.0 GHz | 9. deg |

# eb070tr

Ross867

PI: *Paul Boven*


```
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          Oude Hoogeveensedijk 4
          Dwingeloo
          The Netherlands

Phone:    +31 521 596547
EMAIL:    boven@jive.eu
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Phone during observation: +31 521 595623
```


```
Observing mode:

Schedule for TORUN     (Code Tr )                                    Page   2
               Ross867
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-------------------------------------------------------------------------------------------
Start UT  Source                Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-------------------------------------------------------------------------------------------

 --- Sun  10 Mar 2019   Day  69 ---

 Next scan frequencies:  1610.49  1610.49  1610.49  1610.49  1642.49  1642.49  1642.49  1642.49
                         1674.49  1674.49  1674.49  1674.49  1706.49  1706.49  1706.49  1706.49
 Next BBC frequencies:    689.51   689.51   689.51   689.51   657.51   657.51   657.51   657.51
                          625.51   625.51   625.51   625.51   593.51   593.51   593.51   593.51
 Next scan bandwidths:     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
                           16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00

02 00 00  J1722+2458   14 24 07  46.3 112.1 -3.0     -37.8     0        0   02 00 00
02 02 00  =1720+250    14 26 08  46.6 112.7 -3.0     -37.7   120       15   02 00 01

02 02 00  ROSS867      14 26 08  48.2 112.1 -2.9     -38.4   -20       15   No stop
02 10 00  ---          14 34 09  49.3 114.2 -2.8     -37.7   460       77   02 02 01

02 10 40  J1722+2458   14 34 49  47.8 115.0 -2.8     -36.9    20       77   02 10 40
02 12 00  =1720+250    14 36 09  48.0 115.3 -2.8     -36.8    80       87   02 10 41

02 12 00  ROSS867      14 36 09  49.6 114.8 -2.7     -37.5   -20       87   No stop
02 20 00  ---          14 44 11  50.7 117.0 -2.6     -36.7   460      149   02 12 01

02 20 00  J1722+2458   14 44 11  49.0 117.5 -2.7     -36.0   -20      149   No stop
02 22 00  =1720+250    14 46 11  49.3 118.1 -2.6     -35.7   100      164   02 20 01

02 22 00  ROSS867      14 46 11  50.9 117.6 -2.6     -36.5   -20      164   No stop
02 30 00  ---          14 54 12  52.0 119.9 -2.4     -35.6   460      226   02 22 01

02 30 40  J1722+2458   14 54 52  50.4 120.6 -2.5     -34.8    20      226   02 30 40
02 32 00  =1720+250    14 56 13  50.6 121.0 -2.5     -34.6    80      236   02 30 41

02 32 00  ROSS867      14 56 13  52.3 120.5 -2.4     -35.3   -20      236   No stop
02 40 00  ---          15 04 14  53.3 122.9 -2.3     -34.3   460      297   02 32 01

02 40 00  J1722+2458   15 04 14  51.6 123.4 -2.3     -33.6   -20      297   No stop
02 42 00  =1720+250    15 06 14  51.9 124.0 -2.3     -33.3   100      313   02 40 01
```

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 02 42 00 | ROSS867 | 15 06 14 | 53.5 | 123.5 | -2.2 | -34.0 | -20 | 313 | No stop |
| 02 50 00 | --- | 15 14 16 | 54.5 | 126.1 | -2.1 | -32.8 | 460 | 374 | 02 42 01 |
| 02 50 40 | J1722+2458 | 15 14 56 | 53.0 | 126.7 | -2.1 | -32.1 | 20 | 374 | 02 50 40 |
| 02 52 00 | =1720+250 | 15 16 16 | 53.1 | 127.2 | -2.1 | -31.9 | 80 | 385 | 02 50 41 |
| 02 52 00 | ROSS867 | 15 16 16 | 54.8 | 126.7 | -2.1 | -32.5 | -20 | 385 | No stop |
| 03 00 00 | --- | 15 24 17 | 55.7 | 129.4 | -1.9 | -31.2 | 460 | 446 | 02 52 01 |
| 03 00 00 | J1722+2458 | 15 24 17 | 54.1 | 129.8 | -2.0 | -30.6 | -20 | 446 | No stop |
| 03 02 00 | =1720+250 | 15 26 18 | 54.3 | 130.4 | -2.0 | -30.3 | 100 | 462 | 03 00 01 |

Schedule for TORUN (Code Tr ) Page 3
Ross867

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | Start / Stop LST | EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sun 10 Mar 2019 Day 69 --- | | | | | | | | | | |
| 03 02 00 | ROSS867 | 15 26 18 | 55.9 | 130.1 | -1.9 | | -30.9 | -20 | 462 | No stop |
| 03 10 00 | --- | 15 34 19 | 56.8 | 132.9 | -1.8 | | -29.4 | 460 | 523 | 03 02 01 |
| 03 10 40 | J1722+2458 | 15 34 59 | 55.3 | 133.4 | -1.8 | | -28.8 | 20 | 523 | 03 10 40 |
| 03 12 00 | =1720+250 | 15 36 19 | 55.4 | 133.9 | -1.8 | | -28.5 | 80 | 533 | 03 10 41 |
| 03 12 00 | ROSS867 | 15 36 19 | 57.1 | 133.6 | -1.7 | | -29.1 | -20 | 533 | No stop |
| 03 20 00 | --- | 15 44 21 | 57.9 | 136.6 | -1.6 | | -27.5 | 460 | 595 | 03 12 01 |
| 03 20 00 | J1722+2458 | 15 44 21 | 56.3 | 136.7 | -1.7 | | -27.0 | -20 | 595 | No stop |
| 03 22 00 | =1720+250 | 15 46 21 | 56.5 | 137.5 | -1.6 | | -26.6 | 100 | 610 | 03 20 01 |
| 03 22 00 | ROSS867 | 15 46 21 | 58.1 | 137.3 | -1.6 | | -27.0 | -20 | 610 | No stop |
| 03 30 00 | --- | 15 54 22 | 58.9 | 140.4 | -1.4 | | -25.3 | 460 | 672 | 03 22 01 |
| 03 30 40 | J1722+2458 | 15 55 02 | 57.3 | 140.7 | -1.5 | | -24.8 | 20 | 672 | 03 30 40 |
| 03 32 00 | =1720+250 | 15 56 22 | 57.4 | 141.2 | -1.5 | | -24.5 | 80 | 682 | 03 30 41 |
| 03 32 00 | ROSS867 | 15 56 22 | 59.1 | 141.2 | -1.4 | | -24.9 | -20 | 682 | No stop |
| 03 40 00 | --- | 16 04 24 | 59.8 | 144.4 | -1.3 | | -23.0 | 460 | 744 | 03 32 01 |
| 03 40 00 | J1722+2458 | 16 04 24 | 58.2 | 144.4 | -1.3 | | -22.7 | -20 | 744 | No stop |
| 03 42 00 | =1720+250 | 16 06 24 | 58.3 | 145.2 | -1.3 | | -22.2 | 100 | 759 | 03 40 01 |
| 03 42 00 | ROSS867 | 16 06 24 | 60.0 | 145.3 | -1.2 | | -22.5 | -20 | 759 | No stop |
| 03 50 00 | --- | 16 14 25 | 60.7 | 148.6 | -1.1 | | -20.4 | 460 | 821 | 03 42 01 |
| 03 50 40 | J1722+2458 | 16 15 06 | 59.1 | 148.7 | -1.1 | | -20.1 | 20 | 821 | 03 50 40 |
| 03 52 00 | =1720+250 | 16 16 26 | 59.2 | 149.3 | -1.1 | | -19.8 | 80 | 831 | 03 50 41 |
| 03 52 00 | 3C345 | 16 16 26 | 75.9 | 158.1 | -0.5 | | -17.0 | -77 | 831 | No stop |
| 04 00 00 | --- | 16 24 27 | 76.3 | 164.3 | -0.3 | | -12.2 | 403 | 892 | 03 52 01 |
| 04 00 30 | J1722+2458 | 16 24 57 | 59.8 | 152.9 | -1.0 | | -17.6 | -46 | 892 | 04 00 30 |
| 04 02 00 | =1720+250 | 16 26 27 | 59.9 | 153.5 | -1.0 | | -17.2 | 44 | 904 | 04 00 31 |
| 04 02 00 | ROSS867 | 16 26 27 | 61.5 | 153.9 | -0.9 | | -17.2 | -20 | 904 | No stop |
| 04 10 00 | --- | 16 34 29 | 62.0 | 157.6 | -0.8 | | -14.8 | 460 | 965 | 04 02 01 |
| 04 10 40 | J1722+2458 | 16 35 09 | 60.4 | 157.3 | -0.8 | | -14.8 | 20 | 965 | 04 10 40 |
| 04 12 00 | =1720+250 | 16 36 29 | 60.5 | 157.9 | -0.8 | | -14.4 | 80 | 976 | 04 10 41 |
| 04 12 00 | ROSS867 | 16 36 29 | 62.1 | 158.5 | -0.7 | | -14.2 | -20 | 976 | No stop |
| 04 20 00 | --- | 16 44 30 | 62.5 | 162.3 | -0.6 | | -11.8 | 460 | 1037 | 04 12 01 |

```
Schedule for TORUN     (Code Tr )                                  Page   4
               Ross867
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Sun  10 Mar 2019   Day  69 ---

04 20 00  J1722+2458   16 44 30  60.9 161.5 -0.7     -12.1   -20     1037   No stop
04 22 00  =1720+250    16 46 31  61.0 162.4 -0.6     -11.5   100     1053   04 20 01

04 22 00  ROSS867      16 46 31  62.6 163.2 -0.6     -11.2   -20     1053   No stop
04 30 00  ---          16 54 32  62.9 167.1 -0.4      -8.6   460     1114   04 22 01

04 30 40  J1722+2458   16 55 12  61.4 166.5 -0.5      -8.9    20     1114   04 30 40
04 32 00  =1720+250    16 56 32  61.4 167.1 -0.5      -8.5    80     1124   04 30 41

04 32 00  ROSS867      16 56 32  63.0 168.1 -0.4      -8.0   -20     1124   No stop
04 40 00  ---          17 04 34  63.2 172.0 -0.3      -5.4   460     1186   04 32 01

04 40 00  J1722+2458   17 04 34  61.6 170.9 -0.3      -6.0   -20     1186   No stop
04 42 00  =1720+250    17 06 34  61.7 171.8 -0.3      -5.4   100     1201   04 40 01

04 42 00  ROSS867      17 06 34  63.3 173.0 -0.2      -4.7   -20     1201   No stop
04 50 00  ---          17 14 35  63.4 177.0 -0.1      -2.0   460     1263   04 42 01

04 50 40  J1722+2458   17 15 15  61.8 176.0 -0.1      -2.7    21     1263   04 50 40
04 52 00  =1720+250    17 16 36  61.8 176.6 -0.1      -2.2    80     1273   04 50 41

04 52 00  ROSS867      17 16 36  63.4 178.0 -0.1      -1.4   -19     1273   No stop
05 00 00  ---          17 24 37  63.4 182.0  0.1       1.3   461     1335   04 52 01

05 00 00  J1722+2458   17 24 37  61.9 180.5  0.0       0.3   -19     1335   No stop
05 02 00  =1720+250    17 26 37  61.9 181.4  0.0       0.9   101     1350   05 00 01

05 02 00  ROSS867      17 26 37  63.4 183.0  0.1       2.0   -19     1350   No stop
05 10 00  ---          17 34 39  63.3 187.0  0.2       4.7   461     1412   05 02 01

05 10 40  J1722+2458   17 35 19  61.8 185.6  0.2       3.7    21     1412   05 10 40
05 12 00  =1720+250    17 36 39  61.8 186.2  0.2       4.1    80     1422   05 10 41

05 12 00  ROSS867      17 36 39  63.2 188.0  0.3       5.3   -19     1422   No stop
05 20 00  ---          17 44 40  63.0 191.9  0.4       8.0   461     1483   05 12 01

05 20 00  J1722+2458   17 44 40  61.6 190.0  0.4       6.6   -19     1483   No stop
05 22 00  =1720+250    17 46 41  61.5 191.0  0.4       7.3   101     1499   05 20 01

05 22 00  ROSS867      17 46 41  62.9 192.9  0.4       8.6   -19     1499   No stop
05 30 00  ---          17 54 42  62.6 196.8  0.6      11.2   461     1560   05 22 01

05 30 40  J1722+2458   17 55 22  61.2 195.1  0.5       9.9    21     1560   05 30 40
05 32 00  =1720+250    17 56 42  61.2 195.7  0.6      10.3    80     1571   05 30 41
```

Schedule for TORUN (Code Tr ) Page 5

Ross867

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | LST | Start / Stop EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sun 10 Mar 2019 Day 69 --- | | | | | | | | | | |
| 05 32 00 | ROSS867 | 17 56 42 | 62.5 | 197.7 | 0.6 | | 11.8 | -18 | 1571 | No stop |
| 05 40 00 | --- | 18 04 44 | 62.1 | 201.5 | 0.7 | | 14.2 | 462 | 1632 | 05 32 01 |
| 05 40 00 | J1722+2458 | 18 04 44 | 60.8 | 199.4 | 0.7 | | 12.7 | -18 | 1632 | No stop |
| 05 42 00 | =1720+250 | 18 06 44 | 60.7 | 200.3 | 0.7 | | 13.3 | 102 | 1647 | 05 40 01 |
| 05 42 00 | ROSS867 | 18 06 44 | 62.0 | 202.4 | 0.8 | | 14.8 | -18 | 1647 | No stop |
| 05 50 00 | --- | 18 14 45 | 61.5 | 206.1 | 0.9 | | 17.1 | 462 | 1709 | 05 42 01 |
| 05 50 40 | J1722+2458 | 18 15 25 | 60.2 | 204.1 | 0.9 | | 15.7 | 22 | 1709 | 05 50 40 |
| 05 52 00 | =1720+250 | 18 16 45 | 60.1 | 204.7 | 0.9 | | 16.1 | 80 | 1719 | 05 50 41 |
| 05 52 00 | ROSS867 | 18 16 45 | 61.4 | 207.0 | 0.9 | | 17.7 | -19 | 1719 | No stop |
| 06 00 00 | --- | 18 24 47 | 60.8 | 210.5 | 1.1 | | 19.9 | 461 | 1781 | 05 52 01 |
| 06 00 00 | J1722+2458 | 18 24 47 | 59.6 | 208.2 | 1.0 | | 18.2 | -18 | 1781 | No stop |
| 06 02 00 | =1720+250 | 18 26 47 | 59.5 | 209.0 | 1.1 | | 18.7 | 102 | 1796 | 06 00 01 |
| 06 02 00 | ROSS867 | 18 26 47 | 60.7 | 211.3 | 1.1 | | 20.4 | -19 | 1796 | No stop |
| 06 10 00 | --- | 18 34 48 | 60.0 | 214.7 | 1.2 | | 22.5 | 461 | 1858 | 06 02 01 |
| 06 10 40 | J1722+2458 | 18 35 29 | 58.8 | 212.6 | 1.2 | | 20.9 | 22 | 1858 | 06 10 40 |
| 06 12 00 | =1720+250 | 18 36 49 | 58.7 | 213.2 | 1.2 | | 21.3 | 80 | 1868 | 06 10 41 |
| 06 12 00 | ROSS867 | 18 36 49 | 59.8 | 215.5 | 1.3 | | 23.0 | -19 | 1868 | No stop |
| 06 20 00 | --- | 18 44 50 | 59.1 | 218.8 | 1.4 | | 24.8 | 461 | 1929 | 06 12 01 |
| 06 20 00 | J1722+2458 | 18 44 50 | 58.0 | 216.4 | 1.4 | | 23.1 | -19 | 1929 | No stop |
| 06 22 00 | =1720+250 | 18 46 50 | 57.8 | 217.2 | 1.4 | | 23.6 | 101 | 1945 | 06 20 01 |
| 06 22 00 | ROSS867 | 18 46 50 | 58.9 | 219.6 | 1.4 | | 25.3 | -19 | 1945 | No stop |
| 06 30 00 | --- | 18 54 52 | 58.1 | 222.6 | 1.6 | | 27.0 | 461 | 2006 | 06 22 01 |
| 06 30 40 | J1722+2458 | 18 55 32 | 57.0 | 220.5 | 1.5 | | 25.5 | 21 | 2006 | 06 30 40 |
| 06 32 00 | =1720+250 | 18 56 52 | 56.9 | 221.0 | 1.6 | | 25.8 | 80 | 2017 | 06 30 41 |
| 06 32 00 | ROSS867 | 18 56 52 | 57.9 | 223.4 | 1.6 | | 27.4 | -19 | 2017 | No stop |
| 06 40 00 | --- | 19 04 53 | 57.1 | 226.3 | 1.7 | | 29.0 | 461 | 2078 | 06 32 01 |
| 06 40 00 | J1722+2458 | 19 04 53 | 56.1 | 224.0 | 1.7 | | 27.4 | -19 | 2078 | No stop |
| 06 42 00 | =1720+250 | 19 06 54 | 55.8 | 224.7 | 1.7 | | 27.8 | 101 | 2094 | 06 40 01 |
| 06 42 00 | ROSS867 | 19 06 54 | 56.9 | 227.1 | 1.8 | | 29.4 | -19 | 2094 | No stop |
| 06 50 00 | --- | 19 14 55 | 56.0 | 229.9 | 1.9 | | 30.9 | 461 | 2155 | 06 42 01 |

```
Schedule for TORUN     (Code Tr )                                  Page   6
               Ross867
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Sun  10 Mar 2019   Day  69 ---

06 50 40  J1722+2458   19 15 35  54.9 227.7  1.9      29.3    21     2155   06 50 40
06 52 00  =1720+250    19 16 55  54.8 228.2  1.9      29.6    80     2165   06 50 41

06 52 00  3C345        19 16 55  60.9 258.4  2.6      49.9   -76     2165   No stop
07 00 00  ---          19 24 57  59.7 260.4  2.7      50.4   404     2227   06 52 01



SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119.L1024

   Setup group:   10         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
   Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00
            2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00
  Net SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF SB =         L         L         L         L         L         L         L         L
                  L         L         L         L         L         L         L         L
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
                RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
                  3         7         3         7         4         8         4         8
  BBC SB=         U         U         L         L         U         U         L         L
                  U         U         L         L         U         U         L         L
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                 A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:   7  Setup file default.  Used with PCAL = off
  LO sum=   1610.49  1610.49  1610.49  1610.49  1642.49  1642.49  1642.49  1642.49
            1674.49  1674.49  1674.49  1674.49  1706.49  1706.49  1706.49  1706.49
  BBC fr=    689.51   689.51   689.51   689.51   657.51   657.51   657.51   657.51
             625.51   625.51   625.51   625.51   593.51   593.51   593.51   593.51
  Bandwd=     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
              16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
   Matching frequency sets:   7

  Track assignments are:
   track1=   2, 10, 18, 26,  4, 12, 20, 28,  6, 14, 22, 30,  8, 16, 24, 32
   barrel=roll_off


 POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                        (B1950)             (J2000)             (Date)             (mas)

 * ROSS867           17 17 51.729053   * 17 19 52.704417     17 20 38.279841       0.00
                     26 33 06.96932    * 26 30 08.17019      26 28 50.26698        0.00

 * 3C345             16 41 17.606229   * 16 42 58.809967     16 43 37.140850       0.79
   J1642+3948        39 54 10.81492    * 39 48 36.99399      39 46 17.37126        0.59
   1641+399          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
   J1642+39          GSFC 2016a X/S astro solution,  53724 observations.

   1720+250          17 20 49.923363   * 17 22 52.989968     17 23 39.339745       0.12
 * J1722+2458        25 01 20.62720    * 24 58 34.69119      24 57 22.06506        0.21
                     /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                     GSFC 2016a X/S astro solution,    109 observations.


EFFECT OF SOLAR CORONA

  The solar corona can cause unstable phases for sources too close to the Sun.
  SCHED provides warnings at individual scans for distances less than 10 degrees.
  The distance from the Sun to each source in this schedule is:
    Source         Sun distance (deg)
   ROSS867             91.9
   3C345               99.8
   J1722+2458          91.1
```

```
Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
that the Sun will cause amplitude reductions on the  longest VLBA baselines
at a solar distance of 60deg F^(-0.6) where F is in GHz.
For common VLBI bands, this is:
     1.6 GHz         45. deg
     2.3 GHz         36. deg
     5.0 GHz         23. deg
     8.4 GHz         17. deg
    15.0 GHz         12. deg
    22.0 GHz          9. deg
```

# ep106gtr

## Mrk1018 at 1 Gb/s - L band

PI: *Miguel A. Perez-Torres*


```
Address:  IAA - CSIC
          Glorieta de la Astronomia s/n
          18008 Granada, Spain


Phone:    +34-665252538
EMAIL:    torres@iaa.es
Fax:
Phone during observation: +34-665252538
```


```
Observing mode: 1024 Mbps

Schedule for TORUN     (Code Tr )                                  Page   2
               Mrk1018 at 1 Gb/s - L band
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-------------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-------------------------------------------------------------------------------------------

 --- Sun  10 Mar 2019   Day  69 ---

 Next scan frequencies:  1610.49  1610.49  1610.49  1610.49  1642.49  1642.49  1642.49  1642.49
                         1674.49  1674.49  1674.49  1674.49  1706.49  1706.49  1706.49  1706.49
 Next BBC frequencies:    689.51   689.51   689.51   689.51   657.51   657.51   657.51   657.51
                          625.51   625.51   625.51   625.51   593.51   593.51   593.51   593.51
 Next scan bandwidths:     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
                           16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00

10 30 00  0149+218     22 55 31  44.4 114.9 -3.0     -36.0     0        0   10 30 00
10 33 30  ---          22 59 02  44.8 115.9 -2.9     -35.7   210       27   10 30 01

10 33 30  0205-010     22 59 02  23.3 126.5 -3.2     -28.9   -94       27   No stop
10 37 30  ---          23 03 02  23.8 127.5 -3.1     -28.5   146       58   10 33 31

10 37 30  MRK1018      23 03 02  24.5 127.7 -3.1     -28.4   -15       58   No stop
10 41 20  ---          23 06 53  24.9 128.7 -3.0     -28.0   215       87   10 37 31

10 41 50  0205-010     23 07 23  24.3 128.5 -3.0     -28.0    15       87   10 41 50
10 43 00  ---          23 08 33  24.4 128.8 -3.0     -27.9    70       96   10 41 51

10 43 00  MRK1018      23 08 33  25.1 129.1 -3.0     -27.8   -15       96   No stop
10 46 50  ---          23 12 24  25.5 130.0 -2.9     -27.4   215      126   10 43 01

10 46 50  0205-010     23 12 24  24.8 129.7 -2.9     -27.5   -15      126   No stop
10 48 00  ---          23 13 34  25.0 130.0 -2.9     -27.4    55      135   10 46 51

10 48 00  MRK1018      23 13 34  25.7 130.3 -2.9     -27.3   -15      135   No stop
10 51 50  ---          23 17 25  26.1 131.3 -2.8     -26.8   215      164   10 48 01

10 52 20  0205-010     23 17 55  25.5 131.1 -2.9     -26.9    15      164   10 52 20
10 53 30  ---          23 19 05  25.6 131.4 -2.8     -26.8    70      173   10 52 21

10 53 30  MRK1018      23 19 05  26.3 131.7 -2.8     -26.6   -15      173   No stop
10 57 20  ---          23 22 56  26.7 132.6 -2.7     -26.2   215      203   10 53 31
```

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 57 20 | 0205-010 | 23 22 56 | 26.0 | 132.3 | -2.8 | -26.3 | -14 | 203 | No stop |
| 10 58 30 | --- | 23 24 06 | 26.2 | 132.6 | -2.8 | -26.2 | 56 | 212 | 10 57 21 |
| 10 58 30 | MRK1018 | 23 24 06 | 26.9 | 132.9 | -2.7 | -26.1 | -15 | 212 | No stop |
| 11 02 20 | --- | 23 27 56 | 27.3 | 133.9 | -2.7 | -25.6 | 215 | 241 | 10 58 31 |
| 11 02 50 | 0205-010 | 23 28 27 | 26.6 | 133.7 | -2.7 | -25.7 | 16 | 241 | 11 02 50 |
| 11 04 00 | --- | 23 29 37 | 26.8 | 134.0 | -2.7 | -25.6 | 70 | 250 | 11 02 51 |
| 11 04 00 | MRK1018 | 23 29 37 | 27.5 | 134.3 | -2.6 | -25.4 | -15 | 250 | No stop |
| 11 07 50 | --- | 23 33 27 | 27.9 | 135.3 | -2.6 | -25.0 | 215 | 279 | 11 04 01 |

Schedule for TORUN (Code Tr ) Page 3

Mrk1018 at 1 Gb/s - L band

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | LST | Start / Stop EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sun 10 Mar 2019 Day 69 --- | | | | | | | | | | |
| 11 07 50 | 0205-010 | 23 33 27 | 27.2 | 135.0 | -2.6 | | -25.1 | -14 | 279 | No stop |
| 11 09 00 | --- | 23 34 38 | 27.3 | 135.3 | -2.6 | | -25.0 | 56 | 288 | 11 07 51 |
| 11 09 00 | MRK1018 | 23 34 38 | 28.0 | 135.6 | -2.5 | | -24.8 | -15 | 288 | No stop |
| 11 12 50 | --- | 23 38 28 | 28.4 | 136.6 | -2.5 | | -24.4 | 215 | 318 | 11 09 01 |
| 11 13 20 | 0205-010 | 23 38 58 | 27.8 | 136.4 | -2.5 | | -24.5 | 16 | 318 | 11 13 20 |
| 11 14 30 | --- | 23 40 08 | 27.9 | 136.7 | -2.5 | | -24.3 | 70 | 327 | 11 13 21 |
| 11 14 30 | MRK1018 | 23 40 08 | 28.6 | 137.0 | -2.5 | | -24.2 | -15 | 327 | No stop |
| 11 18 20 | --- | 23 43 59 | 29.0 | 138.0 | -2.4 | | -23.7 | 215 | 356 | 11 14 31 |
| 11 18 20 | 0205-010 | 23 43 59 | 28.3 | 137.7 | -2.4 | | -23.8 | -14 | 356 | No stop |
| 11 19 30 | --- | 23 45 09 | 28.4 | 138.0 | -2.4 | | -23.7 | 56 | 365 | 11 18 21 |
| 11 19 30 | MRK1018 | 23 45 09 | 29.1 | 138.3 | -2.4 | | -23.5 | -15 | 365 | No stop |
| 11 23 20 | --- | 23 49 00 | 29.5 | 139.4 | -2.3 | | -23.0 | 215 | 395 | 11 19 31 |
| 11 23 50 | 0205-010 | 23 49 30 | 28.8 | 139.1 | -2.3 | | -23.1 | 16 | 395 | 11 23 50 |
| 11 25 00 | --- | 23 50 40 | 28.9 | 139.4 | -2.3 | | -23.0 | 70 | 404 | 11 23 51 |
| 11 25 00 | MRK1018 | 23 50 40 | 29.6 | 139.8 | -2.3 | | -22.8 | -15 | 404 | No stop |
| 11 28 50 | --- | 23 54 31 | 30.0 | 140.8 | -2.2 | | -22.3 | 215 | 433 | 11 25 01 |
| 11 28 50 | 0205-010 | 23 54 31 | 29.3 | 140.5 | -2.2 | | -22.5 | -14 | 433 | No stop |
| 11 30 00 | --- | 23 55 41 | 29.4 | 140.8 | -2.2 | | -22.3 | 56 | 442 | 11 28 51 |
| 11 30 00 | MRK1018 | 23 55 41 | 30.1 | 141.1 | -2.2 | | -22.1 | -15 | 442 | No stop |
| 11 33 50 | --- | 23 59 32 | 30.5 | 142.2 | -2.1 | | -21.6 | 215 | 472 | 11 30 01 |
| 11 34 20 | 0205-010 | 00 00 02 | 29.8 | 141.9 | -2.2 | | -21.7 | 16 | 472 | 11 34 20 |
| 11 35 30 | --- | 00 01 12 | 29.9 | 142.2 | -2.1 | | -21.6 | 70 | 481 | 11 34 21 |
| 11 35 30 | MRK1018 | 00 01 12 | 30.6 | 142.6 | -2.1 | | -21.4 | -15 | 481 | No stop |
| 11 39 20 | --- | 00 05 03 | 31.0 | 143.7 | -2.0 | | -20.8 | 215 | 510 | 11 35 31 |
| 11 39 20 | 0205-010 | 00 05 03 | 30.3 | 143.3 | -2.1 | | -21.0 | -14 | 510 | No stop |
| 11 40 30 | --- | 00 06 13 | 30.4 | 143.6 | -2.1 | | -20.9 | 56 | 519 | 11 39 21 |
| 11 40 30 | MRK1018 | 00 06 13 | 31.1 | 144.0 | -2.0 | | -20.7 | -15 | 519 | No stop |
| 11 44 20 | --- | 00 10 03 | 31.4 | 145.0 | -2.0 | | -20.1 | 215 | 549 | 11 40 31 |
| 11 44 50 | 0205-010 | 00 10 33 | 30.8 | 144.8 | -2.0 | | -20.3 | 16 | 549 | 11 44 50 |
| 11 46 00 | --- | 00 11 44 | 30.9 | 145.1 | -2.0 | | -20.1 | 70 | 558 | 11 44 51 |

Schedule for TORUN (Code Tr ) Page 4

Mrk1018 at 1 Gb/s - L band

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | Start / Stop LST | EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sun 10 Mar 2019 Day 69 --- | | | | | | | | | | |
| 11 46 00 | MRK1018 | 00 11 44 | 31.5 | 145.5 | -1.9 | | -19.9 | -14 | 558 | No stop |
| 11 49 50 | --- | 00 15 34 | 31.9 | 146.6 | -1.9 | | -19.3 | 216 | 587 | 11 46 01 |
| 11 49 50 | 0205-010 | 00 15 34 | 31.2 | 146.2 | -1.9 | | -19.5 | -14 | 587 | No stop |
| 11 51 00 | --- | 00 16 44 | 31.3 | 146.5 | -1.9 | | -19.4 | 56 | 596 | 11 49 51 |
| 11 51 00 | MRK1018 | 00 16 44 | 32.0 | 146.9 | -1.8 | | -19.2 | -14 | 596 | No stop |
| 11 54 50 | --- | 00 20 35 | 32.3 | 148.0 | -1.8 | | -18.6 | 216 | 626 | 11 51 01 |
| 11 55 20 | 0205-010 | 00 21 05 | 31.7 | 147.7 | -1.8 | | -18.7 | 16 | 626 | 11 55 20 |
| 11 56 30 | --- | 00 22 15 | 31.7 | 148.0 | -1.8 | | -18.6 | 70 | 635 | 11 55 21 |
| 11 56 30 | MRK1018 | 00 22 15 | 32.4 | 148.4 | -1.7 | | -18.3 | -14 | 635 | No stop |
| 12 00 20 | --- | 00 26 06 | 32.7 | 149.5 | -1.7 | | -17.7 | 216 | 664 | 11 56 31 |
| 12 00 20 | 0205-010 | 00 26 06 | 32.0 | 149.1 | -1.7 | | -18.0 | -14 | 664 | No stop |
| 12 01 30 | --- | 00 27 16 | 32.1 | 149.4 | -1.7 | | -17.8 | 56 | 673 | 12 00 21 |
| 12 01 30 | MRK1018 | 00 27 16 | 32.8 | 149.8 | -1.7 | | -17.6 | -14 | 673 | No stop |
| 12 05 20 | --- | 00 31 07 | 33.1 | 150.9 | -1.6 | | -17.0 | 216 | 703 | 12 01 31 |
| 12 05 50 | 0205-010 | 00 31 37 | 32.5 | 150.6 | -1.6 | | -17.1 | 16 | 703 | 12 05 50 |
| 12 07 00 | --- | 00 32 47 | 32.5 | 151.0 | -1.6 | | -16.9 | 70 | 712 | 12 05 51 |
| 12 07 00 | MRK1018 | 00 32 47 | 33.2 | 151.4 | -1.6 | | -16.7 | -14 | 712 | No stop |
| 12 10 50 | --- | 00 36 38 | 33.5 | 152.5 | -1.5 | | -16.1 | 216 | 741 | 12 07 01 |
| 12 10 50 | 0205-010 | 00 36 38 | 32.8 | 152.1 | -1.5 | | -16.3 | -14 | 741 | No stop |
| 12 12 00 | --- | 00 37 48 | 32.9 | 152.4 | -1.5 | | -16.2 | 56 | 750 | 12 10 51 |
| 12 12 00 | MRK1018 | 00 37 48 | 33.5 | 152.9 | -1.5 | | -15.9 | -14 | 750 | No stop |
| 12 15 50 | --- | 00 41 39 | 33.8 | 154.0 | -1.4 | | -15.3 | 216 | 779 | 12 12 01 |
| 12 16 20 | 0205-010 | 00 42 09 | 33.2 | 153.6 | -1.5 | | -15.5 | 16 | 779 | 12 16 20 |
| 12 17 30 | --- | 00 43 19 | 33.3 | 154.0 | -1.4 | | -15.3 | 70 | 788 | 12 16 21 |
| 12 17 30 | MRK1018 | 00 43 19 | 33.9 | 154.4 | -1.4 | | -15.0 | -14 | 788 | No stop |
| 12 21 20 | --- | 00 47 09 | 34.1 | 155.6 | -1.3 | | -14.4 | 216 | 818 | 12 17 31 |
| 12 21 20 | 0205-010 | 00 47 09 | 33.5 | 155.1 | -1.4 | | -14.7 | -14 | 818 | No stop |
| 12 22 30 | --- | 00 48 20 | 33.6 | 155.4 | -1.4 | | -14.5 | 56 | 827 | 12 21 21 |
| 12 22 30 | MRK1018 | 00 48 20 | 34.2 | 155.9 | -1.3 | | -14.2 | -14 | 827 | No stop |
| 12 26 20 | --- | 00 52 10 | 34.5 | 157.0 | -1.3 | | -13.5 | 216 | 856 | 12 22 31 |

Schedule for TORUN (Code Tr ) Page 5

Mrk1018 at 1 Gb/s - L band

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sun 10 Mar 2019 Day 69 --- | | | | | | | | | | |
| 12 26 50 | 0205-010 | 00 52 40 | 33.9 | 156.7 | -1.3 | | -13.7 | 16 | 856 | 12 26 50 |
| 12 28 00 | --- | 00 53 51 | 33.9 | 157.0 | -1.3 | | -13.5 | 70 | 865 | 12 26 51 |
| 12 28 00 | MRK1018 | 00 53 51 | 34.5 | 157.5 | -1.2 | | -13.3 | -14 | 865 | No stop |
| 12 31 50 | --- | 00 57 41 | 34.8 | 158.7 | -1.2 | | -12.6 | 216 | 895 | 12 28 01 |
| 12 31 50 | 0205-010 | 00 57 41 | 34.2 | 158.2 | -1.2 | | -12.9 | -14 | 895 | No stop |
| 12 33 00 | --- | 00 58 51 | 34.2 | 158.5 | -1.2 | | -12.7 | 56 | 904 | 12 31 51 |
| 12 33 00 | MRK1018 | 00 58 51 | 34.8 | 159.0 | -1.1 | | -12.4 | -14 | 904 | No stop |
| 12 36 50 | --- | 01 02 42 | 35.0 | 160.2 | -1.1 | | -11.8 | 216 | 933 | 12 33 01 |
| 12 37 20 | 0205-010 | 01 03 12 | 34.4 | 159.8 | -1.1 | | -12.0 | 16 | 933 | 12 37 20 |
| 12 38 30 | --- | 01 04 22 | 34.5 | 160.1 | -1.1 | | -11.8 | 70 | 942 | 12 37 21 |
| 12 38 30 | MRK1018 | 01 04 22 | 35.1 | 160.7 | -1.0 | | -11.5 | -14 | 942 | No stop |
| 12 42 20 | --- | 01 08 13 | 35.3 | 161.8 | -1.0 | | -10.8 | 216 | 972 | 12 38 31 |
| 12 42 20 | 0205-010 | 01 08 13 | 34.7 | 161.3 | -1.0 | | -11.1 | -14 | 972 | No stop |
| 12 43 30 | --- | 01 09 23 | 34.8 | 161.6 | -1.0 | | -10.9 | 56 | 981 | 12 42 21 |
| 12 43 30 | MRK1018 | 01 09 23 | 35.4 | 162.2 | -1.0 | | -10.6 | -14 | 981 | No stop |
| 12 47 20 | --- | 01 13 14 | 35.5 | 163.3 | -0.9 | | -9.9 | 216 | 1010 | 12 43 31 |
| 12 47 50 | 0205-010 | 01 13 44 | 35.0 | 162.9 | -0.9 | | -10.1 | 16 | 1010 | 12 47 50 |
| 12 49 00 | --- | 01 14 54 | 35.0 | 163.3 | -0.9 | | -9.9 | 70 | 1019 | 12 47 51 |
| 12 49 00 | MRK1018 | 01 14 54 | 35.6 | 163.8 | -0.9 | | -9.6 | -14 | 1019 | No stop |
| 12 52 50 | --- | 01 18 45 | 35.7 | 165.0 | -0.8 | | -8.9 | 216 | 1049 | 12 49 01 |
| 12 52 50 | 0205-010 | 01 18 45 | 35.2 | 164.4 | -0.8 | | -9.3 | -14 | 1049 | No stop |
| 12 54 00 | --- | 01 19 55 | 35.2 | 164.8 | -0.8 | | -9.1 | 56 | 1058 | 12 52 51 |
| 12 54 00 | MRK1018 | 01 19 55 | 35.8 | 165.4 | -0.8 | | -8.7 | -14 | 1058 | No stop |
| 12 57 50 | --- | 01 23 45 | 35.9 | 166.5 | -0.7 | | -8.0 | 216 | 1087 | 12 54 01 |
| 12 58 20 | 0205-010 | 01 24 16 | 35.4 | 166.1 | -0.8 | | -8.3 | 16 | 1087 | 12 58 20 |
| 12 59 30 | --- | 01 25 26 | 35.4 | 166.5 | -0.7 | | -8.1 | 70 | 1096 | 12 58 21 |
| 12 59 30 | MRK1018 | 01 25 26 | 36.0 | 167.0 | -0.7 | | -7.7 | -14 | 1096 | No stop |
| 13 03 20 | --- | 01 29 16 | 36.1 | 168.2 | -0.6 | | -7.0 | 216 | 1126 | 12 59 31 |
| 13 03 20 | 0205-010 | 01 29 16 | 35.5 | 167.6 | -0.7 | | -7.4 | -14 | 1126 | No stop |
| 13 04 30 | --- | 01 30 27 | 35.6 | 168.0 | -0.6 | | -7.2 | 56 | 1135 | 13 03 21 |

Schedule for TORUN (Code Tr ) Page 6

Mrk1018 at 1 Gb/s - L band

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sun 10 Mar 2019 Day 69 --- | | | | | | | | | | |
| 13 04 30 | MRK1018 | 01 30 27 | 36.2 | 168.6 | -0.6 | | -6.8 | -14 | 1135 | No stop |
| 13 08 20 | --- | 01 34 17 | 36.3 | 169.8 | -0.5 | | -6.1 | 216 | 1164 | 13 04 31 |
| 13 08 50 | 0205-010 | 01 34 47 | 35.7 | 169.3 | -0.6 | | -6.4 | 16 | 1164 | 13 08 50 |
| 13 10 00 | --- | 01 35 57 | 35.7 | 169.7 | -0.6 | | -6.2 | 70 | 1173 | 13 08 51 |
| 13 10 00 | MRK1018 | 01 35 57 | 36.3 | 170.3 | -0.5 | | -5.8 | -14 | 1173 | No stop |
| 13 13 50 | --- | 01 39 48 | 36.4 | 171.5 | -0.5 | | -5.1 | 216 | 1203 | 13 10 01 |
| 13 13 50 | 0205-010 | 01 39 48 | 35.8 | 170.9 | -0.5 | | -5.5 | -14 | 1203 | No stop |
| 13 15 00 | --- | 01 40 58 | 35.9 | 171.2 | -0.5 | | -5.3 | 56 | 1212 | 13 13 51 |
| 13 15 00 | 0154-000 | 01 40 58 | 37.1 | 174.6 | -0.3 | | -3.2 | -22 | 1212 | No stop |
| 13 17 00 | --- | 01 42 59 | 37.1 | 175.2 | -0.3 | | -2.9 | 98 | 1227 | 13 15 01 |
| 13 17 00 | MRK1018 | 01 42 59 | 36.5 | 172.5 | -0.4 | | -4.5 | -20 | 1227 | No stop |
| 13 20 50 | --- | 01 46 49 | 36.5 | 173.6 | -0.3 | | -3.8 | 210 | 1256 | 13 17 01 |
| 13 21 20 | 0205-010 | 01 47 19 | 36.0 | 173.2 | -0.4 | | -4.1 | 17 | 1256 | 13 21 20 |
| 13 22 30 | --- | 01 48 29 | 36.0 | 173.5 | -0.3 | | -3.9 | 70 | 1265 | 13 21 21 |
| 13 22 30 | MRK1018 | 01 48 29 | 36.6 | 174.2 | -0.3 | | -3.5 | -13 | 1265 | No stop |
| 13 26 20 | --- | 01 52 20 | 36.6 | 175.4 | -0.2 | | -2.8 | 217 | 1295 | 13 22 31 |
| 13 26 20 | 0205-010 | 01 52 20 | 36.1 | 174.7 | -0.3 | | -3.2 | -13 | 1295 | No stop |
| 13 27 30 | --- | 01 53 30 | 36.1 | 175.1 | -0.3 | | -2.9 | 57 | 1304 | 13 26 21 |
| 13 27 30 | MRK1018 | 01 53 30 | 36.6 | 175.7 | -0.2 | | -2.6 | -13 | 1304 | No stop |
| 13 31 20 | --- | 01 57 21 | 36.7 | 176.9 | -0.2 | | -1.8 | 217 | 1333 | 13 27 31 |
| 13 31 50 | 0205-010 | 01 57 51 | 36.1 | 176.4 | -0.2 | | -2.1 | 17 | 1333 | 13 31 50 |
| 13 33 00 | --- | 01 59 01 | 36.2 | 176.8 | -0.2 | | -1.9 | 70 | 1342 | 13 31 51 |
| 13 33 00 | MRK1018 | 01 59 01 | 36.7 | 177.4 | -0.1 | | -1.5 | -13 | 1342 | No stop |
| 13 36 50 | --- | 02 02 52 | 36.7 | 178.6 | -0.1 | | -0.8 | 217 | 1372 | 13 33 01 |
| 13 36 50 | 0205-010 | 02 02 52 | 36.2 | 178.0 | -0.1 | | -1.2 | -13 | 1372 | No stop |
| 13 38 00 | --- | 02 04 02 | 36.2 | 178.3 | -0.1 | | -1.0 | 57 | 1381 | 13 36 51 |
| 13 38 00 | MRK1018 | 02 04 02 | 36.7 | 179.0 | -0.1 | | -0.6 | -13 | 1381 | No stop |
| 13 41 50 | --- | 02 07 53 | 36.7 | 180.2 | 0.0 | | 0.1 | 217 | 1410 | 13 38 01 |
| 13 42 20 | 0205-010 | 02 08 23 | 36.2 | 179.7 | -0.0 | | -0.2 | 17 | 1410 | 13 42 20 |
| 13 43 30 | --- | 02 09 33 | 36.2 | 180.0 | 0.0 | | 0.0 | 70 | 1419 | 13 42 21 |

Schedule for TORUN (Code Tr ) Page 7

Mrk1018 at 1 Gb/s - L band

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Sun 10 Mar 2019 Day 69 --- | | | | | | | | | | |
| 13 43 30 | MRK1018 | 02 09 33 | 36.7 | 180.7 | 0.0 | | 0.4 | -13 | 1419 | No stop |
| 13 47 20 | --- | 02 13 24 | 36.7 | 181.9 | 0.1 | | 1.2 | 217 | 1449 | 13 43 31 |
| 13 47 20 | 0205-010 | 02 13 24 | 36.2 | 181.2 | 0.1 | | 0.7 | -13 | 1449 | No stop |
| 13 48 30 | --- | 02 14 34 | 36.2 | 181.6 | 0.1 | | 1.0 | 57 | 1458 | 13 47 21 |
| 13 48 30 | MRK1018 | 02 14 34 | 36.7 | 182.3 | 0.1 | | 1.4 | -13 | 1458 | No stop |
| 13 52 20 | --- | 02 18 24 | 36.6 | 183.5 | 0.2 | | 2.1 | 217 | 1487 | 13 48 31 |
| 13 52 50 | 0205-010 | 02 18 54 | 36.2 | 182.9 | 0.2 | | 1.8 | 17 | 1487 | 13 52 50 |
| 13 54 00 | --- | 02 20 05 | 36.1 | 183.3 | 0.2 | | 2.0 | 70 | 1496 | 13 52 51 |
| 13 54 00 | MRK1018 | 02 20 05 | 36.6 | 184.0 | 0.2 | | 2.4 | -13 | 1496 | No stop |
| 13 57 50 | --- | 02 23 55 | 36.6 | 185.2 | 0.3 | | 3.1 | 217 | 1526 | 13 54 01 |
| 13 57 50 | 0205-010 | 02 23 55 | 36.1 | 184.5 | 0.2 | | 2.7 | -13 | 1526 | No stop |
| 13 59 00 | --- | 02 25 05 | 36.1 | 184.9 | 0.3 | | 2.9 | 57 | 1535 | 13 57 51 |
| 13 59 00 | MRK1018 | 02 25 05 | 36.6 | 185.6 | 0.3 | | 3.3 | -13 | 1535 | No stop |
| 14 02 50 | --- | 02 28 56 | 36.5 | 186.8 | 0.4 | | 4.1 | 217 | 1564 | 13 59 01 |
| 14 03 20 | 0205-010 | 02 29 26 | 36.0 | 186.2 | 0.3 | | 3.7 | 17 | 1564 | 14 03 20 |
| 14 04 30 | --- | 02 30 36 | 36.0 | 186.6 | 0.4 | | 3.9 | 70 | 1573 | 14 03 21 |
| 14 04 30 | MRK1018 | 02 30 36 | 36.5 | 187.3 | 0.4 | | 4.4 | -13 | 1573 | No stop |
| 14 08 20 | --- | 02 34 27 | 36.4 | 188.5 | 0.5 | | 5.1 | 217 | 1603 | 14 04 31 |
| 14 08 20 | 0205-010 | 02 34 27 | 35.9 | 187.7 | 0.4 | | 4.6 | -13 | 1603 | No stop |
| 14 09 30 | --- | 02 35 37 | 35.9 | 188.1 | 0.4 | | 4.9 | 57 | 1612 | 14 08 21 |
| 14 09 30 | MRK1018 | 02 35 37 | 36.4 | 188.8 | 0.5 | | 5.3 | -13 | 1612 | No stop |
| 14 13 20 | --- | 02 39 28 | 36.3 | 190.0 | 0.5 | | 6.0 | 217 | 1641 | 14 09 31 |
| 14 13 50 | 0205-010 | 02 39 58 | 35.8 | 189.4 | 0.5 | | 5.7 | 17 | 1641 | 14 13 50 |
| 14 15 00 | --- | 02 41 08 | 35.8 | 189.8 | 0.5 | | 5.9 | 70 | 1650 | 14 13 51 |
| 14 15 00 | MRK1018 | 02 41 08 | 36.2 | 190.5 | 0.6 | | 6.3 | -13 | 1650 | No stop |
| 14 18 50 | --- | 02 44 59 | 36.1 | 191.7 | 0.6 | | 7.0 | 217 | 1679 | 14 15 01 |
| 14 18 50 | 0205-010 | 02 44 59 | 35.7 | 191.0 | 0.6 | | 6.6 | -13 | 1679 | No stop |
| 14 20 00 | --- | 02 46 09 | 35.6 | 191.3 | 0.6 | | 6.8 | 57 | 1688 | 14 18 51 |
| 14 20 00 | MRK1018 | 02 46 09 | 36.1 | 192.1 | 0.6 | | 7.2 | -13 | 1688 | No stop |
| 14 23 50 | --- | 02 50 00 | 36.0 | 193.3 | 0.7 | | 7.9 | 217 | 1718 | 14 20 01 |

Schedule for TORUN (Code Tr ) Page 8

Mrk1018 at 1 Gb/s - L band

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sun 10 Mar 2019 Day 69 --- | | | | | | | | | | |
| 14 24 20 | 0205-010 | 02 50 30 | 35.5 | 192.7 | 0.7 | | 7.6 | 17 | 1718 | 14 24 20 |
| 14 25 30 | --- | 02 51 40 | 35.5 | 193.0 | 0.7 | | 7.8 | 70 | 1727 | 14 24 21 |
| 14 25 30 | MRK1018 | 02 51 40 | 35.9 | 193.8 | 0.7 | | 8.2 | -13 | 1727 | No stop |
| 14 29 20 | --- | 02 55 30 | 35.8 | 194.9 | 0.8 | | 8.9 | 217 | 1756 | 14 25 31 |
| 14 29 20 | 0205-010 | 02 55 30 | 35.3 | 194.2 | 0.8 | | 8.5 | -13 | 1756 | No stop |
| 14 30 30 | --- | 02 56 41 | 35.3 | 194.5 | 0.8 | | 8.7 | 57 | 1765 | 14 29 21 |
| 14 30 30 | MRK1018 | 02 56 41 | 35.7 | 195.3 | 0.8 | | 9.1 | -13 | 1765 | No stop |
| 14 34 20 | --- | 03 00 31 | 35.6 | 196.5 | 0.9 | | 9.8 | 217 | 1795 | 14 30 31 |
| 14 34 50 | 0205-010 | 03 01 01 | 35.1 | 195.8 | 0.9 | | 9.4 | 17 | 1795 | 14 34 50 |
| 14 36 00 | --- | 03 02 12 | 35.1 | 196.2 | 0.9 | | 9.6 | 70 | 1804 | 14 34 51 |
| 14 36 00 | MRK1018 | 03 02 12 | 35.5 | 197.0 | 0.9 | | 10.1 | -13 | 1804 | No stop |
| 14 39 50 | --- | 03 06 02 | 35.3 | 198.1 | 1.0 | | 10.8 | 217 | 1833 | 14 36 01 |
| 14 39 50 | 0205-010 | 03 06 02 | 34.9 | 197.4 | 0.9 | | 10.3 | -13 | 1833 | No stop |
| 14 41 00 | --- | 03 07 12 | 34.9 | 197.7 | 1.0 | | 10.5 | 57 | 1842 | 14 39 51 |
| 14 41 00 | MRK1018 | 03 07 12 | 35.3 | 198.5 | 1.0 | | 11.0 | -13 | 1842 | No stop |
| 14 44 50 | --- | 03 11 03 | 35.1 | 199.6 | 1.1 | | 11.6 | 217 | 1872 | 14 41 01 |
| 14 45 20 | 0205-010 | 03 11 33 | 34.7 | 199.0 | 1.0 | | 11.3 | 17 | 1872 | 14 45 20 |
| 14 46 30 | --- | 03 12 43 | 34.6 | 199.4 | 1.1 | | 11.5 | 70 | 1881 | 14 45 21 |
| 14 46 30 | MRK1018 | 03 12 43 | 35.0 | 200.1 | 1.1 | | 11.9 | -13 | 1881 | No stop |
| 14 50 20 | --- | 03 16 34 | 34.8 | 201.3 | 1.2 | | 12.6 | 217 | 1910 | 14 46 31 |
| 14 50 20 | 0205-010 | 03 16 34 | 34.4 | 200.5 | 1.1 | | 12.1 | -13 | 1910 | No stop |
| 14 51 30 | --- | 03 17 44 | 34.3 | 200.8 | 1.1 | | 12.3 | 57 | 1919 | 14 50 21 |
| 14 51 30 | MRK1018 | 03 17 44 | 34.7 | 201.6 | 1.2 | | 12.8 | -13 | 1919 | No stop |
| 14 55 20 | --- | 03 21 35 | 34.5 | 202.8 | 1.2 | | 13.4 | 217 | 1949 | 14 51 31 |
| 14 55 50 | 0205-010 | 03 22 05 | 34.1 | 202.1 | 1.2 | | 13.1 | 17 | 1949 | 14 55 50 |
| 14 57 00 | --- | 03 23 15 | 34.0 | 202.5 | 1.2 | | 13.3 | 70 | 1958 | 14 55 51 |
| 14 57 00 | MRK1018 | 03 23 15 | 34.4 | 203.2 | 1.3 | | 13.7 | -13 | 1958 | No stop |
| 15 00 50 | --- | 03 27 06 | 34.2 | 204.4 | 1.3 | | 14.3 | 217 | 1987 | 14 57 01 |
| 15 00 50 | 0205-010 | 03 27 06 | 33.8 | 203.6 | 1.3 | | 13.9 | -13 | 1987 | No stop |
| 15 02 00 | --- | 03 28 16 | 33.7 | 203.9 | 1.3 | | 14.1 | 57 | 1996 | 15 00 51 |

Schedule for TORUN (Code Tr ) Page 9

Mrk1018 at 1 Gb/s - L band

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sun 10 Mar 2019 Day 69 --- | | | | | | | | | | |
| 15 02 00 | MRK1018 | 03 28 16 | 34.1 | 204.7 | 1.4 | | 14.5 | -13 | 1996 | No stop |
| 15 05 50 | --- | 03 32 06 | 33.8 | 205.8 | 1.4 | | 15.2 | 217 | 2026 | 15 02 01 |
| 15 06 20 | 0205-010 | 03 32 37 | 33.5 | 205.2 | 1.4 | | 14.8 | 17 | 2026 | 15 06 20 |
| 15 07 30 | --- | 03 33 47 | 33.4 | 205.5 | 1.4 | | 15.0 | 70 | 2035 | 15 06 21 |
| 15 07 30 | MRK1018 | 03 33 47 | 33.7 | 206.3 | 1.4 | | 15.4 | -13 | 2035 | No stop |
| 15 11 20 | --- | 03 37 37 | 33.5 | 207.4 | 1.5 | | 16.1 | 217 | 2064 | 15 07 31 |
| 15 11 20 | 0205-010 | 03 37 37 | 33.1 | 206.6 | 1.5 | | 15.6 | -13 | 2064 | No stop |
| 15 12 30 | --- | 03 38 48 | 33.1 | 207.0 | 1.5 | | 15.8 | 57 | 2073 | 15 11 21 |
| 15 12 30 | MRK1018 | 03 38 48 | 33.4 | 207.8 | 1.5 | | 16.2 | -13 | 2073 | No stop |
| 15 16 20 | --- | 03 42 38 | 33.1 | 208.9 | 1.6 | | 16.9 | 217 | 2103 | 15 12 31 |
| 15 16 50 | 0205-010 | 03 43 08 | 32.8 | 208.2 | 1.6 | | 16.5 | 17 | 2103 | 15 16 50 |
| 15 18 00 | --- | 03 44 18 | 32.7 | 208.6 | 1.6 | | 16.7 | 70 | 2112 | 15 16 51 |
| 15 18 00 | MRK1018 | 03 44 18 | 33.0 | 209.3 | 1.6 | | 17.1 | -13 | 2112 | No stop |
| 15 21 50 | --- | 03 48 09 | 32.7 | 210.4 | 1.7 | | 17.7 | 217 | 2141 | 15 18 01 |
| 15 21 50 | 0205-010 | 03 48 09 | 32.4 | 209.6 | 1.6 | | 17.3 | -13 | 2141 | No stop |
| 15 23 00 | --- | 03 49 19 | 32.3 | 210.0 | 1.7 | | 17.5 | 57 | 2150 | 15 21 51 |
| 15 23 00 | MRK1018 | 03 49 19 | 32.6 | 210.8 | 1.7 | | 17.9 | -13 | 2150 | No stop |
| 15 26 50 | --- | 03 53 10 | 32.3 | 211.9 | 1.8 | | 18.5 | 217 | 2179 | 15 23 01 |
| 15 27 20 | 0205-010 | 03 53 40 | 32.0 | 211.2 | 1.7 | | 18.1 | 17 | 2179 | 15 27 20 |
| 15 28 30 | --- | 03 54 50 | 31.9 | 211.5 | 1.8 | | 18.3 | 70 | 2188 | 15 27 21 |
| 15 28 30 | MRK1018 | 03 54 50 | 32.2 | 212.3 | 1.8 | | 18.7 | -13 | 2188 | No stop |
| 15 32 20 | --- | 03 58 41 | 31.9 | 213.4 | 1.9 | | 19.3 | 217 | 2218 | 15 28 31 |
| 15 32 20 | 0205-010 | 03 58 41 | 31.6 | 212.6 | 1.8 | | 18.9 | -13 | 2218 | No stop |
| 15 33 30 | --- | 03 59 51 | 31.5 | 212.9 | 1.8 | | 19.0 | 57 | 2227 | 15 32 21 |
| 15 33 30 | MRK1018 | 03 59 51 | 31.8 | 213.7 | 1.9 | | 19.5 | -13 | 2227 | No stop |
| 15 37 20 | --- | 04 03 42 | 31.4 | 214.8 | 1.9 | | 20.0 | 217 | 2256 | 15 33 31 |
| 15 37 50 | 0205-010 | 04 04 12 | 31.1 | 214.1 | 1.9 | | 19.7 | 17 | 2256 | 15 37 50 |
| 15 39 00 | --- | 04 05 22 | 31.0 | 214.4 | 1.9 | | 19.9 | 70 | 2265 | 15 37 51 |
| 15 39 00 | MRK1018 | 04 05 22 | 31.3 | 215.2 | 2.0 | | 20.3 | -13 | 2265 | No stop |
| 15 42 50 | --- | 04 09 13 | 31.0 | 216.3 | 2.0 | | 20.8 | 217 | 2295 | 15 39 01 |

Schedule for TORUN (Code Tr ) Page 10

Mrk1018 at 1 Gb/s - L band

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sun 10 Mar 2019 Day 69 --- | | | | | | | | | | |
| 15 42 50 | 0205-010 | 04 09 13 | 30.7 | 215.5 | 2.0 | | 20.4 | -13 | 2295 | No stop |
| 15 44 00 | --- | 04 10 23 | 30.6 | 215.8 | 2.0 | | 20.6 | 57 | 2304 | 15 42 51 |
| 15 44 00 | MRK1018 | 04 10 23 | 30.9 | 216.6 | 2.1 | | 21.0 | -13 | 2304 | No stop |
| 15 47 50 | --- | 04 14 13 | 30.5 | 217.6 | 2.1 | | 21.5 | 217 | 2333 | 15 44 01 |
| 15 48 20 | 0205-010 | 04 14 43 | 30.2 | 217.0 | 2.1 | | 21.2 | 17 | 2333 | 15 48 20 |
| 15 49 30 | --- | 04 15 54 | 30.1 | 217.3 | 2.1 | | 21.3 | 70 | 2342 | 15 48 21 |
| 15 49 30 | MRK1018 | 04 15 54 | 30.4 | 218.1 | 2.1 | | 21.7 | -13 | 2342 | No stop |
| 15 53 20 | --- | 04 19 44 | 30.0 | 219.1 | 2.2 | | 22.3 | 217 | 2372 | 15 49 31 |
| 15 53 20 | 0205-010 | 04 19 44 | 29.7 | 218.3 | 2.2 | | 21.9 | -13 | 2372 | No stop |
| 15 54 30 | --- | 04 20 54 | 29.6 | 218.6 | 2.2 | | 22.0 | 57 | 2381 | 15 53 21 |
| 15 54 30 | 0154-000 | 04 20 54 | 29.4 | 222.1 | 2.4 | | 23.7 | -22 | 2381 | No stop |
| 15 56 30 | --- | 04 22 55 | 29.2 | 222.6 | 2.4 | | 24.0 | 98 | 2396 | 15 54 31 |
| 15 56 30 | MRK1018 | 04 22 55 | 29.7 | 220.0 | 2.3 | | 22.7 | -19 | 2396 | No stop |
| 16 00 20 | --- | 04 26 45 | 29.3 | 221.0 | 2.3 | | 23.2 | 211 | 2426 | 15 56 31 |
| 16 00 50 | 0205-010 | 04 27 16 | 29.0 | 220.3 | 2.3 | | 22.9 | 17 | 2426 | 16 00 50 |
| 16 02 00 | --- | 04 28 26 | 28.9 | 220.6 | 2.3 | | 23.0 | 70 | 2435 | 16 00 51 |
| 16 02 00 | MRK1018 | 04 28 26 | 29.2 | 221.4 | 2.4 | | 23.4 | -13 | 2435 | No stop |
| 16 05 50 | --- | 04 32 16 | 28.8 | 222.4 | 2.4 | | 23.9 | 217 | 2464 | 16 02 01 |
| 16 05 50 | 0205-010 | 04 32 16 | 28.5 | 221.6 | 2.4 | | 23.5 | -13 | 2464 | No stop |
| 16 07 00 | --- | 04 33 27 | 28.4 | 221.9 | 2.4 | | 23.7 | 57 | 2473 | 16 05 51 |
| 16 07 00 | MRK1018 | 04 33 27 | 28.7 | 222.7 | 2.4 | | 24.1 | -13 | 2473 | No stop |
| 16 10 50 | --- | 04 37 17 | 28.3 | 223.7 | 2.5 | | 24.5 | 217 | 2503 | 16 07 01 |
| 16 11 20 | 0205-010 | 04 37 47 | 28.0 | 223.1 | 2.5 | | 24.2 | 17 | 2503 | 16 11 20 |
| 16 12 30 | --- | 04 38 57 | 27.8 | 223.4 | 2.5 | | 24.4 | 70 | 2512 | 16 11 21 |
| 16 12 30 | MRK1018 | 04 38 57 | 28.1 | 224.2 | 2.5 | | 24.7 | -13 | 2512 | No stop |
| 16 16 20 | --- | 04 42 48 | 27.7 | 225.2 | 2.6 | | 25.2 | 217 | 2541 | 16 12 31 |
| 16 16 20 | 0205-010 | 04 42 48 | 27.4 | 224.4 | 2.6 | | 24.8 | -13 | 2541 | No stop |
| 16 17 30 | --- | 04 43 58 | 27.3 | 224.7 | 2.6 | | 25.0 | 57 | 2550 | 16 16 21 |
| 16 17 30 | MRK1018 | 04 43 58 | 27.6 | 225.5 | 2.6 | | 25.3 | -13 | 2550 | No stop |
| 16 21 20 | --- | 04 47 49 | 27.1 | 226.4 | 2.7 | | 25.8 | 217 | 2579 | 16 17 31 |

Schedule for TORUN (Code Tr ) Page 11

Mrk1018 at 1 Gb/s - L band

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sun 10 Mar 2019 Day 69 --- | | | | | | | | | | |
| 16 21 50 | 0205-010 | 04 48 19 | 26.9 | 225.8 | 2.6 | | 25.5 | 17 | 2579 | 16 21 50 |
| 16 23 00 | --- | 04 49 29 | 26.7 | 226.1 | 2.7 | | 25.6 | 70 | 2588 | 16 21 51 |
| 16 23 00 | MRK1018 | 04 49 29 | 27.0 | 226.9 | 2.7 | | 26.0 | -13 | 2588 | No stop |
| 16 26 50 | --- | 04 53 20 | 26.5 | 227.8 | 2.8 | | 26.4 | 217 | 2618 | 16 23 01 |
| 16 26 50 | 0205-010 | 04 53 20 | 26.3 | 227.0 | 2.7 | | 26.1 | -13 | 2618 | No stop |
| 16 28 00 | --- | 04 54 30 | 26.2 | 227.3 | 2.8 | | 26.2 | 57 | 2627 | 16 26 51 |
| 16 28 00 | MRK1018 | 04 54 30 | 26.4 | 228.1 | 2.8 | | 26.6 | -13 | 2627 | No stop |
| 16 31 50 | --- | 04 58 21 | 26.0 | 229.1 | 2.9 | | 27.0 | 217 | 2656 | 16 28 01 |
| 16 32 20 | 0205-010 | 04 58 51 | 25.7 | 228.4 | 2.8 | | 26.7 | 17 | 2656 | 16 32 20 |
| 16 33 30 | --- | 05 00 01 | 25.6 | 228.7 | 2.8 | | 26.8 | 70 | 2665 | 16 32 21 |
| 16 33 30 | MRK1018 | 05 00 01 | 25.8 | 229.5 | 2.9 | | 27.2 | -13 | 2665 | No stop |
| 16 37 20 | --- | 05 03 52 | 25.3 | 230.4 | 2.9 | | 27.6 | 217 | 2695 | 16 33 31 |
| 16 37 20 | 0205-010 | 05 03 52 | 25.1 | 229.6 | 2.9 | | 27.2 | -13 | 2695 | No stop |
| 16 38 30 | --- | 05 05 02 | 25.0 | 229.9 | 2.9 | | 27.4 | 57 | 2704 | 16 37 21 |
| 16 38 30 | MRK1018 | 05 05 02 | 25.2 | 230.7 | 3.0 | | 27.7 | -13 | 2704 | No stop |
| 16 42 20 | --- | 05 08 52 | 24.8 | 231.6 | 3.0 | | 28.1 | 217 | 2733 | 16 38 31 |
| 16 42 50 | 0205-010 | 05 09 22 | 24.5 | 231.0 | 3.0 | | 27.8 | 17 | 2733 | 16 42 50 |
| 16 44 00 | --- | 05 10 33 | 24.4 | 231.3 | 3.0 | | 27.9 | 70 | 2742 | 16 42 51 |
| 16 44 00 | MRK1018 | 05 10 33 | 24.6 | 232.1 | 3.1 | | 28.3 | -13 | 2742 | No stop |
| 16 47 50 | --- | 05 14 23 | 24.1 | 233.0 | 3.1 | | 28.6 | 217 | 2772 | 16 44 01 |
| 16 47 50 | 0205-010 | 05 14 23 | 23.9 | 232.2 | 3.1 | | 28.3 | -13 | 2772 | No stop |
| 16 49 00 | --- | 05 15 33 | 23.8 | 232.5 | 3.1 | | 28.4 | 57 | 2781 | 16 47 51 |
| 16 49 00 | MRK1018 | 05 15 33 | 24.0 | 233.3 | 3.1 | | 28.8 | -13 | 2781 | No stop |
| 16 52 50 | --- | 05 19 24 | 23.5 | 234.2 | 3.2 | | 29.1 | 217 | 2810 | 16 49 01 |
| 16 53 20 | 0205-010 | 05 19 54 | 23.3 | 233.5 | 3.2 | | 28.9 | 17 | 2810 | 16 53 20 |
| 16 54 30 | --- | 05 21 04 | 23.1 | 233.8 | 3.2 | | 29.0 | 70 | 2819 | 16 53 21 |
| 16 54 30 | MRK1018 | 05 21 04 | 23.3 | 234.6 | 3.2 | | 29.3 | -13 | 2819 | No stop |
| 16 58 20 | --- | 05 24 55 | 22.8 | 235.5 | 3.3 | | 29.7 | 217 | 2849 | 16 54 31 |
| 16 58 20 | 0205-010 | 05 24 55 | 22.6 | 234.7 | 3.3 | | 29.4 | -13 | 2849 | No stop |
| 16 59 30 | --- | 05 26 05 | 22.5 | 235.0 | 3.3 | | 29.5 | 57 | 2858 | 16 58 21 |

Schedule for TORUN (Code Tr ) Page 12

Mrk1018 at 1 Gb/s - L band

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sun 10 Mar 2019 Day 69 --- | | | | | | | | | | |
| 16 59 30 | MRK1018 | 05 26 05 | 22.7 | 235.8 | 3.3 | | 29.8 | -13 | 2858 | No stop |
| 17 03 20 | --- | 05 29 56 | 22.2 | 236.7 | 3.4 | | 30.1 | 217 | 2887 | 16 59 31 |
| 17 03 50 | 0205-010 | 05 30 26 | 22.0 | 236.0 | 3.4 | | 29.9 | 17 | 2887 | 17 03 50 |
| 17 05 00 | --- | 05 31 36 | 21.8 | 236.3 | 3.4 | | 30.0 | 70 | 2896 | 17 03 51 |
| 17 05 00 | MRK1018 | 05 31 36 | 22.0 | 237.1 | 3.4 | | 30.3 | -13 | 2896 | No stop |
| 17 08 50 | --- | 05 35 27 | 21.5 | 237.9 | 3.5 | | 30.6 | 217 | 2926 | 17 05 01 |
| 17 08 50 | 0205-010 | 05 35 27 | 21.3 | 237.2 | 3.4 | | 30.3 | -13 | 2926 | No stop |
| 17 10 00 | --- | 05 36 37 | 21.2 | 237.4 | 3.5 | | 30.4 | 57 | 2935 | 17 08 51 |
| 17 10 00 | MRK1018 | 05 36 37 | 21.3 | 238.2 | 3.5 | | 30.7 | -13 | 2935 | No stop |
| 17 13 50 | --- | 05 40 27 | 20.8 | 239.1 | 3.6 | | 31.0 | 217 | 2964 | 17 10 01 |
| 17 14 20 | 0205-010 | 05 40 58 | 20.6 | 238.4 | 3.5 | | 30.8 | 17 | 2964 | 17 14 20 |
| 17 15 30 | --- | 05 42 08 | 20.5 | 238.7 | 3.5 | | 30.9 | 70 | 2973 | 17 14 21 |
| 17 15 30 | MRK1018 | 05 42 08 | 20.6 | 239.5 | 3.6 | | 31.2 | -13 | 2973 | No stop |
| 17 19 20 | --- | 05 45 58 | 20.1 | 240.4 | 3.6 | | 31.5 | 217 | 3003 | 17 15 31 |
| 17 19 20 | 0205-010 | 05 45 58 | 20.0 | 239.6 | 3.6 | | 31.2 | -13 | 3003 | No stop |
| 17 20 30 | --- | 05 47 09 | 19.8 | 239.9 | 3.6 | | 31.3 | 57 | 3012 | 17 19 21 |
| 17 20 30 | MRK1018 | 05 47 09 | 20.0 | 240.6 | 3.7 | | 31.6 | -13 | 3012 | No stop |
| 17 24 20 | --- | 05 50 59 | 19.5 | 241.5 | 3.7 | | 31.8 | 217 | 3041 | 17 20 31 |
| 17 24 50 | 0205-010 | 05 51 29 | 19.3 | 240.8 | 3.7 | | 31.6 | 17 | 3041 | 17 24 50 |
| 17 26 00 | --- | 05 52 39 | 19.1 | 241.1 | 3.7 | | 31.7 | 70 | 3050 | 17 24 51 |
| 17 26 00 | MRK1018 | 05 52 39 | 19.3 | 241.9 | 3.8 | | 32.0 | -13 | 3050 | No stop |
| 17 29 50 | --- | 05 56 30 | 18.7 | 242.7 | 3.8 | | 32.3 | 217 | 3079 | 17 26 01 |
| 17 29 50 | 0205-010 | 05 56 30 | 18.6 | 242.0 | 3.8 | | 32.0 | -13 | 3079 | No stop |
| 17 31 00 | --- | 05 57 40 | 18.5 | 242.2 | 3.8 | | 32.1 | 57 | 3088 | 17 29 51 |
| 17 31 00 | MRK1018 | 05 57 40 | 18.6 | 243.0 | 3.8 | | 32.3 | -13 | 3088 | No stop |
| 17 34 50 | --- | 06 01 31 | 18.1 | 243.8 | 3.9 | | 32.6 | 217 | 3118 | 17 31 01 |
| 17 35 20 | 0205-010 | 06 02 01 | 17.9 | 243.2 | 3.9 | | 32.4 | 17 | 3118 | 17 35 20 |
| 17 36 30 | --- | 06 03 11 | 17.7 | 243.4 | 3.9 | | 32.5 | 70 | 3127 | 17 35 21 |
| 17 36 30 | MRK1018 | 06 03 11 | 17.8 | 244.2 | 3.9 | | 32.7 | -13 | 3127 | No stop |
| 17 40 20 | --- | 06 07 02 | 17.3 | 245.1 | 4.0 | | 33.0 | 217 | 3156 | 17 36 31 |

Schedule for TORUN (Code Tr ) Page 13

Mrk1018 at 1 Gb/s - L band

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sun 10 Mar 2019 Day 69 --- | | | | | | | | | | |
| 17 40 20 | 0205-010 | 06 07 02 | 17.2 | 244.3 | 4.0 | | 32.8 | -13 | 3156 | No stop |
| 17 41 30 | --- | 06 08 12 | 17.0 | 244.6 | 4.0 | | 32.8 | 57 | 3165 | 17 40 21 |
| 17 41 30 | MRK1018 | 06 08 12 | 17.2 | 245.3 | 4.0 | | 33.1 | -13 | 3165 | No stop |
| 17 45 20 | --- | 06 12 03 | 16.6 | 246.2 | 4.1 | | 33.3 | 217 | 3195 | 17 41 31 |
| 17 45 50 | 0205-010 | 06 12 33 | 16.4 | 245.5 | 4.1 | | 33.1 | 17 | 3195 | 17 45 50 |
| 17 47 00 | --- | 06 13 43 | 16.3 | 245.8 | 4.1 | | 33.2 | 70 | 3204 | 17 45 51 |
| 17 47 00 | MRK1018 | 06 13 43 | 16.4 | 246.5 | 4.1 | | 33.4 | -13 | 3204 | No stop |
| 17 50 50 | --- | 06 17 34 | 15.9 | 247.4 | 4.2 | | 33.7 | 217 | 3233 | 17 47 01 |
| 17 50 50 | 0205-010 | 06 17 34 | 15.8 | 246.6 | 4.1 | | 33.4 | -13 | 3233 | No stop |
| 17 52 00 | --- | 06 18 44 | 15.6 | 246.8 | 4.2 | | 33.5 | 57 | 3242 | 17 50 51 |
| 17 52 00 | MRK1018 | 06 18 44 | 15.7 | 247.6 | 4.2 | | 33.7 | -13 | 3242 | No stop |
| 17 55 50 | --- | 06 22 34 | 15.2 | 248.4 | 4.3 | | 33.9 | 217 | 3272 | 17 52 01 |
| 17 56 20 | 0205-010 | 06 23 04 | 15.0 | 247.8 | 4.2 | | 33.8 | 17 | 3272 | 17 56 20 |
| 17 57 30 | --- | 06 24 15 | 14.8 | 248.0 | 4.2 | | 33.8 | 70 | 3281 | 17 56 21 |
| 17 57 30 | MRK1018 | 06 24 15 | 14.9 | 248.8 | 4.3 | | 34.0 | -13 | 3281 | No stop |
| 18 01 20 | --- | 06 28 05 | 14.4 | 249.6 | 4.3 | | 34.3 | 217 | 3310 | 17 57 31 |
| 18 01 20 | 0205-010 | 06 28 05 | 14.3 | 248.9 | 4.3 | | 34.1 | -13 | 3310 | No stop |
| 18 02 30 | --- | 06 29 15 | 14.1 | 249.1 | 4.3 | | 34.1 | 57 | 3319 | 18 01 21 |
| 18 02 30 | MRK1018 | 06 29 15 | 14.2 | 249.9 | 4.4 | | 34.3 | -13 | 3319 | No stop |
| 18 06 20 | --- | 06 33 06 | 13.7 | 250.7 | 4.4 | | 34.5 | 217 | 3349 | 18 02 31 |
| 18 06 50 | 0205-010 | 06 33 36 | 13.5 | 250.0 | 4.4 | | 34.4 | 17 | 3349 | 18 06 50 |
| 18 08 00 | --- | 06 34 46 | 13.4 | 250.3 | 4.4 | | 34.4 | 70 | 3358 | 18 06 51 |
| 18 08 00 | MRK1018 | 06 34 46 | 13.5 | 251.0 | 4.5 | | 34.6 | -13 | 3358 | No stop |
| 18 11 50 | --- | 06 38 37 | 12.9 | 251.8 | 4.5 | | 34.8 | 217 | 3387 | 18 08 01 |
| 18 11 50 | 0205-010 | 06 38 37 | 12.8 | 251.1 | 4.5 | | 34.6 | -13 | 3387 | No stop |
| 18 13 00 | --- | 06 39 47 | 12.6 | 251.3 | 4.5 | | 34.7 | 57 | 3396 | 18 11 51 |
| 18 13 00 | MRK1018 | 06 39 47 | 12.8 | 252.1 | 4.5 | | 34.8 | -13 | 3396 | No stop |
| 18 16 00 | --- | 06 42 48 | 12.3 | 252.7 | 4.6 | | 35.0 | 167 | 3419 | 18 13 01 |
| 18 16 30 | 0205-010 | 06 43 18 | 12.1 | 252.1 | 4.6 | | 34.8 | 17 | 3419 | 18 16 30 |
| 18 17 30 | --- | 06 44 18 | 12.0 | 252.3 | 4.6 | | 34.9 | 60 | 3427 | 18 16 31 |

```
Schedule for TORUN     (Code Tr )                                Page  14
               Mrk1018 at 1 Gb/s - L band
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-------------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-------------------------------------------------------------------------------------------

 --- Sun  10 Mar 2019   Day  69 ---

18 22 30  J0811+0146   06 49 19  35.8 154.1 -1.4     -15.2    88     3427   18 22 30
18 30 00  =0808+019    06 56 50  36.3 156.3 -1.3     -14.0   450     3485   18 22 31




SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119LG.L1024

   Setup group:   10         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
   Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00
            2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00
  Net SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF SB =         L         L         L         L         L         L         L         L
                  L         L         L         L         L         L         L         L
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
                RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
                  3         7         3         7         4         8         4         8
  BBC SB=         U         U         L         L         U         U         L         L
                  U         U         L         L         U         U         L         L
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                 A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:   8  Setup file default.  Used with PCAL = off
  LO sum=   1610.49  1610.49  1610.49  1610.49  1642.49  1642.49  1642.49  1642.49
            1674.49  1674.49  1674.49  1674.49  1706.49  1706.49  1706.49  1706.49
  BBC fr=    689.51   689.51   689.51   689.51   657.51   657.51   657.51   657.51
             625.51   625.51   625.51   625.51   593.51   593.51   593.51   593.51
  Bandwd=     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
              16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
   Matching frequency sets:   8

  Track assignments are:
   track1=   2, 10, 18, 26,  4, 12, 20, 28,  6, 14, 22, 30,  8, 16, 24, 32
   barrel=roll_off



POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                       (B1950)             (J2000)             (Date)             (mas)

* MRK1018            02 03 42.480768   * 02 06 15.990000     02 07 13.070287       0.00
                    -00 31 46.69524    *-00 17 29.90000     -00 12 17.68628        0.00

* 0149+218           01 49 31.744135   * 01 52 18.059046     01 53 19.998707       0.01
  J0152+2207         21 52 20.74786    * 22 07 07.69973      22 12 36.87626        0.02
  J0152+22           /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                     GSFC 2016a X/S astro solution,   2491 observations.

* 0154-000           01 54 36.737815   * 01 57 10.534897     01 58 07.690568       0.09
  J0157+0011        -00 03 12.25378    * 00 11 24.48436      00 16 44.53987        0.20
                     /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                     GSFC 2016a X/S astro solution,    161 observations.

* 0205-010           02 05 53.149978   * 02 08 26.345914     02 09 23.313723       0.09
  J0208-0047        -01 01 56.12008    *-00 47 44.29431     -00 42 34.12056        0.16
                     /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                     GSFC 2016a X/S astro solution,    142 observations.

  0808+019           08 08 51.138133   * 08 11 26.707316     08 12 26.301370       0.01
* J0811+0146         01 55 51.17953    * 01 46 52.22022      01 43 16.02124        0.01
  J0811+01           /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                     GSFC 2016a X/S astro solution,  18603 observations.
```

EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun.
SCHED provides warnings at individual scans for distances less than 10 degrees.
The distance from the Sun to each source in this schedule is:

| Source | Sun distance (deg) |
|---|---|
| MRK1018 | 41.4 |
| 0149+218 | 45.3 |
| 0154-000 | 39.2 |
| 0205-010 | 41.9 |
| J0811+0146 | 132.6 |

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
that the Sun will cause amplitude reductions on the longest VLBA baselines
at a solar distance of 60deg F^(-0.6) where F is in GHz.
For common VLBI bands, this is:

| | |
|---|---|
| 1.6 GHz | 45. deg |
| 2.3 GHz | 36. deg |
| 5.0 GHz | 23. deg |
| 8.4 GHz | 17. deg |
| 15.0 GHz | 12. deg |
| 22.0 GHz | 9. deg |

# el060tr

No description given.

PI: *Lei Liu*


```
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Phone:    0086 18521517749
EMAIL:    liulei@shao.ac.cn
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Phone during observation:
```


```
Observing mode:

Schedule for TORUN     (Code Tr )                                    Page   2
               No description given.
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source                Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Mon  11 Mar 2019   Day  70 ---

 Next scan frequencies:  1610.49  1610.49  1610.49  1610.49  1642.49  1642.49  1642.49  1642.49
                         1674.49  1674.49  1674.49  1674.49  1706.49  1706.49  1706.49  1706.49
 Next BBC frequencies:    689.51   689.51   689.51   689.51   657.51   657.51   657.51   657.51
                          625.51   625.51   625.51   625.51   593.51   593.51   593.51   593.51
 Next scan bandwidths:     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
                           16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00

05 00 00  J1800+3848   17 28 34  74.7 155.4 -0.5     -18.7     0        0   05 00 00
05 15 00  =1758+388    17 43 36  75.4 166.4 -0.3     -10.4   900      115   05 00 01

05 18 30  J1825-1718   17 47 07  19.1 170.0 -0.7      -6.3   -15      115   05 18 30
05 19 30  =1822-173    17 48 07  19.1 170.3 -0.6      -6.1    45      123   05 18 31

05 20 05  J1819-1458   17 48 42  21.6 171.7 -0.5      -5.1    12      123   05 20 05
05 25 05  ---          17 53 43  21.7 173.0 -0.4      -4.3   300      162   05 20 06

05 25 05  J1825-1718   17 53 43  19.2 171.7 -0.5      -5.2   -23      162   No stop
05 26 30  =1822-173    17 55 08  19.3 172.0 -0.5      -5.0    62      172   05 25 06

05 26 30  J1819-1458   17 55 08  21.7 173.4 -0.4      -4.1   -23      172   No stop
05 31 55  ---          18 00 34  21.8 174.8 -0.3      -3.2   302      214   05 26 31

05 31 55  J1825-1718   18 00 34  19.4 173.4 -0.4      -4.2   -23      214   No stop
05 33 20  =1822-173    18 01 59  19.4 173.7 -0.4      -3.9    62      225   05 31 56

05 33 55  J1819-1458   18 02 34  21.8 175.3 -0.3      -2.9    12      225   05 33 55
05 38 55  ---          18 07 35  21.9 176.6 -0.2      -2.1   300      263   05 33 56

05 38 55  J1825-1718   18 07 35  19.5 175.2 -0.3      -3.0   -23      263   No stop
05 40 20  =1822-173    18 09 00  19.5 175.5 -0.3      -2.8    62      274   05 38 56

05 40 20  J1819-1458   18 09 00  21.9 177.0 -0.2      -1.9   -23      274   No stop
05 45 45  ---          18 14 26  21.9 178.4 -0.1      -1.0   302      316   05 40 21
```

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 05 45 45 | J1825-1718 | 18 14 26 | 19.6 | 176.9 | -0.2 | -2.0 | -23 | 316 | No stop |
| 05 47 10 | =1822-173 | 18 15 51 | 19.6 | 177.3 | -0.2 | -1.7 | 62 | 327 | 05 45 46 |
| 05 47 45 | J1819-1458 | 18 16 26 | 21.9 | 178.9 | -0.1 | -0.7 | 12 | 327 | 05 47 45 |
| 05 52 45 | --- | 18 21 27 | 21.9 | 180.2 | 0.0 | 0.1 | 300 | 365 | 05 47 46 |
| 05 52 45 | J1825-1718 | 18 21 27 | 19.6 | 178.7 | -0.1 | -0.8 | -23 | 365 | No stop |
| 05 54 10 | =1822-173 | 18 22 52 | 19.6 | 179.0 | -0.1 | -0.6 | 62 | 376 | 05 52 46 |
| 05 54 10 | J1819-1458 | 18 22 52 | 21.9 | 180.6 | 0.0 | 0.4 | -23 | 376 | No stop |
| 05 59 35 | --- | 18 28 18 | 21.9 | 182.0 | 0.1 | 1.2 | 302 | 418 | 05 54 11 |

Schedule for TORUN (Code Tr ) Page 3

No description given.

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Mon 11 Mar 2019 Day 70 --- | | | | | | | | | | |
| 05 59 35 | J1825-1718 | 18 28 18 | 19.6 | 180.4 | 0.0 | | 0.3 | -23 | 418 | No stop |
| 06 01 00 | =1822-173 | 18 29 44 | 19.6 | 180.8 | 0.1 | | 0.5 | 62 | 429 | 05 59 36 |
| 06 01 35 | J1819-1458 | 18 30 19 | 21.9 | 182.5 | 0.2 | | 1.6 | 12 | 429 | 06 01 35 |
| 06 06 35 | --- | 18 35 19 | 21.9 | 183.8 | 0.2 | | 2.4 | 300 | 467 | 06 01 36 |
| 06 06 35 | J1825-1718 | 18 35 19 | 19.6 | 182.2 | 0.1 | | 1.4 | -22 | 467 | No stop |
| 06 08 00 | =1822-173 | 18 36 45 | 19.6 | 182.5 | 0.2 | | 1.6 | 63 | 478 | 06 06 36 |
| 06 08 00 | J1819-1458 | 18 36 45 | 21.9 | 184.2 | 0.3 | | 2.6 | -22 | 478 | No stop |
| 06 13 25 | --- | 18 42 11 | 21.8 | 185.6 | 0.4 | | 3.5 | 303 | 520 | 06 08 01 |
| 06 13 25 | J1825-1718 | 18 42 11 | 19.5 | 183.9 | 0.3 | | 2.5 | -22 | 520 | No stop |
| 06 14 50 | =1822-173 | 18 43 36 | 19.5 | 184.3 | 0.3 | | 2.7 | 63 | 531 | 06 13 26 |
| 06 15 50 | J1907+0127 | 18 44 36 | 38.2 | 172.5 | -0.4 | | -4.5 | -24 | 531 | 06 15 50 |
| 06 16 50 | =1904+013 | 18 45 36 | 38.2 | 172.8 | -0.4 | | -4.3 | 36 | 538 | 06 15 51 |
| 06 17 25 | J1854+0306 | 18 46 11 | 40.0 | 177.1 | -0.1 | | -1.7 | 12 | 538 | 06 17 25 |
| 06 22 25 | --- | 18 51 12 | 40.0 | 178.8 | -0.1 | | -0.7 | 300 | 577 | 06 17 26 |
| 06 22 25 | J1907+0127 | 18 51 12 | 38.3 | 174.6 | -0.3 | | -3.2 | -23 | 577 | No stop |
| 06 23 50 | =1904+013 | 18 52 37 | 38.3 | 175.1 | -0.3 | | -3.0 | 62 | 588 | 06 22 26 |
| 06 23 50 | J1854+0306 | 18 52 37 | 40.0 | 179.2 | -0.0 | | -0.5 | -23 | 588 | No stop |
| 06 29 15 | --- | 18 58 03 | 40.0 | 181.0 | 0.1 | | 0.6 | 302 | 629 | 06 23 51 |
| 06 29 15 | J1907+0127 | 18 58 03 | 38.3 | 176.8 | -0.2 | | -1.9 | -23 | 629 | No stop |
| 06 30 40 | =1904+013 | 18 59 28 | 38.4 | 177.2 | -0.1 | | -1.7 | 62 | 640 | 06 29 16 |
| 06 31 15 | J1854+0306 | 19 00 03 | 40.0 | 181.7 | 0.1 | | 1.0 | 11 | 640 | 06 31 15 |
| 06 36 15 | --- | 19 05 04 | 40.0 | 183.3 | 0.2 | | 2.0 | 300 | 679 | 06 31 16 |
| 06 36 15 | J1907+0127 | 19 05 04 | 38.4 | 179.0 | -0.1 | | -0.6 | -23 | 679 | No stop |
| 06 37 40 | =1904+013 | 19 06 30 | 38.4 | 179.5 | -0.0 | | -0.3 | 62 | 690 | 06 36 16 |
| 06 37 40 | J1854+0306 | 19 06 30 | 40.0 | 183.7 | 0.2 | | 2.3 | -24 | 690 | No stop |
| 06 43 05 | --- | 19 11 55 | 39.9 | 185.5 | 0.3 | | 3.3 | 301 | 731 | 06 37 41 |
| 06 43 05 | J1907+0127 | 19 11 55 | 38.4 | 181.2 | 0.1 | | 0.7 | -23 | 731 | No stop |
| 06 44 30 | =1904+013 | 19 13 21 | 38.4 | 181.7 | 0.1 | | 1.0 | 62 | 742 | 06 43 06 |
| 06 45 05 | J1854+0306 | 19 13 56 | 39.9 | 186.2 | 0.3 | | 3.7 | 11 | 742 | 06 45 05 |
| 06 50 05 | --- | 19 18 57 | 39.8 | 187.8 | 0.4 | | 4.7 | 300 | 781 | 06 45 06 |

Schedule for TORUN (Code Tr ) Page 4

No description given.

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Mon 11 Mar 2019 Day 70 --- | | | | | | | | | | |
| 06 50 05 | J1907+0127 | 19 18 57 | 38.3 | 183.4 | 0.2 | | 2.1 | -23 | 781 | No stop |
| 06 51 30 | =1904+013 | 19 20 22 | 38.3 | 183.9 | 0.2 | | 2.3 | 62 | 792 | 06 50 06 |
| 06 51 30 | J1854+0306 | 19 20 22 | 39.8 | 188.3 | 0.4 | | 5.0 | -24 | 792 | No stop |
| 06 56 55 | --- | 19 25 48 | 39.6 | 190.0 | 0.5 | | 6.0 | 301 | 833 | 06 51 31 |
| 06 56 55 | J1907+0127 | 19 25 48 | 38.3 | 185.6 | 0.3 | | 3.4 | -24 | 833 | No stop |
| 06 58 20 | =1904+013 | 19 27 13 | 38.2 | 186.1 | 0.3 | | 3.6 | 61 | 844 | 06 56 56 |
| 06 58 55 | J1854+0306 | 19 27 48 | 39.6 | 190.7 | 0.5 | | 6.4 | 11 | 844 | 06 58 55 |
| 07 03 55 | --- | 19 32 49 | 39.4 | 192.3 | 0.6 | | 7.3 | 300 | 883 | 06 58 56 |
| 07 03 55 | J1907+0127 | 19 32 49 | 38.1 | 187.8 | 0.4 | | 4.7 | -24 | 883 | No stop |
| 07 05 20 | =1904+013 | 19 34 14 | 38.1 | 188.3 | 0.4 | | 5.0 | 61 | 894 | 07 03 56 |
| 07 05 20 | J1854+0306 | 19 34 14 | 39.4 | 192.7 | 0.7 | | 7.6 | -24 | 894 | No stop |
| 07 10 45 | --- | 19 39 40 | 39.2 | 194.5 | 0.7 | | 8.6 | 301 | 935 | 07 05 21 |
| 07 10 45 | J1907+0127 | 19 39 40 | 38.0 | 190.0 | 0.5 | | 6.0 | -24 | 935 | No stop |
| 07 12 10 | =1904+013 | 19 41 05 | 37.9 | 190.5 | 0.5 | | 6.3 | 61 | 946 | 07 10 46 |
| 07 12 10 | J1800+3848 | 19 41 05 | 67.7 | 240.2 | 1.7 | | 42.0 | -124 | 946 | No stop |
| 07 19 10 | =1758+388 | 19 48 06 | 66.8 | 242.8 | 1.8 | | 43.3 | 296 | 1000 | 07 12 11 |
| 07 23 20 | OF3 | 19 52 17 | 30.3 | 397.0 | -7.7 | | -38.9 | -74 | 1000 | 07 23 20 |
| 07 26 40 | --- | 19 55 38 | 30.6 | 397.5 | -7.6 | | -39.3 | 126 | 1026 | 07 23 21 |
| 07 26 40 | J0346+5400 | 19 55 38 | 28.8 | 396.2 | -7.9 | | -37.2 | -20 | 1026 | No stop |
| 07 28 00 | =0342+538 | 19 56 58 | 28.9 | 396.4 | -7.9 | | -37.4 | 60 | 1036 | 07 26 41 |
| 07 28 00 | OF3 | 19 56 58 | 30.7 | 397.6 | -7.6 | | -39.5 | -21 | 1036 | No stop |
| 07 31 20 | --- | 20 00 18 | 31.0 | 398.1 | -7.6 | | -40.0 | 179 | 1062 | 07 28 01 |
| 07 31 50 | J0346+5400 | 20 00 48 | 29.3 | 396.9 | -7.8 | | -37.9 | 10 | 1062 | 07 31 50 |
| 07 32 50 | =0342+538 | 20 01 49 | 29.3 | 397.0 | -7.8 | | -38.0 | 60 | 1069 | 07 31 51 |
| 07 32 50 | OF2 | 20 01 49 | 31.1 | 398.3 | -7.5 | | -40.1 | -20 | 1069 | No stop |
| 07 36 10 | --- | 20 05 09 | 31.4 | 398.8 | -7.5 | | -40.6 | 180 | 1095 | 07 32 51 |
| 07 36 10 | J0346+5400 | 20 05 09 | 29.6 | 397.5 | -7.7 | | -38.5 | -20 | 1095 | No stop |
| 07 37 30 | =0342+538 | 20 06 29 | 29.8 | 397.6 | -7.7 | | -38.7 | 60 | 1105 | 07 36 11 |
| 07 37 30 | OF2 | 20 06 29 | 31.5 | 398.9 | -7.5 | | -40.8 | -20 | 1105 | No stop |
| 07 40 50 | --- | 20 09 50 | 31.8 | 399.4 | -7.4 | | -41.2 | 180 | 1131 | 07 37 31 |

```
Schedule for TORUN     (Code Tr )                                  Page   5
               No description given.
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Mon  11 Mar 2019   Day  70 ---

07 41 20  J0346+5400   20 10 20  30.1 398.1 -7.6     -39.2    10     1131   07 41 20
07 42 20  =0342+538    20 11 20  30.2 398.3 -7.6     -39.3    60     1138   07 41 21

07 42 20  OF1          20 11 20  32.0 399.6 -7.4     -41.4   -20     1138   No stop
07 45 30  ---          20 14 31  32.3 400.0 -7.3     -41.9   170     1163   07 42 21

07 45 30  J0346+5400   20 14 31  30.5 398.7 -7.6     -39.8   -20     1163   No stop
07 46 40  =0342+538    20 15 41  30.6 398.8 -7.5     -39.9    50     1172   07 45 31

07 46 40  OF1          20 15 41  32.4 400.1 -7.3     -42.0   -20     1172   No stop
07 49 50  ---          20 18 51  32.7 400.5 -7.3     -42.5   170     1196   07 46 41

07 50 20  J0346+5400   20 19 21  31.0 399.3 -7.5     -40.4    10     1196   07 50 20
07 51 20  =0342+538    20 20 22  31.1 399.5 -7.5     -40.6    60     1204   07 50 21

07 51 20  J0332+5434   20 20 22  32.8 400.8 -7.2     -42.6   -20     1204   No stop
07 54 30  ---          20 23 32  33.1 401.2 -7.2     -43.1   170     1228   07 51 21

07 54 30  J0346+5400   20 23 32  31.4 399.9 -7.4     -41.0   -20     1228   No stop
07 55 40  =0342+538    20 24 42  31.5 400.0 -7.4     -41.2    50     1237   07 54 31

07 55 40  J0332+5434   20 24 42  33.2 401.3 -7.2     -43.2   -20     1237   No stop
07 58 50  ---          20 27 53  33.6 401.7 -7.1     -43.7   170     1262   07 55 41

07 58 50  J0346+5400   20 27 53  31.8 400.4 -7.3     -41.6   -20     1262   No stop
08 00 00  =0342+538    20 29 03  31.9 400.6 -7.3     -41.7    50     1271   07 58 51



SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119.L1024

   Setup group:   10         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
   Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00
            2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00   2300.00
  Net SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF SB =         L         L         L         L         L         L         L         L
                  L         L         L         L         L         L         L         L
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
                RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
                  3         7         3         7         4         8         4         8
  BBC SB=         U         U         L         L         U         U         L         L
                  U         U         L         L         U         U         L         L
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                 A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:   6  Setup file default.  Used with PCAL = off
  LO sum=   1610.49  1610.49  1610.49  1610.49  1642.49  1642.49  1642.49  1642.49
            1674.49  1674.49  1674.49  1674.49  1706.49  1706.49  1706.49  1706.49
  BBC fr=    689.51   689.51   689.51   689.51   657.51   657.51   657.51   657.51
             625.51   625.51   625.51   625.51   593.51   593.51   593.51   593.51
  Bandwd=     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
              16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
   Matching frequency sets:   6

  Track assignments are:
   track1=   2, 10, 18, 26,  4, 12, 20, 28,  6, 14, 22, 30,  8, 16, 24, 32
   barrel=roll_off



POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                       (B1950)             (J2000)             (Date)             (mas)

* J1819-1458        18 16 42.392399   * 18 19 34.000000     18 20 38.383988       0.00
                   -14 59 23.23884    *-14 58 04.00000     -14 57 30.85587        0.00

* J1854+0306        18 51 32.702817   * 18 54 03.000000     18 54 59.176578       0.00
                    03 02 25.14455    * 03 06 14.00000      03 07 37.18416        0.00

* J0332+5434        03 29 11.066308   * 03 32 59.368000     03 34 25.183372       0.00
                    54 24 37.47697    * 54 34 43.57000      54 38 35.88567        0.00

* OF1               03 29 10.977734   * 03 32 59.368000     03 34 25.216876       0.00
                    54 26 33.49449    * 54 36 39.59000      54 40 31.91461        0.00

* OF2               03 29 10.844605   * 03 32 59.368000     03 34 25.267234       0.00
                    54 29 27.53077    * 54 39 33.63000      54 43 25.96802        0.00

* OF3               03 29 10.666611   * 03 32 59.368000     03 34 25.334564       0.00
                    54 33 19.57579    * 54 43 25.68000      54 47 18.03588        0.00

  0342+538          03 42 44.555626   * 03 46 34.504127     03 48 01.023800       0.08
* J0346+5400        53 51 41.29062    * 54 00 59.10917      54 04 33.11093        0.05
                    /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,    345 observations.

  1758+388          17 58 44.703954   * 18 00 24.765363     18 01 02.198287       0.01
```

```
* J1800+3848        38 48 32.47350    * 38 48 30.69748      38 48 17.06073        0.01
  J1800+38          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,   5095 observations.

  1822-173          18 22 42.013839   * 18 25 36.532290     18 26 41.969395       0.25
* J1825-1718       -17 20 35.28877    *-17 18 49.84765     -17 18 06.01131        0.44
                    /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,     76 observations.

  1904+013          19 04 39.788403   * 19 07 11.996162     19 08 08.823561       0.25
* J1907+0127        01 22 24.59981    * 01 27 08.96179      01 28 53.54362        0.32
                    /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,     93 observations.
```

EFFECT OF SOLAR CORONA

```
  The solar corona can cause unstable phases for sources too close to the Sun.
  SCHED provides warnings at individual scans for distances less than 10 degrees.
  The distance from the Sun to each source in this schedule is:
    Source         Sun distance (deg)
   J1819-1458          75.5
   J1854+0306          67.7
   J0332+5434          77.7
   OF1                 77.7
   OF2                 77.7
   OF3                 77.8
   J0346+5400          79.3
   J1800+3848          85.3
   J1825-1718          74.1
   J1907+0127          64.3

  Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
  that the Sun will cause amplitude reductions on the  longest VLBA baselines
  at a solar distance of 60deg F^(-0.6) where F is in GHz.
  For common VLBI bands, this is:
       1.6 GHz         45. deg
       2.3 GHz         36. deg
       5.0 GHz         23. deg
       8.4 GHz         17. deg
      15.0 GHz         12. deg
      22.0 GHz          9. deg
```

# f19k1tr

## Network Monitoring Experiment

PI: *Katharina Immer*


```
Address:  JIVE
          Postbus 2
          7990 AA Dwingeloo
          The Netherlands

Phone:    +31-521-596507
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Phone during observation: +31-521-596507
```


```
Observing mode:

Schedule for TORUN     (Code Tr )                                    Page   2
               Network Monitoring Experiment
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source                Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Mon  11 Mar 2019   Day  70 ---

 Next scan frequencies:  22187.49  22187.49  22187.49  22187.49  22219.49  22219.49  22219.49  22219.4
                         22251.49  22251.49  22251.49  22251.49  22283.49  22283.49  22283.49  22283.4
 Next BBC frequencies:     687.49    687.49    687.49    687.49    719.49    719.49    719.49    719.4
                           751.49    751.49    751.49    751.49    783.49    783.49    783.49    783.4
 Next scan bandwidths:      16.00     16.00     16.00     16.00     16.00     16.00     16.00     16.0
                            16.00     16.00     16.00     16.00     16.00     16.00     16.00     16.0

12 00 00  0234+285     00 29 42  56.2 122.8 -2.2     -35.2     0        0   12 00 00
12 05 00  ---          00 34 43  56.8 124.4 -2.1     -34.4   300       38   12 00 01

12 07 00  0234+285     00 36 44  57.0 125.1 -2.0     -34.1   113       38   12 07 00
12 20 00  ---          00 49 46  58.6 129.6 -1.8     -31.9   780      138   12 07 01

12 22 00  0234+285     00 51 46  58.8 130.3 -1.8     -31.5   113      138   12 22 00
12 25 00  ---          00 54 47  59.2 131.4 -1.7     -31.0   180      162   12 22 01

12 27 00  0234+285     00 56 47  59.4 132.1 -1.7     -30.6   113      162   12 27 00
12 40 00  ---          01 09 49  60.8 137.1 -1.5     -27.8   780      262   12 27 01

12 42 00  0234+285     01 11 49  61.0 137.9 -1.5     -27.4   113      262   12 42 00
12 45 00  ---          01 14 50  61.3 139.1 -1.4     -26.7   180      285   12 42 01

12 47 00  0234+285     01 16 50  61.5 140.0 -1.4     -26.2   113      285   12 47 00
13 00 00  ---          01 29 52  62.7 145.5 -1.2     -22.8   780      385   12 47 01



SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119.K1024
```

```
Setup group:   11          Station: TORUN             Total bit rate:  1024
Format: MARK5B             Bits per sample: 2         Sample rate: 32.000
Number of channels: 16     DBE type: DBBC_DDC         Speedup factor:   1.00

Disk used to record data.
```

```
 1st LO=  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00
          21500.00  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00
 Net SB=         L         L         U         U         L         L         U         U
                 L         L         U         U         L         L         U         U
 IF SB =         U         U         U         U         U         U         U         U
                 U         U         U         U         U         U         U         U
 Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
               RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
 BBC   =         1         5         1         5         2         6         2         6
                 3         7         3         7         4         8         4         8
 BBC SB=         L         L         U         U         L         L         U         U
                 L         L         U         U         L         L         U         U
 IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

 Frequency Set:   8  Setup file default.  Used with PCAL = off
 LO sum=   22187.49  22187.49  22187.49  22187.49  22219.49  22219.49  22219.49  22219.49
           22251.49  22251.49  22251.49  22251.49  22283.49  22283.49  22283.49  22283.49
 BBC fr=     687.49    687.49    687.49    687.49    719.49    719.49    719.49    719.49
             751.49    751.49    751.49    751.49    783.49    783.49    783.49    783.49
 Bandwd=      16.00     16.00     16.00     16.00     16.00     16.00     16.00     16.00
              16.00     16.00     16.00     16.00     16.00     16.00     16.00     16.00
  Matching frequency sets:   8

 Track assignments are:
  track1=  18, 26,  2, 10, 20, 28,  4, 12, 22, 30,  6, 14, 24, 32,  8, 16
  barrel=roll_off
```

POSITIONS OF SOURCES USED IN RECORDING SCANS

```
 Source                          Source position (RA/Dec)                        Error
                       (B1950)             (J2000)             (Date)             (mas)

* 0234+285          02 34 55.589590   * 02 37 52.405677     02 38 58.488805       0.00
  J0237+2848        28 35 11.40773    * 28 48 08.98999      28 52 58.54746        0.00
  J0237+28          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,  58420 observations.
```

EFFECT OF SOLAR CORONA

```
 The solar corona can cause unstable phases for sources too close to the Sun.
 SCHED provides warnings at individual scans for distances less than 10 degrees.
 The distance from the Sun to each source in this schedule is:
   Source         Sun distance (deg)
  0234+285            56.7

 Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
 that the Sun will cause amplitude reductions on the  longest VLBA baselines
 at a solar distance of 60deg F^(-0.6) where F is in GHz.
 For common VLBI bands, this is:
      1.6 GHz         45. deg
      2.3 GHz         36. deg
      5.0 GHz         23. deg
      8.4 GHz         17. deg
     15.0 GHz         12. deg
```

```
22.0 GHz          9. deg
```

# eb072tr

EB072

PI: *Ross Burns*


```
Address:  NAOJ
          Mitaka
          Japan
          180-0022

Phone:    +81-70-2614-2570
EMAIL:    ross.burns@nao.ac.jp
Fax:
Phone during observation: +81-70-2614-2570
```


```
Observing mode:

Schedule for TORUN     (Code Tr )                                    Page   2
               EB072
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source                Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Mon  11 Mar 2019   Day  70 ---

 ---------- FF1 ----------

 Next scan frequencies:  22207.60  22207.60  22207.60  22207.60  22239.60  22239.60  22239.60  22239.6
                         22271.60  22271.60  22271.60  22271.60  22303.60  22303.60  22303.60  22303.6
 Next BBC frequencies:     707.60    707.60    707.60    707.60    739.60    739.60    739.60    739.6
                           771.60    771.60    771.60    771.60    803.60    803.60    803.60    803.6
 Next scan bandwidths:      16.00     16.00     16.00     16.00     16.00     16.00     16.00     16.0
                            16.00     16.00     16.00     16.00     16.00     16.00     16.00     16.0

14 00 00  J0555+3948   02 30 02  52.9  89.6 -3.4     -51.4     0        0   14 00 00
14 08 00  =0552+398    02 38 04  54.1  91.3 -3.3     -51.4   480       62   14 00 01

14 10 30  J0613+1708   02 40 34  35.2 109.8 -3.6     -36.2    65       62   14 10 30
14 11 00  =0610+171    02 41 04  35.3 110.0 -3.6     -36.2    30       65   14 10 31

14 11 00  S255         02 41 04  36.1 109.5 -3.5     -36.5   -15       65   No stop
14 13 00  ---          02 43 04  36.3 110.0 -3.5     -36.4   105       81   14 11 01

14 13 00  J0613+1708   02 43 04  35.6 110.4 -3.5     -36.1   -15       81   No stop
14 14 51  =0610+171    02 44 56  35.8 110.9 -3.5     -36.0    96       95   14 13 01

14 14 51  S255         02 44 56  36.6 110.4 -3.5     -36.3   -15       95   No stop
14 16 51  ---          02 46 56  36.9 110.9 -3.5     -36.1   105      110   14 14 52

14 16 51  J0613+1708   02 46 56  36.1 111.4 -3.5     -35.8   -15      110   No stop
14 18 42  =0610+171    02 48 47  36.4 111.8 -3.4     -35.7    96      125   14 16 52

14 18 42  S255         02 48 47  37.2 111.3 -3.4     -36.0   -15      125   No stop
14 20 42  ---          02 50 48  37.4 111.8 -3.4     -35.9   105      140   14 18 43

14 21 17  J0613+1708   02 51 23  36.7 112.4 -3.4     -35.5    20      140   14 21 17
14 23 08  =0610+171    02 53 14  37.0 112.9 -3.4     -35.4   111      154   14 21 18

14 23 08  S255         02 53 14  37.8 112.4 -3.3     -35.7   -15      154   No stop
```

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 14 25 08 | --- | 02 55 14 | 38.0 | 112.9 | -3.3 | -35.6 | 105 | 170 | 14 23 09 |
| 14 25 08 | J0613+1708 | 02 55 14 | 37.3 | 113.4 | -3.3 | -35.2 | -15 | 170 | No stop |
| 14 26 59 | =0610+171 | 02 57 06 | 37.5 | 113.8 | -3.3 | -35.1 | 96 | 184 | 14 25 09 |
| 14 26 59 | S255 | 02 57 06 | 38.3 | 113.4 | -3.3 | -35.4 | -15 | 184 | No stop |
| 14 28 59 | --- | 02 59 06 | 38.6 | 113.9 | -3.2 | -35.3 | 105 | 199 | 14 27 00 |
| 14 28 59 | J0613+1708 | 02 59 06 | 37.8 | 114.3 | -3.3 | -34.9 | -15 | 199 | No stop |
| 14 30 50 | =0610+171 | 03 00 57 | 38.0 | 114.8 | -3.2 | -34.8 | 96 | 213 | 14 29 00 |

```
Schedule for TORUN     (Code Tr )                                  Page   3
               EB072
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                  Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Mon  11 Mar 2019   Day  70 ---

14 30 50  S255         03 00 57  38.8 114.3 -3.2     -35.1   -15      213   No stop
14 32 50  ---          03 02 58  39.1 114.8 -3.2     -35.0   105      229   14 30 51

14 33 25  J0613+1708   03 03 33  38.4 115.4 -3.2     -34.6    20      229   14 33 25
14 35 16  =0610+171    03 05 24  38.6 115.9 -3.2     -34.4   111      243   14 33 26

 ---------- FF2 ----------

14 35 16  J0319+4130   03 05 24  78.2 165.6 -0.3     -11.5  -163      243   No stop
14 43 16  =3C84        03 13 25  78.4 172.9 -0.1      -5.7   317      305   14 35 17

 ---------- Tsys ----------

14 43 31  J0319+4130   03 13 40  78.4 173.1 -0.1      -5.5     8      305   14 43 31
14 43 46  =3C84        03 13 55  78.4 173.4 -0.1      -5.3    15      307   14 43 32

 ---------- EVPA-1h ----------

14 44 46  J0359+5057   03 14 56  82.6 101.8 -0.8     -69.1   -97      307   14 44 46
14 51 46  =NRAO150     03 21 57  83.7 105.2 -0.6     -67.1   323      360   14 44 47

 ---------- FF3 ----------

14 51 46  J0555+3948   03 21 57  60.7 101.1 -2.6     -50.1   -99      360   No stop
14 59 46  =0552+398    03 29 58  61.9 103.2 -2.4     -49.6   381      422   14 51 47

15 01 26  J0613+1708   03 31 38  42.1 122.8 -2.7     -31.9    12      422   15 01 26
15 01 56  =0610+171    03 32 08  42.1 122.9 -2.7     -31.8    30      426   15 01 27

15 01 56  S255         03 32 08  43.0 122.5 -2.7     -32.2   -16      426   No stop
15 03 56  ---          03 34 09  43.2 123.1 -2.7     -31.9   104      441   15 01 57

15 03 56  J0613+1708   03 34 09  42.4 123.5 -2.7     -31.6   -15      441   No stop
15 05 47  =0610+171    03 36 00  42.6 124.0 -2.6     -31.4    96      455   15 03 57

15 05 47  S255         03 36 00  43.4 123.6 -2.6     -31.7   -16      455   No stop
15 07 47  ---          03 38 00  43.7 124.1 -2.6     -31.5   104      471   15 05 48

15 07 47  J0613+1708   03 38 00  42.9 124.5 -2.6     -31.2   -15      471   No stop
15 09 38  =0610+171    03 39 52  43.1 125.1 -2.6     -31.0    96      485   15 07 48

15 09 38  S255         03 39 52  43.9 124.6 -2.6     -31.3   -16      485   No stop
15 11 38  ---          03 41 52  44.2 125.2 -2.5     -31.0   104      500   15 09 39
```

Schedule for TORUN (Code Tr ) Page 4
EB072

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Mon 11 Mar 2019 Day 70 --- | | | | | | | | | | |
| 15 12 13 | J0613+1708 | 03 42 27 | 43.4 | 125.8 | -2.5 | | -30.6 | 20 | 500 | 15 12 13 |
| 15 14 04 | =0610+171 | 03 44 18 | 43.6 | 126.3 | -2.5 | | -30.4 | 111 | 515 | 15 12 14 |
| 15 14 04 | S255 | 03 44 18 | 44.5 | 125.9 | -2.5 | | -30.8 | -16 | 515 | No stop |
| 15 16 04 | --- | 03 46 19 | 44.7 | 126.5 | -2.5 | | -30.5 | 104 | 530 | 15 14 05 |
| 15 16 04 | J0613+1708 | 03 46 19 | 43.9 | 126.9 | -2.5 | | -30.2 | -15 | 530 | No stop |
| 15 17 55 | =0610+171 | 03 48 10 | 44.1 | 127.4 | -2.4 | | -29.9 | 96 | 544 | 15 16 05 |
| 15 17 55 | S255 | 03 48 10 | 44.9 | 127.0 | -2.4 | | -30.3 | -16 | 544 | No stop |
| 15 19 55 | --- | 03 50 10 | 45.2 | 127.6 | -2.4 | | -30.0 | 104 | 560 | 15 17 56 |
| 15 19 55 | J0613+1708 | 03 50 10 | 44.3 | 128.0 | -2.4 | | -29.7 | -15 | 560 | No stop |
| 15 21 46 | =0610+171 | 03 52 02 | 44.6 | 128.5 | -2.4 | | -29.4 | 96 | 574 | 15 19 56 |
| 15 21 46 | S255 | 03 52 02 | 45.4 | 128.2 | -2.4 | | -29.8 | -16 | 574 | No stop |
| 15 23 46 | --- | 03 54 02 | 45.6 | 128.7 | -2.3 | | -29.5 | 104 | 589 | 15 21 47 |
| 15 24 21 | J0613+1708 | 03 54 37 | 44.9 | 129.3 | -2.3 | | -29.1 | 20 | 589 | 15 24 21 |
| 15 26 12 | =0610+171 | 03 56 28 | 45.1 | 129.8 | -2.3 | | -28.8 | 111 | 603 | 15 24 22 |
| 15 26 12 | S255 | 03 56 28 | 45.9 | 129.5 | -2.3 | | -29.2 | -16 | 603 | No stop |
| 15 28 12 | --- | 03 58 29 | 46.1 | 130.1 | -2.3 | | -28.9 | 104 | 619 | 15 26 13 |
| 15 28 12 | J0613+1708 | 03 58 29 | 45.3 | 130.4 | -2.3 | | -28.6 | -15 | 619 | No stop |
| 15 30 03 | =0610+171 | 04 00 20 | 45.5 | 131.0 | -2.2 | | -28.3 | 96 | 633 | 15 28 13 |
| 15 30 03 | S255 | 04 00 20 | 46.4 | 130.6 | -2.2 | | -28.6 | -16 | 633 | No stop |
| 15 32 03 | --- | 04 02 20 | 46.6 | 131.2 | -2.2 | | -28.3 | 104 | 648 | 15 30 04 |
| 15 32 03 | J0613+1708 | 04 02 20 | 45.8 | 131.6 | -2.2 | | -28.0 | -15 | 648 | No stop |
| 15 33 54 | =0610+171 | 04 04 12 | 46.0 | 132.2 | -2.2 | | -27.8 | 96 | 663 | 15 32 04 |
| 15 33 54 | S255 | 04 04 12 | 46.8 | 131.8 | -2.2 | | -28.1 | -16 | 663 | No stop |
| 15 35 54 | --- | 04 06 12 | 47.0 | 132.4 | -2.1 | | -27.8 | 104 | 678 | 15 33 55 |
| 15 36 29 | J0613+1708 | 04 06 47 | 46.2 | 133.0 | -2.1 | | -27.4 | 20 | 678 | 15 36 29 |
| 15 38 20 | =0610+171 | 04 08 38 | 46.4 | 133.5 | -2.1 | | -27.1 | 111 | 692 | 15 36 30 |
| 15 38 20 | S255 | 04 08 38 | 47.3 | 133.2 | -2.1 | | -27.4 | -16 | 692 | No stop |
| 15 40 20 | --- | 04 10 39 | 47.5 | 133.8 | -2.1 | | -27.1 | 104 | 708 | 15 38 21 |
| 15 40 20 | J0613+1708 | 04 10 39 | 46.7 | 134.1 | -2.1 | | -26.8 | -15 | 708 | No stop |
| 15 42 11 | =0610+171 | 04 12 30 | 46.9 | 134.7 | -2.0 | | -26.5 | 96 | 722 | 15 40 21 |

```
Schedule for TORUN     (Code Tr )                                  Page   5
               EB072
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                  Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Mon  11 Mar 2019   Day  70 ---

15 42 11  S255         04 12 30  47.7 134.4 -2.0     -26.8   -16      722   No stop
15 44 11  ---          04 14 30  47.9 135.0 -2.0     -26.5   104      737   15 42 12

15 44 11  J0613+1708   04 14 30  47.1 135.4 -2.0     -26.2   -15      737   No stop
15 46 02  =0610+171    04 16 22  47.3 135.9 -2.0     -25.9    96      752   15 44 12

15 46 02  S255         04 16 22  48.1 135.6 -2.0     -26.2   -16      752   No stop
15 48 02  ---          04 18 22  48.3 136.3 -1.9     -25.9   104      767   15 46 03

15 48 37  J0613+1708   04 18 57  47.5 136.8 -1.9     -25.5    20      767   15 48 37
15 50 28  =0610+171    04 20 48  47.7 137.4 -1.9     -25.2   111      781   15 48 38

 ---------- EVPA-2h ----------

15 50 28  J0359+5057   04 20 48  86.3 237.8  0.3      53.9  -225      781   No stop
15 58 28  =NRAO150     04 28 50  85.2 247.0  0.5      61.4   255      843   15 50 29

16 01 28  S255         04 31 50  49.7 140.7 -1.7     -23.6   -47      843   16 01 28
16 03 28  ---          04 33 50  49.8 141.4 -1.7     -23.2    73      858   16 01 29

16 04 03  J0613+1708   04 34 26  49.1 141.8 -1.7     -22.8    19      858   16 04 03
16 05 54  =0610+171    04 36 17  49.2 142.5 -1.6     -22.5   111      872   16 04 04

16 05 54  S255         04 36 17  50.1 142.2 -1.6     -22.8   -16      872   No stop
16 07 54  ---          04 38 17  50.3 142.9 -1.6     -22.4   104      888   16 05 55

16 07 54  J0613+1708   04 38 17  49.4 143.1 -1.6     -22.1   -16      888   No stop
16 09 45  =0610+171    04 40 09  49.6 143.8 -1.6     -21.8    95      902   16 07 55

16 09 45  S255         04 40 09  50.4 143.5 -1.6     -22.0   -16      902   No stop
16 11 45  ---          04 42 09  50.6 144.2 -1.5     -21.7   104      917   16 09 46

16 11 45  J0613+1708   04 42 09  49.7 144.5 -1.5     -21.4   -16      917   No stop
16 13 36  =0610+171    04 44 00  49.9 145.1 -1.5     -21.1    95      932   16 11 46

16 13 36  S255         04 44 00  50.8 144.9 -1.5     -21.3   -16      932   No stop
16 15 36  ---          04 46 00  50.9 145.6 -1.5     -20.9   104      947   16 13 37

16 16 11  J0613+1708   04 46 36  50.1 146.0 -1.5     -20.6    19      947   16 16 11
16 18 02  =0610+171    04 48 27  50.3 146.7 -1.4     -20.2   111      961   16 16 12

16 18 02  S255         04 48 27  51.1 146.4 -1.4     -20.4   -16      961   No stop
16 20 02  ---          04 50 27  51.3 147.1 -1.4     -20.0   104      977   16 18 03
```

Schedule for TORUN (Code Tr ) Page 6
EB072

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | LST | Start / Stop<br>EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Mon 11 Mar 2019 Day 70 --- | | | | | | | | | | |
| 16 20 02 | J0613+1708 | 04 50 27 | 50.4 | 147.4 | -1.4 | | -19.8 | -16 | 977 | No stop |
| 16 21 53 | =0610+171 | 04 52 19 | 50.6 | 148.0 | -1.4 | | -19.4 | 95 | 991 | 16 20 03 |
| 16 21 53 | S255 | 04 52 19 | 51.5 | 147.8 | -1.4 | | -19.7 | -16 | 991 | No stop |
| 16 23 53 | --- | 04 54 19 | 51.6 | 148.5 | -1.3 | | -19.2 | 104 | 1006 | 16 21 54 |
| 16 23 53 | J0613+1708 | 04 54 19 | 50.8 | 148.7 | -1.3 | | -19.0 | -16 | 1006 | No stop |
| 16 25 44 | =0610+171 | 04 56 10 | 50.9 | 149.4 | -1.3 | | -18.7 | 95 | 1020 | 16 23 54 |
| 16 25 44 | S255 | 04 56 10 | 51.8 | 149.2 | -1.3 | | -18.9 | -16 | 1020 | No stop |
| 16 27 44 | --- | 04 58 10 | 51.9 | 149.9 | -1.3 | | -18.4 | 104 | 1036 | 16 25 45 |
| 16 28 19 | J0613+1708 | 04 58 46 | 51.1 | 150.3 | -1.3 | | -18.1 | 19 | 1036 | 16 28 19 |
| 16 30 10 | =0610+171 | 05 00 37 | 51.2 | 151.0 | -1.2 | | -17.7 | 111 | 1050 | 16 28 20 |
| 16 30 10 | S255 | 05 00 37 | 52.1 | 150.8 | -1.2 | | -17.9 | -16 | 1050 | No stop |
| 16 32 10 | --- | 05 02 37 | 52.2 | 151.6 | -1.2 | | -17.5 | 104 | 1065 | 16 30 11 |
| 16 32 10 | J0613+1708 | 05 02 37 | 51.4 | 151.7 | -1.2 | | -17.3 | -16 | 1065 | No stop |
| 16 34 01 | =0610+171 | 05 04 29 | 51.5 | 152.4 | -1.2 | | -16.9 | 95 | 1080 | 16 32 11 |
| 16 34 01 | S255 | 05 04 29 | 52.4 | 152.3 | -1.2 | | -17.1 | -16 | 1080 | No stop |
| 16 36 01 | --- | 05 06 29 | 52.5 | 153.0 | -1.1 | | -16.6 | 104 | 1095 | 16 34 02 |
| 16 36 01 | J0613+1708 | 05 06 29 | 51.6 | 153.1 | -1.1 | | -16.5 | -16 | 1095 | No stop |
| 16 37 52 | =0610+171 | 05 08 20 | 51.8 | 153.8 | -1.1 | | -16.1 | 95 | 1109 | 16 36 02 |
| 16 37 52 | S255 | 05 08 20 | 52.6 | 153.7 | -1.1 | | -16.2 | -16 | 1109 | No stop |
| 16 39 52 | --- | 05 10 20 | 52.8 | 154.5 | -1.1 | | -15.8 | 104 | 1125 | 16 37 53 |
| 16 40 27 | J0613+1708 | 05 10 56 | 51.9 | 154.8 | -1.1 | | -15.5 | 19 | 1125 | 16 40 27 |
| 16 42 18 | =0610+171 | 05 12 47 | 52.1 | 155.5 | -1.0 | | -15.1 | 111 | 1139 | 16 40 28 |
| 16 42 18 | S255 | 05 12 47 | 52.9 | 155.4 | -1.0 | | -15.2 | -16 | 1139 | No stop |
| 16 44 18 | --- | 05 14 47 | 53.0 | 156.2 | -1.0 | | -14.8 | 104 | 1154 | 16 42 19 |
| 16 44 18 | J0613+1708 | 05 14 47 | 52.2 | 156.2 | -1.0 | | -14.7 | -16 | 1154 | No stop |
| 16 46 09 | =0610+171 | 05 16 39 | 52.3 | 156.9 | -1.0 | | -14.2 | 95 | 1168 | 16 44 19 |
| 16 46 09 | S255 | 05 16 39 | 53.2 | 156.9 | -1.0 | | -14.4 | -16 | 1168 | No stop |
| 16 48 09 | --- | 05 18 39 | 53.3 | 157.6 | -0.9 | | -13.9 | 104 | 1184 | 16 46 10 |
| 16 48 44 | J0613+1708 | 05 19 14 | 52.4 | 157.9 | -0.9 | | -13.7 | 19 | 1184 | 16 48 44 |
| 16 50 35 | =0610+171 | 05 21 05 | 52.5 | 158.6 | -0.9 | | -13.2 | 111 | 1198 | 16 48 45 |

Schedule for TORUN (Code Tr ) Page 7
EB072

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Mon 11 Mar 2019 Day 70 --- | | | | | | | | | | |
| ---------- EVPA-3h ---------- | | | | | | | | | | |
| 16 50 35 | J0319+4130 | 05 21 05 | 66.9 | 252.3 | 2.0 | | 49.9 | -204 | 1198 | No stop |
| 16 58 35 | =3C84 | 05 29 07 | 65.7 | 254.7 | 2.1 | | 50.7 | 276 | 1260 | 16 50 36 |
| 17 01 35 | S255 | 05 32 07 | 53.9 | 162.9 | -0.7 | | -10.7 | -18 | 1260 | 17 01 35 |
| 17 03 35 | --- | 05 34 07 | 54.0 | 163.7 | -0.7 | | -10.2 | 102 | 1275 | 17 01 36 |
| 17 04 10 | J0613+1708 | 05 34 42 | 53.2 | 163.9 | -0.7 | | -10.0 | 19 | 1275 | 17 04 10 |
| 17 06 01 | =0610+171 | 05 36 34 | 53.3 | 164.6 | -0.6 | | -9.6 | 111 | 1289 | 17 04 11 |
| 17 06 01 | S255 | 05 36 34 | 54.1 | 164.7 | -0.6 | | -9.6 | -16 | 1289 | No stop |
| 17 08 01 | --- | 05 38 34 | 54.2 | 165.5 | -0.6 | | -9.1 | 104 | 1305 | 17 06 02 |
| 17 08 01 | J0613+1708 | 05 38 34 | 53.3 | 165.4 | -0.6 | | -9.1 | -16 | 1305 | No stop |
| 17 09 52 | =0610+171 | 05 40 25 | 53.4 | 166.2 | -0.6 | | -8.6 | 95 | 1319 | 17 08 02 |
| 17 09 52 | S255 | 05 40 25 | 54.3 | 166.2 | -0.6 | | -8.6 | -16 | 1319 | No stop |
| 17 11 52 | --- | 05 42 26 | 54.4 | 167.0 | -0.5 | | -8.1 | 104 | 1334 | 17 09 53 |
| 17 11 52 | J0613+1708 | 05 42 26 | 53.5 | 167.0 | -0.5 | | -8.1 | -16 | 1334 | No stop |
| 17 13 43 | =0610+171 | 05 44 17 | 53.5 | 167.7 | -0.5 | | -7.7 | 95 | 1348 | 17 11 53 |
| 17 13 43 | S255 | 05 44 17 | 54.4 | 167.8 | -0.5 | | -7.7 | -16 | 1348 | No stop |
| 17 15 43 | --- | 05 46 17 | 54.5 | 168.6 | -0.5 | | -7.2 | 104 | 1364 | 17 13 44 |
| 17 16 18 | J0613+1708 | 05 46 52 | 53.6 | 168.7 | -0.5 | | -7.0 | 19 | 1364 | 17 16 18 |
| 17 18 09 | =0610+171 | 05 48 44 | 53.7 | 169.5 | -0.4 | | -6.6 | 111 | 1378 | 17 16 19 |
| 17 18 09 | S255 | 05 48 44 | 54.5 | 169.6 | -0.4 | | -6.5 | -16 | 1378 | No stop |
| 17 20 09 | --- | 05 50 44 | 54.6 | 170.4 | -0.4 | | -6.0 | 104 | 1393 | 17 18 10 |
| 17 20 09 | J0613+1708 | 05 50 44 | 53.7 | 170.3 | -0.4 | | -6.1 | -16 | 1393 | No stop |
| 17 22 00 | =0610+171 | 05 52 35 | 53.8 | 171.0 | -0.4 | | -5.6 | 95 | 1408 | 17 20 10 |
| 17 22 00 | S255 | 05 52 35 | 54.6 | 171.2 | -0.4 | | -5.6 | -16 | 1408 | No stop |
| 17 24 00 | --- | 05 54 36 | 54.7 | 172.0 | -0.3 | | -5.0 | 104 | 1423 | 17 22 01 |
| 17 24 00 | J0613+1708 | 05 54 36 | 53.8 | 171.8 | -0.3 | | -5.1 | -16 | 1423 | No stop |
| 17 25 51 | =0610+171 | 05 56 27 | 53.9 | 172.6 | -0.3 | | -4.6 | 95 | 1437 | 17 24 01 |
| 17 25 51 | S255 | 05 56 27 | 54.7 | 172.8 | -0.3 | | -4.6 | -16 | 1437 | No stop |
| 17 27 51 | --- | 05 58 27 | 54.8 | 173.6 | -0.3 | | -4.0 | 104 | 1453 | 17 25 52 |

Schedule for TORUN (Code Tr ) Page 8
EB072

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Mon 11 Mar 2019 Day 70 --- | | | | | | | | | | |
| 17 28 26 | J0613+1708 | 05 59 02 | 53.9 | 173.6 | -0.3 | | -4.0 | 19 | 1453 | 17 28 26 |
| 17 30 17 | =0610+171 | 06 00 54 | 53.9 | 174.4 | -0.2 | | -3.5 | 111 | 1467 | 17 28 27 |
| 17 30 17 | S255 | 06 00 54 | 54.8 | 174.6 | -0.2 | | -3.4 | -16 | 1467 | No stop |
| 17 32 17 | --- | 06 02 54 | 54.8 | 175.4 | -0.2 | | -2.9 | 104 | 1482 | 17 30 18 |
| 17 32 17 | J0613+1708 | 06 02 54 | 54.0 | 175.2 | -0.2 | | -3.0 | -16 | 1482 | No stop |
| 17 34 08 | =0610+171 | 06 04 45 | 54.0 | 176.0 | -0.2 | | -2.5 | 95 | 1497 | 17 32 18 |
| 17 34 08 | S255 | 06 04 45 | 54.8 | 176.2 | -0.2 | | -2.4 | -16 | 1497 | No stop |
| 17 36 08 | --- | 06 06 46 | 54.9 | 177.0 | -0.1 | | -1.9 | 104 | 1512 | 17 34 09 |
| 17 36 08 | J0613+1708 | 06 06 46 | 54.0 | 176.8 | -0.1 | | -2.0 | -16 | 1512 | No stop |
| 17 37 59 | =0610+171 | 06 08 37 | 54.0 | 177.5 | -0.1 | | -1.6 | 95 | 1526 | 17 36 09 |
| 17 37 59 | S255 | 06 08 37 | 54.9 | 177.8 | -0.1 | | -1.4 | -16 | 1526 | No stop |
| 17 39 59 | --- | 06 10 37 | 54.9 | 178.6 | -0.1 | | -0.9 | 104 | 1542 | 17 38 00 |
| 17 40 34 | J0613+1708 | 06 11 12 | 54.0 | 178.6 | -0.1 | | -0.9 | 19 | 1542 | 17 40 34 |
| 17 42 25 | =0610+171 | 06 13 04 | 54.0 | 179.3 | -0.0 | | -0.4 | 111 | 1556 | 17 40 35 |
| 17 42 25 | S255 | 06 13 04 | 54.9 | 179.6 | -0.0 | | -0.2 | -16 | 1556 | No stop |
| 17 44 25 | --- | 06 15 04 | 54.9 | 180.4 | 0.0 | | 0.3 | 104 | 1571 | 17 42 26 |
| 17 44 25 | J0613+1708 | 06 15 04 | 54.0 | 180.1 | 0.0 | | 0.1 | -16 | 1571 | No stop |
| 17 46 16 | =0610+171 | 06 16 55 | 54.0 | 180.9 | 0.0 | | 0.6 | 95 | 1585 | 17 44 26 |
| 17 46 16 | S255 | 06 16 55 | 54.9 | 181.2 | 0.0 | | 0.8 | -16 | 1585 | No stop |
| 17 48 16 | --- | 06 18 56 | 54.9 | 182.0 | 0.1 | | 1.3 | 104 | 1601 | 17 46 17 |
| 17 48 16 | J0613+1708 | 06 18 56 | 54.0 | 181.7 | 0.1 | | 1.1 | -16 | 1601 | No stop |
| 17 50 07 | =0610+171 | 06 20 47 | 54.0 | 182.5 | 0.1 | | 1.6 | 95 | 1615 | 17 48 17 |
| ---------- EVPA,FF4 ---------- | | | | | | | | | | |
| 17 50 07 | J0854+2006 | 06 20 47 | 45.5 | 122.8 | -2.6 | | -32.5 | -133 | 1615 | No stop |
| 17 58 07 | =OJ287 | 06 28 48 | 46.5 | 125.1 | -2.5 | | -31.5 | 347 | 1677 | 17 50 08 |
| 18 00 37 | J0613+1708 | 06 31 19 | 53.9 | 186.7 | 0.3 | | 4.2 | 12 | 1677 | 18 00 37 |
| 18 01 07 | =0610+171 | 06 31 49 | 53.9 | 186.9 | 0.3 | | 4.4 | 30 | 1680 | 18 00 38 |
| 18 01 07 | S255 | 06 31 49 | 54.7 | 187.3 | 0.3 | | 4.6 | -16 | 1680 | No stop |
| 18 03 07 | --- | 06 33 49 | 54.7 | 188.2 | 0.3 | | 5.1 | 104 | 1696 | 18 01 08 |

Schedule for TORUN (Code Tr ) Page 9
EB072

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | LST | Start / Stop<br>EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Mon 11 Mar 2019 Day 70 --- | | | | | | | | | | |
| 18 03 07 | J0613+1708 | 06 33 49 | 53.8 | 187.8 | 0.3 | | 4.9 | -16 | 1696 | No stop |
| 18 04 58 | =0610+171 | 06 35 40 | 53.8 | 188.5 | 0.3 | | 5.3 | 95 | 1710 | 18 03 08 |
| 18 04 58 | S255 | 06 35 40 | 54.6 | 188.9 | 0.4 | | 5.6 | -15 | 1710 | No stop |
| 18 06 58 | --- | 06 37 41 | 54.6 | 189.7 | 0.4 | | 6.1 | 105 | 1725 | 18 04 59 |
| 18 06 58 | J0613+1708 | 06 37 41 | 53.8 | 189.3 | 0.4 | | 5.8 | -16 | 1725 | No stop |
| 18 08 49 | =0610+171 | 06 39 32 | 53.7 | 190.1 | 0.4 | | 6.3 | 95 | 1740 | 18 06 59 |
| 18 08 49 | S255 | 06 39 32 | 54.5 | 190.5 | 0.4 | | 6.6 | -15 | 1740 | No stop |
| 18 10 49 | --- | 06 41 32 | 54.5 | 191.3 | 0.5 | | 7.1 | 105 | 1755 | 18 08 50 |
| 18 11 24 | J0613+1708 | 06 42 08 | 53.6 | 191.1 | 0.5 | | 6.9 | 19 | 1755 | 18 11 24 |
| 18 13 15 | =0610+171 | 06 43 59 | 53.6 | 191.8 | 0.5 | | 7.4 | 111 | 1769 | 18 11 25 |
| 18 13 15 | S255 | 06 43 59 | 54.4 | 192.3 | 0.5 | | 7.7 | -15 | 1769 | No stop |
| 18 15 15 | --- | 06 45 59 | 54.3 | 193.1 | 0.5 | | 8.2 | 105 | 1785 | 18 13 16 |
| 18 15 15 | J0613+1708 | 06 45 59 | 53.5 | 192.6 | 0.5 | | 7.9 | -15 | 1785 | No stop |
| 18 17 06 | =0610+171 | 06 47 50 | 53.5 | 193.4 | 0.6 | | 8.4 | 96 | 1799 | 18 15 16 |
| 18 17 06 | S255 | 06 47 50 | 54.3 | 193.9 | 0.6 | | 8.7 | -15 | 1799 | No stop |
| 18 19 06 | --- | 06 49 51 | 54.2 | 194.7 | 0.6 | | 9.2 | 105 | 1814 | 18 17 07 |
| 18 19 06 | J0613+1708 | 06 49 51 | 53.4 | 194.2 | 0.6 | | 8.8 | -15 | 1814 | No stop |
| 18 20 57 | =0610+171 | 06 51 42 | 53.3 | 194.9 | 0.6 | | 9.3 | 96 | 1828 | 18 19 07 |
| 18 20 57 | S255 | 06 51 42 | 54.1 | 195.4 | 0.6 | | 9.7 | -15 | 1828 | No stop |
| 18 22 57 | --- | 06 53 42 | 54.0 | 196.2 | 0.7 | | 10.2 | 105 | 1844 | 18 20 58 |
| 18 23 32 | J0613+1708 | 06 54 18 | 53.2 | 195.9 | 0.7 | | 9.9 | 20 | 1844 | 18 23 32 |
| 18 25 23 | =0610+171 | 06 56 09 | 53.1 | 196.6 | 0.7 | | 10.4 | 111 | 1858 | 18 23 33 |
| 18 25 23 | S255 | 06 56 09 | 53.9 | 197.2 | 0.7 | | 10.7 | -15 | 1858 | No stop |
| 18 27 23 | --- | 06 58 09 | 53.8 | 198.0 | 0.7 | | 11.2 | 105 | 1873 | 18 25 24 |
| 18 27 23 | J0613+1708 | 06 58 09 | 53.0 | 197.4 | 0.7 | | 10.8 | -15 | 1873 | No stop |
| 18 29 14 | =0610+171 | 07 00 00 | 53.0 | 198.2 | 0.8 | | 11.3 | 96 | 1888 | 18 27 24 |
| 18 29 14 | S255 | 07 00 00 | 53.8 | 198.7 | 0.8 | | 11.7 | -15 | 1888 | No stop |
| 18 31 14 | --- | 07 02 01 | 53.7 | 199.5 | 0.8 | | 12.2 | 105 | 1903 | 18 29 15 |
| 18 31 14 | J0613+1708 | 07 02 01 | 52.9 | 198.9 | 0.8 | | 11.8 | -15 | 1903 | No stop |
| 18 33 05 | =0610+171 | 07 03 52 | 52.8 | 199.6 | 0.8 | | 12.2 | 96 | 1917 | 18 31 15 |

```
Schedule for TORUN     (Code Tr )                                  Page  10
               EB072
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                  Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Mon  11 Mar 2019   Day  70 ---

18 33 05  S255         07 03 52  53.6 200.2  0.8      12.6   -15     1917   No stop
18 35 05  ---          07 05 52  53.5 201.0  0.9      13.1   105     1933   18 33 06

18 35 40  J0613+1708   07 06 27  52.6 200.6  0.9      12.8    20     1933   18 35 40
18 37 31  =0610+171    07 08 19  52.5 201.4  0.9      13.2   111     1947   18 35 41

18 37 31  S255         07 08 19  53.3 202.0  0.9      13.7   -15     1947   No stop
18 39 31  ---          07 10 19  53.2 202.7  0.9      14.1   105     1962   18 37 32

18 39 31  J0613+1708   07 10 19  52.4 202.1  0.9      13.7   -15     1962   No stop
18 41 22  =0610+171    07 12 10  52.3 202.8  1.0      14.1    96     1977   18 39 32

18 41 22  S255         07 12 10  53.1 203.4  1.0      14.5   -15     1977   No stop
18 43 22  ---          07 14 11  53.0 204.2  1.0      15.0   105     1992   18 41 23

18 43 22  J0613+1708   07 14 11  52.2 203.6  1.0      14.6   -15     1992   No stop
18 45 13  =0610+171    07 16 02  52.1 204.3  1.0      15.0    96     2006   18 43 23

18 45 13  S255         07 16 02  52.9 204.9  1.0      15.4   -15     2006   No stop
18 47 13  ---          07 18 02  52.7 205.7  1.1      15.9   105     2022   18 45 14

18 47 48  J0613+1708   07 18 37  51.9 205.3  1.1      15.5    20     2022   18 47 48
18 49 39  =0610+171    07 20 29  51.8 205.9  1.1      16.0   111     2036   18 47 49

 ---------- EVPA,FF5 ----------

18 49 39  J0854+2006   07 20 29  52.2 141.7 -1.6     -23.3  -142     2036   No stop
18 57 39  =OJ287       07 28 30  52.9 144.6 -1.5     -21.7   338     2097   18 49 40

19 00 09  J0613+1708   07 31 01  51.1 209.8  1.3      18.2     5     2097   19 00 09
19 00 39  =0610+171    07 31 31  51.0 210.0  1.3      18.3    30     2101   19 00 10

19 00 39  S255         07 31 31  51.8 210.7  1.3      18.8   -15     2101   No stop
19 02 39  ---          07 33 31  51.6 211.4  1.3      19.2   105     2117   19 00 40

19 03 14  J0613+1708   07 34 06  50.8 210.9  1.3      18.8    20     2117   19 03 14
19 05 05  =0610+171    07 35 57  50.7 211.6  1.4      19.2   111     2131   19 03 15

19 05 05  S255         07 35 57  51.4 212.3  1.4      19.7   -15     2131   No stop
19 07 05  ---          07 37 58  51.3 213.0  1.4      20.1   105     2146   19 05 06

19 07 05  J0613+1708   07 37 58  50.5 212.3  1.4      19.6   -15     2146   No stop
19 08 56  =0610+171    07 39 49  50.4 212.9  1.4      20.0    96     2160   19 07 06
```

Schedule for TORUN (Code Tr ) Page 11
EB072

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | LST | Start / Stop<br>EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Mon 11 Mar 2019 Day 70 --- | | | | | | | | | | |
| 19 08 56 | S255 | 07 39 49 | 51.1 | 213.7 | 1.4 | | 20.5 | -15 | 2160 | No stop |
| 19 10 56 | --- | 07 41 49 | 51.0 | 214.4 | 1.5 | | 20.9 | 105 | 2176 | 19 08 57 |
| 19 10 56 | J0613+1708 | 07 41 49 | 50.2 | 213.6 | 1.5 | | 20.4 | -15 | 2176 | No stop |
| 19 12 47 | =0610+171 | 07 43 41 | 50.1 | 214.3 | 1.5 | | 20.7 | 96 | 2190 | 19 10 57 |
| 19 12 47 | S255 | 07 43 41 | 50.8 | 215.0 | 1.5 | | 21.2 | -15 | 2190 | No stop |
| 19 14 47 | --- | 07 45 41 | 50.6 | 215.7 | 1.5 | | 21.6 | 105 | 2205 | 19 12 48 |
| 19 15 22 | J0613+1708 | 07 46 16 | 49.8 | 215.2 | 1.5 | | 21.2 | 20 | 2205 | 19 15 22 |
| 19 17 13 | =0610+171 | 07 48 07 | 49.7 | 215.8 | 1.6 | | 21.6 | 111 | 2220 | 19 15 23 |
| 19 17 13 | S255 | 07 48 07 | 50.4 | 216.6 | 1.6 | | 22.1 | -15 | 2220 | No stop |
| 19 19 13 | --- | 07 50 08 | 50.2 | 217.3 | 1.6 | | 22.5 | 105 | 2235 | 19 17 14 |
| 19 19 13 | J0613+1708 | 07 50 08 | 49.5 | 216.5 | 1.6 | | 22.0 | -15 | 2235 | No stop |
| 19 21 04 | =0610+171 | 07 51 59 | 49.3 | 217.1 | 1.6 | | 22.3 | 96 | 2249 | 19 19 14 |
| 19 21 04 | S255 | 07 51 59 | 50.1 | 217.9 | 1.6 | | 22.8 | -15 | 2249 | No stop |
| 19 23 04 | --- | 07 53 59 | 49.9 | 218.6 | 1.7 | | 23.2 | 105 | 2265 | 19 21 05 |
| 19 23 04 | J0613+1708 | 07 53 59 | 49.1 | 217.8 | 1.7 | | 22.7 | -15 | 2265 | No stop |
| 19 24 55 | =0610+171 | 07 55 51 | 49.0 | 218.4 | 1.7 | | 23.0 | 96 | 2279 | 19 23 05 |
| 19 24 55 | S255 | 07 55 51 | 49.7 | 219.2 | 1.7 | | 23.5 | -15 | 2279 | No stop |
| 19 26 55 | --- | 07 57 51 | 49.5 | 219.9 | 1.7 | | 23.9 | 105 | 2294 | 19 24 56 |
| 19 27 30 | J0613+1708 | 07 58 26 | 48.7 | 219.3 | 1.7 | | 23.5 | 20 | 2294 | 19 27 30 |
| 19 29 21 | =0610+171 | 08 00 17 | 48.6 | 219.9 | 1.8 | | 23.8 | 111 | 2308 | 19 27 31 |
| 19 29 21 | S255 | 08 00 17 | 49.3 | 220.7 | 1.8 | | 24.3 | -15 | 2308 | No stop |
| 19 31 21 | --- | 08 02 18 | 49.1 | 221.3 | 1.8 | | 24.7 | 105 | 2324 | 19 29 22 |
| 19 31 21 | J0613+1708 | 08 02 18 | 48.4 | 220.6 | 1.8 | | 24.1 | -15 | 2324 | No stop |
| 19 33 12 | =0610+171 | 08 04 09 | 48.2 | 221.2 | 1.8 | | 24.4 | 96 | 2338 | 19 31 22 |
| 19 33 12 | S255 | 08 04 09 | 48.9 | 222.0 | 1.8 | | 25.0 | -15 | 2338 | No stop |
| 19 35 12 | --- | 08 06 09 | 48.7 | 222.6 | 1.9 | | 25.3 | 105 | 2353 | 19 33 13 |
| 19 35 12 | J0613+1708 | 08 06 09 | 48.0 | 221.8 | 1.9 | | 24.8 | -15 | 2353 | No stop |
| 19 37 03 | =0610+171 | 08 08 01 | 47.8 | 222.4 | 1.9 | | 25.1 | 96 | 2368 | 19 35 13 |
| 19 37 03 | S255 | 08 08 01 | 48.5 | 223.2 | 1.9 | | 25.6 | -15 | 2368 | No stop |
| 19 39 03 | --- | 08 10 01 | 48.3 | 223.9 | 1.9 | | 25.9 | 105 | 2383 | 19 37 04 |

```
Schedule for TORUN     (Code Tr )                                  Page  12
               EB072
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                  Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Mon  11 Mar 2019   Day  70 ---

19 39 38  J0613+1708   08 10 36  47.5 223.3  1.9      25.5    20     2383   19 39 38
19 41 29  =0610+171    08 12 27  47.3 223.9  2.0      25.8   111     2397   19 39 39

19 41 29  S255         08 12 27  48.0 224.6  2.0      26.3   -14     2397   No stop
19 43 29  ---          08 14 28  47.8 225.3  2.0      26.7   106     2413   19 41 30

19 43 29  J0613+1708   08 14 28  47.1 224.5  2.0      26.1   -15     2413   No stop
19 45 20  =0610+171    08 16 19  46.9 225.1  2.0      26.4    96     2427   19 43 30

19 45 20  S255         08 16 19  47.6 225.9  2.0      26.9   -14     2427   No stop
19 47 20  ---          08 18 19  47.4 226.5  2.1      27.3   106     2442   19 45 21

19 47 55  J0613+1708   08 18 54  46.7 225.9  2.1      26.8    20     2442   19 47 55
19 49 46  =0610+171    08 20 46  46.4 226.5  2.1      27.1   111     2457   19 47 56

 ---------- PolCal ----------

19 49 46  J0854+2006   08 20 46  56.2 165.0 -0.6      -9.5  -136     2457   No stop
19 57 46  =OJ287       08 28 47  56.5 168.4 -0.5      -7.4   344     2518   19 49 47

20 00 16  J0613+1708   08 31 17  45.3 229.7  2.3      28.6    13     2518   20 00 16
20 00 46  =0610+171    08 31 47  45.2 229.8  2.3      28.7    30     2522   20 00 17

20 00 46  S255         08 31 47  45.9 230.6  2.3      29.2   -14     2522   No stop
20 02 46  ---          08 33 48  45.6 231.2  2.3      29.5   106     2537   20 00 47

20 03 21  J0613+1708   08 34 23  44.9 230.6  2.3      29.0    20     2537   20 03 21
20 05 12  =0610+171    08 36 14  44.7 231.1  2.4      29.3   111     2552   20 03 22

20 05 12  S255         08 36 14  45.4 231.9  2.4      29.8   -14     2552   No stop
20 07 12  ---          08 38 15  45.1 232.5  2.4      30.1   106     2567   20 05 13

20 07 12  J0613+1708   08 38 15  44.5 231.7  2.4      29.5   -14     2567   No stop
20 09 03  =0610+171    08 40 06  44.2 232.2  2.4      29.8    97     2581   20 07 13

20 09 03  S255         08 40 06  44.9 233.0  2.4      30.3   -14     2581   No stop
20 11 03  ---          08 42 06  44.7 233.6  2.5      30.6   106     2597   20 09 04

20 11 03  J0613+1708   08 42 06  44.0 232.8  2.5      30.0   -14     2597   No stop
20 12 54  =0610+171    08 43 57  43.8 233.4  2.5      30.3    97     2611   20 11 04

20 12 54  S255         08 43 57  44.4 234.2  2.5      30.8   -14     2611   No stop
20 14 54  ---          08 45 58  44.2 234.7  2.5      31.0   106     2626   20 12 55
```

Schedule for TORUN (Code Tr ) Page 13
EB072

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | LST | Start / Stop<br>EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Mon 11 Mar 2019 Day 70 --- | | | | | | | | | | |
| 20 15 29 | J0613+1708 | 08 46 33 | 43.5 | 234.1 | 2.5 | | 30.6 | 21 | 2626 | 20 15 29 |
| 20 17 20 | =0610+171 | 08 48 24 | 43.2 | 234.6 | 2.6 | | 30.8 | 111 | 2640 | 20 15 30 |
| 20 17 20 | S255 | 08 48 24 | 43.9 | 235.4 | 2.6 | | 31.3 | -14 | 2640 | No stop |
| 20 19 20 | --- | 08 50 25 | 43.6 | 236.0 | 2.6 | | 31.6 | 106 | 2656 | 20 17 21 |
| 20 19 20 | J0613+1708 | 08 50 25 | 43.0 | 235.2 | 2.6 | | 31.1 | -14 | 2656 | No stop |
| 20 21 11 | =0610+171 | 08 52 16 | 42.8 | 235.7 | 2.6 | | 31.3 | 97 | 2670 | 20 19 21 |
| 20 21 11 | S255 | 08 52 16 | 43.4 | 236.5 | 2.6 | | 31.8 | -14 | 2670 | No stop |
| 20 23 11 | --- | 08 54 16 | 43.2 | 237.1 | 2.7 | | 32.0 | 106 | 2685 | 20 21 12 |
| 20 23 11 | J0613+1708 | 08 54 16 | 42.5 | 236.3 | 2.7 | | 31.5 | -14 | 2685 | No stop |
| 20 25 02 | =0610+171 | 08 56 07 | 42.3 | 236.8 | 2.7 | | 31.7 | 97 | 2700 | 20 23 12 |
| 20 25 02 | S255 | 08 56 07 | 42.9 | 237.6 | 2.7 | | 32.2 | -14 | 2700 | No stop |
| 20 27 02 | --- | 08 58 08 | 42.7 | 238.1 | 2.7 | | 32.4 | 106 | 2715 | 20 25 03 |
| 20 27 37 | J0613+1708 | 08 58 43 | 42.0 | 237.5 | 2.7 | | 32.0 | 21 | 2715 | 20 27 37 |
| 20 29 28 | =0610+171 | 09 00 34 | 41.7 | 238.0 | 2.8 | | 32.2 | 111 | 2729 | 20 27 38 |
| 20 29 28 | S255 | 09 00 34 | 42.4 | 238.8 | 2.8 | | 32.7 | -14 | 2729 | No stop |
| 20 31 28 | --- | 09 02 35 | 42.1 | 239.3 | 2.8 | | 32.9 | 106 | 2745 | 20 29 29 |
| 20 31 28 | J0613+1708 | 09 02 35 | 41.5 | 238.5 | 2.8 | | 32.4 | -14 | 2745 | No stop |
| 20 33 19 | =0610+171 | 09 04 26 | 41.2 | 239.0 | 2.8 | | 32.6 | 97 | 2759 | 20 31 29 |
| 20 33 19 | S255 | 09 04 26 | 41.9 | 239.8 | 2.8 | | 33.1 | -14 | 2759 | No stop |
| 20 35 19 | --- | 09 06 26 | 41.6 | 240.4 | 2.9 | | 33.3 | 106 | 2774 | 20 33 20 |
| 20 35 19 | J0613+1708 | 09 06 26 | 41.0 | 239.6 | 2.9 | | 32.8 | -14 | 2774 | No stop |
| 20 37 10 | =0610+171 | 09 08 17 | 40.7 | 240.0 | 2.9 | | 33.0 | 97 | 2788 | 20 35 20 |
| 20 37 10 | S255 | 09 08 17 | 41.4 | 240.8 | 2.9 | | 33.5 | -14 | 2788 | No stop |
| 20 39 10 | --- | 09 10 18 | 41.1 | 241.4 | 2.9 | | 33.7 | 106 | 2804 | 20 37 11 |
| 20 39 45 | J0613+1708 | 09 10 53 | 40.4 | 240.7 | 2.9 | | 33.2 | 21 | 2804 | 20 39 45 |
| 20 41 36 | =0610+171 | 09 12 44 | 40.2 | 241.2 | 3.0 | | 33.4 | 111 | 2818 | 20 39 46 |
| 20 41 36 | S255 | 09 12 44 | 40.8 | 242.0 | 3.0 | | 33.9 | -14 | 2818 | No stop |
| 20 43 36 | --- | 09 14 45 | 40.5 | 242.5 | 3.0 | | 34.1 | 106 | 2833 | 20 41 37 |
| 20 43 36 | J0613+1708 | 09 14 45 | 39.9 | 241.7 | 3.0 | | 33.6 | -14 | 2833 | No stop |
| 20 45 27 | =0610+171 | 09 16 36 | 39.6 | 242.2 | 3.0 | | 33.8 | 97 | 2848 | 20 43 37 |

Schedule for TORUN (Code Tr ) Page 14
EB072

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Mon 11 Mar 2019 Day 70 --- | | | | | | | | | | |
| 20 45 27 | S255 | 09 16 36 | 40.3 | 243.0 | 3.0 | | 34.2 | -14 | 2848 | No stop |
| 20 47 27 | --- | 09 18 36 | 40.0 | 243.5 | 3.1 | | 34.4 | 106 | 2863 | 20 45 28 |
| 20 48 02 | J0613+1708 | 09 19 11 | 39.3 | 242.9 | 3.1 | | 34.0 | 21 | 2863 | 20 48 02 |
| 20 49 53 | =0610+171 | 09 21 03 | 39.0 | 243.4 | 3.1 | | 34.2 | 111 | 2877 | 20 48 03 |
| ---------- FF6 ---------- | | | | | | | | | | |
| 20 49 53 | J1229+0203 | 09 21 03 | 25.7 | 125.4 | -3.2 | | -29.3 | -249 | 2877 | No stop |
| 20 57 53 | =3C273B | 09 29 04 | 26.7 | 127.4 | -3.0 | | -28.5 | 231 | 2939 | 20 49 54 |
| 21 02 23 | J0613+1708 | 09 33 35 | 37.3 | 246.5 | 3.3 | | 35.2 | 17 | 2939 | 21 02 23 |
| 21 02 53 | =0610+171 | 09 34 05 | 37.3 | 246.6 | 3.3 | | 35.2 | 30 | 2943 | 21 02 24 |
| 21 02 53 | S255 | 09 34 05 | 37.9 | 247.4 | 3.3 | | 35.7 | -14 | 2943 | No stop |
| 21 04 53 | --- | 09 36 05 | 37.6 | 247.9 | 3.4 | | 35.8 | 106 | 2958 | 21 02 54 |
| 21 05 28 | J0613+1708 | 09 36 40 | 36.9 | 247.2 | 3.4 | | 35.4 | 21 | 2958 | 21 05 28 |
| 21 07 19 | =0610+171 | 09 38 31 | 36.7 | 247.7 | 3.4 | | 35.5 | 111 | 2972 | 21 05 29 |
| 21 07 19 | S255 | 09 38 31 | 37.3 | 248.5 | 3.4 | | 36.0 | -14 | 2972 | No stop |
| 21 09 19 | --- | 09 40 32 | 37.0 | 249.0 | 3.4 | | 36.1 | 106 | 2988 | 21 07 20 |
| 21 09 19 | J0613+1708 | 09 40 32 | 36.4 | 248.2 | 3.4 | | 35.7 | -14 | 2988 | No stop |
| 21 11 10 | =0610+171 | 09 42 23 | 36.1 | 248.6 | 3.5 | | 35.8 | 97 | 3002 | 21 09 20 |
| 21 11 10 | S255 | 09 42 23 | 36.7 | 249.4 | 3.5 | | 36.2 | -14 | 3002 | No stop |
| 21 13 10 | --- | 09 44 23 | 36.4 | 249.9 | 3.5 | | 36.4 | 106 | 3017 | 21 11 11 |
| 21 13 10 | J0613+1708 | 09 44 23 | 35.8 | 249.1 | 3.5 | | 35.9 | -14 | 3017 | No stop |
| 21 15 01 | =0610+171 | 09 46 15 | 35.6 | 249.5 | 3.5 | | 36.1 | 97 | 3032 | 21 13 11 |
| 21 15 01 | S255 | 09 46 15 | 36.2 | 250.3 | 3.5 | | 36.5 | -14 | 3032 | No stop |
| 21 17 01 | --- | 09 48 15 | 35.9 | 250.8 | 3.6 | | 36.6 | 106 | 3047 | 21 15 02 |
| 21 17 36 | J0613+1708 | 09 48 50 | 35.2 | 250.2 | 3.6 | | 36.2 | 21 | 3047 | 21 17 36 |
| 21 19 27 | =0610+171 | 09 50 41 | 35.0 | 250.6 | 3.6 | | 36.3 | 111 | 3061 | 21 17 37 |
| 21 19 27 | S255 | 09 50 41 | 35.5 | 251.4 | 3.6 | | 36.7 | -14 | 3061 | No stop |
| 21 21 27 | --- | 09 52 42 | 35.2 | 251.8 | 3.6 | | 36.9 | 106 | 3077 | 21 19 28 |
| 21 21 27 | J0613+1708 | 09 52 42 | 34.7 | 251.1 | 3.6 | | 36.5 | -14 | 3077 | No stop |
| 21 23 18 | =0610+171 | 09 54 33 | 34.4 | 251.5 | 3.7 | | 36.6 | 97 | 3091 | 21 21 28 |

Schedule for TORUN (Code Tr ) Page 15
EB072

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Mon 11 Mar 2019 Day 70 --- | | | | | | | | | | |
| 21 23 18 | S255 | 09 54 33 | 35.0 | 252.3 | 3.7 | | 37.0 | -14 | 3091 | No stop |
| 21 25 18 | --- | 09 56 33 | 34.7 | 252.7 | 3.7 | | 37.1 | 106 | 3106 | 21 23 19 |
| 21 25 18 | J0613+1708 | 09 56 33 | 34.1 | 252.0 | 3.7 | | 36.7 | -14 | 3106 | No stop |
| 21 27 09 | =0610+171 | 09 58 25 | 33.9 | 252.4 | 3.7 | | 36.8 | 97 | 3120 | 21 25 19 |
| 21 27 09 | S255 | 09 58 25 | 34.4 | 253.2 | 3.7 | | 37.2 | -14 | 3120 | No stop |
| 21 29 09 | --- | 10 00 25 | 34.1 | 253.6 | 3.8 | | 37.3 | 106 | 3136 | 21 27 10 |
| 21 29 44 | J0613+1708 | 10 01 00 | 33.5 | 253.0 | 3.8 | | 36.9 | 21 | 3136 | 21 29 44 |
| 21 31 35 | =0610+171 | 10 02 51 | 33.2 | 253.4 | 3.8 | | 37.0 | 111 | 3150 | 21 29 45 |
| 21 31 35 | S255 | 10 02 51 | 33.8 | 254.2 | 3.8 | | 37.4 | -14 | 3150 | No stop |
| 21 33 35 | --- | 10 04 52 | 33.5 | 254.6 | 3.8 | | 37.5 | 106 | 3165 | 21 31 36 |
| 21 33 35 | J0613+1708 | 10 04 52 | 32.9 | 253.9 | 3.8 | | 37.1 | -14 | 3165 | No stop |
| 21 35 26 | =0610+171 | 10 06 43 | 32.7 | 254.3 | 3.9 | | 37.2 | 97 | 3180 | 21 33 36 |
| 21 35 26 | S255 | 10 06 43 | 33.2 | 255.1 | 3.9 | | 37.6 | -14 | 3180 | No stop |
| 21 37 26 | --- | 10 08 43 | 32.9 | 255.5 | 3.9 | | 37.7 | 106 | 3195 | 21 35 27 |
| 21 37 26 | J0613+1708 | 10 08 43 | 32.4 | 254.7 | 3.9 | | 37.3 | -14 | 3195 | No stop |
| 21 39 17 | =0610+171 | 10 10 35 | 32.1 | 255.2 | 3.9 | | 37.4 | 97 | 3209 | 21 37 27 |
| 21 39 17 | S255 | 10 10 35 | 32.7 | 255.9 | 3.9 | | 37.8 | -14 | 3209 | No stop |
| 21 41 17 | --- | 10 12 35 | 32.4 | 256.4 | 4.0 | | 37.8 | 106 | 3225 | 21 39 18 |
| 21 41 52 | J0613+1708 | 10 13 10 | 31.7 | 255.7 | 4.0 | | 37.5 | 21 | 3225 | 21 41 52 |
| 21 43 43 | =0610+171 | 10 15 01 | 31.5 | 256.1 | 4.0 | | 37.6 | 111 | 3239 | 21 41 53 |
| 21 43 43 | S255 | 10 15 01 | 32.0 | 256.9 | 4.0 | | 37.9 | -14 | 3239 | No stop |
| 21 45 43 | --- | 10 17 02 | 31.7 | 257.4 | 4.1 | | 38.0 | 106 | 3254 | 21 43 44 |
| 21 45 43 | J0613+1708 | 10 17 02 | 31.2 | 256.6 | 4.0 | | 37.7 | -14 | 3254 | No stop |
| 21 47 34 | =0610+171 | 10 18 53 | 30.9 | 257.0 | 4.1 | | 37.8 | 97 | 3268 | 21 45 44 |
| 21 47 34 | S255 | 10 18 53 | 31.5 | 257.8 | 4.1 | | 38.1 | -14 | 3268 | No stop |
| 21 49 34 | --- | 10 20 53 | 31.2 | 258.2 | 4.1 | | 38.2 | 106 | 3284 | 21 47 35 |
| 21 49 34 | J0613+1708 | 10 20 53 | 30.6 | 257.4 | 4.1 | | 37.8 | -14 | 3284 | No stop |
| 21 51 25 | =0610+171 | 10 22 45 | 30.3 | 257.8 | 4.1 | | 37.9 | 97 | 3298 | 21 49 35 |

```
Schedule for TORUN     (Code Tr )                                Page  16
               EB072
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Mon  11 Mar 2019   Day  70 ---

 ---------- FF7 ----------

21 51 25  J1229+0203   10 22 45  32.5 141.3 -2.1     -22.1  -246     3298   No stop
22 00 00  =3C273B      10 31 21  33.3 143.7 -2.0     -20.8   269     3364   21 51 26




SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119.K1024

   Setup group:   11         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
   Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
 1st LO=  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00
          21500.00  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00
 Net SB=         L         L         U         U         L         L         U         U
                 L         L         U         U         L         L         U         U
 IF SB =         U         U         U         U         U         U         U         U
                 U         U         U         U         U         U         U         U
 Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
               RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
 BBC   =         1         5         1         5         2         6         2         6
                 3         7         3         7         4         8         4         8
 BBC SB=         L         L         U         U         L         L         U         U
                 L         L         U         U         L         L         U         U
 IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

 Frequency Set:   8  Based on FREQ, BW, and/or DOPPLER in schedule.  Used with PCAL = off
  LO sum=   22207.60  22207.60  22207.60  22207.60  22239.60  22239.60  22239.60  22239.60
            22271.60  22271.60  22271.60  22271.60  22303.60  22303.60  22303.60  22303.60
  BBC fr=     707.60    707.60    707.60    707.60    739.60    739.60    739.60    739.60
              771.60    771.60    771.60    771.60    803.60    803.60    803.60    803.60
  Bandwd=      16.00     16.00     16.00     16.00     16.00     16.00     16.00     16.00
               16.00     16.00     16.00     16.00     16.00     16.00     16.00     16.00
   Matching frequency sets:   8

  Track assignments are:
   track1=  18, 26,  2, 10, 20, 28,  4, 12, 22, 30,  6, 14, 24, 32,  8, 16
   barrel=roll_off
```

POSITIONS OF SOURCES USED IN RECORDING SCANS

```
  Source                          Source position (RA/Dec)                        Error
                        (B1950)             (J2000)             (Date)             (mas)

* S255               06 09 58.588596   * 06 12 54.006409     06 14 00.562849       0.00
                     18 00 12.94044    * 17 59 22.95890      17 58 55.64592        0.00
                     Doppler based on LSR frame and radio definition.  Velocities:
                          5.00     5.00     5.00     5.00     5.00     5.00     5.00     5.00
                          5.00     5.00     5.00     5.00     5.00     5.00

  3C84               03 16 29.567265   * 03 19 48.160096     03 21 02.666340       1.50
* J0319+4130         41 19 51.91692    * 41 30 42.10404      41 34 47.38680        2.86
  0316+413           /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
  J0319+41           GSFC 2016a X/S astro solution,  10291 observations.
                     Doppler based on other sources.

  NRAO150            03 55 45.261365   * 03 59 29.747266     04 00 54.260481       0.03
* J0359+5057         50 49 20.28574    * 50 57 50.16169      51 01 05.24597        0.02
  0355+508           /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
  J0359+50           GSFC 2016a X/S astro solution,  22807 observations.
                     Doppler based on other sources.

  0552+398           05 52 01.407168   * 05 55 30.805611     05 56 50.176416       0.00
* J0555+3948         39 48 21.94581    * 39 48 49.16496      39 48 58.12825        0.00
  DA193              /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
  J0555+39           GSFC 2016a X/S astro solution, 415688 observations.
                     Doppler based on other sources.
```

```
  0610+171          06 10 42.033416   * 06 13 36.360087     06 14 42.506645       0.10
* J0613+1708        17 09 18.04876    * 17 08 24.94616      17 07 56.17587        0.18
                    /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,    137 observations.
                    Doppler based on other sources.

  OJ287             08 51 57.250615   * 08 54 48.874927     08 55 54.625137       0.00
* J0854+2006        20 17 58.41740    * 20 06 30.64085      20 02 02.47560        0.00
  0851+202          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
  J0854+20          GSFC 2016a X/S astro solution, 270807 observations.
                    Doppler based on other sources.

  3C273B            12 26 33.245835   * 12 29 06.699731     12 30 05.830170       1.03
* J1229+0203        02 19 43.30570    * 02 03 08.59820      01 56 45.51768        1.38
  3C273             /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
  1226+023          GSFC 2016a X/S astro solution,  32136 observations.
  J1229+02          Doppler based on other sources.
```

EFFECT OF SOLAR CORONA

```
  The solar corona can cause unstable phases for sources too close to the Sun.
  SCHED provides warnings at individual scans for distances less than 10 degrees.
  The distance from the Sun to each source in this schedule is:
    Source         Sun distance (deg)
   S255               102.4
   J0319+4130          69.7
   J0359+5057          79.6
   J0555+3948          98.1
   J0613+1708         102.6
   J0854+2006         139.8
   J1229+0203         164.0

  Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
  that the Sun will cause amplitude reductions on the  longest VLBA baselines
  at a solar distance of 60deg F^(-0.6) where F is in GHz.
  For common VLBI bands, this is:
       1.6 GHz         45. deg
       2.3 GHz         36. deg
       5.0 GHz         23. deg
       8.4 GHz         17. deg
      15.0 GHz         12. deg
      22.0 GHz          9. deg
```

# ep113dtr

## The variable VLBI core of NGC 4151

PI: *F. Panessa*


```
Address:  INAF-IAPS
          via del Fosso del Cavaliere, 100
          00133 - Rome
          Italy

Phone:    +39 06 4548 8456
EMAIL:    francesca.panessa@iaps.inaf.it
Fax:      ---
Phone during observation: +39 06 4548 8456
```


Observing mode: Phase-referencing of a source at 1.3cm (1024 Mb/s)

```
Schedule for TORUN     (Code Tr )                                  Page   2
               The variable VLBI core of NGC 4151
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-------------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-------------------------------------------------------------------------------------------

 --- Mon  11 Mar 2019   Day  70 ---

 Next scan frequencies:  22187.49  22187.49  22187.49  22187.49  22219.49  22219.49  22219.49  22219.4
                         22251.49  22251.49  22251.49  22251.49  22283.49  22283.49  22283.49  22283.4
 Next BBC frequencies:     687.49    687.49    687.49    687.49    719.49    719.49    719.49    719.4
                           751.49    751.49    751.49    751.49    783.49    783.49    783.49    783.4
 Next scan bandwidths:      16.00     16.00     16.00     16.00     16.00     16.00     16.00     16.0
                            16.00     16.00     16.00     16.00     16.00     16.00     16.00     16.0

23 00 00  3C286        11 31 31  58.5 124.0 -2.0     -35.2     0        0   23 00 00
23 02 00  ---          11 33 31  58.8 124.7 -2.0     -34.9   120       15   23 00 01

23 04 20  J1209+4119   11 35 52  76.8 150.5 -0.6     -23.2    59       15   23 04 20
23 06 20  =1206+416    11 37 52  76.9 152.0 -0.5     -22.0   120       31   23 04 21

23 06 20  NGC4151      11 37 52  75.0 154.0 -0.6     -19.9   -21       31   No stop
23 10 20  ---          11 41 53  75.3 156.8 -0.5     -17.8   219       62   23 06 21

23 10 20  J1209+4119   11 41 53  77.2 155.1 -0.5     -19.6   -21       62   No stop
23 12 20  =1206+416    11 43 53  77.3 156.7 -0.4     -18.4    99       77   23 10 21

23 12 20  NGC4151      11 43 53  75.4 158.3 -0.5     -16.7   -21       77   No stop
23 16 20  ---          11 47 54  75.6 161.3 -0.4     -14.4   219      108   23 12 21

23 17 00  J1209+4119   11 48 34  77.6 160.6 -0.4     -15.4    19      108   23 17 00
23 19 00  =1206+416    11 50 34  77.7 162.3 -0.3     -14.0   120      123   23 17 01

23 19 00  NGC4151      11 50 34  75.7 163.3 -0.3     -12.9   -21      123   No stop
23 23 00  ---          11 54 35  75.9 166.4 -0.3     -10.5   219      154   23 19 01

23 23 00  J1209+4119   11 54 35  77.8 165.8 -0.3     -11.3   -21      154   No stop
23 25 00  =1206+416    11 56 35  77.9 167.6 -0.2      -9.9    99      169   23 23 01

23 25 00  NGC4151      11 56 35  76.0 168.0 -0.2      -9.3   -21      169   No stop
23 29 00  ---          12 00 36  76.1 171.2 -0.2      -6.8   219      200   23 25 01
```

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 23 29 40 | J1209+4119 | 12 01 16 | 78.0 | 171.7 | -0.2 | -6.6 | 19 | 200 | 23 29 40 |
| 23 31 40 | =1206+416 | 12 03 16 | 78.1 | 173.5 | -0.1 | -5.2 | 120 | 215 | 23 29 41 |
| 23 31 40 | NGC4151 | 12 03 16 | 76.1 | 173.3 | -0.1 | -5.2 | -21 | 215 | No stop |
| 23 35 40 | --- | 12 07 17 | 76.2 | 176.6 | -0.1 | -2.7 | 219 | 246 | 23 31 41 |
| 23 35 40 | J1209+4119 | 12 07 17 | 78.1 | 177.2 | -0.1 | -2.2 | -21 | 246 | No stop |
| 23 37 40 | =1206+416 | 12 09 17 | 78.1 | 179.0 | -0.0 | -0.8 | 99 | 262 | 23 35 41 |
| 23 37 40 | NGC4151 | 12 09 17 | 76.2 | 178.2 | -0.0 | -1.4 | -21 | 262 | No stop |
| 23 41 40 | --- | 12 13 18 | 76.2 | 181.4 | 0.0 | 1.1 | 219 | 292 | 23 37 41 |

Schedule for TORUN (Code Tr ) Page 3

The variable VLBI core of NGC 4151

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Mon 11 Mar 2019 Day 70 --- | | | | | | | | | | |
| 23 42 20 | J1209+4119 | 12 13 58 | 78.1 | 183.3 | 0.1 | | 2.6 | 19 | 292 | 23 42 20 |
| 23 44 20 | =1206+416 | 12 15 58 | 78.1 | 185.1 | 0.1 | | 4.1 | 120 | 308 | 23 42 21 |
| 23 44 20 | NGC4151 | 12 15 58 | 76.2 | 183.6 | 0.1 | | 2.8 | -21 | 308 | No stop |
| 23 48 20 | --- | 12 19 59 | 76.1 | 186.8 | 0.1 | | 5.3 | 219 | 338 | 23 44 21 |
| 23 48 20 | J1209+4119 | 12 19 59 | 78.0 | 188.7 | 0.2 | | 7.0 | -21 | 338 | No stop |
| 23 50 20 | =1206+416 | 12 21 59 | 78.0 | 190.5 | 0.2 | | 8.4 | 99 | 354 | 23 48 21 |
| 23 50 20 | NGC4151 | 12 21 59 | 76.1 | 188.5 | 0.2 | | 6.5 | -21 | 354 | No stop |
| 23 54 20 | --- | 12 26 00 | 76.0 | 191.6 | 0.2 | | 9.0 | 219 | 385 | 23 50 21 |
| 23 55 00 | J1209+4119 | 12 26 40 | 77.8 | 194.7 | 0.3 | | 11.7 | 19 | 385 | 23 55 00 |
| 23 57 00 | =1206+416 | 12 28 40 | 77.7 | 196.4 | 0.3 | | 13.0 | 120 | 400 | 23 55 01 |
| --- Start: Mon 11 Mar 2019 Day 70 -- Stop: Tue 12 Mar 2019 Day 71 --- | | | | | | | | | | |
| 23 57 00 | NGC4151 | 12 28 40 | 75.9 | 193.7 | 0.3 | | 10.6 | -21 | 400 | No stop |
| 00 01 00 | --- | 12 32 41 | 75.7 | 196.8 | 0.4 | | 13.0 | 219 | 431 | 23 57 01 |
| 00 01 00 | J1209+4119 | 12 32 41 | 77.5 | 199.8 | 0.4 | | 15.7 | -21 | 431 | No stop |
| 00 03 00 | =1206+416 | 12 34 41 | 77.4 | 201.5 | 0.4 | | 17.0 | 99 | 446 | 00 01 01 |
| 00 03 00 | NGC4151 | 12 34 41 | 75.6 | 198.4 | 0.4 | | 14.1 | -21 | 446 | No stop |
| 00 07 00 | --- | 12 38 42 | 75.4 | 201.4 | 0.5 | | 16.4 | 219 | 477 | 00 03 01 |
| 00 07 40 | J1209+4119 | 12 39 22 | 77.2 | 205.3 | 0.5 | | 19.9 | 18 | 477 | 00 07 40 |
| 00 09 40 | =1206+416 | 12 41 22 | 77.0 | 206.9 | 0.5 | | 21.2 | 120 | 492 | 00 07 41 |
| 00 09 40 | NGC4151 | 12 41 22 | 75.3 | 203.3 | 0.5 | | 17.9 | -21 | 492 | No stop |
| 00 13 40 | --- | 12 45 23 | 75.0 | 206.2 | 0.6 | | 20.0 | 219 | 523 | 00 09 41 |
| 00 13 40 | J1209+4119 | 12 45 23 | 76.7 | 209.9 | 0.6 | | 23.5 | -23 | 523 | No stop |
| 00 15 40 | =1206+416 | 12 47 23 | 76.6 | 211.4 | 0.6 | | 24.6 | 97 | 538 | 00 13 41 |
| 00 15 40 | NGC4151 | 12 47 23 | 74.9 | 207.6 | 0.6 | | 21.1 | -22 | 538 | No stop |
| 00 19 40 | --- | 12 51 24 | 74.6 | 210.3 | 0.7 | | 23.1 | 218 | 569 | 00 15 41 |
| 00 20 20 | J1209+4119 | 12 52 04 | 76.2 | 214.8 | 0.7 | | 27.1 | 17 | 569 | 00 20 20 |
| 00 22 20 | =1206+416 | 12 54 04 | 76.0 | 216.2 | 0.7 | | 28.1 | 120 | 585 | 00 20 21 |
| 00 22 20 | NGC4151 | 12 54 04 | 74.4 | 212.1 | 0.7 | | 24.3 | -23 | 585 | No stop |
| 00 26 20 | --- | 12 58 05 | 74.1 | 214.7 | 0.8 | | 26.2 | 217 | 615 | 00 22 21 |

Schedule for TORUN (Code Tr ) Page 4

The variable VLBI core of NGC 4151

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Tue 12 Mar 2019 Day 71 --- | | | | | | | | | | |
| 00 26 20 | J1209+4119 | 12 58 05 | 75.7 | 218.9 | 0.8 | | 30.1 | -24 | 615 | No stop |
| 00 28 20 | =1206+416 | 13 00 05 | 75.5 | 220.2 | 0.8 | | 31.0 | 96 | 631 | 00 26 21 |
| 00 28 20 | NGC4151 | 13 00 05 | 73.9 | 215.9 | 0.8 | | 27.1 | -23 | 631 | No stop |
| 00 32 20 | --- | 13 04 06 | 73.5 | 218.4 | 0.9 | | 28.8 | 217 | 662 | 00 28 21 |
| 00 33 00 | J1209+4119 | 13 04 46 | 75.0 | 223.1 | 0.9 | | 33.1 | 16 | 662 | 00 33 00 |
| 00 35 00 | =1206+416 | 13 06 47 | 74.8 | 224.3 | 0.9 | | 33.9 | 120 | 677 | 00 33 01 |
| 00 37 20 | 3C286 | 13 09 07 | 66.9 | 167.3 | -0.4 | | -8.8 | 11 | 677 | 00 37 20 |
| 00 40 00 | --- | 13 11 47 | 67.0 | 168.8 | -0.3 | | -7.8 | 160 | 697 | 00 37 21 |
| 00 42 00 | J1209+4119 | 13 13 48 | 74.0 | 228.3 | 1.1 | | 36.6 | -14 | 697 | 00 42 00 |
| 00 44 00 | =1206+416 | 13 15 48 | 73.8 | 229.4 | 1.1 | | 37.3 | 106 | 713 | 00 42 01 |
| 00 44 00 | NGC4151 | 13 15 48 | 72.4 | 225.0 | 1.1 | | 33.3 | -23 | 713 | No stop |
| 00 48 00 | --- | 13 19 49 | 71.9 | 227.1 | 1.1 | | 34.6 | 217 | 744 | 00 44 01 |
| 00 48 40 | J1209+4119 | 13 20 29 | 73.3 | 231.9 | 1.2 | | 38.9 | 16 | 744 | 00 48 40 |
| 00 50 40 | =1206+416 | 13 22 29 | 73.0 | 232.9 | 1.2 | | 39.5 | 120 | 759 | 00 48 41 |
| 00 50 40 | NGC4151 | 13 22 29 | 71.6 | 228.4 | 1.2 | | 35.5 | -24 | 759 | No stop |
| 00 54 40 | --- | 13 26 30 | 71.2 | 230.4 | 1.2 | | 36.7 | 216 | 790 | 00 50 41 |
| 00 54 40 | J1209+4119 | 13 26 30 | 72.5 | 234.8 | 1.3 | | 40.7 | -24 | 790 | No stop |
| 00 56 40 | =1206+416 | 13 28 30 | 72.3 | 235.8 | 1.3 | | 41.3 | 96 | 805 | 00 54 41 |
| 00 56 40 | NGC4151 | 13 28 30 | 70.9 | 231.4 | 1.3 | | 37.3 | -23 | 805 | No stop |
| 01 00 40 | --- | 13 32 31 | 70.5 | 233.2 | 1.3 | | 38.4 | 217 | 836 | 00 56 41 |
| 01 01 20 | J1209+4119 | 13 33 11 | 71.7 | 237.9 | 1.4 | | 42.5 | 16 | 836 | 01 01 20 |
| 01 03 20 | =1206+416 | 13 35 11 | 71.4 | 238.8 | 1.4 | | 43.0 | 120 | 851 | 01 01 21 |
| 01 03 20 | NGC4151 | 13 35 11 | 70.1 | 234.4 | 1.4 | | 39.1 | -23 | 851 | No stop |
| 01 07 20 | --- | 13 39 12 | 69.6 | 236.2 | 1.5 | | 40.1 | 217 | 882 | 01 03 21 |
| 01 07 20 | J1209+4119 | 13 39 12 | 70.9 | 240.5 | 1.5 | | 44.0 | -24 | 882 | No stop |
| 01 09 20 | =1206+416 | 13 41 12 | 70.7 | 241.3 | 1.5 | | 44.4 | 96 | 897 | 01 07 21 |
| 01 09 20 | NGC4151 | 13 41 12 | 69.4 | 237.0 | 1.5 | | 40.6 | -23 | 897 | No stop |
| 01 13 20 | --- | 13 45 13 | 68.9 | 238.6 | 1.6 | | 41.5 | 217 | 928 | 01 09 21 |
| 01 14 00 | J1209+4119 | 13 45 53 | 70.0 | 243.1 | 1.6 | | 45.4 | 16 | 928 | 01 14 00 |
| 01 16 00 | =1206+416 | 13 47 53 | 69.8 | 243.9 | 1.6 | | 45.8 | 120 | 944 | 01 14 01 |

Schedule for TORUN (Code Tr ) Page 5

The variable VLBI core of NGC 4151

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT Stop UT | Source | LST | Start / Stop EL | AZ | HA | UP | ParA | Early Dwell | Disk GBytes | TPStart SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Tue 12 Mar 2019 Day 71 --- | | | | | | | | | | |
| 01 16 00 | NGC4151 | 13 47 53 | 68.5 | 239.7 | 1.6 | | 42.1 | -23 | 944 | No stop |
| 01 20 00 | --- | 13 51 54 | 68.0 | 241.2 | 1.7 | | 42.9 | 217 | 974 | 01 16 01 |
| 01 20 00 | J1209+4119 | 13 51 54 | 69.2 | 245.4 | 1.7 | | 46.5 | -23 | 974 | No stop |
| 01 22 00 | =1206+416 | 13 53 54 | 69.0 | 246.1 | 1.7 | | 46.9 | 97 | 990 | 01 20 01 |
| 01 22 00 | NGC4151 | 13 53 54 | 67.8 | 242.0 | 1.7 | | 43.2 | -23 | 990 | No stop |
| 01 26 00 | --- | 13 57 55 | 67.2 | 243.5 | 1.8 | | 44.0 | 217 | 1021 | 01 22 01 |
| 01 26 40 | J1209+4119 | 13 58 35 | 68.3 | 247.8 | 1.8 | | 47.6 | 17 | 1021 | 01 26 40 |
| 01 28 40 | =1206+416 | 14 00 35 | 68.0 | 248.4 | 1.8 | | 47.9 | 120 | 1036 | 01 26 41 |
| 01 28 40 | NGC4151 | 14 00 35 | 66.9 | 244.4 | 1.8 | | 44.4 | -23 | 1036 | No stop |
| 01 32 40 | --- | 14 04 36 | 66.3 | 245.8 | 1.9 | | 45.1 | 217 | 1067 | 01 28 41 |
| 01 32 40 | J1209+4119 | 14 04 36 | 67.5 | 249.8 | 1.9 | | 48.5 | -23 | 1067 | No stop |
| 01 34 40 | =1206+416 | 14 06 36 | 67.2 | 250.4 | 1.9 | | 48.8 | 97 | 1082 | 01 32 41 |
| 01 34 40 | NGC4151 | 14 06 36 | 66.0 | 246.5 | 1.9 | | 45.4 | -22 | 1082 | No stop |
| 01 38 40 | --- | 14 10 37 | 65.5 | 247.8 | 2.0 | | 45.9 | 218 | 1113 | 01 34 41 |
| 01 39 20 | J1209+4119 | 14 11 17 | 66.5 | 251.9 | 2.0 | | 49.4 | 17 | 1113 | 01 39 20 |
| 01 41 20 | =1206+416 | 14 13 17 | 66.2 | 252.5 | 2.0 | | 49.6 | 120 | 1128 | 01 39 21 |
| 01 41 20 | NGC4151 | 14 13 17 | 65.1 | 248.7 | 2.0 | | 46.3 | -22 | 1128 | No stop |
| 01 45 20 | --- | 14 17 18 | 64.5 | 249.9 | 2.1 | | 46.8 | 218 | 1159 | 01 41 21 |
| 01 45 20 | J1209+4119 | 14 17 18 | 65.7 | 253.7 | 2.1 | | 50.0 | -23 | 1159 | No stop |
| 01 47 20 | =1206+416 | 14 19 18 | 65.4 | 254.3 | 2.1 | | 50.2 | 97 | 1174 | 01 45 21 |
| 01 47 20 | NGC4151 | 14 19 18 | 64.3 | 250.5 | 2.1 | | 47.0 | -22 | 1174 | No stop |
| 01 51 20 | --- | 14 23 19 | 63.7 | 251.7 | 2.2 | | 47.5 | 218 | 1205 | 01 47 21 |
| 01 52 00 | J1209+4119 | 14 23 59 | 64.7 | 255.6 | 2.2 | | 50.6 | 18 | 1205 | 01 52 00 |
| 01 54 00 | =1206+416 | 14 26 00 | 64.4 | 256.1 | 2.3 | | 50.8 | 120 | 1221 | 01 52 01 |
| 01 54 00 | NGC4151 | 14 26 00 | 63.3 | 252.5 | 2.2 | | 47.7 | -22 | 1221 | No stop |
| 01 58 00 | --- | 14 30 00 | 62.7 | 253.7 | 2.3 | | 48.1 | 218 | 1251 | 01 54 01 |
| 01 58 00 | J1209+4119 | 14 30 00 | 63.8 | 257.2 | 2.3 | | 51.1 | -22 | 1251 | No stop |
| 02 00 00 | =1206+416 | 14 32 00 | 63.5 | 257.8 | 2.4 | | 51.3 | 98 | 1267 | 01 58 01 |

SETUP FILE INFORMATION:
NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

```
======== Setup file: sess119.K1024

  Setup group:   10         Station: TORUN            Total bit rate:  1024
  Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
  Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00

  Disk used to record data.
```

```
  1st LO=  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00
           21500.00  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00
  Net SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF SB =         U         U         U         U         U         U         U         U
                  U         U         U         U         U         U         U         U
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
                RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
                  3         7         3         7         4         8         4         8
  BBC SB=         L         L         U         U         L         L         U         U
                  L         L         U         U         L         L         U         U
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                 A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:   8  Setup file default.  Used with PCAL = off
  LO sum=   22187.49  22187.49  22187.49  22187.49  22219.49  22219.49  22219.49  22219.49
            22251.49  22251.49  22251.49  22251.49  22283.49  22283.49  22283.49  22283.49
  BBC fr=     687.49    687.49    687.49    687.49    719.49    719.49    719.49    719.49
              751.49    751.49    751.49    751.49    783.49    783.49    783.49    783.49
  Bandwd=      16.00     16.00     16.00     16.00     16.00     16.00     16.00     16.00
               16.00     16.00     16.00     16.00     16.00     16.00     16.00     16.00
   Matching frequency sets:   8

  Track assignments are:
   track1=  18, 26,  2, 10, 20, 28,  4, 12, 22, 30,  6, 14, 24, 32,  8, 16
   barrel=roll_off



 POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                        (B1950)             (J2000)             (Date)            (mas)

 * NGC4151           12 08 01.055801   * 12 10 32.583400     12 11 31.060957       0.00
                     39 41 02.10308    * 39 24 21.03100      39 17 54.18012        0.00

   1206+416          12 06 51.117947   * 12 09 22.788006     12 10 21.343591       0.17
 * J1209+4119        41 36 22.62761    * 41 19 41.37011      41 13 14.53916        0.16
                     /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                     GSFC 2016a X/S astro solution,    150 observations.

 * 3C286             13 28 49.657769   * 13 31 08.288061     13 32 01.677600       0.17
   J1331+3030        30 45 58.64066    * 30 30 32.95930      30 24 33.31208        0.16
   1328+307          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
   J1331+30          GSFC 2016a X/S astro solution,    269 observations.



EFFECT OF SOLAR CORONA

  The solar corona can cause unstable phases for sources too close to the Sun.
  SCHED provides warnings at individual scans for distances less than 10 degrees.
  The distance from the Sun to each source in this schedule is:
    Source         Sun distance (deg)
   NGC4151            142.8
   J1209+4119         141.1
   3C286              140.2
```

```
Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
that the Sun will cause amplitude reductions on the  longest VLBA baselines
at a solar distance of 60deg F^(-0.6) where F is in GHz.
For common VLBI bands, this is:
     1.6 GHz         45. deg
     2.3 GHz         36. deg
     5.0 GHz         23. deg
     8.4 GHz         17. deg
    15.0 GHz         12. deg
    22.0 GHz          9. deg
```

# n19k1tr

## Network Monitoring Experiment

PI: *Katharina Immer*


```
Address:  JIVE
          Postbus 2
          7990 AA Dwingeloo
          The Netherlands

Phone:    +31-521-596507
EMAIL:    immer@jive.eu
Fax:
Phone during observation: +31-521-596507
```


```
Observing mode:

Schedule for TORUN     (Code Tr )                                    Page   2
               Network Monitoring Experiment
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-------------------------------------------------------------------------------------------
Start UT  Source                Start / Stop                  Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-------------------------------------------------------------------------------------------

 --- Tue  12 Mar 2019   Day  71 ---

 Next scan frequencies:  22187.49  22187.49  22187.49  22187.49  22219.49  22219.49  22219.49  22219.4
                         22251.49  22251.49  22251.49  22251.49  22283.49  22283.49  22283.49  22283.4
 Next BBC frequencies:     687.49    687.49    687.49    687.49    719.49    719.49    719.49    719.4
                           751.49    751.49    751.49    751.49    783.49    783.49    783.49    783.4
 Next scan bandwidths:      16.00     16.00     16.00     16.00     16.00     16.00     16.00     16.0
                            16.00     16.00     16.00     16.00     16.00     16.00     16.00     16.0

12 00 00  0234+285     00 33 39  56.7 124.1 -2.1     -34.6     0        0   12 00 00
12 05 00  ---          00 38 40  57.3 125.7 -2.0     -33.8   300       38   12 00 01

12 07 00  0234+285     00 40 40  57.5 126.4 -2.0     -33.5   113       38   12 07 00
12 20 00  ---          00 53 42  59.0 131.0 -1.8     -31.2   780      138   12 07 01

12 22 00  0234+285     00 55 43  59.3 131.7 -1.7     -30.8   113      138   12 22 00
12 25 00  ---          00 58 43  59.6 132.9 -1.7     -30.2   180      162   12 22 01

12 27 00  0234+285     01 00 43  59.8 133.6 -1.6     -29.8   113      162   12 27 00
12 40 00  ---          01 13 46  61.2 138.7 -1.4     -26.9   780      262   12 27 01

12 42 00  0234+285     01 15 46  61.4 139.5 -1.4     -26.4   113      262   12 42 00
12 45 00  ---          01 18 46  61.7 140.8 -1.3     -25.7   180      285   12 42 01

12 47 00  0234+285     01 20 47  61.9 141.6 -1.3     -25.2   113      285   12 47 00
13 00 00  ---          01 33 49  63.0 147.3 -1.1     -21.8   780      385   12 47 01

13 04 00  0528+134     01 37 50  29.5 107.7 -3.9     -36.0    99      385   13 04 00
13 05 00  ---          01 38 50  29.6 107.9 -3.9     -36.0    60      392   13 04 01

13 07 00  0528+134     01 40 50  29.9 108.4 -3.9     -35.9   114      392   13 07 00
13 20 00  ---          01 53 52  31.7 111.4 -3.6     -35.1   780      492   13 07 01

13 22 00  0528+134     01 55 53  32.0 111.9 -3.6     -35.0   114      492   13 22 00
13 25 00  ---          01 58 53  32.4 112.6 -3.6     -34.8   180      515   13 22 01
```

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 13 27 00 | 0528+134 | 02 00 53 | 32.7 | 113.1 | -3.5 | -34.6 | 114 | 515 | 13 27 00 |
| 13 40 00 | --- | 02 13 55 | 34.5 | 116.2 | -3.3 | -33.7 | 780 | 615 | 13 27 01 |
| 13 42 00 | 0528+134 | 02 15 56 | 34.8 | 116.7 | -3.3 | -33.5 | 114 | 615 | 13 42 00 |
| 13 45 00 | --- | 02 18 56 | 35.2 | 117.4 | -3.2 | -33.2 | 180 | 638 | 13 42 01 |
| 13 47 00 | 0528+134 | 02 20 57 | 35.4 | 117.9 | -3.2 | -33.1 | 114 | 638 | 13 47 00 |
| 14 00 00 | --- | 02 33 59 | 37.1 | 121.3 | -3.0 | -31.9 | 780 | 738 | 13 47 01 |
| 14 02 00 | 0528+134 | 02 35 59 | 37.4 | 121.8 | -2.9 | -31.7 | 114 | 738 | 14 02 00 |
| 14 05 00 | --- | 02 39 00 | 37.8 | 122.6 | -2.9 | -31.4 | 180 | 762 | 14 02 01 |

Schedule for TORUN (Code Tr ) Page 3

Network Monitoring Experiment

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT | Source | Start / Stop | | | | | | Early | Disk | TPStart |
|---|---|---|---|---|---|---|---|---|---|---|
| Stop UT | | LST | EL | AZ | HA | UP | ParA | Dwell | GBytes | SYNC |
| --- Tue 12 Mar 2019 Day 71 --- | | | | | | | | | | |
| 14 07 00 | 0528+134 | 02 41 00 | 38.0 | 123.1 | -2.9 | | -31.2 | 113 | 762 | 14 07 00 |
| 14 20 00 | --- | 02 54 02 | 39.6 | 126.6 | -2.6 | | -29.7 | 780 | 862 | 14 07 01 |
| 14 22 00 | 0528+134 | 02 56 02 | 39.9 | 127.2 | -2.6 | | -29.5 | 113 | 862 | 14 22 00 |
| 14 25 00 | --- | 02 59 03 | 40.2 | 128.0 | -2.5 | | -29.1 | 180 | 885 | 14 22 01 |
| 14 27 00 | 0528+134 | 03 01 03 | 40.5 | 128.5 | -2.5 | | -28.9 | 113 | 885 | 14 27 00 |
| 14 40 00 | --- | 03 14 05 | 42.0 | 132.3 | -2.3 | | -27.2 | 780 | 985 | 14 27 01 |
| 14 42 00 | 0528+134 | 03 16 06 | 42.2 | 132.9 | -2.3 | | -26.9 | 113 | 985 | 14 42 00 |
| 14 45 00 | --- | 03 19 06 | 42.5 | 133.7 | -2.2 | | -26.5 | 180 | 1008 | 14 42 01 |
| 14 47 00 | 0528+134 | 03 21 06 | 42.7 | 134.3 | -2.2 | | -26.2 | 113 | 1008 | 14 47 00 |
| 15 00 00 | --- | 03 34 09 | 44.1 | 138.3 | -2.0 | | -24.3 | 780 | 1108 | 14 47 01 |

SETUP FILE INFORMATION:
NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

======== Setup file: sess119.K1024

Setup group: 11 Station: TORUN Total bit rate: 1024
Format: MARK5B Bits per sample: 2 Sample rate: 32.000
Number of channels: 16 DBE type: DBBC_DDC Speedup factor: 1.00

Disk used to record data.

```
 1st LO=  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00
          21500.00  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00
 Net SB=         L         L         U         U         L         L         U         U
                 L         L         U         U         L         L         U         U
 IF SB =         U         U         U         U         U         U         U         U
                 U         U         U         U         U         U         U         U
 Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
               RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
 BBC   =         1         5         1         5         2         6         2         6
                 3         7         3         7         4         8         4         8
 BBC SB=         L         L         U         U         L         L         U         U
                 L         L         U         U         L         L         U         U
 IF    =        A1        B1        A1        B1        A1        B1        A1        B1
                A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

 Frequency Set:   8  Setup file default.  Used with PCAL = off
 LO sum=   22187.49  22187.49  22187.49  22187.49  22219.49  22219.49  22219.49  22219.49
           22251.49  22251.49  22251.49  22251.49  22283.49  22283.49  22283.49  22283.49
 BBC fr=     687.49    687.49    687.49    687.49    719.49    719.49    719.49    719.49
             751.49    751.49    751.49    751.49    783.49    783.49    783.49    783.49
 Bandwd=      16.00     16.00     16.00     16.00     16.00     16.00     16.00     16.00
              16.00     16.00     16.00     16.00     16.00     16.00     16.00     16.00
  Matching frequency sets:   8

 Track assignments are:
  track1=  18, 26,  2, 10, 20, 28,  4, 12, 22, 30,  6, 14, 24, 32,  8, 16
  barrel=roll_off


POSITIONS OF SOURCES USED IN RECORDING SCANS

 Source                          Source position (RA/Dec)                        Error
                       (B1950)             (J2000)             (Date)             (mas)

* 0234+285          02 34 55.589590   * 02 37 52.405677     02 38 58.475754       0.00
  J0237+2848        28 35 11.40773    * 28 48 08.98999      28 52 58.42250        0.00
  J0237+28          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution,  58420 observations.

* 0528+134          05 28 06.759216   * 05 30 56.416746     05 32 00.575865       0.21
  J0530+1331        13 29 42.28882    * 13 31 55.14948      13 32 35.57474        0.24
  J0530+13          /home/guest/rmc/SCHED/sched11.5/catalogs/sources.gsfc
                    GSFC 2016a X/S astro solution, 138236 observations.


EFFECT OF SOLAR CORONA

 The solar corona can cause unstable phases for sources too close to the Sun.
 SCHED provides warnings at individual scans for distances less than 10 degrees.
 The distance from the Sun to each source in this schedule is:
   Source         Sun distance (deg)
  0234+285            55.7
  0528+134            91.4

 Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
 that the Sun will cause amplitude reductions on the  longest VLBA baselines
 at a solar distance of 60deg F^(-0.6) where F is in GHz.
```

```
For common VLBI bands, this is:
     1.6 GHz         45. deg
     2.3 GHz         36. deg
     5.0 GHz         23. deg
     8.4 GHz         17. deg
    15.0 GHz         12. deg
    22.0 GHz          9. deg
```

# rb005tr

RB005

PI: *Ross Burns*


```
Address:  NAOJ
          Mitaka
          Japan
          180-0022

Phone:    +81-70-2614-2570
EMAIL:    ross.burns@nao.ac.jp
Fax:
Phone during observation: +81-70-2614-2570
```


```
Observing mode:

Schedule for TORUN     (Code Tr )                                    Page   2
               RB005
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source                Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Wed  13 Mar 2019   Day  72 ---

 Next scan frequencies:  6661.76  6661.76
 Next BBC frequencies:    761.76   761.76
 Next scan bandwidths:     16.00    16.00

02 30 00  3C273        15 06 02  29.6 226.3  2.6      25.7     0        0   02 30 00
02 38 00  ---          15 14 03  28.7 228.4  2.7      26.7   480        8   02 30 01

 ---------- TSYS ----------

02 38 15  3C273        15 14 18  28.7 228.4  2.7      26.7     9        8   02 38 15
02 38 30  ---          15 14 33  28.6 228.5  2.7      26.7    15        8   02 38 16

02 38 30  3C279        15 14 33  24.3 218.0  2.3      21.8   -36        8   No stop
02 47 00  ---          15 23 05  23.5 220.1  2.4      22.9   474       16   02 38 31

 ---------- TSYS ----------

02 47 15  3C279        15 23 20  23.4 220.2  2.4      22.9     9       16   02 47 15
02 47 30  ---          15 23 35  23.4 220.3  2.4      23.0    15       16   02 47 16

02 47 30  OQ208        15 23 35  61.6 216.9  1.3      24.2  -156       16   No stop
02 57 00  ---          15 33 06  60.7 220.8  1.4      26.5   414       25   02 47 31

 ---------- TSYS ----------

02 57 15  OQ208        15 33 21  60.7 220.9  1.4      26.5     9       25   02 57 15
02 57 30  ---          15 33 36  60.7 221.0  1.4      26.6    15       26   02 57 16

02 57 30  J1635+3808   15 33 36  71.5 138.1 -1.0     -30.6  -178       26   No stop
03 07 00  =1633+382    15 43 08  72.4 143.4 -0.9     -27.0   392       35   02 57 31

 ---------- TSYS ----------

03 07 15  J1635+3808   15 43 23  72.5 143.6 -0.9     -26.9     8       35   03 07 15
```

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 03 07 30 | =1633+382 | 15 43 38 | 72.5 | 143.7 | -0.9 | -26.8 | 15 | 35 | 03 07 16 |
| 03 07 30 | J1745-2900 | 15 43 38 | 3.6 | 153.3 | -2.1 | -17.9 | -271 | 35 | No stop |
| 03 17 30 | =1742-289 | 15 53 40 | 4.3 | 155.4 | -1.9 | -16.6 | 329 | 45 | 03 07 31 |
| 03 23 45 | G358 | 15 59 56 | 4.0 | 157.5 | -1.7 | -15.4 | 361 | 45 | 03 23 45 |
| 03 25 45 | --- | 16 01 56 | 4.1 | 157.9 | -1.7 | -15.1 | 120 | 47 | 03 23 46 |
| 03 27 30 | G358 | 16 03 41 | 4.2 | 158.3 | -1.7 | -14.8 | 99 | 47 | 03 27 30 |
| 03 29 30 | --- | 16 05 42 | 4.3 | 158.7 | -1.6 | -14.6 | 120 | 49 | 03 27 31 |

```
Schedule for TORUN     (Code Tr )                                  Page   3
               RB005
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Wed  13 Mar 2019   Day  72 ---

 ---------- Tsys ----------

03 31 45  J1743-3058   16 07 57   3.3 159.4 -1.6     -14.2   118       49   03 31 45
03 33 30  =1740-309    16 09 42   3.4 159.8 -1.6     -14.0   105       50   03 31 46

03 33 30  G358         16 09 42   4.5 159.6 -1.6     -14.0   -17       50   No stop
03 35 30  ---          16 11 43   4.6 160.0 -1.5     -13.7   103       52   03 33 31

03 35 30  J1743-3058   16 11 43   3.5 160.2 -1.5     -13.7   -17       52   No stop
03 37 15  =1740-309    16 13 28   3.6 160.6 -1.5     -13.5    88       54   03 35 31

03 37 15  G358         16 13 28   4.7 160.4 -1.5     -13.5   -17       54   No stop
03 39 15  ---          16 15 28   4.8 160.8 -1.5     -13.2   103       56   03 37 16

03 39 15  J1743-3058   16 15 28   3.7 161.0 -1.5     -13.2   -17       56   No stop
03 41 00  =1740-309    16 17 14   3.8 161.4 -1.5     -12.9    88       57   03 39 16

 ---------- Tsys ----------

03 41 15  J1744-3116   16 17 29   3.5 161.3 -1.5     -13.0     3       57   03 41 15
03 43 00  =1741-312    16 19 14   3.6 161.6 -1.4     -12.8   105       59   03 41 16

03 43 00  G358         16 19 14   5.0 161.6 -1.4     -12.6   -19       59   No stop
03 45 00  ---          16 21 14   5.1 162.0 -1.4     -12.4   101       61   03 43 01

03 45 00  J1744-3116   16 21 14   3.6 162.0 -1.4     -12.5   -19       61   No stop
03 46 45  =1741-312    16 23 00   3.7 162.4 -1.4     -12.3    86       63   03 45 01

03 46 45  G358         16 23 00   5.2 162.4 -1.4     -12.1   -19       63   No stop
03 48 45  ---          16 25 00   5.3 162.8 -1.3     -11.8   101       65   03 46 46

03 48 45  J1744-3116   16 25 00   3.8 162.8 -1.3     -12.0   -19       65   No stop
03 50 30  =1741-312    16 26 45   3.9 163.2 -1.3     -11.7    86       66   03 48 46

 ---------- Tsys ----------

03 51 00  J1743-3058   16 27 15   4.3 163.5 -1.3     -11.5    18       66   03 51 00
03 52 45  =1740-309    16 29 01   4.3 163.8 -1.3     -11.2   105       68   03 51 01

03 52 45  G358         16 29 01   5.4 163.7 -1.3     -11.2   -17       68   No stop
03 54 45  ---          16 31 01   5.5 164.1 -1.2     -10.9   103       70   03 52 46

03 54 45  J1743-3058   16 31 01   4.4 164.3 -1.2     -10.9   -17       70   No stop
03 56 30  =1740-309    16 32 46   4.5 164.6 -1.2     -10.7    88       72   03 54 46
```

```
Schedule for TORUN     (Code Tr )                                  Page   4
               RB005
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Wed  13 Mar 2019   Day  72 ---

03 56 30  G358         16 32 46   5.6 164.5 -1.2     -10.7   -17       72   No stop
03 58 30  ---          16 34 47   5.7 164.9 -1.2     -10.4   103       74   03 56 31

03 58 30  J1743-3058   16 34 47   4.6 165.1 -1.2     -10.4   -17       74   No stop
04 00 15  =1740-309    16 36 32   4.6 165.4 -1.1     -10.1    88       75   03 58 31

 ---------- Tsys ----------

04 00 30  J1744-3116   16 36 47   4.3 165.3 -1.1     -10.3     3       75   04 00 30
04 02 15  =1741-312    16 38 32   4.4 165.7 -1.1     -10.0   105       77   04 00 31

04 02 15  G358         16 38 32   5.8 165.7 -1.1      -9.8   -19       77   No stop
04 04 15  ---          16 40 32   5.9 166.1 -1.1      -9.6   101       79   04 02 16

04 04 15  J1744-3116   16 40 32   4.4 166.1 -1.1      -9.7   -19       79   No stop
04 06 00  =1741-312    16 42 18   4.5 166.5 -1.1      -9.5    86       81   04 04 16

04 06 00  G358         16 42 18   5.9 166.5 -1.0      -9.3   -19       81   No stop
04 08 00  ---          16 44 18   6.0 166.9 -1.0      -9.0   101       82   04 06 01

04 08 00  J1744-3116   16 44 18   4.6 166.9 -1.0      -9.2   -19       82   No stop
04 09 45  =1741-312    16 46 03   4.6 167.3 -1.0      -8.9    86       84   04 08 01

 ---------- Tsys ----------

04 10 15  J1743-3058   16 46 33   5.0 167.6 -1.0      -8.7    18       84   04 10 15
04 12 00  =1740-309    16 48 19   5.0 167.9 -0.9      -8.4   105       86   04 10 16

04 12 00  G358         16 48 19   6.1 167.8 -0.9      -8.4   -17       86   No stop
04 14 00  ---          16 50 19   6.2 168.2 -0.9      -8.1   103       88   04 12 01

04 14 00  J1743-3058   16 50 19   5.1 168.4 -0.9      -8.1   -17       88   No stop
04 15 45  =1740-309    16 52 04   5.2 168.7 -0.9      -7.9    88       89   04 14 01

04 15 45  G358         16 52 04   6.3 168.6 -0.9      -7.9   -17       89   No stop
04 17 45  ---          16 54 05   6.3 169.1 -0.8      -7.6   103       91   04 15 46

04 17 45  J1743-3058   16 54 05   5.2 169.2 -0.8      -7.6   -17       91   No stop
04 19 30  =1740-309    16 55 50   5.3 169.5 -0.8      -7.3    88       93   04 17 46

 ---------- Pol ----------

04 23 30  BLLAC        16 59 51  10.8  99.7 -5.1     -36.3    85       93   04 23 30
04 28 00  ---          17 04 21  11.5 100.6 -5.0     -36.2   270       97   04 23 31
```

```
Schedule for TORUN     (Code Tr )                                  Page   5
               RB005
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Wed  13 Mar 2019   Day  72 ---

 ---------- flag ----------

04 28 15  BLLAC        17 04 36  11.5 100.7 -5.0     -36.2     9       97   04 28 15
04 28 30  ---          17 04 51  11.6 100.7 -5.0     -36.2    15       98   04 28 16

 ---------- flag ----------

04 32 30  J1744-3116   17 08 52   5.2 172.1 -0.6      -5.5    83       98   04 32 30
04 32 45  =1741-312    17 09 07   5.2 172.2 -0.6      -5.5    15       98   04 32 31

 ---------- Tsys ----------

04 33 00  J1744-3116   17 09 22   5.3 172.2 -0.6      -5.4     9       98   04 33 00
04 34 45  =1741-312    17 11 07   5.3 172.6 -0.6      -5.2   105      100   04 33 01

04 34 45  G358         17 11 07   6.7 172.7 -0.6      -5.0   -19      100   No stop
04 36 45  ---          17 13 08   6.8 173.2 -0.5      -4.7   101      101   04 34 46

04 36 45  J1744-3116   17 13 08   5.3 173.0 -0.5      -4.9   -19      101   No stop
04 38 30  =1741-312    17 14 53   5.4 173.4 -0.5      -4.6    86      103   04 36 46

04 38 30  G358         17 14 53   6.8 173.6 -0.5      -4.5   -19      103   No stop
04 40 30  ---          17 16 53   6.8 174.0 -0.5      -4.1   101      105   04 38 31

04 40 30  J1744-3116   17 16 53   5.4 173.8 -0.5      -4.3   -19      105   No stop
04 42 15  =1741-312    17 18 39   5.4 174.2 -0.4      -4.1    86      107   04 40 31

 ---------- Tsys ----------

04 42 45  J1743-3058   17 19 09   5.7 174.5 -0.4      -3.8    18      107   04 42 45
04 44 30  =1740-309    17 20 54   5.8 174.9 -0.4      -3.6   105      108   04 42 46

04 44 30  G358         17 20 54   6.9 174.9 -0.4      -3.5   -17      108   No stop
04 46 30  ---          17 22 54   6.9 175.3 -0.4      -3.2   103      110   04 44 31

04 46 30  J1743-3058   17 22 54   5.8 175.3 -0.4      -3.3   -17      110   No stop
04 48 15  =1740-309    17 24 40   5.8 175.7 -0.3      -3.0    88      112   04 46 31

04 48 15  G358         17 24 40   6.9 175.7 -0.3      -3.0   -17      112   No stop
04 50 15  ---          17 26 40   6.9 176.1 -0.3      -2.7   103      114   04 48 16

04 50 15  J1743-3058   17 26 40   5.8 176.2 -0.3      -2.7   -17      114   No stop
04 52 00  =1740-309    17 28 25   5.9 176.5 -0.3      -2.4    88      116   04 50 16
```

```
Schedule for TORUN     (Code Tr )                                  Page   6
               RB005
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Wed  13 Mar 2019   Day  72 ---

 ---------- Tsys ----------

04 52 15  J1744-3116   17 28 40   5.5 176.4 -0.3      -2.6     4      116   04 52 15
04 54 00  =1741-312    17 30 26   5.6 176.7 -0.3      -2.3   105      117   04 52 16

04 54 00  G358         17 30 26   7.0 177.0 -0.2      -2.1   -19      117   No stop
04 56 00  ---          17 32 26   7.0 177.4 -0.2      -1.8   101      119   04 54 01

04 56 00  J1744-3116   17 32 26   5.6 177.2 -0.2      -2.0   -19      119   No stop
04 57 45  =1741-312    17 34 11   5.6 177.5 -0.2      -1.7    86      121   04 56 01

04 57 45  G358         17 34 11   7.0 177.8 -0.2      -1.5   -19      121   No stop
04 59 45  ---          17 36 12   7.0 178.2 -0.1      -1.2   101      123   04 57 46

04 59 45  J1744-3116   17 36 12   5.6 178.0 -0.2      -1.4   -19      123   No stop
05 01 30  =1741-312    17 37 57   5.6 178.4 -0.1      -1.2    86      125   04 59 46

 ---------- Tsys ----------

05 02 00  J1743-3058   17 38 27   5.9 178.7 -0.1      -0.9    19      125   05 02 00
05 03 45  =1740-309    17 40 12   5.9 179.1 -0.1      -0.7   105      126   05 02 01

05 03 45  G358         17 40 12   7.0 179.1 -0.1      -0.6   -17      126   No stop
05 05 45  ---          17 42 13   7.0 179.5 -0.0      -0.3   103      128   05 03 46

05 05 45  J1743-3058   17 42 13   5.9 179.5 -0.0      -0.3   -17      128   No stop
05 07 30  =1740-309    17 43 58   5.9 179.9 -0.0      -0.1    88      130   05 05 46

05 07 30  G358         17 43 58   7.0 179.9 -0.0      -0.1   -17      130   No stop
05 09 30  ---          17 45 58   7.0 180.3  0.0       0.2   103      132   05 07 31

05 09 30  J1743-3058   17 45 58   5.9 180.3  0.0       0.2   -17      132   No stop
05 11 15  =1740-309    17 47 43   5.9 180.7  0.1       0.5    88      133   05 09 31

 ---------- Tsys ----------

05 11 30  J1744-3116   17 47 59   5.6 180.5  0.0       0.4     4      133   05 11 30
05 13 15  =1741-312    17 49 44   5.6 180.9  0.1       0.6   105      135   05 11 31

05 13 15  G358         17 49 44   7.0 181.2  0.1       0.8   -19      135   No stop
05 15 15  ---          17 51 44   7.0 181.6  0.1       1.1   101      137   05 13 16

05 15 15  J1744-3116   17 51 44   5.6 181.3  0.1       0.9   -19      137   No stop
05 17 00  =1741-312    17 53 29   5.6 181.7  0.1       1.2    86      139   05 15 16
```

```
Schedule for TORUN     (Code Tr )                                  Page   7
               RB005
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Wed  13 Mar 2019   Day  72 ---

05 17 00  G358         17 53 29   7.0 182.0  0.2       1.4   -19      139   No stop
05 19 00  ---          17 55 30   7.0 182.4  0.2       1.7   101      141   05 17 01

05 19 00  J1744-3116   17 55 30   5.6 182.1  0.2       1.5   -19      141   No stop
05 20 45  =1741-312    17 57 15   5.6 182.5  0.2       1.8    86      142   05 19 01

 ---------- Tsys ----------

05 21 15  J1743-3058   17 57 45   5.9 182.9  0.2       2.0    19      142   05 21 15
05 23 00  =1740-309    17 59 30   5.9 183.2  0.2       2.3   105      144   05 21 16

05 23 00  G358         17 59 30   7.0 183.3  0.3       2.3   -17      144   No stop
05 25 00  ---          18 01 31   7.0 183.7  0.3       2.6   103      146   05 23 01

05 25 00  J1743-3058   18 01 31   5.8 183.7  0.3       2.6   -17      146   No stop
05 26 45  =1740-309    18 03 16   5.8 184.0  0.3       2.8    88      148   05 25 01

05 26 45  G358         18 03 16   6.9 184.1  0.3       2.9   -17      148   No stop
05 28 45  ---          18 05 16   6.9 184.6  0.3       3.2   103      150   05 26 46

05 28 45  J1743-3058   18 05 16   5.8 184.5  0.3       3.1   -17      150   No stop
05 30 30  =1740-309    18 07 02   5.8 184.8  0.4       3.4    88      151   05 28 46

 ---------- Pol ----------

05 34 30  BLLAC        18 11 02  21.0 114.9 -3.9     -33.1    84      151   05 34 30
05 39 00  ---          18 15 33  21.6 115.9 -3.8     -32.7   270      156   05 34 31

 ---------- flag ----------

05 39 15  BLLAC        18 15 48  21.6 115.9 -3.8     -32.7     9      156   05 39 15
05 39 30  ---          18 16 03  21.7 116.0 -3.8     -32.7    15      156   05 39 16

 ---------- flag ----------

05 43 30  J1744-3116   18 20 04   5.3 187.4  0.6       5.2    83      156   05 43 30
05 43 45  =1741-312    18 20 19   5.3 187.4  0.6       5.2    15      156   05 43 31

 ---------- Tsys ----------

05 44 00  J1744-3116   18 20 34   5.3 187.5  0.6       5.3     9      156   05 44 00
05 45 45  =1741-312    18 22 19   5.2 187.9  0.6       5.5   105      158   05 44 01

05 45 45  G358         18 22 19   6.6 188.3  0.6       5.7   -19      158   No stop
05 47 45  ---          18 24 19   6.6 188.7  0.7       6.0   101      160   05 45 46
```

```
Schedule for TORUN     (Code Tr )                                  Page   8
               RB005
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                  Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Wed  13 Mar 2019   Day  72 ---

05 47 45  J1744-3116   18 24 19   5.2 188.3  0.6       5.8   -19      160   No stop
05 49 30  =1741-312    18 26 05   5.2 188.7  0.7       6.1    86      161   05 47 46

05 49 30  G358         18 26 05   6.5 189.1  0.7       6.3   -19      161   No stop
05 51 30  ---          18 28 05   6.5 189.5  0.7       6.6   101      163   05 49 31

05 51 30  J1744-3116   18 28 05   5.1 189.1  0.7       6.4   -19      163   No stop
05 53 15  =1741-312    18 29 50   5.1 189.5  0.7       6.6    86      165   05 51 31

 ---------- Tsys ----------

05 53 45  J1743-3058   18 30 20   5.3 189.8  0.8       6.9    19      165   05 53 45
05 55 30  =1740-309    18 32 06   5.3 190.2  0.8       7.1   105      167   05 53 46

05 55 30  G358         18 32 06   6.4 190.4  0.8       7.2   -17      167   No stop
05 57 30  ---          18 34 06   6.3 190.8  0.8       7.5   103      169   05 55 31

05 57 30  J1743-3058   18 34 06   5.2 190.7  0.8       7.4   -17      169   No stop
05 59 15  =1740-309    18 35 51   5.2 191.0  0.9       7.7    88      170   05 57 31

05 59 15  G358         18 35 51   6.3 191.2  0.9       7.7   -17      170   No stop
06 01 15  ---          18 37 52   6.2 191.6  0.9       8.0   103      172   05 59 16

06 01 15  J1743-3058   18 37 52   5.1 191.5  0.9       8.0   -17      172   No stop
06 03 00  =1740-309    18 39 37   5.1 191.8  0.9       8.3    88      174   06 01 16

 ---------- Tsys ----------

06 03 15  J1744-3116   18 39 52   4.8 191.6  0.9       8.1     4      174   06 03 15
06 05 00  =1741-312    18 41 37   4.7 192.0  0.9       8.4   105      175   06 03 16

06 05 00  G358         18 41 37   6.1 192.4  1.0       8.6   -18      175   No stop
06 07 00  ---          18 43 38   6.0 192.9  1.0       8.9   102      177   06 05 01

06 07 00  J1744-3116   18 43 38   4.7 192.4  1.0       8.7   -18      177   No stop
06 08 45  =1741-312    18 45 23   4.6 192.8  1.0       8.9    87      179   06 07 01

06 08 45  G358         18 45 23   6.0 193.3  1.0       9.1   -18      179   No stop
06 10 45  ---          18 47 23   5.9 193.7  1.1       9.4   102      181   06 08 46

06 10 45  J1744-3116   18 47 23   4.6 193.2  1.0       9.2   -18      181   No stop
06 12 30  =1741-312    18 49 09   4.5 193.6  1.1       9.5    87      183   06 10 46
```

```
Schedule for TORUN     (Code Tr )                                  Page   9
               RB005
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Wed  13 Mar 2019   Day  72 ---

 ---------- Tsys ----------

06 13 00  J1743-3058   18 49 39   4.7 194.0  1.1       9.7    19      183   06 13 00
06 14 45  =1740-309    18 51 24   4.7 194.3  1.1      10.0   105      184   06 13 01

06 14 45  G358         18 51 24   5.8 194.6  1.1      10.0   -17      184   No stop
06 16 45  ---          18 53 24   5.7 195.0  1.2      10.3   103      186   06 14 46

06 16 45  J1743-3058   18 53 24   4.6 194.8  1.1      10.3   -17      186   No stop
06 18 30  =1740-309    18 55 10   4.5 195.1  1.2      10.5    88      188   06 16 46

06 18 30  G358         18 55 10   5.6 195.4  1.2      10.6   -17      188   No stop
06 20 30  ---          18 57 10   5.5 195.8  1.2      10.9   103      190   06 18 31

06 20 30  J1743-3058   18 57 10   4.5 195.5  1.2      10.8   -17      190   No stop
06 22 15  =1740-309    18 58 55   4.4 195.9  1.2      11.1    88      192   06 20 31

 ---------- Tsys ----------

06 22 30  J1744-3116   18 59 10   4.1 195.7  1.2      10.9     4      192   06 22 30
06 24 15  =1741-312    19 00 55   4.0 196.1  1.3      11.2   105      193   06 22 31

06 24 15  G358         19 00 55   5.4 196.6  1.3      11.4   -18      193   No stop
06 26 15  ---          19 02 56   5.3 197.0  1.3      11.7   102      195   06 24 16

06 26 15  J1744-3116   19 02 56   4.0 196.5  1.3      11.5   -18      195   No stop
06 28 00  =1741-312    19 04 41   3.9 196.8  1.3      11.7    87      197   06 26 16

06 28 00  G358         19 04 41   5.2 197.4  1.3      11.9   -18      197   No stop
06 30 00  ---          19 06 41   5.1 197.8  1.4      12.2   102      199   06 28 01

06 30 00  J1744-3116   19 06 41   3.8 197.3  1.4      12.0   -18      199   No stop
06 31 45  =1741-312    19 08 27   3.7 197.6  1.4      12.3    87      200   06 30 01

 ---------- Tsys ----------

06 32 15  J1743-3058   19 08 57   3.9 198.0  1.4      12.5    19      200   06 32 15
06 34 00  =1740-309    19 10 42   3.9 198.4  1.4      12.8   105      202   06 32 16

06 34 00  G358         19 10 42   4.9 198.7  1.4      12.8   -17      202   No stop
06 36 00  ---          19 12 42   4.8 199.1  1.5      13.1   103      204   06 34 01

06 36 00  J1743-3058   19 12 42   3.8 198.8  1.5      13.1   -17      204   No stop
06 37 45  =1740-309    19 14 28   3.7 199.2  1.5      13.3    88      206   06 36 01
```

```
Schedule for TORUN     (Code Tr )                                  Page  10
               RB005
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Wed  13 Mar 2019   Day  72 ---

06 37 45  G358         19 14 28   4.7 199.5  1.5      13.3   -17      206   No stop
06 39 45  ---          19 16 28   4.6 199.9  1.5      13.6   103      208   06 37 46

06 39 45  J1743-3058   19 16 28   3.6 199.6  1.5      13.6   -17      208   No stop
06 41 30  =1740-309    19 18 13   3.5 200.0  1.6      13.8    88      209   06 39 46

 ---------- Pol ----------

06 45 30  BLLAC        19 22 14  29.9 132.0 -2.7     -26.6    88      209   06 45 30
06 50 00  ---          19 26 45  30.4 133.1 -2.6     -26.0   270      214   06 45 31

 ---------- flag ----------

06 50 15  BLLAC        19 27 00  30.4 133.2 -2.6     -26.0     9      214   06 50 15
06 50 30  ---          19 27 15  30.5 133.3 -2.6     -26.0    15      214   06 50 16

06 56 45  G358         19 33 31   3.7 203.5  1.8      16.0   221      214   06 56 45
06 58 45  ---          19 35 31   3.6 203.9  1.9      16.3   120      216   06 56 46

07 00 30  G358         19 37 16   3.5 204.3  1.9      16.5    99      216   07 00 30
07 02 30  ---          19 39 17   3.3 204.7  1.9      16.8   120      218   07 00 31

07 06 30  G358         19 43 17   3.1 205.5  2.0      17.4   233      218   07 06 30
07 08 30  ---          19 45 18   3.0 205.9  2.0  D   17.6     0      220   07 06 31

 ---------- Pol ----------

07 56 30  BLLAC        20 33 26  36.5 151.7 -1.5     -16.5  2730      220   07 56 30
08 01 00  ---          20 37 56  36.8 153.1 -1.4     -15.8   270      224   07 56 31

 ---------- flag ----------

08 01 15  BLLAC        20 38 11  36.8 153.2 -1.4     -15.8     9      224   08 01 15
08 01 30  ---          20 38 26  36.9 153.2 -1.4     -15.7    15      224   08 01 16

 ---------- Pol ----------

 Next scan frequencies:  6174.74  6174.74
 Next BBC frequencies:    774.74   774.74

08 05 30  BLLAC        20 42 27  37.1 154.4 -1.3     -15.0   233      224   08 05 30
08 10 00  ---          20 46 58  37.4 155.8 -1.3     -14.3   270      229   08 05 31
```

```
Schedule for TORUN     (Code Tr )                                  Page  11
               RB005
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Wed  13 Mar 2019   Day  72 ---

 ---------- flag ----------

08 10 15  BLLAC        20 47 13  37.4 155.9 -1.3     -14.2     9      229   08 10 15
08 10 30  ---          20 47 28  37.4 156.0 -1.3     -14.2    15      229   08 10 16

 ---------- Pol ----------

09 16 30  BLLAC        21 53 39  39.8 176.9 -0.2      -1.8  3950      229   09 16 30
09 21 00  ---          21 58 09  39.8 178.4 -0.1      -1.0   270      233   09 16 31

 ---------- flag ----------

09 21 15  BLLAC        21 58 25  39.8 178.5 -0.1      -0.9     9      233   09 21 15
09 21 30  ---          21 58 40  39.8 178.6 -0.1      -0.9    15      233   09 21 16

 ---------- Pol ----------

 Next scan frequencies:  6661.76  6661.76
 Next BBC frequencies:    761.76   761.76

09 25 30  BLLAC        22 02 40  39.8 179.9 -0.0      -0.1   233      233   09 25 30
09 31 30  ---          22 08 41  39.8 181.8  0.1       1.1   360      239   09 25 31

 ---------- Pol ----------

09 31 45  BLLAC        22 08 56  39.8 181.9  0.1       1.1     9      239   09 31 45
09 38 00  ---          22 15 12  39.7 183.9  0.2       2.4   375      245   09 31 46

 ---------- Pol ----------

09 38 15  BLLAC        22 15 27  39.7 184.0  0.2       2.4     9      245   09 38 15
09 44 30  ---          22 21 43  39.7 186.1  0.3       3.6   375      251   09 38 16

 ---------- Pol ----------

09 44 45  BLLAC        22 21 58  39.7 186.1  0.3       3.7     9      251   09 44 45
09 51 00  ---          22 28 14  39.5 188.2  0.4       4.9   375      257   09 44 46

 ---------- Pol ----------

09 51 15  BLLAC        22 28 29  39.5 188.2  0.4       4.9     9      257   09 51 15
09 57 30  ---          22 34 45  39.4 190.3  0.5       6.1   375      263   09 51 16

10 00 30  3C84         22 37 46  42.7  74.0 -4.7     -50.5   -67      263   10 00 30
10 07 30  ---          22 44 47  43.7  75.2 -4.6     -50.9   353      270   10 00 31
```

```
Schedule for TORUN     (Code Tr )                                  Page  12
               RB005
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Wed  13 Mar 2019   Day  72 ---

 ---------- Pol ----------

10 10 30  BLLAC        22 47 48  39.0 194.4  0.7       8.6   -74      270   10 10 30
10 17 30  ---          22 54 49  38.7 196.6  0.9       9.9   346      277   10 10 31

 ---------- Pol ----------

10 17 45  BLLAC        22 55 04  38.7 196.7  0.9      10.0     9      277   10 17 45
10 23 45  ---          23 01 05  38.4 198.6  1.0      11.1   360      282   10 17 46

 ---------- Pol ----------

10 24 00  BLLAC        23 01 20  38.4 198.7  1.0      11.1     9      282   10 24 00
10 30 00  ---          23 07 21  38.1 200.6  1.1      12.2   360      288   10 24 01



SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: sess119.M6667

   Setup group:    5         Station: TORUN            Total bit rate:   128
   Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
   Number of channels:  2    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
 1st LO=   5900.00   5900.00
 Net SB=         U         U
 IF SB =         U         U
 Pol.  =       RCP       LCP
 BBC   =         1         5
 BBC SB=         U         U
 IF    =        A1        B1

The following frequency sets based on these setups were used.

Frequency Set:   4  Based on FREQ, BW, and/or DOPPLER in schedule.  Used with PCAL = off
 LO sum=   6661.76  6661.76
 BBC fr=    761.76   761.76
 Bandwd=     16.00    16.00
  Matching frequency sets:   4

 Track assignments are:
  track1=   2,  4
  barrel=roll_off


======== Setup file: sess119.M6182

 Setup group:   13         Station: TORUN            Total bit rate:   128
 Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
 Number of channels:  2    DBE type: DBBC_DDC        Speedup factor:   1.00

 Disk used to record data.
```

```
  1st LO=   5400.00   5400.00
  Net SB=         U         U
  IF SB =         U         U
  Pol.  =      RCP       LCP
  BBC   =         1         5
  BBC SB=         U         U
  IF    =        A1        B1

 The following frequency sets based on these setups were used.

 Frequency Set:  12  Based on FREQ, BW, and/or DOPPLER in schedule.  Used with PCAL = off
  LO sum=   6174.74  6174.74
  BBC fr=    774.74   774.74
  Bandwd=     16.00    16.00
   Matching frequency sets:  12

  Track assignments are:
   track1=   2,  4
   barrel=roll_off



POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                       (B1950)             (J2000)             (Date)            (mas)

* G358               17 39 58.086976   * 17 43 10.095260     17 44 22.474071       0.00
                    -29 50 25.43128    *-29 51 45.96245     -29 52 07.21991        0.00
                     Doppler based on LSR frame and radio definition.  Velocities:
                        -16.00   -16.00

  0316+413           03 16 29.567283   * 03 19 48.160114     03 21 02.639550       0.14
  J0319+4130         41 19 51.91856    * 41 30 42.10568      41 34 47.18273        0.11
* 3C84               /home/guest/rmc/SCHED/sched11.5/catalogs/sources.rfc
                     rfc_2018a Petrov and Kovalev, in preparation  15726 observations
                     Doppler based on other sources.

  1226+023           12 26 33.245836   * 12 29 06.699732     12 30 05.849258       0.10
  J1229+0203         02 19 43.30553    * 02 03 08.59803      01 56 45.44631        0.10
* 3C273              /home/guest/rmc/SCHED/sched11.5/catalogs/sources.rfc
                     rfc_2018a Petrov and Kovalev, in preparation  32342 observations
                     Doppler based on other sources.

  1253-055           12 53 35.831306   * 12 56 11.166574     12 57 11.042879       0.10
  J1256-0547        -05 31 07.99629    *-05 47 21.52515     -05 53 34.94036        0.10
* 3C279              /home/guest/rmc/SCHED/sched11.5/catalogs/sources.rfc
                     rfc_2018a Petrov and Kovalev, in preparation  14021 observations
                     Doppler based on other sources.

  1404+286           14 04 45.615157   * 14 07 00.394415     14 07 52.233302       0.11
  J1407+2827         28 41 29.23512    * 28 27 14.69015      28 21 41.84917        0.10
* OQ208              /home/guest/rmc/SCHED/sched11.5/catalogs/sources.rfc
                     rfc_2018a Petrov and Kovalev, in preparation  72228 observations
                     Doppler based on other sources.

  1633+382           16 33 30.625102   * 16 35 15.492977     16 35 55.351391       0.13
* J1635+3808         38 14 10.08280    * 38 08 04.50057      38 05 33.35355        0.10
  4C38.41            /home/guest/rmc/SCHED/sched11.5/catalogs/sources.rfc
                     rfc_2018a Petrov and Kovalev, in preparation  21540 observations
                     Doppler based on other sources.
```

```
  1740-309          17 40 04.143438   * 17 43 17.886823     17 44 30.919152       0.74
* J1743-3058       -30 56 58.62598    *-30 58 18.65597     -30 58 39.29652        1.40
                    /home/guest/rmc/SCHED/sched11.5/catalogs/sources.rfc
                    rfc_2018a Petrov and Kovalev, in preparation  325 observations
                    Doppler based on other sources.

  1741-312          17 41 09.335236   * 17 44 23.578230     17 45 36.790121       0.76
* J1744-3116       -31 15 21.01913    *-31 16 36.29395     -31 16 55.02389        1.39
                    /home/guest/rmc/SCHED/sched11.5/catalogs/sources.rfc
                    rfc_2018a Petrov and Kovalev, in preparation  87 observations
                    Doppler based on other sources.

  1742-289          17 42 29.305072   * 17 45 40.036064     17 46 51.913375       1.09
* J1745-2900       -28 59 18.58024    *-29 00 28.16527     -29 00 45.62504        1.87
                    /home/guest/rmc/SCHED/sched11.5/catalogs/sources.rfc
                    rfc_2018a Petrov and Kovalev, in preparation  44 observations
                    Doppler based on other sources.

  2159+025          21 59 34.933763   * 22 02 07.154786     22 03 03.415143       0.92
  J2202+0248        02 34 08.74362    * 02 48 38.48586      02 54 01.45554        2.18
* BLLAC             /home/guest/rmc/SCHED/sched11.5/catalogs/sources.rfc
                    rfc_2018a Petrov and Kovalev, in preparation  26 observations
                    Doppler based on other sources.


EFFECT OF SOLAR CORONA

  The solar corona can cause unstable phases for sources too close to the Sun.
  SCHED provides warnings at individual scans for distances less than 10 degrees.
  The distance from the Sun to each source in this schedule is:
    Source         Sun distance (deg)
   G358                85.8
   3C84                68.3
   3C273              165.5
   3C279              157.0
   OQ208              135.1
   J1635+3808         102.9
   J1743-3058          85.8
   J1744-3116          85.5
   J1745-2900          85.3
   BLLAC               23.0

  Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes
  that the Sun will cause amplitude reductions on the  longest VLBA baselines
  at a solar distance of 60deg F^(-0.6) where F is in GHz.
  For common VLBI bands, this is:
       1.6 GHz         45. deg
       2.3 GHz         36. deg
       5.0 GHz         23. deg
       8.4 GHz         17. deg
      15.0 GHz         12. deg
      22.0 GHz          9. deg
```

# gg085ftr

RadioAstron polarization imaging

PI: *Jose L. Gomez*

```
Observing mode: K-band dual-pol

Schedule for TORUN     (Code Tr )                                  Page   2
               RadioAstron polarization imaging
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-------------------------------------------------------------------------------------------
Start UT  Source                Start / Stop                 Early    Disk   TPStart
Stop UT                   LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-------------------------------------------------------------------------------------------
 --- Sat  16 Mar 2019   Day  75 ---
 Next scan frequencies:  22236.00  22236.00  22236.00  22236.00  22268.00  22268.00  22268.00  22268.0
 Next BBC frequencies:     736.00    736.00    736.00    736.00    768.00    768.00    768.00    768.0
 Next scan bandwidths:      16.00     16.00     16.00     16.00     16.00     16.00     16.00     16.0

00 30 00  0851+202     13 17 32  30.6 262.9  4.4      39.4     0        0   00 30 00
00 39 30  ---          13 27 03  29.2 264.9  4.5      39.5   570       37   00 30 01

00 40 00  0851+202     13 27 34  29.1 265.0  4.5      39.5    24       37   00 40 00
00 49 30  ---          13 37 05  27.7 266.9  4.7      39.7   570       73   00 40 01

00 50 00  0851+202     13 37 35  27.6 267.0  4.7      39.7    24       73   00 50 00
00 59 30  ---          13 47 07  26.2 269.0  4.9      39.7   570      110   00 50 01

01 00 00  0851+202     13 47 37  26.1 269.1  4.9      39.7    24      110   01 00 00
01 09 30  ---          13 57 08  24.6 271.0  5.0      39.7   570      146   01 00 01

01 10 30  0851+202     13 58 09  24.5 271.2  5.0      39.7    54      146   01 10 30
01 18 30  ---          14 06 10  23.3 272.7  5.2      39.7   480      177   01 10 31

01 19 30  0851+202     14 07 10  23.1 272.9  5.2      39.7    54      177   01 19 30
01 29 00  ---          14 16 42  21.7 274.8  5.3      39.6   570      213   01 19 31

01 29 30  0851+202     14 17 12  21.6 274.9  5.4      39.6    24      213   01 29 30
01 34 30  ---          14 22 13  20.9 275.9  5.4      39.5   300      233   01 29 31

01 35 00  0851+202     14 22 43  20.8 276.0  5.4      39.5    24      233   01 35 00
01 44 30  ---          14 32 14  19.4 277.8  5.6      39.3   570      269   01 35 01

01 45 00  0923+392     14 32 44  37.9 286.8  5.1      47.7   -53      269   01 45 00
01 47 30  ---          14 35 15  37.6 287.2  5.1      47.5    97      279   01 45 01

01 48 00  0923+392     14 35 45  37.5 287.3  5.1      47.5    24      279   01 48 00
01 57 30  ---          14 45 16  36.1 288.9  5.3      46.9   570      315   01 48 01

01 58 00  0923+392     14 45 46  36.1 289.0  5.3      46.9    24      315   01 58 00
02 03 00  ---          14 50 47  35.4 289.8  5.4      46.6   300      335   01 58 01

02 03 30  0923+392     14 51 17  35.3 289.9  5.4      46.6    24      335   02 03 30
02 10 30  ---          14 58 18  34.3 291.0  5.5      46.1   420      362   02 03 31

02 11 00  0851+202     14 58 49  15.5 282.9  6.0      38.5   -55      362   02 11 00
02 14 00  ---          15 01 49  15.0 283.5  6.1      38.4   125      373   02 11 01
```

Schedule for TORUN (Code Tr ) Page 3

RadioAstron polarization imaging

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat | 16 Mar 2019 | Day 75 --- | | | | | | | | |
| 02 14 30 | 0851+202 | 15 02 19 | 15.0 | 283.6 | 6.1 | | 38.4 | 24 | 373 | 02 14 30 |
| 02 23 30 | --- | 15 11 21 | 13.6 | 285.3 | 6.3 | | 38.1 | 540 | 408 | 02 14 31 |
| 02 24 00 | 0851+202 | 15 11 51 | 13.6 | 285.4 | 6.3 | | 38.0 | 24 | 408 | 02 24 00 |
| 02 33 20 | --- | 15 21 12 | 12.2 | 287.2 | 6.4 | | 37.6 | 560 | 444 | 02 24 01 |
| 02 34 00 | 0851+202 | 15 21 52 | 12.1 | 287.3 | 6.4 | | 37.6 | 34 | 444 | 02 34 00 |
| 02 44 00 | --- | 15 31 54 | 10.7 | 289.2 | 6.6 | | 37.1 | 600 | 482 | 02 34 01 |
| 02 44 30 | 0851+202 | 15 32 24 | 10.6 | 289.3 | 6.6 | | 37.1 | 24 | 482 | 02 44 30 |
| 02 49 30 | --- | 15 37 25 | 9.9 | 290.3 | 6.7 | | 36.8 | 300 | 501 | 02 44 31 |
| 02 50 00 | 0851+202 | 15 37 55 | 9.9 | 290.4 | 6.7 | | 36.8 | 24 | 501 | 02 50 00 |
| 02 59 30 | --- | 15 47 26 | 8.5 | 292.2 | 6.9 | | 36.3 | 570 | 538 | 02 50 01 |
| 03 00 00 | 0851+202 | 15 47 57 | 8.5 | 292.3 | 6.9 | | 36.3 | 24 | 538 | 03 00 00 |
| 03 09 30 | --- | 15 57 28 | 7.1 | 294.1 | 7.0 | | 35.7 | 570 | 574 | 03 00 01 |
| 03 10 00 | 0851+202 | 15 57 58 | 7.1 | 294.2 | 7.0 | | 35.7 | 24 | 574 | 03 10 00 |
| 03 19 30 | --- | 16 07 30 | 5.8 | 296.0 | 7.2 | | 35.1 | 570 | 611 | 03 10 01 |
| 03 20 00 | 0851+202 | 16 08 00 | 5.7 | 296.1 | 7.2 | | 35.0 | 24 | 611 | 03 20 00 |
| 03 29 30 | --- | 16 17 31 | 4.4 | 298.0 | 7.4 | | 34.4 | 570 | 647 | 03 20 01 |
| 03 30 00 | 0923+392 | 16 18 01 | 23.7 | 304.0 | 6.8 | | 39.8 | -56 | 647 | 03 30 00 |
| 03 32 40 | --- | 16 20 42 | 23.4 | 304.4 | 6.9 | | 39.6 | 104 | 658 | 03 30 01 |
| 03 33 40 | 0923+392 | 16 21 42 | 23.3 | 304.6 | 6.9 | | 39.5 | 54 | 658 | 03 33 40 |
| 03 43 00 | --- | 16 31 04 | 22.1 | 306.1 | 7.0 | | 38.6 | 560 | 694 | 03 33 41 |
| 03 43 30 | 0923+392 | 16 31 34 | 22.0 | 306.2 | 7.1 | | 38.6 | 24 | 694 | 03 43 30 |
| 03 48 30 | --- | 16 36 35 | 21.4 | 307.0 | 7.1 | | 38.1 | 300 | 713 | 03 43 31 |
| 03 49 00 | 0923+392 | 16 37 05 | 21.4 | 307.1 | 7.1 | | 38.0 | 24 | 713 | 03 49 00 |
| 03 56 30 | --- | 16 44 36 | 20.5 | 308.3 | 7.3 | | 37.3 | 450 | 742 | 03 49 01 |
| 03 57 00 | 0923+392 | 16 45 06 | 20.4 | 308.4 | 7.3 | | 37.2 | 24 | 742 | 03 57 00 |
| 04 07 30 | --- | 16 55 38 | 19.2 | 310.2 | 7.5 | | 36.2 | 630 | 782 | 03 57 01 |
| 04 08 00 | 0923+392 | 16 56 08 | 19.2 | 310.2 | 7.5 | | 36.1 | 24 | 782 | 04 08 00 |
| 04 17 30 | --- | 17 05 39 | 18.1 | 311.8 | 7.6 | | 35.1 | 570 | 819 | 04 08 01 |
| 04 18 00 | 0923+392 | 17 06 09 | 18.0 | 311.9 | 7.6 | | 35.1 | 24 | 819 | 04 18 00 |
| 04 27 30 | --- | 17 15 41 | 17.0 | 313.5 | 7.8 | | 34.1 | 570 | 855 | 04 18 01 |
| 04 28 00 | 0923+392 | 17 16 11 | 16.9 | 313.6 | 7.8 | | 34.0 | 24 | 855 | 04 28 00 |
| 04 37 30 | --- | 17 25 43 | 15.9 | 315.2 | 8.0 | | 33.0 | 570 | 892 | 04 28 01 |

Schedule for TORUN (Code Tr ) Page 4

RadioAstron polarization imaging

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 16 Mar 2019 Day 75 --- | | | | | | | | | | |
| 04 38 00 | 0923+392 | 17 26 13 | 15.8 | 315.3 | 8.0 | | 32.9 | 24 | 892 | 04 38 00 |
| 04 47 30 | --- | 17 35 44 | 14.8 | 316.9 | 8.1 | | 31.8 | 570 | 928 | 04 38 01 |
| 04 48 00 | 0923+392 | 17 36 14 | 14.8 | 317.0 | 8.1 | | 31.8 | 24 | 928 | 04 48 00 |
| 04 52 00 | --- | 17 40 15 | 14.4 | 317.7 | 8.2 | | 31.3 | 240 | 944 | 04 48 01 |
| 04 53 30 | 0355+508 | 17 41 45 | 16.3 | 376.2 | -10.3 | | -15.5 | -42 | 944 | 04 53 30 |
| 04 56 30 | --- | 17 44 46 | 16.4 | 376.7 | -10.3 | | -15.9 | 138 | 955 | 04 53 31 |
| 04 57 00 | 0355+508 | 17 45 16 | 16.4 | 376.8 | -10.3 | | -16.0 | 24 | 955 | 04 57 00 |
| 05 08 00 | --- | 17 56 18 | 16.9 | 378.5 | -10.1 | | -17.6 | 660 | 997 | 04 57 01 |
| 05 08 30 | 0355+508 | 17 56 48 | 16.9 | 378.6 | -10.1 | | -17.7 | 24 | 997 | 05 08 30 |
| 05 13 30 | --- | 18 01 48 | 17.2 | 379.4 | -10.0 | | -18.4 | 300 | 1017 | 05 08 31 |
| 05 14 30 | 0355+508 | 18 02 49 | 17.2 | 379.5 | -10.0 | | -18.6 | 54 | 1017 | 05 14 30 |
| 05 19 30 | --- | 18 07 49 | 17.5 | 380.3 | -9.9 | | -19.3 | 300 | 1036 | 05 14 31 |
| 05 20 00 | 0355+508 | 18 08 20 | 17.5 | 380.4 | -9.9 | | -19.4 | 24 | 1036 | 05 20 00 |
| 05 29 20 | --- | 18 17 41 | 18.0 | 381.8 | -9.7 | | -20.8 | 560 | 1072 | 05 20 01 |
| 05 30 00 | 0355+508 | 18 18 21 | 18.0 | 381.9 | -9.7 | | -20.9 | 34 | 1072 | 05 30 00 |
| 05 40 00 | --- | 18 28 23 | 18.6 | 383.5 | -9.5 | | -22.3 | 600 | 1110 | 05 30 01 |
| 05 40 30 | 0355+508 | 18 28 53 | 18.7 | 383.5 | -9.5 | | -22.4 | 24 | 1110 | 05 40 30 |
| 05 50 00 | --- | 18 38 24 | 19.2 | 385.0 | -9.4 | | -23.8 | 570 | 1147 | 05 40 31 |
| 05 51 00 | 0355+508 | 18 39 25 | 19.3 | 385.2 | -9.4 | | -23.9 | 54 | 1147 | 05 51 00 |
| 06 01 00 | --- | 18 49 26 | 20.0 | 386.7 | -9.2 | | -25.4 | 600 | 1185 | 05 51 01 |
| 06 01 30 | 0355+508 | 18 49 56 | 20.0 | 386.8 | -9.2 | | -25.5 | 24 | 1185 | 06 01 30 |
| 06 11 30 | --- | 18 59 58 | 20.7 | 388.3 | -9.0 | | -26.9 | 600 | 1224 | 06 01 31 |
| 06 12 00 | 0355+508 | 19 00 28 | 20.7 | 388.3 | -9.0 | | -26.9 | 24 | 1224 | 06 12 00 |
| 06 16 30 | --- | 19 04 59 | 21.1 | 389.0 | -8.9 | | -27.6 | 270 | 1241 | 06 12 01 |
| 06 17 00 | 0355+508 | 19 05 29 | 21.1 | 389.1 | -8.9 | | -27.7 | 24 | 1241 | 06 17 00 |
| 06 19 00 | --- | 19 07 29 | 21.2 | 389.4 | -8.9 | | -27.9 | 120 | 1249 | 06 17 01 |
| 06 20 00 | 0355+508 | 19 08 29 | 21.3 | 389.5 | -8.9 | | -28.1 | 54 | 1249 | 06 20 00 |
| 06 30 00 | --- | 19 18 31 | 22.1 | 391.0 | -8.7 | | -29.5 | 600 | 1287 | 06 20 01 |
| 06 30 30 | 0355+508 | 19 19 01 | 22.1 | 391.1 | -8.7 | | -29.5 | 24 | 1287 | 06 30 30 |
| 06 36 30 | --- | 19 25 02 | 22.6 | 392.0 | -8.6 | | -30.4 | 360 | 1310 | 06 30 31 |

Schedule for TORUN (Code Tr ) Page 5

RadioAstron polarization imaging

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 16 Mar 2019 Day 75 --- | | | | | | | | | | |
| 06 37 30 | 0355+508 | 19 26 02 | 22.7 | 392.1 | -8.6 | | -30.5 | 54 | 1310 | 06 37 30 |
| 06 42 00 | --- | 19 30 33 | 23.0 | 392.8 | -8.5 | | -31.1 | 270 | 1328 | 06 37 31 |
| 06 43 30 | 0355+508 | 19 32 03 | 23.2 | 393.0 | -8.5 | | -31.3 | 84 | 1328 | 06 43 30 |
| 06 53 00 | --- | 19 41 35 | 23.9 | 394.4 | -8.3 | | -32.6 | 570 | 1364 | 06 43 31 |
| 06 53 30 | 0355+508 | 19 42 05 | 24.0 | 394.5 | -8.3 | | -32.7 | 24 | 1364 | 06 53 30 |
| 07 03 00 | --- | 19 51 36 | 24.8 | 395.8 | -8.2 | | -34.0 | 570 | 1401 | 06 53 31 |
| 07 03 30 | 0355+508 | 19 52 07 | 24.9 | 395.9 | -8.1 | | -34.1 | 24 | 1401 | 07 03 30 |
| 07 13 00 | --- | 20 01 38 | 25.7 | 397.3 | -8.0 | | -35.3 | 570 | 1437 | 07 03 31 |
| 07 13 30 | 0355+508 | 20 02 08 | 25.8 | 397.4 | -8.0 | | -35.4 | 24 | 1437 | 07 13 30 |
| 07 23 00 | --- | 20 11 40 | 26.6 | 398.7 | -7.8 | | -36.6 | 570 | 1474 | 07 13 31 |
| 07 23 30 | 0355+508 | 20 12 10 | 26.7 | 398.8 | -7.8 | | -36.7 | 24 | 1474 | 07 23 30 |
| 07 33 00 | --- | 20 21 41 | 27.6 | 400.1 | -7.7 | | -38.0 | 570 | 1510 | 07 23 31 |
| 07 33 30 | 0355+508 | 20 22 11 | 27.6 | 400.2 | -7.6 | | -38.0 | 24 | 1510 | 07 33 30 |
| 07 43 00 | --- | 20 31 43 | 28.6 | 401.5 | -7.5 | | -39.2 | 570 | 1547 | 07 33 31 |
| 07 43 30 | 0355+508 | 20 32 13 | 28.6 | 401.6 | -7.5 | | -39.3 | 24 | 1547 | 07 43 30 |
| 07 53 00 | --- | 20 41 45 | 29.6 | 402.9 | -7.3 | | -40.5 | 570 | 1583 | 07 43 31 |
| 07 53 30 | 0355+508 | 20 42 15 | 29.6 | 403.0 | -7.3 | | -40.6 | 24 | 1583 | 07 53 30 |
| 07 59 00 | --- | 20 47 46 | 30.2 | 403.7 | -7.2 | | -41.3 | 330 | 1604 | 07 53 31 |
| 08 00 00 | 0355+508 | 20 48 46 | 30.3 | 403.9 | -7.2 | | -41.4 | 54 | 1604 | 08 00 00 |
| 08 10 00 | --- | 20 58 47 | 31.4 | 405.2 | -7.0 | | -42.7 | 600 | 1643 | 08 00 01 |
| 08 10 30 | 0355+508 | 20 59 18 | 31.4 | 405.3 | -7.0 | | -42.7 | 24 | 1643 | 08 10 30 |
| 08 17 00 | --- | 21 05 49 | 32.1 | 406.2 | -6.9 | | -43.5 | 390 | 1668 | 08 10 31 |
| 08 18 00 | 0355+508 | 21 06 49 | 32.2 | 406.3 | -6.9 | | -43.6 | 54 | 1668 | 08 18 00 |
| 08 27 30 | --- | 21 16 20 | 33.3 | 407.6 | -6.7 | | -44.8 | 570 | 1704 | 08 18 01 |
| 08 28 00 | 0355+508 | 21 16 50 | 33.3 | 407.6 | -6.7 | | -44.9 | 24 | 1704 | 08 28 00 |
| 08 37 30 | --- | 21 26 22 | 34.4 | 408.9 | -6.6 | | -46.0 | 570 | 1741 | 08 28 01 |
| 08 38 00 | 0355+508 | 21 26 52 | 34.5 | 409.0 | -6.6 | | -46.1 | 24 | 1741 | 08 38 00 |
| 08 47 30 | --- | 21 36 24 | 35.5 | 410.2 | -6.4 | | -47.2 | 570 | 1778 | 08 38 01 |
| 08 48 00 | 0355+508 | 21 36 54 | 35.6 | 410.3 | -6.4 | | -47.3 | 24 | 1778 | 08 48 00 |
| 08 57 30 | --- | 21 46 25 | 36.7 | 411.5 | -6.2 | | -48.4 | 570 | 1814 | 08 48 01 |

Schedule for TORUN (Code Tr ) Page 6

RadioAstron polarization imaging

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 16 Mar 2019 Day 75 --- | | | | | | | | | | |
| 08 58 00 | 0355+508 | 21 46 55 | 36.8 | 411.6 | -6.2 | | -48.4 | 24 | 1814 | 08 58 00 |
| 09 07 30 | --- | 21 56 27 | 37.9 | 412.8 | -6.1 | | -49.5 | 570 | 1851 | 08 58 01 |
| 09 08 00 | 0355+508 | 21 56 57 | 38.0 | 412.9 | -6.1 | | -49.6 | 24 | 1851 | 09 08 00 |
| 09 11 00 | --- | 21 59 58 | 38.3 | 413.3 | -6.0 | | -49.9 | 180 | 1862 | 09 08 01 |
| 09 12 00 | 0355+508 | 22 00 58 | 38.4 | 413.4 | -6.0 | | -50.1 | 54 | 1862 | 09 12 00 |
| 09 22 00 | --- | 22 10 59 | 39.7 | 414.7 | -5.8 | | -51.2 | 600 | 1901 | 09 12 01 |
| 09 22 30 | 0355+508 | 22 11 29 | 39.7 | 414.8 | -5.8 | | -51.2 | 24 | 1901 | 09 22 30 |
| 09 29 30 | --- | 22 18 31 | 40.6 | 415.7 | -5.7 | | -52.0 | 420 | 1928 | 09 22 31 |
| 09 30 00 | 0355+508 | 22 19 01 | 40.6 | 415.7 | -5.7 | | -52.1 | 24 | 1928 | 09 30 00 |
| 09 39 30 | --- | 22 28 32 | 41.8 | 417.0 | -5.5 | | -53.1 | 570 | 1964 | 09 30 01 |
| 09 40 00 | 0355+508 | 22 29 02 | 41.9 | 417.0 | -5.5 | | -53.2 | 24 | 1964 | 09 40 00 |
| 09 49 45 | --- | 22 38 49 | 43.1 | 418.3 | -5.4 | | -54.3 | 585 | 2002 | 09 40 01 |
| 09 50 15 | 0355+508 | 22 39 19 | 43.2 | 418.3 | -5.4 | | -54.3 | 24 | 2002 | 09 50 15 |
| 10 00 00 | --- | 22 49 06 | 44.5 | 419.5 | -5.2 | | -55.4 | 585 | 2039 | 09 50 16 |
| 10 00 30 | 0355+508 | 22 49 36 | 44.5 | 419.6 | -5.2 | | -55.4 | 24 | 2039 | 10 00 30 |
| 10 10 15 | --- | 22 59 22 | 45.8 | 420.8 | -5.0 | | -56.5 | 585 | 2077 | 10 00 31 |
| 10 10 45 | 0355+508 | 22 59 52 | 45.9 | 420.9 | -5.0 | | -56.5 | 24 | 2077 | 10 10 45 |
| 10 20 30 | --- | 23 09 39 | 47.2 | 422.1 | -4.9 | | -57.5 | 585 | 2114 | 10 10 46 |
| 10 21 00 | 0355+508 | 23 10 09 | 47.2 | 422.2 | -4.8 | | -57.6 | 24 | 2114 | 10 21 00 |
| 10 30 45 | --- | 23 19 56 | 48.5 | 423.4 | -4.7 | | -58.6 | 585 | 2152 | 10 21 01 |
| 10 31 15 | 0355+508 | 23 20 26 | 48.6 | 423.4 | -4.7 | | -58.6 | 24 | 2152 | 10 31 15 |
| 10 40 15 | --- | 23 29 27 | 49.8 | 424.6 | -4.5 | | -59.5 | 540 | 2186 | 10 31 16 |
| 10 42 00 | 0355+508 | 23 31 12 | 50.1 | 424.8 | -4.5 | | -59.7 | 99 | 2186 | 10 42 00 |
| 10 52 00 | --- | 23 41 14 | 51.4 | 426.0 | -4.3 | | -60.7 | 600 | 2225 | 10 42 01 |
| 10 52 30 | 0355+508 | 23 41 44 | 51.5 | 426.1 | -4.3 | | -60.8 | 24 | 2225 | 10 52 30 |
| 10 59 30 | --- | 23 48 45 | 52.5 | 426.9 | -4.2 | | -61.4 | 420 | 2252 | 10 52 31 |
| 11 00 00 | 0355+508 | 23 49 15 | 52.5 | 427.0 | -4.2 | | -61.5 | 24 | 2252 | 11 00 00 |
| 11 09 30 | --- | 23 58 47 | 53.8 | 428.2 | -4.0 | | -62.4 | 570 | 2288 | 11 00 01 |
| 11 10 00 | 0355+508 | 23 59 17 | 53.9 | 428.2 | -4.0 | | -62.4 | 24 | 2288 | 11 10 00 |
| 11 19 30 | --- | 00 08 49 | 55.2 | 429.4 | -3.9 | | -63.3 | 570 | 2325 | 11 10 01 |

Schedule for TORUN (Code Tr ) Page 7

RadioAstron polarization imaging

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

| Start UT<br>Stop UT | Source | Start / Stop<br>LST | EL | AZ | HA | UP | ParA | Early<br>Dwell | Disk<br>GBytes | TPStart<br>SYNC |
|---|---|---|---|---|---|---|---|---|---|---|
| --- Sat 16 Mar 2019 Day 75 --- | | | | | | | | | | |
| 11 20 00 | 0355+508 | 00 09 19 | 55.3 | 429.5 | -3.9 | | -63.4 | 24 | 2325 | 11 20 00 |
| 11 29 30 | --- | 00 18 50 | 56.7 | 430.7 | -3.7 | | -64.2 | 570 | 2361 | 11 20 01 |
| 11 30 00 | 0355+508 | 00 19 20 | 56.7 | 430.7 | -3.7 | | -64.3 | 24 | 2361 | 11 30 00 |
| 11 39 30 | --- | 00 28 52 | 58.1 | 431.9 | -3.5 | | -65.1 | 570 | 2398 | 11 30 01 |
| 11 40 00 | 0355+508 | 00 29 22 | 58.2 | 432.0 | -3.5 | | -65.2 | 24 | 2398 | 11 40 00 |
| 11 49 30 | --- | 00 38 54 | 59.5 | 433.2 | -3.4 | | -66.0 | 570 | 2434 | 11 40 01 |
| 11 50 00 | 0355+508 | 00 39 24 | 59.6 | 433.2 | -3.4 | | -66.1 | 24 | 2434 | 11 50 00 |
| 11 59 00 | --- | 00 48 25 | 60.9 | 434.4 | -3.2 | | -66.8 | 540 | 2469 | 11 50 01 |
| 12 00 00 | 0355+508 | 00 49 25 | 61.0 | 434.5 | -3.2 | | -66.9 | 54 | 2469 | 12 00 00 |
| 12 10 00 | --- | 00 59 27 | 62.5 | 435.8 | -3.0 | | -67.7 | 600 | 2507 | 12 00 01 |
| 12 10 30 | 0355+508 | 00 59 57 | 62.6 | 435.9 | -3.0 | | -67.8 | 24 | 2507 | 12 10 30 |
| 12 17 30 | --- | 01 06 58 | 63.6 | 436.8 | -2.9 | | -68.3 | 420 | 2534 | 12 10 31 |
| 12 29 30 | 0851+202 | 01 19 00 | 2.4 | 419.0 | -7.6 | D | -33.2 | 479 | 2534 | 12 29 30 |
| 12 39 30 | --- | 01 29 02 | 3.7 | 421.0 | -7.4 | | -34.0 | 0 | 2573 | 12 29 31 |
| 12 40 00 | 0851+202 | 01 29 32 | 3.8 | 421.1 | -7.4 | | -34.0 | 24 | 2573 | 12 40 00 |
| 12 49 30 | --- | 01 39 03 | 5.1 | 423.0 | -7.3 | | -34.7 | 570 | 2609 | 12 40 01 |
| 12 50 00 | 0851+202 | 01 39 33 | 5.1 | 423.1 | -7.3 | | -34.7 | 24 | 2609 | 12 50 00 |
| 12 59 30 | --- | 01 49 05 | 6.4 | 424.9 | -7.1 | | -35.4 | 570 | 2646 | 12 50 01 |
| 13 00 00 | 0851+202 | 01 49 35 | 6.5 | 425.0 | -7.1 | | -35.4 | 24 | 2646 | 13 00 00 |
| 13 09 30 | --- | 01 59 07 | 7.8 | 426.8 | -6.9 | | -36.0 | 570 | 2682 | 13 00 01 |
| 13 10 00 | 0851+202 | 01 59 37 | 7.9 | 426.9 | -6.9 | | -36.0 | 24 | 2682 | 13 10 00 |
| 13 19 00 | --- | 02 08 38 | 9.1 | 428.6 | -6.8 | | -36.5 | 540 | 2717 | 13 10 01 |
| 13 20 00 | 0851+202 | 02 09 38 | 9.3 | 428.8 | -6.8 | | -36.6 | 54 | 2717 | 13 20 00 |
| 13 30 00 | --- | 02 19 40 | 10.7 | 430.7 | -6.6 | | -37.1 | 600 | 2755 | 13 20 01 |
| 13 30 30 | 0851+202 | 02 20 10 | 10.7 | 430.8 | -6.6 | | -37.1 | 24 | 2755 | 13 30 30 |
| 13 40 00 | --- | 02 29 42 | 12.1 | 432.7 | -6.4 | | -37.6 | 570 | 2792 | 13 30 31 |
| 13 40 30 | 0851+202 | 02 30 12 | 12.2 | 432.8 | -6.4 | | -37.6 | 24 | 2792 | 13 40 30 |
| 13 50 00 | --- | 02 39 43 | 13.5 | 434.6 | -6.3 | | -38.0 | 570 | 2829 | 13 40 31 |
| 13 50 30 | 0851+202 | 02 40 13 | 13.6 | 434.7 | -6.3 | | -38.1 | 24 | 2829 | 13 50 30 |
| 14 00 30 | --- | 02 50 15 | 15.1 | 436.6 | -6.1 | | -38.4 | 600 | 2867 | 13 50 31 |

```
Schedule for TORUN     (Code Tr )                                  Page   8
               RadioAstron polarization imaging
  UP:  D => Below limits;  H => Below horizon mask;  W => still slewing at end;  blank => Up.
  Early: Seconds between end of slew and start.   Dwell: On source seconds.
  Disk: GBytes recorded to this point.
  TPStart:  Recording start time.  Frequencies are LO sum (band edge).
  SYNC: Time correlator is expected to sync up.
-----------------------------------------------------------------------------------------
Start UT  Source               Start / Stop                 Early    Disk   TPStart
Stop UT                  LST      EL    AZ   HA  UP   ParA  Dwell   GBytes    SYNC
-----------------------------------------------------------------------------------------

 --- Sat  16 Mar 2019   Day  75 ---

14 02 30  0355+508     02 52 15  79.3  94.3 -1.1     -72.2  -574     2867   14 02 30
14 12 30  ---          03 02 17  80.8  97.1 -1.0     -71.3    26     2905   14 02 31

14 13 00  0355+508     03 02 47  80.8  97.3 -1.0     -71.2    24     2905   14 13 00
14 20 00  ---          03 09 48  81.9  99.7 -0.9     -70.2   420     2932   14 13 01

14 20 30  0851+202     03 10 18  18.0  80.4 -5.8     -39.1  -221     2932   14 20 30
14 30 00  ---          03 19 50  19.4  82.2 -5.6     -39.3   349     2969   14 20 31

14 30 30  0851+202     03 20 20  19.5  82.3 -5.6     -39.3    24     2969   14 30 30
14 39 30  ---          03 29 21  20.9  84.1 -5.4     -39.5   540     3004   14 30 31

14 40 30  0851+202     03 30 22  21.0  84.3 -5.4     -39.5    54     3004   14 40 30
14 50 00  ---          03 39 53  22.4  86.1 -5.3     -39.6   570     3040   14 40 31

14 51 30  0923+392     03 41 23  32.0  66.2 -5.8     -45.0    35     3040   14 51 30
15 01 30  ---          03 51 25  33.4  67.9 -5.6     -45.7   600     3079   14 51 31

15 02 00  0923+392     03 51 55  33.4  67.9 -5.6     -45.7    24     3079   15 02 00
15 09 00  ---          03 58 56  34.4  69.1 -5.5     -46.2   420     3105   15 02 01

15 09 30  0851+202     03 59 26  25.4  90.0 -4.9     -39.7   -27     3105   15 09 30
15 20 00  ---          04 09 58  26.9  92.1 -4.8     -39.7   603     3146   15 09 31

15 20 30  0851+202     04 10 28  27.0  92.2 -4.8     -39.7    24     3146   15 20 30
15 30 30  ---          04 20 30  28.5  94.3 -4.6     -39.6   600     3184   15 20 31

15 31 00  0851+202     04 21 00  28.6  94.4 -4.6     -39.6    24     3184   15 31 00
15 40 30  ---          04 30 31  30.0  96.3 -4.4     -39.4   570     3221   15 31 01

15 41 00  0851+202     04 31 02  30.1  96.5 -4.4     -39.4    24     3221   15 41 00
15 50 30  ---          04 40 33  31.5  98.5 -4.3     -39.2   570     3257   15 41 01

15 51 00  0851+202     04 41 03  31.6  98.6 -4.2     -39.2    24     3257   15 51 00
16 00 00  ---          04 50 05  32.9 100.5 -4.1     -38.9   540     3292   15 51 01



SETUP FILE INFORMATION:
   NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.


 ======== Setup file: ra1cm2.set

   Setup group:   20         Station: TORUN            Total bit rate:   512
   Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
   Number of channels:  8    DBE type: DBBC_DDC        Speedup factor:   1.00
```

Disk used to record data.

```
  1st LO=  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00  21500.00
  Net SB=         U         U         L         L         U         U         L         L
  IF SB =         U         U         U         U         U         U         U         U
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         2         6         2         6
  BBC SB=         U         U         L         L         U         U         L         L
  IF    =        A1        B1        A1        B1        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:  20  Setup file default.  Used with PCAL = 1MHz
  LO sum=   22236.00  22236.00  22236.00  22236.00  22268.00  22268.00  22268.00  22268.00
  BBC fr=     736.00    736.00    736.00    736.00    768.00    768.00    768.00    768.00
  Bandwd=      16.00     16.00     16.00     16.00     16.00     16.00     16.00     16.00
   Matching frequency sets:  20

  Track assignments are:
   track1=   2,  6, 10, 14,  4,  8, 12, 16
   barrel=roll_off



POSITIONS OF SOURCES USED IN RECORDING SCANS

  Source                          Source position (RA/Dec)                        Error
                      (B1950)             (J2000)             (Date)             (mas)

  1328+307          13 28 49.657783   * 13 31 08.288075     13 32 01.760916       0.18
  J1331+3030        30 45 58.64055    * 30 30 32.95919      30 24 33.64697        0.17
                    rfc_2018a Petrov and Kovalev, in preparation  603 observations

* 0355+508          03 55 45.261377   * 03 59 29.747278     04 00 54.175951       0.16
  J0359+5057        50 49 20.28597    * 50 57 50.16192      51 01 04.82333        0.10
  NRAO150           /home/guest/rmc/SCHED/sched11.5/catalogs/sources.rfc
                    rfc_2018a Petrov and Kovalev, in preparation  27427 observations

* 0851+202          08 51 57.250617   * 08 54 48.874929     08 55 54.600792       0.11
  J0854+2006        20 17 58.41738    * 20 06 30.64083      20 02 02.58372        0.10
                    /home/guest/rmc/SCHED/sched11.5/catalogs/sources.rfc
                    rfc_2018a Petrov and Kovalev, in preparation  311901 observations

* 0923+392          09 23 55.319219   * 09 27 03.013940     09 28 14.962793       0.13
  J0927+3902        39 15 23.56640    * 39 02 20.85180      38 57 20.77176        0.10
                    /home/guest/rmc/SCHED/sched11.5/catalogs/sources.rfc
                    rfc_2018a Petrov and Kovalev, in preparation  259044 observations
```

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