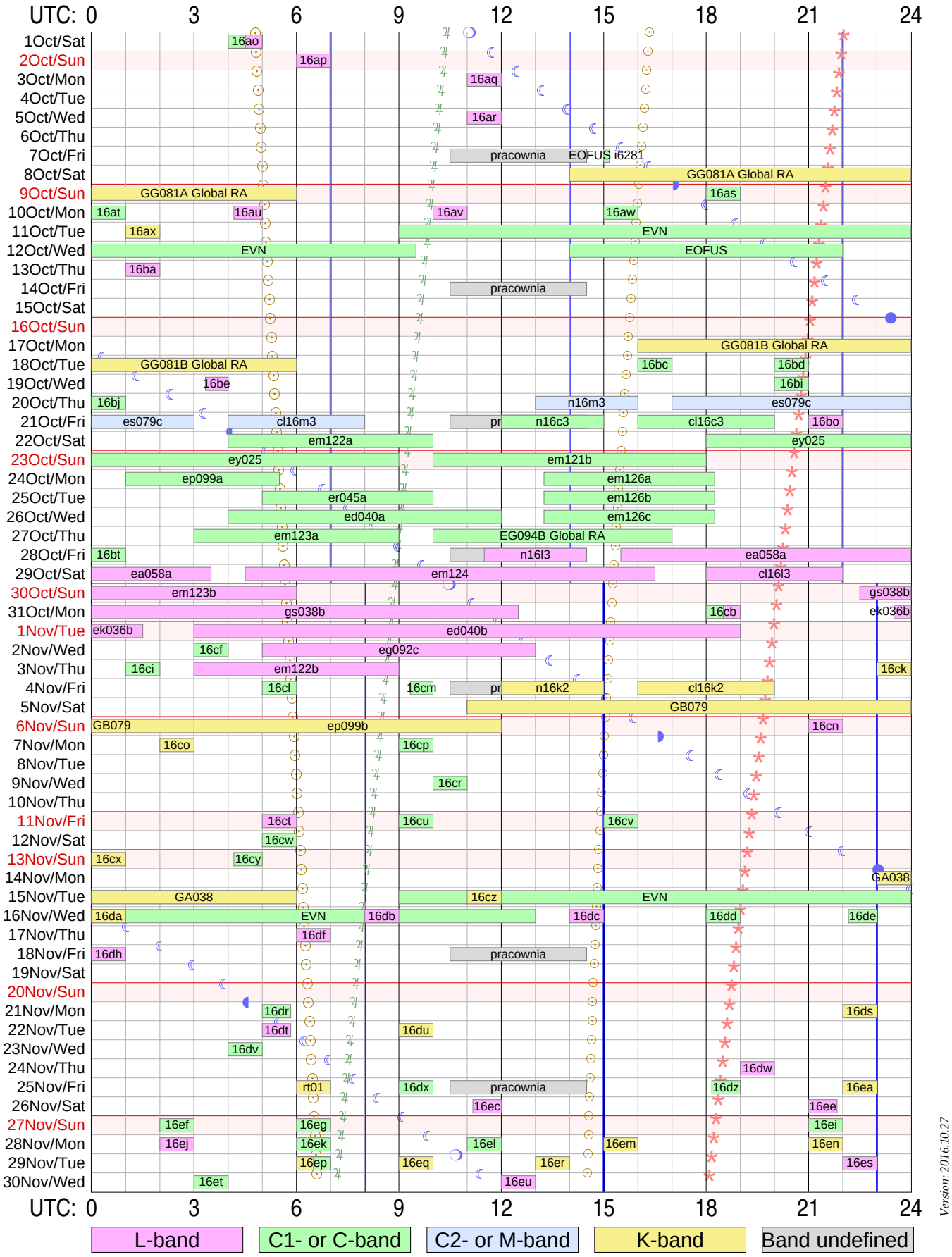
Tr VLBI plan for Oct/Nov 2016



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: 444.2 hours in 108 experiments scheduled

Initial characters 'rk' are omitted from RA experiment names!

Version: 2016.10.27

Strona zostawiona celowo pusta

RadioAstron & EVN Experiments
Oct 2016

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  Date   UTstart UTstop Exper.  xxComment
2016 D  M DoW  hh mm  hh mm  name

246  08 10 Pia  14 00  106 00  "GG081A Global RA"  "K        "
246  17 10 Pia  16 00  106 00  "GG081B Global RA"  "K        "
246  05 11 Pia  11 00  101 00  GB079   "K        "
246  14 11 Pia  23 00  106 00  GA038   "K        "

294 20 10 Czw  13 00  16 00  n16m3    "M"   1- EVN3  0.17
294 20 10 Czw  17 00  24 00  es079c   "M"
295 21 10 Pia   0 00   3 00  es079c   "M"   2- EVN2  1.15
295 21 10 Pia   4 00   8 00  cl16m3   "M"   3- ---0  0.00
295 21 10 Pia  12 00  15 00  n16c3    "C"   4- EVN8  0.69
295 21 10 Pia  16 00  20 00  cl16c3   "C"   5- ---0  0.00
296 22 10 Sob   4 00  10 00  em122a   "C"   6R EVN4  2.76
296 22 10 Sob  18 00  24 00  ey025    "C"
297 23 10 Nie   0 00   9 00  ey025    "C"   7- EVN0 13.82
297 23 10 Nie  10 00  18 00  em121b   "C"   8- EVN2  3.69
298 24 10 Pon   1 00   5 30  ep099a   "C"   9- EVN5  2.53
298 24 10 Pon  13 15  18 15  em126a   "C"  10- EVN7  4.61
299 25 10 Wto   5 00  10 00  er045a   "C"  11- EVN6  2.30
299 25 10 Wto  13 15  18 15  em126b   "C"  12- EVN7  4.61
300 26 10 Sro   4 00  12 00  ed040a   "C"  13- EVN6  7.37
300 26 10 Sro  13 15  18 15  em126c   "C"  14- EVN7  4.61
301 27 10 Czw   3 00   9 00  em123a   "C"  15- EVN8  2.76
301 27 10 Czw  10 00  17 00  "EG094B Global RA"   "C"  16- EVN0  0.81
302 28 10 Pia  11 30  14 30  n16l3    "L"  17- EVN6  0.69
302 28 10 Pia  15 30  24 00  ea058a   "L"
303 29 10 Sob   0 00   3 30  ea058a   "L"  18R EVN3  5.53
303 29 10 Sob   4 30  16 30  em124    "L"  19R EVN4  5.53
303 29 10 Sob  18 00  22 00  cl16l3   "L"  20- ---0  0.00
304 30 10 Nie   0 00   6 00  em123b   "L"  21- EVN1  2.76
304 30 10 Nie  22 30  24 00  gs038b   "L"
305 31 10 Pon   0 00  12 30  gs038b   "L"  22- EVN7  6.45
305 31 10 Pon  23 30  24 00  ek036b   "L"
306  1 11 Wto   0 00   1 30  ek036b   "L"  23- EVN0  0.92
306  1 11 Wto   3 00  19 00  ed040b   "L"  24- EVN5  7.37
307  2 11 Sro   5 00  13 00  eg092c   "L"  25- EVN0  3.69
308  3 11 Czw   3 00   9 00  em122b   "L"  26R EVN5  2.76
309  4 11 Pia  12 00  15 00  n16k2    "K"  27- EVN0  1.38
309  4 11 Pia  16 00  20 00  cl16k2   "K"  28- ---0  0.00
```

```
310  5 11 Sob  11 00  24 00  gb079    "K"
311  6 11 Nie   0 00   1 00  gb079    "K"  29- Bon9  6.45
311  6 11 Nie   3 00  12 00  ep099b   "K"  30- EVN6  4.15

275  1 10 Sob   4 00   5 00  rk16ao "C>L      "
276  2 10 Nie   6 00   7 00  rk16ap "L        "
277  3 10 Pon  11 00  12 00  rk16aq "L        "
279  5 10 Sro  11 00  12 00  rk16ar "L        "
283  9 10 Nie  18 00  19 00  rk16as "C        "
284 10 10 Pon   0 00   1 00  rk16at "C        "
284 10 10 Pon   4 10   5 00  rk16au "L        "
284 10 10 Pon  10 00  11 00  rk16av "L        "
284 10 10 Pon  15 00  16 00  rk16aw "C        "
285 11 10 Wto   1 00   2 00  rk16ax "K        "
287 13 10 Czw   1 00   2 00  rk16ba "L        "
292 18 10 Wto  16 00  17 00  rk16bc "C        "
292 18 10 Wto  20 00  21 00  rk16bd "C        "
293 19 10 Sro   3 20   4 00  rk16be "L        "
293 19 10 Sro  20 00  21 00  rk16bi "C        "
294 20 10 Czw   0 00   1 00  rk16bj "C        "
295 21 10 Pia  21 00  22 00  rk16bo "L        "
%301 27 10 Czw  10 00  17 00  rg23b  "C        "
302 28 10 Pia   0 00   1 00  rk16bt "C        "
305 31 10 Pon  18 00  19 00  rk16cb "C>L      "
```

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

`http://paulo.astro.uni.torun.pl/~pw/VLBI/schedules/oct16.pdf`

rk16aotr

RadioAstron AGN Monitoring

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```


```
Observing mode: C/L-band, dual-pol

Schedule for TORUN     (Code Tr )                                   Page   2
               RadioAstron AGN Monitoring
  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   1 Oct 2016   Day 275 ---

 ---------- C-band VLBI scans ----------

 Next scan frequencies:  4836.00  4836.00  4836.00  4836.00
 Next BBC frequencies:    736.00   736.00   736.00   736.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

04 00 00  0430+052     05 55 33  39.5 206.7  1.4      15.7     0        0   04 00 00
04 14 30  ---          06 10 05  38.4 211.1  1.6      18.2   870       28   04 00 01

04 15 00  0430+052     06 10 35  38.4 211.3  1.6      18.2    24       28   04 15 00
04 25 00  ---          06 20 37  37.6 214.3  1.8      19.8   600       47   04 15 01

 ---------- L-band VLBI scans ----------

 Next scan frequencies:  1668.00  1668.00  1668.00  1668.00
 Next BBC frequencies:    732.00   732.00   732.00   732.00

04 30 00  0430+052     06 25 38  37.1 215.7  1.9      20.6   293       47   04 30 00
04 44 30  ---          06 40 10  35.8 219.9  2.1      22.8   870       75   04 30 01

04 45 00  0430+052     06 40 40  35.7 220.1  2.1      22.8    24       75   04 45 00
05 00 00  ---          06 55 43  34.2 224.2  2.4      24.9   900      104   04 45 01



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


 ======== Setup file: ra6cm2.set

   Setup group:    2         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4100.00   4100.00   4100.00   4100.00
  Net SB=         L         L         U         U
  IF SB =         U         U         U         U
  Pol.  =       RCP       LCP       RCP       LCP
  BBC   =         1         2         1         2
  BBC SB=         L         L         U         U
  IF    =         C         A         C         A

 The following frequency sets based on these setups were used.

  Frequency Set:   4  Setup file default.  Used with PCAL = 1MHz
  LO sum=   4836.00  4836.00  4836.00  4836.00
  BBC fr=    736.00   736.00   736.00   736.00
  Bandwd=     16.00    16.00    16.00    16.00
   Matching frequency sets:   4

  Track assignments are:
   track1=   2, 18,  3, 19
   barrel=roll_off


======== Setup file: ra18cm2.set

  Setup group:    7         Station: TORUN            Total bit rate:   256
  Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
  Number of channels:  4    DBE type:                 Speedup factor:   1.00

  Disk used to record data.
```

```
 1st LO=   2400.00   2400.00   2400.00   2400.00
 Net SB=         L         L         U         U
 IF SB =         L         L         L         L
 Pol.  =       RCP       LCP       RCP       LCP
 BBC   =         1         2         1         2
 BBC SB=         U         U         L         L
 IF    =         C         A         C         A

The following frequency sets based on these setups were used.

 Frequency Set:   6  Setup file default.  Used with PCAL = 1MHz
 LO sum=   1668.00  1668.00  1668.00  1668.00
 BBC fr=    732.00   732.00   732.00   732.00
 Bandwd=     16.00    16.00    16.00    16.00
  Matching frequency sets:   6

 Track assignments are:
  track1=   2, 18,  3, 19
  barrel=roll_off
```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 30.609273	0.00
	85 16 41.77889	* 85 00 00.00000	84 54 24.31560	0.00
	fake circumpolar target for a TS to look at			
* 0430+052	04 30 31.602064	* 04 33 11.095533	04 34 04.834108	0.00
J0433+0521	05 14 59.61638	* 05 21 15.61916	05 23 17.12552	0.00
3C120	./rk16ao_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 9633 observations, RA-AO4-07, RA-AO3-04			

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)
 0430+052           119.4

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
```

rk16aptr

RadioAstron AGN Monitoring

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```


```
Observing mode: C/L-band, dual-pol

Schedule for TORUN     (Code Tr )                                    Page   2
               RadioAstron AGN Monitoring
  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   2 Oct 2016   Day 276 ---

 ---------- L-band VLBI scans ----------

 Next scan frequencies:  1668.00  1668.00  1668.00  1668.00
 Next BBC frequencies:    732.00   732.00   732.00   732.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

06 00 00  0529+483     07 59 49  66.8 273.1  2.4      64.5     0        0   06 00 00
06 19 30  ---          08 19 22  63.9 276.4  2.7      64.0  1170       37   06 00 01

06 20 00  0529+483     08 19 52  63.8 276.5  2.8      63.9    24       37   06 20 00
06 39 30  ---          08 39 26  60.9 279.7  3.1      63.1  1170       75   06 20 01

06 40 00  0529+483     08 39 56  60.8 279.7  3.1      63.0    24       75   06 40 00
07 00 00  ---          08 59 59  57.9 282.7  3.4      61.9  1200      113   06 40 01



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


 ======== Setup file: ra18cm2.set

   Setup group:    9         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
 1st LO=   2400.00   2400.00   2400.00   2400.00
 Net SB=         L         L         U         U
 IF SB =         L         L         L         L
 Pol.  =       RCP       LCP       RCP       LCP
 BBC   =         1         2         1         2
 BBC SB=         U         U         L         L
 IF    =         C         A         C         A

The following frequency sets based on these setups were used.

 Frequency Set:   7  Setup file default.  Used with PCAL = 1MHz
 LO sum=   1668.00  1668.00  1668.00  1668.00
 BBC fr=    732.00   732.00   732.00   732.00
 Bandwd=     16.00    16.00    16.00    16.00
  Matching frequency sets:   7

 Track assignments are:
  track1=   2, 18,  3, 19
  barrel=roll_off



POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 30.634865       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 23.93400        0.00
                    fake circumpolar target for a TS to look at

* 0529+483          05 29 27.565384   * 05 33 15.865793     05 34 32.468443       0.00
  J0533+4822        48 20 47.97038    * 48 22 52.80771      48 23 14.42623        0.00
                    ./rk16ap_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 19801 observations, RA-AO4-07, RA-AO3-0


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)
  0529+483           102.8

 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
```

rk16aqtr

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```


```
Observing mode: C/L-band, dual-pol

Schedule for TORUN     (Code Tr )                                    Page   2
               RadioAstron AGN Monitoring
  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   3 Oct 2016   Day 277 ---

 ---------- L-band VLBI scans ----------

 Next scan frequencies:  1668.00  1668.00  1668.00  1668.00
 Next BBC frequencies:    732.00   732.00   732.00   732.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

11 00 00  0716+714     13 04 35  50.7 -30.3  5.7      70.8     0        0   11 00 00
11 19 30  ---          13 24 08  49.2 -29.4  6.0      66.8  1170       37   11 00 01

11 20 00  0716+714     13 24 38  49.2 -29.4  6.0      66.7    24       37   11 20 00
11 39 30  ---          13 44 11  47.8 -28.4  6.3      62.8  1170       75   11 20 01

11 40 00  0716+714     13 44 41  47.7 -28.3  6.3      62.7    24       75   11 40 00
12 00 00  ---          14 04 45  46.3 -27.2  6.7      58.8  1200      113   11 40 01



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


 ======== Setup file: ra18cm2.set

   Setup group:    7         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   2400.00   2400.00   2400.00   2400.00
  Net SB=         L         L         U         U
  IF SB =         L         L         L         L
  Pol.  =      RCP       LCP       RCP       LCP
  BBC   =         1         2         1         2
  BBC SB=         U         U         L         L
  IF    =        C         A         C         A

 The following frequency sets based on these setups were used.

  Frequency Set:   5  Setup file default.  Used with PCAL = 1MHz
  LO sum=   1668.00  1668.00  1668.00  1668.00
  BBC fr=    732.00   732.00   732.00   732.00
  Bandwd=     16.00    16.00    16.00    16.00
   Matching frequency sets:   5

  Track assignments are:
   track1=   2, 18,  3, 19
   barrel=roll_off
```

POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 30.661078       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 23.49892        0.00
                    fake circumpolar target for a TS to look at

* 0716+714          07 16 13.029739   * 07 21 53.448474     07 23 44.898155       0.00
  J0721+7120        71 26 15.17406    * 71 20 36.36340      71 18 15.73944        0.00
                    ./rk16aq_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 42370 observations, RA-AO4-07, RA-AO3-0
```

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)
  0716+714            90.5

 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
```

rk16artr

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Fax:      +7-495-3332378                Phone during observation: +7-903-6614865
```


```
Observing mode: C/L-band, dual-pol

Schedule for TORUN     (Code Tr )                                   Page   2
               RadioAstron AGN Monitoring
  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   5 Oct 2016   Day 279 ---

 ---------- L-band VLBI scans ----------

 Next scan frequencies:  1668.00  1668.00  1668.00  1668.00
 Next BBC frequencies:    732.00   732.00   732.00   732.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

11 00 00  0716+714     13 12 28  50.1 -29.9  5.8      69.2     0        0   11 00 00
11 19 30  ---          13 32 01  48.6 -29.0  6.1      65.2  1170       37   11 00 01

11 20 00  0716+714     13 32 31  48.6 -29.0  6.1      65.1    24       37   11 20 00
11 39 30  ---          13 52 05  47.2 -27.9  6.5      61.3  1170       75   11 20 01

11 40 00  0716+714     13 52 35  47.2 -27.9  6.5      61.2    24       75   11 40 00
12 00 00  ---          14 12 38  45.8 -26.7  6.8      57.3  1200      113   11 40 01



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


 ======== Setup file: ra18cm2.set

   Setup group:    8         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
 1st LO=   2400.00   2400.00   2400.00   2400.00
 Net SB=         L         L         U         U
 IF SB =         L         L         L         L
 Pol.  =       RCP       LCP       RCP       LCP
 BBC   =         1         2         1         2
 BBC SB=         U         U         L         L
 IF    =         C         A         C         A

The following frequency sets based on these setups were used.

 Frequency Set:   6  Setup file default.  Used with PCAL = 1MHz
 LO sum=   1668.00  1668.00  1668.00  1668.00
 BBC fr=    732.00   732.00   732.00   732.00
 Bandwd=     16.00    16.00    16.00    16.00
  Matching frequency sets:   6

 Track assignments are:
  track1=   2, 18,  3, 19
  barrel=roll_off
```

```
POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 30.715747       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 22.74992        0.00
                    fake circumpolar target for a TS to look at

* 0716+714          07 16 13.029739   * 07 21 53.448474     07 23 45.056452       0.00
  J0721+7120        71 26 15.17406    * 71 20 36.36340      71 18 15.51899        0.00
                    ./rk16ar_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 42370 observations, RA-AO4-07, RA-AO3-0
```

```
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)
  0716+714            91.8

 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
```

i6281tr

MC-TR-YS-IR C-band EOFUS test DOY 16281

PI: *Marcello Giroletti*

```
Address:  INAF

Observing mode: 1024-16-2

Schedule for TORUN     (Code Tr )                                   Page   2
               MC-TR-YS-IR C-band EOFUS test DOY 16281
  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   7 Oct 2016   Day 281 ---

 Next scan frequencies:  4778.49  4778.49  4778.49  4778.49  4850.49  4850.49  4850.49  4850.49
                         4922.49  4922.49  4922.49  4922.49  4994.49  4994.49  4994.49  4994.49
 Next BBC frequencies:    578.49   578.49   578.49   578.49   650.49   650.49   650.49   650.49
                          722.49   722.49   722.49   722.49   794.49   794.49   794.49   794.49
 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

15 00 00  BLLAC        17 21 01  43.3  73.3 -4.7     -51.1     0        0   15 00 00
15 01 00  ---          17 22 01  43.5  73.5 -4.7     -51.2    60        8   15 00 01

15 01 20  BLLAC        17 22 21  43.5  73.6 -4.7     -51.2    14        8   15 01 20
15 02 20  ---          17 23 21  43.7  73.7 -4.7     -51.3    60       15   15 01 21

15 02 40  BLLAC        17 23 41  43.7  73.8 -4.7     -51.3    14       15   15 02 40
15 03 40  ---          17 24 41  43.9  73.9 -4.6     -51.3    60       23   15 02 41

15 04 00  BLLAC        17 25 01  43.9  74.0 -4.6     -51.4    14       23   15 04 00
15 05 00  ---          17 26 01  44.0  74.2 -4.6     -51.4    60       31   15 04 01

15 05 20  BLLAC        17 26 21  44.1  74.2 -4.6     -51.4    14       31   15 05 20
15 06 20  ---          17 27 22  44.2  74.4 -4.6     -51.5    60       38   15 05 21

15 06 40  BLLAC        17 27 42  44.3  74.4 -4.6     -51.5    14       38   15 06 40
15 07 40  ---          17 28 42  44.4  74.6 -4.6     -51.6    60       46   15 06 41

15 08 00  BLLAC        17 29 02  44.5  74.6 -4.6     -51.6    14       46   15 08 00
15 09 00  ---          17 30 02  44.6  74.8 -4.6     -51.7    60       54   15 08 01

15 09 20  BLLAC        17 30 22  44.7  74.8 -4.6     -51.7    14       54   15 09 20
15 10 20  ---          17 31 22  44.8  75.0 -4.5     -51.7    60       62   15 09 21


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


 ======== Setup file: c1024.eofus

   Setup group:    1         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:   2  Setup file default.  Used with PCAL = off
  LO sum=   4778.49  4778.49  4778.49  4778.49  4850.49  4850.49  4850.49  4850.49
            4922.49  4922.49  4922.49  4922.49  4994.49  4994.49  4994.49  4994.49
  BBC fr=    578.49   578.49   578.49   578.49   650.49   650.49   650.49   650.49
             722.49   722.49   722.49   722.49   794.49   794.49   794.49   794.49
  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:   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)

  VR422201          22 00 39.362505   * 22 02 43.291372     22 03 26.179520       0.00
  J2202+4216        42 02 08.59077    * 42 16 39.97990      42 21 49.95560        0.00
* BLLAC             /Users/mgirolet/sched/catalogs/sources.gsfc
  2200+420          GSFC 2015a astro solution, unpublished  51226 observations.
  J2202+42
```

gg081atr

RadioAstron AGN polarization imaging

PI: *Jose L. Gomez*

```
Address:\Large \bf  Instituto de Astrofisica de Andalucia-CSIC
Observing mode: K-band, dual-pol

\Large \bf Schedule for TORUN     (Code Tr )                                  Page   2
               RadioAstron AGN 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   8 Oct 2016   Day 282 ---
 ---------- K-band  VLBI scans.  Ground segment 01: 2251+158 with EVN+KVN ----------
 Next scan frequencies:  22236.00  22236.00  22236.00  22236.00  22268.00  22268.00  22268.00  22268.0
                         22300.00  22300.00  22300.00  22300.00  22332.00  22332.00  22332.00  22332.0
 Next BBC frequencies:     736.00    736.00    736.00    736.00    768.00    768.00    768.00    768.0
                           800.00    800.00    800.00    800.00    832.00    832.00    832.00    832.0
 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
   \Large \bf poh                          poh -0.025 0.030
14 00 00  2251+158     16 24 47   8.5  74.3 -6.5     -37.0     0        0   14 00 00
14 09 30  ---          16 34 19   9.9  76.1 -6.3     -37.4   570       73   14 00 01

14 10 00  2251+158     16 34 49  10.0  76.2 -6.3     -37.4    24       73   14 10 00
14 19 30  ---          16 44 20  11.4  78.1 -6.2     -37.7   570      146   14 10 01

14 20 50  2136+141     16 45 41  21.4  94.3 -4.9     -38.2    29      146   14 20 50
14 28 40  ---          16 53 32  22.6  95.9 -4.8     -38.1   470      206   14 20 51

14 30 00  2251+158     16 54 52  12.9  80.1 -6.0     -38.0    30      206   14 30 00
14 39 30  ---          17 04 24  14.3  81.9 -5.8     -38.3   570      279   14 30 01

14 40 00  2251+158     17 04 54  14.4  82.0 -5.8     -38.3    24      279   14 40 00
14 49 30  ---          17 14 25  15.8  83.9 -5.7     -38.5   570      353   14 40 01

14 50 00  2251+158     17 14 55  15.9  84.0 -5.7     -38.5    24      353   14 50 00
14 59 30  ---          17 24 27  17.3  85.9 -5.5     -38.6   570      426   14 50 01

15 00 00  2251+158     17 24 57  17.4  86.0 -5.5     -38.6    24      426   15 00 00
15 09 30  ---          17 34 29  18.8  87.8 -5.3     -38.7   570      499   15 00 01

15 10 00  2251+158     17 34 59  18.9  87.9 -5.3     -38.7    24      499   15 10 00
15 19 30  ---          17 44 30  20.3  89.8 -5.2     -38.7   570      572   15 10 01
                                                           poh -0.030 0.030
15 20 50  2136+141     17 45 51  30.2 107.1 -3.9     -36.3    29      572   15 20 50
15 28 40  ---          17 53 42  31.4 108.9 -3.8     -35.9   470      632   15 20 51

15 30 00  2251+158     17 55 02  21.9  91.9 -5.0     -38.7    30      632   15 30 00
15 39 30  ---          18 04 34  23.4  93.9 -4.8     -38.6   570      705   15 30 01

15 40 00  2251+158     18 05 04  23.4  94.0 -4.8     -38.6    24      705   15 40 00
15 49 30  ---          18 14 35  24.9  95.9 -4.7     -38.5   570      778   15 40 01

15 50 00  2251+158     18 15 05  24.9  96.0 -4.7     -38.5    24      778   15 50 00
15 59 30  ---          18 24 37  26.3  98.0 -4.5     -38.3   570      851   15 50 01
```

```
Schedule for TORUN     (Code Tr )                                  Page   3
               RadioAstron AGN 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   8 Oct 2016   Day 282 ---

 ---------- K-band VLBI scans. Space segment 01: 2251+158 with EVN+KVN ----------

16 00 00  2251+158     18 25 07  26.4  98.1 -4.5     -38.3    24      851   16 00 00
16 10 00  ---          18 35 09  27.9 100.3 -4.3     -38.0   600      928   16 00 01

16 10 30  2251+158     18 35 39  28.0 100.4 -4.3     -38.0    24      928   16 10 30
16 20 00  ---          18 45 10  29.4 102.4 -4.2     -37.6   570     1001   16 10 31

16 20 30  2251+158     18 45 40  29.5 102.5 -4.2     -37.6    24     1001   16 20 30
16 30 00  ---          18 55 12  30.8 104.6 -4.0     -37.2   570     1074   16 20 31
                                                         poh -0.030 0.030
16 30 30  2251+158     18 55 42  30.9 104.8 -4.0     -37.2    24     1074   16 30 30
16 40 00  ---          19 05 14  32.3 106.9 -3.8     -36.8   570     1147   16 30 31

16 40 30  2251+158     19 05 44  32.4 107.0 -3.8     -36.7    24     1147   16 40 30
16 50 00  ---          19 15 15  33.7 109.2 -3.7     -36.2   570     1221   16 40 31

16 50 30  2251+158     19 15 45  33.8 109.3 -3.7     -36.2    24     1221   16 50 30
17 00 00  ---          19 25 17  35.1 111.6 -3.5     -35.6   570     1294   16 50 31

17 00 30  2251+158     19 25 47  35.2 111.7 -3.5     -35.5    24     1294   17 00 30
17 10 00  ---          19 35 18  36.5 114.0 -3.3     -34.8   570     1367   17 00 31

17 10 30  2251+158     19 35 49  36.6 114.1 -3.3     -34.8    24     1367   17 10 30
17 20 00  ---          19 45 20  37.9 116.5 -3.2     -34.0   570     1440   17 10 31

 ---------- K-band  VLBI scans.  Ground segment 02: 2251+158 with EVN+KVN+VLBA+GB ----------

17 21 20  2251+158     19 46 40  38.1 116.8 -3.1     -33.9    74     1440   17 21 20
17 30 50  ---          19 56 12  39.3 119.3 -3.0     -33.1   570     1513   17 21 21

 ---------- K-band  VLBI scans.  Ground segment 02: 2251+158 with EVN+KVN+VLBA+GB ----------

17 31 20  2251+158     19 56 42  39.4 119.4 -3.0     -33.0    24     1513   17 31 20
17 40 50  ---          20 06 14  40.6 121.9 -2.8     -32.1   570     1586   17 31 21

 ---------- K-band  VLBI scans.  Ground segment 02: 2251+158 with EVN+KVN+VLBA+GB ----------
                                 poh -0.030 0.035
17 41 20  2251+158     20 06 44  40.7 122.1 -2.8     -32.0    24     1586   17 41 20
17 50 50  ---          20 16 15  41.9 124.6 -2.6     -31.0   570     1659   17 41 21

 ---------- K-band  VLBI scans.  Ground segment 02: 2251+158 with EVN+KVN+VLBA+GB ----------

17 51 20  2251+158     20 16 45  41.9 124.8 -2.6     -30.9    24     1659   17 51 20
18 00 50  ---          20 26 17  43.1 127.5 -2.5     -29.8   570     1732   17 51 21
```

Schedule for TORUN (Code Tr) Page 4

RadioAstron AGN 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.

--- Sat 8 Oct 2016 Day 282 ---

Start UT	Source	Start / Stop LST	EL	AZ	HA	UP	ParA	Early Dwell	Disk GBytes	TPStart SYNC
Stop UT										
18 02 10	2136+141	20 27 37	48.8	152.9	-1.2		-16.4	14	1732	18 02 10
18 10 00	---	20 35 28	49.3	155.7	-1.1		-14.8	470	1792	18 02 11
18 11 20	2251+158	20 36 49	44.3	130.5	-2.3		-28.4	14	1792	18 11 20
18 20 50	---	20 46 20	45.4	133.4	-2.1		-27.0	570	1865	18 11 21
18 21 20	2251+158	20 46 50	45.4	133.5	-2.1		-27.0	24	1865	18 21 20
18 30 50	---	20 56 22	46.5	136.5	-2.0		-25.5	570	1938	18 21 21
18 31 20	2251+158	20 56 52	46.5	136.6	-2.0		-25.4	24	1938	18 31 20
18 40 50	---	21 06 23	47.5	139.7	-1.8		-23.9	570	2012	18 31 21
18 41 20	2251+158	21 06 53	47.5	139.8	-1.8		-23.8	24	2012	18 41 20
18 50 00	---	21 15 35	48.3	142.7	-1.7		-22.3	520	2078	18 41 21
18 50 30	2251+158	21 16 05	48.4	142.9	-1.6		-22.2	24	2078	18 50 30
19 00 00	---	21 25 37	49.2	146.1	-1.5		-20.4	570	2151	18 50 31
19 00 00	2251+158	21 25 37	49.2	146.1	-1.5		-20.4	-5	2151	No stop
19 09 30	---	21 35 08	50.0	149.4	-1.3		-18.5	565	2224	19 00 01
19 10 00	2251+158	21 35 38	50.0	149.6	-1.3		-18.4	24	2224	19 10 00
19 19 30	---	21 45 10	50.7	153.0	-1.2		-16.5	570	2297	19 10 01
19 20 00	2251+158	21 45 40	50.7	153.2	-1.2		-16.4	24	2297	19 20 00
19 29 30	---	21 55 11	51.3	156.7	-1.0		-14.3	570	2371	19 20 01
19 30 00	2251+158	21 55 41	51.4	156.9	-1.0		-14.2	24	2371	19 30 00
19 39 30	---	22 05 13	51.9	160.5	-0.8		-12.1	570	2444	19 30 01
19 40 00	2251+158	22 05 43	51.9	160.7	-0.8		-11.9	24	2444	19 40 00
19 49 30	---	22 15 15	52.3	164.3	-0.7		-9.7	570	2517	19 40 01
19 50 00	2251+158	22 15 45	52.4	164.5	-0.7		-9.6	24	2517	19 50 00
19 59 30	---	22 25 16	52.7	168.3	-0.5		-7.3	570	2590	19 50 01
								poh -0.025 0.035		
20 00 00	2136+141	22 25 46	50.3	197.6	0.8		10.8	-44	2590	20 00 00
20 09 30	---	22 35 18	49.8	201.1	0.9		12.9	526	2663	20 00 01
								poh -0.035 0.035		
20 10 00	2251+158	22 35 48	53.0	172.4	-0.3		-4.7	-42	2663	20 10 00
20 19 30	---	22 45 20	53.1	176.2	-0.2		-2.4	528	2736	20 10 01
20 20 00	2251+158	22 45 50	53.1	176.4	-0.1		-2.2	24	2736	20 20 00
20 29 30	---	22 55 21	53.1	180.2	0.0		0.1	570	2809	20 20 01

```
Schedule for TORUN     (Code Tr )                                  Page   5
               RadioAstron AGN 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   8 Oct 2016   Day 282 ---

20 30 00  2251+158     22 55 51  53.1 180.4  0.0       0.3    24     2809   20 30 00
20 39 30  ---          23 05 23  53.1 184.2  0.2       2.6   570     2882   20 30 01

20 40 00  2251+158     23 05 53  53.1 184.4  0.2       2.8    24     2882   20 40 00
20 49 30  ---          23 15 25  52.9 188.2  0.3       5.1   570     2955   20 40 01

20 50 00  2251+158     23 15 55  52.9 188.4  0.4       5.3    24     2955   20 50 00
20 59 30  ---          23 25 26  52.7 192.2  0.5       7.6   570     3028   20 50 01

21 00 00  2251+158     23 25 56  52.6 192.4  0.5       7.7    24     3028   21 00 00
21 09 30  ---          23 35 28  52.3 196.1  0.7      10.0   570     3101   21 00 01

21 10 00  2251+158     23 35 58  52.3 196.3  0.7      10.1    24     3101   21 10 00
21 23 30  ---          23 49 30  51.6 201.4  0.9      13.2   810     3205   21 10 01

 ---------- K-band VLBI scans. Space segment 02: 2251+158 with EVN+GB ----------

21 25 00  2251+158     23 51 00  51.5 202.0  0.9      13.6    83     3205   21 25 00
21 35 00  ---          00 01 02  50.9 205.7  1.1      15.7   600     3282   21 25 01

21 35 30  2251+158     00 01 32  50.9 205.9  1.1      15.9    24     3282   21 35 30
21 45 00  ---          00 11 04  50.2 209.3  1.3      17.9   570     3355   21 35 31

21 45 30  2251+158     00 11 34  50.2 209.5  1.3      18.0    24     3355   21 45 30
21 55 00  ---          00 21 05  49.4 212.9  1.4      19.8   570     3428   21 45 31
                                                           poh -0.025 0.035
21 55 30  2251+158     00 21 35  49.4 213.1  1.4      19.9    24     3428   21 55 30
22 05 00  ---          00 31 07  48.6 216.3  1.6      21.7   570     3501   21 55 31

22 05 30  2251+158     00 31 37  48.5 216.5  1.6      21.8    24     3501   22 05 30
22 15 00  ---          00 41 09  47.7 219.6  1.8      23.5   570     3574   22 05 31

22 15 30  2251+158     00 41 39  47.6 219.8  1.8      23.6    24     3574   22 15 30
22 25 00  ---          00 51 10  46.7 222.9  1.9      25.2   570     3647   22 15 31

 ---------- K-band  VLBI scans.  Ground segment 03: 2251+158 with EVN+VLBA+GB+Hh ----------

22 26 00  2251+158     00 52 10  46.6 223.2  2.0      25.3    54     3647   22 26 00
22 36 00  ---          01 02 12  45.5 226.3  2.1      26.9   600     3724   22 26 01

22 36 30  2251+158     01 02 42  45.5 226.4  2.1      27.0    24     3724   22 36 30
22 46 00  ---          01 12 14  44.4 229.3  2.3      28.3   570     3797   22 36 31
                                                           poh -0.015 0.035
22 47 40  2136+141     01 13 54  33.1 248.3  3.6      35.2    44     3797   22 47 40
22 55 30  ---          01 21 45  32.0 250.1  3.7      35.7   470     3858   22 47 41
```

```
Schedule for TORUN     (Code Tr )                                  Page   6
               RadioAstron AGN 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   8 Oct 2016   Day 282 ---
   poh -0.025 0.035
22 57 40  2251+158     01 23 56  43.0 232.7  2.5      29.8    74     3858   22 57 40
23 06 00  ---          01 32 17  42.0 235.1  2.6      30.8   500     3922   22 57 41

23 07 40  2251+158     01 33 57  41.8 235.5  2.7      31.0    93     3922   23 07 40
23 16 00  ---          01 42 19  40.8 237.8  2.8      32.0   500     3986   23 07 41

23 16 30  2251+158     01 42 49  40.7 237.9  2.8      32.0    24     3986   Stopped
23 17 30  ---          01 43 49  40.6 238.2  2.8      32.1    60     3986

23 17 40  2251+158     01 43 59  40.5 238.2  2.8      32.1     4     3986   23 17 40
23 26 30  ---          01 52 50  39.4 240.6  3.0      33.0   530     4054   23 17 41

23 31 00  2251+158     01 57 21  38.8 241.7  3.0      33.4   263     4054   23 31 00
23 37 00  ---          02 03 22  38.0 243.3  3.1      34.0   360     4100   23 31 01
                                                               poh -0.020 0.030
23 39 30  2136+141     02 05 52  25.6 259.9  4.4      37.6    90     4100   23 39 30
23 45 40  ---          02 12 03  24.7 261.2  4.5      37.8   370     4147   23 39 31
                                                                poh -0.020 0.035
23 48 10  2251+158     02 14 34  36.5 246.1  3.3      34.9    91     4147   23 48 10
23 56 30  ---          02 22 55  35.3 248.1  3.5      35.5   500     4212   23 48 11

 --- Start: Sat   8 Oct 2016   Day 282 -- Stop: Sun   9 Oct 2016   Day 283 ---

23 59 00  2331+073     02 25 26  33.0 233.1  2.8      29.0   104     4212   23 59 00
00 05 10  ---          02 31 37  32.3 234.7  2.9      29.6   370     4259   23 59 01

00 07 30  2251+158     02 33 57  33.8 250.7  3.7      36.2    94     4259   00 07 30
00 17 00  ---          02 43 29  32.4 252.9  3.8      36.7   570     4332   00 07 31

00 17 30  2251+158     02 43 59  32.4 253.0  3.8      36.7    24     4332   00 17 30
00 27 00  ---          02 53 30  31.0 255.2  4.0      37.2   570     4405   00 17 31

00 28 40  2251+158     02 55 11  30.7 255.5  4.0      37.3    94     4405   00 28 40
00 37 00  ---          03 03 32  29.5 257.4  4.1      37.6   500     4469   00 28 41

00 41 00  2251+158     03 07 33  28.9 258.2  4.2      37.8   233     4469   00 41 00
00 47 00  ---          03 13 34  28.0 259.5  4.3      38.0   360     4515   00 41 01

00 48 40  2251+158     03 15 14  27.8 259.9  4.3      38.0    94     4515   00 48 40
00 57 00  ---          03 23 35  26.6 261.7  4.5      38.2   500     4579   00 48 41

00 58 40  2251+158     03 25 15  26.3 262.0  4.5      38.3    94     4579   00 58 40
01 07 00  ---          03 33 37  25.1 263.8  4.6      38.4   500     4644   00 58 41
```

Schedule for TORUN (Code Tr) Page 7

RadioAstron AGN 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
--- Sun 9 Oct 2016 Day 283 ---										
01 07 30	2251+158	03 34 07	25.0	263.9	4.7		38.5	24	4644	01 07 30
01 17 00	---	03 43 38	23.6	265.8	4.8		38.6	570	4717	01 07 31
01 17 30	2251+158	03 44 09	23.5	265.9	4.8		38.6	24	4717	01 17 30
01 27 00	---	03 53 40	22.1	267.9	5.0		38.7	570	4790	01 17 31
01 27 30	2251+158	03 54 10	22.0	268.0	5.0		38.7	24	4790	01 27 30
01 37 00	---	04 03 42	20.6	269.9	5.1		38.7	570	4863	01 27 31
01 37 30	2251+158	04 04 12	20.5	270.0	5.2		38.7	24	4863	01 37 30
01 47 00	---	04 13 43	19.1	271.9	5.3		38.7	570	4936	01 37 31
01 47 30	2251+158	04 14 13	19.0	272.0	5.3		38.7	24	4936	01 47 30
01 57 00	---	04 23 45	17.5	273.9	5.5		38.6	570	5009	01 47 31
01 58 40	2251+158	04 25 25	17.3	274.2	5.5		38.6	94	5009	01 58 40
02 07 00	---	04 33 47	16.0	275.8	5.6		38.5	500	5073	01 58 41
---------- K-band VLBI scans. Space segment 03: 2251+158 with VLA+VLBA+EVN+GB ----------										
02 15 00	2251+158	04 41 48	14.9	277.4	5.8		38.3	473	5073	02 15 00
02 23 50	---	04 50 39	13.5	279.1	5.9		38.1	530	5141	02 15 01
02 25 30	2251+158	04 52 20	13.3	279.4	6.0		38.1	94	5141	02 25 30
02 33 50	---	05 00 41	12.1	281.1	6.1		37.9	500	5205	02 25 31
02 35 30	2251+158	05 02 21	11.8	281.4	6.1		37.8	94	5205	02 35 30
02 43 50	---	05 10 43	10.6	283.0	6.3		37.5	500	5269	02 35 31
02 45 30	2251+158	05 12 23	10.3	283.3	6.3		37.5	94	5269	02 45 30
02 53 50	---	05 20 44	9.1	284.9	6.4		37.2	500	5333	02 45 31
02 55 30	2251+158	05 22 25	8.9	285.3	6.5		37.1	94	5333	02 55 30
03 03 50	---	05 30 46	7.7	286.9	6.6		36.8	500	5397	02 55 31
03 05 30	2251+158	05 32 26	7.4	287.2	6.6		36.7	94	5397	03 05 30
03 15 00	---	05 41 58	6.1	289.1	6.8		36.2	570	5470	03 05 31
---------- K-band VLBI scans. Ground segment 04: 2251+158 with EVN+KVN+VLBA+GB ----------										
03 16 00	2251+158	05 42 58	5.9	289.3	6.8		36.2	54	5470	03 16 00
03 25 20	---	05 52 20	4.6	291.1	7.0		35.7	560	5542	03 16 01
03 25 50	2251+158	05 52 50	4.5	291.2	7.0		35.7	24	5542	03 25 50
03 35 20	---	06 02 21	3.2	293.1	7.1		35.1	570	5615	03 25 51

```
Schedule for TORUN     (Code Tr )                                  Page   8
               RadioAstron AGN 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
-----------------------------------------------------------------------------------------

 --- Sun   9 Oct 2016   Day 283 ---
   poh -0.035 0.035
04 05 10  OJ287        06 32 16  47.0 126.2 -2.4     -31.1  1428     5615   04 05 10
04 13 30  ---          06 40 37  48.0 128.7 -2.3     -29.9   500     5679   04 05 11

04 14 00  OJ287        06 41 08  48.0 128.9 -2.2     -29.9    24     5679   04 14 00
04 24 00  ---          06 51 09  49.2 132.0 -2.1     -28.4   600     5756   04 14 01

04 27 00  OJ287        06 54 10  49.5 132.9 -2.0     -27.9   173     5756   04 27 00
04 33 00  ---          07 00 11  50.2 134.9 -1.9     -26.9   360     5803   04 27 01

04 33 30  OJ287        07 00 41  50.2 135.0 -1.9     -26.9    24     5803   04 33 30
04 43 00  ---          07 10 12  51.2 138.2 -1.8     -25.2   570     5876   04 33 31

04 43 30  OJ287        07 10 42  51.3 138.4 -1.8     -25.1    24     5876   04 43 30
04 53 00  ---          07 20 14  52.2 141.7 -1.6     -23.4   570     5949   04 43 31

04 53 30  OJ287        07 20 44  52.2 141.9 -1.6     -23.3    24     5949   04 53 30
05 03 00  ---          07 30 16  53.1 145.3 -1.4     -21.4   570     6022   04 53 31

05 03 30  OJ287        07 30 46  53.1 145.4 -1.4     -21.3    24     6022   05 03 30
05 13 00  ---          07 40 17  53.9 149.0 -1.3     -19.2   570     6095   05 03 31

05 13 30  OJ287        07 40 47  53.9 149.2 -1.2     -19.1    24     6095   05 13 30
05 23 00  ---          07 50 19  54.6 152.8 -1.1     -17.0   570     6168   05 13 31
                                                         poh -0.040 0.035
05 24 30  OJ287        07 51 49  54.7 153.4 -1.1     -16.6    83     6168   05 24 30
05 29 30  ---          07 56 50  55.0 155.4 -1.0     -15.5   300     6206   05 24 31

05 30 00  OJ287        07 57 20  55.1 155.6 -1.0     -15.3    24     6206   05 30 00
05 39 30  ---          08 06 52  55.6 159.4 -0.8     -13.0   570     6279   05 30 01

05 40 00  OJ287        08 07 22  55.7 159.6 -0.8     -12.9    24     6279   05 40 00
05 49 30  ---          08 16 53  56.1 163.5 -0.6     -10.5   570     6353   05 40 01

05 50 00  OJ287        08 17 23  56.1 163.7 -0.6     -10.3    23     6353   05 50 00
05 59 30  ---          08 26 55  56.5 167.7 -0.5      -7.8   570     6426   05 50 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:   26         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=         U         U         L         L         U         U         L         L
                   U         U         L         L         U         U         L         L
   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=         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:   5  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
             22300.00  22300.00  22300.00  22300.00  22332.00  22332.00  22332.00  22332.00
   BBC fr=     736.00    736.00    736.00    736.00    768.00    768.00    768.00    768.00
               800.00    800.00    800.00    800.00    832.00    832.00    832.00    832.00
   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:   5
   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)
 * 2331+073          23 31 40.087463   * 23 34 12.828163     23 35 04.888788       0.00
   J2334+0736        07 19 52.41033    * 07 36 27.55159      07 42 08.61343        0.00

   1328+307          13 28 49.657778   * 13 31 08.288070     13 31 52.594343       0.00
   J1331+3030        30 45 58.64060    * 30 30 32.95924      30 25 36.62028        0.00
 * 3C286             ./gg081a_sources.radioastron

   0851+202          08 51 57.250618   * 08 54 48.874930     08 55 45.160432       0.00
   J0854+2006        20 17 58.41733    * 20 06 30.64078      20 02 35.26632        0.00
 * OJ287             ./gg081a_sources.radioastron

   2037+511          20 37 07.456977   * 20 38 37.034732     20 39 08.003296       0.00
   J2038+5119        51 08 35.76950    * 51 19 12.66253      51 23 10.77548        0.00
 * 3C418             ./gg081a_sources.radioastron

 * 2136+141          21 36 37.412147   * 21 39 01.309269     21 39 50.070488       0.00
   J2139+1423        14 10 00.62094    * 14 23 35.99209      14 28 24.77234        0.00

 * 2251+158          22 51 29.519741   * 22 53 57.747940     22 54 48.320174       0.00
   J2253+1608        15 52 54.34791    * 16 08 53.56074      16 14 26.23315        0.00
```

rk16astr

RadioAstron AGN Monitoring

PI: *Yuri Kovalev*


```
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Fax:      +7-495-3332378                 Phone during observation: +7-903-6614865
```


```
Observing mode: C/K-band, dual-pol

Schedule for TORUN     (Code Tr )                                    Page   2
               RadioAstron AGN Monitoring
  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   9 Oct 2016   Day 283 ---

 ---------- C-band VLBI scans ----------

 Next scan frequencies:  4836.00  4836.00  4836.00  4836.00
 Next BBC frequencies:    736.00   736.00   736.00   736.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

18 00 00  2200+420     20 29 23  71.0 115.0 -1.6     -47.5     0        0   18 00 00
18 14 30  ---          20 43 56  73.0 121.0 -1.3     -44.2   870       28   18 00 01

18 15 00  2200+420     20 44 26  73.0 121.2 -1.3     -44.0    23       28   18 15 00
18 29 30  ---          20 58 58  74.8 128.5 -1.1     -39.5   870       56   18 15 01

18 30 00  2200+420     20 59 28  74.9 128.7 -1.1     -39.3    23       56   18 30 00
18 44 30  ---          21 14 01  76.5 137.5 -0.8     -33.3   870       84   18 30 01

18 45 00  2200+420     21 14 31  76.5 137.8 -0.8     -33.1    23       84   18 45 00
19 00 00  ---          21 29 33  77.9 148.8 -0.6     -24.9   900      112   18 45 01



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


 ======== Setup file: ra6cm2.set

   Setup group:    4         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4100.00   4100.00   4100.00   4100.00
  Net SB=         L         L         U         U
  IF SB =         U         U         U         U
  Pol.  =      RCP       LCP       RCP       LCP
  BBC   =         1         2         1         2
  BBC SB=         L         L         U         U
  IF    =        C         A         C         A

 The following frequency sets based on these setups were used.

  Frequency Set:   5  Setup file default.  Used with PCAL = 1MHz
  LO sum=   4836.00  4836.00  4836.00  4836.00
  BBC fr=    736.00   736.00   736.00   736.00
  Bandwd=     16.00    16.00    16.00    16.00
   Matching frequency sets:   5

  Track assignments are:
   track1=   2, 18,  3, 19
   barrel=roll_off
```

POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 30.981450       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 21.03820        0.00
                    fake circumpolar target for a TS to look at

* 2200+420          22 00 39.362504   * 22 02 43.291371     22 03 26.148383       0.00
  J2202+4216        42 02 08.59073    * 42 16 39.97987      42 21 50.36597        0.00
  BLLAC             ./rk16as_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 59417 observations, RA-AO4-07, RA-AO3-0
```

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)
  2200+420           126.8
  2107+353           119.7

 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
```

rk16attr

RadioAstron AGN Monitoring

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```
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Phone:    +7-495-3332512                EMAIL:    kirx@scan.sai.msu.ru
Fax:      +7-495-3332378                Phone during observation: +7-903-6614865
```


```
Observing mode: C/K-band, dual-pol

Schedule for TORUN     (Code Tr )                                   Page   2
               RadioAstron AGN Monitoring
  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  10 Oct 2016   Day 284 ---

 ---------- C-band VLBI scans ----------

 Next scan frequencies:  4836.00  4836.00  4836.00  4836.00
 Next BBC frequencies:    736.00   736.00   736.00   736.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

00 00 00  0716+714     02 30 22  54.4  31.8 -4.9     -80.8     0        0   00 00 00
00 14 30  ---          02 44 55  55.5  32.1 -4.6     -84.0   870       28   00 00 01

00 15 00  0716+714     02 45 25  55.5  32.1 -4.6     -84.1    24       28   00 15 00
00 29 30  ---          02 59 57  56.7  32.2 -4.4     -87.4   870       56   00 15 01

00 30 00  0716+714     03 00 27  56.7  32.2 -4.4     -87.6    24       56   00 30 00
00 44 30  ---          03 15 00  57.9  32.3 -4.1     -91.0   870       84   00 30 01

00 45 00  0716+714     03 15 30  58.0  32.3 -4.1     -91.1    24       84   00 45 00
01 00 00  ---          03 30 32  59.2  32.1 -3.9     -94.8   900      112   00 45 01



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


 ======== Setup file: ra6cm2.set

   Setup group:    5         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4100.00   4100.00   4100.00   4100.00
  Net SB=         L         L         U         U
  IF SB =         U         U         U         U
  Pol.  =      RCP       LCP       RCP       LCP
  BBC   =         1         2         1         2
  BBC SB=         L         L         U         U
  IF    =        C         A         C         A

 The following frequency sets based on these setups were used.

  Frequency Set:   4  Setup file default.  Used with PCAL = 1MHz
  LO sum=   4836.00  4836.00  4836.00  4836.00
  BBC fr=    736.00   736.00   736.00   736.00
  Bandwd=     16.00    16.00    16.00    16.00
   Matching frequency sets:   4

  Track assignments are:
   track1=   2, 18,  3, 19
   barrel=roll_off
```

```
 POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 31.005533       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 20.93485        0.00
                    fake circumpolar target for a TS to look at

* 0716+714          07 16 13.029739   * 07 21 53.448474     07 23 45.468690       0.00
  J0721+7120        71 26 15.17406    * 71 20 36.36340      71 18 15.14645        0.00
                    ./rk16at_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 42370 observations, RA-AO4-07, RA-AO3-0
```

```
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)
   0716+714            94.7

  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
```

rk16autr

RadioAstron AGN Monitoring

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Fax:      +7-495-3332378                Phone during observation: +7-903-6614865
```


```
Observing mode: C/L-band, dual-pol

Schedule for TORUN     (Code Tr )                                   Page   2
               RadioAstron AGN Monitoring
  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  10 Oct 2016   Day 284 ---

 ---------- L-band VLBI scans ----------

 Next scan frequencies:  1668.00  1668.00  1668.00  1668.00
 Next BBC frequencies:    732.00   732.00   732.00   732.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

04 10 00  2200+420     06 41 03  14.9 -36.2  8.6      28.7     0        0   04 10 00
04 34 30  ---          07 05 37  12.8 -32.1  9.0      25.6  1470       47   04 10 01

04 35 00  2200+420     07 06 08  12.8 -32.0  9.0      25.5    24       47   04 35 00
05 00 00  ---          07 31 12  10.9 -27.6  9.5      22.1  1500       95   04 35 01



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


 ======== Setup file: ra18cm2.set

   Setup group:    6         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   2400.00   2400.00   2400.00   2400.00
  Net SB=         L         L         U         U
  IF SB =         L         L         L         L
  Pol.  =      RCP       LCP       RCP       LCP
  BBC   =         1         2         1         2
  BBC SB=         U         U         L         L
  IF    =        C         A         C         A

 The following frequency sets based on these setups were used.

  Frequency Set:   5  Setup file default.  Used with PCAL = 1MHz
  LO sum=   1668.00  1668.00  1668.00  1668.00
  BBC fr=    732.00   732.00   732.00   732.00
  Bandwd=     16.00    16.00    16.00    16.00
   Matching frequency sets:   5

  Track assignments are:
   track1=   2, 18,  3, 19
   barrel=roll_off
```

POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 31.022604       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 20.86387        0.00
                    fake circumpolar target for a TS to look at

* 2200+420          22 00 39.362504   * 22 02 43.291371     22 03 26.141052       0.00
  J2202+4216        42 02 08.59073    * 42 16 39.97987      42 21 50.44336        0.00
  BLLAC             ./rk16au_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 59417 observations, RA-AO4-07, RA-AO3-0
```

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)
  2200+420           126.7

 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
```

rk16avtr

RadioAstron AGN Monitoring

PI: *Yuri Kovalev*


```
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Fax:      +7-495-3332378                Phone during observation: +7-903-6614865
```


```
Observing mode: C/L-band, dual-pol

Schedule for TORUN     (Code Tr )                                   Page   2
               RadioAstron AGN Monitoring
  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  10 Oct 2016   Day 284 ---

 ---------- L-band VLBI scans ----------

 Next scan frequencies:  1668.00  1668.00  1668.00  1668.00
 Next BBC frequencies:    732.00   732.00   732.00   732.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

10 00 00  2200+420     12 32 01  10.7  27.0 -9.5     -21.7     0        0   10 00 00
10 19 30  ---          12 51 34  12.1  30.4 -9.2     -24.3  1170       37   10 00 01

10 20 00  2200+420     12 52 04  12.1  30.5 -9.2     -24.3    24       37   10 20 00
10 39 30  ---          13 11 37  13.7  33.8 -8.9     -26.9  1170       75   10 20 01

10 40 00  2200+420     13 12 08  13.7  33.9 -8.9     -27.0    24       75   10 40 00
11 00 00  ---          13 32 11  15.5  37.3 -8.5     -29.5  1200      113   10 40 01



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


 ======== Setup file: ra18cm2.set

   Setup group:    7         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   2400.00   2400.00   2400.00   2400.00
  Net SB=         L         L         U         U
  IF SB =         L         L         L         L
  Pol.  =      RCP       LCP       RCP       LCP
  BBC   =         1         2         1         2
  BBC SB=         U         U         L         L
  IF    =        C         A         C         A

 The following frequency sets based on these setups were used.

  Frequency Set:   4  Setup file default.  Used with PCAL = 1MHz
  LO sum=   1668.00  1668.00  1668.00  1668.00
  BBC fr=    732.00   732.00   732.00   732.00
  Bandwd=     16.00    16.00    16.00    16.00
   Matching frequency sets:   4

  Track assignments are:
   track1=   2, 18,  3, 19
   barrel=roll_off



 POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 31.045767       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 20.77026        0.00
                    fake circumpolar target for a TS to look at

* 2200+420          22 00 39.362504   * 22 02 43.291371     22 03 26.136916       0.00
  J2202+4216        42 02 08.59073    * 42 16 39.97987      42 21 50.48388        0.00
  BLLAC             ./rk16av_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 59417 observations, RA-AO4-07, RA-AO3-0



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)
  2200+420           126.6

 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
```

rk16awtr

RadioAstron AGN Monitoring

PI: *Yuri Kovalev*


```
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Fax:      +7-495-3332378                Phone during observation: +7-903-6614865
```


```
Observing mode: C/K-band, dual-pol

Schedule for TORUN     (Code Tr )                                    Page   2
               RadioAstron AGN Monitoring
  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  10 Oct 2016   Day 284 ---

 ---------- C-band VLBI scans ----------

 Next scan frequencies:  4836.00  4836.00  4836.00  4836.00
 Next BBC frequencies:    736.00   736.00   736.00   736.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

15 00 00  0716+714     17 32 50  35.9 -10.6 10.2      20.2     0        0   15 00 00
15 14 30  ---          17 47 23  35.6  -9.3 10.4      17.5   870       28   15 00 01

15 15 00  0716+714     17 47 53  35.6  -9.2 10.4      17.5    25       28   15 15 00
15 29 30  ---          18 02 25  35.2  -7.8 10.6      14.8   870       56   15 15 01

15 30 00  0716+714     18 02 55  35.2  -7.8 10.7      14.7    25       56   15 30 00
15 44 30  ---          18 17 28  35.0  -6.4 10.9      12.1   870       84   15 30 01

15 45 00  0716+714     18 17 58  34.9  -6.4 10.9      12.0    24       84   15 45 00
16 00 00  ---          18 33 00  34.7  -4.9 11.2       9.2   900      112   15 45 01



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


 ======== Setup file: ra6cm2.set

   Setup group:    3         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
 1st LO=   4100.00   4100.00   4100.00   4100.00
 Net SB=         L         L         U         U
 IF SB =         U         U         U         U
 Pol.  =       RCP       LCP       RCP       LCP
 BBC   =         1         2         1         2
 BBC SB=         L         L         U         U
 IF    =         C         A         C         A

The following frequency sets based on these setups were used.

 Frequency Set:   3  Setup file default.  Used with PCAL = 1MHz
 LO sum=   4836.00  4836.00  4836.00  4836.00
 BBC fr=    736.00   736.00   736.00   736.00
 Bandwd=     16.00    16.00    16.00    16.00
  Matching frequency sets:   3

 Track assignments are:
  track1=   2, 18,  3, 19
  barrel=roll_off



POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 31.065997       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 20.69076        0.00
                    fake circumpolar target for a TS to look at

* 0716+714          07 16 13.029739   * 07 21 53.448474     07 23 45.525862       0.00
  J0721+7120        71 26 15.17406    * 71 20 36.36340      71 18 15.12184        0.00
                    ./rk16aw_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 42370 observations, RA-AO4-07, RA-AO3-0


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)
  0716+714            95.1

 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
```

rk16axtr

RadioAstron AGN Monitoring

PI: *Yuri Kovalev*


```
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Fax:      +7-495-3332378                 Phone during observation: +7-903-6614865
```


```
Observing mode: C/K-band, dual-pol

Schedule for TORUN     (Code Tr )                                   Page   2
               RadioAstron AGN Monitoring
  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  11 Oct 2016   Day 285 ---

 ---------- K-band VLBI scans ----------

 Next scan frequencies:  22236.00  22236.00  22236.00  22236.00
 Next BBC frequencies:     736.00    736.00    736.00    736.00
 Next scan bandwidths:      16.00     16.00     16.00     16.00
   poh -0.020 0.035
01 00 00  2251+158     03 34 29  24.9 263.9  4.7      38.5     0        0   01 00 00
01 14 30  ---          03 49 01  22.8 266.9  4.9      38.6   870       28   01 00 01

01 15 00  2251+158     03 49 31  22.7 267.0  4.9      38.7    24       28   01 15 00
01 29 30  ---          04 04 04  20.5 270.0  5.2      38.7   870       56   01 15 01

01 30 00  2251+158     04 04 34  20.4 270.1  5.2      38.7    24       56   01 30 00
01 44 30  ---          04 19 06  18.2 272.9  5.4      38.7   870       84   01 30 01

01 45 00  2251+158     04 19 36  18.2 273.0  5.4      38.6    24       84   01 45 00
02 00 00  ---          04 34 39  15.9 276.0  5.7      38.5   900      112   01 45 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
   Matching groups in ./rk16ax_freq.dat:
     tr1cm

   Setup group:    8         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
 1st LO=  21500.00  21500.00  21500.00  21500.00
 Net SB=         L         L         U         U
 IF SB =         U         U         U         U
 Pol.  =       RCP       LCP       RCP       LCP
 BBC   =         1         2         1         2
 BBC SB=         L         L         U         U
 IF    =         C         A         C         A

The following frequency sets based on these setups were used.

 Frequency Set:   7  Setup file default.  Used with PCAL = 1MHz
 LO sum=   22236.00  22236.00  22236.00  22236.00
 BBC fr=     736.00    736.00    736.00    736.00
 Bandwd=      16.00     16.00     16.00     16.00
  Matching frequency sets:   7

 Track assignments are:
  track1=   2, 18,  3, 19
  barrel=roll_off
```

```
POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 31.107138       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 20.53466        0.00
                    fake circumpolar target for a TS to look at

* 2251+158          22 51 29.519741   * 22 53 57.747940     22 54 48.307475       0.00
  J2253+1608        15 52 54.34791    * 16 08 53.56074      16 14 26.45730        0.00
  3C454.3           ./rk16ax_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 40570 observations, RA-AO4-06, RA-AO3-0
```

```
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)
  2251+158           146.4

 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
```

em125atr

e-EVN: em125a, es081a

PI: *Marcote, Saikia*

```
Address:  JIVE

Observing mode: realtime e-vlbi
Schedule for TORUN     (Code Tr )                                  Page   2
               e-EVN: em125a, es081a
  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  11 Oct 2016   Day 285 ---
 ---------- test run ----------
 Next scan frequencies:  4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
 Next BBC frequencies:    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
 Next scan bandwidths:     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00

09 00 00  J1540+1447   11 35 48  28.8 104.3 -4.1     -37.0     0        0   09 00 00
09 09 00  =1538+149    11 44 49  30.1 106.3 -3.9     -36.6   540       69   09 00 01

09 09 40  J1540+1447   11 45 29  30.2 106.5 -3.9     -36.5    34       69   09 09 40
09 19 00  =1538+149    11 54 51  31.5 108.6 -3.8     -36.1   560      141   09 09 41

09 19 40  J1540+1447   11 55 31  31.6 108.7 -3.8     -36.0    34      141   09 19 40
09 29 00  =1538+149    12 04 52  32.9 110.9 -3.6     -35.5   560      213   09 19 41

09 29 40  J1540+1447   12 05 33  33.0 111.1 -3.6     -35.4    34      213   09 29 40
09 39 00  =1538+149    12 14 54  34.3 113.3 -3.4     -34.8   560      285   09 29 41

09 39 40  J1540+1447   12 15 34  34.4 113.5 -3.4     -34.7    34      285   09 39 40
09 49 00  =1538+149    12 24 56  35.7 115.7 -3.3     -34.0   560      356   09 39 41

09 49 40  J1540+1447   12 25 36  35.8 115.9 -3.3     -34.0    34      356   09 49 40
09 59 00  =1538+149    12 34 57  37.0 118.3 -3.1     -33.2   560      428   09 49 41

09 59 40  J1540+1447   12 35 37  37.1 118.4 -3.1     -33.1    34      428   09 59 40
10 09 00  =1538+149    12 44 59  38.3 120.8 -2.9     -32.2   560      500   09 59 41

10 09 40  J1540+1447   12 45 39  38.4 121.0 -2.9     -32.2    34      500   10 09 40
10 19 00  =1538+149    12 55 01  39.6 123.5 -2.8     -31.2   560      572   10 09 41

10 19 40  J1540+1447   12 55 41  39.7 123.7 -2.8     -31.1    34      572   10 19 40
10 29 00  =1538+149    13 05 02  40.8 126.2 -2.6     -30.1   560      644   10 19 41

10 29 40  J1540+1447   13 05 42  40.9 126.4 -2.6     -30.0    34      644   10 29 40
10 39 00  =1538+149    13 15 04  42.0 129.0 -2.4     -28.8   560      715   10 29 41

10 39 40  J1540+1447   13 15 44  42.1 129.2 -2.4     -28.8    34      715   10 39 40
10 49 00  =1538+149    13 25 06  43.2 131.9 -2.3     -27.5   560      787   10 39 41

10 49 40  J1540+1447   13 25 46  43.3 132.1 -2.3     -27.4    34      787   10 49 40
10 59 00  =1538+149    13 35 07  44.3 134.9 -2.1     -26.1   560      859   10 49 41

10 59 40  J1540+1447   13 35 47  44.3 135.1 -2.1     -26.0    34      859   10 59 40
11 09 00  =1538+149    13 45 09  45.3 138.0 -1.9     -24.5   560      931   10 59 41
```

```
Schedule for TORUN     (Code Tr )                                  Page   3
               e-EVN: em125a, es081a
  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  11 Oct 2016   Day 285 ---

11 09 40  J1540+1447   13 45 49  45.4 138.2 -1.9     -24.4    34      931   11 09 40
11 19 00  =1538+149    13 55 10  46.3 141.2 -1.8     -22.9   560     1003   11 09 41

11 19 40  J1540+1447   13 55 51  46.3 141.4 -1.8     -22.8    34     1003   11 19 40
11 29 00  =1538+149    14 05 12  47.2 144.5 -1.6     -21.1   560     1074   11 19 41

11 29 40  J1540+1447   14 05 52  47.3 144.7 -1.6     -21.0    34     1074   11 29 40
11 39 00  =1538+149    14 15 14  48.0 147.9 -1.4     -19.3   560     1146   11 29 41

11 39 40  J1540+1447   14 15 54  48.1 148.1 -1.4     -19.2    34     1146   11 39 40
11 49 00  =1538+149    14 25 15  48.8 151.3 -1.3     -17.3   560     1218   11 39 41

11 49 40  J1540+1447   14 25 56  48.8 151.6 -1.3     -17.2    34     1218   11 49 40
11 59 00  =1538+149    14 35 17  49.5 154.9 -1.1     -15.3   560     1290   11 49 41

11 59 40  J1540+1447   14 35 57  49.5 155.1 -1.1     -15.1    34     1290   11 59 40
12 09 00  =1538+149    14 45 19  50.1 158.5 -0.9     -13.1   560     1362   11 59 41

12 09 40  J1540+1447   14 45 59  50.1 158.8 -0.9     -13.0    34     1362   12 09 40
12 19 00  =1538+149    14 55 20  50.6 162.2 -0.8     -10.9   560     1433   12 09 41

12 19 40  J1540+1447   14 56 00  50.6 162.5 -0.8     -10.8    34     1433   12 19 40
12 29 00  =1538+149    15 05 22  51.0 166.0 -0.6      -8.6   560     1505   12 19 41

12 29 40  J1540+1447   15 06 02  51.0 166.3 -0.6      -8.5    33     1505   12 29 40
12 39 00  =1538+149    15 15 24  51.3 169.8 -0.4      -6.3   560     1577   12 29 41

12 39 40  J1540+1447   15 16 04  51.3 170.1 -0.4      -6.1    33     1577   12 39 40
12 49 00  =1538+149    15 25 25  51.5 173.7 -0.3      -3.9   560     1649   12 39 41

12 49 30  J1540+1447   15 25 55  51.5 173.9 -0.3      -3.8    24     1649   12 49 30
12 57 30  =1538+149    15 33 57  51.6 177.0 -0.1      -1.8   480     1710   12 49 31

 ---------- EM125A ----------

13 00 00  J1835-1115   15 36 27  15.1 134.1 -3.0     -26.1    -1     1710   13 00 00
13 02 00  =1832-113    15 38 27  15.3 134.6 -3.0     -25.9   119     1726   13 00 01

13 02 00  HESSJ1832    15 38 27  17.3 134.3 -2.9     -25.8   -21     1726   No stop
13 05 30  ---          15 41 58  17.7 135.1 -2.9     -25.4   189     1753   13 02 01

13 05 30  J1835-1115   15 41 58  15.7 135.4 -2.9     -25.5   -21     1753   No stop
13 07 00  =1832-113    15 43 28  15.9 135.7 -2.9     -25.3    69     1764   13 05 31
```

Schedule for TORUN (Code Tr) Page 4

e-EVN: em125a, es081a

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
--- Tue 11 Oct 2016 Day 285 ---										
13 07 00	HESSJ1832	15 43 28	17.9	135.5	-2.8		-25.3	-21	1764	No stop
13 10 30	---	15 46 59	18.2	136.3	-2.8		-24.9	189	1791	13 07 01
13 11 10	J1835-1115	15 47 39	16.3	136.7	-2.8		-24.8	19	1791	13 11 10
13 12 10	=1832-113	15 48 39	16.4	136.9	-2.8		-24.7	60	1799	13 11 11
13 12 10	HESSJ1832	15 48 39	18.4	136.7	-2.8		-24.7	-21	1799	No stop
13 15 40	---	15 52 10	18.8	137.5	-2.7		-24.3	189	1826	13 12 11
13 15 40	J1835-1115	15 52 10	16.8	137.8	-2.7		-24.3	-21	1826	No stop
13 17 10	=1832-113	15 53 40	16.9	138.1	-2.7		-24.1	69	1837	13 15 41
13 17 10	HESSJ1832	15 53 40	18.9	137.9	-2.7		-24.1	-21	1837	No stop
13 20 40	---	15 57 10	19.3	138.7	-2.6		-23.7	189	1864	13 17 11
13 21 20	J1835-1115	15 57 51	17.3	139.1	-2.6		-23.6	19	1864	13 21 20
13 22 20	=1832-113	15 58 51	17.4	139.3	-2.6		-23.5	60	1872	13 21 21
13 22 20	HESSJ1832	15 58 51	19.4	139.1	-2.6		-23.5	-21	1872	No stop
13 25 50	---	16 02 21	19.8	140.0	-2.5		-23.0	189	1899	13 22 21
13 25 50	J1835-1115	16 02 21	17.8	140.2	-2.6		-23.1	-21	1899	No stop
13 27 20	=1832-113	16 03 52	17.9	140.5	-2.5		-22.9	69	1910	13 25 51
13 27 20	HESSJ1832	16 03 52	19.9	140.3	-2.5		-22.9	-21	1910	No stop
13 30 50	---	16 07 22	20.2	141.2	-2.4		-22.4	189	1937	13 27 21
13 31 30	J1835-1115	16 08 02	18.3	141.5	-2.5		-22.4	19	1937	13 31 30
13 32 30	=1832-113	16 09 02	18.4	141.7	-2.5		-22.3	60	1945	13 31 31
13 32 30	HESSJ1832	16 09 02	20.4	141.6	-2.4		-22.2	-21	1945	No stop
13 36 00	---	16 12 33	20.7	142.5	-2.4		-21.8	189	1972	13 32 31
13 36 00	J1835-1115	16 12 33	18.7	142.6	-2.4		-21.8	-21	1972	No stop
13 37 30	=1832-113	16 14 03	18.9	142.9	-2.4		-21.6	69	1983	13 36 01
13 37 30	HESSJ1832	16 14 03	20.9	142.8	-2.3		-21.6	-21	1983	No stop
13 41 00	---	16 17 34	21.2	143.7	-2.3		-21.1	189	2010	13 37 31
13 41 40	J1835-1115	16 18 14	19.2	144.0	-2.3		-21.1	19	2010	13 41 40
13 42 40	=1832-113	16 19 14	19.3	144.2	-2.3		-21.0	60	2018	13 41 41
13 42 40	HESSJ1832	16 19 14	21.3	144.1	-2.2		-20.9	-21	2018	No stop
13 46 10	---	16 22 45	21.6	145.0	-2.2		-20.4	189	2045	13 42 41

Schedule for TORUN (Code Tr) Page 5

e-EVN: em125a, es081a

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
--- Tue 11 Oct 2016 Day 285 ---										
13 46 10	J1835-1115	16 22 45	19.6	145.1	-2.2		-20.5	-21	2045	No stop
13 47 40	=1832-113	16 24 15	19.8	145.4	-2.2		-20.3	69	2056	13 46 11
13 47 40	HESSJ1832	16 24 15	21.8	145.4	-2.2		-20.2	-21	2056	No stop
13 51 10	---	16 27 45	22.1	146.2	-2.1		-19.8	189	2083	13 47 41
13 51 50	J1835-1115	16 28 26	20.1	146.4	-2.1		-19.8	19	2083	13 51 50
13 52 50	=1832-113	16 29 26	20.2	146.7	-2.1		-19.6	60	2091	13 51 51
13 52 50	HESSJ1832	16 29 26	22.2	146.6	-2.1		-19.5	-21	2091	No stop
13 56 20	---	16 32 56	22.5	147.5	-2.0		-19.1	189	2118	13 52 51
13 56 20	J1835-1115	16 32 56	20.5	147.6	-2.1		-19.2	-21	2118	No stop
13 57 50	=1832-113	16 34 27	20.6	147.9	-2.0		-19.0	69	2129	13 56 21
13 57 50	HESSJ1832	16 34 27	22.6	147.9	-2.0		-18.9	-21	2129	No stop
14 01 20	---	16 37 57	22.9	148.8	-1.9		-18.4	189	2156	13 57 51
14 02 00	J1835-1115	16 38 37	20.9	149.0	-2.0		-18.4	19	2156	14 02 00
14 03 00	=1832-113	16 39 37	21.0	149.2	-1.9		-18.3	60	2164	14 02 01
14 03 00	HESSJ1832	16 39 37	23.0	149.2	-1.9		-18.1	-21	2164	No stop
14 06 30	---	16 43 08	23.3	150.1	-1.8		-17.6	189	2191	14 03 01
14 06 30	J1835-1115	16 43 08	21.3	150.1	-1.9		-17.8	-21	2191	No stop
14 08 00	=1832-113	16 44 38	21.4	150.5	-1.9		-17.6	69	2203	14 06 31
14 08 00	HESSJ1832	16 44 38	23.4	150.5	-1.8		-17.4	-21	2203	No stop
14 11 30	---	16 48 09	23.6	151.4	-1.8		-16.9	189	2229	14 08 01
14 12 10	J1835-1115	16 48 49	21.7	151.5	-1.8		-17.0	19	2229	14 12 10
14 13 10	=1832-113	16 49 49	21.8	151.8	-1.8		-16.8	60	2237	14 12 11
14 13 10	HESSJ1832	16 49 49	23.8	151.8	-1.7		-16.7	-21	2237	No stop
14 16 40	---	16 53 20	24.0	152.7	-1.7		-16.2	189	2264	14 13 11
14 16 40	J1835-1115	16 53 20	22.0	152.7	-1.7		-16.3	-21	2264	No stop
14 18 10	=1832-113	16 54 50	22.1	153.0	-1.7		-16.1	69	2276	14 16 41
14 18 10	HESSJ1832	16 54 50	24.1	153.1	-1.6		-16.0	-21	2276	No stop
14 21 40	---	16 58 20	24.3	154.1	-1.6		-15.4	189	2303	14 18 11
14 22 20	J1835-1115	16 59 01	22.4	154.1	-1.6		-15.5	19	2303	14 22 20
14 23 20	=1832-113	17 00 01	22.4	154.4	-1.6		-15.4	60	2310	14 22 21

Schedule for TORUN (Code Tr) Page 6

e-EVN: em125a, es081a

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
--- Tue 11 Oct 2016 Day 285 ---										
14 25 00	J1824+1044	17 01 41	44.5	150.7	-1.4		-17.4	3	2310	14 25 00
14 28 30	=1821+107	17 05 12	44.7	151.9	-1.3		-16.7	210	2337	14 25 01
14 30 10	J1835-1115	17 06 52	22.9	156.1	-1.5		-14.3	4	2337	14 30 10
14 32 10	=1832-113	17 08 52	23.0	156.6	-1.5		-14.0	120	2353	14 30 11
14 32 10	HESSJ1832	17 08 52	25.0	156.8	-1.4		-13.9	-21	2353	No stop
14 35 40	---	17 12 23	25.2	157.7	-1.4		-13.3	189	2379	14 32 11
14 35 40	J1835-1115	17 12 23	23.2	157.6	-1.4		-13.5	-21	2379	No stop
14 37 10	=1832-113	17 13 53	23.3	157.9	-1.4		-13.3	69	2391	14 35 41
14 37 10	HESSJ1832	17 13 53	25.3	158.1	-1.3		-13.1	-21	2391	No stop
14 40 40	---	17 17 24	25.5	159.1	-1.3		-12.5	189	2418	14 37 11
14 41 20	J1835-1115	17 18 04	23.5	159.0	-1.3		-12.7	19	2418	14 41 20
14 42 20	=1832-113	17 19 04	23.6	159.3	-1.3		-12.5	60	2426	14 41 21
14 42 20	HESSJ1832	17 19 04	25.6	159.5	-1.2		-12.3	-21	2426	No stop
14 45 50	---	17 22 34	25.7	160.5	-1.2		-11.7	189	2453	14 42 21
14 45 50	J1835-1115	17 22 34	23.8	160.2	-1.2		-12.0	-21	2453	No stop
14 47 20	=1832-113	17 24 05	23.8	160.6	-1.2		-11.7	69	2464	14 45 51
14 47 20	HESSJ1832	17 24 05	25.8	160.9	-1.2		-11.5	-21	2464	No stop
14 50 50	---	17 27 35	26.0	161.8	-1.1		-10.9	189	2491	14 47 21
14 51 30	J1835-1115	17 28 15	24.0	161.7	-1.1		-11.1	19	2491	14 51 30
14 52 30	=1832-113	17 29 16	24.1	162.0	-1.1		-10.9	60	2499	14 51 31
14 52 30	HESSJ1832	17 29 16	26.1	162.3	-1.1		-10.7	-21	2499	No stop
14 56 00	---	17 32 46	26.2	163.2	-1.0		-10.1	189	2526	14 52 31
14 56 00	J1835-1115	17 32 46	24.2	162.9	-1.1		-10.4	-21	2526	No stop
14 57 30	=1832-113	17 34 16	24.3	163.3	-1.0		-10.1	69	2537	14 56 01
14 57 30	HESSJ1832	17 34 16	26.3	163.6	-1.0		-9.9	-21	2537	No stop
15 01 00	---	17 37 47	26.4	164.6	-0.9		-9.3	189	2564	14 57 31
15 01 40	J1835-1115	17 38 27	24.5	164.4	-1.0		-9.5	19	2564	15 01 40
15 02 40	=1832-113	17 39 27	24.5	164.7	-0.9		-9.3	60	2572	15 01 41
15 02 40	HESSJ1832	17 39 27	26.5	165.0	-0.9		-9.0	-21	2572	No stop
15 06 10	---	17 42 58	26.6	166.0	-0.8		-8.5	189	2599	15 02 41

Schedule for TORUN (Code Tr) Page 7

e-EVN: em125a, es081a

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
--- Tue 11 Oct 2016 Day 285 ---										
15 06 10	J1835-1115	17 42 58	24.7	165.6	-0.9		-8.8	-21	2599	No stop
15 07 40	=1832-113	17 44 28	24.7	166.0	-0.9		-8.5	69	2610	15 06 11
15 07 40	HESSJ1832	17 44 28	26.7	166.4	-0.8		-8.2	-21	2610	No stop
15 11 10	---	17 47 59	26.8	167.4	-0.8		-7.7	189	2637	15 07 41
15 11 50	J1835-1115	17 48 39	24.9	167.1	-0.8		-7.8	19	2637	15 11 50
15 12 50	=1832-113	17 49 39	24.9	167.4	-0.8		-7.7	60	2645	15 11 51
15 12 50	HESSJ1832	17 49 39	26.9	167.8	-0.7		-7.4	-21	2645	No stop
15 16 20	---	17 53 09	27.0	168.8	-0.7		-6.8	189	2672	15 12 51
15 16 20	J1835-1115	17 53 09	25.0	168.3	-0.7		-7.1	-21	2672	No stop
15 17 50	=1832-113	17 54 40	25.0	168.7	-0.7		-6.9	69	2683	15 16 21
15 17 50	HESSJ1832	17 54 40	27.0	169.2	-0.6		-6.6	-21	2683	No stop
15 21 20	---	17 58 10	27.1	170.2	-0.6		-6.0	189	2710	15 17 51
15 22 00	J1835-1115	17 58 50	25.2	169.9	-0.6		-6.2	19	2710	15 22 00
15 23 00	=1832-113	17 59 51	25.2	170.1	-0.6		-6.0	60	2718	15 22 01
15 23 00	HESSJ1832	17 59 51	27.1	170.6	-0.6		-5.7	-21	2718	No stop
15 26 30	---	18 03 21	27.2	171.6	-0.5		-5.1	189	2745	15 23 01
15 26 30	J1835-1115	18 03 21	25.3	171.1	-0.5		-5.5	-21	2745	No stop
15 28 00	=1832-113	18 04 51	25.3	171.5	-0.5		-5.2	69	2756	15 26 31
15 28 00	HESSJ1832	18 04 51	27.3	172.0	-0.5		-4.9	-21	2756	No stop
15 31 30	---	18 08 22	27.3	173.0	-0.4		-4.3	189	2783	15 28 01
15 32 10	J1835-1115	18 09 02	25.4	172.6	-0.5		-4.5	19	2783	15 32 10
15 33 10	=1832-113	18 10 02	25.4	172.9	-0.4		-4.4	60	2791	15 32 11
15 33 10	HESSJ1832	18 10 02	27.4	173.4	-0.4		-4.0	-21	2791	No stop
15 36 40	---	18 13 33	27.4	174.4	-0.3		-3.4	189	2818	15 33 11
15 36 40	J1835-1115	18 13 33	25.5	173.8	-0.4		-3.8	-21	2818	No stop
15 38 10	=1832-113	18 15 03	25.5	174.2	-0.4		-3.5	69	2829	15 36 41
15 38 10	HESSJ1832	18 15 03	27.4	174.8	-0.3		-3.1	-21	2829	No stop
15 41 40	---	18 18 34	27.5	175.8	-0.3		-2.6	189	2856	15 38 11
15 42 20	J1835-1115	18 19 14	25.6	175.4	-0.3		-2.8	19	2856	15 42 20
15 43 20	=1832-113	18 20 14	25.6	175.6	-0.3		-2.7	60	2864	15 42 21

Schedule for TORUN (Code Tr) Page 8

e-EVN: em125a, es081a

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
--- Tue 11 Oct 2016 Day 285 ---										
15 43 20	HESSJ1832	18 20 14	27.5	176.3	-0.2		-2.3	-21	2864	No stop
15 46 50	---	18 23 44	27.5	177.2	-0.2		-1.7	189	2891	15 43 21
15 46 50	J1835-1115	18 23 44	25.6	176.6	-0.2		-2.1	-21	2891	No stop
15 48 20	=1832-113	18 25 15	25.6	177.0	-0.2		-1.8	69	2903	15 46 51
15 48 20	HESSJ1832	18 25 15	27.5	177.7	-0.1		-1.4	-21	2903	No stop
15 51 50	---	18 28 45	27.5	178.6	-0.1		-0.8	189	2929	15 48 21
15 52 30	J1835-1115	18 29 25	25.6	178.1	-0.1		-1.1	19	2929	15 52 30
15 53 30	=1832-113	18 30 26	25.6	178.4	-0.1		-1.0	60	2937	15 52 31
15 53 30	HESSJ1832	18 30 26	27.6	179.1	-0.1		-0.5	-21	2937	No stop
15 57 00	---	18 33 56	27.6	180.1	0.0		0.0	189	2964	15 53 31
15 57 00	J1835-1115	18 33 56	25.7	179.4	-0.0		-0.4	-21	2964	No stop
15 58 30	=1832-113	18 35 26	25.7	179.8	-0.0		-0.1	69	2976	15 57 01
15 58 30	HESSJ1832	18 35 26	27.6	180.5	0.0		0.3	-21	2976	No stop
16 02 00	---	18 38 57	27.5	181.5	0.1		0.9	189	3003	15 58 31
16 02 40	J1835-1115	18 39 37	25.7	180.9	0.1		0.6	19	3003	16 02 40
16 03 40	=1832-113	18 40 37	25.6	181.2	0.1		0.7	60	3010	16 02 41
16 03 40	HESSJ1832	18 40 37	27.5	181.9	0.1		1.2	-21	3010	No stop
16 07 10	---	18 44 08	27.5	182.9	0.2		1.8	189	3037	16 03 41
16 07 10	J1835-1115	18 44 08	25.6	182.1	0.1		1.3	-21	3037	No stop
16 08 40	=1832-113	18 45 38	25.6	182.6	0.2		1.6	69	3049	16 07 11
16 08 40	HESSJ1832	18 45 38	27.5	183.3	0.2		2.0	-21	3049	No stop
16 12 10	---	18 49 09	27.5	184.3	0.3		2.6	189	3076	16 08 41
16 12 50	J1835-1115	18 49 49	25.6	183.7	0.2		2.3	19	3076	16 12 50
16 13 50	=1832-113	18 50 49	25.6	184.0	0.2		2.4	60	3083	16 12 51
16 13 50	HESSJ1832	18 50 49	27.4	184.8	0.3		2.9	-21	3083	No stop
16 17 20	---	18 54 19	27.4	185.7	0.3		3.5	189	3110	16 13 51
16 17 20	J1835-1115	18 54 19	25.5	184.9	0.3		3.0	-21	3110	No stop
16 18 50	=1832-113	18 55 50	25.5	185.3	0.3		3.3	69	3122	16 17 21
16 18 50	HESSJ1832	18 55 50	27.4	186.2	0.4		3.7	-21	3122	No stop
16 22 20	---	18 59 20	27.3	187.1	0.4		4.3	189	3149	16 18 51

Schedule for TORUN (Code Tr) Page 9

e-EVN: em125a, es081a

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 11 Oct 2016 Day 285 ---										
16 23 00	J1835-1115	19 00 00	25.5	186.5	0.4		3.9	19	3149	16 23 00
16 24 00	=1832-113	19 01 01	25.4	186.7	0.4		4.1	60	3156	16 23 01
16 24 00	HESSJ1832	19 01 01	27.3	187.6	0.5		4.6	-21	3156	No stop
16 27 30	---	19 04 31	27.2	188.6	0.5		5.2	189	3183	16 24 01
16 27 30	J1835-1115	19 04 31	25.4	187.7	0.5		4.7	-21	3183	No stop
16 29 00	=1832-113	19 06 01	25.3	188.1	0.5		4.9	69	3195	16 27 31
16 29 00	HESSJ1832	19 06 01	27.2	189.0	0.5		5.5	-21	3195	No stop
16 32 30	---	19 09 32	27.1	189.9	0.6		6.0	189	3222	16 29 01
16 33 10	J1835-1115	19 10 12	25.2	189.2	0.6		5.6	19	3222	16 33 10
16 34 10	=1832-113	19 11 12	25.2	189.5	0.6		5.8	60	3229	16 33 11
16 34 10	HESSJ1832	19 11 12	27.0	190.4	0.6		6.3	-21	3229	No stop
16 37 40	---	19 14 43	26.9	191.4	0.7		6.9	189	3256	16 34 11
16 37 40	J1835-1115	19 14 43	25.1	190.4	0.6		6.4	-21	3256	No stop
16 39 10	=1832-113	19 16 13	25.1	190.8	0.7		6.6	69	3268	16 37 41
16 39 10	HESSJ1832	19 16 13	26.9	191.8	0.7		7.1	-21	3268	No stop
16 42 40	---	19 19 44	26.8	192.7	0.8		7.7	189	3295	16 39 11
16 43 20	J1835-1115	19 20 24	25.0	192.0	0.7		7.3	19	3295	16 43 20
16 44 20	=1832-113	19 21 24	24.9	192.2	0.8		7.4	60	3303	16 43 21
16 44 20	HESSJ1832	19 21 24	26.7	193.2	0.8		8.0	-20	3303	No stop
16 47 50	---	19 24 55	26.6	194.2	0.9		8.6	190	3329	16 44 21
16 47 50	J1835-1115	19 24 55	24.8	193.2	0.8		8.0	-20	3329	No stop
16 49 20	=1832-113	19 26 25	24.8	193.6	0.8		8.3	70	3341	16 47 51
16 49 20	HESSJ1832	19 26 25	26.6	194.6	0.9		8.8	-20	3341	No stop
16 52 50	---	19 29 55	26.4	195.5	0.9		9.4	190	3368	16 49 21
16 53 30	J1835-1115	19 30 35	24.6	194.7	0.9		8.9	20	3368	16 53 30
16 54 30	=1832-113	19 31 36	24.6	194.9	0.9		9.1	60	3376	16 53 31
16 54 30	HESSJ1832	19 31 36	26.3	196.0	1.0		9.6	-20	3376	No stop
16 58 00	---	19 35 06	26.2	196.9	1.0		10.2	190	3403	16 54 31
16 58 00	J1835-1115	19 35 06	24.4	195.9	1.0		9.6	-20	3403	No stop
16 59 30	=1832-113	19 36 36	24.4	196.3	1.0		9.9	70	3414	16 58 01

Schedule for TORUN (Code Tr) Page 10

e-EVN: em125a, es081a

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
--- Tue 11 Oct 2016 Day 285 ---										
16 59 30	HESSJ1832	19 36 36	26.1	197.3	1.0		10.5	-20	3414	No stop
17 03 00	---	19 40 07	26.0	198.3	1.1		11.0	190	3441	16 59 31
17 03 40	J1835-1115	19 40 47	24.2	197.4	1.1		10.5	20	3441	17 03 40
17 04 40	=1832-113	19 41 47	24.1	197.6	1.1		10.7	60	3449	17 03 41
17 04 40	HESSJ1832	19 41 47	25.9	198.7	1.1		11.3	-20	3449	No stop
17 08 10	---	19 45 18	25.7	199.7	1.2		11.8	190	3476	17 04 41
17 08 10	J1835-1115	19 45 18	24.0	198.6	1.2		11.2	-20	3476	No stop
17 09 40	=1832-113	19 46 48	23.9	199.0	1.2		11.5	70	3487	17 08 11
17 09 40	HESSJ1832	19 46 48	25.6	200.1	1.2		12.1	-20	3487	No stop
17 13 10	---	19 50 19	25.5	201.0	1.3		12.6	190	3514	17 09 41
17 13 50	J1835-1115	19 50 59	23.7	200.1	1.2		12.1	20	3514	17 13 50
17 14 50	=1832-113	19 51 59	23.6	200.3	1.3		12.3	60	3522	17 13 51
17 16 30	J1824+1044	19 53 39	44.1	211.1	1.5		18.4	9	3522	17 16 30
17 19 50	=1821+107	19 57 00	43.8	212.2	1.5		19.0	200	3547	17 16 31
17 21 30	J1835-1115	19 58 40	23.3	202.1	1.4		13.3	9	3547	17 21 30
17 23 30	=1832-113	20 00 40	23.2	202.6	1.4		13.6	120	3563	17 21 31
17 23 30	HESSJ1832	20 00 40	24.9	203.8	1.5		14.2	-20	3563	No stop
17 27 00	---	20 04 11	24.6	204.7	1.5		14.7	190	3590	17 23 31
17 27 00	J1835-1115	20 04 11	23.0	203.5	1.5		14.1	-20	3590	No stop
17 28 30	=1832-113	20 05 41	22.9	203.9	1.5		14.4	70	3601	17 27 01
17 28 30	HESSJ1832	20 05 41	24.6	205.1	1.5		15.0	-20	3601	No stop
17 32 00	---	20 09 12	24.3	206.0	1.6		15.5	190	3628	17 28 31
17 32 40	J1835-1115	20 09 52	22.6	205.0	1.6		15.0	20	3628	17 32 40
17 33 40	=1832-113	20 10 52	22.5	205.2	1.6		15.1	60	3636	17 32 41
17 33 40	HESSJ1832	20 10 52	24.2	206.4	1.6		15.7	-20	3636	No stop
17 37 10	---	20 14 23	24.0	207.4	1.7		16.2	190	3663	17 33 41
17 37 10	J1835-1115	20 14 23	22.3	206.1	1.6		15.6	-20	3663	No stop
17 38 40	=1832-113	20 15 53	22.2	206.5	1.7		15.9	70	3674	17 37 11
17 38 40	HESSJ1832	20 15 53	23.9	207.7	1.7		16.5	-20	3674	No stop
17 42 10	---	20 19 23	23.6	208.6	1.8		17.0	190	3701	17 38 41

Schedule for TORUN (Code Tr) Page 11

e-EVN: em125a, es081a

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
--- Tue 11 Oct 2016 Day 285 ---										
17 42 50	J1835-1115	20 20 04	21.9	207.6	1.7		16.5	20	3701	17 42 50
17 43 50	=1832-113	20 21 04	21.9	207.8	1.7		16.6	60	3709	17 42 51
17 43 50	HESSJ1832	20 21 04	23.5	209.1	1.8		17.2	-20	3709	No stop
17 47 20	---	20 24 34	23.2	210.0	1.8		17.7	190	3736	17 43 51
17 47 20	J1835-1115	20 24 34	21.6	208.7	1.8		17.1	-20	3736	No stop
17 48 50	=1832-113	20 26 05	21.5	209.1	1.8		17.3	70	3747	17 47 21
17 48 50	HESSJ1832	20 26 05	23.1	210.4	1.9		17.9	-20	3747	No stop
17 52 20	---	20 29 35	22.9	211.3	1.9		18.4	190	3774	17 48 51
17 53 00	J1835-1115	20 30 15	21.2	210.1	1.9		17.9	20	3774	17 53 00
17 54 00	=1832-113	20 31 15	21.1	210.4	1.9		18.0	60	3782	17 53 01
17 54 00	HESSJ1832	20 31 15	22.7	211.7	2.0		18.6	-20	3782	No stop
17 57 30	---	20 34 46	22.4	212.6	2.0		19.1	190	3809	17 54 01
17 57 30	J1835-1115	20 34 46	20.9	211.3	2.0		18.5	-20	3809	No stop
17 59 00	=1832-113	20 36 16	20.7	211.6	2.0		18.7	70	3821	17 57 31
17 59 00	HESSJ1832	20 36 16	22.3	212.9	2.0		19.3	-19	3821	No stop
18 02 30	---	20 39 47	22.0	213.8	2.1		19.8	191	3847	17 59 01
18 03 10	J1835-1115	20 40 27	20.4	212.7	2.1		19.3	20	3847	18 03 10
18 04 10	=1832-113	20 41 27	20.3	212.9	2.1		19.4	60	3855	18 03 11
18 04 10	HESSJ1832	20 41 27	21.9	214.2	2.1		20.0	-19	3855	No stop
18 07 40	---	20 44 58	21.6	215.1	2.2		20.5	191	3882	18 04 11
18 07 40	J1835-1115	20 44 58	20.0	213.8	2.1		19.9	-20	3882	No stop
18 09 10	=1832-113	20 46 28	19.9	214.1	2.2		20.1	70	3894	18 07 41
18 09 10	HESSJ1832	20 46 28	21.5	215.5	2.2		20.7	-19	3894	No stop
18 12 40	---	20 49 58	21.2	216.4	2.3		21.1	191	3921	18 09 11
18 13 20	J1835-1115	20 50 39	19.5	215.2	2.2		20.6	21	3921	18 13 20
18 14 20	=1832-113	20 51 39	19.5	215.4	2.3		20.8	60	3928	18 13 21
18 14 20	HESSJ1832	20 51 39	21.0	216.8	2.3		21.4	-19	3928	No stop
18 17 50	---	20 55 09	20.7	217.6	2.4		21.8	191	3955	18 14 21
18 17 50	J1835-1115	20 55 09	19.2	216.3	2.3		21.2	-19	3955	No stop
18 19 20	=1832-113	20 56 40	19.0	216.6	2.3		21.4	71	3967	18 17 51

```
Schedule for TORUN     (Code Tr )                                  Page  12
               e-EVN: em125a, es081a
  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  11 Oct 2016   Day 285 ---

18 19 20  HESSJ1832    20 56 40  20.5 218.0  2.4      22.0   -19     3967   No stop
18 22 50  ---          21 00 10  20.2 218.9  2.4      22.4   191     3994   18 19 21

18 23 30  J1835-1115   21 00 50  18.6 217.6  2.4      22.0    21     3994   18 23 30
18 24 30  =1832-113    21 01 50  18.5 217.9  2.4      22.1    60     4001   18 23 31

18 24 30  HESSJ1832    21 01 50  20.1 219.3  2.5      22.7   -19     4001   No stop
18 28 00  ---          21 05 21  19.7 220.1  2.5      23.1   191     4028   18 24 31

18 28 00  J1835-1115   21 05 21  18.2 218.7  2.5      22.5   -19     4028   No stop
18 30 00  =1832-113    21 07 21  18.0 219.2  2.5      22.8   101     4044   18 28 01

 ---------- FRINGE FINDER ----------

18 34 30  J0108+0135   21 11 52  19.2 114.3 -4.0     -33.2    45     4044   18 34 30
18 40 00  =0106+013    21 17 23  19.9 115.6 -3.9     -32.8   330     4086   18 34 31

18 41 00  J0108+0135   21 18 23  20.1 115.8 -3.9     -32.7    54     4086   18 41 00
18 50 00  =0106+013    21 27 25  21.3 117.8 -3.7     -32.1   540     4155   18 41 01

18 51 00  J0108+0135   21 28 25  21.4 118.0 -3.7     -32.0    54     4155   18 51 00
19 00 00  =0106+013    21 37 26  22.6 120.1 -3.5     -31.3   540     4224   18 51 01

19 01 00  J0108+0135   21 38 26  22.7 120.4 -3.5     -31.2    54     4224   19 01 00
19 10 00  =0106+013    21 47 28  23.9 122.5 -3.4     -30.5   540     4294   19 01 01

19 11 00  J0108+0135   21 48 28  24.0 122.7 -3.4     -30.4    54     4294   19 11 00
19 20 00  =0106+013    21 57 30  25.1 124.8 -3.2     -29.5   540     4363   19 11 01

19 21 00  J0108+0135   21 58 30  25.3 125.1 -3.2     -29.4    54     4363   19 21 00
19 30 00  =0106+013    22 07 31  26.4 127.3 -3.0     -28.6   540     4432   19 21 01

19 31 00  J0108+0135   22 08 31  26.5 127.5 -3.0     -28.5    54     4432   19 31 00
19 40 00  =0106+013    22 17 33  27.5 129.8 -2.9     -27.5   540     4501   19 31 01

19 41 00  J0108+0135   22 18 33  27.7 130.0 -2.8     -27.4    54     4501   19 41 00
19 50 00  =0106+013    22 27 34  28.7 132.3 -2.7     -26.4   540     4571   19 41 01

19 51 00  J0108+0135   22 28 35  28.8 132.5 -2.7     -26.3    54     4571   19 51 00
20 00 00  =0106+013    22 37 36  29.8 134.9 -2.5     -25.2   540     4640   19 51 01

20 01 00  J0108+0135   22 38 36  29.9 135.1 -2.5     -25.1    54     4640   20 01 00
20 10 00  =0106+013    22 47 38  30.8 137.5 -2.4     -23.9   540     4709   20 01 01
```

Schedule for TORUN (Code Tr) Page 13

e-EVN: em125a, es081a

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
--- Tue 11 Oct 2016 Day 285 ---										
20 11 00	J0108+0135	22 48 38	30.9	137.8	-2.3		-23.8	54	4709	20 11 00
20 20 00	=0106+013	22 57 39	31.8	140.2	-2.2		-22.6	540	4778	20 11 01
20 21 00	J0108+0135	22 58 40	31.9	140.5	-2.2		-22.5	54	4778	20 21 00
20 30 00	=0106+013	23 07 41	32.7	143.0	-2.0		-21.2	540	4847	20 21 01
20 31 00	J0108+0135	23 08 41	32.8	143.2	-2.0		-21.1	54	4847	20 31 00
20 40 00	=0106+013	23 17 43	33.6	145.8	-1.9		-19.8	540	4917	20 31 01
20 41 00	J0108+0135	23 18 43	33.7	146.0	-1.8		-19.6	54	4917	20 41 00
20 50 00	=0106+013	23 27 44	34.4	148.6	-1.7		-18.2	540	4986	20 41 01
20 51 00	J0108+0135	23 28 44	34.5	148.9	-1.7		-18.1	54	4986	20 51 00
21 00 00	=0106+013	23 37 46	35.2	151.5	-1.5		-16.6	540	5055	20 51 01
21 01 00	J0108+0135	23 38 46	35.2	151.8	-1.5		-16.5	54	5055	21 01 00
21 10 00	=0106+013	23 47 48	35.9	154.5	-1.4		-15.0	540	5124	21 01 01
21 11 00	J0108+0135	23 48 48	35.9	154.8	-1.3		-14.8	54	5124	21 11 00
21 20 00	=0106+013	23 57 49	36.5	157.5	-1.2		-13.3	540	5194	21 11 01
21 21 00	J0108+0135	23 58 49	36.5	157.8	-1.2		-13.1	54	5194	21 21 00
21 30 00	=0106+013	00 07 51	37.0	160.6	-1.0		-11.5	540	5263	21 21 01
21 33 00	J0339-0146	00 10 51	20.0	122.6	-3.5		-30.4	88	5263	21 33 00
21 40 00	=CTA26	00 17 52	20.9	124.2	-3.4		-29.8	420	5317	21 33 01
21 41 00	J0339-0146	00 18 53	21.0	124.4	-3.4		-29.7	54	5317	21 41 00
21 50 00	=CTA26	00 27 54	22.1	126.5	-3.2		-28.9	540	5386	21 41 01
21 51 00	J0339-0146	00 28 54	22.2	126.8	-3.2		-28.8	54	5386	21 51 00
22 00 00	=CTA26	00 37 56	23.3	128.9	-3.0		-27.9	540	5455	21 51 01
22 01 00	J0339-0146	00 38 56	23.4	129.2	-3.0		-27.8	54	5455	22 01 00
22 10 00	=CTA26	00 47 57	24.5	131.4	-2.9		-26.8	540	5524	22 01 01
22 11 00	J0339-0146	00 48 58	24.6	131.6	-2.9		-26.7	54	5524	22 11 00
22 20 00	=CTA26	00 57 59	25.6	133.9	-2.7		-25.7	540	5594	22 11 01
22 21 00	J0339-0146	00 58 59	25.7	134.1	-2.7		-25.6	54	5594	22 21 00
22 30 00	=CTA26	01 08 01	26.6	136.4	-2.5		-24.5	540	5663	22 21 01
22 31 00	J0339-0146	01 09 01	26.7	136.6	-2.5		-24.4	54	5663	22 31 00
22 40 00	=CTA26	01 18 02	27.7	139.0	-2.4		-23.2	540	5732	22 31 01

```
Schedule for TORUN     (Code Tr )                                  Page  14
               e-EVN: em125a, es081a
  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  11 Oct 2016   Day 285 ---

22 41 00  J0339-0146   01 19 03  27.7 139.2 -2.4     -23.1    54     5732   22 41 00
22 50 00  =CTA26       01 28 04  28.6 141.6 -2.2     -21.9   540     5801   22 41 01

22 51 00  J0339-0146   01 29 04  28.7 141.8 -2.2     -21.8    54     5801   22 51 00
23 00 00  =CTA26       01 38 06  29.5 144.3 -2.0     -20.5   540     5870   22 51 01

23 01 00  J0339-0146   01 39 06  29.6 144.5 -2.0     -20.4    54     5870   23 01 00
23 10 00  =CTA26       01 48 07  30.4 147.0 -1.9     -19.1   540     5940   23 01 01

23 11 00  J0339-0146   01 49 07  30.5 147.2 -1.9     -19.0    54     5940   23 11 00
23 20 00  =CTA26       01 58 09  31.2 149.7 -1.7     -17.6   540     6009   23 11 01

23 21 00  J0339-0146   01 59 09  31.2 150.0 -1.7     -17.5    54     6009   23 21 00
23 30 00  =CTA26       02 08 11  31.9 152.6 -1.5     -16.1   540     6078   23 21 01

23 31 00  J0339-0146   02 09 11  32.0 152.8 -1.5     -15.9    54     6078   23 31 00
23 40 00  =CTA26       02 18 12  32.5 155.4 -1.4     -14.5   540     6147   23 31 01

23 41 00  J0339-0146   02 19 12  32.6 155.7 -1.4     -14.3    54     6147   23 41 00
23 50 00  =CTA26       02 28 14  33.1 158.3 -1.2     -12.8   540     6217   23 41 01

23 51 30  J0339-0146   02 29 44  33.2 158.7 -1.2     -12.6    83     6217   23 51 30
23 59 59  =CTA26       02 38 15  33.7 161.2 -1.0     -11.1   509     6282   23 51 31

 --- Wed  12 Oct 2016   Day 286 ---

 ---------- ES081A ----------

00 00 00  J0339-0146   02 38 15  33.7 161.2 -1.0     -11.1    -5     6282   No stop
00 02 50  =CTA26       02 41 06  33.8 162.1 -1.0     -10.7   165     6304   00 00 00

00 04 40  J0208-0047   02 42 56  35.7 190.4  0.6       6.2    39     6304   00 04 40
00 06 50  =0205-010    02 45 07  35.7 191.0  0.6       6.6   130     6320   00 04 41

00 06 50  MRK1018      02 45 07  36.1 191.8  0.6       7.0   -13     6320   No stop
00 10 20  ---          02 48 37  36.0 192.9  0.7       7.7   197     6347   00 06 51

00 10 20  J0208-0047   02 48 37  35.6 192.1  0.7       7.2   -13     6347   No stop
00 11 50  =0205-010    02 50 07  35.5 192.6  0.7       7.5    77     6359   00 10 21

00 11 50  MRK1018      02 50 07  35.9 193.3  0.7       7.9   -13     6359   No stop
00 15 20  ---          02 53 38  35.8 194.4  0.8       8.6   197     6386   00 11 51

00 15 50  J0208-0047   02 54 08  35.4 193.8  0.7       8.2    17     6386   00 15 50
00 16 50  =0205-010    02 55 08  35.3 194.1  0.8       8.4    60     6394   00 15 51
```

Schedule for TORUN (Code Tr) Page 15

e-EVN: em125a, es081a

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
--- Wed 12 Oct 2016 Day 286 ---										
00 16 50	MRK1018	02 55 08	35.8	194.8	0.8		8.9	-13	6394	No stop
00 20 20	---	02 58 39	35.6	195.9	0.9		9.5	197	6420	00 16 51
00 20 20	J0208-0047	02 58 39	35.2	195.2	0.8		9.0	-13	6420	No stop
00 21 50	=0205-010	03 00 09	35.2	195.6	0.8		9.3	77	6432	00 20 21
00 21 50	MRK1018	03 00 09	35.6	196.4	0.9		9.7	-13	6432	No stop
00 25 20	---	03 03 40	35.4	197.4	0.9		10.4	197	6459	00 21 51
00 25 50	J0208-0047	03 04 10	35.0	196.8	0.9		10.0	17	6459	00 25 50
00 26 50	=0205-010	03 05 10	34.9	197.1	0.9		10.2	60	6467	00 25 51
00 26 50	MRK1018	03 05 10	35.3	197.9	1.0		10.6	-13	6467	No stop
00 30 20	---	03 08 40	35.2	198.9	1.0		11.2	197	6494	00 26 51
00 30 20	J0208-0047	03 08 40	34.8	198.2	1.0		10.8	-13	6494	No stop
00 31 50	=0205-010	03 10 11	34.7	198.6	1.0		11.1	77	6505	00 30 21
00 31 50	MRK1018	03 10 11	35.1	199.4	1.1		11.5	-13	6505	No stop
00 35 20	---	03 13 41	34.9	200.4	1.1		12.1	197	6532	00 31 51
00 35 50	J0208-0047	03 14 11	34.5	199.8	1.1		11.7	17	6532	00 35 50
00 36 50	=0205-010	03 15 12	34.5	200.1	1.1		11.9	60	6540	00 35 51
00 36 50	MRK1018	03 15 12	34.8	200.9	1.1		12.4	-13	6540	No stop
00 40 20	---	03 18 42	34.6	201.9	1.2		13.0	197	6567	00 36 51
00 40 20	J0208-0047	03 18 42	34.3	201.1	1.2		12.5	-13	6567	No stop
00 41 50	=0205-010	03 20 12	34.2	201.6	1.2		12.8	77	6578	00 40 21
00 41 50	MRK1018	03 20 12	34.6	202.4	1.2		13.2	-13	6578	No stop
00 45 20	---	03 23 43	34.4	203.4	1.3		13.8	197	6605	00 41 51
00 45 50	J0208-0047	03 24 13	34.0	202.8	1.2		13.4	17	6605	00 45 50
00 46 50	=0205-010	03 25 13	33.9	203.1	1.3		13.6	60	6613	00 45 51
00 46 50	MRK1018	03 25 13	34.3	203.8	1.3		14.1	-13	6613	No stop
00 50 20	---	03 28 44	34.0	204.9	1.4		14.6	197	6640	00 46 51
00 50 20	J0208-0047	03 28 44	33.7	204.1	1.3		14.2	-13	6640	No stop
00 51 50	=0205-010	03 30 14	33.6	204.5	1.3		14.4	77	6651	00 50 21
00 51 50	MRK1018	03 30 14	34.0	205.3	1.4		14.9	-13	6651	No stop
00 55 20	---	03 33 45	33.7	206.3	1.4		15.4	197	6678	00 51 51

Schedule for TORUN (Code Tr) Page 16

e-EVN: em125a, es081a

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
--- Wed 12 Oct 2016 Day 286 ---										
00 55 50	J0208-0047	03 34 15	33.3	205.7	1.4		15.1	17	6678	00 55 50
00 56 50	=0205-010	03 35 15	33.3	206.0	1.4		15.3	60	6686	00 55 51
00 56 50	MRK1018	03 35 15	33.6	206.8	1.5		15.7	-13	6686	No stop
01 00 20	---	03 38 45	33.4	207.8	1.5		16.3	197	6713	00 56 51
01 00 20	J0208-0047	03 38 45	33.0	207.0	1.5		15.8	-13	6713	No stop
01 01 50	=0205-010	03 40 16	32.9	207.4	1.5		16.1	77	6724	01 00 21
01 01 50	MRK1018	03 40 16	33.3	208.2	1.6		16.5	-13	6724	No stop
01 05 20	---	03 43 46	33.0	209.2	1.6		17.0	197	6751	01 01 51
01 05 50	J0208-0047	03 44 16	32.7	208.6	1.6		16.7	17	6751	01 05 50
01 06 50	=0205-010	03 45 16	32.6	208.9	1.6		16.8	60	6759	01 05 51
01 06 50	MRK1018	03 45 16	32.9	209.6	1.6		17.3	-13	6759	No stop
01 10 20	---	03 48 47	32.6	210.6	1.7		17.8	197	6786	01 06 51
01 10 20	J0208-0047	03 48 47	32.3	209.8	1.7		17.4	-13	6786	No stop
01 11 50	=0205-010	03 50 17	32.2	210.3	1.7		17.6	77	6797	01 10 21
01 11 50	MRK1018	03 50 17	32.5	211.1	1.7		18.0	-13	6797	No stop
01 15 20	---	03 53 48	32.3	212.0	1.8		18.6	197	6824	01 11 51
01 15 50	J0208-0047	03 54 18	31.9	211.4	1.7		18.2	17	6824	01 15 50
01 16 50	=0205-010	03 55 18	31.8	211.7	1.8		18.4	60	6832	01 15 51
01 16 50	MRK1018	03 55 18	32.1	212.5	1.8		18.8	-13	6832	No stop
01 20 20	---	03 58 49	31.8	213.4	1.9		19.3	197	6859	01 16 51
01 20 20	J0208-0047	03 58 49	31.5	212.7	1.8		18.9	-13	6859	No stop
01 21 50	=0205-010	04 00 19	31.4	213.1	1.9		19.1	77	6870	01 20 21
01 21 50	MRK1018	04 00 19	31.7	213.9	1.9		19.5	-13	6870	No stop
01 25 20	---	04 03 50	31.4	214.8	1.9		20.1	197	6897	01 21 51
01 25 50	J0208-0047	04 04 20	31.1	214.2	1.9		19.7	17	6897	01 25 50
01 26 50	=0205-010	04 05 20	31.0	214.4	1.9		19.9	60	6905	01 25 51
01 26 50	MRK1018	04 05 20	31.3	215.2	2.0		20.3	-13	6905	No stop
01 30 20	---	04 08 50	31.0	216.2	2.0		20.8	197	6932	01 26 51
01 30 20	J0208-0047	04 08 50	30.7	215.4	2.0		20.4	-13	6932	No stop
01 31 50	=0205-010	04 10 21	30.6	215.8	2.0		20.6	77	6944	01 30 21

Schedule for TORUN (Code Tr) Page 17

e-EVN: em125a, es081a

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 12 Oct 2016 Day 286 ---										
01 31 50	MRK1018	04 10 21	30.9	216.6	2.1		21.0	-13	6944	No stop
01 35 20	---	04 13 51	30.5	217.6	2.1		21.5	197	6970	01 31 51
01 35 50	J0208-0047	04 14 21	30.2	216.9	2.1		21.1	17	6970	01 35 50
01 36 50	=0205-010	04 15 21	30.1	217.2	2.1		21.3	60	6978	01 35 51
01 36 50	MRK1018	04 15 21	30.4	218.0	2.1		21.7	-13	6978	No stop
01 40 20	---	04 18 52	30.1	218.9	2.2		22.2	197	7005	01 36 51
01 40 20	J0208-0047	04 18 52	29.8	218.1	2.2		21.8	-13	7005	No stop
01 41 50	=0205-010	04 20 22	29.7	218.5	2.2		22.0	77	7017	01 40 21
01 41 50	MRK1018	04 20 22	29.9	219.3	2.2		22.4	-13	7017	No stop
01 45 20	---	04 23 53	29.6	220.3	2.3		22.8	197	7044	01 41 51
01 45 50	J0208-0047	04 24 23	29.3	219.6	2.3		22.5	17	7044	01 45 50
01 46 50	=0205-010	04 25 23	29.2	219.9	2.3		22.6	60	7051	01 45 51
01 46 50	MRK1018	04 25 23	29.4	220.6	2.3		23.0	-13	7051	No stop
01 50 20	---	04 28 54	29.1	221.6	2.4		23.5	197	7078	01 46 51
01 50 20	J0208-0047	04 28 54	28.8	220.8	2.3		23.1	-13	7078	No stop
01 51 50	=0205-010	04 30 24	28.7	221.2	2.4		23.3	77	7090	01 50 21
01 51 50	MRK1018	04 30 24	28.9	222.0	2.4		23.7	-13	7090	No stop
01 55 20	---	04 33 54	28.6	222.9	2.4		24.1	197	7117	01 51 51
01 55 50	J0208-0047	04 34 25	28.3	222.2	2.4		23.8	17	7117	01 55 50
01 56 50	=0205-010	04 35 25	28.2	222.5	2.4		23.9	60	7124	01 55 51
01 56 50	MRK1018	04 35 25	28.4	223.3	2.5		24.3	-13	7124	No stop
02 00 20	---	04 38 55	28.1	224.2	2.5		24.7	197	7151	01 56 51
02 00 20	J0208-0047	04 38 55	27.8	223.4	2.5		24.4	-13	7151	No stop
02 01 50	=0205-010	04 40 26	27.7	223.8	2.5		24.5	77	7163	02 00 21
02 01 50	MRK1018	04 40 26	27.9	224.6	2.6		24.9	-13	7163	No stop
02 05 20	---	04 43 56	27.5	225.5	2.6		25.3	197	7190	02 01 51
02 05 50	J0208-0047	04 44 26	27.3	224.8	2.6		25.0	17	7190	02 05 50
02 06 50	=0205-010	04 45 26	27.2	225.0	2.6		25.2	60	7197	02 05 51
02 06 50	MRK1018	04 45 26	27.4	225.8	2.6		25.5	-13	7197	No stop
02 10 20	---	04 48 57	27.0	226.7	2.7		25.9	197	7224	02 06 51

Schedule for TORUN (Code Tr) Page 18

e-EVN: em125a, es081a

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
--- Wed 12 Oct 2016 Day 286 ---										
02 10 20	J0208-0047	04 48 57	26.8	225.9	2.7		25.6	-13	7224	No stop
02 11 50	=0205-010	04 50 27	26.6	226.3	2.7		25.7	77	7236	02 10 21
02 11 50	MRK1018	04 50 27	26.8	227.1	2.7		26.1	-13	7236	No stop
02 15 20	---	04 53 58	26.4	228.0	2.8		26.5	197	7263	02 11 51
02 15 50	J0208-0047	04 54 28	26.2	227.3	2.8		26.2	17	7263	02 15 50
02 16 50	=0205-010	04 55 28	26.1	227.6	2.8		26.3	60	7270	02 15 51
02 16 50	MRK1018	04 55 28	26.3	228.4	2.8		26.7	-13	7270	No stop
02 20 20	---	04 58 59	25.9	229.2	2.9		27.1	197	7297	02 16 51
02 20 20	J0208-0047	04 58 59	25.7	228.4	2.8		26.7	-13	7297	No stop
02 21 50	=0205-010	05 00 29	25.5	228.8	2.9		26.9	77	7309	02 20 21
02 25 00	J0513+0100	05 03 39	37.9	176.6	-0.2		-2.1	70	7309	02 25 00
02 26 50	=0511+009	05 05 30	37.9	177.1	-0.2		-1.7	110	7323	02 25 01
02 26 50	ARK120	05 05 30	36.7	176.4	-0.2		-2.2	-18	7323	No stop
02 30 20	---	05 09 00	36.7	177.5	-0.1		-1.5	192	7350	02 26 51
02 30 20	J0513+0100	05 09 00	37.9	178.2	-0.1		-1.1	-17	7350	No stop
02 31 50	=0511+009	05 10 30	37.9	178.7	-0.1		-0.8	73	7362	02 30 21
02 31 50	ARK120	05 10 30	36.8	178.0	-0.1		-1.2	-17	7362	No stop
02 35 20	---	05 14 01	36.8	179.1	-0.1		-0.6	193	7388	02 31 51
02 35 50	J0513+0100	05 14 31	37.9	180.0	-0.0		-0.0	13	7388	02 35 50
02 36 50	=0511+009	05 15 31	37.9	180.3	0.0		0.2	60	7396	02 35 51
02 36 50	ARK120	05 15 31	36.8	179.5	-0.0		-0.3	-17	7396	No stop
02 40 20	---	05 19 02	36.8	180.6	0.0		0.4	193	7423	02 36 51
02 40 20	J0513+0100	05 19 02	37.9	181.4	0.1		0.9	-17	7423	No stop
02 41 50	=0511+009	05 20 32	37.9	181.9	0.1		1.1	73	7435	02 40 21
02 41 50	ARK120	05 20 32	36.8	181.1	0.1		0.7	-17	7435	No stop
02 45 20	---	05 24 03	36.8	182.2	0.1		1.3	193	7462	02 41 51
02 45 50	J0513+0100	05 24 33	37.9	183.2	0.2		1.9	13	7462	02 45 50
02 46 50	=0511+009	05 25 33	37.9	183.5	0.2		2.1	60	7469	02 45 51
02 46 50	ARK120	05 25 33	36.7	182.7	0.1		1.6	-17	7469	No stop
02 50 20	---	05 29 03	36.7	183.7	0.2		2.2	193	7496	02 46 51

Schedule for TORUN (Code Tr) Page 19

e-EVN: em125a, es081a

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 12 Oct 2016 Day 286 ---										
02 50 20	J0513+0100	05 29 03	37.8	184.6	0.2		2.8	-17	7496	No stop
02 51 50	=0511+009	05 30 34	37.8	185.1	0.3		3.0	73	7508	02 50 21
02 51 50	ARK120	05 30 34	36.7	184.2	0.2		2.5	-17	7508	No stop
02 55 20	---	05 34 04	36.7	185.3	0.3		3.2	193	7535	02 51 51
02 55 50	J0513+0100	05 34 34	37.8	186.3	0.3		3.8	13	7535	02 55 50
02 56 50	=0511+009	05 35 35	37.7	186.7	0.4		4.0	60	7542	02 55 51
02 56 50	ARK120	05 35 35	36.6	185.8	0.3		3.5	-17	7542	No stop
03 00 20	---	05 39 05	36.6	186.9	0.4		4.1	193	7569	02 56 51
03 00 20	J0513+0100	05 39 05	37.7	187.8	0.4		4.7	-17	7569	No stop
03 01 50	=0511+009	05 40 35	37.6	188.2	0.4		4.9	73	7581	03 00 21
03 01 50	ARK120	05 40 35	36.5	187.3	0.4		4.4	-17	7581	No stop
03 05 20	---	05 44 06	36.5	188.4	0.5		5.0	193	7608	03 01 51
03 05 50	J0513+0100	05 44 36	37.6	189.5	0.5		5.7	13	7608	03 05 50
03 06 50	=0511+009	05 45 36	37.5	189.8	0.5		5.9	60	7615	03 05 51
03 06 50	ARK120	05 45 36	36.4	188.9	0.5		5.3	-17	7615	No stop
03 10 20	---	05 49 07	36.4	190.0	0.5		6.0	193	7642	03 06 51
03 10 20	J0513+0100	05 49 07	37.4	190.9	0.6		6.5	-17	7642	No stop
03 11 50	=0511+009	05 50 37	37.4	191.4	0.6		6.8	73	7654	03 10 21
03 11 50	ARK120	05 50 37	36.3	190.4	0.6		6.2	-17	7654	No stop
03 15 20	---	05 54 08	36.2	191.5	0.6		6.9	193	7681	03 11 51
03 15 50	J0513+0100	05 54 38	37.3	192.6	0.7		7.5	13	7681	03 15 50
03 16 50	=0511+009	05 55 38	37.2	192.9	0.7		7.7	60	7688	03 15 51
03 16 50	ARK120	05 55 38	36.2	192.0	0.6		7.2	-17	7688	No stop
03 20 20	---	05 59 08	36.1	193.1	0.7		7.8	193	7715	03 16 51
03 20 20	J0513+0100	05 59 08	37.1	194.0	0.7		8.4	-17	7715	No stop
03 21 50	=0511+009	06 00 39	37.1	194.5	0.8		8.6	73	7727	03 20 21
03 21 50	ARK120	06 00 39	36.0	193.5	0.7		8.1	-17	7727	No stop
03 25 20	---	06 04 09	35.9	194.6	0.8		8.7	193	7754	03 21 51
03 25 50	J0513+0100	06 04 39	36.9	195.7	0.8		9.4	13	7754	03 25 50
03 26 50	=0511+009	06 05 39	36.9	196.0	0.9		9.6	60	7762	03 25 51

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Schedule for TORUN     (Code Tr )                                  Page  20
               e-EVN: em125a, es081a
  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  12 Oct 2016   Day 286 ---

03 26 50  ARK120       06 05 39  35.8 195.0  0.8       9.0   -17     7762   No stop
03 30 20  ---          06 09 10  35.7 196.1  0.9       9.6   193     7788   03 26 51

03 30 20  J0513+0100   06 09 10  36.7 197.1  0.9      10.2   -17     7788   No stop
03 31 50  =0511+009    06 10 40  36.6 197.6  0.9      10.5    73     7800   03 30 21

03 31 50  ARK120       06 10 40  35.6 196.6  0.9       9.9   -17     7800   No stop
03 35 20  ---          06 14 11  35.5 197.6  1.0      10.5   193     7827   03 31 51

03 35 50  J0513+0100   06 14 41  36.5 198.8  1.0      11.2    13     7827   03 35 50
03 36 50  =0511+009    06 15 41  36.4 199.1  1.0      11.3    60     7835   03 35 51

03 36 50  ARK120       06 15 41  35.4 198.1  1.0      10.7   -17     7835   No stop
03 40 20  ---          06 19 12  35.2 199.1  1.0      11.4   193     7862   03 36 51

03 40 20  J0513+0100   06 19 12  36.2 200.2  1.1      12.0   -17     7862   No stop
03 41 50  =0511+009    06 20 42  36.1 200.6  1.1      12.2    73     7873   03 40 21

03 41 50  ARK120       06 20 42  35.1 199.6  1.1      11.6   -17     7873   No stop
03 45 20  ---          06 24 13  35.0 200.6  1.1      12.2   193     7900   03 41 51

03 45 50  J0513+0100   06 24 43  35.9 201.8  1.2      12.9    14     7900   03 45 50
03 46 50  =0511+009    06 25 43  35.9 202.2  1.2      13.1    60     7908   03 45 51

03 46 50  ARK120       06 25 43  34.9 201.1  1.1      12.5   -17     7908   No stop
03 50 20  ---          06 29 13  34.7 202.1  1.2      13.1   193     7935   03 46 51

03 50 20  J0513+0100   06 29 13  35.7 203.2  1.2      13.7   -16     7935   No stop
03 51 50  =0511+009    06 30 44  35.6 203.7  1.3      13.9    74     7946   03 50 21

03 51 50  ARK120       06 30 44  34.6 202.6  1.2      13.3   -16     7946   No stop
03 55 20  ---          06 34 14  34.4 203.6  1.3      13.9   194     7973   03 51 51

03 55 50  J0513+0100   06 34 44  35.3 204.8  1.3      14.6    14     7973   03 55 50
03 56 50  =0511+009    06 35 44  35.3 205.1  1.4      14.8    60     7981   03 55 51

03 56 50  ARK120       06 35 44  34.3 204.0  1.3      14.2   -16     7981   No stop
04 00 20  ---          06 39 15  34.1 205.1  1.4      14.7   194     8008   03 56 51

04 00 20  J0513+0100   06 39 15  35.0 206.2  1.4      15.4   -16     8008   No stop
04 01 50  =0511+009    06 40 45  34.9 206.6  1.4      15.6    74     8019   04 00 21

04 01 50  ARK120       06 40 45  34.0 205.5  1.4      15.0   -16     8019   No stop
04 05 20  ---          06 44 16  33.8 206.5  1.5      15.6   194     8046   04 01 51
```

Schedule for TORUN (Code Tr) Page 21

e-EVN: em125a, es081a

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
--- Wed 12 Oct 2016 Day 286 ---										
04 05 50	J0513+0100	06 44 46	34.7	207.8	1.5		16.3	14	8046	04 05 50
04 06 50	=0511+009	06 45 46	34.6	208.1	1.5		16.4	60	8054	04 05 51
04 06 50	ARK120	06 45 46	33.7	207.0	1.5		15.8	-16	8054	No stop
04 10 20	---	06 49 17	33.4	208.0	1.5		16.4	194	8081	04 06 51
04 10 20	J0513+0100	06 49 17	34.3	209.1	1.6		17.0	-16	8081	No stop
04 11 50	=0511+009	06 50 47	34.2	209.5	1.6		17.2	74	8092	04 10 21
04 11 50	ARK120	06 50 47	33.3	208.4	1.6		16.6	-16	8092	No stop
04 15 20	---	06 54 17	33.1	209.4	1.6		17.2	194	8119	04 11 51
04 15 50	J0513+0100	06 54 48	33.9	210.7	1.7		17.9	14	8119	04 15 50
04 16 50	=0511+009	06 55 48	33.9	211.0	1.7		18.0	60	8127	04 15 51
04 16 50	ARK120	06 55 48	32.9	209.8	1.6		17.4	-16	8127	No stop
04 20 20	---	06 59 18	32.7	210.8	1.7		17.9	194	8154	04 16 51
04 20 20	J0513+0100	06 59 18	33.6	212.0	1.7		18.5	-16	8154	No stop
04 21 50	=0511+009	07 00 49	33.5	212.4	1.8		18.8	74	8165	04 20 21
04 21 50	ARK120	07 00 49	32.6	211.3	1.7		18.2	-16	8165	No stop
04 25 20	---	07 04 19	32.3	212.2	1.8		18.7	194	8192	04 21 51
04 25 50	J0513+0100	07 04 49	33.1	213.5	1.8		19.4	14	8192	04 25 50
04 26 50	=0511+009	07 05 49	33.0	213.8	1.9		19.5	60	8200	04 25 51
04 26 50	ARK120	07 05 49	32.2	212.7	1.8		18.9	-16	8200	No stop
04 30 20	---	07 09 20	31.9	213.6	1.9		19.4	194	8227	04 26 51
04 30 20	J0513+0100	07 09 20	32.7	214.8	1.9		20.1	-16	8227	No stop
04 31 50	=0511+009	07 10 50	32.6	215.2	1.9		20.3	74	8238	04 30 21
04 31 50	ARK120	07 10 50	31.7	214.1	1.9		19.7	-16	8238	No stop
04 35 20	---	07 14 21	31.4	215.0	2.0		20.2	194	8265	04 31 51
04 35 50	J0513+0100	07 14 51	32.3	216.3	2.0		20.8	14	8265	04 35 50
04 36 50	=0511+009	07 15 51	32.2	216.6	2.0		21.0	60	8273	04 35 51
04 36 50	ARK120	07 15 51	31.3	215.4	2.0		20.4	-16	8273	No stop
04 40 20	---	07 19 22	31.0	216.4	2.0		20.9	194	8300	04 36 51
04 40 20	J0513+0100	07 19 22	31.9	217.6	2.1		21.5	-16	8300	No stop
04 41 50	=0511+009	07 20 52	31.7	218.0	2.1		21.7	74	8312	04 40 21

Schedule for TORUN (Code Tr) Page 22

e-EVN: em125a, es081a

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 12 Oct 2016 Day 286 ---										
04 45 00	J0750+1231	07 24 02	49.0	169.6	-0.5		-6.3	77	8312	04 45 00
04 48 00	=0748+126	07 27 03	49.1	170.8	-0.4		-5.7	180	8335	04 45 01
04 52 10	J0932+5306	07 31 13	71.7	77.8	-2.0		-77.5	49	8335	04 52 10
04 54 00	=0929+533	07 33 04	72.0	78.0	-2.0		-77.6	110	8349	04 52 11
04 54 00	MRK110	07 33 04	72.9	81.5	-1.9		-75.8	-22	8349	No stop
04 57 30	---	07 36 34	73.4	82.0	-1.8		-76.0	188	8376	04 54 01
04 57 30	J0932+5306	07 36 34	72.5	78.4	-2.0		-78.0	-22	8376	No stop
04 59 00	=0929+533	07 38 05	72.7	78.6	-1.9		-78.1	68	8387	04 57 31
04 59 00	MRK110	07 38 05	73.7	82.2	-1.8		-76.1	-22	8387	No stop
05 02 30	---	07 41 35	74.2	82.7	-1.7		-76.4	188	8414	04 59 01
05 03 10	J0932+5306	07 42 15	73.3	79.0	-1.9		-78.6	18	8414	05 03 10
05 04 10	=0929+533	07 43 15	73.5	79.1	-1.8		-78.7	60	8422	05 03 11
05 04 10	MRK110	07 43 15	74.4	82.9	-1.7		-76.5	-22	8422	No stop
05 07 40	---	07 46 46	74.9	83.4	-1.7		-76.7	188	8449	05 04 11
05 07 40	J0932+5306	07 46 46	74.0	79.5	-1.8		-79.0	-23	8449	No stop
05 09 10	=0929+533	07 48 16	74.2	79.6	-1.8		-79.2	67	8460	05 07 41
05 09 10	MRK110	07 48 16	75.2	83.6	-1.6		-76.8	-23	8460	No stop
05 12 40	---	07 51 47	75.7	84.0	-1.6		-77.1	187	8487	05 09 11
05 13 20	J0932+5306	07 52 27	74.9	80.1	-1.7		-79.6	17	8487	05 13 20
05 14 20	=0929+533	07 53 27	75.0	80.2	-1.7		-79.7	60	8495	05 13 21
05 14 20	MRK110	07 53 27	75.9	84.3	-1.5		-77.2	-23	8495	No stop
05 17 50	---	07 56 58	76.5	84.8	-1.5		-77.4	187	8522	05 14 21
05 17 50	J0932+5306	07 56 58	75.5	80.5	-1.6		-80.0	-23	8522	No stop
05 19 20	=0929+533	07 58 28	75.7	80.7	-1.6		-80.2	67	8533	05 17 51
05 19 20	MRK110	07 58 28	76.7	85.0	-1.5		-77.5	-24	8533	No stop
05 22 50	---	08 01 59	77.2	85.5	-1.4		-77.7	186	8560	05 19 21
05 23 30	J0932+5306	08 02 39	76.4	81.1	-1.5		-80.6	16	8560	05 23 30
05 24 30	=0929+533	08 03 39	76.5	81.2	-1.5		-80.7	60	8568	05 23 31
05 24 30	MRK110	08 03 39	77.5	85.7	-1.4		-77.8	-24	8568	No stop
05 28 00	---	08 07 09	78.0	86.3	-1.3		-77.9	186	8595	05 24 31

Schedule for TORUN (Code Tr) Page 23

e-EVN: em125a, es081a

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
--- Wed 12 Oct 2016 Day 286 ---										
05 28 00	J0932+5306	08 07 09	77.0	81.6	-1.4		-81.0	-24	8595	No stop
05 29 30	=0929+533	08 08 40	77.3	81.7	-1.4		-81.2	66	8606	05 28 01
05 29 30	MRK110	08 08 40	78.2	86.5	-1.3		-78.0	-25	8606	No stop
05 33 00	---	08 12 10	78.7	87.1	-1.2		-78.1	185	8633	05 29 31
05 33 40	J0932+5306	08 12 50	77.9	82.2	-1.3		-81.6	15	8633	05 33 40
05 34 40	=0929+533	08 13 50	78.0	82.3	-1.3		-81.7	60	8641	05 33 41
05 34 40	MRK110	08 13 50	79.0	87.3	-1.2		-78.2	-25	8641	No stop
05 38 10	---	08 17 21	79.5	87.9	-1.1		-78.3	185	8668	05 34 41
05 38 10	J0932+5306	08 17 21	78.5	82.7	-1.3		-82.0	-25	8668	No stop
05 39 40	=0929+533	08 18 51	78.8	82.8	-1.2		-82.2	65	8679	05 38 11
05 39 40	MRK110	08 18 51	79.8	88.2	-1.1		-78.4	-26	8679	No stop
05 43 10	---	08 22 22	80.3	88.8	-1.1		-78.4	184	8706	05 39 41
05 43 50	J0932+5306	08 23 02	79.4	83.3	-1.2		-82.6	14	8706	05 43 50
05 44 50	=0929+533	08 24 02	79.5	83.4	-1.2		-82.7	60	8714	05 43 51
05 44 50	MRK110	08 24 02	80.5	89.1	-1.0		-78.5	-27	8714	No stop
05 48 20	---	08 27 33	81.1	89.8	-1.0		-78.5	183	8741	05 44 51
05 48 20	J0932+5306	08 27 33	80.1	83.7	-1.1		-83.0	-27	8741	No stop
05 49 50	=0929+533	08 29 03	80.3	83.9	-1.1		-83.1	63	8753	05 48 21
05 49 50	MRK110	08 29 03	81.3	90.1	-1.0		-78.5	-28	8753	No stop
05 53 20	---	08 32 34	81.8	90.8	-0.9		-78.5	182	8779	05 49 51
05 54 00	J0932+5306	08 33 14	80.9	84.3	-1.0		-83.5	12	8779	05 54 00
05 55 00	=0929+533	08 34 14	81.1	84.4	-1.0		-83.6	60	8787	05 54 01
05 55 00	MRK110	08 34 14	82.1	91.2	-0.9		-78.4	-29	8787	No stop
05 58 30	---	08 37 44	82.6	92.0	-0.8		-78.3	181	8814	05 55 01
05 58 30	J0932+5306	08 37 44	81.6	84.8	-0.9		-84.0	-29	8814	No stop
06 00 00	=0929+533	08 39 15	81.8	85.0	-0.9		-84.1	61	8826	05 58 31
06 00 00	MRK110	08 39 15	82.8	92.4	-0.8		-78.3	-30	8826	No stop
06 03 30	---	08 42 45	83.3	93.3	-0.7		-78.1	180	8853	06 00 01
06 04 10	J0932+5306	08 43 25	82.4	85.4	-0.8		-84.5	9	8853	06 04 10
06 05 10	=0929+533	08 44 25	82.6	85.6	-0.8		-84.6	60	8860	06 04 11

Schedule for TORUN (Code Tr) Page 24

e-EVN: em125a, es081a

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 12 Oct 2016 Day 286 ---										
06 05 10	MRK110	08 44 25	83.6	93.7	-0.7		-77.9	-32	8860	No stop
06 08 40	---	08 47 56	84.1	94.8	-0.6		-77.6	178	8887	06 05 11
06 08 40	J0932+5306	08 47 56	83.1	85.9	-0.8		-84.9	-33	8887	No stop
06 10 10	=0929+533	08 49 26	83.3	86.1	-0.7		-85.0	57	8899	06 08 41
06 10 10	MRK110	08 49 26	84.3	95.3	-0.6		-77.4	-34	8899	No stop
06 13 40	---	08 52 57	84.9	96.6	-0.6		-76.8	176	8926	06 10 11
06 14 20	J0932+5306	08 53 37	84.0	86.6	-0.7		-85.4	5	8926	06 14 20
06 15 20	=0929+533	08 54 37	84.1	86.7	-0.7		-85.5	60	8933	06 14 21
06 15 20	MRK110	08 54 37	85.1	97.3	-0.5		-76.4	-37	8933	No stop
06 18 50	---	08 58 08	85.6	98.9	-0.5		-75.5	173	8960	06 15 21
06 18 50	J0932+5306	08 58 08	84.6	87.1	-0.6		-85.7	-38	8960	No stop
06 20 20	=0929+533	08 59 38	84.9	87.3	-0.6		-85.9	52	8972	06 18 51
06 20 20	MRK110	08 59 38	85.9	99.7	-0.4		-75.0	-40	8972	No stop
06 23 50	---	09 03 09	86.4	101.8	-0.4		-73.6	170	8999	06 20 21
06 24 30	J0932+5306	09 03 49	85.5	87.8	-0.5		-86.2	-3	8999	06 24 30
06 25 30	=0929+533	09 04 49	85.6	87.9	-0.5		-86.3	57	9006	06 24 31
07 14 40	J1325+3807	09 54 07	51.0	90.8	-3.5		-49.7	2780	9006	07 14 40
07 16 10	---	09 55 37	51.3	91.2	-3.5		-49.7	90	9018	07 14 41
07 16 10	MCG6-30-15	09 55 37	50.2	91.2	-3.6		-49.0	-17	9018	No stop
07 19 40	---	09 59 08	50.7	91.9	-3.5		-49.0	193	9045	07 16 11
07 19 40	J1325+3807	09 59 08	51.8	91.9	-3.4		-49.6	-17	9045	No stop
07 21 10	---	10 00 38	52.0	92.2	-3.4		-49.6	73	9056	07 19 41
07 21 10	MCG6-30-15	10 00 38	50.9	92.2	-3.5		-49.0	-17	9056	No stop
07 24 40	---	10 04 09	51.5	92.9	-3.4		-49.0	193	9083	07 21 11
07 25 10	J1325+3807	10 04 39	52.6	93.0	-3.4		-49.6	13	9083	07 25 10
07 26 10	---	10 05 39	52.8	93.2	-3.3		-49.6	60	9091	07 25 11
07 26 10	MCG6-30-15	10 05 39	51.7	93.2	-3.4		-48.9	-17	9091	No stop
07 29 40	---	10 09 09	52.2	94.0	-3.3		-48.9	193	9118	07 26 11
07 29 40	J1325+3807	10 09 09	53.3	94.0	-3.3		-49.5	-17	9118	No stop
07 31 10	---	10 10 40	53.5	94.3	-3.3		-49.5	73	9129	07 29 41

Schedule for TORUN (Code Tr) Page 25

e-EVN: em125a, es081a

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
--- Wed 12 Oct 2016 Day 286 ---										
07 31 10	MCG6-30-15	10 10 40	52.4	94.3	-3.3		-48.9	-17	9129	No stop
07 34 40	---	10 14 10	53.0	95.1	-3.3		-48.8	193	9156	07 31 11
07 35 10	J1325+3807	10 14 40	54.1	95.2	-3.2		-49.4	13	9156	07 35 10
07 36 10	---	10 15 40	54.3	95.4	-3.2		-49.4	60	9164	07 35 11
07 36 10	MCG6-30-15	10 15 40	53.2	95.4	-3.2		-48.7	-17	9164	No stop
07 39 40	---	10 19 11	53.7	96.2	-3.2		-48.7	193	9191	07 36 11
07 39 40	J1325+3807	10 19 11	54.8	96.2	-3.1		-49.3	-17	9191	No stop
07 41 10	---	10 20 41	55.0	96.5	-3.1		-49.2	73	9203	07 39 41
07 41 10	MCG6-30-15	10 20 41	53.9	96.5	-3.2		-48.6	-17	9203	No stop
07 44 40	---	10 24 12	54.5	97.3	-3.1		-48.5	193	9229	07 41 11
07 45 10	J1325+3807	10 24 42	55.6	97.4	-3.0		-49.1	13	9229	07 45 10
07 46 10	---	10 25 42	55.8	97.6	-3.0		-49.1	60	9237	07 45 11
07 46 10	MCG6-30-15	10 25 42	54.7	97.6	-3.1		-48.5	-17	9237	No stop
07 49 40	---	10 29 13	55.2	98.4	-3.0		-48.3	193	9264	07 46 11
07 49 40	J1325+3807	10 29 13	56.3	98.4	-2.9		-49.0	-17	9264	No stop
07 51 10	---	10 30 43	56.5	98.8	-2.9		-48.9	73	9276	07 49 41
07 51 10	MCG6-30-15	10 30 43	55.4	98.8	-3.0		-48.3	-17	9276	No stop
07 54 40	---	10 34 13	56.0	99.6	-2.9		-48.1	193	9303	07 51 11
07 55 10	J1325+3807	10 34 44	57.1	99.7	-2.9		-48.7	13	9303	07 55 10
07 56 10	---	10 35 44	57.2	100.0	-2.8		-48.7	60	9310	07 55 11
07 56 10	MCG6-30-15	10 35 44	56.2	100.0	-2.9		-48.1	-17	9310	No stop
07 59 40	---	10 39 14	56.7	100.8	-2.8		-47.9	193	9337	07 56 11
07 59 40	J1325+3807	10 39 14	57.8	100.8	-2.8		-48.5	-17	9337	No stop
08 01 10	---	10 40 45	58.0	101.2	-2.8		-48.4	73	9349	07 59 41
08 01 10	MCG6-30-15	10 40 45	56.9	101.2	-2.8		-47.8	-17	9349	No stop
08 04 40	---	10 44 15	57.4	102.1	-2.8		-47.6	193	9376	08 01 11
08 05 10	J1325+3807	10 44 45	58.6	102.2	-2.7		-48.2	13	9376	08 05 10
08 06 10	---	10 45 45	58.7	102.5	-2.7		-48.1	60	9383	08 05 11
08 06 10	MCG6-30-15	10 45 45	57.7	102.4	-2.7		-47.5	-17	9383	No stop
08 09 40	---	10 49 16	58.2	103.3	-2.7		-47.3	193	9410	08 06 11

Schedule for TORUN (Code Tr) Page 26

e-EVN: em125a, es081a

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
--- Wed 12 Oct 2016 Day 286 ---										
08 09 40	J1325+3807	10 49 16	59.2	103.4	-2.6		-47.9	-17	9410	No stop
08 11 10	---	10 50 46	59.5	103.7	-2.6		-47.8	73	9422	08 09 41
08 11 10	MCG6-30-15	10 50 46	58.4	103.7	-2.7		-47.2	-17	9422	No stop
08 14 40	---	10 54 17	58.9	104.6	-2.6		-46.9	193	9449	08 11 11
08 15 10	J1325+3807	10 54 47	60.0	104.8	-2.5		-47.5	13	9449	08 15 10
08 16 10	---	10 55 47	60.2	105.1	-2.5		-47.4	60	9456	08 15 11
08 16 10	MCG6-30-15	10 55 47	59.1	105.0	-2.6		-46.8	-17	9456	No stop
08 19 40	---	10 59 18	59.6	106.0	-2.5		-46.6	193	9483	08 16 11
08 19 40	J1325+3807	10 59 18	60.7	106.0	-2.4		-47.1	-17	9483	No stop
08 21 10	---	11 00 48	60.9	106.4	-2.4		-47.0	73	9495	08 19 41
08 21 10	MCG6-30-15	11 00 48	59.8	106.4	-2.5		-46.4	-17	9495	No stop
08 24 40	---	11 04 18	60.3	107.3	-2.4		-46.1	193	9522	08 21 11
08 25 10	J1325+3807	11 04 48	61.5	107.6	-2.4		-46.6	13	9522	08 25 10
08 26 10	---	11 05 49	61.6	107.8	-2.3		-46.5	60	9529	08 25 11
08 26 10	MCG6-30-15	11 05 49	60.6	107.8	-2.4		-46.0	-17	9529	No stop
08 29 40	---	11 09 19	61.1	108.7	-2.3		-45.7	193	9556	08 26 11
08 29 40	J1325+3807	11 09 19	62.1	108.9	-2.3		-46.2	-17	9556	No stop
08 31 10	---	11 10 49	62.3	109.3	-2.3		-46.0	73	9568	08 29 41
08 31 10	MCG6-30-15	11 10 49	61.3	109.2	-2.3		-45.5	-17	9568	No stop
08 34 40	---	11 14 20	61.8	110.2	-2.3		-45.1	193	9595	08 31 11
08 35 10	J1325+3807	11 14 50	62.9	110.5	-2.2		-45.6	13	9595	08 35 10
08 36 10	---	11 15 50	63.1	110.8	-2.2		-45.5	60	9603	08 35 11
08 36 10	MCG6-30-15	11 15 50	62.0	110.7	-2.2		-45.0	-17	9603	No stop
08 39 40	---	11 19 21	62.5	111.7	-2.2		-44.6	193	9629	08 36 11
08 39 40	J1325+3807	11 19 21	63.5	111.9	-2.1		-45.0	-17	9629	No stop
08 41 10	---	11 20 51	63.8	112.4	-2.1		-44.8	73	9641	08 39 41
08 41 10	MCG6-30-15	11 20 51	62.7	112.2	-2.2		-44.4	-17	9641	No stop
08 44 40	---	11 24 22	63.2	113.3	-2.1		-43.9	193	9668	08 41 11
08 45 10	J1325+3807	11 24 52	64.3	113.6	-2.0		-44.3	13	9668	08 45 10
08 46 10	---	11 25 52	64.4	114.0	-2.0		-44.2	60	9676	08 45 11

```
Schedule for TORUN     (Code Tr )                                  Page  27
               e-EVN: em125a, es081a
  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  12 Oct 2016   Day 286 ---

08 46 10  MCG6-30-15   11 25 52  63.4 113.8 -2.1     -43.7   -17     9676   No stop
08 49 40  ---          11 29 23  63.9 114.9 -2.0     -43.2   193     9703   08 46 11

08 49 40  J1325+3807   11 29 23  64.9 115.1 -1.9     -43.6   -17     9703   No stop
08 51 10  ---          11 30 53  65.1 115.6 -1.9     -43.4    73     9714   08 49 41

08 51 10  MCG6-30-15   11 30 53  64.1 115.4 -2.0     -43.0   -17     9714   No stop
08 54 40  ---          11 34 23  64.5 116.6 -1.9     -42.5   193     9741   08 51 11

08 55 10  J1325+3807   11 34 53  65.7 117.0 -1.9     -42.8    13     9741   08 55 10
08 56 10  ---          11 35 54  65.8 117.4 -1.8     -42.6    60     9749   08 55 11

08 56 10  MCG6-30-15   11 35 54  64.7 117.1 -1.9     -42.2   -17     9749   No stop
08 59 40  ---          11 39 24  65.2 118.3 -1.8     -41.7   193     9776   08 56 11

08 59 40  J1325+3807   11 39 24  66.3 118.6 -1.8     -42.0   -17     9776   No stop
09 01 10  ---          11 40 54  66.5 119.2 -1.8     -41.7    73     9787   08 59 41

09 01 10  MCG6-30-15   11 40 54  65.4 118.9 -1.8     -41.4   -17     9787   No stop
09 04 40  ---          11 44 25  65.9 120.1 -1.8     -40.8   193     9814   09 01 11

09 05 10  J1325+3807   11 44 55  67.0 120.7 -1.7     -41.0    13     9814   09 05 10
09 06 10  ---          11 45 55  67.1 121.1 -1.7     -40.8    60     9822   09 05 11

09 06 10  MCG6-30-15   11 45 55  66.1 120.7 -1.7     -40.5   -17     9822   No stop
09 09 40  ---          11 49 26  66.5 122.0 -1.7     -39.8   193     9849   09 06 11

09 09 40  J1325+3807   11 49 26  67.6 122.4 -1.6     -40.1   -17     9849   No stop
09 11 10  ---          11 50 56  67.8 123.0 -1.6     -39.7    73     9860   09 09 41

09 11 10  MCG6-30-15   11 50 56  66.7 122.6 -1.7     -39.5   -17     9860   No stop
09 14 40  ---          11 54 27  67.1 124.0 -1.6     -38.8   193     9887   09 11 11

09 15 10  J1325+3807   11 54 57  68.3 124.7 -1.5     -38.8    13     9887   09 15 10
09 16 10  ---          11 55 57  68.4 125.1 -1.5     -38.6    60     9895   09 15 11

09 16 10  MCG6-30-15   11 55 57  67.3 124.6 -1.6     -38.4   -17     9895   No stop
09 19 40  ---          11 59 27  67.7 126.0 -1.5     -37.6   193     9922   09 16 11

09 19 40  J1325+3807   11 59 27  68.8 126.6 -1.4     -37.8   -17     9922   No stop
09 21 10  ---          12 00 58  69.0 127.2 -1.4     -37.4    73     9933   09 19 41

09 21 10  MCG6-30-15   12 00 58  67.9 126.6 -1.5     -37.3   -17     9933   No stop
09 24 40  ---          12 04 28  68.4 128.1 -1.4     -36.4   193     9960   09 21 11
```

```
Schedule for TORUN     (Code Tr )                                  Page  28
              e-EVN: em125a, es081a
  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  12 Oct 2016   Day 286 ---

09 25 10  J1325+3807   12 04 58  69.5 129.0 -1.4     -36.3    13     9960   09 25 10
09 26 10  ---          12 05 59  69.6 129.5 -1.3     -36.1    60     9968   09 25 11

09 27 00  J1310+3220   12 06 49  66.2 144.5 -1.1     -24.3     5     9968   09 27 00
09 30 00  =1308+326    12 09 49  66.4 146.0 -1.0     -23.4   180     9991   09 27 01



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


 ======== Setup file: sess316.C2048e

   Setup group:    9         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 64.000
   Number of channels:  8    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
   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         3         7         3         7
   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:   7  Setup file default.  Used with PCAL = off
   LO sum=   4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
   BBC fr=    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
   Bandwd=     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00
    Matching frequency sets:   7

   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)

 * HESSJ1832         18 30 00.434787   * 18 32 45.160970     18 33 39.667902       0.00
                    -09 24 11.52373    *-09 21 54.71439     -09 20 53.75211        0.00
```

```
* MRK1018          02 03 42.485567   * 02 06 15.994901     02 07 08.363870       0.00
                  -00 31 46.08908    *-00 17 29.29402     -00 12 42.08766        0.00

* ARK120           05 13 37.853234   * 05 16 11.395008     05 17 03.184689       0.00
                  -00 12 15.57156    *-00 08 59.65008     -00 07 57.30889        0.00

* MRK110           09 21 44.397019   * 09 25 12.871200     09 26 20.332619       0.00
                   52 30 07.66846    * 52 17 10.49500      52 12 36.25171        0.00

* MCG6-30-15       13 27 06.910542   * 13 29 21.400000     13 30 04.109691       0.00
                   37 40 10.54550    * 37 24 42.00000      37 19 43.30302        0.00

* J1325+3807       13 23 02.715320   * 13 25 17.574631     13 26 00.374389       0.00
                   38 22 47.94266    * 38 07 12.86898      38 02 11.56640        0.00

  0106+013         01 06 04.517939   * 01 08 38.771109     01 09 31.416291       0.32
* J0108+0135       01 19 01.13988    * 01 35 00.31726      01 40 24.08127        0.36

  0205-010         02 05 53.149970   * 02 08 26.345906     02 09 18.603403       0.11
* J0208-0047      -01 01 56.11936    *-00 47 44.29360     -00 42 58.79328        0.24

  CTA26            03 36 58.953147   * 03 39 30.937787     03 40 22.599109       0.00
* J0339-0146      -01 56 16.89653    *-01 46 35.80413     -01 43 23.20898        0.00
  0336-019         /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc

  0511+009         05 11 05.172944   * 05 13 40.032507     05 14 32.276273       0.19
* J0513+0100       00 56 54.88262    * 01 00 21.65434      01 01 27.28388        0.35
                   /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc

  0748+126         07 48 05.060495   * 07 50 52.045733     07 51 47.365419       0.00
* J0750+1231       12 38 45.47758    * 12 31 04.82825      12 28 25.19946        0.00
  J0750+12         /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc

  0929+533         09 29 13.304118   * 09 32 41.150812     09 33 48.279096       0.14
* J0932+5306       53 19 51.18116    * 53 06 33.80160      53 01 53.16612        0.10
  J0932+53         /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc

  1308+326         13 08 07.560130   * 13 10 28.663849     13 11 13.729915       0.21
* J1310+3220       32 36 40.23886    * 32 20 43.78293      32 15 34.54601        0.20
  J1310+32         /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc

  1538+149         15 38 30.232266   * 15 40 49.491517     15 41 34.680972       0.01
* J1540+1447       14 57 21.79435    * 14 47 45.88482      14 44 53.04008        0.02
  J1540+14         /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc

  1821+107         18 21 41.659100   * 18 24 02.855250     18 24 49.515353       0.02
* J1824+1044       10 42 43.89915    * 10 44 23.77404      10 45 18.53251        0.04
  J1824+10         /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc

  1832-113         18 32 32.599235   * 18 35 19.575779     18 36 14.837972       0.73
* J1835-1115      -11 18 27.17944    *-11 15 59.31221     -11 14 55.31281        0.92
```

fus01tr

Hunting the unidentified gamma-ray sources

PI: *Frank Schinzel*

```
Observing mode: 6cm Continuum C-dual-1024-16-2-2

Schedule for TORUN     (Code Tr )                                  Page   2
               Hunting the unidentified gamma-ray sources
  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  12 Oct 2016   Day 286 ---
 Next scan frequencies:  4778.49  4778.49  4778.49  4778.49  4850.49  4850.49  4850.49  4850.49
                         4922.49  4922.49  4922.49  4922.49  4994.49  4994.49  4994.49  4994.49
 Next BBC frequencies:    578.49   578.49   578.49   578.49   650.49   650.49   650.49   650.49
                          722.49   722.49   722.49   722.49   794.49   794.49   794.49   794.49
 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

14 00 26  1308+326     16 41 00  47.4 262.2  3.5      44.7     0        0   14 00 26
14 01 26  ---          16 42 00  47.3 262.4  3.5      44.7    60        8   14 00 27

14 02 35  1030+415     16 43 09  30.6 299.1  6.2      44.2   -20        8   14 01 36
14 03 35  ---          16 44 09  30.4 299.3  6.2      44.1    40       23   14 01 37

14 04 40  1150+497     16 45 14  46.3 295.9  4.9      56.1    -8       23   14 03 45
14 05 40  ---          16 46 14  46.2 296.1  4.9      56.0    52       38   14 03 46

14 12 47  1617-263     16 53 23  10.1 187.2  0.5       4.8   193       38   14 08 32
14 20 47  ---          17 01 24   9.9 189.0  0.7       6.0   480      132   14 08 33

14 21 07  1629-244     17 01 44  12.0 186.4  0.5       4.3    -2      132   14 20 57
14 29 07  ---          17 09 45  11.9 188.3  0.6       5.5   478      195   14 20 58

14 29 27  1645-240     17 10 05  12.6 184.7  0.3       3.1    -2      195   14 29 17
14 37 27  ---          17 18 07  12.5 186.6  0.5       4.3   478      258   14 29 18

14 37 46  1659-253     17 18 26  11.4 183.5  0.3       2.3    -2      258   14 37 37
14 45 16  ---          17 25 57  11.3 185.2  0.4       3.5   448      316   14 37 38

14 46 06  1717-269     17 26 47   9.9 181.1  0.1       0.7    27      316   14 45 56
14 54 06  ---          17 34 48   9.9 182.9  0.2       2.0   480      379   14 45 57

14 55 20  1703-087     17 36 03  27.8 187.9  0.5       4.8    -7      379   14 54 16
15 03 20  ---          17 44 04  27.6 190.2  0.6       6.2   473      449   14 54 17

15 03 40  1709-111     17 44 24  25.3 188.4  0.5       5.1    -2      449   15 03 30
15 11 40  ---          17 52 25  25.2 190.6  0.6       6.4   478      512   15 03 31

15 12 01  1712-143     17 52 46  22.0 189.7  0.6       6.0    -5      512   15 11 50
15 19 31  ---          18 00 18  21.8 191.6  0.7       7.2   445      571   15 11 51

15 21 25  1538+149     18 02 12  42.7 229.3  2.3      28.1    22      571   15 20 11
15 22 25  ---          18 03 12  42.6 229.6  2.4      28.2    60      588   15 20 12

15 23 56  1156+295     18 04 43  22.3 289.3  6.1      40.5   -44      588   15 22 35
15 24 56  ---          18 05 43  22.2 289.5  6.1      40.4    16      606   15 22 36
```

Schedule for TORUN (Code Tr) Page 3

Hunting the unidentified gamma-ray sources

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
--- Wed 12 Oct 2016 Day 286 ---										
15 26 42	1300+580	18 07 30	48.9	308.0	5.1		62.4	-8	606	15 25 06
15 27 42	---	18 08 30	48.8	308.1	5.1		62.3	52	626	15 25 07
15 36 26	1740-183	18 17 15	18.1	188.1	0.5		5.1	267	626	15 31 11
15 44 26	---	18 25 17	18.0	190.1	0.7		6.4	480	728	15 31 12
15 44 49	1741-159	18 25 40	20.4	190.3	0.7		6.4	0	728	15 44 36
15 52 19	---	18 33 11	20.2	192.2	0.8		7.6	450	787	15 44 37
15 53 10	1741-131	18 34 02	22.9	193.0	0.8		7.9	27	787	15 52 59
16 01 10	---	18 42 03	22.6	195.1	1.0		9.2	480	850	15 53 00
16 01 32	1745-088	18 42 25	27.0	194.7	0.9		8.9	-8	850	16 01 20
16 09 32	---	18 50 27	26.7	196.9	1.0		10.2	472	913	16 01 21
16 09 52	1801-088	18 50 47	27.3	192.6	0.8		7.6	-3	913	16 09 42
16 17 52	---	18 58 48	27.0	194.8	0.9		9.0	477	976	16 09 43
16 18 26	1834-168	18 59 22	20.0	185.3	0.3		3.3	-6	976	16 18 02
16 25 56	---	19 06 53	19.9	187.2	0.5		4.5	444	1037	16 18 03
16 28 15	1836+106	19 09 13	47.2	190.6	0.5		6.4	22	1037	16 26 36
16 36 15	---	19 17 14	47.0	193.4	0.6		8.2	480	1111	16 26 37
16 36 42	1831+061	19 17 41	42.3	194.4	0.7		8.6	-4	1111	16 36 25
16 44 42	---	19 25 43	42.0	197.1	0.8		10.2	476	1175	16 36 26
16 45 37	1743+173	19 26 38	49.2	218.3	1.7		22.9	-2	1175	16 44 52
16 46 37	---	19 27 38	49.1	218.6	1.7		23.1	58	1188	16 44 53
16 48 27	1936-155	19 29 28	21.5	177.2	-0.2		-1.8	-8	1188	16 46 47
16 49 27	---	19 30 28	21.5	177.4	-0.2		-1.6	52	1209	16 46 48
16 50 54	1725+123	19 31 56	42.4	222.6	2.1		24.6	-18	1209	16 49 37
16 51 54	---	19 32 56	42.3	222.9	2.1		24.7	42	1227	16 49 38
16 55 15	0007+106	19 36 17	21.5	100.5	-4.6		-37.0	-58	1227	16 52 04
16 56 15	---	19 37 17	21.7	100.7	-4.6		-37.0	2	1259	16 52 05
16 56 51	2330+134	19 37 54	29.3	107.0	-3.9		-36.2	-7	1259	16 56 25
17 04 21	---	19 45 25	30.4	108.7	-3.8		-35.8	443	1320	16 56 26
17 05 10	2343+120	19 46 14	27.7	107.0	-4.0		-36.0	25	1320	17 05 01
17 13 10	---	19 54 15	28.8	108.8	-3.9		-35.6	480	1382	17 05 02

Schedule for TORUN (Code Tr) Page 4

Hunting the unidentified gamma-ray sources

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
--- Wed 12 Oct 2016 Day 286 ---										
17 13 31	2356+144	19 54 36	29.0	104.4	-4.1		-37.0	-3	1382	17 13 20
17 21 31	---	20 02 38	30.1	106.2	-4.0		-36.6	477	1445	17 13 21
17 24 56	1933+599	20 06 03	81.8	-28.5	0.5		144.9	-81	1445	17 21 41
17 32 56	---	20 14 04	81.2	-33.8	0.7		137.9	399	1532	17 21 42
17 33 42	2000+661	20 14 51	76.7	-6.0	0.2		171.1	-24	1532	17 33 06
17 41 12	---	20 22 22	76.5	-9.2	0.4		166.2	426	1594	17 33 07
17 42 06	1955+704	20 23 16	72.2	-7.5	0.5		166.3	24	1594	17 41 52
17 50 06	---	20 31 17	72.0	-9.6	0.6		162.4	480	1658	17 41 53
17 50 40	1859+732	20 31 51	67.5	-17.4	1.6		141.3	3	1658	17 50 16
17 58 40	---	20 39 53	67.1	-18.5	1.7		138.3	480	1722	17 50 17
17 59 21	2020+788	20 40 34	63.9	-2.4	0.4		172.3	-6	1722	17 58 50
18 07 21	---	20 48 35	63.9	-3.3	0.5		169.6	474	1788	17 58 51
18 07 42	2007+777	20 48 56	64.8	-5.4	0.7		164.4	3	1788	18 07 31
18 08 42	---	20 49 56	64.8	-5.5	0.8		164.0	60	1797	18 07 32
18 10 33	0219+428	20 51 48	36.9	64.9	-5.5		-48.2	-45	1797	18 08 52
18 11 33	---	20 52 48	37.0	65.1	-5.5		-48.2	15	1817	18 08 53
18 12 46	0010+405	20 54 01	54.6	89.4	-3.3		-52.7	-7	1817	18 11 43
18 13 46	---	20 55 01	54.7	89.6	-3.3		-52.7	53	1833	18 11 44
18 16 08	0003-066	20 57 24	18.4	129.5	-3.2		-27.8	-8	1833	18 13 56
18 17 08	---	20 58 24	18.5	129.7	-3.1		-27.7	52	1858	18 13 57
18 18 48	2027+068	21 00 04	43.6	189.9	0.5		6.0	-36	1858	18 17 18
18 26 18	---	21 07 35	43.4	192.5	0.6		7.5	414	1927	18 17 19
18 27 16	2037+124	21 08 33	49.2	190.4	0.5		6.4	22	1927	18 26 58
18 35 16	---	21 16 35	49.0	193.4	0.6		8.2	480	1991	18 26 59
18 35 37	2040+151	21 16 56	51.7	193.1	0.6		8.1	-3	1991	18 35 26
18 43 37	---	21 24 57	51.4	196.1	0.7		10.0	477	2054	18 35 27
18 43 57	2050+164	21 25 17	53.0	192.9	0.5		8.0	-1	2054	18 43 47
18 51 57	---	21 33 18	52.7	196.0	0.7		10.0	479	2117	18 43 48
18 52 17	2057+145	21 33 39	51.2	192.7	0.5		7.9	-1	2117	18 52 07
19 00 17	---	21 41 40	50.9	195.7	0.7		9.7	479	2179	18 52 08

Schedule for TORUN (Code Tr) Page 5

Hunting the unidentified gamma-ray sources

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
--- Wed 12 Oct 2016 Day 286 ---										
19 00 38	2112+120	21 42 01	49.0	189.7	0.4		5.9	-6	2179	19 00 27
19 08 08	---	21 49 32	48.7	192.4	0.6		7.6	444	2239	19 00 28
19 08 58	2126+123	21 50 22	49.4	187.8	0.3		4.8	25	2239	19 08 48
19 16 58	---	21 58 24	49.2	190.8	0.5		6.6	480	2301	19 08 49
19 17 17	2133+136	21 58 43	50.6	188.5	0.4		5.3	0	2301	19 17 08
19 25 17	---	22 06 44	50.4	191.6	0.5		7.1	480	2364	19 17 09
19 26 00	2230+114	22 07 27	48.4	170.4	-0.4		-5.9	-14	2364	19 25 27
19 27 00	---	22 08 27	48.4	170.8	-0.4		-5.7	46	2376	19 25 28
19 28 33	0202+149	22 10 00	30.7	106.2	-3.9		-36.7	-51	2376	19 27 10
19 29 33	---	22 11 01	30.8	106.4	-3.9		-36.7	9	2394	19 27 11
19 30 49	0017+200	22 12 17	49.1	130.5	-2.1		-29.2	-7	2394	19 29 43
19 31 49	---	22 13 17	49.3	130.8	-2.1		-29.0	53	2411	19 29 44
19 33 22	0003-066	22 14 50	26.0	148.6	-1.9		-18.3	-8	2411	19 31 59
19 34 22	---	22 15 50	26.1	148.9	-1.9		-18.2	52	2429	19 32 00
19 34 47	0023-078	22 16 15	23.4	144.3	-2.2		-20.7	1	2429	19 34 32
19 42 47	---	22 24 17	24.1	146.3	-2.0		-19.6	480	2492	19 34 33
19 43 13	0036-019	22 24 43	28.4	140.7	-2.3		-22.4	-4	2492	19 42 57
19 50 43	---	22 32 14	29.1	142.7	-2.1		-21.3	446	2552	19 42 58
19 51 44	0108-066	22 33 15	21.8	136.8	-2.6		-24.4	20	2552	19 51 23
19 59 44	---	22 41 17	22.6	138.8	-2.5		-23.4	480	2616	19 51 24
20 00 08	0129-102	22 41 41	17.2	135.5	-2.9		-25.3	-10	2616	19 59 54
20 08 08	---	22 49 42	18.1	137.4	-2.7		-24.4	470	2680	19 59 55
20 08 44	0055-119	22 50 18	19.7	146.3	-2.2		-19.9	3	2680	20 08 18
20 16 44	---	22 58 19	20.3	148.2	-2.0		-18.8	480	2744	20 08 19
20 17 11	0122-160	22 58 46	14.3	143.5	-2.5		-21.8	-9	2744	20 16 54
20 25 11	---	23 06 48	15.0	145.4	-2.3		-20.8	471	2808	20 16 55
20 25 49	0043-206	23 07 26	13.5	156.1	-1.7		-15.0	2	2808	20 25 21
20 33 19	---	23 14 57	14.0	157.9	-1.5		-14.0	450	2869	20 25 22
20 34 17	0028-237	23 15 55	11.7	162.2	-1.3		-11.5	35	2869	20 33 59
20 42 17	---	23 23 57	12.1	164.1	-1.1		-10.3	480	2933	20 34 00

Schedule for TORUN (Code Tr) Page 6

Hunting the unidentified gamma-ray sources

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
--- Wed 12 Oct 2016 Day 286 ---										
20 43 56	2121+053	23 25 36	36.5	218.6	2.0		22.1	-25	2933	20 42 27
20 44 56	---	23 26 36	36.4	218.9	2.0		22.3	35	2952	20 42 28
20 46 46	2255-282	23 28 26	8.8	186.6	0.5		4.5	-8	2952	20 45 06
20 47 46	---	23 29 26	8.8	186.8	0.5		4.6	52	2973	20 45 07
20 50 16	0007+106	23 31 57	47.2	165.7	-0.7		-8.7	-8	2973	20 47 56
20 51 16	---	23 32 57	47.3	166.0	-0.6		-8.5	52	2999	20 47 57
20 52 44	0048-097	23 34 25	25.4	158.9	-1.3		-12.7	-8	2999	20 51 26
20 53 44	---	23 35 25	25.4	159.1	-1.3		-12.5	52	3016	20 51 27
20 54 27	2347-172	23 36 09	20.0	176.3	-0.2		-2.3	-6	3016	20 53 54
21 02 27	---	23 44 10	20.1	178.4	-0.1		-1.0	474	3082	20 53 55
21 02 59	2332-240	23 44 42	13.2	182.0	0.1		1.3	-8	3082	21 02 37
21 10 29	---	23 52 13	13.1	183.8	0.3		2.5	442	3143	21 02 38
21 11 20	2336-272	23 53 04	10.0	182.9	0.2		2.0	25	3143	21 11 09
21 19 20	---	00 01 06	9.9	184.7	0.3		3.2	480	3206	21 11 10
21 19 44	2327-250	00 01 30	12.0	187.0	0.5		4.6	2	3206	21 19 30
21 27 44	---	00 09 31	11.8	188.8	0.6		5.8	480	3269	21 19 31
21 28 23	2237-235	00 10 10	11.3	200.8	1.5		13.4	0	3269	21 27 54
21 36 23	---	00 18 11	10.9	202.6	1.6		14.5	480	3334	21 27 55
21 36 59	2139-207	00 18 48	9.2	216.5	2.6		22.4	-7	3334	21 36 33
21 44 29	---	00 26 19	8.5	218.2	2.7		23.3	443	3395	21 36 34
21 45 19	2143-187	00 27 09	10.5	218.4	2.7		23.2	28	3395	21 45 09
21 53 19	---	00 35 10	9.7	220.2	2.8		24.1	480	3458	21 45 10
21 55 08	2136+141	00 37 00	38.0	239.1	3.0		32.2	-11	3458	21 53 29
21 56 08	---	00 38 00	37.9	239.4	3.0		32.3	49	3478	21 53 30
21 56 56	2029+121	00 38 48	26.8	254.2	4.1		36.3	-7	3478	21 56 18
21 58 26	---	00 40 18	26.6	254.5	4.1		36.3	83	3495	21 56 19

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

======== Setup file: c1024.eofus

Setup group: 2 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:   3  Setup file default.  Used with PCAL = off
 LO sum=   4778.49  4778.49  4778.49  4778.49  4850.49  4850.49  4850.49  4850.49
           4922.49  4922.49  4922.49  4922.49  4994.49  4994.49  4994.49  4994.49
 BBC fr=    578.49   578.49   578.49   578.49   650.49   650.49   650.49   650.49
            722.49   722.49   722.49   722.49   794.49   794.49   794.49   794.49
 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:   3

 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)

* 0023-078          00 23 35.008061   * 00 26 07.800000     00 26 59.805360       0.00
                   -07 49 14.11738    *-07 32 37.80000     -07 27 00.50920        0.00

* 0028-237          00 28 29.916717   * 00 30 59.900000     00 31 50.867839       0.00
                   -23 46 12.26417    *-23 29 38.40000     -23 24 03.95329        0.00

* 0036-019          00 36 41.592095   * 00 39 15.000000     00 40 07.295181       0.00
                   -01 59 57.24854    *-01 43 28.80000     -01 37 54.11812        0.00

* 0043-206          00 43 26.773916   * 00 45 55.700000     00 46 46.359204       0.00
                   -20 38 07.28852    *-20 21 44.00000     -20 16 12.93646        0.00

* 0055-119          00 55 59.292855   * 00 58 29.600000     00 59 20.792499       0.00
                   -11 57 32.13565    *-11 41 21.00000     -11 35 53.50560        0.00

* 0108-066          01 08 39.422400   * 01 11 10.900000     01 12 02.540865       0.00
                   -06 37 47.12339    *-06 21 51.20000     -06 16 28.88072        0.00

* 0122-160          01 22 33.743245   * 01 25 00.700000     01 25 50.775699       0.00
                   -16 01 56.72435    *-15 46 20.70000     -15 41 05.76367        0.00
```

* 0129-102	01 29 39.342487	* 01 32 08.500000	01 32 59.350345	0.00
	-10 14 29.52579	*-09 59 05.10000	-09 53 54.03336	0.00
* 1617-263	16 17 39.294958	* 16 20 43.100000	16 21 43.427569	0.00
	-26 21 00.39446	*-26 28 07.20000	-26 30 18.00531	0.00
* 1629-244	16 29 58.360244	* 16 33 00.400000	16 34 00.174447	0.00
	-24 29 07.97379	*-24 35 25.50000	-24 37 19.50321	0.00
* 1645-240	16 45 52.816206	* 16 48 55.000000	16 49 54.868252	0.00
	-24 03 20.68049	*-24 08 32.90000	-24 10 05.14091	0.00
* 1659-253	16 59 14.354565	* 17 02 18.800000	17 03 19.458851	0.00
	-25 21 19.86998	*-25 25 36.00000	-25 26 50.02021	0.00
* 1703-087	17 03 58.402626	* 17 06 42.200000	17 07 36.010734	0.00
	-08 44 02.05075	*-08 47 58.80000	-08 49 01.80170	0.00
* 1709-111	17 09 46.519439	* 17 12 33.200000	17 13 27.994286	0.00
	-11 08 26.77355	*-11 11 58.70000	-11 12 54.08156	0.00
* 1712-143	17 12 02.568434	* 17 14 53.100000	17 15 49.184761	0.00
	-14 19 31.80477	*-14 22 53.90000	-14 23 46.90072	0.00
* 1717-269	17 17 46.856699	* 17 20 54.100000	17 21 55.744366	0.00
	-26 56 21.41387	*-26 59 18.30000	-27 00 06.57012	0.00
* 1740-183	17 40 43.256013	* 17 43 39.200000	17 44 37.188343	0.00
	-18 23 16.58682	*-18 24 34.40000	-18 24 47.36042	0.00
* 1741-131	17 41 16.910718	* 17 44 06.300000	17 45 02.117898	0.00
	-13 10 12.60328	*-13 11 28.20000	-13 11 38.84454	0.00
* 1741-159	17 41 51.251585	* 17 44 44.100000	17 45 41.067285	0.00
	-15 57 12.12024	*-15 58 25.10000	-15 58 35.71899	0.00
* 1745-088	17 45 50.980433	* 17 48 35.200000	17 49 29.320299	0.00
	-08 52 50.65368	*-08 53 46.50000	-08 53 49.29863	0.00
* 1801-088	18 01 43.879189	* 18 04 28.100000	18 05 22.289671	0.00
	-08 52 41.97247	*-08 52 28.40000	-08 52 08.15326	0.00
* 1831+061	18 31 48.376685	* 18 34 15.000000	18 35 03.497516	0.00
	06 09 53.44897	* 06 12 17.40000	06 13 25.43762	0.00
* 1834-168	18 34 34.104076	* 18 37 27.800000	18 38 25.266212	0.00
	-16 48 34.45976	*-16 45 57.60000	-16 44 52.50263	0.00
* 1836+106	18 36 56.152446	* 18 39 17.500000	18 40 04.274845	0.00
	10 40 10.97937	* 10 42 56.90000	10 44 13.50100	0.00
* 1859+732	18 59 15.835324	* 18 58 14.700000	18 57 53.908323	0.00
	73 13 59.29615	* 73 18 13.40000	73 20 05.32102	0.00
* 1933+599	19 33 33.060155	* 19 34 20.800000	19 34 37.047359	0.00
	59 55 50.25013	* 60 02 29.60000	60 05 11.16411	0.00
* 1955+704	19 55 52.565181	* 19 55 41.500000	19 55 38.697331	0.00
	70 24 38.96189	* 70 32 43.90000	70 35 52.83309	0.00
* 2000+661	20 00 40.574514	* 20 01 03.600000	20 01 12.152297	0.00
	66 06 48.73328	* 66 15 13.00000	66 18 28.70681	0.00
* 2020+788	20 20 50.406799	* 20 18 43.500000	20 18 02.923656	0.00

	78 53 01.67810	* 79 02 35.60000	79 06 11.53818	0.00
* 2027+068	20 27 48.047196	* 20 30 15.400000	20 31 04.798816	0.00
	06 48 50.00463	* 06 58 56.70000	07 02 36.91934	0.00
* 2037+124	20 37 38.457594	* 20 40 00.800000	20 40 48.636758	0.00
	12 27 46.68581	* 12 38 26.90000	12 42 19.54372	0.00
* 2040+151	20 40 26.369938	* 20 42 46.300000	20 43 33.376340	0.00
	15 08 39.99512	* 15 19 29.50000	15 23 25.84603	0.00
* 2050+164	20 50 03.748349	* 20 52 23.000000	20 53 09.922398	0.00
	16 25 17.45932	* 16 36 38.40000	16 40 45.17438	0.00
* 2057+145	20 57 43.555269	* 21 00 04.900000	21 00 52.545065	0.00
	14 35 17.20260	* 14 47 02.40000	14 51 16.48421	0.00
* 2112+120	21 12 51.586967	* 21 15 15.800000	21 16 04.458943	0.00
	12 05 55.68446	* 12 18 26.40000	12 22 54.38039	0.00
* 2126+123	21 26 15.769539	* 21 28 40.400000	21 29 29.275721	0.00
	12 23 58.56312	* 12 37 06.80000	12 41 46.76185	0.00
* 2133+136	21 33 16.334157	* 21 35 40.400000	21 36 29.142103	0.00
	13 39 53.72798	* 13 53 20.50000	13 58 06.61436	0.00
* 2139-207	21 39 48.009775	* 21 42 36.100000	21 43 32.528829	0.00
	-20 43 48.10913	*-20 30 04.10000	-20 25 22.04742	0.00
* 2143-187	21 43 07.726019	* 21 45 54.100000	21 46 49.987655	0.00
	-18 47 58.46669	*-18 34 06.30000	-18 29 21.03673	0.00
* 2237-235	22 37 34.404776	* 22 40 18.200000	22 41 13.420911	0.00
	-23 32 12.93954	*-23 16 32.70000	-23 11 14.06806	0.00
* 2327-250	23 27 55.879803	* 23 30 33.800000	23 31 27.238204	0.00
	-25 01 35.58495	*-24 45 02.30000	-24 39 27.31949	0.00
* 2330+134	23 30 57.775429	* 23 33 29.600000	23 34 21.444906	0.00
	13 25 26.16508	* 13 42 00.90000	13 47 42.85739	0.00
* 2332-240	23 32 29.347693	* 23 35 06.500000	23 35 59.702907	0.00
	-24 03 02.74749	*-23 46 27.00000	-23 40 51.08097	0.00
* 2336-272	23 36 42.853746	* 23 39 19.900000	23 40 13.064168	0.00
	-27 14 21.40180	*-26 57 43.70000	-26 52 07.83048	0.00
* 2343+120	23 43 15.305611	* 23 45 48.100000	23 46 40.281567	0.00
	12 05 37.69268	* 12 22 17.50000	12 28 00.20737	0.00
* 2347-172	23 47 08.293835	* 23 49 43.100000	23 50 35.610527	0.00
	-17 12 07.47896	*-16 55 26.50000	-16 49 47.87245	0.00
* 2356+144	23 56 13.219939	* 23 58 46.800000	23 59 39.322245	0.00
	14 29 11.88444	* 14 45 53.90000	14 51 36.74587	0.00
* 0003-066	00 03 40.287878	* 00 06 13.892000	00 07 06.137274	0.00
	-06 40 17.30457	*-06 23 35.34000	-06 17 55.28958	0.00
* 0007+106	00 07 56.721083	* 00 10 31.005000	00 11 23.721131	0.00
	10 41 48.21620	* 10 58 29.50000	11 04 11.01391	0.00
* 0010+405	00 10 54.297504	* 00 13 31.130000	00 14 25.554762	0.00
	40 34 56.62926	* 40 51 37.14000	40 57 19.36691	0.00

* 0017+200	00 17 02.119058	* 00 19 37.854000	00 20 31.258874	0.00
	20 05 06.80304	* 20 21 45.64000	20 27 26.33738	0.00
* 0048-097	00 48 09.975532	* 00 50 41.317000	00 51 32.861765	0.00
	-09 45 24.21164	*-09 29 05.21000	-09 23 34.70006	0.00
* 0202+149	02 02 07.395334	* 02 04 50.413000	02 05 46.181142	0.00
	14 59 50.93574	* 15 14 11.04000	15 18 58.26186	0.00
* 0212+735	02 12 49.921529	* 02 17 30.813000	02 19 11.659560	0.00
	73 35 40.08365	* 73 49 32.62000	73 54 00.72765	0.00
* 0219+428	02 19 29.982415	* 02 22 39.611000	02 23 45.062683	0.00
	42 48 29.80949	* 43 02 07.80000	43 06 36.02538	0.00
* 1030+415	10 30 07.799978	* 10 33 03.707000	10 34 00.397146	0.00
	41 31 34.51624	* 41 16 06.23000	41 10 50.13815	0.00
* 1150+497	11 50 47.999213	* 11 53 24.466000	11 54 13.913176	0.00
	49 47 50.09397	* 49 31 08.83000	49 25 34.30675	0.00
* 1156+295	11 56 57.785297	* 11 59 31.833000	12 00 21.360809	0.00
	29 31 25.74190	* 29 14 43.83000	29 09 13.43495	0.00
* 1300+580	13 00 47.131162	* 13 02 52.465000	13 03 30.835019	0.00
	58 04 43.18880	* 57 48 37.61000	57 43 21.18674	0.00
* 1308+326	13 08 07.559278	* 13 10 28.663000	13 11 13.735409	0.00
	32 36 40.23595	* 32 20 43.78000	32 15 34.22693	0.00
* 1538+149	15 38 30.231747	* 15 40 49.491000	15 41 34.668055	0.00
	14 57 21.78956	* 14 47 45.88000	14 44 52.84865	0.00
* 1725+123	17 25 47.656317	* 17 28 07.051000	17 28 52.778747	0.00
	12 18 03.42696	* 12 15 39.49000	12 15 12.96088	0.00
* 1743+173	17 43 22.235731	* 17 45 35.208000	17 46 18.873777	0.00
	17 21 09.18270	* 17 20 01.42000	17 20 01.66442	0.00
* 1936-155	19 36 36.025495	* 19 39 26.657000	19 40 23.393370	0.00
	-15 32 38.77474	*-15 25 43.06000	-15 23 12.38031	0.00
* 2007+777	20 07 20.429693	* 20 05 30.998000	20 04 55.801071	0.00
	77 43 58.12550	* 77 52 43.25000	77 56 03.64860	0.00
* 2029+121	20 29 32.680993	* 20 31 54.994000	20 32 42.770178	0.00
	12 09 28.75286	* 12 19 41.34000	12 23 24.97541	0.00
* 2121+053	21 21 14.801593	* 21 23 44.517000	21 24 34.978724	0.00
	05 22 27.43922	* 05 35 22.09000	05 39 55.92230	0.00
* 2136+141	21 36 37.411878	* 21 39 01.309000	21 39 50.019832	0.00
	14 10 00.61886	* 14 23 35.99000	14 28 24.92491	0.00
* 2230+114	22 30 07.803042	* 22 32 36.408000	22 33 26.913350	0.00
	11 28 22.80674	* 11 43 50.90000	11 49 13.98883	0.00
* 2255-282	22 55 22.459765	* 22 58 05.962000	22 59 01.123892	0.00
	-28 14 25.62200	*-27 58 21.26000	-27 52 56.09799	0.00

rk16batr

RadioAstron AGN Monitoring

PI: *Yuri Kovalev*


```
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```


```
Observing mode: C/L-band, dual-pol

Schedule for TORUN     (Code Tr )                                    Page   2
               RadioAstron AGN Monitoring
  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  13 Oct 2016   Day 287 ---

 ---------- L-band VLBI scans ----------

 Next scan frequencies:  1668.00  1668.00  1668.00  1668.00
 Next BBC frequencies:    732.00   732.00   732.00   732.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

01 00 00  2251+158     03 42 22  23.8 265.6  4.8      38.6     0        0   01 00 00
01 14 30  ---          03 56 54  21.6 268.5  5.0      38.7   870       28   01 00 01

01 15 00  2251+158     03 57 24  21.5 268.6  5.0      38.7    24       28   01 15 00
01 29 30  ---          04 11 57  19.3 271.5  5.3      38.7   870       56   01 15 01

01 30 00  2251+158     04 12 27  19.2 271.6  5.3      38.7    24       56   01 30 00
01 44 30  ---          04 26 59  17.1 274.5  5.5      38.6   870       84   01 30 01

01 45 00  2251+158     04 27 29  17.0 274.6  5.5      38.6    24       84   01 45 00
02 00 00  ---          04 42 32  14.7 277.5  5.8      38.3   900      112   01 45 01



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


 ======== Setup file: ra18cm2.set

   Setup group:    9         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   2400.00   2400.00   2400.00   2400.00
  Net SB=         L         L         U         U
  IF SB =         L         L         L         L
  Pol.  =      RCP       LCP       RCP       LCP
  BBC   =         1         2         1         2
  BBC SB=         U         U         L         L
  IF    =        C         A         C         A

 The following frequency sets based on these setups were used.

  Frequency Set:   6  Setup file default.  Used with PCAL = 1MHz
  LO sum=   1668.00  1668.00  1668.00  1668.00
  BBC fr=    732.00   732.00   732.00   732.00
  Bandwd=     16.00    16.00    16.00    16.00
   Matching frequency sets:   6

  Track assignments are:
   track1=   2, 18,  3, 19
   barrel=roll_off
```

POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 31.317423       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 19.80213        0.00
                    fake circumpolar target for a TS to look at

* 2251+158          22 51 29.519741   * 22 53 57.747940     22 54 48.287486       0.00
  J2253+1608        15 52 54.34791    * 16 08 53.56074      16 14 26.56976        0.00
  3C454.3           ./rk16ba_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 40570 observations, RA-AO4-06, RA-AO3-0
```

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)
  2251+158           144.9

 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
```

gg081btr

RadioAstron AGN polarization imaging

PI: *Jose L. Gomez*

```
Address:  Instituto de Astrofisica de Andalucia-CSIC

Observing mode: K-band,Q-band, dual-pol
Schedule for TORUN     (Code Tr )                                  Page   2
               RadioAstron AGN 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
-------------------------------------------------------------------------------------------
 --- Mon  17 Oct 2016   Day 291 ---
 ---------- K-band  VLBI scans.  Ground segment 01: calibrator source 3C453.4 with EVN+KVN ----------
 Next scan frequencies:  22236.00  22236.00  22236.00  22236.00  22268.00  22268.00  22268.00  22268.0
                         22300.00  22300.00  22300.00  22300.00  22332.00  22332.00  22332.00  22332.0
 Next BBC frequencies:     736.00    736.00    736.00    736.00    768.00    768.00    768.00    768.0
                           800.00    800.00    800.00    800.00    832.00    832.00    832.00    832.0
 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

16 00 00  2251+158     19 00 36  31.6 105.9 -3.9     -37.0     0        0   15 59 49
16 05 00  ---          19 05 37  32.4 107.0 -3.8     -36.7   300       40   15 59 50

 ---------- K-band  VLBI scans.  Ground segment 01: EVPA calibrator 2136+141 with EVN+KVN segment 1 --

16 06 15  2136+141     19 06 52  41.0 127.4 -2.5     -29.5    19       40   16 06 04
16 11 15  ---          19 11 52  41.6 128.8 -2.5     -28.9   300       80   16 06 05

 ---------- K-band  VLBI scans.  Ground segment 01: 2230+114 with EVN+KVN ----------

16 12 25  2230+114     19 13 03  32.7 116.8 -3.3     -33.2    23       80   16 12 14
16 20 45  ---          19 21 24  33.8 118.8 -3.2     -32.5   500      145   16 12 15

16 21 15  2230+114     19 21 54  33.9 119.0 -3.2     -32.5    24      145   16 21 04
16 31 15  ---          19 31 56  35.2 121.5 -3.0     -31.5   600      224   16 21 05

16 31 45  2230+114     19 32 26  35.3 121.6 -3.0     -31.5    24      224   16 31 34
16 41 45  ---          19 42 27  36.5 124.2 -2.8     -30.5   600      302   16 31 35

16 42 15  2230+114     19 42 57  36.6 124.3 -2.8     -30.4    24      302   16 42 04
16 52 15  ---          19 52 59  37.8 127.0 -2.7     -29.3   600      380   16 42 05

16 52 45  2230+114     19 53 29  37.9 127.2 -2.7     -29.3    24      380   16 52 34
17 02 45  ---          20 03 31  39.1 129.9 -2.5     -28.1   600      459   16 52 35

17 03 15  2230+114     20 04 01  39.1 130.0 -2.5     -28.0    24      459   17 03 04
17 13 15  ---          20 14 03  40.3 132.9 -2.3     -26.7   600      537   17 03 05

17 13 45  2230+114     20 14 33  40.3 133.0 -2.3     -26.7    24      537   17 13 34
17 23 45  ---          20 24 34  41.4 135.9 -2.1     -25.3   600      615   17 13 35

 ---------- K-band VLBI scans. Space segment 01: 2230+114 with EVN+KVN(part time , till 18:00) -------

17 25 00  2230+114     20 25 50  41.5 136.3 -2.1     -25.1    69      615   17 24 49
17 35 00  ---          20 35 52  42.5 139.3 -2.0     -23.6   600      694   17 24 50
```

Schedule for TORUN (Code Tr) Page 3

RadioAstron AGN 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 Stop UT	Source	Start / Stop LST	EL	AZ	HA	UP	ParA	Early Dwell	Disk GBytes	TPStart SYNC
--- Mon 17 Oct 2016 Day 291 ---										
17 35 30	2230+114	20 36 22	42.6	139.5	-2.0		-23.5	24	694	17 35 19
17 45 00	---	20 45 53	43.5	142.4	-1.8		-22.0	570	768	17 35 20
17 45 30	2230+114	20 46 23	43.5	142.6	-1.8		-21.9	24	768	17 45 19
17 55 00	---	20 55 55	44.4	145.6	-1.6		-20.3	570	843	17 45 20
17 55 30	2230+114	20 56 25	44.4	145.7	-1.6		-20.2	24	843	17 55 19
18 05 00	---	21 05 57	45.2	148.8	-1.5		-18.5	570	917	17 55 20
18 05 30	2230+114	21 06 27	45.2	149.0	-1.5		-18.4	24	917	18 05 19
18 15 00	---	21 15 58	45.9	152.2	-1.3		-16.6	570	992	18 05 20
18 15 30	2230+114	21 16 28	45.9	152.4	-1.3		-16.5	24	992	18 15 19
18 25 00	---	21 26 00	46.6	155.6	-1.1		-14.7	570	1066	18 15 20
18 25 30	2230+114	21 26 30	46.6	155.8	-1.1		-14.6	24	1066	18 25 19
18 35 00	---	21 36 01	47.2	159.1	-1.0		-12.6	570	1141	18 25 20
18 35 30	2230+114	21 36 32	47.2	159.3	-0.9		-12.5	24	1141	18 35 19
18 45 00	---	21 46 03	47.6	162.6	-0.8		-10.5	570	1215	18 35 20
---------- K-band VLBI scans. Ground segment 02: 2230+114 with EVN + Hart ----------										
18 46 00	2230+114	21 47 03	47.7	163.0	-0.8		-10.3	53	1215	18 45 49
18 56 00	---	21 57 05	48.1	166.6	-0.6		-8.2	600	1293	18 45 50
18 56 30	2230+114	21 57 35	48.1	166.8	-0.6		-8.1	24	1293	18 56 19
19 06 00	---	22 07 07	48.4	170.3	-0.4		-6.0	570	1368	18 56 20
19 06 30	2230+114	22 07 37	48.4	170.5	-0.4		-5.8	24	1368	19 06 19
19 16 00	---	22 17 08	48.6	174.0	-0.3		-3.7	570	1442	19 06 20
19 16 30	2230+114	22 17 38	48.6	174.1	-0.3		-3.6	24	1442	19 16 19
19 26 00	---	22 27 10	48.7	177.7	-0.1		-1.4	570	1517	19 16 20
19 26 30	2230+114	22 27 40	48.7	177.9	-0.1		-1.3	24	1517	19 26 19
19 36 00	---	22 37 11	48.7	181.4	0.1		0.9	570	1591	19 26 20
---------- K-band VLBI scans. EVPA calibrator 2136+141 with EVN+KVN segment 2 ----------										
19 37 21	2136+141	22 38 33	49.7	202.3	1.0		13.6	25	1591	19 37 10
19 42 21	---	22 43 34	49.4	204.1	1.1		14.7	300	1631	19 37 11

Schedule for TORUN (Code Tr) Page 4

RadioAstron AGN 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 Stop UT	Source	Start / Stop LST	EL	AZ	HA	UP	ParA	Early Dwell	Disk GBytes	TPStart SYNC
--- Mon 17 Oct 2016 Day 291 ---										
---------- K-band VLBI scans. Back to 2230+114 with EVN + Hart ----------										
19 42 51	2230+114	22 44 04	48.7	183.9	0.2		2.4	-25	1631	19 42 40
19 52 21	---	22 53 35	48.5	187.5	0.3		4.6	545	1706	19 42 41
19 52 51	2230+114	22 54 06	48.5	187.6	0.3		4.7	24	1706	19 52 40
20 02 21	---	23 03 37	48.3	191.1	0.5		6.8	570	1780	19 52 41
20 02 51	2230+114	23 04 07	48.3	191.3	0.5		6.9	24	1780	20 02 40
20 12 21	---	23 13 39	47.9	194.8	0.7		9.0	570	1855	20 02 41
20 12 50	2230+114	23 14 08	47.9	194.9	0.7		9.1	22	1855	20 12 50
20 16 20	---	23 17 38	47.8	196.2	0.7		9.9	210	1882	20 12 51
20 16 50	2230+114	23 18 08	47.8	196.4	0.7		10.0	24	1882	20 16 39
20 26 20	---	23 27 40	47.3	199.8	0.9		12.0	570	1956	20 16 40
20 26 50	2230+114	23 28 10	47.3	200.0	0.9		12.1	24	1956	20 26 39
20 36 20	---	23 37 41	46.8	203.3	1.1		14.0	570	2031	20 26 40
20 36 50	2230+114	23 38 11	46.7	203.5	1.1		14.1	24	2031	20 36 39
20 46 20	---	23 47 43	46.1	206.7	1.2		16.0	570	2105	20 36 40
20 46 50	2230+114	23 48 13	46.1	206.9	1.2		16.1	24	2105	20 46 39
20 56 20	---	23 57 45	45.4	210.1	1.4		17.9	570	2179	20 46 40
20 56 50	2230+114	23 58 15	45.4	210.3	1.4		18.0	24	2179	20 56 39
21 06 20	---	00 07 46	44.6	213.4	1.6		19.7	570	2254	20 56 40
21 06 50	2230+114	00 08 16	44.6	213.5	1.6		19.8	24	2254	21 06 39
21 16 20	---	00 17 48	43.8	216.6	1.7		21.4	570	2328	21 06 40
21 16 50	2230+114	00 18 18	43.7	216.7	1.7		21.5	24	2328	21 16 39
21 26 20	---	00 27 50	42.8	219.7	1.9		23.1	570	2403	21 16 40
21 26 50	2230+114	00 28 20	42.8	219.9	1.9		23.2	24	2403	21 26 39
21 36 20	---	00 37 51	41.8	222.7	2.1		24.6	570	2477	21 26 40
---------- K-band VLBI scans. EVPA calibrator 2136+141 with EVN+KVN+VLBA segment 3 ----------										
21 37 43	2136+141	00 39 15	37.7	239.7	3.0		32.4	35	2477	21 37 32
21 44 43	---	00 46 16	36.8	241.5	3.1		33.0	420	2533	21 37 33
21 47 00	2230+114	00 48 33	40.7	225.9	2.3		26.1	90	2533	21 46 49
21 57 00	---	00 58 35	39.6	228.8	2.4		27.5	600	2611	21 46 50

```
Schedule for TORUN     (Code Tr )                                  Page   5
               RadioAstron AGN 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
-------------------------------------------------------------------------------------------

 --- Mon  17 Oct 2016   Day 291 ---

21 57 30  2230+114     00 59 05  39.6 228.9  2.4      27.5    24     2611   21 57 19
22 07 00  ---          01 08 36  38.5 231.5  2.6      28.7   570     2686   21 57 20

22 07 30  2230+114     01 09 06  38.4 231.7  2.6      28.8    24     2686   22 07 19
22 17 00  ---          01 18 38  37.3 234.2  2.8      29.9   570     2760   22 07 20

22 17 30  2230+114     01 19 08  37.2 234.4  2.8      29.9    24     2760   22 17 19
22 19 30  ---          01 21 08  36.9 234.9  2.8      30.1   120     2777   22 17 20

 ---------- K-band VLBI scans. Space segment 02: 2230+114 with EVN+GB+Ro70+VLBA+Y27+Hh(-23:00), no KVN

22 20 00  2230+114     01 21 38  36.9 235.0  2.8      30.2    24     2777   22 19 49
22 28 50  ---          01 30 30  35.8 237.4  3.0      31.1   530     2846   22 19 50

22 29 00  2230+114     01 30 40  35.8 237.4  3.0      31.1     4     2846   No stop
22 30 00  ---          01 31 40  35.6 237.7  3.0      31.2    60     2855   22 28 51

22 30 30  2230+114     01 32 10  35.6 237.8  3.0      31.3    24     2855   22 30 19
22 38 50  ---          01 40 31  34.5 239.9  3.1      32.1   500     2921   22 30 20

22 39 00  2230+114     01 40 42  34.5 240.0  3.1      32.1     4     2921   No stop
22 40 00  ---          01 41 42  34.3 240.2  3.1      32.2    60     2930   22 38 51

22 40 30  2230+114     01 42 12  34.3 240.3  3.1      32.2    24     2930   22 40 19
22 48 50  ---          01 50 33  33.2 242.4  3.3      32.9   500     2995   22 40 20

22 49 00  2230+114     01 50 43  33.2 242.5  3.3      33.0     4     2995   No stop
22 50 00  ---          01 51 43  33.0 242.7  3.3      33.0    60     3004   22 48 51

22 50 30  2230+114     01 52 13  33.0 242.8  3.3      33.1    24     3004   22 50 19
22 58 50  ---          02 00 35  31.8 244.8  3.5      33.7   500     3070   22 50 20

22 59 00  2230+114     02 00 45  31.8 244.9  3.5      33.7     4     3070   No stop
23 00 00  ---          02 01 45  31.7 245.1  3.5      33.8    60     3079   22 58 51

23 00 30  2230+114     02 02 15  31.6 245.2  3.5      33.9    24     3079   23 00 19
23 06 00  ---          02 07 46  30.8 246.5  3.6      34.3   330     3122   23 00 20

23 06 10  2230+114     02 07 56  30.8 246.6  3.6      34.3     4     3122   No stop
23 08 50  ---          02 10 36  30.5 247.2  3.6      34.4   160     3144   23 06 01

23 09 00  2230+114     02 10 46  30.4 247.3  3.6      34.5     4     3144   No stop
23 10 00  ---          02 11 47  30.3 247.5  3.6      34.5    60     3153   23 08 51
```

```
Schedule for TORUN     (Code Tr )                                  Page   6
               RadioAstron AGN 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
-----------------------------------------------------------------------------------------

 --- Mon  17 Oct 2016   Day 291 ---

23 10 30  2230+114     02 12 17  30.2 247.6  3.6      34.6    24     3153   23 10 19
23 18 50  ---          02 20 38  29.1 249.5  3.8      35.1   500     3219   23 10 20

23 19 00  2230+114     02 20 48  29.0 249.6  3.8      35.1     4     3219   No stop
23 20 00  ---          02 21 48  28.9 249.8  3.8      35.2    60     3228   23 18 51

23 20 30  2230+114     02 22 18  28.8 249.9  3.8      35.2    24     3228   23 20 19
23 28 50  ---          02 30 40  27.6 251.8  4.0      35.7   500     3293   23 20 20

23 29 00  2230+114     02 30 50  27.6 251.8  4.0      35.7     4     3293   No stop
23 30 00  ---          02 31 50  27.5 252.1  4.0      35.7    60     3302   23 28 51

23 30 30  2230+114     02 32 20  27.4 252.2  4.0      35.7    24     3302   23 30 19
23 38 50  ---          02 40 41  26.2 254.0  4.1      36.1   500     3368   23 30 20

23 39 00  2230+114     02 40 51  26.2 254.1  4.1      36.2     4     3368   No stop
23 40 00  ---          02 41 52  26.0 254.3  4.1      36.2    60     3377   23 38 51

23 40 30  2230+114     02 42 22  26.0 254.4  4.1      36.2    24     3377   23 40 19
23 50 00  ---          02 51 53  24.6 256.5  4.3      36.6   570     3451   23 40 20

23 51 00  2230+114     02 52 53  24.4 256.7  4.3      36.7    54     3451   23 50 49
23 53 40  ---          02 55 34  24.0 257.3  4.4      36.8   160     3473   23 50 50

23 53 50  2230+114     02 55 44  24.0 257.3  4.4      36.8     4     3473   No stop
23 54 50  ---          02 56 44  23.9 257.5  4.4      36.8    60     3482   23 53 41

 --- Start: Mon  17 Oct 2016   Day 291 -- Stop: Tue  18 Oct 2016   Day 292 ---

23 55 20  2230+114     02 57 14  23.8 257.6  4.4      36.8    24     3482   23 55 09
00 03 40  ---          03 05 35  22.6 259.4  4.5      37.1   500     3547   23 55 10

 ---------- Ground-only EVN +GBT K-band scans on target source ----------

00 04 10  2230+114     03 06 06  22.5 259.5  4.5      37.1    24     3547   00 03 59
00 12 40  ---          03 14 37  21.2 261.3  4.7      37.3   510     3614   00 04 00

00 13 10  2230+114     03 15 07  21.1 261.4  4.7      37.3    24     3614   00 12 59
00 23 40  ---          03 25 39  19.6 263.6  4.9      37.6   630     3696   00 13 00

 ----------  All ground stations in  K-band  on target source ----------

00 24 55  2230+114     03 26 54  19.4 263.8  4.9      37.6    69     3696   00 24 44
00 25 55  ---          03 27 54  19.2 264.1  4.9      37.6    60     3706   00 24 45
```

```
Schedule for TORUN     (Code Tr )                                  Page   7
              RadioAstron AGN 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
-------------------------------------------------------------------------------------------

 --- Tue  18 Oct 2016   Day 292 ---

00 26 05  2230+114     03 28 04  19.2 264.1  4.9      37.6     4     3706   No stop
00 35 35  ---          03 37 36  17.8 266.0  5.1      37.7   570     3780   00 25 56

 ---------- Ground-only EVN +GBT K-band scans on target source ----------

00 35 50  2230+114     03 37 51  17.8 266.1  5.1      37.7     9     3780   00 35 39
00 45 20  ---          03 47 22  16.3 268.0  5.2      37.8   570     3854   00 35 40

00 45 50  2230+114     03 47 52  16.3 268.1  5.2      37.8    24     3854   00 45 39
00 55 20  ---          03 57 24  14.8 270.0  5.4      37.8   570     3929   00 45 40

00 55 50  2230+114     03 57 54  14.7 270.1  5.4      37.8    24     3929   00 55 39
00 58 30  ---          04 00 34  14.3 270.7  5.5      37.8   160     3951   00 55 40

 ----------  All ground stations in  K-band  on target source ----------

00 59 00  2230+114     04 01 05  14.3 270.8  5.5      37.8    24     3951   00 58 49
01 00 00  ---          04 02 05  14.1 271.0  5.5      37.8    60     3960   00 58 50

01 00 10  2230+114     04 02 15  14.1 271.0  5.5      37.8     4     3960   No stop
01 10 10  ---          04 12 16  12.6 273.0  5.6      37.8   600     4038   01 00 01

 ---------- Ground-only EVN +GBT K-band scans on target source ----------

01 10 40  2230+114     04 12 46  12.5 273.1  5.7      37.8    24     4038   01 10 29
01 20 10  ---          04 22 18  11.1 275.0  5.8      37.7   570     4113   01 10 30

01 20 40  2230+114     04 22 48  11.0 275.1  5.8      37.7    24     4113   01 20 29
01 30 10  ---          04 32 20   9.6 276.9  6.0      37.5   570     4187   01 20 30

 ----------  All ground stations in  K-band  on target source ----------

01 30 40  2230+114     04 32 50   9.5 277.0  6.0      37.5    24     4187   01 30 29
01 31 40  ---          04 33 50   9.4 277.2  6.0      37.5    60     4196   01 30 30

01 31 50  2230+114     04 34 00   9.3 277.3  6.0      37.5     4     4196   No stop
01 40 10  ---          04 42 21   8.1 278.9  6.1      37.3   500     4262   01 31 41

01 40 40  2230+114     04 42 51   8.0 279.0  6.2      37.3    24     4262   01 40 29
01 41 40  ---          04 43 52   7.9 279.2  6.2      37.3    60     4271   01 40 30

01 41 50  2230+114     04 44 02   7.9 279.2  6.2      37.3     4     4271   No stop
01 49 00  ---          04 51 13   6.8 280.7  6.3      37.1   430     4327   01 41 41
```

Schedule for TORUN (Code Tr) Page 8

RadioAstron AGN 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 Stop UT	Source	Start / Stop LST	EL	AZ	HA	UP	ParA	Early Dwell	Disk GBytes	TPStart SYNC
--- Tue 18 Oct 2016 Day 292 ---										
01 49 30	2230+114	04 51 43	6.7	280.8	6.3		37.1	24	4327	01 49 19
01 52 10	---	04 54 23	6.3	281.3	6.3		37.0	160	4349	01 49 20
02 03 30	0748+126	05 05 45	37.7	125.1	-2.8		-30.2	349	4349	02 03 19
02 13 00	---	05 15 17	38.9	127.7	-2.6		-29.1	570	4423	02 03 20
02 13 30	0748+126	05 15 47	38.9	127.8	-2.6		-29.1	24	4423	02 13 19
02 23 00	---	05 25 18	40.0	130.5	-2.4		-27.9	570	4498	02 13 20
02 23 30	0748+126	05 25 48	40.1	130.6	-2.4		-27.8	24	4498	02 23 19
02 33 00	---	05 35 20	41.2	133.3	-2.3		-26.6	570	4572	02 23 20
02 33 30	0748+126	05 35 50	41.2	133.5	-2.3		-26.5	24	4572	02 33 19
02 43 00	---	05 45 22	42.2	136.3	-2.1		-25.2	570	4647	02 33 20
02 43 30	0748+126	05 45 52	42.3	136.4	-2.1		-25.1	24	4647	02 43 19
02 53 00	---	05 55 23	43.2	139.3	-1.9		-23.6	570	4721	02 43 20
---------- EVN+GBT scan on FF 3C84 in K bands ----------										
02 56 50	0316+413	05 59 14	61.3	262.5	2.6		52.7	-32	4721	02 56 39
03 06 50	---	06 09 16	59.8	264.8	2.8		53.1	568	4800	02 56 40
03 07 20	0316+413	06 09 46	59.7	264.9	2.8		53.1	24	4800	03 07 09
03 17 20	---	06 19 47	58.2	267.1	3.0		53.3	600	4878	03 07 10
---------- EVNs-> 0748+126 ----------										
03 19 00	0748+126	06 21 28	45.6	147.6	-1.5		-19.2	-152	4878	03 18 49
03 28 30	---	06 30 59	46.3	150.8	-1.3		-17.5	418	4953	03 18 50
03 29 00	0748+126	06 31 29	46.3	151.0	-1.3		-17.4	24	4953	03 28 49
03 38 30	---	06 41 01	47.0	154.2	-1.2		-15.5	570	5027	03 28 50
03 39 00	0748+126	06 41 31	47.0	154.4	-1.2		-15.4	24	5027	03 38 49
03 48 30	---	06 51 02	47.6	157.7	-1.0		-13.5	570	5102	03 38 50
03 49 00	0748+126	06 51 32	47.6	157.9	-1.0		-13.4	24	5102	03 48 49
03 58 30	---	07 01 04	48.1	161.3	-0.8		-11.4	570	5176	03 48 50
03 59 00	0748+126	07 01 34	48.2	161.4	-0.8		-11.3	24	5176	03 58 49
04 08 30	---	07 11 06	48.6	164.9	-0.7		-9.2	570	5250	03 58 50
04 09 00	0748+126	07 11 36	48.6	165.1	-0.7		-9.1	24	5250	04 08 49
04 18 30	---	07 21 07	48.9	168.6	-0.5		-7.0	570	5325	04 08 50

```
Schedule for TORUN     (Code Tr )                                Page   9
              RadioAstron AGN 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
-------------------------------------------------------------------------------------------

 --- Tue  18 Oct 2016   Day 292 ---

04 19 00  0748+126     07 21 37  48.9 168.8 -0.5      -6.9    24     5325   04 18 49
04 25 10  ---          07 27 48  49.1 171.0 -0.4      -5.5   370     5374   04 18 50

 ---------- K-band VLBI scans. EVN scan on 3C84 at ~4:30 ----------

04 30 00  0316+413     07 32 39  47.3 280.7  4.2      52.1    56     5374   04 29 49
04 40 00  ---          07 42 41  45.8 282.4  4.4      51.6   600     5452   04 29 50

 ---------- Ur Zc Bd, Sv -> 0748+126 ----------

04 46 16  0748+126     07 48 58  49.4 178.9 -0.0      -0.7   152     5452   04 46 05
04 56 16  ---          07 58 59  49.4 182.7  0.1       1.7   600     5530   04 46 06

04 56 46  0748+126     07 59 30  49.3 182.9  0.1       1.8    24     5530   04 56 35
05 06 16  ---          08 09 01  49.2 186.4  0.3       4.0   570     5605   04 56 36

05 06 46  0748+126     08 09 31  49.2 186.6  0.3       4.1    24     5605   05 06 35
05 16 16  ---          08 19 03  49.0 190.2  0.5       6.2   570     5679   05 06 36

05 16 46  0748+126     08 19 33  49.0 190.4  0.5       6.3    24     5679   05 16 35
05 26 16  ---          08 29 04  48.7 193.9  0.6       8.5   570     5754   05 16 36

05 26 46  0748+126     08 29 35  48.7 194.0  0.6       8.6    24     5754   05 26 35
05 36 16  ---          08 39 06  48.3 197.5  0.8      10.7   570     5828   05 26 36

05 36 46  0748+126     08 39 36  48.3 197.7  0.8      10.8    24     5828   05 36 35
05 46 16  ---          08 49 08  47.8 201.1  1.0      12.8   570     5903   05 36 36

05 46 46  0748+126     08 49 38  47.8 201.3  1.0      12.9    24     5903   05 46 35
05 56 16  ---          08 59 09  47.2 204.6  1.1      14.8   570     5977   05 46 36

05 56 46  0748+126     08 59 39  47.2 204.8  1.1      14.9    24     5977   05 56 35
05 59 56  ---          09 02 50  47.0 205.9  1.2      15.6   190     6003   05 56 36



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:   26         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=         U         U         L         L         U         U         L         L
                  U         U         L         L         U         U         L         L
  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=         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 = 1MHz
  LO sum=   22236.00  22236.00  22236.00  22236.00  22268.00  22268.00  22268.00  22268.00
            22300.00  22300.00  22300.00  22300.00  22332.00  22332.00  22332.00  22332.00
  BBC fr=     736.00    736.00    736.00    736.00    768.00    768.00    768.00    768.00
              800.00    800.00    800.00    800.00    832.00    832.00    832.00    832.00
  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:   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)

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 31.676268       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 18.22736        0.00
                    fake circumpolar target for a TS to look at

  1328+307          13 28 49.657778   * 13 31 08.288070     13 31 52.609697       0.00
  J1331+3030        30 45 58.64060    * 30 30 32.95924      30 25 34.41572        0.00
* 3C286             ./gg081b_sources.radioastron
                    WSRT calibrator, not for 92cm, rfc_2013d Petrov, 2013, unpublished 542 observati

* 0316+413          03 16 29.567283   * 03 19 48.160114     03 20 56.362032       0.00
  J0319+4130        41 19 51.91847    * 41 30 42.10559      41 34 10.36045        0.00
  3C84              ./gg081b_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 15448 observations, RA-AO3-04, RA-AO2-1

* 0748+126          07 48 05.060493   * 07 50 52.045731     07 51 47.529372       0.00
  J0750+1231        12 38 45.47747    * 12 31 04.82815      12 28 24.72088        0.00
                    ./gg081b_sources.radioastron
                    AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 26051 observations, RA-AO3-04, R

* 1921-293          19 21 42.234129   * 19 24 51.055956     19 25 53.565583       0.00
  J1924-2914       -29 20 26.35404    *-29 14 30.12114     -29 12 23.78367        0.00
                    ./gg081b_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 45960 observations, RA-AO3-04, RA-AO2-1
```

```
* 2136+141          21 36 37.412147   * 21 39 01.309269     21 39 49.929363       0.00
  J2139+1423        14 10 00.62094    * 14 23 35.99209      14 28 25.01652        0.00
                    ./gg081b_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 52968 observations, RA-AO3-04, RA-AO2-1

* 2230+114          22 30 07.803947   * 22 32 36.408905     22 33 26.843297       0.00
  J2232+1143        11 28 22.81067    * 11 43 50.90395      11 49 14.08660        0.00
  CTA102            ./gg081b_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 5100 observations, RA-AO3-04, RA-AO2-12

* 2251+158          22 51 29.519741   * 22 53 57.747940     22 54 48.229805       0.00
  J2253+1608        15 52 54.34791    * 16 08 53.56074      16 14 26.76997        0.00
  3C454.3           ./gg081b_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 40570 observations, RA-AO3-04, RA-AO2-1
```

rk16bctr

RadioAstron AGN Monitoring

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```
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```


```
Observing mode: C/K-band, dual-pol

Schedule for TORUN     (Code Tr )                                   Page   2
               RadioAstron AGN Monitoring
  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  18 Oct 2016   Day 292 ---

 ---------- C-band VLBI scans ----------

 Next scan frequencies:  4836.00  4836.00  4836.00  4836.00
 Next BBC frequencies:    736.00   736.00   736.00   736.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

16 00 00  2251+158     19 04 33  32.2 106.7 -3.8     -36.8     0        0   16 00 00
16 14 30  ---          19 19 05  34.3 110.1 -3.6     -36.0   870       28   16 00 01

16 15 00  2251+158     19 19 35  34.3 110.2 -3.6     -35.9    24       28   16 15 00
16 29 30  ---          19 34 07  36.4 113.7 -3.3     -34.9   870       56   16 15 01

16 30 00  2251+158     19 34 37  36.4 113.8 -3.3     -34.9    24       56   16 30 00
16 44 30  ---          19 49 10  38.4 117.5 -3.1     -33.7   870       84   16 30 01

16 45 00  2251+158     19 49 40  38.5 117.6 -3.1     -33.7    24       84   16 45 00
17 00 00  ---          20 04 42  40.4 121.5 -2.8     -32.2   900      112   16 45 01



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


 ======== Setup file: ra6cm2.set

   Setup group:    4         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4100.00   4100.00   4100.00   4100.00
  Net SB=         L         L         U         U
  IF SB =         U         U         U         U
  Pol.  =      RCP       LCP       RCP       LCP
  BBC   =         1         2         1         2
  BBC SB=         L         L         U         U
  IF    =        C         A         C         A

 The following frequency sets based on these setups were used.

  Frequency Set:   2  Setup file default.  Used with PCAL = 1MHz
  LO sum=   4836.00  4836.00  4836.00  4836.00
  BBC fr=    736.00   736.00   736.00   736.00
  Bandwd=     16.00    16.00    16.00    16.00
   Matching frequency sets:   2

  Track assignments are:
   track1=   2, 18,  3, 19
   barrel=roll_off
```

POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 31.745843       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 17.84640        0.00
                    fake circumpolar target for a TS to look at

* 2251+158          22 51 29.519741   * 22 53 57.747940     22 54 48.223445       0.00
  J2253+1608        15 52 54.34791    * 16 08 53.56074      16 14 26.85604        0.00
  3C454.3           ./rk16bc_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 40570 observations, RA-AO4-06, RA-AO3-0
```

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)
  2251+158           140.5

 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
```

rk16bdtr

RadioAstron AGN Monitoring

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```
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Fax:      +7-495-3332378                 Phone during observation: +7-903-6614865
```


```
Observing mode: C/K-band, dual-pol

Schedule for TORUN     (Code Tr )                                   Page   2
               RadioAstron AGN Monitoring
  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  18 Oct 2016   Day 292 ---

 ---------- C-band VLBI scans ----------

 Next scan frequencies:  4836.00  4836.00  4836.00  4836.00
 Next BBC frequencies:    736.00   736.00   736.00   736.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

20 00 00  0048-097     23 05 12  23.5 151.2 -1.8     -17.0     0        0   20 00 00
20 14 30  ---          23 19 44  24.5 155.0 -1.5     -14.9   870       28   20 00 01

20 15 00  0048-097     23 20 14  24.6 155.1 -1.5     -14.8    24       28   20 15 00
20 29 30  ---          23 34 47  25.4 159.0 -1.3     -12.6   870       56   20 15 01

20 30 00  0048-097     23 35 17  25.4 159.1 -1.3     -12.5    24       56   20 30 00
20 44 30  ---          23 49 49  26.1 163.0 -1.0     -10.3   870       84   20 30 01

20 45 00  0048-097     23 50 19  26.2 163.1 -1.0     -10.2    24       84   20 45 00
21 00 00  ---          00 05 22  26.7 167.2 -0.8      -7.7   900      112   20 45 01



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


 ======== Setup file: ra6cm2.set

   Setup group:    4         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4100.00   4100.00   4100.00   4100.00
  Net SB=         L         L         U         U
  IF SB =         U         U         U         U
  Pol.  =      RCP       LCP       RCP       LCP
  BBC   =         1         2         1         2
  BBC SB=         L         L         U         U
  IF    =        C         A         C         A

 The following frequency sets based on these setups were used.

  Frequency Set:   2  Setup file default.  Used with PCAL = 1MHz
  LO sum=   4836.00  4836.00  4836.00  4836.00
  BBC fr=    736.00   736.00   736.00   736.00
  Bandwd=     16.00    16.00    16.00    16.00
   Matching frequency sets:   2

  Track assignments are:
   track1=   2, 18,  3, 19
   barrel=roll_off



 POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 31.758625       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 17.78150        0.00
                    fake circumpolar target for a TS to look at

* 0048-097          00 48 09.975920   * 00 50 41.317387     00 51 32.858543       0.00
  J0050-0929       -09 45 24.21201    *-09 29 05.21037     -09 23 35.29952        0.00
                    ./rk16bd_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 46175 observations, RA-AO4-07, RA-AO3-0



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)
  0048-097           157.7

 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
```

rk16betr

RadioAstron AGN Monitoring

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```
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Fax:      +7-495-3332378                Phone during observation: +7-903-6614865
```


```
Observing mode: C/L-band, dual-pol

Schedule for TORUN     (Code Tr )                                    Page   2
               RadioAstron AGN Monitoring
  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  19 Oct 2016   Day 293 ---

 ---------- L-band VLBI scans ----------

 Next scan frequencies:  1668.00  1668.00  1668.00  1668.00
 Next BBC frequencies:    732.00   732.00   732.00   732.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

03 20 00  0430+052     06 26 24  37.1 216.0  1.9      20.7     0        0   03 20 00
03 29 30  ---          06 35 56  36.2 218.7  2.0      22.2   570       18   03 20 01

03 30 00  0430+052     06 36 26  36.1 218.8  2.0      22.2    24       18   03 30 00
03 39 30  ---          06 45 57  35.2 221.5  2.2      23.6   570       36   03 30 01

03 40 00  0430+052     06 46 28  35.2 221.7  2.2      23.6    24       36   03 40 00
03 49 30  ---          06 55 59  34.2 224.3  2.4      24.9   570       55   03 40 01

03 50 00  0430+052     06 56 29  34.1 224.4  2.4      25.0    24       55   03 50 00
04 00 00  ---          07 06 31  33.1 227.1  2.5      26.2   600       74   03 50 01



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


 ======== Setup file: ra18cm2.set

   Setup group:    8         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   2400.00   2400.00   2400.00   2400.00
  Net SB=         L         L         U         U
  IF SB =         L         L         L         L
  Pol.  =      RCP       LCP       RCP       LCP
  BBC   =         1         2         1         2
  BBC SB=         U         U         L         L
  IF    =        C         A         C         A

 The following frequency sets based on these setups were used.

  Frequency Set:   5  Setup file default.  Used with PCAL = 1MHz
  LO sum=   1668.00  1668.00  1668.00  1668.00
  BBC fr=    732.00   732.00   732.00   732.00
  Bandwd=     16.00    16.00    16.00    16.00
   Matching frequency sets:   5

  Track assignments are:
   track1=   2, 18,  3, 19
   barrel=roll_off
```

POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 31.782958       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 17.66277        0.00
                    fake circumpolar target for a TS to look at

* 0430+052          04 30 31.602064   * 04 33 11.095533     04 34 05.259316       0.00
  J0433+0521        05 14 59.61638    * 05 21 15.61916      05 23 16.68818        0.00
  3C120             ./rk16be_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 9633 observations, RA-AO4-07, RA-AO3-04
```

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)
  0430+052           136.0

 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
```

rk16bitr

RadioAstron AGN Monitoring

PI: *Yuri Kovalev*


```
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Phone:    +7-495-3332512                EMAIL:    kirx@scan.sai.msu.ru
Fax:      +7-495-3332378                Phone during observation: +7-903-6614865
```


```
Observing mode: C/K-band, dual-pol

Schedule for TORUN     (Code Tr )                                   Page   2
               RadioAstron AGN Monitoring
  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  19 Oct 2016   Day 293 ---

 ---------- C-band VLBI scans ----------

 Next scan frequencies:  4836.00  4836.00  4836.00  4836.00
 Next BBC frequencies:    736.00   736.00   736.00   736.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

20 00 00  0048-097     23 09 09  23.8 152.2 -1.7     -16.5     0        0   20 00 00
20 14 30  ---          23 23 41  24.8 156.0 -1.5     -14.3   870       28   20 00 01

20 15 00  0048-097     23 24 11  24.8 156.2 -1.5     -14.2    24       28   20 15 00
20 29 30  ---          23 38 43  25.6 160.0 -1.2     -12.0   870       56   20 15 01

20 30 00  0048-097     23 39 13  25.6 160.1 -1.2     -11.9    24       56   20 30 00
20 44 30  ---          23 53 46  26.3 164.1 -1.0      -9.6   870       84   20 30 01

20 45 00  0048-097     23 54 16  26.3 164.2 -1.0      -9.5    24       84   20 45 00
21 00 00  ---          00 09 18  26.9 168.3 -0.7      -7.1   900      112   20 45 01



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


 ======== Setup file: ra6cm2.set

   Setup group:    4         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
 1st LO=   4100.00   4100.00   4100.00   4100.00
 Net SB=         L         L         U         U
 IF SB =         U         U         U         U
 Pol.  =       RCP       LCP       RCP       LCP
 BBC   =         1         2         1         2
 BBC SB=         L         L         U         U
 IF    =         C         A         C         A

The following frequency sets based on these setups were used.

 Frequency Set:   2  Setup file default.  Used with PCAL = 1MHz
 LO sum=   4836.00  4836.00  4836.00  4836.00
 BBC fr=    736.00   736.00   736.00   736.00
 Bandwd=     16.00    16.00    16.00    16.00
  Matching frequency sets:   2

 Track assignments are:
  track1=   2, 18,  3, 19
  barrel=roll_off



POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 31.845541       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 17.38447        0.00
                    fake circumpolar target for a TS to look at

* 0048-097          00 48 09.975920   * 00 50 41.317387     00 51 32.864773       0.00
  J0050-0929       -09 45 24.21201    *-09 29 05.21037     -09 23 35.35292        0.00
                    ./rk16bi_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 46175 observations, RA-AO4-07, RA-AO3-0


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)
  0048-097           156.9

 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
```

rk16bjtr

RadioAstron AGN Monitoring

PI: *Yuri Kovalev*


```
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Phone:    +7-495-3332512                EMAIL:    kirx@scan.sai.msu.ru
Fax:      +7-495-3332378                Phone during observation: +7-903-6614865
```


```
Observing mode: C/K-band, dual-pol

Schedule for TORUN     (Code Tr )                                    Page   2
               RadioAstron AGN Monitoring
  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  20 Oct 2016   Day 294 ---

 ---------- C-band VLBI scans ----------

 Next scan frequencies:  4836.00  4836.00  4836.00  4836.00
 Next BBC frequencies:    736.00   736.00   736.00   736.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

00 00 00  2230+114     03 09 48  21.9 260.3  4.6      37.2     0        0   00 00 00
00 14 30  ---          03 24 20  19.8 263.3  4.8      37.5   870       28   00 00 01

00 15 00  2230+114     03 24 50  19.7 263.4  4.9      37.6    24       28   00 15 00
00 29 30  ---          03 39 23  17.5 266.4  5.1      37.8   870       56   00 15 01

00 30 00  2230+114     03 39 53  17.5 266.5  5.1      37.8    24       56   00 30 00
00 44 30  ---          03 54 25  15.3 269.4  5.3      37.8   870       84   00 30 01

00 45 00  2230+114     03 54 55  15.2 269.5  5.4      37.8    24       84   00 45 00
01 00 00  ---          04 09 58  12.9 272.5  5.6      37.8   900      112   00 45 01



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


 ======== Setup file: ra6cm2.set

   Setup group:    4         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4100.00   4100.00   4100.00   4100.00
  Net SB=         L         L         U         U
  IF SB =         U         U         U         U
  Pol.  =      RCP       LCP       RCP       LCP
  BBC   =         1         2         1         2
  BBC SB=         L         L         U         U
  IF    =        C         A         C         A

 The following frequency sets based on these setups were used.

  Frequency Set:   4  Setup file default.  Used with PCAL = 1MHz
  LO sum=   4836.00  4836.00  4836.00  4836.00
  BBC fr=    736.00   736.00   736.00   736.00
  Bandwd=     16.00    16.00    16.00    16.00
   Matching frequency sets:   4

  Track assignments are:
   track1=   2, 18,  3, 19
   barrel=roll_off
```

POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 31.861880       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 17.31747        0.00
                    fake circumpolar target for a TS to look at

* 2230+114          22 30 07.803947   * 22 32 36.408905     22 33 26.828037       0.00
  J2232+1143        11 28 22.81067    * 11 43 50.90395      11 49 14.24796        0.00
  CTA102            ./rk16bj_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 5100 observations, RA-AO4-06, RA-AO3-04
```

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)
  2230+114           134.2

 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
```

n16m3tr

Network Monitoring Experiment

PI: *Jay Blanchard*

```
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
-------------------------------------------------------------------------------------------
 --- Thu  20 Oct 2016   Day 294 ---
 Next scan frequencies:  6655.49  6655.49  6655.49  6655.49  6663.49  6663.49  6663.49  6663.49
                         6671.49  6671.49  6671.49  6671.49  6679.49  6679.49  6679.49  6679.49
 Next BBC frequencies:    755.49   755.49   755.49   755.49   763.49   763.49   763.49   763.49
                          771.49   771.49   771.49   771.49   779.49   779.49   779.49   779.49
 Next scan bandwidths:      4.00     4.00     4.00     4.00     4.00     4.00     4.00     4.00
                            4.00     4.00     4.00     4.00     4.00     4.00     4.00     4.00
13 00 00  J1927+7358   16 11 56  61.3  25.6 -3.3    -109.4     0        0   13 00 00
13 15 00  =1928+738    16 26 59  62.3  24.8 -3.0    -113.7   900       29   13 00 01

13 16 00  J1927+7358   16 27 59  62.4  24.8 -3.0    -114.0    54       29   13 16 00
13 30 00  =1928+738    16 42 01  63.2  23.8 -2.8    -118.2   840       56   13 16 01

13 31 00  J1927+7358   16 43 01  63.3  23.8 -2.7    -118.5    54       56   13 31 00
13 45 00  =1928+738    16 57 03  64.1  22.7 -2.5    -122.9   840       83   13 31 01

13 46 00  J1927+7358   16 58 04  64.2  22.6 -2.5    -123.2    54       83   13 46 00
14 00 00  =1928+738    17 12 06  65.0  21.3 -2.3    -127.8   840      110   13 46 01

14 01 00  J1927+7358   17 13 06  65.0  21.2 -2.2    -128.1    54      110   14 01 00
14 15 00  =1928+738    17 27 08  65.8  19.7 -2.0    -132.9   840      137   14 01 01

14 16 00  J1927+7358   17 28 09  65.8  19.5 -2.0    -133.2    54      137   14 16 00
14 30 00  =1928+738    17 42 11  66.5  17.8 -1.8    -138.1   840      163   14 16 01

14 31 00  J1927+7358   17 43 11  66.5  17.7 -1.7    -138.5    54      163   14 31 00
14 45 00  =1928+738    17 57 13  67.1  15.8 -1.5    -143.6   840      190   14 31 01

14 46 00  J1927+7358   17 58 13  67.2  15.6 -1.5    -144.0    54      190   14 46 00
15 00 00  =1928+738    18 12 16  67.7  13.5 -1.3    -149.3   840      217   14 46 01

15 01 00  J1927+7358   18 13 16  67.7  13.4 -1.2    -149.7    54      217   15 01 00
15 15 00  =1928+738    18 27 18  68.2  11.1 -1.0    -155.2   840      244   15 01 01

15 16 00  J1927+7358   18 28 18  68.2  10.9 -1.0    -155.6    54      244   15 16 00
15 30 00  =1928+738    18 42 21  68.6   8.5 -0.8    -161.2   840      271   15 16 01

15 31 00  J1927+7358   18 43 21  68.6   8.3 -0.7    -161.6    54      271   15 31 00
15 45 00  =1928+738    18 57 23  68.9   5.7 -0.5    -167.4   840      298   15 31 01

15 46 00  J1927+7358   18 58 23  68.9   5.5 -0.5    -167.8    54      298   15 46 00
16 00 00  =1928+738    19 12 26  69.0   2.9 -0.3    -173.7   840      325   15 46 01


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

```
======== Setup file: sess316.M256nme

  Setup group:   10         Station: TORUN            Total bit rate:   256
  Format: MARK5B            Bits per sample: 2        Sample rate:  8.000
  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=   6655.49  6655.49  6655.49  6655.49  6663.49  6663.49  6663.49  6663.49
            6671.49  6671.49  6671.49  6671.49  6679.49  6679.49  6679.49  6679.49
  BBC fr=    755.49   755.49   755.49   755.49   763.49   763.49   763.49   763.49
             771.49   771.49   771.49   771.49   779.49   779.49   779.49   779.49
  Bandwd=      4.00     4.00     4.00     4.00     4.00     4.00     4.00     4.00
               4.00     4.00     4.00     4.00     4.00     4.00     4.00     4.00
   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)

  1928+738          19 28 49.350209   * 19 27 48.495162     19 27 27.806646       0.04
* J1927+7358        73 51 44.92746    * 73 58 01.56990      74 00 34.32361        0.01
  J1927+73          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                    GSFC 2015a astro solution, unpublished   4075 observations.
```

es079ctr

Short-period maser, epoch 3

PI: *Marian Szymczak*

```
Observing mode: MKV, 256Mb/s
Schedule for TORUN     (Code Tr )                                    Page   2
               Short-period maser, epoch 3
  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  20 Oct 2016   Day 294 ---
 Next scan frequencies:  6663.00  6663.00  6663.00  6663.00  6671.00  6671.00  6671.00  6671.00
                         6679.00  6679.00  6679.00  6679.00  6687.00  6687.00  6687.00  6687.00
 Next BBC frequencies:    763.00   763.00   763.00   763.00   771.00   771.00   771.00   771.00
                          779.00   779.00   779.00   779.00   787.00   787.00   787.00   787.00
 Next scan bandwidths:      4.00     4.00     4.00     4.00     4.00     4.00     4.00     4.00
                            4.00     4.00     4.00     4.00     4.00     4.00     4.00     4.00

17 00 00  3C345        20 12 36  52.6 270.8  3.5      51.4     0        0   17 00 00
17 10 00  ---          20 22 37  51.1 272.7  3.7      51.3   600       19   17 00 01

17 11 00  3C345        20 23 37  50.9 272.9  3.7      51.3    54       19   17 11 00
17 21 00  ---          20 33 39  49.4 274.8  3.8      51.1   600       38   17 11 01

17 28 42  3C454.3      20 41 23  44.8 131.9 -2.2     -27.8   160       38   17 28 42
17 38 42  ---          20 51 24  45.9 134.9 -2.1     -26.3   600       58   17 28 43

17 39 42  3C454.3      20 52 24  46.0 135.2 -2.0     -26.1    54       58   17 39 42
17 48 17  ---          21 01 01  46.9 138.0 -1.9     -24.8   515       74   17 39 43

17 52 00  J2223+6249   21 04 44  75.7  38.8 -1.3    -124.4     9       74   17 52 00
17 53 45  =2221+625    21 06 29  75.9  38.3 -1.3    -125.2   105       78   17 52 01

17 53 45  G107.29      21 06 29  75.4  34.4 -1.3    -129.3   -23       78   No stop
17 57 00  ---          21 09 45  75.7  33.5 -1.2    -131.0   172       84   17 53 46

17 57 00  J2223+6249   21 09 45  76.2  37.4 -1.2    -126.8   -22       84   No stop
17 58 45  =2221+625    21 11 30  76.4  36.9 -1.2    -127.7    83       87   17 57 01

17 58 45  G107.29      21 11 30  75.9  33.0 -1.2    -131.9   -23       87   No stop
18 02 00  ---          21 14 46  76.1  32.0 -1.1    -133.6   172       93   17 58 46

18 02 00  J2223+6249   21 14 46  76.7  35.9 -1.2    -129.4   -22       93   No stop
18 03 45  =2221+625    21 16 31  76.8  35.3 -1.1    -130.3    83       97   18 02 01

18 04 45  G107.29      21 17 31  76.3  31.1 -1.1    -135.1    37       97   18 04 45
18 08 00  ---          21 20 47  76.6  30.0 -1.0    -136.9   195      103   18 04 46

18 08 00  J2223+6249   21 20 47  77.2  33.9 -1.1    -132.6   -22      103   No stop
18 09 45  =2221+625    21 22 32  77.3  33.3 -1.0    -133.6    83      106   18 08 01

18 21 13  3C345        21 34 02  40.5 -74.7  4.8      48.9   455      106   18 21 13
18 26 13  ---          21 39 03  39.8 -73.9  4.9      48.6   300      116   18 21 14

18 26 13  3C345        21 39 03  39.8 -73.9  4.9      48.6    -5      116   No stop
18 31 13  ---          21 44 04  39.1 -73.0  5.0      48.4   295      126   18 26 14
```

Schedule for TORUN (Code Tr) Page 3

Short-period maser, epoch 3

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 20 Oct 2016 Day 294 ---										
18 39 05	3C454.3	21 51 57	51.1	155.5	-1.0		-15.0	0	126	18 39 05
18 44 05	---	21 56 58	51.4	157.4	-1.0		-13.9	300	135	18 39 06
18 44 05	3C454.3	21 56 58	51.4	157.4	-1.0		-13.9	-5	135	No stop
18 49 05	---	22 01 59	51.7	159.3	-0.9		-12.8	295	145	18 44 06
18 49 05	3C454.3	22 01 59	51.7	159.3	-0.9		-12.8	-5	145	No stop
18 54 05	---	22 06 59	52.0	161.2	-0.8		-11.6	295	154	18 49 06
19 04 17	J2223+6249	22 17 13	80.1	4.4	-0.1		-174.1	290	154	19 04 17
19 06 02	=2221+625	22 18 59	80.2	3.3	-0.1		-175.7	105	158	19 04 18
19 06 02	G107.29	22 18 59	79.1	1.8	-0.1		-177.6	-17	158	No stop
19 09 17	---	22 22 14	79.1	-0.1	0.0		179.8	178	164	19 06 03
19 09 17	J2223+6249	22 22 14	80.2	1.1	-0.0		-178.5	-17	164	No stop
19 11 02	=2221+625	22 23 59	80.2	-0.1	0.0		179.9	88	167	19 09 18
19 11 02	G107.29	22 23 59	79.1	-1.1	0.0		178.4	-17	167	No stop
19 14 17	---	22 27 15	79.1	-3.0	0.1		175.8	178	174	19 11 03
19 14 17	J2223+6249	22 27 15	80.2	-2.2	0.1		177.1	-17	174	No stop
19 16 02	=2221+625	22 29 00	80.2	-3.4	0.1		175.5	88	177	19 14 18
19 17 02	G107.29	22 30 00	79.1	-4.6	0.1		173.7	43	177	19 17 02
19 20 17	---	22 33 16	79.0	-6.5	0.2		171.1	195	183	19 17 03
19 20 17	J2223+6249	22 33 16	80.1	-6.2	0.2		171.8	-17	183	No stop
19 22 02	=2221+625	22 35 01	80.1	-7.4	0.2		170.3	88	187	19 20 18
19 22 02	G107.29	22 35 01	79.0	-7.5	0.2		169.7	-17	187	No stop
19 25 17	---	22 38 17	78.9	-9.3	0.3		167.2	178	193	19 22 03
19 25 17	J2223+6249	22 38 17	80.0	-9.5	0.2		167.5	-17	193	No stop
19 27 02	=2221+625	22 40 02	80.0	-10.6	0.3		166.0	88	196	19 25 18
19 27 02	G107.29	22 40 02	78.9	-10.3	0.3		165.8	-17	196	No stop
19 30 17	---	22 43 18	78.8	-12.1	0.4		163.3	178	203	19 27 03
19 30 17	J2223+6249	22 43 18	79.9	-12.6	0.3		163.3	-17	203	No stop
19 32 02	=2221+625	22 45 03	79.8	-13.7	0.4		161.8	88	206	19 30 18
19 33 02	G107.29	22 46 03	78.7	-13.6	0.4		161.3	43	206	19 33 02
19 36 17	---	22 49 19	78.6	-15.3	0.5		158.9	195	212	19 33 03

Schedule for TORUN (Code Tr) Page 4

Short-period maser, epoch 3

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 20 Oct 2016 Day 294 ---										
19 36 17	J2223+6249	22 49 19	79.6	-16.2	0.4		158.3	-17	212	No stop
19 38 02	=2221+625	22 51 04	79.6	-17.3	0.5		156.9	88	216	19 36 18
19 38 02	G107.29	22 51 04	78.5	-16.2	0.5		157.6	-17	216	No stop
19 41 17	---	22 54 19	78.4	-17.8	0.5		155.3	178	222	19 38 03
19 41 17	J2223+6249	22 54 19	79.4	-19.1	0.5		154.4	-17	222	No stop
19 43 02	=2221+625	22 56 05	79.3	-20.1	0.5		153.1	88	225	19 41 18
19 43 02	G107.29	22 56 05	78.3	-18.7	0.6		154.0	-17	225	No stop
19 46 17	---	22 59 20	78.1	-20.2	0.6		151.8	178	231	19 43 03
19 46 17	J2223+6249	22 59 20	79.1	-21.8	0.6		150.6	-17	231	No stop
19 48 02	=2221+625	23 01 05	79.0	-22.8	0.6		149.3	88	235	19 46 18
19 49 02	G107.29	23 02 06	78.0	-21.5	0.7		149.9	43	235	19 49 02
19 52 17	---	23 05 21	77.8	-23.0	0.7		147.7	195	241	19 49 03
19 52 17	J2223+6249	23 05 21	78.8	-24.9	0.7		146.3	-18	241	No stop
19 54 02	=2221+625	23 07 06	78.7	-25.7	0.7		145.1	87	244	19 52 18
19 54 02	G107.29	23 07 06	77.7	-23.7	0.8		146.6	-17	244	No stop
19 57 17	---	23 10 22	77.5	-25.1	0.8		144.5	178	251	19 54 03
19 57 17	J2223+6249	23 10 22	78.4	-27.2	0.8		142.9	-18	251	No stop
19 59 02	=2221+625	23 12 07	78.3	-28.0	0.8		141.7	87	254	19 57 18
19 59 02	G107.29	23 12 07	77.4	-25.8	0.8		143.4	-18	254	No stop
20 02 17	---	23 15 23	77.2	-27.1	0.9		141.4	177	260	19 59 03
20 02 17	J2223+6249	23 15 23	78.1	-29.4	0.9		139.6	-19	260	No stop
20 04 02	=2221+625	23 17 08	78.0	-30.2	0.9		138.5	86	264	20 02 18
20 05 02	G107.29	23 18 08	77.0	-28.2	0.9		139.8	41	264	20 05 02
20 08 17	---	23 21 24	76.7	-29.3	1.0		137.9	195	270	20 05 03
20 08 17	J2223+6249	23 21 24	77.6	-31.8	1.0		135.9	-19	270	No stop
20 10 02	=2221+625	23 23 09	77.5	-32.5	1.0		134.9	86	273	20 08 18
20 10 02	G107.29	23 23 09	76.6	-30.0	1.0		136.9	-19	273	No stop
20 13 17	---	23 26 25	76.4	-31.1	1.1		135.1	176	279	20 10 03
20 13 17	J2223+6249	23 26 25	77.2	-33.7	1.0		133.0	-20	279	No stop
20 15 02	=2221+625	23 28 10	77.1	-34.3	1.1		132.0	85	283	20 13 18

Schedule for TORUN (Code Tr) Page 5

Short-period maser, epoch 3

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 20 Oct 2016 Day 294 ---										
20 15 02	G107.29	23 28 10	76.2	-31.6	1.1		134.2	-19	283	No stop
20 18 17	---	23 31 25	76.0	-32.7	1.2		132.5	176	289	20 15 03
20 18 17	J2223+6249	23 31 25	76.8	-35.4	1.1		130.2	-20	289	No stop
20 20 02	=2221+625	23 33 11	76.6	-35.9	1.2		129.3	85	292	20 18 18
20 21 02	G107.29	23 34 11	75.7	-33.5	1.2		131.0	40	292	20 21 02
20 24 17	---	23 37 26	75.5	-34.4	1.3		129.4	195	299	20 21 03
20 24 17	J2223+6249	23 37 26	76.3	-37.2	1.2		127.1	-20	299	No stop
20 26 02	=2221+625	23 39 12	76.1	-37.7	1.3		126.2	85	302	20 24 18
20 26 02	G107.29	23 39 12	75.3	-34.9	1.3		128.5	-20	302	No stop
20 29 17	---	23 42 27	75.0	-35.7	1.3		127.0	175	308	20 26 03
20 29 17	J2223+6249	23 42 27	75.8	-38.6	1.3		124.7	-20	308	No stop
20 31 02	=2221+625	23 44 13	75.6	-39.0	1.3		123.8	85	312	20 29 18
20 31 02	G107.29	23 44 13	74.9	-36.2	1.4		126.2	-20	312	No stop
20 34 17	---	23 47 28	74.6	-37.0	1.4		124.7	175	318	20 31 03
20 34 17	J2223+6249	23 47 28	75.3	-39.9	1.4		122.3	-20	318	No stop
20 36 02	=2221+625	23 49 13	75.2	-40.3	1.4		121.5	85	321	20 34 18
20 37 02	G107.29	23 50 13	74.3	-37.6	1.5		123.4	40	321	20 37 02
20 40 17	---	23 53 29	74.0	-38.3	1.5		122.0	195	328	20 37 03
20 40 17	J2223+6249	23 53 29	74.7	-41.2	1.5		119.7	-20	328	No stop
20 42 02	=2221+625	23 55 14	74.6	-41.6	1.5		118.9	85	331	20 40 18
20 42 02	G107.29	23 55 14	73.9	-38.7	1.6		121.3	-20	331	No stop
20 45 17	---	23 58 30	73.6	-39.3	1.6		119.9	175	337	20 42 03
20 45 17	J2223+6249	23 58 30	74.2	-42.2	1.6		117.6	-20	337	No stop
20 47 02	=2221+625	00 00 15	74.1	-42.6	1.6		116.8	85	341	20 45 18
20 47 02	G107.29	00 00 15	73.4	-39.7	1.6		119.2	-20	341	No stop
20 50 17	---	00 03 31	73.1	-40.3	1.7		117.9	175	347	20 47 03
20 50 17	J2223+6249	00 03 31	73.7	-43.2	1.7		115.5	-20	347	No stop
20 52 02	=2221+625	00 05 16	73.5	-43.5	1.7		114.9	85	350	20 50 18
20 53 02	G107.29	00 06 16	72.8	-40.7	1.7		116.8	40	350	20 53 02
20 56 17	---	00 09 32	72.5	-41.3	1.8		115.6	195	356	20 53 03

Schedule for TORUN (Code Tr) Page 6

Short-period maser, epoch 3

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 20 Oct 2016 Day 294 ---										
20 56 17	J2223+6249	00 09 32	73.1	-44.2	1.8		113.3	-20	356	No stop
20 58 02	=2221+625	00 11 17	72.9	-44.4	1.8		112.6	85	360	20 56 18
20 58 02	G107.29	00 11 17	72.3	-41.5	1.8		114.9	-20	360	No stop
21 01 17	---	00 14 32	72.0	-42.0	1.9		113.8	175	366	20 58 03
21 01 17	J2223+6249	00 14 32	72.6	-44.9	1.8		111.4	-20	366	No stop
21 03 02	=2221+625	00 16 18	72.4	-45.1	1.9		110.8	85	369	21 01 18
21 03 02	G107.29	00 16 18	71.8	-42.3	1.9		113.1	-20	369	No stop
21 06 17	---	00 19 33	71.5	-42.7	2.0		112.0	175	376	21 03 03
21 06 17	J2223+6249	00 19 33	72.0	-45.5	1.9		109.7	-20	376	No stop
21 08 02	=2221+625	00 21 19	71.9	-45.8	2.0		109.1	85	379	21 06 18
21 09 02	G107.29	00 22 19	71.2	-43.0	2.0		111.0	40	379	21 09 02
21 12 17	---	00 25 34	70.9	-43.4	2.1		109.9	195	385	21 09 03
21 12 17	J2223+6249	00 25 34	71.4	-46.2	2.0		107.7	-20	385	No stop
21 14 02	=2221+625	00 27 20	71.2	-46.4	2.1		107.1	85	389	21 12 18
21 14 02	G107.29	00 27 20	70.7	-43.6	2.1		109.4	-20	389	No stop
21 17 17	---	00 30 35	70.3	-44.0	2.1		108.3	175	395	21 14 03
21 17 17	J2223+6249	00 30 35	70.8	-46.8	2.1		106.1	-20	395	No stop
21 19 02	=2221+625	00 32 20	70.7	-46.9	2.1		105.5	85	398	21 17 18
21 19 02	G107.29	00 32 20	70.2	-44.1	2.2		107.7	-20	398	No stop
21 22 17	---	00 35 36	69.8	-44.5	2.2		106.7	175	404	21 19 03
21 22 17	J2223+6249	00 35 36	70.3	-47.2	2.2		104.5	-20	404	No stop
21 24 02	=2221+625	00 37 21	70.1	-47.4	2.2		104.0	85	408	21 22 18
21 25 02	G107.29	00 38 21	69.5	-44.7	2.3		105.9	40	408	21 25 02
21 28 17	---	00 41 37	69.2	-45.0	2.3		104.9	195	414	21 25 03
21 28 17	J2223+6249	00 41 37	69.6	-47.7	2.3		102.8	-20	414	No stop
21 30 02	=2221+625	00 43 22	69.4	-47.8	2.3		102.3	85	417	21 28 18
21 30 02	G107.29	00 43 22	69.0	-45.1	2.4		104.4	-20	417	No stop
21 33 17	---	00 46 38	68.6	-45.3	2.4		103.4	175	424	21 30 03
21 33 17	J2223+6249	00 46 38	69.1	-48.0	2.4		101.3	-20	424	No stop
21 35 02	=2221+625	00 48 23	68.9	-48.1	2.4		100.8	85	427	21 33 18

Schedule for TORUN (Code Tr) Page 7

Short-period maser, epoch 3

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 20 Oct 2016 Day 294 ---										
21 35 02	G107.29	00 48 23	68.5	-45.5	2.4		102.9	-20	427	No stop
21 38 17	---	00 51 39	68.1	-45.7	2.5		102.0	175	433	21 35 03
21 38 17	J2223+6249	00 51 39	68.5	-48.3	2.5		99.9	-20	433	No stop
21 40 02	=2221+625	00 53 24	68.3	-48.4	2.5		99.5	85	437	21 38 18
21 41 02	G107.29	00 54 24	67.8	-45.8	2.5		101.2	41	437	21 41 02
21 44 17	---	00 57 40	67.5	-46.0	2.6		100.3	195	443	21 41 03
21 44 17	J2223+6249	00 57 40	67.8	-48.6	2.6		98.3	-19	443	No stop
21 46 02	=2221+625	00 59 25	67.6	-48.7	2.6		97.9	86	446	21 44 18
21 46 02	G107.29	00 59 25	67.3	-46.1	2.6		99.8	-19	446	No stop
21 49 17	---	01 02 40	66.9	-46.3	2.7		99.0	176	453	21 46 03
21 49 17	J2223+6249	01 02 40	67.3	-48.8	2.6		97.0	-19	453	No stop
21 51 02	=2221+625	01 04 26	67.1	-48.9	2.7		96.6	86	456	21 49 18
21 51 02	G107.29	01 04 26	66.7	-46.3	2.7		98.5	-19	456	No stop
21 54 17	---	01 07 41	66.4	-46.5	2.8		97.7	176	462	21 51 03
21 54 17	J2223+6249	01 07 41	66.7	-49.0	2.7		95.8	-19	462	No stop
21 56 02	=2221+625	01 09 26	66.5	-49.0	2.8		95.3	86	466	21 54 18
21 57 02	G107.29	01 10 27	66.1	-46.5	2.8		97.0	41	466	21 57 02
22 00 17	---	01 13 42	65.7	-46.6	2.9		96.1	195	472	21 57 03
22 00 17	J2223+6249	01 13 42	66.0	-49.1	2.8		94.3	-19	472	No stop
22 02 02	=2221+625	01 15 27	65.8	-49.2	2.9		93.9	86	475	22 00 18
22 02 02	G107.29	01 15 27	65.5	-46.7	2.9		95.7	-19	475	No stop
22 05 17	---	01 18 43	65.2	-46.8	2.9		94.9	176	481	22 02 03
22 05 17	J2223+6249	01 18 43	65.4	-49.2	2.9		93.1	-19	481	No stop
22 07 02	=2221+625	01 20 28	65.3	-49.2	2.9		92.7	86	485	22 05 18
22 07 02	G107.29	01 20 28	65.0	-46.8	3.0		94.5	-19	485	No stop
22 10 17	---	01 23 44	64.6	-46.9	3.0		93.7	176	491	22 07 03
22 10 17	J2223+6249	01 23 44	64.9	-49.3	3.0		91.9	-19	491	No stop
22 12 02	=2221+625	01 25 29	64.7	-49.3	3.0		91.5	86	494	22 10 18
22 13 02	G107.29	01 26 29	64.3	-46.9	3.1		93.0	41	494	22 13 02
22 16 17	---	01 29 45	64.0	-46.9	3.1		92.3	195	501	22 13 03

Schedule for TORUN (Code Tr) Page 8

Short-period maser, epoch 3

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 20 Oct 2016 Day 294 ---										
22 16 17	J2223+6249	01 29 45	64.2	-49.3	3.1		90.6	-19	501	No stop
22 18 02	=2221+625	01 31 30	64.0	-49.3	3.1		90.2	86	504	22 16 18
22 18 02	G107.29	01 31 30	63.8	-47.0	3.2		91.8	-19	504	No stop
22 21 17	---	01 34 46	63.4	-47.0	3.2		91.1	176	510	22 18 03
22 21 17	J2223+6249	01 34 46	63.6	-49.3	3.2		89.4	-19	510	No stop
22 23 02	=2221+625	01 36 31	63.4	-49.3	3.2		89.1	86	514	22 21 18
22 23 02	G107.29	01 36 31	63.2	-47.0	3.2		90.7	-19	514	No stop
22 26 17	---	01 39 46	62.9	-47.0	3.3		90.0	176	520	22 23 03
22 26 17	J2223+6249	01 39 46	63.1	-49.3	3.3		88.3	-19	520	No stop
22 28 02	=2221+625	01 41 32	62.9	-49.3	3.3		88.0	86	523	22 26 18
22 39 02	G107.29	01 52 34	61.5	-46.9	3.5		87.2	642	523	22 39 02
22 42 17	---	01 55 49	61.1	-46.9	3.6		86.5	195	529	22 39 03
22 42 17	J2223+6249	01 55 49	61.2	-49.1	3.5		85.0	-18	529	No stop
22 44 02	=2221+625	01 57 34	61.0	-49.0	3.6		84.6	87	533	22 42 18
22 44 02	G107.29	01 57 34	60.9	-46.9	3.6		86.1	-18	533	No stop
22 47 17	---	02 00 50	60.6	-46.8	3.6		85.4	177	539	22 44 03
22 47 17	J2223+6249	02 00 50	60.7	-48.9	3.6		84.0	-18	539	No stop
22 49 02	=2221+625	02 02 35	60.5	-48.9	3.6		83.6	87	542	22 47 18
22 49 02	G107.29	02 02 35	60.4	-46.8	3.7		85.0	-18	542	No stop
22 52 17	---	02 05 51	60.0	-46.7	3.7		84.4	177	549	22 49 03
22 52 17	J2223+6249	02 05 51	60.1	-48.8	3.7		83.0	-18	549	No stop
22 54 02	=2221+625	02 07 36	59.9	-48.8	3.7		82.6	87	552	22 52 18
22 55 02	G107.29	02 08 36	59.7	-46.6	3.8		83.8	42	552	22 55 02
22 58 17	---	02 11 52	59.3	-46.6	3.8		83.1	195	558	22 55 03
22 58 17	J2223+6249	02 11 52	59.4	-48.6	3.8		81.8	-18	558	No stop
23 00 02	=2221+625	02 13 37	59.2	-48.6	3.8		81.4	87	562	22 58 18
23 00 02	G107.29	02 13 37	59.2	-46.5	3.9		82.8	-18	562	No stop
23 03 17	---	02 16 53	58.8	-46.4	3.9		82.1	177	568	23 00 03
23 03 17	J2223+6249	02 16 53	58.9	-48.5	3.9		80.8	-18	568	No stop
23 05 02	=2221+625	02 18 38	58.7	-48.4	3.9		80.5	87	571	23 03 18

Schedule for TORUN (Code Tr) Page 9

Short-period maser, epoch 3

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 20 Oct 2016 Day 294 ---										
23 05 02	G107.29	02 18 38	58.6	-46.4	3.9		81.8	-18	571	No stop
23 08 17	---	02 21 53	58.3	-46.3	4.0		81.1	177	578	23 05 03
23 08 17	J2223+6249	02 21 53	58.3	-48.3	4.0		79.8	-18	578	No stop
23 10 02	=2221+625	02 23 39	58.1	-48.2	4.0		79.5	87	581	23 08 18
23 11 02	G107.29	02 24 39	58.0	-46.2	4.0		80.6	42	581	23 11 02
23 14 17	---	02 27 54	57.6	-46.1	4.1		80.0	195	587	23 11 03
23 14 17	J2223+6249	02 27 54	57.6	-48.0	4.1		78.7	-18	587	No stop
23 16 02	=2221+625	02 29 40	57.4	-48.0	4.1		78.4	87	591	23 14 18
23 16 02	G107.29	02 29 40	57.4	-46.0	4.1		79.6	-18	591	No stop
23 19 17	---	02 32 55	57.1	-45.9	4.2		79.0	177	597	23 16 03
23 19 17	J2223+6249	02 32 55	57.1	-47.8	4.2		77.8	-17	597	No stop
23 21 02	=2221+625	02 34 40	56.9	-47.7	4.2		77.4	88	600	23 19 18
23 21 02	G107.29	02 34 40	56.9	-45.8	4.2		78.6	-17	600	No stop
23 24 17	---	02 37 56	56.5	-45.7	4.3		78.0	178	606	23 21 03
23 24 17	J2223+6249	02 37 56	56.5	-47.6	4.2		76.8	-17	606	No stop
23 26 02	=2221+625	02 39 41	56.3	-47.5	4.3		76.5	88	610	23 24 18
23 27 02	G107.29	02 40 41	56.2	-45.6	4.3		77.5	43	610	23 27 02
23 30 17	---	02 43 57	55.9	-45.4	4.4		76.9	195	616	23 27 03
23 30 17	J2223+6249	02 43 57	55.8	-47.3	4.3		75.8	-17	616	No stop
23 32 02	=2221+625	02 45 42	55.6	-47.2	4.4		75.4	88	619	23 30 18
23 32 02	G107.29	02 45 42	55.7	-45.3	4.4		76.6	-17	619	No stop
23 35 17	---	02 48 58	55.3	-45.2	4.4		75.9	178	626	23 32 03
23 35 17	J2223+6249	02 48 58	55.3	-47.0	4.4		74.8	-17	626	No stop
23 37 02	=2221+625	02 50 43	55.1	-46.9	4.4		74.5	88	629	23 35 18
23 37 02	G107.29	02 50 43	55.2	-45.1	4.5		75.6	-17	629	No stop
23 40 17	---	02 53 59	54.8	-44.9	4.5		75.0	178	635	23 37 03
23 40 17	J2223+6249	02 53 59	54.7	-46.8	4.5		73.9	-17	635	No stop
23 42 02	=2221+625	02 55 44	54.5	-46.7	4.5		73.6	88	639	23 40 18
23 43 02	G107.29	02 56 44	54.5	-44.8	4.6		74.5	43	639	23 43 02
23 46 17	---	03 00 00	54.2	-44.6	4.6		73.9	195	645	23 43 03

Schedule for TORUN (Code Tr) Page 10

Short-period maser, epoch 3

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 20 Oct 2016 Day 294 ---										
23 46 17	J2223+6249	03 00 00	54.1	-46.4	4.6		72.9	-17	645	No stop
23 48 02	=2221+625	03 01 45	53.9	-46.3	4.6		72.6	88	648	23 46 18
23 48 02	G107.29	03 01 45	54.0	-44.6	4.7		73.6	-17	648	No stop
23 51 17	---	03 05 00	53.6	-44.4	4.7		73.0	178	654	23 48 03
23 51 17	J2223+6249	03 05 00	53.5	-46.1	4.7		72.0	-17	654	No stop
23 53 02	=2221+625	03 06 46	53.3	-46.0	4.7		71.7	88	658	23 51 18
23 53 02	G107.29	03 06 46	53.5	-44.3	4.7		72.7	-17	658	No stop
23 56 17	---	03 10 01	53.1	-44.1	4.8		72.1	178	664	23 53 03
23 56 17	J2223+6249	03 10 01	53.0	-45.8	4.8		71.1	-17	664	No stop
23 58 02	=2221+625	03 11 47	52.8	-45.7	4.8		70.8	88	667	23 56 18
--- Start: Thu 20 Oct 2016 Day 294 -- Stop: Fri 21 Oct 2016 Day 295 ---										
23 59 02	G107.29	03 12 47	52.8	-43.9	4.8		71.6	43	667	23 59 02
00 02 17	---	03 16 02	52.5	-43.8	4.9		71.0	195	674	23 59 03
00 02 17	J2223+6249	03 16 02	52.3	-45.5	4.9		70.1	-17	674	No stop
00 04 02	=2221+625	03 17 48	52.2	-45.4	4.9		69.8	88	677	00 02 18
00 04 02	G107.29	03 17 48	52.3	-43.7	4.9		70.7	-17	677	No stop
00 07 17	---	03 21 03	52.0	-43.5	5.0		70.1	178	683	00 04 03
00 07 17	J2223+6249	03 21 03	51.8	-45.1	5.0		69.2	-17	683	No stop
00 09 02	=2221+625	03 22 48	51.6	-45.0	5.0		68.9	88	687	00 07 18
00 09 02	G107.29	03 22 48	51.8	-43.4	5.0		69.8	-17	687	No stop
00 12 17	---	03 26 04	51.5	-43.1	5.1		69.3	178	693	00 09 03
00 12 17	J2223+6249	03 26 04	51.3	-44.8	5.0		68.4	-16	693	No stop
00 14 02	=2221+625	03 27 49	51.1	-44.7	5.1		68.1	89	696	00 12 18
00 15 02	G107.29	03 28 49	51.2	-43.0	5.1		68.8	43	696	00 15 02
00 18 17	---	03 32 05	50.8	-42.8	5.2		68.2	195	703	00 15 03
00 18 17	J2223+6249	03 32 05	50.6	-44.4	5.1		67.3	-16	703	No stop
00 20 02	=2221+625	03 33 50	50.5	-44.3	5.2		67.1	89	706	00 18 18
00 20 02	G107.29	03 33 50	50.7	-42.7	5.2		67.9	-16	706	No stop
00 23 17	---	03 37 06	50.3	-42.4	5.3		67.3	179	712	00 20 03

Schedule for TORUN (Code Tr) Page 11

Short-period maser, epoch 3

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 21 Oct 2016 Day 295 ---										
00 23 17	J2223+6249	03 37 06	50.1	-44.1	5.2		66.5	-16	712	No stop
00 25 02	=2221+625	03 38 51	49.9	-43.9	5.2		66.2	89	716	00 23 18
00 25 02	G107.29	03 38 51	50.2	-42.3	5.3		67.0	-16	716	No stop
00 28 17	---	03 42 06	49.8	-42.1	5.3		66.5	179	722	00 25 03
00 28 17	J2223+6249	03 42 06	49.6	-43.7	5.3		65.7	-16	722	No stop
00 30 02	=2221+625	03 43 52	49.4	-43.6	5.3		65.4	89	725	00 28 18
00 31 02	G107.29	03 44 52	49.6	-41.9	5.4		66.0	44	725	00 31 02
00 34 17	---	03 48 07	49.2	-41.7	5.4		65.4	195	731	00 31 03
00 34 17	J2223+6249	03 48 07	49.0	-43.3	5.4		64.7	-16	731	No stop
00 36 02	=2221+625	03 49 53	48.8	-43.1	5.4		64.4	89	735	00 34 18
00 36 02	G107.29	03 49 53	49.0	-41.6	5.5		65.1	-16	735	No stop
00 39 17	---	03 53 08	48.7	-41.3	5.5		64.6	179	741	00 36 03
00 39 17	J2223+6249	03 53 08	48.5	-42.9	5.5		63.8	-16	741	No stop
00 41 02	=2221+625	03 54 54	48.3	-42.7	5.5		63.5	89	744	00 39 18
00 41 02	G107.29	03 54 54	48.6	-41.2	5.5		64.3	-16	744	No stop
00 44 17	---	03 58 09	48.2	-41.0	5.6		63.7	179	751	00 41 03
00 44 17	J2223+6249	03 58 09	48.0	-42.5	5.6		63.0	-16	751	No stop
00 46 02	=2221+625	03 59 54	47.8	-42.4	5.6		62.7	89	754	00 44 18
00 47 02	G107.29	04 00 55	48.0	-40.8	5.6		63.2	44	754	00 47 02
00 50 17	---	04 04 10	47.6	-40.5	5.7		62.7	195	760	00 47 03
00 50 17	J2223+6249	04 04 10	47.3	-42.0	5.7		62.0	-16	760	No stop
00 52 02	=2221+625	04 05 55	47.2	-41.9	5.7		61.7	89	764	00 50 18
00 52 02	G107.29	04 05 55	47.5	-40.4	5.7		62.4	-16	764	No stop
00 55 17	---	04 09 11	47.2	-40.1	5.8		61.8	179	770	00 52 03
00 55 17	J2223+6249	04 09 11	46.8	-41.6	5.8		61.2	-16	770	No stop
00 57 02	=2221+625	04 10 56	46.7	-41.5	5.8		60.9	89	773	00 55 18
00 57 02	G107.29	04 10 56	47.0	-40.0	5.8		61.5	-16	773	No stop
01 00 17	---	04 14 12	46.7	-39.8	5.9		61.0	179	779	00 57 03
01 00 17	J2223+6249	04 14 12	46.3	-41.2	5.8		60.4	-16	779	No stop
01 02 02	=2221+625	04 15 57	46.2	-41.1	5.9		60.1	89	783	01 00 18

Schedule for TORUN (Code Tr) Page 12

Short-period maser, epoch 3

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 21 Oct 2016 Day 295 ---										
01 03 02	G107.29	04 16 57	46.4	-39.5	5.9		60.5	44	783	01 03 02
01 06 17	---	04 20 13	46.1	-39.3	6.0		60.0	195	789	01 03 03
01 06 17	J2223+6249	04 20 13	45.8	-40.7	5.9		59.4	-16	789	No stop
01 08 02	=2221+625	04 21 58	45.6	-40.6	6.0		59.1	89	792	01 06 18
01 08 02	G107.29	04 21 58	45.9	-39.2	6.0		59.7	-16	792	No stop
01 11 17	---	04 25 14	45.6	-38.9	6.1		59.1	179	799	01 08 03
01 11 17	J2223+6249	04 25 14	45.3	-40.3	6.0		58.6	-16	799	No stop
01 13 02	=2221+625	04 26 59	45.1	-40.2	6.1		58.3	89	802	01 11 18
01 13 02	G107.29	04 26 59	45.5	-38.7	6.1		58.9	-16	802	No stop
01 16 17	---	04 30 14	45.2	-38.5	6.1		58.3	179	808	01 13 03
01 16 17	J2223+6249	04 30 14	44.8	-39.9	6.1		57.7	-16	808	No stop
01 18 02	=2221+625	04 32 00	44.6	-39.7	6.1		57.5	89	812	01 16 18
01 19 02	G107.29	04 33 00	44.9	-38.3	6.2		57.9	44	812	01 19 02
01 22 17	---	04 36 15	44.6	-38.0	6.2		57.3	195	818	01 19 03
01 22 17	J2223+6249	04 36 15	44.2	-39.4	6.2		56.8	-15	818	No stop
01 24 02	=2221+625	04 38 01	44.0	-39.2	6.2		56.5	90	821	01 22 18
01 24 02	G107.29	04 38 01	44.4	-37.8	6.3		57.0	-16	821	No stop
01 27 17	---	04 41 16	44.1	-37.6	6.3		56.5	179	828	01 24 03
01 27 17	J2223+6249	04 41 16	43.7	-38.9	6.3		56.0	-15	828	No stop
01 29 02	=2221+625	04 43 01	43.6	-38.8	6.3		55.7	90	831	01 27 18
01 29 02	G107.29	04 43 01	44.0	-37.4	6.3		56.2	-15	831	No stop
01 32 17	---	04 46 17	43.7	-37.1	6.4		55.6	180	837	01 29 03
01 32 17	J2223+6249	04 46 17	43.3	-38.5	6.4		55.1	-15	837	No stop
01 34 02	=2221+625	04 48 02	43.1	-38.3	6.4		54.9	90	841	01 32 18
01 35 02	G107.29	04 49 02	43.4	-36.9	6.5		55.2	45	841	01 35 02
01 38 17	---	04 52 18	43.1	-36.6	6.5		54.7	195	847	01 35 03
01 38 17	J2223+6249	04 52 18	42.7	-37.9	6.5		54.2	-15	847	No stop
01 40 02	=2221+625	04 54 03	42.5	-37.8	6.5		53.9	90	850	01 38 18
01 40 02	G107.29	04 54 03	43.0	-36.5	6.5		54.4	-15	850	No stop
01 43 17	---	04 57 19	42.7	-36.2	6.6		53.8	180	856	01 40 03

Schedule for TORUN (Code Tr) Page 13

Short-period maser, epoch 3

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 21 Oct 2016 Day 295 ---										
01 43 17	J2223+6249	04 57 19	42.2	-37.5	6.6		53.4	-15	856	No stop
01 45 02	=2221+625	04 59 04	42.1	-37.3	6.6		53.1	90	860	01 43 18
01 45 02	G107.29	04 59 04	42.5	-36.0	6.6		53.5	-15	860	No stop
01 48 17	---	05 02 20	42.2	-35.7	6.7		53.0	180	866	01 45 03
01 48 17	J2223+6249	05 02 20	41.8	-37.0	6.6		52.6	-15	866	No stop
01 50 02	=2221+625	05 04 05	41.6	-36.9	6.7		52.3	90	869	01 48 18
01 51 02	G107.29	05 05 05	42.0	-35.5	6.7		52.5	45	869	01 51 02
01 54 17	---	05 08 21	41.7	-35.2	6.8		52.0	195	876	01 51 03
01 54 17	J2223+6249	05 08 21	41.2	-36.5	6.7		51.6	-15	876	No stop
01 56 02	=2221+625	05 10 06	41.1	-36.3	6.8		51.3	90	879	01 54 18
01 56 02	G107.29	05 10 06	41.6	-35.0	6.8		51.7	-15	879	No stop
01 59 17	---	05 13 21	41.3	-34.7	6.9		51.2	180	885	01 56 03
01 59 17	J2223+6249	05 13 21	40.8	-36.0	6.8		50.8	-15	885	No stop
02 01 02	=2221+625	05 15 07	40.6	-35.8	6.9		50.5	90	889	01 59 18
02 01 02	G107.29	05 15 07	41.1	-34.6	6.9		50.9	-15	889	No stop
02 04 17	---	05 18 22	40.9	-34.3	6.9		50.4	180	895	02 01 03
02 04 17	J2223+6249	05 18 22	40.4	-35.5	6.9		50.0	-15	895	No stop
02 06 02	=2221+625	05 20 08	40.2	-35.3	6.9		49.7	90	898	02 04 18
02 07 02	G107.29	05 21 08	40.6	-34.0	7.0		49.9	45	898	02 07 02
02 10 17	---	05 24 23	40.4	-33.7	7.0		49.4	195	904	02 07 03
02 10 17	J2223+6249	05 24 23	39.8	-34.9	7.0		49.0	-15	904	No stop
02 12 02	=2221+625	05 26 09	39.7	-34.7	7.0		48.7	90	908	02 10 18
02 12 02	G107.29	05 26 09	40.2	-33.6	7.1		49.1	-15	908	No stop
02 15 17	---	05 29 24	39.9	-33.2	7.1		48.6	180	914	02 12 03
02 15 17	J2223+6249	05 29 24	39.4	-34.4	7.1		48.2	-15	914	No stop
02 17 02	=2221+625	05 31 09	39.3	-34.3	7.1		47.9	90	917	02 15 18
02 17 02	G107.29	05 31 09	39.8	-33.1	7.2		48.3	-15	917	No stop
02 20 17	---	05 34 25	39.5	-32.8	7.2		47.7	180	924	02 17 03
02 20 17	J2223+6249	05 34 25	39.0	-33.9	7.2		47.4	-15	924	No stop
02 22 02	=2221+625	05 36 10	38.8	-33.8	7.2		47.1	90	927	02 20 18

Schedule for TORUN (Code Tr) Page 14

Short-period maser, epoch 3

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 21 Oct 2016 Day 295 ---										
02 23 02	G107.29	05 37 10	39.3	-32.5	7.3		47.3	45	927	02 23 02
02 26 17	---	05 40 26	39.0	-32.2	7.3		46.8	195	933	02 23 03
02 26 17	J2223+6249	05 40 26	38.5	-33.3	7.3		46.5	-15	933	No stop
02 28 02	=2221+625	05 42 11	38.3	-33.2	7.3		46.2	90	937	02 26 18
02 28 02	G107.29	05 42 11	38.9	-32.0	7.3		46.5	-15	937	No stop
02 31 17	---	05 45 27	38.6	-31.7	7.4		45.9	180	943	02 28 03
02 31 17	J2223+6249	05 45 27	38.1	-32.8	7.4		45.6	-14	943	No stop
02 33 02	=2221+625	05 47 12	37.9	-32.7	7.4		45.4	91	946	02 31 18
02 33 02	G107.29	05 47 12	38.5	-31.5	7.4		45.6	-15	946	No stop
02 36 17	---	05 50 28	38.3	-31.2	7.5		45.1	180	953	02 33 03
02 36 17	J2223+6249	05 50 28	37.7	-32.3	7.4		44.8	-14	953	No stop
02 38 02	=2221+625	05 52 13	37.5	-32.1	7.5		44.6	91	956	02 36 18
02 39 02	G107.29	05 53 13	38.0	-30.9	7.5		44.7	46	956	02 39 02
02 42 17	---	05 56 29	37.8	-30.6	7.6		44.1	195	962	02 39 03
02 42 17	J2223+6249	05 56 29	37.2	-31.7	7.5		43.9	-14	962	No stop
02 44 02	=2221+625	05 58 14	37.1	-31.5	7.6		43.6	91	966	02 42 18
02 44 02	G107.29	05 58 14	37.7	-30.4	7.6		43.8	-14	966	No stop
02 47 17	---	06 01 29	37.4	-30.1	7.7		43.3	181	972	02 44 03
02 47 17	J2223+6249	06 01 29	36.8	-31.2	7.6		43.1	-14	972	No stop
02 49 02	=2221+625	06 03 15	36.7	-31.0	7.7		42.8	91	975	02 47 18
02 49 02	G107.29	06 03 15	37.3	-29.9	7.7		43.0	-14	975	No stop
02 52 17	---	06 06 30	37.0	-29.6	7.7		42.5	181	981	02 49 03
02 52 17	J2223+6249	06 06 30	36.4	-30.7	7.7		42.3	-14	981	No stop
02 54 02	=2221+625	06 08 15	36.3	-30.5	7.7		42.0	91	985	02 52 18
02 55 02	G107.29	06 09 16	36.8	-29.3	7.8		42.0	46	985	02 55 02
02 58 17	---	06 12 31	36.6	-29.0	7.8		41.5	195	991	02 55 03
02 58 17	J2223+6249	06 12 31	36.0	-30.0	7.8		41.3	-14	991	No stop
03 00 02	=2221+625	06 14 16	35.8	-29.8	7.8		41.0	91	994	02 58 18

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

```
======== Setup file: sess316.M256

  Setup group:    6         Station: TORUN            Total bit rate:   256
  Format: MARK5B            Bits per sample: 2        Sample rate:  8.000
  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:   5  Based on FREQ, BW, and/or DOPPLER in schedule.  Used with PCAL = off
  LO sum=   6663.00  6663.00  6663.00  6663.00  6671.00  6671.00  6671.00  6671.00
            6679.00  6679.00  6679.00  6679.00  6687.00  6687.00  6687.00  6687.00
  BBC fr=    763.00   763.00   763.00   763.00   771.00   771.00   771.00   771.00
             779.00   779.00   779.00   779.00   787.00   787.00   787.00   787.00
  Bandwd=      4.00     4.00     4.00     4.00     4.00     4.00     4.00     4.00
               4.00     4.00     4.00     4.00     4.00     4.00     4.00     4.00
   Matching frequency sets:   5

  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)

* G107.29           22 19 49.845621   * 22 21 26.769000     22 22 01.820327       0.00
                    63 36 28.33825    * 63 51 37.52200      63 57 02.06333        0.00

* 3C345             16 41 17.606228   * 16 42 58.809966     16 43 31.087780       0.76
  J1642+3948        39 54 10.81496    * 39 48 36.99402      39 47 08.78769        0.52


  2221+625          22 21 37.739320   * 22 23 18.096566     22 23 54.219633       1.64
* J2223+6249        62 34 21.29402    * 62 49 33.80564      62 54 59.31088        1.26


* 3C454.3           22 51 29.519738   * 22 53 57.747938     22 54 48.215817       0.67
  J2253+1608        15 52 54.34810    * 16 08 53.56093      16 14 27.05432        0.70
```

n16c3tr

Network Monitoring Experiment

PI: *Jay Blanchard*

```
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
-------------------------------------------------------------------------------------------
 --- Fri  21 Oct 2016   Day 295 ---
 Next scan frequencies:  4974.49  4974.49  4974.49  4974.49  5006.49  5006.49  5006.49  5006.49
 Next BBC frequencies:    774.49   774.49   774.49   774.49   806.49   806.49   806.49   806.49
 Next scan bandwidths:     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00

12 00 00  J1848+3219   15 15 43  47.0  96.9 -3.6     -44.9     0        0   12 00 00
12 15 00  =1846+322    15 30 45  49.2 100.3 -3.3     -44.4   900       58   12 00 01

12 18 00  J1848+3219   15 33 46  49.6 101.0 -3.3     -44.2   173       58   12 18 00
12 30 00  =1846+322    15 45 48  51.4 103.9 -3.1     -43.6   720      104   12 18 01

12 33 00  J1848+3219   15 48 48  51.8 104.6 -3.0     -43.4   173      104   12 33 00
12 45 00  =1846+322    16 00 50  53.6 107.7 -2.8     -42.6   720      150   12 33 01

12 48 00  J1848+3219   16 03 51  54.0 108.5 -2.8     -42.4   173      150   12 48 00
13 00 00  =1846+322    16 15 53  55.7 111.8 -2.6     -41.3   720      196   12 48 01

13 03 00  J1848+3219   16 18 53  56.1 112.6 -2.5     -41.0   173      196   13 03 00
13 15 00  =1846+322    16 30 55  57.8 116.2 -2.3     -39.6   720      242   13 03 01

13 18 00  J1848+3219   16 33 56  58.2 117.1 -2.3     -39.2   173      242   13 18 00
13 30 00  =1846+322    16 45 58  59.7 121.0 -2.1     -37.5   720      288   13 18 01

13 33 00  J1848+3219   16 48 58  60.1 122.0 -2.0     -37.1   173      288   13 33 00
13 45 00  =1846+322    17 01 00  61.6 126.2 -1.8     -35.0   720      335   13 33 01

13 48 00  J1848+3219   17 04 01  62.0 127.3 -1.7     -34.4   173      335   13 48 00
14 00 00  =1846+322    17 16 02  63.4 131.9 -1.5     -31.9   720      381   13 48 01

14 03 00  J1848+3219   17 19 03  63.7 133.2 -1.5     -31.2   173      381   14 03 00
14 15 00  =1846+322    17 31 05  65.0 138.3 -1.3     -28.2   720      427   14 03 01

14 18 00  J1848+3219   17 34 05  65.3 139.6 -1.2     -27.4   173      427   14 18 00
14 30 00  =1846+322    17 46 07  66.4 145.2 -1.0     -23.9   720      473   14 18 01



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


 ======== Setup file: sess316.C512nme

   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=   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
 IF SB =         U         U         U         U         U         U         U         U
 Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
 BBC   =         1         5         1         5         3         7         3         7
 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:   9  Setup file default.  Used with PCAL = off
 LO sum=   4974.49  4974.49  4974.49  4974.49  5006.49  5006.49  5006.49  5006.49
 BBC fr=    774.49   774.49   774.49   774.49   806.49   806.49   806.49   806.49
 Bandwd=     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00
  Matching frequency sets:   9

 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)

 1846+322          18 46 29.612032   * 18 48 22.088575     18 48 59.121477       0.00
* J1848+3219        32 15 36.66046    * 32 19 02.60386      32 20 37.08112        0.00
```

rk16botr

RadioAstron AGN Monitoring

PI: *Yuri Kovalev*


```
Address:  ASC Lebedev          Profsoyuznaya 84/32          117997 Moscow, Russia
Phone:    +7-495-3332512                EMAIL:    kirx@scan.sai.msu.ru
Fax:      +7-495-3332378                Phone during observation: +7-903-6614865
```


```
Observing mode: C/L-band, dual-pol

Schedule for TORUN     (Code Tr )                                   Page   2
               RadioAstron AGN Monitoring
  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  21 Oct 2016   Day 295 ---

 ---------- L-band VLBI scans ----------

 Next scan frequencies:  1668.00  1668.00  1668.00  1668.00
 Next BBC frequencies:    732.00   732.00   732.00   732.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

21 00 00  0048-097     00 17 11  27.1 170.5 -0.6      -5.8     0        0   21 00 00
21 14 30  ---          00 31 44  27.4 174.5 -0.3      -3.3   870       28   21 00 01

21 15 00  0048-097     00 32 14  27.4 174.6 -0.3      -3.3    24       28   21 15 00
21 29 30  ---          00 46 46  27.5 178.7 -0.1      -0.8   870       56   21 15 01

21 30 00  0048-097     00 47 16  27.5 178.8 -0.1      -0.7    24       56   21 30 00
21 44 30  ---          01 01 49  27.5 182.9  0.2       1.7   870       84   21 30 01

21 45 00  0048-097     01 02 19  27.5 183.0  0.2       1.8    24       84   21 45 00
22 00 00  ---          01 17 21  27.3 187.2  0.4       4.4   900      112   21 45 01



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


 ======== Setup file: ra18cm2.set

   Setup group:    9         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
 1st LO=   2400.00   2400.00   2400.00   2400.00
 Net SB=         L         L         U         U
 IF SB =         L         L         L         L
 Pol.  =       RCP       LCP       RCP       LCP
 BBC   =         1         2         1         2
 BBC SB=         U         U         L         L
 IF    =         C         A         C         A

The following frequency sets based on these setups were used.

 Frequency Set:   5  Setup file default.  Used with PCAL = 1MHz
 LO sum=   1668.00  1668.00  1668.00  1668.00
 BBC fr=    732.00   732.00   732.00   732.00
 Bandwd=     16.00    16.00    16.00    16.00
  Matching frequency sets:   5

 Track assignments are:
  track1=   2, 18,  3, 19
  barrel=roll_off
```

```
POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 32.081352       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 16.56835        0.00
                    fake circumpolar target for a TS to look at

* 0048-097          00 48 09.975920   * 00 50 41.317387     00 51 32.878698       0.00
  J0050-0929       -09 45 24.21201    *-09 29 05.21037     -09 23 35.44393        0.00
                    ./rk16bo_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 46175 observations, RA-AO4-07, RA-AO3-0
```

```
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)
  0048-097           155.2

 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
```

em122atr

NGC3310

PI: *Mar Mezcua*

```
Observing mode: continuum

Schedule for TORUN     (Code Tr )                                  Page   2
               NGC3310
  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  22 Oct 2016   Day 296 ---
 Next scan frequencies:  4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
 Next BBC frequencies:    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
 Next scan bandwidths:     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00

04 00 00  DA193        07 18 20  70.8 234.5  1.4      39.5     0        0   04 00 00
04 08 00  ---          07 26 22  69.8 238.0  1.5      41.5   480       62   04 00 01

04 08 10  DA193        07 26 32  69.8 238.0  1.5      41.5     4       62   04 08 10
04 10 10  ---          07 28 32  69.5 238.9  1.5      42.0   120       77   04 08 11

04 12 10  J1044+5322   07 30 32  61.4  69.8 -3.2  W  -70.4  -232       77   04 12 10
04 15 10  ---          07 33 33  61.8  70.1 -3.2  W  -70.8     0      100   04 12 11

04 15 10  NGC3310      07 33 33  62.7  70.4 -3.1     -71.6   -16      100   No stop
04 22 10  ---          07 40 34  63.6  71.1 -3.0     -72.4   404      154   04 15 11

04 22 40  J1044+5322   07 41 04  62.9  70.9 -3.1     -71.6    15      154   04 22 40
04 25 40  ---          07 44 05  63.3  71.2 -3.0     -71.9   180      177   04 22 41

04 25 40  NGC3310      07 44 05  64.1  71.4 -2.9     -72.8   -16      177   No stop
04 32 40  ---          07 51 06  65.1  72.2 -2.8     -73.5   404      231   04 25 41

04 33 10  J1044+5322   07 51 36  64.4  71.9 -2.9     -72.7    15      231   04 33 10
04 36 10  ---          07 54 36  64.8  72.3 -2.8     -73.0   180      254   04 33 11

04 36 10  NGC3310      07 54 36  65.6  72.5 -2.8     -73.9   -16      254   No stop
04 43 10  ---          08 01 38  66.7  73.2 -2.6     -74.7   404      308   04 36 11

04 43 40  J1044+5322   08 02 08  65.9  73.0 -2.7     -73.9    15      308   04 43 40
04 46 40  ---          08 05 08  66.3  73.3 -2.7     -74.2   180      331   04 43 41

04 46 40  NGC3310      08 05 08  67.2  73.6 -2.6     -75.1   -16      331   No stop
04 53 40  ---          08 12 09  68.2  74.2 -2.5     -75.8   404      385   04 46 41

04 54 10  J1044+5322   08 12 39  67.4  74.1 -2.5     -75.0    15      385   04 54 10
04 57 10  ---          08 15 40  67.9  74.4 -2.5     -75.3   180      408   04 54 11

04 57 10  NGC3310      08 15 40  68.7  74.6 -2.4     -76.2   -16      408   No stop
05 04 10  ---          08 22 41  69.7  75.3 -2.3     -77.0   404      462   04 57 11

05 04 40  J1044+5322   08 23 11  69.0  75.1 -2.4     -76.1    15      462   05 04 40
05 07 40  ---          08 26 12  69.4  75.4 -2.3     -76.4   180      485   05 04 41

05 07 40  NGC3310      08 26 12  70.2  75.6 -2.2     -77.4   -16      485   No stop
05 14 40  ---          08 33 13  71.2  76.3 -2.1     -78.1   404      538   05 07 41
```

Schedule for TORUN (Code Tr) Page 3

NGC3310

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 22 Oct 2016 Day 296 ---										
05 15 10	J1044+5322	08 33 43	70.5	76.2	-2.2		-77.2	15	538	05 15 10
05 18 10	---	08 36 43	70.9	76.5	-2.1		-77.6	180	562	05 15 11
05 18 10	NGC3310	08 36 43	71.7	76.6	-2.1		-78.5	-16	562	No stop
05 25 10	---	08 43 44	72.8	77.3	-1.9		-79.3	404	615	05 18 11
05 25 40	J1044+5322	08 44 15	72.0	77.2	-2.0		-78.4	15	615	05 25 40
05 28 40	---	08 47 15	72.5	77.5	-2.0		-78.7	180	638	05 25 41
05 28 40	NGC3310	08 47 15	73.3	77.6	-1.9		-79.7	-16	638	No stop
05 35 40	---	08 54 16	74.3	78.2	-1.8		-80.5	404	692	05 28 41
05 36 10	J1044+5322	08 54 46	73.6	78.2	-1.8		-79.5	15	692	05 36 10
05 39 10	---	08 57 47	74.0	78.5	-1.8		-79.8	180	715	05 36 11
05 39 10	NGC3310	08 57 47	74.8	78.6	-1.7		-80.9	-16	715	No stop
05 46 10	---	09 04 48	75.9	79.2	-1.6		-81.7	404	769	05 39 11
05 46 40	J1044+5322	09 05 18	75.1	79.2	-1.7		-80.7	15	769	05 46 40
05 49 40	---	09 08 18	75.6	79.5	-1.6		-81.0	180	792	05 46 41
05 49 40	NGC3310	09 08 18	76.4	79.5	-1.5		-82.1	-16	792	No stop
05 56 40	---	09 15 20	77.4	80.1	-1.4		-82.9	404	846	05 49 41
05 57 10	J1044+5322	09 15 50	76.7	80.2	-1.5		-81.8	15	846	05 57 10
06 00 10	---	09 18 50	77.1	80.5	-1.4		-82.1	180	869	05 57 11
06 00 10	NGC3310	09 18 50	77.9	80.4	-1.3		-83.3	-16	869	No stop
06 07 10	---	09 25 51	79.0	81.0	-1.2		-84.2	404	923	06 00 11
06 07 40	J1044+5322	09 26 21	78.2	81.2	-1.3		-83.0	15	923	06 07 40
06 10 40	---	09 29 22	78.7	81.5	-1.3		-83.3	180	946	06 07 41
06 10 40	NGC3310	09 29 22	79.5	81.2	-1.2		-84.6	-16	946	No stop
06 17 40	---	09 36 23	80.5	81.7	-1.1		-85.5	404	1000	06 10 41
06 18 10	J1044+5322	09 36 53	79.8	82.1	-1.1		-84.2	15	1000	06 18 10
06 21 10	---	09 39 54	80.2	82.4	-1.1		-84.5	180	1023	06 18 11
06 21 10	NGC3310	09 39 54	81.1	82.0	-1.0		-86.0	-16	1023	No stop
06 28 10	---	09 46 55	82.1	82.4	-0.9		-87.0	404	1077	06 21 11
06 28 40	J1044+5322	09 47 25	81.4	83.0	-1.0		-85.4	15	1077	06 28 40
06 31 40	---	09 50 25	81.8	83.2	-0.9		-85.8	180	1100	06 28 41

Schedule for TORUN (Code Tr) Page 4
NGC3310

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 22 Oct 2016 Day 296 ---										
06 31 40	NGC3310	09 50 25	82.6	82.6	-0.8		-87.5	-16	1100	No stop
06 38 40	---	09 57 27	83.7	82.9	-0.7		-88.6	404	1154	06 31 41
06 39 10	J1044+5322	09 57 57	82.9	83.8	-0.8		-86.8	15	1154	06 39 10
06 42 10	---	10 00 57	83.4	84.0	-0.7		-87.2	180	1177	06 39 11
06 42 10	3C273	10 00 57	30.3	135.5	-2.5		-24.9	-211	1177	No stop
06 54 10	---	10 12 59	31.6	138.7	-2.3		-23.4	509	1269	06 42 11
06 54 30	3C273	10 13 19	31.6	138.8	-2.3		-23.3	14	1269	06 54 30
06 57 10	---	10 16 00	31.9	139.5	-2.2		-23.0	160	1290	06 54 31
06 58 40	J1044+5322	10 17 30	85.9	84.7	-0.5		-89.8	-127	1290	06 58 40
07 01 40	---	10 20 30	86.3	84.6	-0.4		-90.4	53	1313	06 58 41
07 01 40	NGC3310	10 20 30	87.1	81.8	-0.3		-94.3	-20	1313	No stop
07 08 40	---	10 27 31	88.1	79.0	-0.2		-98.6	400	1367	07 01 41
07 09 10	J1044+5322	10 28 02	87.4	84.1	-0.3		-92.4	5	1367	07 09 10
07 12 10	---	10 31 02	87.9	83.6	-0.2		-93.6	180	1390	07 09 11
07 12 10	NGC3310	10 31 02	88.7	75.5	-0.1		-102.8	-32	1390	No stop
07 19 10	---	10 38 03	89.6	38.5	-0.0		-141.2	388	1444	07 12 11
07 19 40	J1044+5322	10 38 33	89.0	78.7	-0.1		-100.0	-62	1444	07 19 40
07 22 40	---	10 41 34	89.4	70.6	-0.1		-108.7	118	1467	07 19 41
07 33 10	NGC3310	10 52 05	88.1	280.9	0.2		98.5	188	1467	07 33 10
07 40 10	---	10 59 07	87.1	278.2	0.3		94.3	420	1521	07 33 11
07 40 40	J1044+5322	10 59 37	87.8	276.4	0.2		93.5	13	1521	07 40 40
07 43 40	---	11 02 37	87.4	275.8	0.3		92.3	180	1544	07 40 41
07 43 40	NGC3310	11 02 37	86.6	277.6	0.4		93.0	-17	1544	No stop
07 50 40	---	11 09 38	85.5	277.0	0.5		91.0	403	1597	07 43 41
07 51 10	J1044+5322	11 10 08	86.3	275.3	0.4		90.3	13	1597	07 51 10
07 54 10	---	11 13 09	85.8	275.3	0.5		89.7	180	1621	07 51 11
07 54 10	NGC3310	11 13 09	85.0	277.0	0.6		90.3	-16	1621	No stop
08 01 10	---	11 20 10	84.0	277.0	0.7		88.9	404	1674	07 54 11
08 01 40	J1044+5322	11 20 40	84.7	275.6	0.6		88.4	14	1674	08 01 40
08 04 40	---	11 23 41	84.2	275.7	0.6		88.0	180	1697	08 01 41

Schedule for TORUN (Code Tr) Page 5

NGC3310

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 22 Oct 2016 Day 296 ---										
08 04 40	NGC3310	11 23 41	83.4	277.1	0.7		88.3	-16	1697	No stop
08 11 40	---	11 30 42	82.4	277.5	0.8		87.3	404	1751	08 04 41
08 12 10	J1044+5322	11 31 12	83.1	276.2	0.8		86.9	15	1751	08 12 10
08 15 10	---	11 34 12	82.7	276.4	0.8		86.5	180	1774	08 12 11
08 15 10	NGC3310	11 34 12	81.9	277.7	0.9		86.7	-15	1774	No stop
08 22 10	---	11 41 14	80.8	278.1	1.0		85.8	405	1828	08 15 11
08 22 40	J1044+5322	11 41 44	81.5	276.9	0.9		85.6	15	1828	08 22 40
08 25 40	---	11 44 44	81.1	277.2	1.0		85.2	180	1851	08 22 41
08 25 40	NGC3310	11 44 44	80.3	278.4	1.1		85.3	-15	1851	No stop
08 32 40	---	11 51 45	79.3	278.9	1.2		84.4	405	1905	08 25 41
08 33 20	J1044+5322	11 52 25	79.9	277.8	1.1		84.3	25	1905	08 33 20
08 36 10	---	11 55 16	79.5	278.0	1.2		84.0	170	1927	08 33 21
08 36 10	NGC3310	11 55 16	78.7	279.2	1.3		84.0	-15	1927	No stop
08 43 10	---	12 02 17	77.7	279.7	1.4		83.1	405	1981	08 36 11
08 43 50	J1044+5322	12 02 57	78.4	278.7	1.3		83.1	25	1981	08 43 50
08 46 40	---	12 05 48	78.0	279.0	1.3		82.8	170	2003	08 43 51
08 46 40	NGC3310	12 05 48	77.2	280.0	1.4		82.7	-15	2003	No stop
08 53 40	---	12 12 49	76.1	280.6	1.6		81.9	405	2056	08 46 41
08 54 10	J1044+5322	12 13 19	76.8	279.7	1.5		81.9	15	2056	08 54 10
08 57 10	---	12 16 19	76.4	279.9	1.5		81.6	180	2079	08 54 11
08 57 10	NGC3310	12 16 19	75.6	281.0	1.6		81.5	-15	2079	No stop
09 04 10	---	12 23 20	74.6	281.6	1.7		80.7	405	2133	08 57 11
09 04 40	J1044+5322	12 23 51	75.3	280.6	1.6		80.8	15	2133	09 04 40
09 07 40	---	12 26 51	74.8	280.9	1.7		80.5	180	2156	09 04 41
09 07 40	NGC3310	12 26 51	74.1	281.9	1.8		80.3	-15	2156	No stop
09 14 40	---	12 33 52	73.0	282.6	1.9		79.5	405	2210	09 07 41
09 15 10	J1044+5322	12 34 22	73.7	281.6	1.8		79.6	15	2210	09 15 10
09 18 10	---	12 37 23	73.3	281.9	1.9		79.3	180	2233	09 15 11
09 18 10	NGC3310	12 37 23	72.5	282.9	2.0		79.1	-15	2233	No stop
09 25 10	---	12 44 24	71.5	283.5	2.1		78.4	405	2287	09 18 11

```
Schedule for TORUN     (Code Tr )                                Page   6
               NGC3310
  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  22 Oct 2016   Day 296 ---

09 25 40  J1044+5322   12 44 54  72.2 282.7  2.0      78.5    15     2287   09 25 40
09 28 40  ---          12 47 54  71.8 283.0  2.0      78.2   180     2310   09 25 41

09 28 40  NGC3310      12 47 54  71.0 283.9  2.1      78.0   -15     2310   No stop
09 35 40  ---          12 54 56  70.0 284.5  2.3      77.2   405     2364   09 28 41

09 36 10  J1044+5322   12 55 26  70.7 283.7  2.2      77.4    15     2364   09 36 10
09 39 10  ---          12 58 26  70.2 284.0  2.2      77.0   180     2387   09 36 11

09 39 10  NGC3310      12 58 26  69.5 284.9  2.3      76.8   -15     2387   No stop
09 46 10  ---          13 05 27  68.4 285.6  2.4      76.0   405     2441   09 39 11

09 46 10  3C273        13 05 27  38.3 191.3  0.6       6.8  -201     2441   No stop
09 51 10  ---          13 10 28  38.2 192.9  0.7       7.7    99     2479   09 46 11

09 51 30  3C273        13 10 48  38.2 193.0  0.7       7.8    14     2479   09 51 30
09 59 30  ---          13 18 50  37.9 195.5  0.8       9.3   480     2541   09 51 31



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


 ======== Setup file: sess316.C1024

   Setup group:   18         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 64.000
   Number of channels:  8    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
  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         3         7         3         7
  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:   9  Setup file default.  Used with PCAL = off
  LO sum=   4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
  BBC fr=    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
  Bandwd=     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00
   Matching frequency sets:   9

  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)

* NGC3310           10 35 39.087142   * 10 38 44.900000     10 39 44.466956       0.00
                    53 45 42.18763    * 53 30 05.00000      53 24 40.56723        0.00

* J1044+5322        10 41 07.025414   * 10 44 10.673016     10 45 09.485678       0.00
                    53 38 05.88012    * 53 22 20.54138      53 16 53.92005        0.00

  0552+398          05 52 01.407169   * 05 55 30.805611     05 56 41.525532       0.00
  J0555+3948        39 48 21.94581    * 39 48 49.16496      39 48 41.43430        0.00
* DA193             /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc

  3C273B            12 26 33.245833   * 12 29 06.699729     12 29 56.647645       1.05
  J1229+0203        02 19 43.30578    * 02 03 08.59828      01 57 45.32566        1.37
* 3C273             /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
```

ey025tr

PC-SCALE BINARY BLACK HOLE CANDIDATE: B0402+379

PI: *Jun Yang Observing mode: 2048-16-2*

```
Schedule for TORUN     (Code Tr )                                   Page   2
               PC-scale binary black hole candidate: B0402+379
  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  22 Oct 2016   Day 296 ---
 Next scan frequencies:  4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
 Next BBC frequencies:    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
 Next scan bandwidths:     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00

18 00 00  3C84         21 20 38  32.0  61.9 -6.0     -45.1     0        0   18 00 00
18 04 00  ---          21 24 39  32.5  62.5 -5.9     -45.4   240       31   18 00 01

18 05 00  0402+379     21 25 39  24.1  58.0 -6.7     -40.3    14       31   18 05 00
18 17 00  ---          21 37 41  25.7  60.0 -6.5     -41.4   720      123   18 05 01

18 17 20  0402+379     21 38 01  25.7  60.1 -6.5     -41.4    14      123   18 17 20
18 29 20  ---          21 50 03  27.3  62.0 -6.3     -42.4   720      215   18 17 21

18 31 00  DA193        21 51 44  15.8  43.1 -8.1     -32.3    43      215   18 31 00
18 33 30  ---          21 54 14  16.1  43.5 -8.0     -32.5   150      235   18 31 01

18 34 30  0402+379     21 55 14  28.0  62.9 -6.2     -42.8     2      235   18 34 30
18 46 30  ---          22 07 16  29.6  64.8 -6.0     -43.7   720      327   18 34 31

18 46 50  0402+379     22 07 36  29.7  64.9 -6.0     -43.7    14      327   18 46 50
18 58 50  ---          22 19 38  31.3  66.9 -5.8     -44.6   720      419   18 46 51

19 00 30  3C138        22 21 18   4.5  68.0 -7.0     -35.5   -14      419   19 00 30
19 03 00  ---          22 23 49   4.8  68.5 -7.0     -35.7   136      438   19 00 31

19 04 00  0402+379     22 24 49  32.0  67.7 -5.7     -44.9   -56      438   19 04 00
19 16 00  ---          22 36 51  33.7  69.7 -5.5     -45.7   664      531   19 04 01

19 16 20  0402+379     22 37 11  33.7  69.8 -5.5     -45.7    14      531   19 16 20
19 28 20  ---          22 49 13  35.5  71.7 -5.3     -46.4   720      623   19 16 21

19 30 00  DA193        22 50 53  22.4  52.8 -7.1     -38.5    37      623   19 30 00
19 32 30  ---          22 53 24  22.7  53.2 -7.1     -38.8   150      642   19 30 01

19 33 30  0402+379     22 54 24  36.2  72.6 -5.2     -46.7    -4      642   19 33 30
19 45 30  ---          23 06 26  37.9  74.6 -5.0     -47.4   716      735   19 33 31

19 45 50  0402+379     23 06 46  38.0  74.7 -5.0     -47.4    14      735   19 45 50
19 57 50  ---          23 18 48  39.7  76.7 -4.8     -48.0   720      827   19 45 51

19 59 30  3C138        23 20 28  13.0  79.5 -6.0     -38.0   -14      827   19 59 30
20 02 00  ---          23 22 59  13.4  80.0 -6.0     -38.1   136      846   19 59 31

20 03 00  0402+379     23 23 59  40.5  77.6 -4.7     -48.2   -56      846   20 03 00
20 15 00  ---          23 36 01  42.3  79.7 -4.5     -48.7   664      938   20 03 01
```

Schedule for TORUN (Code Tr) Page 3

PC-scale binary black hole candidate: B0402+379

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 22 Oct 2016 Day 296 ---										
20 15 20	0402+379	23 36 21	42.3	79.8	-4.5		-48.7	14	938	20 15 20
20 27 20	---	23 48 23	44.1	81.9	-4.3		-49.1	720	1031	20 15 21
20 29 00	DA193	23 50 03	29.9	62.3	-6.1		-43.8	33	1031	20 29 00
20 31 30	---	23 52 33	30.2	62.8	-6.1		-44.0	150	1050	20 29 01
20 32 30	0402+379	23 53 34	44.9	82.8	-4.2		-49.2	-9	1050	20 32 30
20 44 30	---	00 05 35	46.7	85.1	-4.0		-49.5	711	1142	20 32 31
20 44 50	0402+379	00 05 56	46.7	85.1	-4.0		-49.5	14	1142	20 44 50
20 56 50	---	00 17 58	48.5	87.4	-3.8		-49.7	720	1235	20 44 51
20 58 30	3C138	00 19 38	21.8	91.1	-5.0		-38.8	-14	1235	20 58 30
21 01 00	---	00 22 08	22.2	91.6	-5.0		-38.8	136	1254	20 58 31
21 02 00	0402+379	00 23 08	49.3	88.4	-3.7		-49.7	-56	1254	21 02 00
21 14 00	---	00 35 10	51.1	90.8	-3.5		-49.7	664	1346	21 02 01
21 14 20	0402+379	00 35 30	51.1	90.9	-3.5		-49.7	14	1346	21 14 20
21 26 20	---	00 47 32	52.9	93.3	-3.3		-49.6	720	1438	21 14 21
21 28 00	DA193	00 49 13	38.1	71.9	-5.1		-48.0	30	1438	21 28 00
21 30 30	---	00 51 43	38.4	72.3	-5.1		-48.1	150	1458	21 28 01
21 31 30	0402+379	00 52 43	53.7	94.5	-3.2		-49.5	-11	1458	21 31 30
21 43 30	---	01 04 45	55.5	97.1	-3.0		-49.2	709	1550	21 31 31
21 43 50	0402+379	01 05 05	55.6	97.2	-3.0		-49.2	14	1550	21 43 50
21 55 50	---	01 17 07	57.4	100.0	-2.8		-48.7	720	1642	21 43 51
21 57 30	3C138	01 18 47	30.6	103.5	-4.1		-37.5	-14	1642	21 57 30
22 00 00	---	01 21 18	31.0	104.1	-4.0		-37.4	136	1662	21 57 31
22 01 00	0402+379	01 22 18	58.1	101.3	-2.7		-48.4	-56	1662	22 01 00
22 13 00	---	01 34 20	59.9	104.3	-2.5		-47.7	664	1754	22 01 01
22 13 20	0402+379	01 34 40	59.9	104.4	-2.5		-47.6	14	1754	22 13 20
22 25 20	---	01 46 42	61.7	107.7	-2.3		-46.6	720	1846	22 13 21
22 27 00	DA193	01 48 22	46.7	81.9	-4.1		-50.7	30	1846	22 27 00
22 29 30	---	01 50 53	47.1	82.3	-4.1		-50.8	150	1865	22 27 01
22 30 30	0402+379	01 51 53	62.4	109.2	-2.3		-46.1	-11	1865	22 30 30
22 42 30	---	02 03 55	64.1	112.9	-2.1		-44.7	709	1958	22 30 31

Schedule for TORUN (Code Tr) Page 4

PC-scale binary black hole candidate: B0402+379

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 22 Oct 2016 Day 296 ---										
22 42 50	0402+379	02 04 15	64.1	113.0	-2.0		-44.6	14	1958	22 42 50
22 54 50	---	02 16 17	65.8	117.1	-1.8		-42.8	720	2050	22 42 51
22 56 30	3C138	02 17 57	38.9	117.5	-3.1		-33.8	-14	2050	22 56 30
22 59 00	---	02 20 28	39.3	118.2	-3.0		-33.5	136	2069	22 56 31
23 00 00	0402+379	02 21 28	66.5	118.9	-1.8		-41.9	-56	2069	23 00 00
23 12 00	---	02 33 30	68.0	123.6	-1.6		-39.5	664	2162	23 00 01
23 12 20	0402+379	02 33 50	68.0	123.7	-1.6		-39.4	14	2162	23 12 20
23 24 20	---	02 45 52	69.5	128.9	-1.4		-36.5	720	2254	23 12 21
23 26 00	DA193	02 47 32	55.6	93.3	-3.2		-51.3	14	2254	23 26 00
23 28 30	---	02 50 02	55.9	93.8	-3.1		-51.3	150	2273	23 26 01
23 29 30	0402+379	02 51 03	70.1	131.3	-1.3		-35.0	-30	2273	23 29 30
23 41 30	---	03 03 05	71.4	137.3	-1.1		-31.2	690	2365	23 29 31
23 41 50	0402+379	03 03 25	71.4	137.5	-1.1		-31.1	13	2365	23 41 50
23 53 50	---	03 15 27	72.6	144.2	-0.9		-26.5	720	2458	23 41 51
23 55 30	3C138	03 17 07	46.1	134.2	-2.1		-26.7	-13	2458	23 55 30
23 58 00	---	03 19 37	46.4	134.9	-2.0		-26.3	137	2477	23 55 31
--- Sun 23 Oct 2016 Day 297 ---										
00 00 00	3C84	03 21 38	78.5	180.6	0.0		0.5	-14	2477	00 00 00
00 04 00	---	03 25 38	78.4	184.4	0.1		3.5	226	2508	00 00 01
00 05 00	0402+379	03 26 38	73.5	151.1	-0.7		-21.7	-21	2508	00 05 00
00 17 00	---	03 38 40	74.2	159.1	-0.5		-15.8	699	2600	00 05 01
00 17 20	0402+379	03 39 00	74.2	159.4	-0.5		-15.6	13	2600	00 17 20
00 29 20	---	03 51 02	74.8	168.0	-0.3		-9.1	720	2692	00 17 21
00 31 00	DA193	03 52 43	65.1	109.8	-2.1		-47.4	-31	2692	00 31 00
00 33 30	---	03 55 13	65.5	110.5	-2.0		-47.1	119	2712	00 31 01
00 34 30	0402+379	03 56 13	74.9	171.9	-0.2		-6.2	-79	2712	00 34 30
00 46 30	---	04 08 15	75.0	181.0	0.0		0.8	641	2804	00 34 31
00 46 50	0402+379	04 08 35	75.0	181.2	0.0		0.9	13	2804	00 46 50
00 56 50	---	04 18 37	74.9	188.8	0.2		6.7	600	2881	00 46 51

Schedule for TORUN (Code Tr) Page 5

PC-scale binary black hole candidate: B0402+379

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 23 Oct 2016 Day 297 ---										
00 58 30	3C138	04 20 17	51.6	155.7	-1.0		-14.9	-1	2881	00 58 30
01 03 00	---	04 24 48	51.9	157.4	-1.0		-13.9	269	2915	00 58 31
01 04 00	0402+379	04 25 48	74.7	194.1	0.3		10.7	-39	2915	01 04 00
01 16 00	---	04 37 50	74.1	202.7	0.5		17.1	681	3008	01 04 01
01 16 20	0402+379	04 38 10	74.1	202.9	0.5		17.3	13	3008	01 16 20
01 28 20	---	04 50 12	73.2	210.8	0.7		23.0	720	3100	01 16 21
01 30 00	DA193	04 51 52	72.7	133.8	-1.1		-34.4	-68	3100	01 30 00
01 32 30	---	04 54 23	73.0	135.1	-1.0		-33.5	82	3119	01 30 01
01 33 30	0402+379	04 55 23	72.8	214.0	0.8		25.3	-115	3119	01 33 30
01 45 30	---	05 07 25	71.7	220.9	1.0		30.0	605	3212	01 33 31
01 45 50	0402+379	05 07 45	71.7	221.1	1.0		30.1	13	3212	01 45 50
01 55 50	---	05 17 47	70.7	226.3	1.2		33.5	600	3288	01 45 51
01 57 30	3C138	05 19 27	53.6	178.9	-0.0		-0.7	-10	3288	01 57 30
02 02 00	---	05 23 58	53.6	180.7	0.0		0.5	260	3323	01 57 31
02 03 00	0402+379	05 24 58	69.9	229.7	1.3		35.6	-54	3323	02 03 00
02 15 00	---	05 37 00	68.4	235.0	1.5		38.7	666	3415	02 03 01
02 15 20	0402+379	05 37 20	68.4	235.2	1.5		38.8	14	3415	02 15 20
02 27 20	---	05 49 22	66.9	239.9	1.7		41.3	720	3508	02 15 21
02 29 00	DA193	05 51 02	76.7	175.3	-0.1		-3.7	-43	3508	02 29 00
02 31 30	---	05 53 32	76.7	177.4	-0.1		-2.1	107	3527	02 29 01
02 32 30	0402+379	05 54 33	66.2	241.8	1.8		42.3	-85	3527	02 32 30
02 44 30	---	06 06 35	64.6	246.0	2.0		44.2	635	3619	02 32 31
02 44 50	0402+379	06 06 55	64.5	246.1	2.0		44.2	14	3619	02 44 50
02 54 50	---	06 16 56	63.1	249.2	2.2		45.5	600	3696	02 44 51
02 56 30	3C138	06 18 37	51.9	202.3	0.9		13.7	-9	3696	02 56 30
03 01 00	---	06 23 07	51.6	204.0	1.0		14.7	261	3731	02 56 31
03 02 00	0402+379	06 24 08	62.1	251.4	2.3		46.3	-50	3731	03 02 00
03 14 00	---	06 36 09	60.4	254.7	2.5		47.4	670	3823	03 02 01
03 14 20	0402+379	06 36 30	60.3	254.8	2.5		47.4	14	3823	03 14 20
03 26 20	---	06 48 32	58.6	258.0	2.7		48.3	720	3915	03 14 21

Schedule for TORUN (Code Tr) Page 6

PC-scale binary black hole candidate: B0402+379

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 23 Oct 2016 Day 297 ---										
03 28 00	DA193	06 50 12	73.9	219.8	0.9		30.0	8	3915	03 28 00
03 30 30	---	06 52 42	73.6	221.3	0.9		31.1	150	3935	03 28 01
03 31 30	0402+379	06 53 42	57.8	259.2	2.8		48.6	-31	3935	03 31 30
03 43 30	---	07 05 44	56.0	262.1	3.0		49.1	689	4027	03 31 31
03 43 50	0402+379	07 06 04	56.0	262.2	3.0		49.1	14	4027	03 43 50
03 53 50	---	07 16 06	54.5	264.4	3.2		49.4	600	4104	03 43 51
03 55 30	3C138	07 17 46	47.1	222.9	1.9		25.3	2	4104	03 55 30
04 00 00	---	07 22 17	46.7	224.3	2.0		26.0	270	4138	03 55 31
04 01 00	0402+379	07 23 17	53.4	266.0	3.3		49.6	-39	4138	04 01 00
04 13 00	---	07 35 19	51.6	268.5	3.5		49.7	681	4231	04 01 01
04 13 20	0402+379	07 35 39	51.6	268.6	3.5		49.7	14	4231	04 13 20
04 25 20	---	07 47 41	49.7	271.0	3.7		49.7	720	4323	04 13 21
04 27 00	DA193	07 49 21	66.7	246.6	1.9		45.8	22	4323	04 27 00
04 29 30	---	07 51 52	66.4	247.4	1.9		46.2	150	4342	04 27 01
04 30 30	0402+379	07 52 52	49.0	272.0	3.8		49.7	-19	4342	04 30 30
04 42 30	---	08 04 54	47.2	274.3	4.0		49.5	701	4435	04 30 31
04 42 50	0402+379	08 05 14	47.1	274.4	4.0		49.5	14	4435	04 42 50
04 52 50	---	08 15 16	45.6	276.2	4.1		49.3	600	4512	04 42 51
04 54 30	3C138	08 16 56	40.2	240.0	2.9		32.9	12	4512	04 54 30
04 59 00	---	08 21 27	39.6	241.2	3.0		33.3	270	4546	04 54 31
05 00 00	0402+379	08 22 27	44.5	277.5	4.3		49.2	-28	4546	05 00 00
05 12 00	---	08 34 29	42.8	279.7	4.5		48.8	692	4638	05 00 01
05 12 20	0402+379	08 34 49	42.7	279.7	4.5		48.8	14	4638	05 12 20
05 24 20	---	08 46 51	40.9	281.8	4.7		48.3	720	4731	05 12 21
05 26 00	DA193	08 48 31	58.2	262.9	2.9		50.9	21	4731	05 26 00
05 28 30	---	08 51 02	57.8	263.5	2.9		51.0	150	4750	05 26 01
05 29 30	0402+379	08 52 02	40.2	282.7	4.8		48.1	-20	4750	05 29 30
05 41 30	---	09 04 04	38.4	284.8	5.0		47.5	700	4842	05 29 31
05 41 50	0402+379	09 04 24	38.4	284.8	5.0		47.5	14	4842	05 41 50
05 51 50	---	09 14 25	36.9	286.5	5.1		47.0	600	4919	05 41 51

Schedule for TORUN (Code Tr) Page 7

PC-scale binary black hole candidate: B0402+379

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 23 Oct 2016 Day 297 ---										
05 53 30	3C138	09 16 06	32.0	254.4	3.9		37.1	20	4919	05 53 30
05 58 00	---	09 20 36	31.3	255.4	4.0		37.3	270	4954	05 53 31
06 00 00	3C84	09 22 37	31.8	298.3	6.0		45.0	19	4954	06 00 00
06 03 00	---	09 25 37	31.4	298.8	6.1		44.7	180	4977	06 00 01
06 04 00	0402+379	09 26 37	35.2	288.6	5.3		46.3	24	4977	06 04 00
06 16 00	---	09 38 39	33.5	290.6	5.5		45.6	720	5069	06 04 01
06 16 20	0402+379	09 38 59	33.4	290.6	5.5		45.6	14	5069	06 16 20
06 28 20	---	09 51 01	31.8	292.6	5.7		44.8	720	5162	06 16 21
06 30 00	DA193	09 52 42	48.6	275.9	3.9		51.0	23	5162	06 30 00
06 32 30	---	09 55 12	48.2	276.4	4.0		51.0	150	5181	06 30 01
06 33 30	0402+379	09 56 12	31.0	293.5	5.8		44.4	-18	5181	06 33 30
06 45 30	---	10 08 14	29.4	295.4	6.0		43.6	702	5273	06 33 31
06 45 50	0402+379	10 08 34	29.3	295.5	6.0		43.5	14	5273	06 45 50
06 57 50	---	10 20 36	27.7	297.4	6.2		42.6	720	5365	06 45 51
06 59 30	DA193	10 22 17	44.2	281.1	4.4		50.1	24	5365	06 59 30
07 02 00	---	10 24 47	43.8	281.6	4.5		50.0	150	5385	06 59 31
07 03 00	0402+379	10 25 47	27.0	298.3	6.3		42.2	-17	5385	07 03 00
07 15 00	---	10 37 49	25.5	300.3	6.5		41.2	703	5477	07 03 01
07 15 20	0402+379	10 38 09	25.4	300.3	6.5		41.2	14	5477	07 15 20
07 27 20	---	10 50 11	23.9	302.3	6.7		40.2	720	5569	07 15 21
07 29 00	DA193	10 51 51	39.8	286.1	4.9		48.7	26	5569	07 29 00
07 31 30	---	10 54 22	39.5	286.5	5.0		48.5	150	5588	07 29 01
07 32 30	0402+379	10 55 22	23.2	303.1	6.8		39.7	-15	5588	07 32 30
07 44 30	---	11 07 24	21.7	305.1	7.0		38.6	705	5681	07 32 31
07 44 50	0402+379	11 07 44	21.7	305.2	7.0		38.6	14	5681	07 44 50
07 56 50	---	11 19 46	20.2	307.2	7.2		37.4	720	5773	07 44 51
07 58 30	DA193	11 21 26	35.6	290.9	5.4		46.9	28	5773	07 58 30
08 01 00	---	11 23 57	35.3	291.3	5.5		46.7	150	5792	07 58 31
08 02 00	0402+379	11 24 57	19.6	308.0	7.3		36.9	-13	5792	08 02 00
08 14 00	---	11 36 59	18.2	310.1	7.5		35.7	707	5885	08 02 01

```
Schedule for TORUN     (Code Tr )                                  Page   8
               PC-scale binary black hole candidate: B0402+379
  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  23 Oct 2016   Day 297 ---

08 14 20  0402+379     11 37 19  18.2 310.1  7.5      35.7    14     5885   08 14 20
08 26 20  ---          11 49 21  16.8 312.2  7.7      34.5   720     5977   08 14 21

08 28 00  DA193        11 51 01  31.6 295.7  5.9      44.8    31     5977   08 28 00
08 30 30  ---          11 53 31  31.2 296.1  5.9      44.6   150     5996   08 28 01

08 31 30  0402+379     11 54 32  16.2 313.0  7.8      33.9   -10     5996   08 31 30
08 43 30  ---          12 06 34  14.9 315.1  8.0      32.6   710     6088   08 31 31

08 43 50  0402+379     12 06 54  14.9 315.1  8.0      32.6    14     6088   08 43 50
08 55 50  ---          12 18 56  13.7 317.2  8.2      31.2   720     6181   08 43 51

08 57 30  DA193        12 20 36  27.6 300.4  6.4      42.4    33     6181   08 57 30
09 00 00  ---          12 23 06  27.3 300.8  6.4      42.2   150     6200   08 57 31



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


 ======== Setup file: sess316.C2048

   Setup group:   13         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 64.000
   Number of channels:  8    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
  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         3         7         3         7
  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:   8  Setup file default.  Used with PCAL = off
  LO sum=   4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
  BBC fr=    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
  Bandwd=     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00
   Matching frequency sets:   8

  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)

* 3C84              03 16 29.567263   * 03 19 48.160094     03 20 56.506153       1.30
  J0319+4130        41 19 51.91701    * 41 30 42.10413      41 34 11.31825        2.69
  0316+413          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
  J0319+41          GSFC 2015a astro solution, unpublished  10208 observations.

* 0402+379          04 02 29.863230   * 04 05 49.262653     04 06 57.501591       0.37
  J0405+3803        37 55 27.11288    * 38 03 32.23497      38 06 03.43214        0.33
                    /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                    GSFC 2015a astro solution, unpublished     92 observations.

* 3C138             05 18 16.514083   * 05 21 09.885965     05 22 08.631634       0.05
  J0521+1638        16 35 26.83418    * 16 38 22.05165      16 39 11.96976        0.06
  0518+165          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
  J0521+16          GSFC 2015a astro solution, unpublished    352 observations.

  0552+398          05 52 01.407169   * 05 55 30.805611     05 56 41.549097       0.00
  J0555+3948        39 48 21.94581    * 39 48 49.16496      39 48 41.47263        0.00
* DA193             /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
  J0555+39          GSFC 2015a astro solution, unpublished 394383 observations.
```

em121btr

EM121B
PI: *Marcote*

```
Observing mode: vlbi

Schedule for TORUN     (Code Tr )                                  Page   2
               em121b
  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  23 Oct 2016   Day 297 ---
 Next scan frequencies:  4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
 Next BBC frequencies:    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
 Next scan bandwidths:     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00

10 00 00  J1955+5131   13 23 16  35.0  48.6 -6.5     -46.5     0        0   10 00 00
10 06 00  =1954+513    13 29 17  35.7  49.4 -6.4     -47.2   360       46   10 00 01

10 07 00  J2018+3851   13 30 17  23.8  56.2 -6.8     -39.9     2       46   10 07 00
10 09 00  ---          13 32 18  24.0  56.5 -6.8     -40.1   120       62   10 07 01

10 09 00  TEVJ2043     13 32 18  24.5  52.5 -7.0     -39.6   -23       62   No stop
10 12 00  ---          13 35 18  24.8  53.0 -7.0     -39.9   157       85   10 09 01

10 12 50  J2018+3851   13 36 08  24.5  57.2 -6.7     -40.4    27       85   10 12 50
10 14 20  ---          13 37 39  24.7  57.4 -6.7     -40.6    90       96   10 12 51

10 14 20  TEVJ2043     13 37 39  25.1  53.4 -6.9     -40.1   -23       96   No stop
10 17 20  ---          13 40 39  25.5  53.8 -6.9     -40.4   157      119   10 14 21

10 17 20  J2018+3851   13 40 39  25.1  57.9 -6.6     -40.8   -23      119   No stop
10 18 50  ---          13 42 09  25.3  58.1 -6.6     -41.0    67      131   10 17 21

10 18 50  TEVJ2043     13 42 09  25.7  54.1 -6.8     -40.6   -23      131   No stop
10 21 50  ---          13 45 10  26.0  54.6 -6.8     -40.8   157      154   10 18 51

10 21 50  J2018+3851   13 45 10  25.7  58.6 -6.6     -41.2   -23      154   No stop
10 23 20  ---          13 46 40  25.9  58.9 -6.5     -41.4    67      165   10 21 51

10 23 20  TEVJ2043     13 46 40  26.2  54.8 -6.8     -41.0   -23      165   No stop
10 26 20  ---          13 49 40  26.6  55.3 -6.7     -41.3   157      188   10 23 21

10 27 10  J2018+3851   13 50 31  26.4  59.5 -6.5     -41.7    27      188   10 27 10
10 28 40  ---          13 52 01  26.6  59.7 -6.5     -41.8    90      200   10 27 11

10 28 40  TEVJ2043     13 52 01  26.9  55.6 -6.7     -41.5   -23      200   No stop
10 31 40  ---          13 55 01  27.2  56.1 -6.6     -41.8   157      223   10 28 41

10 31 40  J2018+3851   13 55 01  27.0  60.2 -6.4     -42.1   -23      223   No stop
10 33 10  ---          13 56 32  27.1  60.5 -6.4     -42.2    67      235   10 31 41

10 33 10  TEVJ2043     13 56 32  27.4  56.3 -6.6     -41.9   -23      235   No stop
10 36 10  ---          13 59 32  27.8  56.8 -6.5     -42.2   157      258   10 33 11

10 36 10  J2018+3851   13 59 32  27.5  61.0 -6.3     -42.4   -23      258   No stop
10 37 40  ---          14 01 02  27.7  61.2 -6.3     -42.6    67      269   10 36 11
```

Schedule for TORUN (Code Tr) Page 3

em121b

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 23 Oct 2016 Day 297 ---										
10 37 40	TEVJ2043	14 01 02	28.0	57.0	-6.5		-42.4	-23	269	No stop
10 40 40	---	14 04 03	28.4	57.5	-6.5		-42.6	157	292	10 37 41
10 41 30	J2018+3851	14 04 53	28.2	61.8	-6.2		-42.9	27	292	10 41 30
10 43 00	---	14 06 23	28.4	62.1	-6.2		-43.0	90	304	10 41 31
10 43 00	TEVJ2043	14 06 23	28.7	57.9	-6.4		-42.8	-23	304	No stop
10 46 00	---	14 09 24	29.1	58.4	-6.4		-43.1	157	327	10 43 01
10 46 00	J2018+3851	14 09 24	28.8	62.6	-6.2		-43.2	-23	327	No stop
10 47 30	---	14 10 54	29.0	62.8	-6.1		-43.3	67	338	10 46 01
10 47 30	TEVJ2043	14 10 54	29.2	58.6	-6.4		-43.2	-23	338	No stop
10 50 30	---	14 13 54	29.6	59.1	-6.3		-43.5	157	362	10 47 31
10 50 30	J2018+3851	14 13 54	29.4	63.3	-6.1		-43.6	-24	362	No stop
10 52 00	---	14 15 25	29.7	63.5	-6.1		-43.7	66	373	10 50 31
10 52 00	TEVJ2043	14 15 25	29.8	59.3	-6.3		-43.6	-23	373	No stop
10 55 00	---	14 18 25	30.2	59.8	-6.2		-43.9	157	396	10 52 01
10 55 50	J2018+3851	14 19 15	30.2	64.2	-6.0		-44.0	26	396	10 55 50
10 57 20	---	14 20 46	30.4	64.4	-6.0		-44.1	90	408	10 55 51
10 57 20	TEVJ2043	14 20 46	30.5	60.1	-6.2		-44.1	-23	408	No stop
11 00 20	---	14 23 46	30.9	60.6	-6.1		-44.4	157	431	10 57 21
11 00 20	J2018+3851	14 23 46	30.8	64.9	-5.9		-44.3	-24	431	No stop
11 01 50	---	14 25 16	31.0	65.1	-5.9		-44.4	66	442	11 00 21
11 01 50	TEVJ2043	14 25 16	31.1	60.8	-6.1		-44.5	-23	442	No stop
11 04 50	---	14 28 17	31.5	61.3	-6.1		-44.8	157	465	11 01 51
11 04 50	J2018+3851	14 28 17	31.4	65.6	-5.8		-44.7	-24	465	No stop
11 06 20	---	14 29 47	31.6	65.9	-5.8		-44.8	66	477	11 04 51
11 06 20	TEVJ2043	14 29 47	31.7	61.5	-6.0		-44.9	-24	477	No stop
11 09 20	---	14 32 48	32.1	62.0	-6.0		-45.1	156	500	11 06 21
11 10 10	J2018+3851	14 33 38	32.1	66.5	-5.8		-45.0	26	500	11 10 10
11 11 40	---	14 35 08	32.3	66.7	-5.7		-45.2	90	512	11 10 11
11 11 40	TEVJ2043	14 35 08	32.4	62.4	-6.0		-45.3	-24	512	No stop
11 14 40	---	14 38 08	32.8	62.8	-5.9		-45.6	156	535	11 11 41

Schedule for TORUN (Code Tr) Page 4

em121b

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 23 Oct 2016 Day 297 ---										
11 14 40	J2018+3851	14 38 08	32.8	67.2	-5.7		-45.4	-24	535	No stop
11 16 10	---	14 39 39	33.0	67.5	-5.7		-45.5	66	546	11 14 41
11 16 10	TEVJ2043	14 39 39	33.0	63.1	-5.9		-45.7	-24	546	No stop
11 19 10	---	14 42 39	33.4	63.5	-5.8		-45.9	156	569	11 16 11
11 19 10	J2018+3851	14 42 39	33.4	68.0	-5.6		-45.7	-24	569	No stop
11 20 40	---	14 44 09	33.6	68.2	-5.6		-45.8	66	581	11 19 11
11 20 40	TEVJ2043	14 44 09	33.6	63.8	-5.8		-46.1	-24	581	No stop
11 23 40	---	14 47 10	34.0	64.2	-5.8		-46.3	156	604	11 20 41
11 24 30	J2018+3851	14 48 00	34.1	68.8	-5.5		-46.0	26	604	11 24 30
11 26 00	---	14 49 30	34.3	69.1	-5.5		-46.1	90	615	11 24 31
11 26 00	TEVJ2043	14 49 30	34.3	64.6	-5.7		-46.5	-24	615	No stop
11 29 00	---	14 52 31	34.7	65.1	-5.7		-46.7	156	638	11 26 01
11 29 00	J2018+3851	14 52 31	34.8	69.6	-5.4		-46.3	-24	638	No stop
11 30 30	---	14 54 01	35.0	69.8	-5.4		-46.4	66	650	11 29 01
11 30 30	TEVJ2043	14 54 01	35.0	65.3	-5.6		-46.8	-24	650	No stop
11 33 30	---	14 57 02	35.4	65.8	-5.6		-47.1	156	673	11 30 31
11 33 30	J2018+3851	14 57 02	35.4	70.3	-5.4		-46.6	-24	673	No stop
11 35 00	---	14 58 32	35.6	70.5	-5.3		-46.7	66	685	11 33 31
11 35 00	TEVJ2043	14 58 32	35.6	66.0	-5.6		-47.2	-24	685	No stop
11 38 00	---	15 01 32	36.0	66.5	-5.5		-47.4	156	708	11 35 01
11 38 50	J2018+3851	15 02 22	36.2	71.2	-5.3		-46.9	26	708	11 38 50
11 40 20	---	15 03 53	36.4	71.4	-5.3		-47.0	90	719	11 38 51
11 40 20	TEVJ2043	15 03 53	36.3	66.8	-5.5		-47.6	-24	719	No stop
11 43 20	---	15 06 53	36.7	67.3	-5.4		-47.8	156	742	11 40 21
11 43 20	J2018+3851	15 06 53	36.8	71.9	-5.2		-47.2	-24	742	No stop
11 44 50	---	15 08 23	37.0	72.2	-5.2		-47.3	66	754	11 43 21
11 44 50	TEVJ2043	15 08 23	36.9	67.6	-5.4		-47.9	-24	754	No stop
11 47 50	---	15 11 24	37.4	68.0	-5.4		-48.1	156	777	11 44 51
11 47 50	J2018+3851	15 11 24	37.4	72.7	-5.1		-47.5	-24	777	No stop
11 49 20	---	15 12 54	37.7	72.9	-5.1		-47.5	66	788	11 47 51

Schedule for TORUN (Code Tr) Page 5

em121b

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 23 Oct 2016 Day 297 ---										
11 49 20	TEVJ2043	15 12 54	37.6	68.3	-5.3		-48.2	-24	788	No stop
11 52 20	---	15 15 55	38.0	68.7	-5.3		-48.4	156	812	11 49 21
11 53 10	J2018+3851	15 16 45	38.2	73.6	-5.0		-47.7	26	812	11 53 10
11 54 40	---	15 18 15	38.4	73.8	-5.0		-47.8	90	823	11 53 11
11 54 40	TEVJ2043	15 18 15	38.3	69.1	-5.2		-48.6	-24	823	No stop
11 57 40	---	15 21 16	38.7	69.6	-5.2		-48.8	156	846	11 54 41
11 57 40	J2018+3851	15 21 16	38.9	74.3	-5.0		-48.0	-25	846	No stop
11 59 10	---	15 22 46	39.1	74.6	-4.9		-48.1	65	858	11 57 41
11 59 10	TEVJ2043	15 22 46	38.9	69.8	-5.2		-48.9	-24	858	No stop
12 02 10	---	15 25 46	39.4	70.3	-5.1		-49.1	156	881	11 59 11
12 02 10	J2018+3851	15 25 46	39.5	75.1	-4.9		-48.2	-25	881	No stop
12 03 40	---	15 27 16	39.7	75.3	-4.9		-48.3	65	892	12 02 11
12 03 40	TEVJ2043	15 27 16	39.6	70.5	-5.1		-49.2	-24	892	No stop
12 06 40	---	15 30 17	40.0	71.0	-5.0		-49.4	156	915	12 03 41
12 07 30	J2018+3851	15 31 07	40.3	76.0	-4.8		-48.5	25	915	12 07 30
12 09 00	---	15 32 37	40.5	76.2	-4.8		-48.6	90	927	12 07 31
12 09 00	J1955+5131	15 32 37	51.2	64.8	-4.4		-60.9	-54	927	No stop
12 13 00	=1954+513	15 36 38	51.7	65.2	-4.3		-61.3	186	958	12 09 01
12 14 00	J2018+3851	15 37 38	41.2	77.1	-4.7		-48.8	7	958	12 14 00
12 15 30	---	15 39 08	41.5	77.3	-4.7		-48.8	90	969	12 14 01
12 15 30	TEVJ2043	15 39 08	41.3	72.4	-4.9		-49.9	-25	969	No stop
12 18 30	---	15 42 09	41.7	72.9	-4.8		-50.1	155	992	12 15 31
12 18 30	J2018+3851	15 42 09	41.9	77.8	-4.6		-49.0	-25	992	No stop
12 20 00	---	15 43 39	42.1	78.1	-4.6		-49.0	65	1004	12 18 31
12 20 00	TEVJ2043	15 43 39	41.9	73.1	-4.8		-50.2	-25	1004	No stop
12 23 00	---	15 46 40	42.3	73.6	-4.8		-50.4	155	1027	12 20 01
12 23 00	J2018+3851	15 46 40	42.6	78.6	-4.5		-49.2	-25	1027	No stop
12 24 30	---	15 48 10	42.8	78.9	-4.5		-49.2	65	1038	12 23 01
12 24 30	TEVJ2043	15 48 10	42.6	73.9	-4.7		-50.5	-25	1038	No stop
12 27 30	---	15 51 10	43.0	74.4	-4.7		-50.6	155	1062	12 24 31

Schedule for TORUN (Code Tr) Page 6

em121b

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 23 Oct 2016 Day 297 ---										
12 28 20	J2018+3851	15 52 01	43.4	79.5	-4.5		-49.4	25	1062	12 28 20
12 29 50	---	15 53 31	43.6	79.8	-4.4		-49.4	90	1073	12 28 21
12 29 50	TEVJ2043	15 53 31	43.3	74.7	-4.6		-50.8	-25	1073	No stop
12 32 50	---	15 56 31	43.8	75.2	-4.6		-50.9	155	1096	12 29 51
12 32 50	J2018+3851	15 56 31	44.0	80.3	-4.4		-49.5	-25	1096	No stop
12 34 20	---	15 58 02	44.2	80.6	-4.4		-49.6	65	1108	12 32 51
12 34 20	TEVJ2043	15 58 02	44.0	75.5	-4.6		-51.0	-25	1108	No stop
12 37 20	---	16 01 02	44.4	76.0	-4.5		-51.2	155	1131	12 34 21
12 37 20	J2018+3851	16 01 02	44.7	81.1	-4.3		-49.7	-25	1131	No stop
12 38 50	---	16 02 32	44.9	81.4	-4.3		-49.7	65	1142	12 37 21
12 38 50	TEVJ2043	16 02 32	44.6	76.2	-4.5		-51.2	-25	1142	No stop
12 41 50	---	16 05 33	45.1	76.7	-4.4		-51.4	155	1165	12 38 51
12 42 40	J2018+3851	16 06 23	45.5	82.1	-4.2		-49.9	24	1165	12 42 40
12 44 10	---	16 07 53	45.7	82.4	-4.2		-49.9	90	1177	12 42 41
12 44 10	TEVJ2043	16 07 53	45.4	77.1	-4.4		-51.5	-25	1177	No stop
12 47 10	---	16 10 54	45.9	77.6	-4.4		-51.6	155	1200	12 44 11
12 47 10	J2018+3851	16 10 54	46.2	82.9	-4.1		-50.0	-26	1200	No stop
12 48 40	---	16 12 24	46.4	83.2	-4.1		-50.0	64	1212	12 47 11
12 48 40	TEVJ2043	16 12 24	46.1	77.9	-4.3		-51.7	-26	1212	No stop
12 51 40	---	16 15 24	46.5	78.4	-4.3		-51.8	154	1235	12 48 41
12 51 40	J2018+3851	16 15 24	46.8	83.7	-4.1		-50.1	-26	1235	No stop
12 53 10	---	16 16 55	47.1	84.0	-4.0		-50.1	64	1246	12 51 41
12 53 10	TEVJ2043	16 16 55	46.8	78.6	-4.3		-51.9	-26	1246	No stop
12 56 10	---	16 19 55	47.2	79.1	-4.2		-52.0	154	1269	12 53 11
12 57 00	J2018+3851	16 20 45	47.6	84.7	-4.0		-50.2	24	1269	12 57 00
12 58 30	---	16 22 15	47.9	85.0	-3.9		-50.2	90	1281	12 57 01
12 58 30	TEVJ2043	16 22 15	47.5	79.5	-4.2		-52.1	-26	1281	No stop
13 01 30	---	16 25 16	48.0	80.0	-4.1		-52.3	154	1304	12 58 31
13 01 30	J2018+3851	16 25 16	48.3	85.5	-3.9		-50.3	-26	1304	No stop
13 03 00	---	16 26 46	48.5	85.8	-3.9		-50.3	64	1315	13 01 31

Schedule for TORUN (Code Tr) Page 7

em121b

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 23 Oct 2016 Day 297 ---										
13 03 00	TEVJ2043	16 26 46	48.2	80.3	-4.1		-52.3	-26	1315	No stop
13 06 00	---	16 29 47	48.7	80.8	-4.0		-52.4	154	1338	13 03 01
13 06 00	J2018+3851	16 29 47	49.0	86.4	-3.8		-50.4	-26	1338	No stop
13 07 30	---	16 31 17	49.2	86.7	-3.8		-50.4	64	1350	13 06 01
13 07 30	TEVJ2043	16 31 17	48.9	81.1	-4.0		-52.5	-26	1350	No stop
13 10 30	---	16 34 17	49.3	81.6	-4.0		-52.6	154	1373	13 07 31
13 11 20	J2018+3851	16 35 08	49.8	87.4	-3.7		-50.4	24	1373	13 11 20
13 12 50	---	16 36 38	50.0	87.7	-3.7		-50.5	90	1385	13 11 21
13 12 50	TEVJ2043	16 36 38	49.7	82.0	-3.9		-52.7	-26	1385	No stop
13 15 50	---	16 39 38	50.1	82.5	-3.9		-52.7	154	1408	13 12 51
13 15 50	J2018+3851	16 39 38	50.5	88.3	-3.7		-50.5	-27	1408	No stop
13 17 20	---	16 41 09	50.7	88.6	-3.6		-50.5	63	1419	13 15 51
13 17 20	TEVJ2043	16 41 09	50.3	82.8	-3.9		-52.8	-26	1419	No stop
13 20 20	---	16 44 09	50.8	83.3	-3.8		-52.9	154	1442	13 17 21
13 20 20	J2018+3851	16 44 09	51.1	89.2	-3.6		-50.5	-27	1442	No stop
13 21 50	---	16 45 39	51.4	89.5	-3.6		-50.5	63	1454	13 20 21
13 21 50	TEVJ2043	16 45 39	51.0	83.6	-3.8		-52.9	-27	1454	No stop
13 24 50	---	16 48 40	51.5	84.1	-3.7		-53.0	153	1477	13 21 51
13 25 40	J2018+3851	16 49 30	51.9	90.2	-3.5		-50.5	23	1477	13 25 40
13 27 10	---	16 51 00	52.2	90.5	-3.5		-50.5	90	1488	13 25 41
13 27 10	TEVJ2043	16 51 00	51.8	84.6	-3.7		-53.1	-27	1488	No stop
13 30 10	---	16 54 01	52.3	85.1	-3.6		-53.1	153	1512	13 27 11
13 30 10	J2018+3851	16 54 01	52.6	91.1	-3.4		-50.5	-27	1512	No stop
13 31 40	---	16 55 31	52.8	91.4	-3.4		-50.5	63	1523	13 30 11
13 31 40	TEVJ2043	16 55 31	52.5	85.4	-3.6		-53.2	-27	1523	No stop
13 34 40	---	16 58 31	52.9	85.9	-3.6		-53.2	153	1546	13 31 41
13 34 40	J2018+3851	16 58 31	53.3	92.1	-3.3		-50.5	-27	1546	No stop
13 36 10	---	17 00 02	53.5	92.4	-3.3		-50.5	63	1558	13 34 41
13 36 10	TEVJ2043	17 00 02	53.2	86.2	-3.5		-53.2	-27	1558	No stop
13 39 10	---	17 03 02	53.6	86.8	-3.5		-53.3	153	1581	13 36 11

Schedule for TORUN (Code Tr) Page 8

em121b

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 23 Oct 2016 Day 297 ---										
13 40 00	J2018+3851	17 03 52	54.1	93.2	-3.3		-50.4	22	1581	13 40 00
13 41 30	---	17 05 23	54.3	93.5	-3.2		-50.4	90	1592	13 40 01
13 41 30	TEVJ2043	17 05 23	54.0	87.2	-3.5		-53.3	-27	1592	No stop
13 44 30	---	17 08 23	54.4	87.8	-3.4		-53.3	153	1615	13 41 31
13 44 30	J2018+3851	17 08 23	54.8	94.1	-3.2		-50.3	-28	1615	No stop
13 46 00	---	17 09 53	55.0	94.5	-3.2		-50.3	62	1627	13 44 31
13 46 00	TEVJ2043	17 09 53	54.6	88.1	-3.4		-53.4	-28	1627	No stop
13 49 00	---	17 12 54	55.1	88.7	-3.3		-53.4	152	1650	13 46 01
13 49 00	J2018+3851	17 12 54	55.4	95.1	-3.1		-50.2	-28	1650	No stop
13 50 30	---	17 14 24	55.7	95.5	-3.1		-50.2	62	1662	13 49 01
13 50 30	TEVJ2043	17 14 24	55.3	89.0	-3.3		-53.4	-28	1662	No stop
13 53 30	---	17 17 25	55.8	89.6	-3.3		-53.4	152	1685	13 50 31
13 54 20	J2018+3851	17 18 15	56.2	96.3	-3.0		-50.1	22	1685	13 54 20
13 55 50	---	17 19 45	56.5	96.6	-3.0		-50.0	90	1696	13 54 21
13 55 50	TEVJ2043	17 19 45	56.1	90.0	-3.2		-53.4	-28	1696	No stop
13 58 50	---	17 22 45	56.6	90.6	-3.2		-53.4	152	1719	13 55 51
13 58 50	J2018+3851	17 22 45	56.9	97.3	-2.9		-49.9	-29	1719	No stop
14 00 20	---	17 24 16	57.1	97.7	-2.9		-49.9	61	1731	13 58 51
14 00 20	TEVJ2043	17 24 16	56.8	90.9	-3.1		-53.4	-28	1731	No stop
14 03 20	---	17 27 16	57.3	91.6	-3.1		-53.4	152	1754	14 00 21
14 03 20	J2018+3851	17 27 16	57.6	98.4	-2.9		-49.8	-29	1754	No stop
14 04 50	---	17 28 46	57.8	98.7	-2.8		-49.7	61	1765	14 03 21
14 04 50	TEVJ2043	17 28 46	57.5	91.9	-3.1		-53.4	-29	1765	No stop
14 07 50	---	17 31 47	57.9	92.5	-3.0		-53.3	151	1788	14 04 51
14 08 40	J2018+3851	17 32 37	58.4	99.6	-2.8		-49.5	21	1788	14 08 40
14 10 10	---	17 34 07	58.6	100.0	-2.8		-49.5	90	1800	14 08 41
14 10 10	TEVJ2043	17 34 07	58.3	93.0	-3.0		-53.3	-29	1800	No stop
14 13 10	---	17 37 08	58.7	93.6	-2.9		-53.2	151	1823	14 10 11
14 13 10	J2018+3851	17 37 08	59.0	100.7	-2.7		-49.3	-29	1823	No stop
14 14 40	---	17 38 38	59.3	101.1	-2.7		-49.2	61	1835	14 13 11

Schedule for TORUN (Code Tr) Page 9

em121b

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 23 Oct 2016 Day 297 ---										
14 14 40	TEVJ2043	17 38 38	59.0	94.0	-2.9		-53.2	-29	1835	No stop
14 17 40	---	17 41 38	59.4	94.6	-2.8		-53.2	151	1858	14 14 41
14 17 40	J2018+3851	17 41 38	59.7	101.9	-2.6		-49.0	-30	1858	No stop
14 19 10	---	17 43 09	59.9	102.3	-2.6		-49.0	60	1869	14 17 41
14 19 10	TEVJ2043	17 43 09	59.6	94.9	-2.8		-53.1	-29	1869	No stop
14 22 10	---	17 46 09	60.1	95.6	-2.8		-53.0	151	1892	14 19 11
14 23 00	J2018+3851	17 46 59	60.5	103.2	-2.5		-48.7	20	1892	14 23 00
14 24 30	---	17 48 30	60.7	103.6	-2.5		-48.6	90	1904	14 23 01
14 24 30	TEVJ2043	17 48 30	60.4	96.2	-2.7		-53.0	-30	1904	No stop
14 27 30	---	17 51 30	60.9	96.8	-2.7		-52.9	150	1927	14 24 31
14 27 30	J2018+3851	17 51 30	61.2	104.4	-2.5		-48.4	-30	1927	No stop
14 29 30	---	17 53 30	61.4	105.0	-2.4		-48.2	90	1942	14 27 31
14 29 30	TEVJ2043	17 53 30	61.2	97.3	-2.6		-52.8	-30	1942	No stop
14 32 30	---	17 56 31	61.6	98.0	-2.6		-52.7	150	1965	14 29 31
14 32 30	J2018+3851	17 56 31	61.9	105.8	-2.4		-48.0	-31	1965	No stop
14 34 30	---	17 58 31	62.2	106.4	-2.3		-47.8	89	1981	14 32 31
14 34 30	TEVJ2043	17 58 31	61.9	98.5	-2.6		-52.6	-31	1981	No stop
14 37 30	---	18 01 32	62.4	99.2	-2.5		-52.4	149	2004	14 34 31
14 38 30	J2018+3851	18 02 32	62.7	107.5	-2.3		-47.4	29	2004	14 38 30
14 40 00	---	18 04 02	63.0	107.9	-2.3		-47.2	90	2015	14 38 31
14 40 00	TEVJ2043	18 04 02	62.7	99.9	-2.5		-52.3	-31	2015	No stop
14 43 00	---	18 07 03	63.2	100.6	-2.4		-52.1	149	2038	14 40 01
14 43 00	J2018+3851	18 07 03	63.4	108.8	-2.2		-46.9	-32	2038	No stop
14 45 00	---	18 09 03	63.7	109.4	-2.2		-46.7	88	2054	14 43 01
14 45 00	TEVJ2043	18 09 03	63.5	101.1	-2.4		-52.0	-31	2054	No stop
14 48 00	---	18 12 03	63.9	101.9	-2.3		-51.8	149	2077	14 45 01
14 48 00	J2018+3851	18 12 03	64.1	110.3	-2.1		-46.4	-32	2077	No stop
14 50 00	---	18 14 04	64.4	110.9	-2.1		-46.1	88	2092	14 48 01
14 50 00	TEVJ2043	18 14 04	64.2	102.4	-2.3		-51.6	-32	2092	No stop
14 53 00	---	18 17 04	64.7	103.3	-2.3		-51.4	148	2115	14 50 01

Schedule for TORUN (Code Tr) Page 10

em121b

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 23 Oct 2016 Day 297 ---										
14 54 00	J2018+3851	18 18 04	64.9	112.2	-2.0		-45.6	27	2115	14 54 00
14 55 30	---	18 19 35	65.1	112.7	-2.0		-45.4	90	2127	14 54 01
14 55 30	TEVJ2043	18 19 35	65.0	103.9	-2.2		-51.2	-32	2127	No stop
14 58 30	---	18 22 35	65.5	104.8	-2.2		-50.9	148	2150	14 55 31
14 58 30	J2018+3851	18 22 35	65.6	113.7	-1.9		-45.0	-33	2150	No stop
15 00 30	---	18 24 36	65.8	114.4	-1.9		-44.7	87	2165	14 58 31
15 00 30	TEVJ2043	18 24 36	65.8	105.4	-2.1		-50.7	-33	2165	No stop
15 03 30	---	18 27 36	66.2	106.2	-2.1		-50.4	147	2188	15 00 31
15 03 30	J2018+3851	18 27 36	66.2	115.4	-1.9		-44.2	-34	2188	No stop
15 05 30	---	18 29 36	66.5	116.1	-1.8		-43.9	86	2204	15 03 31
15 05 30	TEVJ2043	18 29 36	66.5	106.8	-2.0		-50.2	-33	2204	No stop
15 08 30	---	18 32 37	66.9	107.8	-2.0		-49.9	147	2227	15 05 31
15 09 30	J2018+3851	18 33 37	67.1	117.5	-1.8		-43.2	26	2227	15 09 30
15 11 00	---	18 35 07	67.3	118.1	-1.7		-42.9	90	2238	15 09 31
15 11 00	TEVJ2043	18 35 07	67.3	108.5	-2.0		-49.6	-34	2238	No stop
15 14 00	---	18 38 08	67.7	109.5	-1.9		-49.2	146	2262	15 11 01
15 14 00	J2018+3851	18 38 08	67.7	119.2	-1.7		-42.3	-35	2262	No stop
15 16 00	---	18 40 08	67.9	120.0	-1.6		-42.0	85	2277	15 14 01
15 16 00	TEVJ2043	18 40 08	68.0	110.1	-1.9		-48.9	-34	2277	No stop
15 19 00	---	18 43 09	68.4	111.1	-1.8		-48.5	146	2300	15 16 01
15 19 00	J2018+3851	18 43 09	68.3	121.1	-1.6		-41.3	-35	2300	No stop
15 21 00	---	18 45 09	68.6	121.9	-1.6		-40.9	85	2315	15 19 01
15 21 00	TEVJ2043	18 45 09	68.7	111.8	-1.8		-48.2	-35	2315	No stop
15 24 00	---	18 48 09	69.1	112.9	-1.7		-47.7	145	2338	15 21 01
15 25 00	J2018+3851	18 49 10	69.1	123.6	-1.5		-40.0	24	2338	15 25 00
15 26 30	---	18 50 40	69.3	124.2	-1.5		-39.7	90	2350	15 25 01
15 26 30	TEVJ2043	18 50 40	69.4	113.8	-1.7		-47.3	-36	2350	No stop
15 29 30	---	18 53 40	69.9	114.9	-1.6		-46.8	144	2373	15 26 31
15 29 30	J2018+3851	18 53 40	69.6	125.5	-1.4		-38.9	-37	2373	No stop
15 31 30	---	18 55 41	69.9	126.4	-1.4		-38.4	83	2388	15 29 31

```
Schedule for TORUN     (Code Tr )                                  Page  11
               em121b
  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  23 Oct 2016   Day 297 ---

15 31 30  TEVJ2043     18 55 41  70.1 115.6 -1.6     -46.4   -36     2388   No stop
15 34 30  ---          18 58 41  70.5 116.8 -1.6     -45.8   144     2412   15 31 31

15 34 30  J2018+3851   18 58 41  70.2 127.7 -1.3     -37.6   -37     2412   No stop
15 36 30  ---          19 00 41  70.5 128.7 -1.3     -37.1    83     2427   15 34 31

15 36 30  TEVJ2043     19 00 41  70.8 117.6 -1.5     -45.4   -37     2427   No stop
15 39 30  ---          19 03 42  71.2 118.8 -1.5     -44.7   143     2450   15 36 31

15 40 30  J2018+3851   19 04 42  70.9 130.6 -1.2     -35.9    22     2450   15 40 30
15 42 00  ---          19 06 12  71.1 131.3 -1.2     -35.4    90     2462   15 40 31

15 42 00  TEVJ2043     19 06 12  71.5 119.8 -1.4     -44.1   -37     2462   No stop
15 45 00  ---          19 09 13  71.9 121.1 -1.4     -43.4   143     2485   15 42 01

15 45 00  J2018+3851   19 09 13  71.4 132.8 -1.2     -34.5   -39     2485   No stop
15 47 00  ---          19 11 13  71.7 133.8 -1.1     -33.9    81     2500   15 45 01

15 47 00  TEVJ2043     19 11 13  72.2 122.0 -1.4     -42.9   -38     2500   No stop
15 50 00  ---          19 14 14  72.5 123.4 -1.3     -42.1   142     2523   15 47 01

15 50 00  J2018+3851   19 14 14  72.0 135.4 -1.1     -32.8   -40     2523   No stop
15 52 00  ---          19 16 14  72.2 136.4 -1.0     -32.1    80     2538   15 50 01

15 52 00  TEVJ2043     19 16 14  72.8 124.3 -1.3     -41.5   -39     2538   No stop
15 55 00  ---          19 19 14  73.2 125.8 -1.2     -40.6   141     2562   15 52 01

15 56 00  J2018+3851   19 20 15  72.6 138.6 -1.0     -30.7    20     2562   15 56 00
15 57 30  ---          19 21 45  72.7 139.5 -1.0     -30.1    90     2573   15 56 01

15 57 30  TEVJ2043     19 21 45  73.5 127.0 -1.2     -39.9   -39     2573   No stop
16 00 30  ---          19 24 45  73.8 128.6 -1.1     -38.9   141     2596   15 57 31

16 00 30  J2018+3851   19 24 45  73.0 141.2 -0.9     -28.9   -41     2596   No stop
16 02 30  ---          19 26 46  73.2 142.4 -0.9     -28.1    79     2612   16 00 31

16 02 30  TEVJ2043     19 26 46  74.1 129.6 -1.1     -38.2   -40     2612   No stop
16 05 30  ---          19 29 46  74.4 131.3 -1.0     -37.1   140     2635   16 02 31

16 05 30  J2018+3851   19 29 46  73.5 144.2 -0.8     -26.8   -42     2635   No stop
16 07 30  ---          19 31 47  73.7 145.4 -0.8     -26.0    78     2650   16 05 31

16 07 30  TEVJ2043     19 31 47  74.6 132.4 -1.0     -36.4   -40     2650   No stop
16 10 30  ---          19 34 47  75.0 134.1 -1.0     -35.2   140     2673   16 07 31
```

Schedule for TORUN (Code Tr) Page 12

em121b

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 23 Oct 2016 Day 297 ---										
16 11 30	J2018+3851	19 35 47	74.0	148.0	-0.7		-24.2	18	2673	16 11 30
16 13 00	---	19 37 17	74.1	149.0	-0.7		-23.5	90	2685	16 11 31
16 13 00	TEVJ2043	19 37 17	75.2	135.6	-0.9		-34.2	-41	2685	No stop
16 16 00	---	19 40 18	75.5	137.5	-0.9		-32.9	139	2708	16 13 01
16 16 00	J2018+3851	19 40 18	74.3	150.9	-0.6		-22.0	-43	2708	No stop
16 18 00	---	19 42 18	74.5	152.3	-0.6		-21.0	77	2723	16 16 01
16 18 00	TEVJ2043	19 42 18	75.7	138.8	-0.8		-32.0	-41	2723	No stop
16 21 00	---	19 45 19	76.0	140.7	-0.8		-30.5	139	2746	16 18 01
16 21 00	J2018+3851	19 45 19	74.7	154.3	-0.6		-19.5	-43	2746	No stop
16 23 00	---	19 47 19	74.8	155.8	-0.5		-18.5	77	2762	16 21 01
16 23 00	TEVJ2043	19 47 19	76.2	142.1	-0.8		-29.6	-41	2762	No stop
16 26 00	---	19 50 20	76.5	144.2	-0.7		-28.0	139	2785	16 23 01
16 27 00	J2018+3851	19 51 20	75.0	158.6	-0.5		-16.3	17	2785	16 27 00
16 28 30	---	19 52 50	75.1	159.7	-0.4		-15.5	90	2796	16 27 01
16 28 30	TEVJ2043	19 52 50	76.7	146.0	-0.7		-26.7	-42	2796	No stop
16 31 30	---	19 55 50	76.9	148.2	-0.6		-25.0	138	2819	16 28 31
16 31 30	J2018+3851	19 55 50	75.3	161.9	-0.4		-13.9	-43	2819	No stop
16 33 30	---	19 57 51	75.4	163.4	-0.4		-12.7	77	2835	16 31 31
16 33 30	TEVJ2043	19 57 51	77.1	149.7	-0.6		-23.9	-41	2835	No stop
16 36 30	---	20 00 51	77.3	152.1	-0.5		-22.1	139	2858	16 33 31
16 36 30	J2018+3851	20 00 51	75.5	165.7	-0.3		-11.0	-43	2858	No stop
16 38 30	---	20 02 52	75.5	167.2	-0.3		-9.8	77	2873	16 36 31
16 38 30	TEVJ2043	20 02 52	77.5	153.7	-0.5		-20.9	-41	2873	No stop
16 41 30	---	20 05 52	77.7	156.1	-0.4		-19.0	139	2896	16 38 31
16 42 30	J2018+3851	20 06 52	75.7	170.3	-0.2		-7.4	17	2896	16 42 30
16 44 00	---	20 08 23	75.7	171.5	-0.2		-6.5	90	2908	16 42 31
16 44 00	J1955+5131	20 08 23	87.6	232.2	0.2		49.8	-146	2908	No stop
16 48 00	=1954+513	20 12 23	87.1	240.2	0.3		57.0	94	2938	16 44 01
16 49 00	J2018+3851	20 13 23	75.8	175.4	-0.1		-3.5	-82	2938	16 49 00
16 51 30	---	20 15 54	75.8	177.4	-0.1		-2.0	68	2958	16 49 01

Schedule for TORUN (Code Tr) Page 13

em121b

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 23 Oct 2016 Day 297 ---										
16 51 30	TEVJ2043	20 15 54	78.2	164.7	-0.3		-12.2	-39	2958	No stop
16 54 30	---	20 18 54	78.3	167.4	-0.2		-10.1	141	2981	16 51 31
16 54 30	J2018+3851	20 18 54	75.8	179.8	-0.0		-0.1	-41	2981	No stop
16 56 30	---	20 20 55	75.8	181.4	0.0		1.1	79	2996	16 54 31
16 56 30	TEVJ2043	20 20 55	78.3	169.3	-0.2		-8.6	-38	2996	No stop
16 59 30	---	20 23 55	78.4	172.0	-0.1		-6.4	142	3019	16 56 31
16 59 30	J2018+3851	20 23 55	75.8	183.8	0.1		2.9	-39	3019	No stop
17 01 30	---	20 25 55	75.8	185.4	0.1		4.2	81	3035	16 59 31
17 01 30	TEVJ2043	20 25 55	78.4	173.9	-0.1		-4.9	-37	3035	No stop
17 04 30	---	20 28 56	78.5	176.7	-0.1		-2.7	143	3058	17 01 31
17 05 30	J2018+3851	20 29 56	75.7	188.5	0.2		6.6	22	3058	17 05 30
17 07 00	---	20 31 26	75.7	189.7	0.2		7.5	90	3069	17 05 31
17 07 00	TEVJ2043	20 31 26	78.5	179.0	-0.0		-0.8	-35	3069	No stop
17 10 00	---	20 34 27	78.5	181.9	0.0		1.5	145	3092	17 07 01
17 10 00	J2018+3851	20 34 27	75.6	192.0	0.3		9.3	-36	3092	No stop
17 12 00	---	20 36 27	75.5	193.6	0.3		10.4	84	3108	17 10 01
17 12 00	TEVJ2043	20 36 27	78.5	183.7	0.1		3.0	-34	3108	No stop
17 15 00	---	20 39 28	78.4	186.5	0.1		5.2	146	3131	17 12 01
17 15 00	J2018+3851	20 39 28	75.4	195.9	0.3		12.2	-34	3131	No stop
17 17 00	---	20 41 28	75.3	197.4	0.4		13.3	86	3146	17 15 01
17 17 00	TEVJ2043	20 41 28	78.4	188.4	0.2		6.7	-32	3146	No stop
17 20 00	---	20 44 28	78.3	191.2	0.2		8.9	148	3169	17 17 01
17 21 10	J2018+3851	20 45 39	75.1	200.5	0.4		15.6	37	3169	17 21 10
17 22 40	---	20 47 09	75.0	201.5	0.5		16.5	90	3181	17 21 11
17 22 40	TEVJ2043	20 47 09	78.2	193.6	0.2		10.9	-30	3181	No stop
17 25 40	---	20 50 09	78.1	196.3	0.3		13.0	150	3204	17 22 41
17 25 40	J2018+3851	20 50 09	74.9	203.7	0.5		18.1	-30	3204	No stop
17 27 40	---	20 52 10	74.7	205.1	0.6		19.1	90	3219	17 25 41
17 27 40	TEVJ2043	20 52 10	78.0	198.0	0.3		14.4	-28	3219	No stop
17 30 40	---	20 55 10	77.9	200.6	0.4		16.4	152	3242	17 27 41

```
Schedule for TORUN     (Code Tr )                                  Page  14
               em121b
  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  23 Oct 2016   Day 297 ---

17 30 40  J2018+3851   20 55 10  74.5 207.2  0.6      20.6   -29     3242   No stop
17 32 40  ---          20 57 11  74.4 208.5  0.6      21.6    91     3258   17 30 41

17 32 40  TEVJ2043     20 57 11  77.8 202.3  0.4      17.8   -27     3258   No stop
17 35 40  ---          21 00 11  77.6 204.8  0.5      19.7   153     3281   17 32 41

17 36 50  J2018+3851   21 01 21  74.1 211.3  0.7      23.6    43     3281   17 36 50
17 38 20  ---          21 02 51  74.0 212.3  0.7      24.3    90     3292   17 36 51

17 38 20  TEVJ2043     21 02 51  77.4 207.0  0.5      21.4   -27     3292   No stop
17 41 20  ---          21 05 52  77.2 209.3  0.6      23.2   153     3315   17 38 21

17 41 20  J2018+3851   21 05 52  73.7 214.2  0.8      25.7   -27     3315   No stop
17 43 20  ---          21 07 52  73.5 215.4  0.8      26.6    93     3331   17 41 21

17 43 20  TEVJ2043     21 07 52  77.0 210.9  0.6      24.3   -27     3331   No stop
17 46 20  ---          21 10 53  76.8 213.1  0.6      26.0   153     3354   17 43 21

17 46 20  J2018+3851   21 10 53  73.3 217.2  0.9      27.8   -27     3354   No stop
17 48 20  ---          21 12 53  73.1 218.4  0.9      28.7    93     3369   17 46 21

17 48 20  TEVJ2043     21 12 53  76.6 214.6  0.7      27.1   -27     3369   No stop
17 51 20  ---          21 15 54  76.4 216.7  0.7      28.7   153     3392   17 48 21

17 52 30  J2018+3851   21 17 04  72.7 220.8  1.0      30.3    43     3392   17 52 30
17 54 00  ---          21 18 34  72.5 221.7  1.0      30.9    90     3404   17 52 31

17 54 00  TEVJ2043     21 18 34  76.1 218.6  0.8      30.0   -27     3404   No stop
17 57 00  ---          21 21 35  75.8 220.6  0.8      31.5   153     3427   17 54 01

17 57 00  J2018+3851   21 21 35  72.2 223.3  1.0      32.0   -28     3427   No stop
18 00 00  ---          21 24 35  71.9 224.9  1.1      33.0   152     3450   17 57 01


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


 ======== Setup file: sess316.C1024

   Setup group:   14         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 64.000
   Number of channels:  8    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
 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         3         7         3         7
 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:   6  Setup file default.  Used with PCAL = off
 LO sum=   4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
 BBC fr=    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
 Bandwd=     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00
  Matching frequency sets:   6

 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)

* TEVJ2043          20 30 04.623758   * 20 31 51.780000     20 32 27.933979       0.00
                    41 21 04.95852    * 41 31 18.30000      41 35 08.86835        0.00

* J2018+3851        20 16 41.516228   * 20 18 31.024225     20 19 07.809104       0.00
                    38 41 53.25540    * 38 51 19.38319      38 54 54.15119        0.00

  1954+513          19 54 22.470020   * 19 55 42.738250     19 56 09.635807       0.02
* J1955+5131        51 23 46.42518    * 51 31 48.54619      51 34 57.30772        0.01
```

ep099atr

Snapshot observations of high Rotation Measure (RM) sources - 3 sou

PI: *A. Pasetto*

```
Observing mode: Snapshot observations of sources at 6cm (256 Mb/s)
Schedule for TORUN     (Code Tr )                                   Page   2
               Snapshot observations of high Rotation Measure (RM) sources - 3 sources
  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  24 Oct 2016   Day 298 ---
 Next scan frequencies:  4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
 Next BBC frequencies:    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
 Next scan bandwidths:     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00

01 00 00  0243-05      04 25 44  27.3 208.7  1.7      16.9     0        0   01 00 00
01 05 00  ---          04 30 45  27.0 210.1  1.8      17.6   300       38   01 00 01

01 05 15  0243-05      04 31 00  26.9 210.1  1.8      17.6     9       38   01 05 15
01 10 10  ---          04 35 56  26.6 211.4  1.9      18.4   295       76   01 05 16

01 10 32  0243-05      04 36 18  26.5 211.5  1.9      18.4    16       76   01 10 32
01 20 20  ---          04 46 07  25.7 214.1  2.0      19.8   588      152   01 10 33

01 23 20  3C84         04 49 08  71.3 240.9  1.5      44.6    -5      152   01 23 20
01 24 20  ---          04 50 08  71.1 241.4  1.5      44.8    55      159   01 23 21

01 24 42  3C84         04 50 30  71.1 241.5  1.5      44.9    16      159   01 24 42
01 26 00  ---          04 51 48  70.9 242.0  1.5      45.1    78      169   01 24 43

01 28 30  0958+32      04 54 19  33.2  78.9 -5.1     -44.2  -190      169   01 28 30
01 38 30  ---          05 04 20  34.7  80.8 -4.9     -44.5   410      246   01 28 31

01 41 00  0243-05      05 06 51  23.9 219.4  2.4      22.5  -143      246   01 41 00
01 51 00  ---          05 16 52  22.9 221.9  2.5      23.8   457      323   01 41 01

01 55 00  0243-05      05 20 53  22.5 222.9  2.6      24.3   233      323   01 55 00
02 05 00  ---          05 30 55  21.4 225.3  2.8      25.4   600      400   01 55 01

02 08 00  3C84         05 33 55  65.0 256.0  2.2      51.2     3      400   02 08 00
02 09 00  ---          05 34 55  64.9 256.3  2.2      51.2    60      408   02 08 01

02 09 15  3C84         05 35 10  64.8 256.4  2.2      51.3     9      408   02 09 15
02 10 40  ---          05 36 36  64.6 256.8  2.3      51.4    85      419   02 09 16

02 13 10  0958+32      05 39 06  39.9  87.3 -4.3     -45.2  -203      419   02 13 10
02 23 10  ---          05 49 08  41.4  89.3 -4.2     -45.3   397      496   02 13 11

02 25 40  0243-05      05 51 38  19.1 230.3  3.1      27.6  -148      496   02 25 40
02 35 40  ---          06 01 40  18.0 232.6  3.3      28.6   452      573   02 25 41

02 38 10  0243-05      06 04 10  17.7 233.1  3.3      28.9   144      573   02 38 10
02 43 10  ---          06 09 11  17.0 234.3  3.4      29.3   300      611   02 38 11

02 50 00  J0948+4039   06 16 02  52.3  87.3 -3.6     -52.2   100      611   02 50 00
02 51 00  =0945+408    06 17 02  52.5  87.5 -3.5     -52.2    60      619   02 50 01
```

Schedule for TORUN (Code Tr) Page 3

Snapshot observations of high Rotation Measure (RM) sources - 3 sources

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
--- Mon 24 Oct 2016 Day 298 ---										
02 51 15	J0948+4039	06 17 17	52.5	87.5	-3.5		-52.2	9	619	02 51 15
02 52 15	=0945+408	06 18 17	52.7	87.7	-3.5		-52.2	60	626	02 51 16
02 54 40	0958+32	06 20 43	46.1	95.8	-3.6		-45.0	106	626	02 54 40
03 04 40	---	06 30 44	47.6	98.0	-3.5		-44.7	600	703	02 54 41
03 07 10	0958+32	06 33 15	48.0	98.6	-3.4		-44.6	143	703	03 07 10
03 17 10	---	06 43 17	49.5	100.8	-3.3		-44.3	600	780	03 07 11
03 19 40	1146+53	06 45 47	47.3	57.3	-5.0		-59.0	48	780	03 19 40
03 29 40	---	06 55 49	48.6	58.4	-4.9		-60.1	600	857	03 19 41
03 32 10	0958+32	06 58 19	51.7	104.5	-3.0		-43.5	43	857	03 32 10
03 42 10	---	07 08 21	53.1	107.0	-2.8		-42.8	600	934	03 32 11
03 48 30	J0948+4039	07 14 42	61.1	99.8	-2.6		-51.2	339	934	03 48 30
03 49 30	=0945+408	07 15 42	61.3	100.1	-2.6		-51.1	60	942	03 48 31
03 49 45	J0948+4039	07 15 57	61.3	100.2	-2.6		-51.1	9	942	03 49 45
03 50 45	=0945+408	07 16 57	61.4	100.4	-2.5		-51.0	60	949	03 49 46
03 53 10	1146+53	07 19 22	51.6	61.0	-4.5		-62.9	51	949	03 53 10
04 03 10	---	07 29 24	52.9	62.1	-4.3		-64.1	600	1026	03 53 11
04 05 40	0958+32	07 31 55	56.5	113.4	-2.5		-40.7	33	1026	04 05 40
04 15 40	---	07 41 56	57.8	116.4	-2.3		-39.5	600	1103	04 05 41
04 18 10	1146+53	07 44 27	54.9	63.7	-4.1		-65.8	29	1103	04 18 10
04 28 10	---	07 54 28	56.3	64.7	-3.9		-67.0	600	1180	04 18 11
04 30 40	1146+53	07 56 59	56.6	65.0	-3.8		-67.3	144	1180	04 30 40
04 40 40	---	08 07 00	58.0	66.0	-3.7		-68.5	600	1257	04 30 41
04 47 00	J0948+4039	08 13 21	69.4	117.8	-1.6		-44.4	265	1257	04 47 00
04 48 00	=0945+408	08 14 21	69.6	118.2	-1.6		-44.2	60	1265	04 47 01
04 48 15	J0948+4039	08 14 37	69.6	118.3	-1.6		-44.1	9	1265	04 48 15
04 49 15	=0945+408	08 15 37	69.7	118.6	-1.6		-43.9	60	1273	04 48 16
04 55 05	3C138	08 21 28	39.6	241.2	3.0		33.3	91	1273	04 55 05
04 56 05	---	08 22 28	39.4	241.5	3.0		33.4	60	1280	04 55 06
04 56 20	3C138	08 22 43	39.4	241.5	3.0		33.4	9	1280	04 56 20
04 57 20	---	08 23 43	39.3	241.8	3.0		33.5	60	1288	04 56 21

```
Schedule for TORUN     (Code Tr )                                  Page   4
               Snapshot observations of high Rotation Measure (RM) sources - 3 sources
  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  24 Oct 2016   Day 298 ---

04 59 50  1146+53      08 26 13  60.7  68.0 -3.4     -70.7  -212     1288   04 59 50
05 09 50  ---          08 36 15  62.1  69.0 -3.2     -71.8   388     1365   04 59 51

05 12 20  1146+53      08 38 45  62.4  69.2 -3.1     -72.1   144     1365   05 12 20
05 22 20  ---          08 48 47  63.8  70.2 -3.0     -73.3   600     1442   05 12 21

05 27 15  3C286        08 53 43  35.9  85.5 -4.6     -44.0   175     1442   05 27 15
05 28 15  ---          08 54 43  36.0  85.7 -4.6     -44.0    60     1449   05 27 16

05 28 30  3C286        08 54 58  36.1  85.8 -4.6     -44.0     9     1449   05 28 30
05 30 00  ---          08 56 28  36.3  86.1 -4.6     -44.0    90     1461   05 28 31


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


 ======== Setup file: evn_pol.6cm

   Setup group:   14         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 64.000
   Number of channels:  8    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
  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         3         7         3         7
  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:   7  Setup file default.  Used with PCAL = off
  LO sum=   4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
  BBC fr=    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
  Bandwd=     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00
   Matching frequency sets:   7

  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)

* 0243-05           02 40 43.234532   * 02 43 12.464000     02 44 03.482992       0.00
                    -06 03 37.54967    *-05 50 55.36000     -05 46 41.26732       0.00

* 0958+32           09 55 25.395126   * 09 58 20.939000     09 59 18.342019       0.00
                     32 38 22.98256    * 32 24 02.16000      32 19 05.97547        0.00

* 1146+53           11 44 04.561185   * 11 46 44.186000     11 47 34.633902       0.00
                     54 13 23.17562    * 53 56 43.36000      53 51 03.96860        0.00

* 3C84              03 16 29.567263   * 03 19 48.160094     03 20 56.533618       1.30
  J0319+4130        41 19 51.91701    * 41 30 42.10413      41 34 11.58874        2.69

* 3C138             05 18 16.514083   * 05 21 09.885965     05 22 08.667978       0.05
  J0521+1638        16 35 26.83418    * 16 38 22.05165      16 39 11.99639        0.06

  0945+408          09 45 50.078215   * 09 48 55.338148     09 49 55.817427       0.02
* J0948+4039        40 53 43.38100    * 40 39 44.58699      40 34 52.42174        0.02

* 3C286             13 28 49.657758   * 13 31 08.288051     13 31 52.673507       0.18
  J1331+3030        30 45 58.64059    * 30 30 32.95924      30 25 32.57202        0.17
```

em126atr

EM126A - EVN C-band obs of M22-VLA1 and M22-VLA2

PI: *James Miller-Jones Address: Curtin University*

```
Observing mode: 6cm wideband observations at 2048Mbps
Schedule for TORUN     (Code Tr )                                    Page   2
               EM126A - EVN C-band obs of M22-VLA1 and M22-VLA2
  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  24 Oct 2016   Day 298 ---
 Next scan frequencies:  4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
 Next BBC frequencies:    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
 Next scan bandwidths:     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00

13 15 00  J1642+3948   16 42 45  76.7 179.4 -0.0      -0.5     0        0   13 15 00
13 18 00  =3C345       16 45 45  76.7 181.9  0.0       1.5   180       23   13 15 01

13 18 30  J1834-2341   16 46 15   9.6 154.7 -1.8     -16.3  -234       23   13 18 30
13 23 30  ---          16 51 16   9.9 155.8 -1.7     -15.6    66       62   13 18 31

13 23 30  M22          16 51 16   9.6 155.5 -1.8     -15.8   -11       62   No stop
13 25 40  ---          16 53 27   9.8 156.0 -1.7     -15.5   119       78   13 23 31

13 25 40  J1834-2341   16 53 27  10.1 156.3 -1.7     -15.3   -11       78   No stop
13 27 00  ---          16 54 47  10.2 156.6 -1.7     -15.1    69       88   13 25 41

13 27 00  M22          16 54 47   9.8 156.3 -1.7     -15.3   -11       88   No stop
13 29 10  ---          16 56 57  10.0 156.8 -1.7     -15.0   119      105   13 27 01

13 29 40  J1834-2341   16 57 27  10.3 157.2 -1.6     -14.7    19      105   13 29 40
13 30 30  ---          16 58 17  10.4 157.4 -1.6     -14.6    50      112   13 29 41

13 30 30  M22          16 58 17  10.1 157.1 -1.7     -14.8   -11      112   No stop
13 32 40  ---          17 00 28  10.2 157.6 -1.6     -14.5   119      128   13 30 31

13 32 40  J1834-2341   17 00 28  10.5 157.9 -1.6     -14.3   -11      128   No stop
13 34 00  ---          17 01 48  10.6 158.2 -1.6     -14.1    69      138   13 32 41

13 34 00  M22          17 01 48  10.3 157.9 -1.6     -14.3   -11      138   No stop
13 36 10  ---          17 03 58  10.4 158.4 -1.6     -14.0   119      155   13 34 01

13 36 10  J1834-2341   17 03 58  10.7 158.7 -1.5     -13.8   -11      155   No stop
13 37 30  ---          17 05 18  10.7 159.0 -1.5     -13.6    69      165   13 36 11

13 37 30  M22          17 05 18  10.5 158.7 -1.5     -13.8   -11      165   No stop
13 39 40  ---          17 07 29  10.6 159.2 -1.5     -13.5   119      182   13 37 31

13 40 10  J1834-2341   17 07 59  10.9 159.6 -1.5     -13.2    19      182   13 40 10
13 41 00  ---          17 08 49  10.9 159.8 -1.4     -13.1    50      188   13 40 11

13 41 00  M22          17 08 49  10.6 159.5 -1.5     -13.3   -11      188   No stop
13 43 10  ---          17 10 59  10.8 160.0 -1.4     -13.0   119      205   13 41 01

13 43 10  J1834-2341   17 10 59  11.0 160.3 -1.4     -12.8   -11      205   No stop
13 44 30  ---          17 12 20  11.1 160.6 -1.4     -12.6    69      215   13 43 11
```

Schedule for TORUN (Code Tr) Page 3

EM126A - EVN C-band obs of M22-VLA1 and M22-VLA2

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 24 Oct 2016 Day 298 ---										
13 44 30	M22	17 12 20	10.8	160.3	-1.4		-12.8	-11	215	No stop
13 46 40	---	17 14 30	10.9	160.8	-1.4		-12.5	119	232	13 44 31
13 46 40	J1834-2341	17 14 30	11.2	161.1	-1.4		-12.3	-11	232	No stop
13 48 00	---	17 15 50	11.3	161.4	-1.3		-12.1	69	242	13 46 41
13 48 00	M22	17 15 50	11.0	161.1	-1.4		-12.3	-11	242	No stop
13 50 10	---	17 18 01	11.1	161.6	-1.3		-12.0	119	259	13 48 01
13 50 40	J1834-2341	17 18 31	11.4	162.0	-1.3		-11.7	19	259	13 50 40
13 51 30	---	17 19 21	11.4	162.2	-1.3		-11.6	50	265	13 50 41
13 51 30	M22	17 19 21	11.2	161.9	-1.3		-11.8	-11	265	No stop
13 53 40	---	17 21 31	11.3	162.4	-1.3		-11.5	119	282	13 51 31
13 53 40	J1834-2341	17 21 31	11.5	162.7	-1.2		-11.2	-11	282	No stop
13 55 00	---	17 22 51	11.6	163.0	-1.2		-11.0	69	292	13 53 41
13 55 00	M22	17 22 51	11.3	162.7	-1.2		-11.3	-11	292	No stop
13 57 10	---	17 25 02	11.4	163.2	-1.2		-11.0	119	309	13 55 01
13 57 10	J1834-2341	17 25 02	11.7	163.5	-1.2		-10.7	-11	309	No stop
13 58 30	---	17 26 22	11.8	163.8	-1.2		-10.5	69	319	13 57 11
13 58 30	M22	17 26 22	11.5	163.5	-1.2		-10.8	-11	319	No stop
14 00 40	---	17 28 32	11.6	164.0	-1.1		-10.5	119	336	13 58 31
14 01 10	J1834-2341	17 29 02	11.9	164.4	-1.1		-10.1	19	336	14 01 10
14 02 00	---	17 29 52	11.9	164.6	-1.1		-10.0	50	342	14 01 11
14 02 00	M22	17 29 52	11.6	164.3	-1.1		-10.3	-11	342	No stop
14 04 10	---	17 32 03	11.7	164.8	-1.1		-9.9	119	359	14 02 01
14 04 10	J1834-2341	17 32 03	12.0	165.1	-1.1		-9.7	-11	359	No stop
14 05 30	---	17 33 23	12.0	165.4	-1.0		-9.5	69	369	14 04 11
14 05 30	M22	17 33 23	11.8	165.1	-1.1		-9.7	-11	369	No stop
14 07 40	---	17 35 33	11.8	165.6	-1.0		-9.4	119	386	14 05 31
14 07 40	J1834-2341	17 35 33	12.1	165.9	-1.0		-9.2	-11	386	No stop
14 09 00	---	17 36 54	12.2	166.2	-1.0		-9.0	69	396	14 07 41
14 09 00	M22	17 36 54	11.9	165.9	-1.0		-9.2	-11	396	No stop
14 11 10	---	17 39 04	12.0	166.4	-1.0		-8.9	119	413	14 09 01

Schedule for TORUN (Code Tr) Page 4

EM126A - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Mon 24 Oct 2016 Day 298 ---										
14 11 40	J1834-2341	17 39 34	12.3	166.9	-0.9		-8.6	19	413	14 11 40
14 12 30	---	17 40 24	12.3	167.1	-0.9		-8.4	50	419	14 11 41
14 12 30	M22	17 40 24	12.0	166.7	-1.0		-8.7	-11	419	No stop
14 14 40	---	17 42 35	12.1	167.2	-0.9		-8.4	119	436	14 12 31
14 14 40	J1834-2341	17 42 35	12.4	167.6	-0.9		-8.1	-11	436	No stop
14 16 00	---	17 43 55	12.4	167.9	-0.9		-7.9	69	446	14 14 41
14 16 00	M22	17 43 55	12.1	167.5	-0.9		-8.2	-11	446	No stop
14 18 10	---	17 46 05	12.2	168.0	-0.9		-7.8	119	463	14 16 01
14 18 10	J1834-2341	17 46 05	12.5	168.4	-0.8		-7.6	-11	463	No stop
14 19 30	---	17 47 25	12.5	168.7	-0.8		-7.4	69	473	14 18 11
14 19 30	M22	17 47 25	12.3	168.3	-0.8		-7.6	-11	473	No stop
14 21 40	---	17 49 36	12.3	168.8	-0.8		-7.3	119	490	14 19 31
14 22 10	J1834-2341	17 50 06	12.6	169.3	-0.8		-7.0	19	490	14 22 10
14 23 00	---	17 50 56	12.6	169.5	-0.7		-6.9	50	496	14 22 11
14 23 00	M22	17 50 56	12.4	169.1	-0.8		-7.1	-11	496	No stop
14 25 10	---	17 53 06	12.4	169.6	-0.7		-6.8	119	513	14 23 01
14 25 10	J1834-2341	17 53 06	12.7	170.0	-0.7		-6.5	-11	513	No stop
14 26 30	---	17 54 27	12.7	170.3	-0.7		-6.3	69	523	14 25 11
14 26 30	M22	17 54 27	12.4	169.9	-0.7		-6.6	-11	523	No stop
14 28 40	---	17 56 37	12.5	170.5	-0.7		-6.3	119	540	14 26 31
14 28 40	J1834-2341	17 56 37	12.8	170.8	-0.7		-6.0	-11	540	No stop
14 30 00	---	17 57 57	12.8	171.1	-0.6		-5.8	69	550	14 28 41
14 30 00	M22	17 57 57	12.5	170.8	-0.7		-6.1	-11	550	No stop
14 32 10	---	18 00 07	12.6	171.3	-0.6		-5.7	119	567	14 30 01
14 32 40	J1834-2341	18 00 38	12.8	171.8	-0.6		-5.4	19	567	14 32 40
14 33 30	---	18 01 28	12.9	172.0	-0.6		-5.3	50	573	14 32 41
14 33 30	M22	18 01 28	12.6	171.6	-0.6		-5.5	-11	573	No stop
14 35 40	---	18 03 38	12.7	172.1	-0.6		-5.2	119	590	14 33 31
14 35 40	J1834-2341	18 03 38	12.9	172.5	-0.5		-4.9	-11	590	No stop
14 37 00	---	18 04 58	12.9	172.8	-0.5		-4.7	69	600	14 35 41

Schedule for TORUN (Code Tr) Page 5

EM126A - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Mon 24 Oct 2016 Day 298 ---										
14 37 00	M22	18 04 58	12.7	172.4	-0.5		-5.0	-11	600	No stop
14 39 10	---	18 07 09	12.7	172.9	-0.5		-4.7	119	617	14 37 01
14 39 10	J1834-2341	18 07 09	13.0	173.3	-0.5		-4.4	-11	617	No stop
14 40 30	---	18 08 29	13.0	173.6	-0.5		-4.2	69	627	14 39 11
14 40 30	M22	18 08 29	12.8	173.2	-0.5		-4.4	-11	627	No stop
14 42 40	---	18 10 39	12.8	173.7	-0.4		-4.1	119	644	14 40 31
14 43 10	J1834-2341	18 11 09	13.0	174.2	-0.4		-3.8	19	644	14 43 10
14 44 00	---	18 11 59	13.0	174.4	-0.4		-3.7	50	650	14 43 11
14 44 00	M22	18 11 59	12.8	174.0	-0.4		-3.9	-11	650	No stop
14 46 10	---	18 14 10	12.8	174.5	-0.4		-3.6	119	667	14 44 01
14 46 10	J1834-2341	18 14 10	13.1	174.9	-0.4		-3.3	-11	667	No stop
14 47 30	---	18 15 30	13.1	175.3	-0.3		-3.1	69	677	14 46 11
14 47 30	M22	18 15 30	12.9	174.9	-0.4		-3.4	-10	677	No stop
14 49 40	---	18 17 40	12.9	175.4	-0.3		-3.0	120	694	14 47 31
14 49 40	J1834-2341	18 17 40	13.1	175.8	-0.3		-2.8	-11	694	No stop
14 51 00	---	18 19 01	13.1	176.1	-0.3		-2.6	69	704	14 49 41
14 51 00	M22	18 19 01	12.9	175.7	-0.3		-2.8	-10	704	No stop
14 53 10	---	18 21 11	12.9	176.2	-0.3		-2.5	120	721	14 51 01
14 53 40	J1834-2341	18 21 41	13.2	176.7	-0.2		-2.2	19	721	14 53 40
14 54 30	---	18 22 31	13.2	176.9	-0.2		-2.0	50	727	14 53 41
14 54 30	M22	18 22 31	12.9	176.5	-0.2		-2.3	-10	727	No stop
14 56 40	---	18 24 41	13.0	177.0	-0.2		-2.0	120	744	14 54 31
14 56 40	J1834-2341	18 24 41	13.2	177.4	-0.2		-1.7	-11	744	No stop
14 58 00	---	18 26 02	13.2	177.7	-0.2		-1.5	69	754	14 56 41
14 58 00	M22	18 26 02	13.0	177.3	-0.2		-1.8	-10	754	No stop
15 00 10	---	18 28 12	13.0	177.8	-0.2		-1.4	120	771	14 58 01
15 00 10	J1834-2341	18 28 12	13.2	178.2	-0.1		-1.2	-11	771	No stop
15 01 30	---	18 29 32	13.2	178.5	-0.1		-1.0	69	781	15 00 11
15 01 30	M22	18 29 32	13.0	178.2	-0.1		-1.2	-10	781	No stop
15 03 40	---	18 31 43	13.0	178.7	-0.1		-0.9	120	797	15 01 31

Schedule for TORUN (Code Tr) Page 6

EM126A - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Mon 24 Oct 2016 Day 298 ---										
15 04 10	J1834-2341	18 32 13	13.2	179.2	-0.1		-0.5	19	797	15 04 10
15 05 00	---	18 33 03	13.2	179.4	-0.0		-0.4	50	804	15 04 11
15 05 00	M22	18 33 03	13.0	179.0	-0.1		-0.7	-10	804	No stop
15 07 10	---	18 35 13	13.0	179.5	-0.0		-0.3	120	821	15 05 01
15 07 10	J1834-2341	18 35 13	13.2	179.9	-0.0		-0.1	-11	821	No stop
15 08 30	---	18 36 33	13.2	180.2	0.0		0.1	69	831	15 07 11
15 08 30	M22	18 36 33	13.0	179.8	-0.0		-0.1	-11	831	No stop
15 10 40	---	18 38 44	13.0	180.3	0.0		0.2	119	847	15 08 31
15 10 40	J1834-2341	18 38 44	13.2	180.7	0.1		0.5	-11	847	No stop
15 12 00	---	18 40 04	13.2	181.0	0.1		0.7	69	858	15 10 41
15 12 00	M22	18 40 04	13.0	180.6	0.0		0.4	-11	858	No stop
15 14 10	---	18 42 14	13.0	181.1	0.1		0.7	119	874	15 12 01
15 14 40	J1834-2341	18 42 44	13.2	181.7	0.1		1.1	19	874	15 14 40
15 15 30	---	18 43 35	13.2	181.8	0.1		1.2	50	881	15 14 41
15 15 30	M22	18 43 35	13.0	181.4	0.1		0.9	-11	881	No stop
15 17 40	---	18 45 45	13.0	182.0	0.1		1.3	119	897	15 15 31
15 17 40	J1834-2341	18 45 45	13.2	182.4	0.2		1.5	-11	897	No stop
15 19 00	---	18 47 05	13.2	182.7	0.2		1.8	69	908	15 17 41
15 19 00	M22	18 47 05	13.0	182.3	0.2		1.5	-11	908	No stop
15 21 10	---	18 49 15	13.0	182.8	0.2		1.8	119	924	15 19 01
15 21 10	J1834-2341	18 49 15	13.2	183.2	0.2		2.1	-11	924	No stop
15 22 30	---	18 50 36	13.2	183.5	0.2		2.3	69	935	15 21 11
15 22 30	M22	18 50 36	13.0	183.1	0.2		2.0	-11	935	No stop
15 24 40	---	18 52 46	12.9	183.6	0.3		2.4	119	951	15 22 31
15 25 10	J1834-2341	18 53 16	13.1	184.1	0.3		2.7	19	951	15 25 10
15 26 00	---	18 54 06	13.1	184.3	0.3		2.8	50	958	15 25 11
15 26 00	M22	18 54 06	12.9	183.9	0.3		2.6	-11	958	No stop
15 28 10	---	18 56 17	12.9	184.4	0.3		2.9	119	974	15 26 01
15 28 10	J1834-2341	18 56 17	13.1	184.8	0.3		3.2	-11	974	No stop
15 29 30	---	18 57 37	13.1	185.1	0.4		3.4	69	985	15 28 11

```
Schedule for TORUN     (Code Tr )                                  Page   7
               EM126A - EVN C-band obs of M22-VLA1 and M22-VLA2
  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  24 Oct 2016   Day 298 ---

15 29 30  M22          18 57 37  12.9 184.7  0.3       3.1   -11      985   No stop
15 31 40  ---          18 59 47  12.9 185.2  0.4       3.4   119     1001   15 29 31

15 31 40  J1834-2341   18 59 47  13.0 185.7  0.4       3.7   -11     1001   No stop
15 33 00  ---          19 01 07  13.0 186.0  0.4       3.9    69     1012   15 31 41

15 33 00  M22          19 01 07  12.8 185.6  0.4       3.6   -11     1012   No stop
15 35 10  ---          19 03 18  12.8 186.1  0.4       4.0   119     1028   15 33 01

15 35 40  J1834-2341   19 03 48  13.0 186.6  0.5       4.3    19     1028   15 35 40
15 36 30  ---          19 04 38  13.0 186.8  0.5       4.4    50     1035   15 35 41

15 36 30  M22          19 04 38  12.8 186.4  0.5       4.2   -11     1035   No stop
15 38 40  ---          19 06 48  12.8 186.9  0.5       4.5   119     1051   15 36 31

15 38 40  J1834-2341   19 06 48  12.9 187.3  0.5       4.8   -11     1051   No stop
15 40 00  ---          19 08 09  12.9 187.6  0.5       5.0    69     1062   15 38 41

15 40 00  M22          19 08 09  12.7 187.2  0.5       4.7   -11     1062   No stop
15 42 10  ---          19 10 19  12.7 187.7  0.5       5.1   119     1078   15 40 01

15 42 40  J1834-2341   19 10 49  12.8 188.2  0.6       5.4    19     1078   15 42 40
15 43 30  ---          19 11 39  12.8 188.4  0.6       5.5    50     1085   15 42 41

15 44 00  J1924-2914   19 12 09   7.6 177.0 -0.2      -2.1    -8     1085   15 44 00
15 47 00  =1921-293    19 15 10   7.7 177.6 -0.2      -1.6   172     1108   15 44 01

15 47 30  J1834-2341   19 15 40  12.7 189.4  0.7       6.1    -8     1108   15 47 30
15 49 00  ---          19 17 10  12.7 189.7  0.7       6.4    82     1119   15 47 31

15 49 00  M22          19 17 10  12.5 189.3  0.7       6.1   -11     1119   No stop
15 51 10  ---          19 19 20  12.5 189.8  0.7       6.4   119     1136   15 49 01

15 51 10  J1834-2341   19 19 20  12.6 190.2  0.7       6.7   -11     1136   No stop
15 52 30  ---          19 20 41  12.6 190.5  0.7       6.9    69     1146   15 51 11

15 52 30  M22          19 20 41  12.4 190.1  0.7       6.6   -11     1146   No stop
15 54 40  ---          19 22 51  12.4 190.6  0.8       7.0   119     1163   15 52 31

15 55 10  J1834-2341   19 23 21  12.5 191.2  0.8       7.3    19     1163   15 55 10
15 56 00  ---          19 24 11  12.5 191.4  0.8       7.4    50     1169   15 55 11

15 56 00  M22          19 24 11  12.3 190.9  0.8       7.2   -11     1169   No stop
15 58 10  ---          19 26 22  12.3 191.4  0.8       7.5   119     1186   15 56 01
```

Schedule for TORUN (Code Tr) Page 8

EM126A - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Mon 24 Oct 2016 Day 298 ---										
15 58 10	J1834-2341	19 26 22	12.4	191.9	0.8		7.7	-11	1186	No stop
15 59 30	---	19 27 42	12.4	192.2	0.9		7.9	69	1196	15 58 11
15 59 30	M22	19 27 42	12.2	191.7	0.8		7.7	-11	1196	No stop
16 01 40	---	19 29 52	12.2	192.3	0.9		8.0	119	1213	15 59 31
16 01 40	J1834-2341	19 29 52	12.3	192.7	0.9		8.3	-11	1213	No stop
16 03 00	---	19 31 12	12.3	193.0	0.9		8.5	69	1223	16 01 41
16 03 00	M22	19 31 12	12.1	192.6	0.9		8.2	-11	1223	No stop
16 05 10	---	19 33 23	12.1	193.1	0.9		8.5	119	1240	16 03 01
16 05 40	J1834-2341	19 33 53	12.2	193.6	1.0		8.9	19	1240	16 05 40
16 06 30	---	19 34 43	12.2	193.8	1.0		9.0	50	1246	16 05 41
16 06 30	M22	19 34 43	12.0	193.4	1.0		8.7	-11	1246	No stop
16 08 40	---	19 36 53	11.9	193.9	1.0		9.1	119	1263	16 06 31
16 08 40	J1834-2341	19 36 53	12.1	194.3	1.0		9.3	-11	1263	No stop
16 10 00	---	19 38 14	12.0	194.6	1.0		9.5	69	1273	16 08 41
16 10 00	M22	19 38 14	11.9	194.2	1.0		9.3	-11	1273	No stop
16 12 10	---	19 40 24	11.8	194.7	1.0		9.6	119	1290	16 10 01
16 12 10	J1834-2341	19 40 24	11.9	195.1	1.1		9.8	-11	1290	No stop
16 13 30	---	19 41 44	11.9	195.4	1.1		10.0	69	1300	16 12 11
16 13 30	M22	19 41 44	11.8	195.0	1.1		9.8	-11	1300	No stop
16 15 40	---	19 43 54	11.7	195.5	1.1		10.1	119	1317	16 13 31
16 16 10	J1834-2341	19 44 25	11.8	196.0	1.1		10.4	19	1317	16 16 10
16 17 00	---	19 45 15	11.7	196.2	1.2		10.6	50	1323	16 16 11
16 17 00	M22	19 45 15	11.6	195.8	1.1		10.3	-11	1323	No stop
16 19 10	---	19 47 25	11.5	196.3	1.2		10.6	119	1340	16 17 01
16 19 10	J1834-2341	19 47 25	11.7	196.7	1.2		10.9	-11	1340	No stop
16 20 30	---	19 48 45	11.6	197.0	1.2		11.1	69	1350	16 19 11
16 20 30	M22	19 48 45	11.5	196.6	1.2		10.8	-11	1350	No stop
16 22 40	---	19 50 56	11.4	197.1	1.2		11.1	119	1367	16 20 31
16 22 40	J1834-2341	19 50 56	11.5	197.5	1.3		11.4	-11	1367	No stop
16 24 00	---	19 52 16	11.4	197.8	1.3		11.6	69	1377	16 22 41

Schedule for TORUN (Code Tr) Page 9

EM126A - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Mon 24 Oct 2016 Day 298 ---										
16 24 00	M22	19 52 16	11.3	197.4	1.2		11.3	-11	1377	No stop
16 26 10	---	19 54 26	11.2	197.9	1.3		11.6	119	1394	16 24 01
16 26 40	J1834-2341	19 54 56	11.3	198.4	1.3		12.0	19	1394	16 26 40
16 27 30	---	19 55 46	11.3	198.6	1.3		12.1	50	1400	16 26 41
16 27 30	M22	19 55 46	11.2	198.2	1.3		11.8	-11	1400	No stop
16 29 40	---	19 57 57	11.0	198.7	1.3		12.2	119	1417	16 27 31
16 29 40	J1834-2341	19 57 57	11.2	199.1	1.4		12.4	-11	1417	No stop
16 31 00	---	19 59 17	11.1	199.4	1.4		12.6	69	1427	16 29 41
16 31 00	M22	19 59 17	11.0	199.0	1.4		12.3	-11	1427	No stop
16 33 10	---	20 01 27	10.9	199.5	1.4		12.7	119	1444	16 31 01
16 33 10	J1834-2341	20 01 27	11.0	199.9	1.4		12.9	-11	1444	No stop
16 34 30	---	20 02 48	10.9	200.2	1.5		13.1	69	1454	16 33 11
16 34 30	M22	20 02 48	10.8	199.8	1.4		12.9	-11	1454	No stop
16 36 40	---	20 04 58	10.7	200.3	1.5		13.2	119	1471	16 34 31
16 37 10	J1834-2341	20 05 28	10.8	200.8	1.5		13.5	19	1471	16 37 10
16 38 00	---	20 06 18	10.7	201.0	1.5		13.6	50	1477	16 37 11
16 38 00	M22	20 06 18	10.6	200.6	1.5		13.4	-11	1477	No stop
16 40 10	---	20 08 28	10.5	201.1	1.5		13.7	119	1494	16 38 01
16 40 10	J1834-2341	20 08 28	10.6	201.5	1.5		13.9	-11	1494	No stop
16 41 30	---	20 09 49	10.5	201.8	1.6		14.1	69	1504	16 40 11
16 41 30	M22	20 09 49	10.4	201.4	1.5		13.9	-11	1504	No stop
16 43 40	---	20 11 59	10.3	201.9	1.6		14.2	119	1521	16 41 31
16 43 40	J1834-2341	20 11 59	10.4	202.3	1.6		14.4	-11	1521	No stop
16 45 00	---	20 13 19	10.3	202.6	1.6		14.6	69	1531	16 43 41
16 45 00	M22	20 13 19	10.2	202.2	1.6		14.4	-11	1531	No stop
16 47 10	---	20 15 30	10.1	202.7	1.6		14.7	119	1547	16 45 01
16 47 40	J1834-2341	20 16 00	10.2	203.2	1.7		15.0	19	1547	16 47 40
16 48 30	---	20 16 50	10.1	203.4	1.7		15.1	50	1554	16 47 41
16 48 30	M22	20 16 50	10.0	203.0	1.7		14.9	-11	1554	No stop
16 50 40	---	20 19 00	9.9	203.5	1.7		15.2	119	1571	16 48 31

Schedule for TORUN (Code Tr) Page 10

EM126A - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Mon 24 Oct 2016 Day 298 ---										
16 50 40	J1834-2341	20 19 00	10.0	203.9	1.7		15.4	-11	1571	No stop
16 52 00	---	20 20 20	9.9	204.2	1.7		15.6	69	1581	16 50 41
16 52 00	M22	20 20 20	9.8	203.8	1.7		15.3	-11	1581	No stop
16 54 10	---	20 22 31	9.7	204.2	1.8		15.6	119	1597	16 52 01
16 54 10	J1834-2341	20 22 31	9.8	204.7	1.8		15.9	-11	1597	No stop
16 55 30	---	20 23 51	9.7	205.0	1.8		16.1	69	1608	16 54 11
16 55 30	M22	20 23 51	9.6	204.5	1.8		15.8	-11	1608	No stop
16 57 40	---	20 26 01	9.5	205.0	1.8		16.1	119	1624	16 55 31
16 58 10	J1834-2341	20 26 31	9.5	205.6	1.8		16.4	19	1624	16 58 10
16 59 00	---	20 27 22	9.5	205.8	1.9		16.6	50	1631	16 58 11
16 59 00	M22	20 27 22	9.4	205.3	1.8		16.3	-11	1631	No stop
17 01 10	---	20 29 32	9.3	205.8	1.9		16.6	119	1647	16 59 01
17 01 10	J1834-2341	20 29 32	9.3	206.2	1.9		16.9	-11	1647	No stop
17 02 30	---	20 30 52	9.2	206.5	1.9		17.0	69	1658	17 01 11
17 02 30	M22	20 30 52	9.2	206.1	1.9		16.8	-11	1658	No stop
17 04 40	---	20 33 02	9.0	206.6	1.9		17.1	119	1674	17 02 31
17 04 40	J1834-2341	20 33 02	9.1	207.0	2.0		17.3	-11	1674	No stop
17 06 00	---	20 34 23	9.0	207.3	2.0		17.5	69	1685	17 04 41
17 06 00	M22	20 34 23	8.9	206.9	1.9		17.3	-11	1685	No stop
17 08 10	---	20 36 33	8.8	207.4	2.0		17.6	119	1701	17 06 01
17 08 40	J1834-2341	20 37 03	8.8	207.9	2.0		17.9	19	1701	17 08 40
17 09 30	---	20 37 53	8.8	208.1	2.0		18.0	50	1708	17 08 41
17 09 30	M22	20 37 53	8.7	207.7	2.0		17.7	-11	1708	No stop
17 11 40	---	20 40 04	8.5	208.1	2.0		18.0	119	1724	17 09 31
17 11 40	J1834-2341	20 40 04	8.6	208.6	2.1		18.3	-11	1724	No stop
17 13 00	---	20 41 24	8.5	208.9	2.1		18.5	69	1735	17 11 41
17 13 00	M22	20 41 24	8.4	208.4	2.1		18.2	-11	1735	No stop
17 15 10	---	20 43 34	8.3	208.9	2.1		18.5	119	1751	17 13 01
17 15 10	J1834-2341	20 43 34	8.4	209.3	2.1		18.7	-11	1751	No stop
17 16 30	---	20 44 54	8.3	209.6	2.2		18.9	69	1762	17 15 11

Schedule for TORUN (Code Tr) Page 11

EM126A - EVN C-band obs of M22-VLA1 and M22-VLA2

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 24 Oct 2016 Day 298 ---										
17 16 30	M22	20 44 54	8.2	209.2	2.1		18.7	-11	1762	No stop
17 18 40	---	20 47 05	8.0	209.7	2.2		19.0	119	1778	17 16 31
17 19 10	J1834-2341	20 47 35	8.1	210.2	2.2		19.3	19	1778	17 19 10
17 20 00	---	20 48 25	8.0	210.4	2.2		19.4	50	1785	17 19 11
17 20 00	M22	20 48 25	7.9	210.0	2.2		19.1	-11	1785	No stop
17 22 10	---	20 50 35	7.8	210.4	2.2		19.4	119	1801	17 20 01
17 22 10	J1834-2341	20 50 35	7.8	210.9	2.2		19.7	-11	1801	No stop
17 23 30	---	20 51 56	7.7	211.2	2.3		19.8	69	1812	17 22 11
17 23 30	M22	20 51 56	7.7	210.7	2.2		19.6	-11	1812	No stop
17 25 40	---	20 54 06	7.5	211.2	2.3		19.9	119	1828	17 23 31
17 25 40	J1834-2341	20 54 06	7.6	211.6	2.3		20.1	-11	1828	No stop
17 27 00	---	20 55 26	7.4	211.9	2.3		20.3	69	1838	17 25 41
17 27 00	M22	20 55 26	7.4	211.5	2.3		20.1	-11	1838	No stop
17 29 10	---	20 57 37	7.2	212.0	2.3		20.3	119	1855	17 27 01
17 29 40	J1834-2341	20 58 07	7.2	212.5	2.4		20.6	19	1855	17 29 40
17 30 30	---	20 58 57	7.2	212.7	2.4		20.7	50	1862	17 29 41
17 30 30	M22	20 58 57	7.1	212.2	2.4		20.5	-11	1862	No stop
17 32 40	---	21 01 07	6.9	212.7	2.4		20.8	119	1878	17 30 31
17 32 40	J1834-2341	21 01 07	7.0	213.2	2.4		21.0	-11	1878	No stop
17 34 00	---	21 02 27	6.9	213.4	2.4		21.2	69	1888	17 32 41
17 34 00	M22	21 02 27	6.8	213.0	2.4		21.0	-11	1888	No stop
17 36 10	---	21 04 38	6.6	213.5	2.5		21.2	119	1905	17 34 01
17 36 10	J1834-2341	21 04 38	6.7	213.9	2.5		21.5	-11	1905	No stop
17 37 30	---	21 05 58	6.6	214.2	2.5		21.6	69	1915	17 36 11
17 37 30	M22	21 05 58	6.5	213.8	2.5		21.4	-11	1915	No stop
17 39 40	---	21 08 08	6.4	214.2	2.5		21.7	119	1932	17 37 31
17 40 10	J1834-2341	21 08 38	6.4	214.8	2.5		22.0	19	1932	17 40 10
17 41 00	---	21 09 28	6.3	214.9	2.6		22.1	50	1938	17 40 11
17 41 00	M22	21 09 28	6.2	214.5	2.5		21.8	-11	1938	No stop
17 43 10	---	21 11 39	6.1	215.0	2.6		22.1	119	1955	17 41 01

Schedule for TORUN (Code Tr) Page 12

EM126A - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Mon 24 Oct 2016 Day 298 ---										
17 43 10	J1834-2341	21 11 39	6.1	215.4	2.6		22.3	-11	1955	No stop
17 44 30	---	21 12 59	6.0	215.7	2.6		22.5	69	1965	17 43 11
17 44 30	M22	21 12 59	5.9	215.3	2.6		22.3	-11	1965	No stop
17 46 40	---	21 15 09	5.8	215.7	2.6		22.5	119	1982	17 44 31
17 46 40	J1834-2341	21 15 09	5.8	216.2	2.7		22.8	-11	1982	No stop
17 48 00	---	21 16 30	5.7	216.4	2.7		22.9	69	1992	17 46 41
17 48 00	M22	21 16 30	5.6	216.0	2.7		22.7	-11	1992	No stop
17 50 10	---	21 18 40	5.4	216.5	2.7		23.0	119	2009	17 48 01
17 50 40	J1834-2341	21 19 10	5.4	217.0	2.7		23.2	19	2009	17 50 40
17 51 30	---	21 20 00	5.4	217.2	2.7		23.3	50	2015	17 50 41
17 51 30	M22	21 20 00	5.3	216.7	2.7		23.1	-11	2015	No stop
17 53 40	---	21 22 11	5.1	217.2	2.7		23.4	119	2032	17 51 31
17 53 40	J1834-2341	21 22 11	5.2	217.6	2.8		23.6	-11	2032	No stop
17 55 00	---	21 23 31	5.0	217.9	2.8		23.8	69	2042	17 53 41
17 55 00	M22	21 23 31	5.0	217.5	2.8		23.6	-11	2042	No stop
17 57 10	---	21 25 41	4.8	217.9	2.8		23.8	119	2059	17 55 01
17 57 10	J1834-2341	21 25 41	4.8	218.4	2.8		24.0	-11	2059	No stop
17 58 30	---	21 27 01	4.7	218.7	2.9		24.2	69	2069	17 57 11
17 58 30	M22	21 27 01	4.7	218.2	2.8		24.0	-11	2069	No stop
18 00 40	---	21 29 12	4.5	218.7	2.9		24.2	119	2086	17 58 31
18 01 10	J1834-2341	21 29 42	4.5	219.2	2.9		24.5	19	2086	18 01 10
18 02 00	---	21 30 32	4.4	219.4	2.9		24.6	50	2092	18 01 11
18 02 00	M22	21 30 32	4.4	218.9	2.9		24.4	-11	2092	No stop
18 04 10	---	21 32 42	4.1	219.4	2.9		24.6	119	2109	18 02 01
18 04 10	J1834-2341	21 32 42	4.2	219.8	2.9		24.8	-11	2109	No stop
18 05 30	---	21 34 02	4.0	220.1	3.0		25.0	69	2119	18 04 11
18 05 30	M22	21 34 02	4.0	219.7	2.9		24.8	-11	2119	No stop
18 07 40	---	21 36 13	3.8	220.1	3.0		25.0	119	2136	18 05 31
18 08 10	J1834-2341	21 36 43	3.8	220.7	3.0		25.3	19	2136	18 08 10
18 09 00	---	21 37 33	3.7	220.9	3.0		25.4	50	2142	18 08 11

```
Schedule for TORUN     (Code Tr )                                  Page  13
               EM126A - EVN C-band obs of M22-VLA1 and M22-VLA2
  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  24 Oct 2016   Day 298 ---

18 09 30  J2253+1608   21 38 03  50.2 150.5 -1.3     -18.0  -159     2142   18 09 30
18 15 00  =3C454.3     21 43 34  50.6 152.5 -1.2     -16.8   171     2185   18 09 31




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


 ======== Setup file: sess316.C2048

   Setup group:   10         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 64.000
   Number of channels:  8    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
  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         3         7         3         7
  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:   6  Setup file default.  Used with PCAL = off
  LO sum=   4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
  BBC fr=    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
  Bandwd=     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00
   Matching frequency sets:   6

  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)

* M22                18 33 21.731212   * 18 36 24.822800     18 37 25.176868       0.00
                   -23 56 55.64152    *-23 54 23.65850     -23 53 22.51303        0.00
                    Position intermediate between the two targets

* J1834-2341        18 31 39.447623   * 18 34 42.285467     18 35 42.550060       0.23
                   -23 44 24.27265    *-23 41 59.67178     -23 41 00.88484        0.47
                    Same position as BS228 for consistent astrometry, from rfc_2012b Petrov, 2012

  3C345             16 41 17.606228   * 16 42 58.809966     16 43 31.032250       0.76
* J1642+3948        39 54 10.81496    * 39 48 36.99402      39 47 07.84541        0.52
  1641+399          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
  J1642+39          GSFC 2015a astro solution, unpublished  53430 observations.

  1921-293          19 21 42.234127   * 19 24 51.055954     19 25 53.466137       0.01
* J1924-2914       -29 20 26.35393    *-29 14 30.12103     -29 12 23.84763        0.01
  J1924-29          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                    GSFC 2015a astro solution, unpublished  45228 observations.

  3C454.3           22 51 29.519738   * 22 53 57.747938     22 54 48.185958       0.67
* J2253+1608        15 52 54.34810    * 16 08 53.56093      16 14 27.28535        0.70
  2251+158          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
  J2253+16          GSFC 2015a astro solution, unpublished  40748 observations.
```

er045atr

TDE ASASSN-14IL

PI: *C. Romero-Canizales*

```
Address:  Universidad Diego Portales          Chile

Observing mode: 1024 Mbps
Schedule for TORUN     (Code Tr )                                   Page   2
               TDE ASASSN-14il
  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  25 Oct 2016   Day 299 ---
 Next scan frequencies:  4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
 Next BBC frequencies:    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
 Next scan bandwidths:     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00

05 00 00  J1159+2914   08 30 20  45.1 100.8 -3.5     -42.5     0        0   05 00 00
05 04 00  =1156+295    08 34 21  45.7 101.8 -3.4     -42.3   240       31   05 00 01

05 05 20  J1250+1621   08 35 41  28.6 101.2 -4.3     -37.9     2       31   05 05 20
05 06 50  =1247+166    08 37 11  28.8 101.5 -4.2     -37.8    90       42   05 05 21

05 06 50  ASASSN-14LI  08 37 11  30.2 100.9 -4.2     -38.2   -19       42   No stop
05 10 20  ---          08 40 42  30.7 101.7 -4.1     -38.1   191       69   05 06 51

05 11 00  J1250+1621   08 41 22  29.4 102.4 -4.2     -37.7    22       69   05 11 00
05 12 30  =1247+166    08 42 52  29.6 102.8 -4.1     -37.6    90       81   05 11 01

05 12 30  ASASSN-14LI  08 42 52  31.0 102.2 -4.1     -38.0   -19       81   No stop
05 16 00  ---          08 46 23  31.5 102.9 -4.0     -37.9   191      108   05 12 31

05 16 00  J1250+1621   08 46 23  30.1 103.5 -4.1     -37.5   -18      108   No stop
05 17 30  =1247+166    08 47 53  30.4 103.9 -4.1     -37.4    72      119   05 16 01

05 17 30  ASASSN-14LI  08 47 53  31.8 103.3 -4.0     -37.8   -19      119   No stop
05 21 00  ---          08 51 23  32.3 104.0 -4.0     -37.7   191      146   05 17 31

05 21 40  J1250+1621   08 52 04  31.0 104.8 -4.0     -37.2    21      146   05 21 40
05 23 10  =1247+166    08 53 34  31.2 105.1 -4.0     -37.1    90      158   05 21 41

05 23 10  ASASSN-14LI  08 53 34  32.6 104.5 -3.9     -37.6   -19      158   No stop
05 26 40  ---          08 57 04  33.1 105.3 -3.9     -37.4   191      185   05 23 11

05 26 40  J1250+1621   08 57 04  31.7 105.9 -3.9     -37.0   -19      185   No stop
05 28 10  =1247+166    08 58 35  31.9 106.2 -3.9     -36.9    71      196   05 26 41

05 28 10  ASASSN-14LI  08 58 35  33.3 105.7 -3.8     -37.4   -19      196   No stop
05 31 40  ---          09 02 05  33.8 106.5 -3.8     -37.2   191      223   05 28 11

05 32 20  J1250+1621   09 02 45  32.5 107.2 -3.8     -36.7    21      223   05 32 20
05 33 50  =1247+166    09 04 16  32.7 107.5 -3.8     -36.6    90      235   05 32 21

05 33 50  ASASSN-14LI  09 04 16  34.1 107.0 -3.7     -37.1   -19      235   No stop
05 37 20  ---          09 07 46  34.6 107.8 -3.7     -36.9   191      262   05 33 51

05 37 20  J1250+1621   09 07 46  33.2 108.3 -3.7     -36.4   -19      262   No stop
05 38 50  =1247+166    09 09 16  33.4 108.7 -3.7     -36.3    71      273   05 37 21
```

Schedule for TORUN (Code Tr) Page 3

TDE ASASSN-14il

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
--- Tue 25 Oct 2016 Day 299 ---										
05 38 50	ASASSN-14LI	09 09 16	34.9	108.1	-3.7		-36.8	-19	273	No stop
05 42 20	---	09 12 47	35.4	108.9	-3.6		-36.6	191	300	05 38 51
05 43 00	J1250+1621	09 13 27	34.0	109.7	-3.6		-36.1	21	300	05 43 00
05 44 30	=1247+166	09 14 57	34.3	110.0	-3.6		-36.0	90	312	05 43 01
05 44 30	ASASSN-14LI	09 14 57	35.7	109.4	-3.6		-36.5	-19	312	No stop
05 48 00	---	09 18 28	36.2	110.3	-3.5		-36.2	191	338	05 44 31
05 48 00	J1250+1621	09 18 28	34.7	110.8	-3.5		-35.8	-19	338	No stop
05 49 30	=1247+166	09 19 58	35.0	111.2	-3.5		-35.7	71	350	05 48 01
05 49 30	ASASSN-14LI	09 19 58	36.4	110.6	-3.5		-36.1	-19	350	No stop
05 53 00	---	09 23 29	36.9	111.5	-3.4		-35.9	191	377	05 49 31
05 53 40	J1250+1621	09 24 09	35.5	112.2	-3.4		-35.4	21	377	05 53 40
05 55 10	=1247+166	09 25 39	35.7	112.6	-3.4		-35.3	90	388	05 53 41
05 55 10	ASASSN-14LI	09 25 39	37.2	112.0	-3.4		-35.8	-19	388	No stop
05 58 40	---	09 29 10	37.7	112.9	-3.3		-35.5	191	415	05 55 11
05 58 40	J1250+1621	09 29 10	36.2	113.4	-3.4		-35.0	-19	415	No stop
06 00 10	=1247+166	09 30 40	36.4	113.8	-3.3		-34.9	71	427	05 58 41
06 00 10	ASASSN-14LI	09 30 40	37.9	113.2	-3.3		-35.4	-19	427	No stop
06 03 40	---	09 34 10	38.3	114.1	-3.2		-35.1	191	454	06 00 11
06 04 20	J1250+1621	09 34 51	37.0	114.8	-3.3		-34.6	21	454	06 04 20
06 05 50	=1247+166	09 36 21	37.2	115.2	-3.2		-34.5	90	465	06 04 21
06 05 50	ASASSN-14LI	09 36 21	38.6	114.6	-3.2		-35.0	-19	465	No stop
06 09 20	---	09 39 51	39.1	115.5	-3.2		-34.7	191	492	06 05 51
06 09 20	J1250+1621	09 39 51	37.7	116.1	-3.2		-34.2	-19	492	No stop
06 10 50	=1247+166	09 41 22	37.9	116.4	-3.2		-34.1	71	504	06 09 21
06 10 50	ASASSN-14LI	09 41 22	39.3	115.9	-3.1		-34.5	-19	504	No stop
06 14 20	---	09 44 52	39.8	116.8	-3.1		-34.2	191	531	06 10 51
06 15 00	J1250+1621	09 45 32	38.5	117.5	-3.1		-33.7	21	531	06 15 00
06 16 30	=1247+166	09 47 03	38.7	117.9	-3.1		-33.6	90	542	06 15 01
06 16 30	ASASSN-14LI	09 47 03	40.1	117.4	-3.0		-34.0	-19	542	No stop
06 20 00	---	09 50 33	40.5	118.3	-3.0		-33.7	191	569	06 16 31

Schedule for TORUN (Code Tr) Page 4

TDE ASASSN-14il

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
--- Tue 25 Oct 2016 Day 299 ---										
06 20 00	J1250+1621	09 50 33	39.1	118.8	-3.0		-33.2	-19	569	No stop
06 21 30	=1247+166	09 52 03	39.3	119.2	-3.0		-33.1	71	581	06 20 01
06 21 30	ASASSN-14LI	09 52 03	40.7	118.7	-3.0		-33.6	-19	581	No stop
06 25 00	---	09 55 34	41.2	119.6	-2.9		-33.2	191	608	06 21 31
06 25 40	J1250+1621	09 56 14	39.9	120.3	-2.9		-32.7	21	608	06 25 40
06 27 10	=1247+166	09 57 44	40.1	120.7	-2.9		-32.6	90	619	06 25 41
06 27 10	ASASSN-14LI	09 57 44	41.5	120.2	-2.9		-33.0	-19	619	No stop
06 30 40	---	10 01 15	41.9	121.1	-2.8		-32.7	191	646	06 27 11
06 30 40	J1250+1621	10 01 15	40.5	121.6	-2.8		-32.2	-19	646	No stop
06 32 10	=1247+166	10 02 45	40.7	122.0	-2.8		-32.0	71	658	06 30 41
06 32 10	ASASSN-14LI	10 02 45	42.1	121.5	-2.8		-32.5	-19	658	No stop
06 35 40	---	10 06 16	42.6	122.5	-2.7		-32.1	191	685	06 32 11
06 36 20	J1250+1621	10 06 56	41.2	123.1	-2.7		-31.6	21	685	06 36 20
06 37 50	=1247+166	10 08 26	41.4	123.5	-2.7		-31.4	90	696	06 36 21
06 37 50	ASASSN-14LI	10 08 26	42.9	123.1	-2.7		-31.9	-19	696	No stop
06 41 20	---	10 11 57	43.3	124.0	-2.6		-31.5	191	723	06 37 51
06 41 20	J1250+1621	10 11 57	41.8	124.5	-2.7		-31.0	-19	723	No stop
06 42 50	=1247+166	10 13 27	42.0	124.9	-2.6		-30.9	71	735	06 41 21
06 42 50	ASASSN-14LI	10 13 27	43.5	124.5	-2.6		-31.3	-19	735	No stop
06 46 20	---	10 16 57	43.9	125.4	-2.5		-30.9	191	762	06 42 51
06 47 00	J1250+1621	10 17 38	42.5	126.1	-2.6		-30.4	21	762	06 47 00
06 48 30	=1247+166	10 19 08	42.7	126.5	-2.5		-30.2	90	773	06 47 01
06 48 30	ASASSN-14LI	10 19 08	44.2	126.1	-2.5		-30.6	-19	773	No stop
06 52 00	---	10 22 38	44.6	127.1	-2.4		-30.2	191	800	06 48 31
06 52 00	J1250+1621	10 22 38	43.1	127.5	-2.5		-29.8	-19	800	No stop
06 53 30	=1247+166	10 24 09	43.3	127.9	-2.4		-29.6	71	812	06 52 01
06 54 50	J1159+2914	10 25 29	60.4	134.6	-1.6		-29.3	2	812	06 54 50
06 58 50	=1156+295	10 29 30	60.8	136.2	-1.5		-28.4	240	842	06 54 51
07 00 10	J1250+1621	10 30 50	44.1	129.9	-2.3		-28.7	3	842	07 00 10
07 01 30	=1247+166	10 32 10	44.3	130.3	-2.3		-28.5	80	853	07 00 11

Schedule for TORUN (Code Tr) Page 5

TDE ASASSN-14il

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 25 Oct 2016 Day 299 ---										
07 01 30	ASASSN-14LI	10 32 10	45.7	129.9	-2.3		-28.9	-19	853	No stop
07 05 00	---	10 35 41	46.1	130.9	-2.2		-28.4	191	879	07 01 31
07 05 40	J1250+1621	10 36 21	44.7	131.5	-2.2		-27.9	21	879	07 05 40
07 07 10	=1247+166	10 37 51	44.9	132.0	-2.2		-27.7	90	891	07 05 41
07 07 10	ASASSN-14LI	10 37 51	46.4	131.6	-2.2		-28.1	-19	891	No stop
07 10 40	---	10 41 21	46.8	132.7	-2.1		-27.6	191	918	07 07 11
07 10 40	J1250+1621	10 41 21	45.3	133.0	-2.2		-27.2	-19	918	No stop
07 12 10	=1247+166	10 42 52	45.5	133.5	-2.1		-27.0	71	929	07 10 41
07 12 10	ASASSN-14LI	10 42 52	46.9	133.1	-2.1		-27.4	-19	929	No stop
07 15 40	---	10 46 22	47.3	134.2	-2.0		-26.9	191	956	07 12 11
07 16 20	J1250+1621	10 47 02	45.9	134.8	-2.1		-26.4	21	956	07 16 20
07 17 50	=1247+166	10 48 33	46.1	135.2	-2.0		-26.1	90	968	07 16 21
07 17 50	ASASSN-14LI	10 48 33	47.5	134.9	-2.0		-26.5	-19	968	No stop
07 21 20	---	10 52 03	47.9	136.0	-2.0		-26.0	191	995	07 17 51
07 21 20	J1250+1621	10 52 03	46.4	136.3	-2.0		-25.6	-19	995	No stop
07 22 50	=1247+166	10 53 33	46.6	136.8	-2.0		-25.4	71	1006	07 21 21
07 22 50	ASASSN-14LI	10 53 33	48.1	136.5	-1.9		-25.7	-19	1006	No stop
07 26 20	---	10 57 04	48.4	137.6	-1.9		-25.1	191	1033	07 22 51
07 27 00	J1250+1621	10 57 44	47.0	138.1	-1.9		-24.7	21	1033	07 27 00
07 28 30	=1247+166	10 59 14	47.2	138.6	-1.9		-24.4	90	1045	07 27 01
07 28 30	ASASSN-14LI	10 59 14	48.6	138.3	-1.8		-24.8	-19	1045	No stop
07 32 00	---	11 02 45	49.0	139.5	-1.8		-24.2	191	1072	07 28 31
07 32 00	J1250+1621	11 02 45	47.5	139.7	-1.8		-23.8	-19	1072	No stop
07 33 30	=1247+166	11 04 15	47.7	140.2	-1.8		-23.6	71	1083	07 32 01
07 33 30	ASASSN-14LI	11 04 15	49.1	140.0	-1.7		-23.9	-19	1083	No stop
07 37 00	---	11 07 46	49.5	141.2	-1.7		-23.3	191	1110	07 33 31
07 37 40	J1250+1621	11 08 26	48.0	141.6	-1.7		-22.9	21	1110	07 37 40
07 39 10	=1247+166	11 09 56	48.2	142.1	-1.7		-22.6	90	1122	07 37 41
07 39 10	ASASSN-14LI	11 09 56	49.7	141.9	-1.7		-22.9	-19	1122	No stop
07 42 40	---	11 13 27	50.0	143.1	-1.6		-22.2	191	1149	07 39 11

Schedule for TORUN (Code Tr) Page 6

TDE ASASSN-14il

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
--- Tue 25 Oct 2016 Day 299 ---										
07 42 40	J1250+1621	11 13 27	48.5	143.3	-1.6		-22.0	-19	1149	No stop
07 44 10	=1247+166	11 14 57	48.6	143.8	-1.6		-21.7	71	1160	07 42 41
07 44 10	ASASSN-14LI	11 14 57	50.1	143.6	-1.6		-22.0	-19	1160	No stop
07 47 40	---	11 18 28	50.4	144.8	-1.5		-21.3	191	1187	07 44 11
07 48 20	J1250+1621	11 19 08	49.0	145.2	-1.5		-20.9	21	1187	07 48 20
07 49 50	=1247+166	11 20 38	49.1	145.7	-1.5		-20.6	90	1199	07 48 21
07 49 50	ASASSN-14LI	11 20 38	50.6	145.6	-1.5		-20.9	-19	1199	No stop
07 53 20	---	11 24 08	50.9	146.8	-1.4		-20.2	191	1226	07 49 51
07 53 20	J1250+1621	11 24 08	49.4	146.9	-1.4		-20.0	-19	1226	No stop
07 54 50	=1247+166	11 25 39	49.5	147.4	-1.4		-19.7	71	1237	07 53 21
07 54 50	ASASSN-14LI	11 25 39	51.0	147.4	-1.4		-19.9	-19	1237	No stop
07 58 20	---	11 29 09	51.3	148.6	-1.3		-19.2	191	1264	07 54 51
07 59 00	J1250+1621	11 29 49	49.9	148.9	-1.4		-18.8	21	1264	07 59 00
08 00 30	=1247+166	11 31 20	50.0	149.4	-1.3		-18.5	90	1276	07 59 01
08 00 30	ASASSN-14LI	11 31 20	51.5	149.4	-1.3		-18.7	-19	1276	No stop
08 04 00	---	11 34 50	51.7	150.7	-1.2		-18.0	191	1303	08 00 31
08 04 00	J1250+1621	11 34 50	50.3	150.7	-1.3		-17.8	-19	1303	No stop
08 05 30	=1247+166	11 36 20	50.4	151.2	-1.2		-17.5	71	1314	08 04 01
08 05 30	ASASSN-14LI	11 36 20	51.9	151.2	-1.2		-17.7	-19	1314	No stop
08 09 00	---	11 39 51	52.1	152.5	-1.2		-16.9	191	1341	08 05 31
08 09 40	J1250+1621	11 40 31	50.7	152.7	-1.2		-16.7	21	1341	08 09 40
08 11 10	=1247+166	11 42 01	50.8	153.3	-1.1		-16.3	90	1353	08 09 41
08 11 10	ASASSN-14LI	11 42 01	52.3	153.3	-1.1		-16.4	-19	1353	No stop
08 14 40	---	11 45 32	52.5	154.7	-1.1		-15.7	191	1379	08 11 11
08 14 40	J1250+1621	11 45 32	51.0	154.6	-1.1		-15.6	-19	1379	No stop
08 16 10	=1247+166	11 47 02	51.1	155.1	-1.1		-15.3	71	1391	08 14 41
08 16 10	ASASSN-14LI	11 47 02	52.6	155.2	-1.0		-15.3	-19	1391	No stop
08 19 40	---	11 50 33	52.8	156.6	-1.0		-14.5	191	1418	08 16 11
08 20 20	J1250+1621	11 51 13	51.3	156.7	-1.0		-14.3	21	1418	08 20 20
08 21 50	=1247+166	11 52 43	51.4	157.2	-1.0		-14.0	90	1429	08 20 21

Schedule for TORUN (Code Tr) Page 7

TDE ASASSN-14il

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
--- Tue 25 Oct 2016 Day 299 ---										
08 21 50	ASASSN-14LI	11 52 43	52.9	157.4	-0.9		-14.0	-19	1429	No stop
08 25 20	---	11 56 14	53.1	158.7	-0.9		-13.2	191	1456	08 21 51
08 25 20	J1250+1621	11 56 14	51.6	158.5	-0.9		-13.2	-19	1456	No stop
08 26 50	=1247+166	11 57 44	51.7	159.1	-0.9		-12.9	71	1468	08 25 21
08 26 50	ASASSN-14LI	11 57 44	53.2	159.3	-0.9		-12.9	-19	1468	No stop
08 30 20	---	12 01 15	53.4	160.7	-0.8		-12.0	191	1495	08 26 51
08 31 00	J1250+1621	12 01 55	51.9	160.7	-0.8		-11.9	21	1495	08 31 00
08 32 30	=1247+166	12 03 25	52.0	161.3	-0.8		-11.6	90	1506	08 31 01
08 32 30	ASASSN-14LI	12 03 25	53.5	161.5	-0.8		-11.5	-19	1506	No stop
08 36 00	---	12 06 55	53.6	162.9	-0.7		-10.7	191	1533	08 32 31
08 36 00	J1250+1621	12 06 55	52.2	162.6	-0.7		-10.8	-19	1533	No stop
08 37 30	=1247+166	12 08 26	52.2	163.2	-0.7		-10.4	71	1545	08 36 01
08 37 30	ASASSN-14LI	12 08 26	53.7	163.5	-0.7		-10.3	-19	1545	No stop
08 41 00	---	12 11 56	53.9	164.9	-0.6		-9.4	191	1572	08 37 31
08 41 40	J1250+1621	12 12 36	52.4	164.8	-0.6		-9.4	21	1572	08 41 40
08 43 10	=1247+166	12 14 07	52.5	165.4	-0.6		-9.1	90	1583	08 41 41
08 43 10	ASASSN-14LI	12 14 07	53.9	165.8	-0.6		-8.9	-19	1583	No stop
08 46 40	---	12 17 37	54.1	167.2	-0.5		-8.0	191	1610	08 43 11
08 46 40	J1250+1621	12 17 37	52.6	166.8	-0.6		-8.2	-19	1610	No stop
08 48 10	=1247+166	12 19 07	52.6	167.3	-0.5		-7.9	71	1622	08 46 41
08 48 10	ASASSN-14LI	12 19 07	54.1	167.8	-0.5		-7.7	-19	1622	No stop
08 51 40	---	12 22 38	54.2	169.2	-0.4		-6.8	191	1649	08 48 11
08 52 20	J1250+1621	12 23 18	52.8	169.0	-0.5		-6.9	21	1649	08 52 20
08 53 50	=1247+166	12 24 48	52.8	169.6	-0.4		-6.5	90	1660	08 52 21
08 53 50	ASASSN-14LI	12 24 48	54.3	170.1	-0.4		-6.2	-19	1660	No stop
08 57 20	---	12 28 19	54.4	171.5	-0.3		-5.3	191	1687	08 53 51
08 57 20	J1250+1621	12 28 19	52.9	171.0	-0.4		-5.6	-19	1687	No stop
08 58 50	=1247+166	12 29 49	52.9	171.6	-0.4		-5.3	71	1699	08 57 21
08 58 50	ASASSN-14LI	12 29 49	54.4	172.1	-0.3		-5.0	-19	1699	No stop
09 02 20	---	12 33 20	54.5	173.5	-0.3		-4.1	191	1726	08 58 51

Schedule for TORUN (Code Tr) Page 8

TDE ASASSN-14il

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 25 Oct 2016 Day 299 ---										
09 03 00	J1250+1621	12 34 00	53.0	173.2	-0.3		-4.2	21	1726	09 03 00
09 04 30	=1247+166	12 35 30	53.0	173.8	-0.3		-3.9	90	1737	09 03 01
09 04 30	ASASSN-14LI	12 35 30	54.5	174.4	-0.2		-3.5	-19	1737	No stop
09 08 00	---	12 39 01	54.5	175.9	-0.2		-2.6	191	1764	09 04 31
09 08 00	J1250+1621	12 39 01	53.1	175.2	-0.2		-3.0	-19	1764	No stop
09 09 30	=1247+166	12 40 31	53.1	175.8	-0.2		-2.6	71	1776	09 08 01
09 09 30	ASASSN-14LI	12 40 31	54.6	176.5	-0.1		-2.2	-19	1776	No stop
09 13 00	---	12 44 02	54.6	177.9	-0.1		-1.3	191	1803	09 09 31
09 13 40	J1250+1621	12 44 42	53.2	177.5	-0.1		-1.6	21	1803	09 13 40
09 15 10	=1247+166	12 46 12	53.2	178.1	-0.1		-1.2	90	1814	09 13 41
09 15 10	ASASSN-14LI	12 46 12	54.6	178.8	-0.0		-0.7	-19	1814	No stop
09 18 40	---	12 49 42	54.6	180.3	0.0		0.2	191	1841	09 15 11
09 18 40	J1250+1621	12 49 42	53.2	179.5	-0.0		-0.3	-19	1841	No stop
09 20 10	=1247+166	12 51 13	53.2	180.1	0.0		0.1	71	1853	09 18 41
09 20 10	ASASSN-14LI	12 51 13	54.6	180.9	0.0		0.6	-19	1853	No stop
09 23 40	---	12 54 43	54.6	182.3	0.1		1.5	191	1879	09 20 11
09 24 20	J1250+1621	12 55 23	53.2	181.8	0.1		1.1	21	1879	09 24 20
09 25 50	=1247+166	12 56 54	53.2	182.4	0.1		1.5	90	1891	09 24 21
09 25 50	ASASSN-14LI	12 56 54	54.6	183.2	0.1		2.0	-19	1891	No stop
09 29 20	---	13 00 24	54.5	184.7	0.2		2.9	191	1918	09 25 51
09 29 20	J1250+1621	13 00 24	53.1	183.8	0.2		2.4	-19	1918	No stop
09 30 50	=1247+166	13 01 54	53.1	184.4	0.2		2.7	71	1929	09 29 21
09 30 50	ASASSN-14LI	13 01 54	54.5	185.3	0.2		3.3	-19	1929	No stop
09 34 20	---	13 05 25	54.4	186.7	0.3		4.2	191	1956	09 30 51
09 35 00	J1250+1621	13 06 05	53.1	186.0	0.3		3.8	21	1956	09 35 00
09 36 30	=1247+166	13 07 35	53.0	186.6	0.3		4.2	90	1968	09 35 01
09 36 30	ASASSN-14LI	13 07 35	54.4	187.6	0.3		4.8	-19	1968	No stop
09 40 00	---	13 11 06	54.3	189.0	0.4		5.7	191	1995	09 36 31
09 40 00	J1250+1621	13 11 06	53.0	188.0	0.3		5.0	-19	1995	No stop
09 41 30	=1247+166	13 12 36	52.9	188.6	0.4		5.4	71	2006	09 40 01

```
Schedule for TORUN     (Code Tr )                                Page   9
               TDE ASASSN-14il
  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  25 Oct 2016   Day 299 ---

09 41 30  ASASSN-14LI  13 12 36  54.3 189.6  0.4       6.1   -18     2006   No stop
09 45 00  ---          13 16 07  54.2 191.1  0.5       6.9   192     2033   09 41 31

09 45 40  J1250+1621   13 16 47  52.8 190.3  0.4       6.4    22     2033   09 45 40
09 47 10  =1247+166    13 18 17  52.8 190.9  0.5       6.8    90     2045   09 45 41

09 47 10  ASASSN-14LI  13 18 17  54.1 191.9  0.5       7.5   -18     2045   No stop
09 50 40  ---          13 21 48  54.0 193.3  0.5       8.4   192     2072   09 47 11

09 50 40  J1250+1621   13 21 48  52.7 192.3  0.5       7.6   -18     2072   No stop
09 52 10  =1247+166    13 23 18  52.6 192.9  0.5       8.0    72     2083   09 50 41

09 52 10  ASASSN-14LI  13 23 18  54.0 193.9  0.6       8.7   -18     2083   No stop
09 55 10  ---          13 26 18  53.9 195.2  0.6       9.5   162     2106   09 52 11

09 55 50  J1250+1621   13 26 59  52.5 194.3  0.6       8.9    22     2106   09 55 50
09 57 00  =1247+166    13 28 09  52.5 194.7  0.6       9.2    70     2115   09 55 51

09 57 00  ASASSN-14LI  13 28 09  53.8 195.9  0.7       9.9   -18     2115   No stop
10 00 00  ---          13 31 09  53.6 197.1  0.7      10.7   162     2138   09 57 01



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


 ======== Setup file: sess316CG.setini

   Setup group:   15         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 64.000
   Number of channels:  8    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
  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         3         7         3         7
  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:   9  Setup file default.  Used with PCAL = off
  LO sum=   4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
  BBC fr=    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
  Bandwd=     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00
   Matching frequency sets:   9

  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)

* ASASSN-14LI       12 45 45.858736   * 12 48 15.226300     12 49 03.560180       0.00
                    18 02 47.44778    * 17 46 26.45700      17 41 05.88308        0.00

  1156+295          11 56 57.786211   * 11 59 31.833912     12 00 21.572268       0.00
* J1159+2914        29 31 25.73882    * 29 14 43.82692      29 09 10.26566        0.00
  J1159+29          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc.2015feb
                    GSFC 2015a astro solution, unpublished  69878 observations.

  1247+166          12 47 39.650446   * 12 50 09.227097     12 50 57.655463       0.28
* J1250+1621        16 37 40.73650    * 16 21 21.46211      16 16 01.82413        0.47
                    /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc.2015feb
                    GSFC 2015a astro solution, unpublished     48 observations.
```

em126btr

EM126B - EVN C-band obs of M22-VLA1 and M22-VLA2

PI: *James Miller-Jones*

```
Address:  Curtin University

Observing mode: 6cm wideband observations at 2048Mbps
Schedule for TORUN     (Code Tr )                                   Page   2
               EM126B - EVN C-band obs of M22-VLA1 and M22-VLA2
  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  25 Oct 2016   Day 299 ---
 Next scan frequencies:  4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
 Next BBC frequencies:    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
 Next scan bandwidths:     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00

13 15 00  J1642+3948   16 46 41  76.7 182.6  0.1       2.1     0        0   13 15 00
13 18 00  =3C345       16 49 42  76.6 185.1  0.1       4.0   180       23   13 15 01

13 18 30  J1834-2341   16 50 12   9.9 155.6 -1.8     -15.7  -233       23   13 18 30
13 23 30  ---          16 55 13  10.2 156.7 -1.7     -15.0    67       62   13 18 31

13 23 30  M22          16 55 13   9.9 156.4 -1.7     -15.2   -11       62   No stop
13 25 40  ---          16 57 23  10.0 156.9 -1.7     -14.9   119       78   13 23 31

13 25 40  J1834-2341   16 57 23  10.3 157.2 -1.6     -14.7   -11       78   No stop
13 27 00  ---          16 58 43  10.4 157.5 -1.6     -14.5    69       88   13 25 41

13 27 00  M22          16 58 43  10.1 157.2 -1.6     -14.8   -11       88   No stop
13 29 10  ---          17 00 54  10.2 157.7 -1.6     -14.4   119      105   13 27 01

13 29 40  J1834-2341   17 01 24  10.5 158.1 -1.6     -14.1    19      105   13 29 40
13 30 30  ---          17 02 14  10.6 158.3 -1.6     -14.0    50      112   13 29 41

13 30 30  M22          17 02 14  10.3 158.0 -1.6     -14.3   -11      112   No stop
13 32 40  ---          17 04 24  10.4 158.5 -1.6     -13.9   119      128   13 30 31

13 32 40  J1834-2341   17 04 24  10.7 158.8 -1.5     -13.7   -11      128   No stop
13 34 00  ---          17 05 44  10.8 159.1 -1.5     -13.5    69      138   13 32 41

13 34 00  M22          17 05 44  10.5 158.8 -1.5     -13.8   -11      138   No stop
13 36 10  ---          17 07 55  10.6 159.3 -1.5     -13.4   119      155   13 34 01

13 36 10  J1834-2341   17 07 55  10.9 159.6 -1.5     -13.2   -11      155   No stop
13 37 30  ---          17 09 15  11.0 159.9 -1.4     -13.0    69      165   13 36 11

13 37 30  M22          17 09 15  10.7 159.6 -1.5     -13.3   -11      165   No stop
13 39 40  ---          17 11 25  10.8 160.1 -1.4     -12.9   119      182   13 37 31

13 40 10  J1834-2341   17 11 55  11.1 160.5 -1.4     -12.6    19      182   13 40 10
13 41 00  ---          17 12 46  11.1 160.7 -1.4     -12.5    50      188   13 40 11

13 41 00  M22          17 12 46  10.8 160.4 -1.4     -12.8   -11      188   No stop
13 43 10  ---          17 14 56  11.0 160.9 -1.4     -12.4   119      205   13 41 01

13 43 10  J1834-2341   17 14 56  11.2 161.2 -1.3     -12.2   -11      205   No stop
13 44 30  ---          17 16 16  11.3 161.5 -1.3     -12.0    69      215   13 43 11
```

Schedule for TORUN (Code Tr) Page 3

EM126B - EVN C-band obs of M22-VLA1 and M22-VLA2

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 25 Oct 2016 Day 299 ---										
13 44 30	M22	17 16 16	11.0	161.2	-1.4		-12.2	-11	215	No stop
13 46 40	---	17 18 27	11.1	161.7	-1.3		-11.9	119	232	13 44 31
13 46 40	J1834-2341	17 18 27	11.4	162.0	-1.3		-11.7	-11	232	No stop
13 48 00	---	17 19 47	11.5	162.3	-1.3		-11.5	69	242	13 46 41
13 48 00	M22	17 19 47	11.2	162.0	-1.3		-11.7	-11	242	No stop
13 50 10	---	17 21 57	11.3	162.5	-1.3		-11.4	119	259	13 48 01
13 50 40	J1834-2341	17 22 27	11.6	162.9	-1.2		-11.1	19	259	13 50 40
13 51 30	---	17 23 17	11.6	163.1	-1.2		-11.0	50	265	13 50 41
13 51 30	M22	17 23 17	11.3	162.8	-1.2		-11.2	-11	265	No stop
13 53 40	---	17 25 28	11.4	163.3	-1.2		-10.9	119	282	13 51 31
13 53 40	J1834-2341	17 25 28	11.7	163.6	-1.2		-10.7	-11	282	No stop
13 55 00	---	17 26 48	11.8	163.9	-1.1		-10.5	69	292	13 53 41
13 55 00	M22	17 26 48	11.5	163.6	-1.2		-10.7	-11	292	No stop
13 57 10	---	17 28 58	11.6	164.1	-1.1		-10.4	119	309	13 55 01
13 57 10	J1834-2341	17 28 58	11.9	164.4	-1.1		-10.1	-11	309	No stop
13 58 30	---	17 30 18	11.9	164.7	-1.1		-9.9	69	319	13 57 11
13 58 30	M22	17 30 18	11.6	164.4	-1.1		-10.2	-11	319	No stop
14 00 40	---	17 32 29	11.7	164.9	-1.1		-9.9	119	336	13 58 31
14 01 10	J1834-2341	17 32 59	12.0	165.3	-1.0		-9.6	19	336	14 01 10
14 02 00	---	17 33 49	12.1	165.5	-1.0		-9.4	50	342	14 01 11
14 02 00	M22	17 33 49	11.8	165.2	-1.1		-9.7	-11	342	No stop
14 04 10	---	17 35 59	11.9	165.7	-1.0		-9.4	119	359	14 02 01
14 04 10	J1834-2341	17 35 59	12.1	166.0	-1.0		-9.1	-11	359	No stop
14 05 30	---	17 37 20	12.2	166.3	-1.0		-8.9	69	369	14 04 11
14 05 30	M22	17 37 20	11.9	166.0	-1.0		-9.2	-11	369	No stop
14 07 40	---	17 39 30	12.0	166.5	-1.0		-8.8	119	386	14 05 31
14 07 40	J1834-2341	17 39 30	12.3	166.8	-0.9		-8.6	-11	386	No stop
14 09 00	---	17 40 50	12.3	167.2	-0.9		-8.4	69	396	14 07 41
14 09 00	M22	17 40 50	12.0	166.8	-0.9		-8.6	-11	396	No stop
14 11 10	---	17 43 01	12.1	167.3	-0.9		-8.3	119	413	14 09 01

Schedule for TORUN (Code Tr) Page 4

EM126B - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Tue 25 Oct 2016 Day 299 ---										
14 11 40	J1834-2341	17 43 31	12.4	167.8	-0.9		-8.0	19	413	14 11 40
14 12 30	---	17 44 21	12.4	168.0	-0.9		-7.9	50	419	14 11 41
14 12 30	M22	17 44 21	12.2	167.6	-0.9		-8.1	-11	419	No stop
14 14 40	---	17 46 31	12.2	168.1	-0.8		-7.8	119	436	14 12 31
14 14 40	J1834-2341	17 46 31	12.5	168.5	-0.8		-7.5	-11	436	No stop
14 16 00	---	17 47 51	12.5	168.8	-0.8		-7.3	69	446	14 14 41
14 16 00	M22	17 47 51	12.3	168.4	-0.8		-7.6	-11	446	No stop
14 18 10	---	17 50 02	12.3	168.9	-0.8		-7.2	119	463	14 16 01
14 18 10	J1834-2341	17 50 02	12.6	169.3	-0.8		-7.0	-11	463	No stop
14 19 30	---	17 51 22	12.6	169.6	-0.7		-6.8	69	473	14 18 11
14 19 30	M22	17 51 22	12.4	169.2	-0.8		-7.0	-11	473	No stop
14 21 40	---	17 53 32	12.4	169.7	-0.7		-6.7	119	490	14 19 31
14 22 10	J1834-2341	17 54 02	12.7	170.2	-0.7		-6.4	19	490	14 22 10
14 23 00	---	17 54 52	12.7	170.4	-0.7		-6.3	50	496	14 22 11
14 23 00	M22	17 54 52	12.5	170.0	-0.7		-6.5	-11	496	No stop
14 25 10	---	17 57 03	12.5	170.6	-0.7		-6.2	119	513	14 23 01
14 25 10	J1834-2341	17 57 03	12.8	170.9	-0.6		-5.9	-11	513	No stop
14 26 30	---	17 58 23	12.8	171.2	-0.6		-5.7	69	523	14 25 11
14 26 30	M22	17 58 23	12.5	170.9	-0.7		-6.0	-11	523	No stop
14 28 40	---	18 00 33	12.6	171.4	-0.6		-5.7	119	540	14 26 31
14 28 40	J1834-2341	18 00 33	12.8	171.7	-0.6		-5.4	-11	540	No stop
14 30 00	---	18 01 54	12.9	172.1	-0.6		-5.2	69	550	14 28 41
14 30 00	M22	18 01 54	12.6	171.7	-0.6		-5.5	-11	550	No stop
14 32 10	---	18 04 04	12.7	172.2	-0.6		-5.1	119	567	14 30 01
14 32 40	J1834-2341	18 04 34	12.9	172.7	-0.5		-4.8	19	567	14 32 40
14 33 30	---	18 05 24	12.9	172.9	-0.5		-4.7	50	573	14 32 41
14 33 30	M22	18 05 24	12.7	172.5	-0.5		-4.9	-11	573	No stop
14 35 40	---	18 07 35	12.7	173.0	-0.5		-4.6	119	590	14 33 31
14 35 40	J1834-2341	18 07 35	13.0	173.4	-0.5		-4.3	-11	590	No stop
14 37 00	---	18 08 55	13.0	173.7	-0.4		-4.1	69	600	14 35 41

Schedule for TORUN (Code Tr) Page 5

EM126B - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Tue 25 Oct 2016 Day 299 ---										
14 37 00	M22	18 08 55	12.8	173.3	-0.5		-4.4	-11	600	No stop
14 39 10	---	18 11 05	12.8	173.8	-0.4		-4.0	119	617	14 37 01
14 39 10	J1834-2341	18 11 05	13.0	174.2	-0.4		-3.8	-11	617	No stop
14 40 30	---	18 12 25	13.1	174.5	-0.4		-3.6	69	627	14 39 11
14 40 30	M22	18 12 25	12.8	174.1	-0.4		-3.8	-11	627	No stop
14 42 40	---	18 14 36	12.9	174.6	-0.4		-3.5	119	644	14 40 31
14 43 10	J1834-2341	18 15 06	13.1	175.2	-0.3		-3.2	19	644	14 43 10
14 44 00	---	18 15 56	13.1	175.4	-0.3		-3.0	50	650	14 43 11
14 44 00	M22	18 15 56	12.9	175.0	-0.4		-3.3	-10	650	No stop
14 46 10	---	18 18 06	12.9	175.5	-0.3		-3.0	120	667	14 44 01
14 46 10	J1834-2341	18 18 06	13.1	175.9	-0.3		-2.7	-11	667	No stop
14 47 30	---	18 19 27	13.1	176.2	-0.3		-2.5	69	677	14 46 11
14 47 30	M22	18 19 27	12.9	175.8	-0.3		-2.8	-10	677	No stop
14 49 40	---	18 21 37	12.9	176.3	-0.3		-2.4	120	694	14 47 31
14 49 40	J1834-2341	18 21 37	13.2	176.7	-0.2		-2.2	-11	694	No stop
14 51 00	---	18 22 57	13.2	177.0	-0.2		-2.0	69	704	14 49 41
14 51 00	M22	18 22 57	13.0	176.6	-0.2		-2.2	-10	704	No stop
14 53 10	---	18 25 07	13.0	177.1	-0.2		-1.9	120	721	14 51 01
14 53 40	J1834-2341	18 25 38	13.2	177.6	-0.2		-1.6	19	721	14 53 40
14 54 30	---	18 26 28	13.2	177.8	-0.2		-1.4	50	727	14 53 41
14 54 30	M22	18 26 28	13.0	177.4	-0.2		-1.7	-10	727	No stop
14 56 40	---	18 28 38	13.0	177.9	-0.1		-1.4	120	744	14 54 31
14 56 40	J1834-2341	18 28 38	13.2	178.3	-0.1		-1.1	-11	744	No stop
14 58 00	---	18 29 58	13.2	178.7	-0.1		-0.9	69	754	14 56 41
14 58 00	M22	18 29 58	13.0	178.3	-0.1		-1.1	-10	754	No stop
15 00 10	---	18 32 09	13.0	178.8	-0.1		-0.8	120	771	14 58 01
15 00 10	J1834-2341	18 32 09	13.2	179.2	-0.1		-0.5	-11	771	No stop
15 01 30	---	18 33 29	13.2	179.5	-0.0		-0.3	69	781	15 00 11
15 01 30	M22	18 33 29	13.0	179.1	-0.1		-0.6	-10	781	No stop
15 03 40	---	18 35 39	13.0	179.6	-0.0		-0.3	120	797	15 01 31

Schedule for TORUN (Code Tr) Page 6

EM126B - EVN C-band obs of M22-VLA1 and M22-VLA2

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 25 Oct 2016 Day 299 ---										
15 04 10	J1834-2341	18 36 09	13.2	180.1	0.0		0.1	19	797	15 04 10
15 05 00	---	18 36 59	13.2	180.3	0.0		0.2	50	804	15 04 11
15 05 00	M22	18 36 59	13.0	179.9	-0.0		-0.1	-11	804	No stop
15 07 10	---	18 39 10	13.0	180.4	0.0		0.3	119	821	15 05 01
15 07 10	J1834-2341	18 39 10	13.2	180.8	0.1		0.5	-11	821	No stop
15 08 30	---	18 40 30	13.2	181.1	0.1		0.7	69	831	15 07 11
15 08 30	M22	18 40 30	13.0	180.7	0.1		0.5	-11	831	No stop
15 10 40	---	18 42 40	13.0	181.2	0.1		0.8	119	847	15 08 31
15 10 40	J1834-2341	18 42 40	13.2	181.6	0.1		1.1	-11	847	No stop
15 12 00	---	18 44 01	13.2	182.0	0.1		1.3	69	858	15 10 41
15 12 00	M22	18 44 01	13.0	181.5	0.1		1.0	-11	858	No stop
15 14 10	---	18 46 11	13.0	182.1	0.1		1.3	119	874	15 12 01
15 14 40	J1834-2341	18 46 41	13.2	182.6	0.2		1.7	19	874	15 14 40
15 15 30	---	18 47 31	13.2	182.8	0.2		1.8	50	881	15 14 41
15 15 30	M22	18 47 31	13.0	182.4	0.2		1.6	-11	881	No stop
15 17 40	---	18 49 41	13.0	182.9	0.2		1.9	119	897	15 15 31
15 17 40	J1834-2341	18 49 41	13.2	183.3	0.2		2.2	-11	897	No stop
15 19 00	---	18 51 02	13.1	183.6	0.3		2.4	69	908	15 17 41
15 19 00	M22	18 51 02	13.0	183.2	0.2		2.1	-11	908	No stop
15 21 10	---	18 53 12	12.9	183.7	0.3		2.4	119	924	15 19 01
15 21 10	J1834-2341	18 53 12	13.1	184.1	0.3		2.7	-11	924	No stop
15 22 30	---	18 54 32	13.1	184.4	0.3		2.9	69	935	15 21 11
15 22 30	M22	18 54 32	12.9	184.0	0.3		2.6	-11	935	No stop
15 24 40	---	18 56 43	12.9	184.5	0.3		3.0	119	951	15 22 31
15 25 10	J1834-2341	18 57 13	13.1	185.1	0.4		3.3	19	951	15 25 10
15 26 00	---	18 58 03	13.1	185.2	0.4		3.4	50	958	15 25 11
15 26 00	M22	18 58 03	12.9	184.8	0.3		3.2	-11	958	No stop
15 28 10	---	19 00 13	12.9	185.3	0.4		3.5	119	974	15 26 01
15 28 10	J1834-2341	19 00 13	13.0	185.8	0.4		3.8	-11	974	No stop
15 29 30	---	19 01 33	13.0	186.1	0.4		4.0	69	985	15 28 11

Schedule for TORUN (Code Tr) Page 7

EM126B - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Tue 25 Oct 2016 Day 299 ---										
15 29 30	M22	19 01 33	12.8	185.7	0.4		3.7	-11	985	No stop
15 31 40	---	19 03 44	12.8	186.2	0.4		4.0	119	1001	15 29 31
15 31 40	J1834-2341	19 03 44	13.0	186.6	0.5		4.3	-11	1001	No stop
15 33 00	---	19 05 04	13.0	186.9	0.5		4.5	69	1012	15 31 41
15 33 00	M22	19 05 04	12.8	186.5	0.5		4.2	-11	1012	No stop
15 35 10	---	19 07 14	12.7	187.0	0.5		4.6	119	1028	15 33 01
15 35 40	J1834-2341	19 07 44	12.9	187.5	0.5		4.9	19	1028	15 35 40
15 36 30	---	19 08 35	12.9	187.7	0.5		5.1	50	1035	15 35 41
15 36 30	M22	19 08 35	12.7	187.3	0.5		4.8	-11	1035	No stop
15 38 40	---	19 10 45	12.7	187.8	0.6		5.1	119	1051	15 36 31
15 38 40	J1834-2341	19 10 45	12.8	188.2	0.6		5.4	-11	1051	No stop
15 40 00	---	19 12 05	12.8	188.5	0.6		5.6	69	1062	15 38 41
15 40 00	M22	19 12 05	12.6	188.1	0.6		5.3	-11	1062	No stop
15 42 10	---	19 14 15	12.6	188.6	0.6		5.7	119	1078	15 40 01
15 42 40	J1834-2341	19 14 46	12.8	189.2	0.7		6.0	19	1078	15 42 40
15 43 30	---	19 15 36	12.7	189.4	0.7		6.1	50	1085	15 42 41
15 44 00	J1924-2914	19 16 06	7.7	177.8	-0.2		-1.5	-8	1085	15 44 00
15 47 00	=1921-293	19 19 06	7.7	178.5	-0.1		-1.0	172	1108	15 44 01
15 47 30	J1834-2341	19 19 36	12.6	190.3	0.7		6.7	-9	1108	15 47 30
15 49 00	---	19 21 07	12.6	190.6	0.8		7.0	81	1119	15 47 31
15 49 00	M22	19 21 07	12.4	190.2	0.7		6.7	-11	1119	No stop
15 51 10	---	19 23 17	12.4	190.7	0.8		7.0	119	1136	15 49 01
15 51 10	J1834-2341	19 23 17	12.5	191.1	0.8		7.3	-11	1136	No stop
15 52 30	---	19 24 37	12.5	191.5	0.8		7.5	69	1146	15 51 11
15 52 30	M22	19 24 37	12.3	191.0	0.8		7.2	-11	1146	No stop
15 54 40	---	19 26 48	12.3	191.5	0.8		7.5	119	1163	15 52 31
15 55 10	J1834-2341	19 27 18	12.4	192.1	0.9		7.9	19	1163	15 55 10
15 56 00	---	19 28 08	12.4	192.3	0.9		8.0	50	1169	15 55 11
15 56 00	M22	19 28 08	12.2	191.8	0.8		7.7	-11	1169	No stop
15 58 10	---	19 30 18	12.2	192.4	0.9		8.1	119	1186	15 56 01

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Schedule for TORUN     (Code Tr )                                  Page   8
               EM126B - EVN C-band obs of M22-VLA1 and M22-VLA2
  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  25 Oct 2016   Day 299 ---

15 58 10  J1834-2341   19 30 18  12.3 192.8  0.9       8.3   -11     1186   No stop
15 59 30  ---          19 31 38  12.3 193.1  0.9       8.5    69     1196   15 58 11

15 59 30  M22          19 31 38  12.1 192.7  0.9       8.3   -11     1196   No stop
16 01 40  ---          19 33 49  12.0 193.2  0.9       8.6   119     1213   15 59 31

16 01 40  J1834-2341   19 33 49  12.2 193.6  1.0       8.9   -11     1213   No stop
16 03 00  ---          19 35 09  12.1 193.9  1.0       9.1    69     1223   16 01 41

16 03 00  M22          19 35 09  12.0 193.5  1.0       8.8   -11     1223   No stop
16 05 10  ---          19 37 19  11.9 194.0  1.0       9.1   119     1240   16 03 01

16 05 40  J1834-2341   19 37 49  12.0 194.5  1.0       9.5    19     1240   16 05 40
16 06 30  ---          19 38 39  12.0 194.7  1.0       9.6    50     1246   16 05 41

16 06 30  M22          19 38 39  11.9 194.3  1.0       9.3   -11     1246   No stop
16 08 40  ---          19 40 50  11.8 194.8  1.1       9.6   119     1263   16 06 31

16 08 40  J1834-2341   19 40 50  11.9 195.2  1.1       9.9   -11     1263   No stop
16 10 00  ---          19 42 10  11.9 195.5  1.1      10.1    69     1273   16 08 41

16 10 00  M22          19 42 10  11.7 195.1  1.1       9.8   -11     1273   No stop
16 12 10  ---          19 44 20  11.7 195.6  1.1      10.2   119     1290   16 10 01

16 12 10  J1834-2341   19 44 20  11.8 196.0  1.1      10.4   -11     1290   No stop
16 13 30  ---          19 45 41  11.7 196.3  1.2      10.6    69     1300   16 12 11

16 13 30  M22          19 45 41  11.6 195.9  1.1      10.4   -11     1300   No stop
16 15 40  ---          19 47 51  11.5 196.4  1.2      10.7   119     1317   16 13 31

16 16 10  J1834-2341   19 48 21  11.6 196.9  1.2      11.0    19     1317   16 16 10
16 17 00  ---          19 49 11  11.6 197.1  1.2      11.1    50     1323   16 16 11

16 17 00  M22          19 49 11  11.4 196.7  1.2      10.9   -11     1323   No stop
16 19 10  ---          19 51 22  11.4 197.2  1.2      11.2   119     1340   16 17 01

16 19 10  J1834-2341   19 51 22  11.5 197.6  1.3      11.5   -11     1340   No stop
16 20 30  ---          19 52 42  11.4 197.9  1.3      11.7    69     1350   16 19 11

16 20 30  M22          19 52 42  11.3 197.5  1.3      11.4   -11     1350   No stop
16 22 40  ---          19 54 52  11.2 198.0  1.3      11.7   119     1367   16 20 31

16 22 40  J1834-2341   19 54 52  11.3 198.4  1.3      12.0   -11     1367   No stop
16 24 00  ---          19 56 12  11.3 198.7  1.3      12.2    69     1377   16 22 41
```

Schedule for TORUN (Code Tr) Page 9

EM126B - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Tue 25 Oct 2016 Day 299 ---										
16 24 00	M22	19 56 12	11.1	198.3	1.3		11.9	-11	1377	No stop
16 26 10	---	19 58 23	11.0	198.8	1.3		12.2	119	1394	16 24 01
16 26 40	J1834-2341	19 58 53	11.1	199.3	1.4		12.5	19	1394	16 26 40
16 27 30	---	19 59 43	11.1	199.5	1.4		12.7	50	1400	16 26 41
16 27 30	M22	19 59 43	11.0	199.1	1.4		12.4	-11	1400	No stop
16 29 40	---	20 01 53	10.9	199.6	1.4		12.7	119	1417	16 27 31
16 29 40	J1834-2341	20 01 53	11.0	200.0	1.4		13.0	-11	1417	No stop
16 31 00	---	20 03 14	10.9	200.3	1.5		13.2	69	1427	16 29 41
16 31 00	M22	20 03 14	10.8	199.9	1.4		12.9	-11	1427	No stop
16 33 10	---	20 05 24	10.7	200.4	1.5		13.2	119	1444	16 31 01
16 33 10	J1834-2341	20 05 24	10.8	200.8	1.5		13.5	-11	1444	No stop
16 34 30	---	20 06 44	10.7	201.1	1.5		13.7	69	1454	16 33 11
16 34 30	M22	20 06 44	10.6	200.7	1.5		13.4	-11	1454	No stop
16 36 40	---	20 08 54	10.5	201.2	1.5		13.7	119	1471	16 34 31
16 37 10	J1834-2341	20 09 25	10.6	201.7	1.6		14.1	19	1471	16 37 10
16 38 00	---	20 10 15	10.5	201.9	1.6		14.2	50	1477	16 37 11
16 38 00	M22	20 10 15	10.4	201.5	1.5		13.9	-11	1477	No stop
16 40 10	---	20 12 25	10.3	202.0	1.6		14.2	119	1494	16 38 01
16 40 10	J1834-2341	20 12 25	10.4	202.4	1.6		14.5	-11	1494	No stop
16 41 30	---	20 13 45	10.3	202.7	1.6		14.7	69	1504	16 40 11
16 41 30	M22	20 13 45	10.2	202.3	1.6		14.4	-11	1504	No stop
16 43 40	---	20 15 56	10.1	202.8	1.6		14.7	119	1521	16 41 31
16 43 40	J1834-2341	20 15 56	10.2	203.2	1.7		15.0	-11	1521	No stop
16 45 00	---	20 17 16	10.1	203.5	1.7		15.2	69	1531	16 43 41
16 45 00	M22	20 17 16	10.0	203.1	1.7		14.9	-11	1531	No stop
16 47 10	---	20 19 26	9.9	203.6	1.7		15.2	119	1547	16 45 01
16 47 40	J1834-2341	20 19 56	10.0	204.1	1.7		15.5	19	1547	16 47 40
16 48 30	---	20 20 46	9.9	204.3	1.8		15.6	50	1554	16 47 41
16 48 30	M22	20 20 46	9.8	203.9	1.7		15.4	-11	1554	No stop
16 50 40	---	20 22 57	9.7	204.3	1.8		15.7	119	1571	16 48 31

Schedule for TORUN (Code Tr) Page 10

EM126B - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Tue 25 Oct 2016 Day 299 ---										
16 50 40	J1834-2341	20 22 57	9.8	204.8	1.8		16.0	-11	1571	No stop
16 52 00	---	20 24 17	9.7	205.1	1.8		16.1	69	1581	16 50 41
16 52 00	M22	20 24 17	9.6	204.6	1.8		15.9	-11	1581	No stop
16 54 10	---	20 26 27	9.5	205.1	1.8		16.2	119	1597	16 52 01
16 54 10	J1834-2341	20 26 27	9.5	205.6	1.8		16.4	-11	1597	No stop
16 55 30	---	20 27 48	9.5	205.9	1.9		16.6	69	1608	16 54 11
16 55 30	M22	20 27 48	9.4	205.4	1.8		16.4	-11	1608	No stop
16 57 40	---	20 29 58	9.2	205.9	1.9		16.7	119	1624	16 55 31
16 58 10	J1834-2341	20 30 28	9.3	206.5	1.9		17.0	19	1624	16 58 10
16 59 00	---	20 31 18	9.2	206.6	1.9		17.1	50	1631	16 58 11
16 59 00	M22	20 31 18	9.1	206.2	1.9		16.9	-11	1631	No stop
17 01 10	---	20 33 28	9.0	206.7	1.9		17.1	119	1647	16 59 01
17 01 10	J1834-2341	20 33 28	9.1	207.1	2.0		17.4	-11	1647	No stop
17 02 30	---	20 34 49	9.0	207.4	2.0		17.6	69	1658	17 01 11
17 02 30	M22	20 34 49	8.9	207.0	2.0		17.3	-11	1658	No stop
17 04 40	---	20 36 59	8.8	207.5	2.0		17.6	119	1674	17 02 31
17 04 40	J1834-2341	20 36 59	8.8	207.9	2.0		17.9	-11	1674	No stop
17 06 00	---	20 38 19	8.7	208.2	2.0		18.0	69	1685	17 04 41
17 06 00	M22	20 38 19	8.7	207.7	2.0		17.8	-11	1685	No stop
17 08 10	---	20 40 30	8.5	208.2	2.1		18.1	119	1701	17 06 01
17 08 40	J1834-2341	20 41 00	8.5	208.8	2.1		18.4	19	1701	17 08 40
17 09 30	---	20 41 50	8.5	209.0	2.1		18.5	50	1708	17 08 41
17 09 30	M22	20 41 50	8.4	208.5	2.1		18.3	-11	1708	No stop
17 11 40	---	20 44 00	8.3	209.0	2.1		18.6	119	1724	17 09 31
17 11 40	J1834-2341	20 44 00	8.3	209.4	2.1		18.8	-11	1724	No stop
17 13 00	---	20 45 20	8.2	209.7	2.2		19.0	69	1735	17 11 41
17 13 00	M22	20 45 20	8.2	209.3	2.1		18.7	-11	1735	No stop
17 15 10	---	20 47 31	8.0	209.8	2.2		19.0	119	1751	17 13 01
17 15 10	J1834-2341	20 47 31	8.1	210.2	2.2		19.3	-11	1751	No stop
17 16 30	---	20 48 51	8.0	210.5	2.2		19.4	69	1762	17 15 11

Schedule for TORUN (Code Tr) Page 11

EM126B - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Tue 25 Oct 2016 Day 299 ---										
17 16 30	M22	20 48 51	7.9	210.1	2.2		19.2	-11	1762	No stop
17 18 40	---	20 51 01	7.7	210.5	2.2		19.5	119	1778	17 16 31
17 19 10	J1834-2341	20 51 31	7.8	211.1	2.3		19.8	19	1778	17 19 10
17 20 00	---	20 52 22	7.7	211.3	2.3		19.9	50	1785	17 19 11
17 20 00	M22	20 52 22	7.6	210.8	2.2		19.7	-11	1785	No stop
17 22 10	---	20 54 32	7.5	211.3	2.3		19.9	119	1801	17 20 01
17 22 10	J1834-2341	20 54 32	7.5	211.7	2.3		20.2	-11	1801	No stop
17 23 30	---	20 55 52	7.4	212.0	2.3		20.3	69	1812	17 22 11
17 23 30	M22	20 55 52	7.4	211.6	2.3		20.1	-11	1812	No stop
17 25 40	---	20 58 02	7.2	212.0	2.3		20.4	119	1828	17 23 31
17 25 40	J1834-2341	20 58 02	7.2	212.5	2.4		20.6	-11	1828	No stop
17 27 00	---	20 59 23	7.1	212.8	2.4		20.8	69	1838	17 25 41
17 27 00	M22	20 59 23	7.1	212.3	2.4		20.6	-11	1838	No stop
17 29 10	---	21 01 33	6.9	212.8	2.4		20.8	119	1855	17 27 01
17 29 40	J1834-2341	21 02 03	6.9	213.4	2.4		21.1	19	1855	17 29 40
17 30 30	---	21 02 53	6.8	213.5	2.5		21.2	50	1862	17 29 41
17 30 30	M22	21 02 53	6.8	213.1	2.4		21.0	-11	1862	No stop
17 32 40	---	21 05 04	6.6	213.6	2.5		21.3	119	1878	17 30 31
17 32 40	J1834-2341	21 05 04	6.7	214.0	2.5		21.5	-11	1878	No stop
17 34 00	---	21 06 24	6.5	214.3	2.5		21.7	69	1888	17 32 41
17 34 00	M22	21 06 24	6.5	213.8	2.5		21.5	-11	1888	No stop
17 36 10	---	21 08 34	6.3	214.3	2.5		21.7	119	1905	17 34 01
17 36 10	J1834-2341	21 08 34	6.4	214.8	2.5		21.9	-11	1905	No stop
17 37 30	---	21 09 54	6.2	215.0	2.6		22.1	69	1915	17 36 11
17 37 30	M22	21 09 54	6.2	214.6	2.5		21.9	-11	1915	No stop
17 39 40	---	21 12 05	6.0	215.1	2.6		22.2	119	1932	17 37 31
17 40 10	J1834-2341	21 12 35	6.0	215.6	2.6		22.4	19	1932	17 40 10
17 41 00	---	21 13 25	5.9	215.8	2.6		22.5	50	1938	17 40 11
17 41 00	M22	21 13 25	5.9	215.3	2.6		22.3	-11	1938	No stop
17 43 10	---	21 15 35	5.7	215.8	2.6		22.6	119	1955	17 41 01

Schedule for TORUN (Code Tr) Page 12

EM126B - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Tue 25 Oct 2016 Day 299 ---										
17 43 10	J1834-2341	21 15 35	5.8	216.2	2.7		22.8	-11	1955	No stop
17 44 30	---	21 16 56	5.6	216.5	2.7		23.0	69	1965	17 43 11
17 44 30	M22	21 16 56	5.6	216.1	2.7		22.8	-11	1965	No stop
17 46 40	---	21 19 06	5.4	216.5	2.7		23.0	119	1982	17 44 31
17 46 40	J1834-2341	21 19 06	5.4	217.0	2.7		23.2	-11	1982	No stop
17 48 00	---	21 20 26	5.3	217.3	2.7		23.4	69	1992	17 46 41
17 48 00	M22	21 20 26	5.3	216.8	2.7		23.2	-11	1992	No stop
17 50 10	---	21 22 37	5.1	217.3	2.8		23.4	119	2009	17 48 01
17 50 40	J1834-2341	21 23 07	5.1	217.8	2.8		23.7	19	2009	17 50 40
17 51 30	---	21 23 57	5.0	218.0	2.8		23.8	50	2015	17 50 41
17 51 30	M22	21 23 57	5.0	217.6	2.8		23.6	-11	2015	No stop
17 53 40	---	21 26 07	4.8	218.0	2.8		23.9	119	2032	17 51 31
17 53 40	J1834-2341	21 26 07	4.8	218.5	2.8		24.1	-11	2032	No stop
17 55 00	---	21 27 27	4.7	218.7	2.9		24.2	69	2042	17 53 41
17 55 00	M22	21 27 27	4.6	218.3	2.8		24.0	-11	2042	No stop
17 57 10	---	21 29 38	4.4	218.8	2.9		24.3	119	2059	17 55 01
17 57 10	J1834-2341	21 29 38	4.5	219.2	2.9		24.5	-11	2059	No stop
17 58 30	---	21 30 58	4.3	219.5	2.9		24.6	69	2069	17 57 11
17 58 30	M22	21 30 58	4.3	219.0	2.9		24.4	-11	2069	No stop
18 00 40	---	21 33 08	4.1	219.5	2.9		24.7	119	2086	17 58 31
18 01 10	J1834-2341	21 33 38	4.1	220.0	3.0		24.9	19	2086	18 01 10
18 02 00	---	21 34 28	4.0	220.2	3.0		25.0	50	2092	18 01 11
18 02 00	M22	21 34 28	4.0	219.8	3.0		24.8	-11	2092	No stop
18 04 10	---	21 36 39	3.8	220.2	3.0		25.1	119	2109	18 02 01
18 04 10	J1834-2341	21 36 39	3.8	220.7	3.0		25.3	-11	2109	No stop
18 05 30	---	21 37 59	3.7	220.9	3.0		25.4	69	2119	18 04 11
18 05 30	M22	21 37 59	3.6	220.5	3.0		25.2	-11	2119	No stop
18 07 40	---	21 40 09	3.4	220.9	3.0		25.5	119	2136	18 05 31
18 08 10	J1834-2341	21 40 39	3.4	221.5	3.1		25.7	19	2136	18 08 10
18 09 00	---	21 41 30	3.3	221.7	3.1		25.8	50	2142	18 08 11

```
Schedule for TORUN     (Code Tr )                                  Page  13
               EM126B - EVN C-band obs of M22-VLA1 and M22-VLA2
  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  25 Oct 2016   Day 299 ---

18 09 30  J2253+1608   21 42 00  50.5 151.9 -1.2     -17.1  -161     2142   18 09 30
18 15 00  =3C454.3     21 47 31  50.8 153.9 -1.1     -16.0   169     2185   18 09 31



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


 ======== Setup file: sess316.C2048

   Setup group:   10         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 64.000
   Number of channels:  8    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
  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         3         7         3         7
  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:   6  Setup file default.  Used with PCAL = off
  LO sum=   4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
  BBC fr=    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
  Bandwd=     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00
   Matching frequency sets:   6

  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)

* M22                18 33 21.731212   * 18 36 24.822800     18 37 25.157785       0.00
                   -23 56 55.64152    *-23 54 23.65850     -23 53 22.54431        0.00
                    Position intermediate between the two targets

* J1834-2341        18 31 39.447623   * 18 34 42.285467     18 35 42.531071       0.23
                   -23 44 24.27265    *-23 41 59.67178     -23 41 00.91585        0.47
                    Same position as BS228 for consistent astrometry, from rfc_2012b Petrov, 2012

  3C345             16 41 17.606228   * 16 42 58.809966     16 43 31.015160       0.76
* J1642+3948        39 54 10.81496    * 39 48 36.99402      39 47 07.59599        0.52
  1641+399          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
  J1642+39          GSFC 2015a astro solution, unpublished  53430 observations.

  1921-293          19 21 42.234127   * 19 24 51.055954     19 25 53.444821       0.01
* J1924-2914       -29 20 26.35393    *-29 14 30.12103     -29 12 23.89446        0.01
  J1924-29          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                    GSFC 2015a astro solution, unpublished  45228 observations.

  3C454.3           22 51 29.519738   * 22 53 57.747938     22 54 48.172061       0.67
* J2253+1608        15 52 54.34810    * 16 08 53.56093      16 14 27.30180        0.70
  2251+158          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
  J2253+16          GSFC 2015a astro solution, unpublished  40748 observations.
```

ed040atr

EVN follow up of binary SMBH candidates

PI: *Roger Deane*

```
Address:  Rhodes University         South Africa

Observing mode: 204816-2
Schedule for TORUN     (Code Tr )                                  Page   2
               EVN follow up of binary SMBH candidates
  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  26 Oct 2016   Day 300 ---
 Next scan frequencies:  4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
 Next BBC frequencies:    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
 Next scan bandwidths:     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00

04 00 00  1100+122     07 34 07  31.5 114.5 -3.5     -33.9     0        0   04 00 00
04 04 00  ---          07 38 07  32.1 115.4 -3.4     -33.7   240       31   04 00 01

04 04 00  PM64         07 38 07  32.6 119.0 -3.2     -32.3   -22       31   No stop
04 07 30  ---          07 41 38  33.0 119.8 -3.2     -32.0   188       58   04 04 01

04 08 15  1100+122     07 42 23  32.6 116.5 -3.4     -33.3    23       58   04 08 15
04 09 30  ---          07 43 38  32.8 116.8 -3.3     -33.2    75       67   04 08 16

04 09 30  PM64         07 43 38  33.3 120.3 -3.1     -31.8   -22       67   No stop
04 13 00  ---          07 47 09  33.7 121.2 -3.1     -31.5   188       94   04 09 31

04 13 00  1100+122     07 47 09  33.3 117.6 -3.3     -32.9   -22       94   No stop
04 14 30  ---          07 48 39  33.5 118.0 -3.3     -32.8    68      106   04 13 01

04 14 30  PM64         07 48 39  33.9 121.6 -3.1     -31.4   -22      106   No stop
04 18 00  ---          07 52 10  34.4 122.5 -3.0     -31.0   188      133   04 14 31

04 18 45  1100+122     07 52 55  34.0 119.1 -3.2     -32.4    23      133   04 18 45
04 20 00  ---          07 54 10  34.2 119.4 -3.2     -32.3    75      142   04 18 46

04 20 00  PM64         07 54 10  34.6 123.0 -3.0     -30.8   -22      142   No stop
04 23 30  ---          07 57 41  35.1 123.9 -2.9     -30.5   188      169   04 20 01

04 23 30  1100+122     07 57 41  34.7 120.3 -3.1     -32.0   -22      169   No stop
04 25 00  ---          07 59 11  34.9 120.6 -3.1     -31.9    68      181   04 23 31

04 25 00  PM64         07 59 11  35.2 124.3 -2.9     -30.3   -22      181   No stop
04 28 30  ---          08 02 41  35.7 125.2 -2.8     -29.9   188      208   04 25 01

04 29 15  1100+122     08 03 27  35.4 121.7 -3.0     -31.5    23      208   04 29 15
04 32 40  ---          08 06 52  35.8 122.6 -3.0     -31.1   205      234   04 29 16

 ---------- fringe-finder ----------

04 34 40  4C39.25      08 08 52  70.4 128.2 -1.3     -37.4   -24      234   04 34 40
04 42 40  ---          08 16 54  71.3 132.1 -1.2     -35.0   456      296   04 34 41

04 43 10  1015+359     08 17 24  62.5 117.1 -2.0     -41.1   -17      296   04 43 10
04 48 10  ---          08 22 25  63.1 118.8 -1.9     -40.4   283      334   04 43 11
```

Schedule for TORUN (Code Tr) Page 3

EVN follow up of binary SMBH candidates

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
--- Wed 26 Oct 2016 Day 300 ---										
04 48 10	PM39	08 22 25	63.5	117.9	-2.0		-41.1	-13	334	No stop
04 51 40	---	08 25 55	63.9	119.1	-1.9		-40.5	197	361	04 48 11
04 52 16	1015+359	08 26 31	63.7	120.2	-1.9		-39.7	22	361	04 52 16
04 53 40	---	08 27 56	63.8	120.7	-1.9		-39.4	84	372	04 52 17
04 53 40	PM39	08 27 56	64.2	119.8	-1.9		-40.2	-13	372	No stop
04 57 10	---	08 31 26	64.6	121.1	-1.8		-39.6	197	399	04 53 41
04 57 10	1015+359	08 31 26	64.3	122.0	-1.8		-38.8	-14	399	No stop
04 58 40	---	08 32 56	64.5	122.5	-1.8		-38.5	76	410	04 57 11
04 58 40	PM39	08 32 56	64.8	121.6	-1.8		-39.3	-13	410	No stop
05 02 10	---	08 36 27	65.3	122.9	-1.7		-38.6	197	437	04 58 41
05 02 46	1015+359	08 37 03	65.0	124.1	-1.7		-37.7	22	437	05 02 46
05 04 10	---	08 38 27	65.2	124.6	-1.7		-37.5	84	448	05 02 47
05 04 10	PM39	08 38 27	65.5	123.7	-1.7		-38.2	-13	448	No stop
05 07 40	---	08 41 58	66.0	125.1	-1.6		-37.5	197	475	05 04 11
05 07 40	1015+359	08 41 58	65.6	126.0	-1.6		-36.7	-14	475	No stop
05 09 10	---	08 43 28	65.8	126.6	-1.6		-36.4	76	486	05 07 41
05 09 10	PM39	08 43 28	66.1	125.7	-1.6		-37.2	-13	486	No stop
05 12 40	---	08 46 59	66.6	127.1	-1.5		-36.4	197	513	05 09 11
05 13 16	1015+359	08 47 35	66.3	128.2	-1.5		-35.5	22	513	05 13 16
05 14 40	---	08 48 59	66.4	128.8	-1.5		-35.1	84	524	05 13 17
05 14 40	PM39	08 48 59	66.8	127.9	-1.5		-35.9	-13	524	No stop
05 18 10	---	08 52 30	67.2	129.4	-1.5		-35.1	197	551	05 14 41
05 18 10	1015+359	08 52 30	66.8	130.3	-1.4		-34.3	-14	551	No stop
05 19 40	---	08 54 00	67.0	130.9	-1.4		-33.9	76	562	05 18 11
05 19 40	PM39	08 54 00	67.4	130.0	-1.4		-34.7	-13	562	No stop
05 23 10	---	08 57 30	67.8	131.6	-1.4		-33.8	197	589	05 19 41
05 23 40	1015+359	08 58 00	67.5	132.7	-1.4		-32.9	16	589	05 23 40
05 27 20	---	09 01 41	67.9	134.4	-1.3		-31.9	220	618	05 23 41
05 28 00	1100+122	09 02 21	42.2	138.1	-2.0		-24.2	-70	618	05 28 00
05 31 50	---	09 06 12	42.6	139.2	-2.0		-23.6	160	647	05 28 01

Schedule for TORUN (Code Tr) Page 4

EVN follow up of binary SMBH candidates

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
--- Wed 26 Oct 2016 Day 300 ---										
05 31 50	PM64	09 06 12	42.5	143.4	-1.8		-21.4	-23	647	No stop
05 35 20	---	09 09 42	42.8	144.5	-1.7		-20.8	187	674	05 31 51
05 35 56	1100+122	09 10 18	43.0	140.5	-1.9		-23.0	13	674	05 35 56
05 37 20	---	09 11 43	43.1	140.9	-1.9		-22.8	84	685	05 35 57
05 37 20	PM64	09 11 43	43.0	145.1	-1.7		-20.5	-23	685	No stop
05 40 50	---	09 15 13	43.3	146.2	-1.6		-19.9	187	712	05 37 21
05 40 50	1100+122	09 15 13	43.4	142.0	-1.8		-22.2	-23	712	No stop
05 42 20	---	09 16 44	43.6	142.5	-1.8		-21.9	67	723	05 40 51
05 42 20	PM64	09 16 44	43.4	146.7	-1.6		-19.6	-23	723	No stop
05 45 50	---	09 20 14	43.7	147.8	-1.5		-19.0	187	750	05 42 21
05 46 26	1100+122	09 20 50	43.9	143.8	-1.7		-21.3	13	750	05 46 26
05 47 50	---	09 22 14	44.1	144.2	-1.7		-21.0	84	761	05 46 27
05 47 50	PM64	09 22 14	43.9	148.4	-1.5		-18.7	-24	761	No stop
05 51 20	---	09 25 45	44.1	149.6	-1.4		-18.0	186	788	05 47 51
05 51 20	1100+122	09 25 45	44.4	145.4	-1.6		-20.4	-23	788	No stop
05 52 50	---	09 27 15	44.5	145.8	-1.6		-20.2	67	799	05 51 21
05 52 50	PM64	09 27 15	44.2	150.1	-1.4		-17.8	-24	799	No stop
05 56 20	---	09 30 46	44.5	151.2	-1.4		-17.1	186	826	05 52 51
05 57 05	1100+122	09 31 31	44.8	147.2	-1.5		-19.4	22	826	05 57 05
06 00 32	---	09 34 58	45.1	148.3	-1.5		-18.8	207	853	05 57 06
06 01 02	1015+359	09 35 29	70.9	151.9	-0.7		-20.3	-81	853	06 01 02
06 06 02	---	09 40 29	71.3	154.9	-0.6		-18.3	219	891	06 01 03
06 06 02	PM39	09 40 29	71.7	154.1	-0.7		-18.9	-13	891	No stop
06 09 32	---	09 44 00	71.9	156.3	-0.6		-17.4	197	918	06 06 03
06 10 08	1015+359	09 44 36	71.5	157.4	-0.6		-16.5	23	918	06 10 08
06 11 32	---	09 46 00	71.6	158.2	-0.6		-15.9	84	929	06 10 09
06 11 32	PM39	09 46 00	72.1	157.6	-0.6		-16.5	-13	929	No stop
06 15 02	---	09 49 31	72.2	159.8	-0.5		-14.9	197	956	06 11 33
06 15 02	1015+359	09 49 31	71.8	160.4	-0.5		-14.3	-13	956	No stop
06 16 32	---	09 51 01	71.8	161.4	-0.5		-13.6	77	967	06 15 03

Schedule for TORUN (Code Tr) Page 5

EVN follow up of binary SMBH candidates

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
--- Wed 26 Oct 2016 Day 300 ---										
06 16 32	PM39	09 51 01	72.3	160.7	-0.5		-14.2	-13	967	No stop
06 20 02	---	09 54 32	72.5	163.0	-0.4		-12.5	197	994	06 16 33
06 20 38	1015+359	09 55 08	72.0	164.0	-0.4		-11.7	23	994	06 20 38
06 22 02	---	09 56 32	72.1	164.9	-0.4		-11.1	84	1005	06 20 39
06 22 02	PM39	09 56 32	72.6	164.3	-0.4		-11.6	-13	1005	No stop
06 25 32	---	10 00 03	72.7	166.7	-0.3		-9.9	197	1032	06 22 03
06 25 32	1015+359	10 00 03	72.2	167.2	-0.3		-9.4	-13	1032	No stop
06 27 02	---	10 01 33	72.3	168.2	-0.3		-8.7	77	1044	06 25 33
06 27 02	PM39	10 01 33	72.8	167.7	-0.3		-9.1	-13	1044	No stop
06 30 32	---	10 05 03	72.9	170.1	-0.2		-7.4	197	1071	06 27 03
06 31 08	1015+359	10 05 40	72.4	170.9	-0.2		-6.7	23	1071	06 31 08
06 32 32	---	10 07 04	72.4	171.9	-0.2		-6.0	84	1081	06 31 09
06 32 32	PM39	10 07 04	72.9	171.4	-0.2		-6.4	-13	1081	No stop
06 36 02	---	10 10 34	73.0	173.8	-0.1		-4.6	197	1108	06 32 33
06 36 02	1015+359	10 10 34	72.5	174.2	-0.1		-4.3	-13	1108	No stop
06 37 32	---	10 12 05	72.5	175.2	-0.1		-3.5	77	1120	06 36 03
06 37 32	PM39	10 12 05	73.0	174.9	-0.1		-3.8	-13	1120	No stop
06 41 02	---	10 15 35	73.0	177.3	-0.1		-2.0	197	1147	06 37 33
06 41 32	1015+359	10 16 05	72.5	177.9	-0.1		-1.5	17	1147	06 41 32
06 45 12	---	10 19 46	72.5	180.4	0.0		0.3	220	1175	06 41 33
06 45 42	1100+122	10 20 16	47.9	164.0	-0.7		-9.8	-76	1175	06 45 42
06 49 42	---	10 24 17	48.0	165.4	-0.7		-8.9	164	1206	06 45 43
06 49 42	PM64	10 24 17	47.2	169.7	-0.5		-6.2	-24	1206	No stop
06 53 12	---	10 27 47	47.3	171.0	-0.4		-5.5	186	1233	06 49 43
06 53 57	1100+122	10 28 32	48.2	167.0	-0.6		-8.0	22	1233	06 53 57
06 55 12	---	10 29 47	48.2	167.4	-0.6		-7.7	75	1242	06 53 58
06 55 12	PM64	10 29 47	47.3	171.7	-0.4		-5.0	-24	1242	No stop
06 58 42	---	10 33 18	47.4	173.0	-0.3		-4.3	186	1269	06 55 13
06 58 42	1100+122	10 33 18	48.3	168.7	-0.5		-6.9	-23	1269	No stop
07 00 12	---	10 34 48	48.4	169.2	-0.5		-6.6	67	1281	06 58 43

Schedule for TORUN (Code Tr) Page 6

EVN follow up of binary SMBH candidates

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
--- Wed 26 Oct 2016 Day 300 ---										
07 00 12	PM64	10 34 48	47.4	173.5	-0.3		-3.9	-24	1281	No stop
07 03 42	---	10 38 19	47.5	174.8	-0.2		-3.2	186	1308	07 00 13
07 04 27	1100+122	10 39 04	48.5	170.8	-0.4		-5.6	22	1308	07 04 27
07 05 42	---	10 40 19	48.5	171.3	-0.4		-5.3	75	1317	07 04 28
07 05 42	PM64	10 40 19	47.5	175.5	-0.2		-2.7	-24	1317	No stop
07 09 12	---	10 43 50	47.5	176.8	-0.1		-1.9	186	1344	07 05 43
07 09 12	1100+122	10 43 50	48.6	172.6	-0.3		-4.6	-23	1344	No stop
07 10 42	---	10 45 20	48.6	173.1	-0.3		-4.2	67	1356	07 09 13
07 10 42	PM64	10 45 20	47.5	177.4	-0.1		-1.6	-24	1356	No stop
07 14 12	---	10 48 51	47.6	178.6	-0.1		-0.8	186	1383	07 10 43
07 14 57	1100+122	10 49 36	48.7	174.7	-0.2		-3.3	22	1383	07 14 57
07 18 22	---	10 53 01	48.7	176.0	-0.2		-2.5	205	1409	07 14 58
07 18 52	1015+359	10 53 31	71.5	202.5	0.6		16.4	-69	1409	07 18 52
07 22 52	---	10 57 32	71.3	205.0	0.6		18.2	171	1440	07 18 53
07 22 52	PM39	10 57 32	71.8	205.2	0.6		18.5	-13	1440	No stop
07 26 22	---	11 01 03	71.5	207.4	0.7		20.0	197	1467	07 22 53
07 26 58	1015+359	11 01 39	71.0	207.4	0.7		19.9	23	1467	07 26 58
07 28 22	---	11 03 03	70.9	208.2	0.7		20.5	84	1477	07 26 59
07 28 22	PM39	11 03 03	71.4	208.6	0.7		20.8	-13	1477	No stop
07 31 52	---	11 06 34	71.1	210.6	0.8		22.3	197	1504	07 28 23
07 31 52	1015+359	11 06 34	70.6	210.3	0.8		21.9	-13	1504	No stop
07 33 22	---	11 08 04	70.5	211.1	0.8		22.4	77	1516	07 31 53
07 33 22	PM39	11 08 04	71.0	211.5	0.8		22.9	-13	1516	No stop
07 36 52	---	11 11 34	70.7	213.5	0.9		24.2	197	1543	07 33 23
07 37 28	1015+359	11 12 10	70.2	213.4	0.9		24.0	23	1543	07 37 28
07 38 52	---	11 13 35	70.1	214.2	0.9		24.5	84	1553	07 37 29
07 38 52	PM39	11 13 35	70.6	214.6	0.9		25.0	-13	1553	No stop
07 42 22	---	11 17 05	70.3	216.5	1.0		26.2	197	1580	07 38 53
07 42 22	1015+359	11 17 05	69.8	216.0	1.0		25.8	-13	1580	No stop
07 43 52	---	11 18 35	69.6	216.8	1.0		26.3	77	1592	07 42 23

Schedule for TORUN (Code Tr) Page 7

EVN follow up of binary SMBH candidates

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 26 Oct 2016 Day 300 ---										
07 43 52	PM39	11 18 35	70.1	217.3	1.0		26.8	-13	1592	No stop
07 47 22	---	11 22 06	69.8	219.1	1.0		28.0	197	1619	07 43 53
07 47 58	1015+359	11 22 42	69.3	218.9	1.1		27.7	23	1619	07 47 58
07 49 22	---	11 24 06	69.1	219.7	1.1		28.1	84	1630	07 47 59
07 49 22	PM39	11 24 06	69.6	220.2	1.1		28.7	-13	1630	No stop
07 52 52	---	11 27 37	69.3	221.9	1.1		29.8	197	1657	07 49 23
07 52 52	1015+359	11 27 37	68.8	221.4	1.1		29.2	-13	1657	No stop
07 54 22	---	11 29 07	68.6	222.1	1.2		29.7	77	1668	07 52 53
07 54 22	PM39	11 29 07	69.1	222.7	1.2		30.3	-13	1668	No stop
07 57 52	---	11 32 38	68.8	224.4	1.2		31.3	197	1695	07 54 23
07 58 28	1015+359	11 33 14	68.2	224.1	1.2		30.9	23	1695	07 58 28
08 01 52	---	11 36 38	67.9	225.7	1.3		31.9	204	1721	07 58 29
---------- fringe-finder ----------										
08 03 52	OQ208	11 38 39	53.2	117.3	-2.5		-37.4	-111	1721	08 03 52
08 11 52	---	11 46 40	54.2	119.6	-2.4		-36.4	369	1783	08 03 53
08 14 52	1100+122	11 49 41	47.8	196.8	0.8		10.2	11	1783	08 14 52
08 16 22	---	11 51 11	47.7	197.3	0.8		10.5	90	1794	08 14 53
08 16 22	PM64	11 51 11	46.0	201.0	1.0		12.6	-22	1794	No stop
08 19 52	---	11 54 41	45.8	202.2	1.0		13.3	188	1821	08 16 23
08 20 22	1100+122	11 55 11	47.5	198.8	0.9		11.4	8	1821	08 20 22
08 21 52	---	11 56 42	47.5	199.3	0.9		11.7	90	1833	08 20 23
08 21 52	PM64	11 56 42	45.7	202.8	1.1		13.7	-22	1833	No stop
08 25 22	---	12 00 12	45.4	204.0	1.1		14.4	188	1860	08 21 53
08 25 22	1100+122	12 00 12	47.3	200.5	0.9		12.4	-22	1860	No stop
08 26 52	---	12 01 43	47.2	201.1	1.0		12.7	68	1871	08 25 23
08 26 52	PM64	12 01 43	45.4	204.5	1.2		14.7	-22	1871	No stop
08 30 22	---	12 05 13	45.1	205.7	1.2		15.4	188	1898	08 26 53
08 30 52	1100+122	12 05 43	47.0	202.5	1.0		13.6	9	1898	08 30 52
08 32 22	---	12 07 13	46.9	203.0	1.1		13.9	90	1910	08 30 53

Schedule for TORUN (Code Tr) Page 8

EVN follow up of binary SMBH candidates

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
--- Wed 26 Oct 2016 Day 300 ---										
08 32 22	PM64	12 07 13	45.0	206.4	1.2		15.8	-22	1910	No stop
08 35 52	---	12 10 44	44.8	207.6	1.3		16.4	188	1937	08 32 23
08 35 52	1100+122	12 10 44	46.7	204.2	1.1		14.6	-21	1937	No stop
08 37 22	---	12 12 14	46.6	204.7	1.1		14.9	69	1948	08 35 53
08 37 22	PM64	12 12 14	44.7	208.1	1.3		16.7	-22	1948	No stop
08 40 52	---	12 15 45	44.4	209.2	1.4		17.4	188	1975	08 37 23
08 41 22	1100+122	12 16 15	46.3	206.1	1.2		15.7	9	1975	08 41 22
08 45 02	---	12 19 56	46.1	207.3	1.3		16.4	220	2003	08 41 23
08 49 32	PM36	12 24 26	44.3	78.9	-4.4		-50.2	-2	2003	08 49 32
08 53 02	---	12 27 57	44.8	79.5	-4.4		-50.3	208	2030	08 49 33
08 53 32	1645+410	12 28 27	45.9	78.7	-4.3		-51.2	13	2030	08 53 32
08 55 02	---	12 29 57	46.1	79.0	-4.3		-51.3	90	2042	08 53 33
08 55 02	PM36	12 29 57	45.1	79.8	-4.3		-50.4	-16	2042	No stop
08 58 32	---	12 33 28	45.6	80.4	-4.3		-50.5	194	2069	08 55 03
08 58 32	1645+410	12 33 28	46.6	79.6	-4.2		-51.5	-17	2069	No stop
09 00 02	---	12 34 58	46.8	79.8	-4.2		-51.5	73	2080	08 58 33
09 00 02	PM36	12 34 58	45.8	80.7	-4.2		-50.6	-16	2080	No stop
09 03 32	---	12 38 29	46.4	81.3	-4.2		-50.7	194	2107	09 00 03
09 04 02	1645+410	12 38 59	47.4	80.5	-4.1		-51.7	13	2107	09 04 02
09 05 32	---	12 40 29	47.6	80.8	-4.1		-51.7	90	2119	09 04 03
09 05 32	PM36	12 40 29	46.7	81.7	-4.1		-50.7	-16	2119	No stop
09 09 02	---	12 43 59	47.2	82.3	-4.1		-50.9	194	2146	09 05 33
09 09 02	1645+410	12 43 59	48.2	81.4	-4.1		-51.8	-17	2146	No stop
09 10 32	---	12 45 30	48.4	81.7	-4.0		-51.9	73	2157	09 09 03
09 10 32	PM36	12 45 30	47.4	82.6	-4.1		-50.9	-16	2157	No stop
09 14 02	---	12 49 00	47.9	83.2	-4.0		-51.0	194	2184	09 10 33
09 14 32	1645+410	12 49 30	49.0	82.4	-4.0		-52.0	13	2184	09 14 32
09 16 02	---	12 51 01	49.2	82.6	-3.9		-52.1	90	2196	09 14 33
09 16 02	PM36	12 51 01	48.2	83.6	-4.0		-51.0	-16	2196	No stop
09 19 32	---	12 54 31	48.8	84.2	-3.9		-51.1	194	2222	09 16 03

Schedule for TORUN (Code Tr) Page 9

EVN follow up of binary SMBH candidates

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 26 Oct 2016 Day 300 ---										
09 19 32	1645+410	12 54 31	49.7	83.3	-3.9		-52.2	-17	2222	No stop
09 21 02	---	12 56 01	49.9	83.5	-3.9		-52.2	73	2234	09 19 33
09 21 02	PM36	12 56 01	49.0	84.5	-3.9		-51.2	-16	2234	No stop
09 24 32	---	12 59 32	49.5	85.1	-3.8		-51.2	194	2261	09 21 03
09 25 02	1645+410	13 00 02	50.5	84.3	-3.8		-52.3	13	2261	09 25 02
09 28 42	---	13 03 43	51.1	84.9	-3.7		-52.4	220	2289	09 25 03
09 33 12	PM39	13 08 13	56.2	257.1	2.8		46.4	-90	2289	09 33 12
09 36 42	---	13 11 44	55.7	257.9	2.9		46.6	120	2316	09 33 13
09 37 12	1015+359	13 12 14	55.2	257.5	2.9		46.2	17	2316	09 37 12
09 38 42	---	13 13 44	55.0	257.9	2.9		46.2	90	2328	09 37 13
09 38 42	PM39	13 13 44	55.4	258.4	2.9		46.8	-12	2328	No stop
09 42 12	---	13 17 15	54.9	259.3	3.0		46.9	198	2354	09 38 43
09 42 12	1015+359	13 17 15	54.5	258.7	3.0		46.4	-13	2354	No stop
09 43 42	---	13 18 45	54.2	259.1	3.0		46.5	77	2366	09 42 13
09 43 42	PM39	13 18 45	54.6	259.6	3.0		47.0	-12	2366	No stop
09 47 12	---	13 22 16	54.1	260.5	3.0		47.2	198	2393	09 43 43
09 47 42	1015+359	13 22 46	53.6	260.0	3.1		46.7	17	2393	09 47 42
09 49 12	---	13 24 16	53.4	260.4	3.1		46.8	90	2404	09 47 43
09 49 12	PM39	13 24 16	53.8	260.9	3.1		47.2	-12	2404	No stop
09 52 42	---	13 27 47	53.3	261.7	3.1		47.4	198	2431	09 49 13
09 52 42	1015+359	13 27 47	52.9	261.2	3.1		46.9	-13	2431	No stop
09 54 12	---	13 29 17	52.7	261.6	3.2		46.9	77	2443	09 52 43
09 54 12	PM39	13 29 17	53.1	262.1	3.2		47.4	-12	2443	No stop
09 57 42	---	13 32 47	52.6	262.9	3.2		47.5	198	2470	09 54 13
09 58 12	1015+359	13 33 18	52.1	262.5	3.2		47.1	17	2470	09 58 12
10 01 52	---	13 36 58	51.5	263.3	3.3		47.2	220	2498	09 58 13
10 06 22	PM36	13 41 29	55.8	93.4	-3.1		-51.4	-84	2498	10 06 22
10 09 52	---	13 44 59	56.3	94.2	-3.1		-51.3	126	2525	10 06 23
10 10 32	1645+410	13 45 40	57.4	93.2	-3.0		-52.6	23	2525	10 10 32
10 11 52	---	13 47 00	57.6	93.5	-3.0		-52.5	80	2535	10 10 33

Schedule for TORUN (Code Tr) Page 10

EVN follow up of binary SMBH candidates

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 26 Oct 2016 Day 300 ---										
10 11 52	PM36	13 47 00	56.6	94.6	-3.0		-51.3	-16	2535	No stop
10 15 22	---	13 50 30	57.1	95.4	-3.0		-51.2	194	2562	10 11 53
10 15 22	1645+410	13 50 30	58.1	94.2	-2.9		-52.5	-17	2562	No stop
10 16 52	---	13 52 01	58.3	94.6	-2.9		-52.4	73	2574	10 15 23
10 16 52	PM36	13 52 01	57.4	95.7	-3.0		-51.1	-16	2574	No stop
10 20 22	---	13 55 31	57.9	96.5	-2.9		-51.0	194	2601	10 16 53
10 21 02	1645+410	13 56 11	59.0	95.5	-2.9		-52.3	23	2601	10 21 02
10 22 22	---	13 57 32	59.2	95.8	-2.8		-52.3	80	2611	10 21 03
10 22 22	PM36	13 57 32	58.2	96.9	-2.9		-51.0	-16	2611	No stop
10 25 52	---	14 01 02	58.7	97.8	-2.8		-50.8	194	2638	10 22 23
10 25 52	1645+410	14 01 02	59.7	96.6	-2.8		-52.2	-17	2638	No stop
10 27 22	---	14 02 32	59.9	96.9	-2.7		-52.1	73	2649	10 25 53
10 27 22	PM36	14 02 32	58.9	98.1	-2.8		-50.8	-16	2649	No stop
10 30 52	---	14 06 03	59.5	98.9	-2.7		-50.6	194	2676	10 27 23
10 31 32	1645+410	14 06 43	60.5	97.9	-2.7		-52.0	23	2676	10 31 32
10 32 52	---	14 08 03	60.7	98.2	-2.7		-51.9	80	2687	10 31 33
10 32 52	PM36	14 08 03	59.8	99.4	-2.7		-50.5	-16	2687	No stop
10 36 22	---	14 11 34	60.3	100.3	-2.6		-50.4	194	2713	10 32 53
10 36 22	1645+410	14 11 34	61.3	99.1	-2.6		-51.7	-17	2713	No stop
10 37 52	---	14 13 04	61.5	99.4	-2.6		-51.7	73	2725	10 36 23
10 37 52	PM36	14 13 04	60.5	100.7	-2.6		-50.3	-16	2725	No stop
10 41 22	---	14 16 35	61.0	101.5	-2.5		-50.1	194	2752	10 37 53
10 42 02	1645+410	14 17 15	62.1	100.5	-2.5		-51.4	23	2752	10 42 02
10 43 22	---	14 18 35	62.3	100.8	-2.5		-51.4	80	2762	10 42 03
10 43 22	PM36	14 18 35	61.3	102.1	-2.5		-49.9	-16	2762	No stop
10 46 52	---	14 22 06	61.8	103.0	-2.5		-49.7	194	2789	10 43 23
10 46 52	1645+410	14 22 06	62.8	101.7	-2.4		-51.1	-17	2789	No stop
10 48 22	---	14 23 36	63.0	102.1	-2.4		-51.0	73	2801	10 46 53
10 48 22	PM36	14 23 36	62.0	103.4	-2.4		-49.6	-16	2801	No stop
10 51 52	---	14 27 06	62.6	104.3	-2.4		-49.3	194	2828	10 48 23

Schedule for TORUN (Code Tr) Page 11

EVN follow up of binary SMBH candidates

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 26 Oct 2016 Day 300 ---										
10 52 32	1645+410	14 27 46	63.6	103.2	-2.3		-50.7	23	2828	10 52 32
10 53 52	---	14 29 07	63.8	103.6	-2.3		-50.6	80	2838	10 52 33
10 53 52	PM36	14 29 07	62.8	104.9	-2.3		-49.2	-16	2838	No stop
10 57 22	---	14 32 37	63.4	105.8	-2.3		-48.8	194	2865	10 53 53
10 57 22	1645+410	14 32 37	64.3	104.5	-2.2		-50.3	-17	2865	No stop
10 58 52	---	14 34 08	64.6	104.9	-2.2		-50.2	73	2876	10 57 23
10 58 52	PM36	14 34 08	63.6	106.3	-2.3		-48.7	-16	2876	No stop
11 02 22	---	14 37 38	64.1	107.3	-2.2		-48.4	194	2903	10 58 53
11 03 02	1645+410	14 38 18	65.2	106.1	-2.2		-49.8	23	2903	11 03 02
11 04 22	---	14 39 38	65.4	106.5	-2.1		-49.7	80	2913	11 03 03
11 04 22	PM36	14 39 38	64.4	107.9	-2.2		-48.2	-16	2913	No stop
11 07 52	---	14 43 09	64.9	108.9	-2.1		-47.8	194	2940	11 04 23
11 07 52	1645+410	14 43 09	65.9	107.6	-2.1		-49.3	-17	2940	No stop
11 09 22	---	14 44 39	66.1	108.0	-2.0		-49.1	73	2952	11 07 53
11 09 22	PM36	14 44 39	65.1	109.4	-2.1		-47.6	-16	2952	No stop
11 12 52	---	14 48 10	65.6	110.5	-2.0		-47.2	194	2979	11 09 23
11 13 32	1645+410	14 48 50	66.7	109.3	-2.0		-48.6	23	2979	11 13 32
11 14 52	---	14 50 10	66.9	109.7	-2.0		-48.5	80	2989	11 13 33
11 14 52	PM36	14 50 10	65.9	111.1	-2.0		-46.9	-16	2989	No stop
11 18 22	---	14 53 41	66.3	112.2	-1.9		-46.4	194	3016	11 14 53
11 18 22	1645+410	14 53 41	67.4	110.9	-1.9		-48.0	-17	3016	No stop
11 19 52	---	14 55 11	67.6	111.4	-1.9		-47.8	73	3028	11 18 23
11 19 52	PM36	14 55 11	66.6	112.7	-1.9		-46.2	-16	3028	No stop
11 23 22	---	14 58 42	67.0	113.9	-1.8		-45.7	194	3054	11 19 53
11 24 02	1645+410	14 59 22	68.1	112.8	-1.8		-47.1	23	3054	11 24 02
11 25 22	---	15 00 42	68.3	113.3	-1.8		-46.9	80	3065	11 24 03
11 25 22	PM36	15 00 42	67.3	114.6	-1.8		-45.4	-17	3065	No stop
11 28 52	---	15 04 12	67.8	115.9	-1.8		-44.8	193	3092	11 25 23
11 28 52	1645+410	15 04 12	68.8	114.5	-1.7		-46.4	-17	3092	No stop
11 30 22	---	15 05 43	69.0	115.0	-1.7		-46.1	73	3103	11 28 53

```
Schedule for TORUN     (Code Tr )                                Page  12
              EVN follow up of binary SMBH candidates
  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  26 Oct 2016   Day 300 ---

11 30 22  PM36         15 05 43  68.0 116.4 -1.7     -44.5   -17     3103   No stop
11 33 52  ---          15 09 13  68.5 117.7 -1.7     -43.9   193     3130   11 30 23

11 34 32  1645+410     15 09 53  69.6 116.6 -1.6     -45.3    23     3130   11 34 32
11 35 52  ---          15 11 14  69.8 117.1 -1.6     -45.1    80     3140   11 34 33

11 35 52  PM36         15 11 14  68.7 118.5 -1.6     -43.5   -17     3140   No stop
11 39 22  ---          15 14 44  69.2 119.8 -1.6     -42.8   193     3167   11 35 53

11 39 22  1645+410     15 14 44  70.2 118.5 -1.5     -44.3   -17     3167   No stop
11 40 52  ---          15 16 14  70.4 119.1 -1.5     -44.0    73     3179   11 39 23

11 40 52  PM36         15 16 14  69.4 120.4 -1.6     -42.4   -17     3179   No stop
11 44 22  ---          15 19 45  69.8 121.9 -1.5     -41.6   193     3206   11 40 53

11 45 02  1645+410     15 20 25  71.0 120.8 -1.5     -43.1    23     3206   11 45 02
11 46 22  ---          15 21 45  71.1 121.4 -1.4     -42.7    80     3216   11 45 03

11 46 22  PM36         15 21 45  70.1 122.7 -1.5     -41.2   -17     3216   No stop
11 49 52  ---          15 25 16  70.5 124.2 -1.4     -40.3   193     3243   11 46 23

11 49 52  1645+410     15 25 16  71.6 122.9 -1.4     -41.9   -17     3243   No stop
11 51 22  ---          15 26 46  71.8 123.6 -1.3     -41.5    73     3254   11 49 53

11 51 22  PM36         15 26 46  70.7 124.9 -1.4     -39.9   -17     3254   No stop
11 54 52  ---          15 30 17  71.1 126.5 -1.3     -39.0   193     3281   11 51 23

11 55 22  1645+410     15 30 47  72.3 125.5 -1.3     -40.4    13     3281   11 55 22
11 59 02  ---          15 34 27  72.7 127.2 -1.2     -39.3   220     3310   11 55 23



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


 ======== Setup file: sess316.C2048

   Setup group:   14         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 64.000
   Number of channels:  8    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
 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         3         7         3         7
 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:   8  Setup file default.  Used with PCAL = off
 LO sum=   4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
 BBC fr=    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
 Bandwd=     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00
  Matching frequency sets:   8

 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)

* PM39              10 15 38.551992   * 10 18 33.640000     10 19 30.711877       0.00
                    36 28 29.27575    * 36 13 26.65000      36 08 16.24091        0.00

* PM36              16 47 15.363407   * 16 48 55.920000     16 49 27.932480       0.00
                    39 59 46.59580    * 39 54 37.44000      39 53 16.46237        0.00

* PM64              10 49 05.674781   * 10 51 43.272000     10 52 34.872733       0.00
                    11 01 21.03842    * 10 45 24.84000      10 40 06.59754        0.00

* 4C39.25           09 23 55.319215   * 09 27 03.013936     09 28 04.602250       0.30
  J0927+3902        39 15 23.56645    * 39 02 20.85186      38 57 46.25074        0.16
  0923+392          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
  J0927+39          GSFC 2015a astro solution, unpublished 245753 observations.

* 1015+359          10 15 16.226759   * 10 18 10.988102     10 19 07.968641       0.01
  J1018+3542        35 57 41.35613    * 35 42 39.44094      35 37 29.40577        0.02
  J1018+35          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                    GSFC 2015a astro solution, unpublished   3262 observations.

* 1100+122          11 00 26.171568   * 11 03 03.529836     11 03 54.981224       0.06
  J1103+1158        12 14 26.46455    * 11 58 16.62425      11 52 54.12601        0.11
                    /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                    GSFC 2015a astro solution, unpublished    272 observations.

* OQ208             14 04 45.615156   * 14 07 00.394414     14 07 43.571278       0.24
  J1407+2827        28 41 29.23518    * 28 27 14.69022      28 22 40.59029        0.34
  1404+286          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
  J1407+28          GSFC 2015a astro solution, unpublished  67871 observations.

* 1645+410          16 45 18.214795   * 16 46 56.858702     16 47 28.193721       0.08
  J1646+4059        41 04 34.49966    * 40 59 17.17206      40 57 53.40307        0.12
                    /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                    GSFC 2015a astro solution, unpublished    111 observations.
```

em126ctr

EM126C - EVN C-band obs of M22-VLA1 and M22-VLA2

PI: *James Miller-Jones*

```
Address:  Curtin University

Observing mode: 6cm wideband observations at 2048Mbps

Schedule for TORUN     (Code Tr )                                   Page   2
               EM126C - EVN C-band obs of M22-VLA1 and M22-VLA2
  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  26 Oct 2016   Day 300 ---
 Next scan frequencies:  4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
 Next BBC frequencies:    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
 Next scan bandwidths:     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00

13 15 00  J1642+3948   16 50 38  76.6 185.9  0.1       4.6     0        0   13 15 00
13 18 00  =3C345       16 53 38  76.6 188.4  0.2       6.6   180       23   13 15 01

13 18 30  J1834-2341   16 54 08  10.1 156.5 -1.7     -15.2  -232       23   13 18 30
13 23 30  ---          16 59 09  10.4 157.6 -1.6     -14.5    68       62   13 18 31

13 23 30  M22          16 59 09  10.1 157.3 -1.6     -14.7   -11       62   No stop
13 25 40  ---          17 01 20  10.2 157.8 -1.6     -14.4   119       78   13 23 31

13 25 40  J1834-2341   17 01 20  10.5 158.1 -1.6     -14.2   -11       78   No stop
13 27 00  ---          17 02 40  10.6 158.4 -1.6     -14.0    69       88   13 25 41

13 27 00  M22          17 02 40  10.3 158.1 -1.6     -14.2   -11       88   No stop
13 29 10  ---          17 04 50  10.4 158.6 -1.5     -13.9   119      105   13 27 01

13 29 40  J1834-2341   17 05 20  10.7 159.0 -1.5     -13.6    19      105   13 29 40
13 30 30  ---          17 06 10  10.8 159.2 -1.5     -13.5    50      112   13 29 41

13 30 30  M22          17 06 10  10.5 158.9 -1.5     -13.7   -11      112   No stop
13 32 40  ---          17 08 21  10.6 159.4 -1.5     -13.4   119      128   13 30 31

13 32 40  J1834-2341   17 08 21  10.9 159.7 -1.5     -13.2   -11      128   No stop
13 34 00  ---          17 09 41  11.0 160.0 -1.4     -13.0    69      138   13 32 41

13 34 00  M22          17 09 41  10.7 159.7 -1.5     -13.2   -11      138   No stop
13 36 10  ---          17 11 51  10.8 160.2 -1.4     -12.9   119      155   13 34 01

13 36 10  J1834-2341   17 11 51  11.1 160.5 -1.4     -12.6   -11      155   No stop
13 37 30  ---          17 13 12  11.2 160.8 -1.4     -12.5    69      165   13 36 11

13 37 30  M22          17 13 12  10.9 160.5 -1.4     -12.7   -11      165   No stop
13 39 40  ---          17 15 22  11.0 161.0 -1.4     -12.4   119      182   13 37 31

13 40 10  J1834-2341   17 15 52  11.3 161.4 -1.3     -12.1    19      182   13 40 10
13 41 00  ---          17 16 42  11.3 161.6 -1.3     -11.9    50      188   13 40 11

13 41 00  M22          17 16 42  11.0 161.3 -1.3     -12.2   -11      188   No stop
13 43 10  ---          17 18 52  11.1 161.8 -1.3     -11.9   119      205   13 41 01
```

Schedule for TORUN (Code Tr) Page 3

EM126C - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Wed 26 Oct 2016 Day 300 ---										
13 43 10	J1834-2341	17 18 52	11.4	162.1	-1.3		-11.6	-11	205	No stop
13 44 30	---	17 20 13	11.5	162.4	-1.3		-11.4	69	215	13 43 11
13 44 30	M22	17 20 13	11.2	162.1	-1.3		-11.7	-11	215	No stop
13 46 40	---	17 22 23	11.3	162.6	-1.3		-11.4	119	232	13 44 31
13 46 40	J1834-2341	17 22 23	11.6	162.9	-1.2		-11.1	-11	232	No stop
13 48 00	---	17 23 43	11.6	163.2	-1.2		-10.9	69	242	13 46 41
13 48 00	M22	17 23 43	11.4	162.9	-1.2		-11.2	-11	242	No stop
13 50 10	---	17 25 54	11.5	163.4	-1.2		-10.8	119	259	13 48 01
13 50 40	J1834-2341	17 26 24	11.8	163.8	-1.2		-10.5	19	259	13 50 40
13 51 30	---	17 27 14	11.8	164.0	-1.1		-10.4	50	265	13 50 41
13 51 30	M22	17 27 14	11.5	163.7	-1.2		-10.6	-11	265	No stop
13 53 40	---	17 29 24	11.6	164.2	-1.1		-10.3	119	282	13 51 31
13 53 40	J1834-2341	17 29 24	11.9	164.5	-1.1		-10.1	-11	282	No stop
13 55 00	---	17 30 44	11.9	164.8	-1.1		-9.9	69	292	13 53 41
13 55 00	M22	17 30 44	11.7	164.5	-1.1		-10.1	-11	292	No stop
13 57 10	---	17 32 55	11.7	165.0	-1.1		-9.8	119	309	13 55 01
13 57 10	J1834-2341	17 32 55	12.0	165.3	-1.0		-9.6	-11	309	No stop
13 58 30	---	17 34 15	12.1	165.6	-1.0		-9.4	69	319	13 57 11
13 58 30	M22	17 34 15	11.8	165.3	-1.1		-9.6	-11	319	No stop
14 00 40	---	17 36 25	11.9	165.8	-1.0		-9.3	119	336	13 58 31
14 01 10	J1834-2341	17 36 55	12.2	166.3	-1.0		-9.0	19	336	14 01 10
14 02 00	---	17 37 46	12.2	166.4	-1.0		-8.8	50	342	14 01 11
14 02 00	M22	17 37 46	11.9	166.1	-1.0		-9.1	-11	342	No stop
14 04 10	---	17 39 56	12.0	166.6	-1.0		-8.8	119	359	14 02 01
14 04 10	J1834-2341	17 39 56	12.3	166.9	-0.9		-8.5	-11	359	No stop
14 05 30	---	17 41 16	12.3	167.3	-0.9		-8.3	69	369	14 04 11
14 05 30	M22	17 41 16	12.1	166.9	-0.9		-8.6	-11	369	No stop
14 07 40	---	17 43 27	12.1	167.4	-0.9		-8.2	119	386	14 05 31
14 07 40	J1834-2341	17 43 27	12.4	167.8	-0.9		-8.0	-11	386	No stop
14 09 00	---	17 44 47	12.4	168.1	-0.8		-7.8	69	396	14 07 41
14 09 00	M22	17 44 47	12.2	167.7	-0.9		-8.0	-11	396	No stop
14 11 10	---	17 46 57	12.2	168.2	-0.8		-7.7	119	413	14 09 01

Schedule for TORUN (Code Tr) Page 4

EM126C - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Wed 26 Oct 2016 Day 300 ---										
14 11 40	J1834-2341	17 47 27	12.5	168.7	-0.8		-7.4	19	413	14 11 40
14 12 30	---	17 48 17	12.5	168.9	-0.8		-7.3	50	419	14 11 41
14 12 30	M22	17 48 17	12.3	168.5	-0.8		-7.5	-11	419	No stop
14 14 40	---	17 50 28	12.3	169.0	-0.8		-7.2	119	436	14 12 31
14 14 40	J1834-2341	17 50 28	12.6	169.4	-0.8		-6.9	-11	436	No stop
14 16 00	---	17 51 48	12.6	169.7	-0.7		-6.7	69	446	14 14 41
14 16 00	M22	17 51 48	12.4	169.3	-0.8		-7.0	-11	446	No stop
14 18 10	---	17 53 58	12.4	169.8	-0.7		-6.7	119	463	14 16 01
14 18 10	J1834-2341	17 53 58	12.7	170.2	-0.7		-6.4	-11	463	No stop
14 19 30	---	17 55 18	12.7	170.5	-0.7		-6.2	69	473	14 18 11
14 19 30	M22	17 55 18	12.5	170.1	-0.7		-6.5	-11	473	No stop
14 21 40	---	17 57 29	12.5	170.7	-0.7		-6.1	119	490	14 19 31
14 22 10	J1834-2341	17 57 59	12.8	171.1	-0.6		-5.8	19	490	14 22 10
14 23 00	---	17 58 49	12.8	171.3	-0.6		-5.7	50	496	14 22 11
14 23 00	M22	17 58 49	12.6	171.0	-0.6		-5.9	-11	496	No stop
14 25 10	---	18 00 59	12.6	171.5	-0.6		-5.6	119	513	14 23 01
14 25 10	J1834-2341	18 00 59	12.9	171.9	-0.6		-5.3	-11	513	No stop
14 26 30	---	18 02 20	12.9	172.2	-0.6		-5.1	69	523	14 25 11
14 26 30	M22	18 02 20	12.6	171.8	-0.6		-5.4	-11	523	No stop
14 28 40	---	18 04 30	12.7	172.3	-0.5		-5.1	119	540	14 26 31
14 28 40	J1834-2341	18 04 30	12.9	172.7	-0.5		-4.8	-11	540	No stop
14 30 00	---	18 05 50	12.9	173.0	-0.5		-4.6	69	550	14 28 41
14 30 00	M22	18 05 50	12.7	172.6	-0.5		-4.9	-11	550	No stop
14 32 10	---	18 08 01	12.7	173.1	-0.5		-4.5	119	567	14 30 01
14 32 40	J1834-2341	18 08 31	13.0	173.6	-0.5		-4.2	19	567	14 32 40
14 33 30	---	18 09 21	13.0	173.8	-0.4		-4.1	50	573	14 32 41
14 33 30	M22	18 09 21	12.8	173.4	-0.5		-4.3	-11	573	No stop
14 35 40	---	18 11 31	12.8	173.9	-0.4		-4.0	119	590	14 33 31
14 35 40	J1834-2341	18 11 31	13.0	174.3	-0.4		-3.7	-11	590	No stop
14 37 00	---	18 12 51	13.1	174.6	-0.4		-3.5	69	600	14 35 41

Schedule for TORUN (Code Tr) Page 5

EM126C - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Wed 26 Oct 2016 Day 300 ---										
14 37 00	M22	18 12 51	12.8	174.2	-0.4		-3.8	-11	600	No stop
14 39 10	---	18 15 02	12.9	174.8	-0.4		-3.4	119	617	14 37 01
14 39 10	J1834-2341	18 15 02	13.1	175.1	-0.3		-3.2	-11	617	No stop
14 40 30	---	18 16 22	13.1	175.5	-0.3		-3.0	69	627	14 39 11
14 40 30	M22	18 16 22	12.9	175.1	-0.4		-3.2	-10	627	No stop
14 42 40	---	18 18 32	12.9	175.6	-0.3		-2.9	120	644	14 40 31
14 43 10	J1834-2341	18 19 02	13.1	176.1	-0.3		-2.6	19	644	14 43 10
14 44 00	---	18 19 52	13.1	176.3	-0.3		-2.4	50	650	14 43 11
14 44 00	M22	18 19 52	12.9	175.9	-0.3		-2.7	-10	650	No stop
14 46 10	---	18 22 03	12.9	176.4	-0.3		-2.4	120	667	14 44 01
14 46 10	J1834-2341	18 22 03	13.2	176.8	-0.2		-2.1	-11	667	No stop
14 47 30	---	18 23 23	13.2	177.1	-0.2		-1.9	69	677	14 46 11
14 47 30	M22	18 23 23	13.0	176.7	-0.2		-2.2	-10	677	No stop
14 49 40	---	18 25 33	13.0	177.2	-0.2		-1.8	120	694	14 47 31
14 49 40	J1834-2341	18 25 33	13.2	177.6	-0.2		-1.6	-11	694	No stop
14 51 00	---	18 26 54	13.2	177.9	-0.1		-1.4	69	704	14 49 41
14 51 00	M22	18 26 54	13.0	177.5	-0.2		-1.6	-10	704	No stop
14 53 10	---	18 29 04	13.0	178.0	-0.1		-1.3	120	721	14 51 01
14 53 40	J1834-2341	18 29 34	13.2	178.6	-0.1		-0.9	19	721	14 53 40
14 54 30	---	18 30 24	13.2	178.8	-0.1		-0.8	50	727	14 53 41
14 54 30	M22	18 30 24	13.0	178.4	-0.1		-1.1	-10	727	No stop
14 56 40	---	18 32 35	13.0	178.9	-0.1		-0.7	120	744	14 54 31
14 56 40	J1834-2341	18 32 35	13.2	179.3	-0.1		-0.5	-11	744	No stop
14 58 00	---	18 33 55	13.2	179.6	-0.0		-0.3	69	754	14 56 41
14 58 00	M22	18 33 55	13.0	179.2	-0.1		-0.5	-10	754	No stop
15 00 10	---	18 36 05	13.0	179.7	-0.0		-0.2	120	771	14 58 01
15 00 10	J1834-2341	18 36 05	13.2	180.1	0.0		0.1	-11	771	No stop
15 01 30	---	18 37 25	13.2	180.4	0.0		0.3	69	781	15 00 11
15 01 30	M22	18 37 25	13.0	180.0	0.0		0.0	-11	781	No stop
15 03 40	---	18 39 36	13.0	180.5	0.0		0.3	119	797	15 01 31

Schedule for TORUN (Code Tr) Page 6

EM126C - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Wed 26 Oct 2016 Day 300 ---										
15 04 10	J1834-2341	18 40 06	13.2	181.0	0.1		0.7	19	797	15 04 10
15 05 00	---	18 40 56	13.2	181.2	0.1		0.8	50	804	15 04 11
15 05 00	M22	18 40 56	13.0	180.8	0.1		0.5	-11	804	No stop
15 07 10	---	18 43 06	13.0	181.3	0.1		0.9	119	821	15 05 01
15 07 10	J1834-2341	18 43 06	13.2	181.7	0.1		1.1	-11	821	No stop
15 08 30	---	18 44 27	13.2	182.1	0.1		1.3	69	831	15 07 11
15 08 30	M22	18 44 27	13.0	181.6	0.1		1.1	-11	831	No stop
15 10 40	---	18 46 37	13.0	182.2	0.2		1.4	119	847	15 08 31
15 10 40	J1834-2341	18 46 37	13.2	182.6	0.2		1.7	-11	847	No stop
15 12 00	---	18 47 57	13.2	182.9	0.2		1.9	69	858	15 10 41
15 12 00	M22	18 47 57	13.0	182.5	0.2		1.6	-11	858	No stop
15 14 10	---	18 50 07	13.0	183.0	0.2		2.0	119	874	15 12 01
15 14 40	J1834-2341	18 50 38	13.2	183.5	0.2		2.3	19	874	15 14 40
15 15 30	---	18 51 28	13.1	183.7	0.3		2.4	50	881	15 14 41
15 15 30	M22	18 51 28	13.0	183.3	0.2		2.2	-11	881	No stop
15 17 40	---	18 53 38	12.9	183.8	0.3		2.5	119	897	15 15 31
15 17 40	J1834-2341	18 53 38	13.1	184.2	0.3		2.8	-11	897	No stop
15 19 00	---	18 54 58	13.1	184.5	0.3		3.0	69	908	15 17 41
15 19 00	M22	18 54 58	12.9	184.1	0.3		2.7	-11	908	No stop
15 21 10	---	18 57 09	12.9	184.6	0.3		3.0	119	924	15 19 01
15 21 10	J1834-2341	18 57 09	13.1	185.0	0.4		3.3	-11	924	No stop
15 22 30	---	18 58 29	13.1	185.4	0.4		3.5	69	935	15 21 11
15 22 30	M22	18 58 29	12.9	184.9	0.4		3.2	-11	935	No stop
15 24 40	---	19 00 39	12.8	185.4	0.4		3.6	119	951	15 22 31
15 25 10	J1834-2341	19 01 09	13.0	186.0	0.4		3.9	19	951	15 25 10
15 26 00	---	19 01 59	13.0	186.2	0.4		4.0	50	958	15 25 11
15 26 00	M22	19 01 59	12.8	185.8	0.4		3.8	-11	958	No stop
15 28 10	---	19 04 10	12.8	186.3	0.4		4.1	119	974	15 26 01
15 28 10	J1834-2341	19 04 10	13.0	186.7	0.5		4.4	-11	974	No stop
15 29 30	---	19 05 30	12.9	187.0	0.5		4.6	69	985	15 28 11

Schedule for TORUN (Code Tr) Page 7

EM126C - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Wed 26 Oct 2016 Day 300 ---										
15 29 30	M22	19 05 30	12.8	186.6	0.5		4.3	-11	985	No stop
15 31 40	---	19 07 40	12.7	187.1	0.5		4.6	119	1001	15 29 31
15 31 40	J1834-2341	19 07 40	12.9	187.5	0.5		4.9	-11	1001	No stop
15 33 00	---	19 09 01	12.9	187.8	0.6		5.1	69	1012	15 31 41
15 33 00	M22	19 09 01	12.7	187.4	0.5		4.9	-11	1012	No stop
15 35 10	---	19 11 11	12.7	187.9	0.6		5.2	119	1028	15 33 01
15 35 40	J1834-2341	19 11 41	12.8	188.4	0.6		5.5	19	1028	15 35 40
15 36 30	---	19 12 31	12.8	188.6	0.6		5.7	50	1035	15 35 41
15 36 30	M22	19 12 31	12.6	188.2	0.6		5.4	-11	1035	No stop
15 38 40	---	19 14 41	12.6	188.7	0.6		5.7	119	1051	15 36 31
15 38 40	J1834-2341	19 14 41	12.8	189.1	0.6		6.0	-11	1051	No stop
15 40 00	---	19 16 02	12.7	189.5	0.7		6.2	69	1062	15 38 41
15 40 00	M22	19 16 02	12.6	189.0	0.6		5.9	-11	1062	No stop
15 42 10	---	19 18 12	12.5	189.5	0.7		6.3	119	1078	15 40 01
15 42 40	J1834-2341	19 18 42	12.7	190.1	0.7		6.6	19	1078	15 42 40
15 43 30	---	19 19 32	12.6	190.3	0.7		6.7	50	1085	15 42 41
15 44 00	J1924-2914	19 20 02	7.7	178.7	-0.1		-0.9	-8	1085	15 44 00
15 47 00	=1921-293	19 23 03	7.7	179.4	-0.0		-0.4	172	1108	15 44 01
15 47 30	J1834-2341	19 23 33	12.5	191.2	0.8		7.3	-9	1108	15 47 30
15 49 00	---	19 25 03	12.5	191.6	0.8		7.6	81	1119	15 47 31
15 49 00	M22	19 25 03	12.3	191.1	0.8		7.3	-11	1119	No stop
15 51 10	---	19 27 14	12.3	191.6	0.8		7.6	119	1136	15 49 01
15 51 10	J1834-2341	19 27 14	12.4	192.1	0.9		7.9	-11	1136	No stop
15 52 30	---	19 28 34	12.4	192.4	0.9		8.1	69	1146	15 51 11
15 52 30	M22	19 28 34	12.2	191.9	0.9		7.8	-11	1146	No stop
15 54 40	---	19 30 44	12.1	192.5	0.9		8.1	119	1163	15 52 31
15 55 10	J1834-2341	19 31 14	12.3	193.0	0.9		8.5	19	1163	15 55 10
15 56 00	---	19 32 04	12.2	193.2	0.9		8.6	50	1169	15 55 11
15 56 00	M22	19 32 04	12.1	192.8	0.9		8.3	-11	1169	No stop
15 58 10	---	19 34 15	12.0	193.3	0.9		8.7	119	1186	15 56 01

Schedule for TORUN (Code Tr) Page 8

EM126C - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Wed 26 Oct 2016 Day 300 ---										
15 58 10	J1834-2341	19 34 15	12.2	193.7	1.0		8.9	-11	1186	No stop
15 59 30	---	19 35 35	12.1	194.0	1.0		9.1	69	1196	15 58 11
15 59 30	M22	19 35 35	12.0	193.6	1.0		8.9	-11	1196	No stop
16 01 40	---	19 37 45	11.9	194.1	1.0		9.2	119	1213	15 59 31
16 01 40	J1834-2341	19 37 45	12.0	194.5	1.0		9.5	-11	1213	No stop
16 03 00	---	19 39 05	12.0	194.8	1.1		9.6	69	1223	16 01 41
16 03 00	M22	19 39 05	11.9	194.4	1.0		9.4	-11	1223	No stop
16 05 10	---	19 41 16	11.8	194.9	1.1		9.7	119	1240	16 03 01
16 05 40	J1834-2341	19 41 46	11.9	195.4	1.1		10.0	19	1240	16 05 40
16 06 30	---	19 42 36	11.9	195.6	1.1		10.2	50	1246	16 05 41
16 06 30	M22	19 42 36	11.7	195.2	1.1		9.9	-11	1246	No stop
16 08 40	---	19 44 46	11.6	195.7	1.1		10.2	119	1263	16 06 31
16 08 40	J1834-2341	19 44 46	11.8	196.1	1.2		10.5	-11	1263	No stop
16 10 00	---	19 46 07	11.7	196.4	1.2		10.7	69	1273	16 08 41
16 10 00	M22	19 46 07	11.6	196.0	1.1		10.4	-11	1273	No stop
16 12 10	---	19 48 17	11.5	196.5	1.2		10.7	119	1290	16 10 01
16 12 10	J1834-2341	19 48 17	11.6	196.9	1.2		11.0	-11	1290	No stop
16 13 30	---	19 49 37	11.6	197.2	1.2		11.2	69	1300	16 12 11
16 13 30	M22	19 49 37	11.4	196.8	1.2		10.9	-11	1300	No stop
16 15 40	---	19 51 48	11.3	197.3	1.2		11.3	119	1317	16 13 31
16 16 10	J1834-2341	19 52 18	11.4	197.8	1.3		11.6	19	1317	16 16 10
16 17 00	---	19 53 08	11.4	198.0	1.3		11.7	50	1323	16 16 11
16 17 00	M22	19 53 08	11.3	197.6	1.3		11.5	-11	1323	No stop
16 19 10	---	19 55 18	11.2	198.1	1.3		11.8	119	1340	16 17 01
16 19 10	J1834-2341	19 55 18	11.3	198.5	1.3		12.0	-11	1340	No stop
16 20 30	---	19 56 38	11.2	198.8	1.3		12.2	69	1350	16 19 11
16 20 30	M22	19 56 38	11.1	198.4	1.3		12.0	-11	1350	No stop
16 22 40	---	19 58 49	11.0	198.9	1.4		12.3	119	1367	16 20 31
16 22 40	J1834-2341	19 58 49	11.1	199.3	1.4		12.5	-11	1367	No stop
16 24 00	---	20 00 09	11.1	199.6	1.4		12.7	69	1377	16 22 41

Schedule for TORUN (Code Tr) Page 9

EM126C - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Wed 26 Oct 2016 Day 300 ---										
16 24 00	M22	20 00 09	10.9	199.2	1.4		12.5	-11	1377	No stop
16 26 10	---	20 02 19	10.8	199.7	1.4		12.8	119	1394	16 24 01
16 26 40	J1834-2341	20 02 49	10.9	200.2	1.5		13.1	19	1394	16 26 40
16 27 30	---	20 03 39	10.9	200.4	1.5		13.2	50	1400	16 26 41
16 27 30	M22	20 03 39	10.8	200.0	1.4		13.0	-11	1400	No stop
16 29 40	---	20 05 50	10.7	200.5	1.5		13.3	119	1417	16 27 31
16 29 40	J1834-2341	20 05 50	10.8	200.9	1.5		13.5	-11	1417	No stop
16 31 00	---	20 07 10	10.7	201.2	1.5		13.7	69	1427	16 29 41
16 31 00	M22	20 07 10	10.6	200.8	1.5		13.5	-11	1427	No stop
16 33 10	---	20 09 20	10.5	201.3	1.5		13.8	119	1444	16 31 01
16 33 10	J1834-2341	20 09 20	10.6	201.7	1.6		14.0	-11	1444	No stop
16 34 30	---	20 10 41	10.5	202.0	1.6		14.2	69	1454	16 33 11
16 34 30	M22	20 10 41	10.4	201.6	1.6		14.0	-11	1454	No stop
16 36 40	---	20 12 51	10.3	202.1	1.6		14.3	119	1471	16 34 31
16 37 10	J1834-2341	20 13 21	10.3	202.6	1.6		14.6	19	1471	16 37 10
16 38 00	---	20 14 11	10.3	202.8	1.6		14.7	50	1477	16 37 11
16 38 00	M22	20 14 11	10.2	202.4	1.6		14.5	-11	1477	No stop
16 40 10	---	20 16 22	10.1	202.9	1.6		14.8	119	1494	16 38 01
16 40 10	J1834-2341	20 16 22	10.2	203.3	1.7		15.0	-11	1494	No stop
16 41 30	---	20 17 42	10.1	203.6	1.7		15.2	69	1504	16 40 11
16 41 30	M22	20 17 42	10.0	203.2	1.7		15.0	-11	1504	No stop
16 43 40	---	20 19 52	9.9	203.7	1.7		15.3	119	1521	16 41 31
16 43 40	J1834-2341	20 19 52	10.0	204.1	1.7		15.5	-11	1521	No stop
16 45 00	---	20 21 12	9.9	204.4	1.8		15.7	69	1531	16 43 41
16 45 00	M22	20 21 12	9.8	204.0	1.7		15.5	-11	1531	No stop
16 47 10	---	20 23 23	9.6	204.4	1.8		15.8	119	1547	16 45 01
16 47 40	J1834-2341	20 23 53	9.7	205.0	1.8		16.1	19	1547	16 47 40
16 48 30	---	20 24 43	9.7	205.2	1.8		16.2	50	1554	16 47 41
16 48 30	M22	20 24 43	9.6	204.7	1.8		15.9	-11	1554	No stop
16 50 40	---	20 26 53	9.4	205.2	1.8		16.2	119	1571	16 48 31

Schedule for TORUN (Code Tr) Page 10

EM126C - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Wed 26 Oct 2016 Day 300 ---										
16 50 40	J1834-2341	20 26 53	9.5	205.7	1.9		16.5	-11	1571	No stop
16 52 00	---	20 28 14	9.4	206.0	1.9		16.7	69	1581	16 50 41
16 52 00	M22	20 28 14	9.3	205.5	1.8		16.4	-11	1581	No stop
16 54 10	---	20 30 24	9.2	206.0	1.9		16.7	119	1597	16 52 01
16 54 10	J1834-2341	20 30 24	9.3	206.4	1.9		17.0	-11	1597	No stop
16 55 30	---	20 31 44	9.2	206.7	1.9		17.2	69	1608	16 54 11
16 55 30	M22	20 31 44	9.1	206.3	1.9		16.9	-11	1608	No stop
16 57 40	---	20 33 54	9.0	206.8	1.9		17.2	119	1624	16 55 31
16 58 10	J1834-2341	20 34 25	9.0	207.3	2.0		17.5	19	1624	16 58 10
16 59 00	---	20 35 15	9.0	207.5	2.0		17.6	50	1631	16 58 11
16 59 00	M22	20 35 15	8.9	207.1	2.0		17.4	-11	1631	No stop
17 01 10	---	20 37 25	8.7	207.5	2.0		17.7	119	1647	16 59 01
17 01 10	J1834-2341	20 37 25	8.8	208.0	2.0		17.9	-11	1647	No stop
17 02 30	---	20 38 45	8.7	208.3	2.1		18.1	69	1658	17 01 11
17 02 30	M22	20 38 45	8.6	207.8	2.0		17.9	-11	1658	No stop
17 04 40	---	20 40 56	8.5	208.3	2.1		18.2	119	1674	17 02 31
17 04 40	J1834-2341	20 40 56	8.5	208.8	2.1		18.4	-11	1674	No stop
17 06 00	---	20 42 16	8.5	209.1	2.1		18.6	69	1685	17 04 41
17 06 00	M22	20 42 16	8.4	208.6	2.1		18.3	-11	1685	No stop
17 08 10	---	20 44 26	8.2	209.1	2.1		18.6	119	1701	17 06 01
17 08 40	J1834-2341	20 44 56	8.3	209.6	2.2		18.9	19	1701	17 08 40
17 09 30	---	20 45 46	8.2	209.8	2.2		19.0	50	1708	17 08 41
17 09 30	M22	20 45 46	8.1	209.4	2.1		18.8	-11	1708	No stop
17 11 40	---	20 47 57	8.0	209.9	2.2		19.1	119	1724	17 09 31
17 11 40	J1834-2341	20 47 57	8.0	210.3	2.2		19.3	-11	1724	No stop
17 13 00	---	20 49 17	7.9	210.6	2.2		19.5	69	1735	17 11 41
17 13 00	M22	20 49 17	7.9	210.1	2.2		19.3	-11	1735	No stop
17 15 10	---	20 51 27	7.7	210.6	2.2		19.5	119	1751	17 13 01
17 15 10	J1834-2341	20 51 27	7.8	211.1	2.3		19.8	-11	1751	No stop
17 16 30	---	20 52 48	7.7	211.4	2.3		19.9	69	1762	17 15 11

Schedule for TORUN (Code Tr) Page 11

EM126C - EVN C-band obs of M22-VLA1 and M22-VLA2

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
--- Wed 26 Oct 2016 Day 300 ---										
17 16 30	M22	20 52 48	7.6	210.9	2.3		19.7	-11	1762	No stop
17 18 40	---	20 54 58	7.4	211.4	2.3		20.0	119	1778	17 16 31
17 19 10	J1834-2341	20 55 28	7.4	211.9	2.3		20.3	19	1778	17 19 10
17 20 00	---	20 56 18	7.4	212.1	2.3		20.4	50	1785	17 19 11
17 20 00	M22	20 56 18	7.3	211.7	2.3		20.2	-11	1785	No stop
17 22 10	---	20 58 28	7.1	212.1	2.4		20.5	119	1801	17 20 01
17 22 10	J1834-2341	20 58 28	7.2	212.6	2.4		20.7	-11	1801	No stop
17 23 30	---	20 59 49	7.1	212.9	2.4		20.8	69	1812	17 22 11
17 23 30	M22	20 59 49	7.0	212.4	2.4		20.6	-11	1812	No stop
17 25 40	---	21 01 59	6.9	212.9	2.4		20.9	119	1828	17 23 31
17 25 40	J1834-2341	21 01 59	6.9	213.3	2.4		21.1	-11	1828	No stop
17 27 00	---	21 03 19	6.8	213.6	2.5		21.3	69	1838	17 25 41
17 27 00	M22	21 03 19	6.8	213.2	2.4		21.1	-11	1838	No stop
17 29 10	---	21 05 30	6.6	213.7	2.5		21.3	119	1855	17 27 01
17 29 40	J1834-2341	21 06 00	6.6	214.2	2.5		21.6	19	1855	17 29 40
17 30 30	---	21 06 50	6.5	214.4	2.5		21.7	50	1862	17 29 41
17 30 30	M22	21 06 50	6.5	213.9	2.5		21.5	-11	1862	No stop
17 32 40	---	21 09 00	6.3	214.4	2.5		21.8	119	1878	17 30 31
17 32 40	J1834-2341	21 09 00	6.3	214.8	2.6		22.0	-11	1878	No stop
17 34 00	---	21 10 20	6.2	215.1	2.6		22.2	69	1888	17 32 41
17 34 00	M22	21 10 20	6.2	214.7	2.5		21.9	-11	1888	No stop
17 36 10	---	21 12 31	6.0	215.2	2.6		22.2	119	1905	17 34 01
17 36 10	J1834-2341	21 12 31	6.0	215.6	2.6		22.4	-11	1905	No stop
17 37 30	---	21 13 51	5.9	215.9	2.6		22.6	69	1915	17 36 11
17 37 30	M22	21 13 51	5.9	215.4	2.6		22.4	-11	1915	No stop
17 39 40	---	21 16 01	5.7	215.9	2.6		22.6	119	1932	17 37 31
17 40 10	J1834-2341	21 16 31	5.7	216.4	2.7		22.9	19	1932	17 40 10
17 41 00	---	21 17 22	5.6	216.6	2.7		23.0	50	1938	17 40 11
17 41 00	M22	21 17 22	5.6	216.2	2.7		22.8	-11	1938	No stop
17 43 10	---	21 19 32	5.4	216.6	2.7		23.1	119	1955	17 41 01

Schedule for TORUN (Code Tr) Page 12

EM126C - EVN C-band obs of M22-VLA1 and M22-VLA2

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 26 Oct 2016 Day 300 ---										
17 43 10	J1834-2341	21 19 32	5.4	217.1	2.7		23.3	-11	1955	No stop
17 44 30	---	21 20 52	5.3	217.4	2.8		23.4	69	1965	17 43 11
17 44 30	M22	21 20 52	5.2	216.9	2.7		23.2	-11	1965	No stop
17 46 40	---	21 23 02	5.0	217.4	2.8		23.5	119	1982	17 44 31
17 46 40	J1834-2341	21 23 02	5.1	217.8	2.8		23.7	-11	1982	No stop
17 48 00	---	21 24 23	5.0	218.1	2.8		23.9	69	1992	17 46 41
17 48 00	M22	21 24 23	4.9	217.7	2.8		23.7	-11	1992	No stop
17 50 10	---	21 26 33	4.7	218.1	2.8		23.9	119	2009	17 48 01
17 50 40	J1834-2341	21 27 03	4.7	218.7	2.9		24.2	19	2009	17 50 40
17 51 30	---	21 27 53	4.6	218.8	2.9		24.3	50	2015	17 50 41
17 51 30	M22	21 27 53	4.6	218.4	2.8		24.1	-11	2015	No stop
17 53 40	---	21 30 04	4.4	218.9	2.9		24.3	119	2032	17 51 31
17 53 40	J1834-2341	21 30 04	4.4	219.3	2.9		24.5	-11	2032	No stop
17 55 00	---	21 31 24	4.3	219.6	2.9		24.7	69	2042	17 53 41
17 55 00	M22	21 31 24	4.3	219.1	2.9		24.5	-11	2042	No stop
17 57 10	---	21 33 34	4.1	219.6	2.9		24.7	119	2059	17 55 01
17 57 10	J1834-2341	21 33 34	4.1	220.0	3.0		24.9	-11	2059	No stop
17 58 30	---	21 34 54	4.0	220.3	3.0		25.1	69	2069	17 57 11
17 58 30	M22	21 34 54	3.9	219.9	3.0		24.9	-11	2069	No stop
18 00 40	---	21 37 05	3.7	220.3	3.0		25.1	119	2086	17 58 31
18 01 10	J1834-2341	21 37 35	3.7	220.9	3.0		25.4	19	2086	18 01 10
18 02 00	---	21 38 25	3.6	221.0	3.0		25.5	50	2092	18 01 11
18 02 00	M22	21 38 25	3.6	220.6	3.0		25.3	-11	2092	No stop
18 04 10	---	21 40 35	3.4	221.0	3.1		25.5	119	2109	18 02 01
18 04 10	J1834-2341	21 40 35	3.4	221.5	3.1		25.7	-11	2109	No stop
18 05 30	---	21 41 56	3.3	221.8	3.1		25.9	69	2119	18 04 11
18 05 30	M22	21 41 56	3.2	221.3	3.1		25.7	-11	2119	No stop
18 07 40	---	21 44 06	3.0	221.8	3.1		25.9	119	2136	18 05 31
18 09 30	J2253+1608	21 45 56	50.7	153.3	-1.1		-16.3	-83	2136	18 09 30
18 15 00	=3C454.3	21 51 27	51.1	155.3	-1.1		-15.1	247	2178	18 09 31

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

 ======== Setup file: sess316.C2048

   Setup group:   10         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 64.000
   Number of channels:  8    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
   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         3         7         3         7
   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:   6  Setup file default.  Used with PCAL = off
   LO sum=   4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
   BBC fr=    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
   Bandwd=     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00
    Matching frequency sets:   6

   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)

 * M22                18 33 21.731212   * 18 36 24.822800     18 37 25.136803       0.00
                    -23 56 55.64152    *-23 54 23.65850     -23 53 22.56744        0.00

 * J1834-2341        18 31 39.447623   * 18 34 42.285467     18 35 42.510191       0.23
                    -23 44 24.27265    *-23 41 59.67178     -23 41 00.93865        0.47

   3C345             16 41 17.606228   * 16 42 58.809966     16 43 30.997178       0.76
 * J1642+3948        39 54 10.81496    * 39 48 36.99402      39 47 07.35515        0.52

   1921-293          19 21 42.234127   * 19 24 51.055954     19 25 53.421372       0.01
 * J1924-2914       -29 20 26.35393    *-29 14 30.12103     -29 12 23.93521        0.01

   3C454.3           22 51 29.519738   * 22 53 57.747938     22 54 48.156426       0.67
 * J2253+1608        15 52 54.34810    * 16 08 53.56093      16 14 27.30708        0.70
```

em123atr

EVN-6CM-IZw18

PI: *Mar Mezcua*

```
Address:  2900 Bould. Edouard Montpetit          H3T1J4 Montreal         Canada

Observing mode: Continuum
Schedule for TORUN     (Code Tr )                                   Page   2
               EVN-6CM-IZw18
  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  27 Oct 2016   Day 301 ---
 Next scan frequencies:  4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
 Next BBC frequencies:    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
 Next scan bandwidths:     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00

03 00 00  4C39.25      06 37 53  57.9  98.7 -2.8     -49.8     0        0   03 00 00
03 05 00  ---          06 42 54  58.6  99.9 -2.8     -49.5   300       38   03 00 01

03 05 20  4C39.25      06 43 14  58.7 100.0 -2.7     -49.5    14       38   03 05 20
03 08 00  ---          06 45 55  59.1 100.6 -2.7     -49.4   160       59   03 05 21

03 08 00  J0932+5306   06 45 55  65.1  73.1 -2.8     -72.8   -70       59   No stop
03 11 00  ---          06 48 55  65.6  73.4 -2.7     -73.1   110       82   03 08 01

03 11 00  IZW18        06 48 55  65.9  68.3 -2.8     -77.5   -25       82   No stop
03 18 10  ---          06 56 06  66.9  68.8 -2.7     -78.5   405      137   03 11 01

03 19 00  J0932+5306   06 56 57  66.7  74.3 -2.6     -74.0    24      137   03 19 00
03 22 00  ---          06 59 57  67.2  74.6 -2.6     -74.3   180      160   03 19 01

03 22 00  IZW18        06 59 57  67.5  69.1 -2.6     -79.1   -26      160   No stop
03 29 10  ---          07 07 08  68.5  69.6 -2.5     -80.1   404      215   03 22 01

03 30 00  J0932+5306   07 07 58  68.3  75.4 -2.4     -75.1    23      215   03 30 00
03 33 00  ---          07 10 59  68.8  75.7 -2.4     -75.4   180      238   03 30 01

03 33 00  IZW18        07 10 59  69.0  69.8 -2.4     -80.6   -27      238   No stop
03 40 10  ---          07 18 10  70.0  70.3 -2.3     -81.7   403      294   03 33 01

03 41 00  J0932+5306   07 19 00  69.9  76.6 -2.2     -76.2    23      294   03 41 00
03 44 00  ---          07 22 01  70.4  76.9 -2.2     -76.5   180      317   03 41 01

03 44 00  IZW18        07 22 01  70.6  70.5 -2.2     -82.3   -28      317   No stop
03 51 10  ---          07 29 12  71.6  70.9 -2.1     -83.4   402      372   03 44 01

03 52 00  J0932+5306   07 30 02  71.5  77.7 -2.1     -77.3    21      372   03 52 00
03 55 00  ---          07 33 02  72.0  78.0 -2.0     -77.6   180      395   03 52 01

03 55 00  IZW18        07 33 02  72.1  71.1 -2.0     -84.0   -29      395   No stop
04 02 10  ---          07 40 14  73.2  71.4 -1.9     -85.1   401      450   03 55 01

04 03 00  J0932+5306   07 41 04  73.2  78.9 -1.9     -78.4    20      450   04 03 00
04 06 00  ---          07 44 04  73.6  79.2 -1.8     -78.7   180      473   04 03 01

04 06 00  IZW18        07 44 04  73.7  71.6 -1.9     -85.8   -30      473   No stop
04 13 10  ---          07 51 15  74.7  71.8 -1.7     -87.0   400      528   04 06 01
```

Schedule for TORUN (Code Tr) Page 3
EVN-6CM-IZw18

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 27 Oct 2016 Day 301 ---										
04 14 00	J0932+5306	07 52 06	74.8	80.0	-1.7		-79.5	19	528	04 14 00
04 17 00	---	07 55 06	75.2	80.3	-1.6		-79.8	180	551	04 14 01
04 17 00	IZW18	07 55 06	75.3	71.9	-1.7		-87.7	-32	551	No stop
04 24 10	---	08 02 17	76.3	72.0	-1.5		-89.1	398	606	04 17 01
04 25 00	J0932+5306	08 03 07	76.4	81.2	-1.5		-80.6	17	606	04 25 00
04 28 00	---	08 06 08	76.9	81.5	-1.5		-80.9	180	629	04 25 01
04 28 00	IZW18	08 06 08	76.9	72.1	-1.5		-89.8	-34	629	No stop
04 35 10	---	08 13 19	77.9	72.0	-1.4		-91.3	396	685	04 28 01
04 36 00	J0932+5306	08 14 09	78.1	82.3	-1.3		-81.7	14	685	04 36 00
04 39 00	---	08 17 10	78.5	82.6	-1.3		-82.0	180	708	04 36 01
04 39 00	IZW18	08 17 10	78.4	71.9	-1.3		-92.2	-36	708	No stop
04 46 10	---	08 24 21	79.4	71.6	-1.2		-94.0	394	763	04 39 01
04 47 00	J0932+5306	08 25 11	79.7	83.5	-1.1		-82.8	11	763	04 47 00
04 50 00	---	08 28 11	80.2	83.8	-1.1		-83.1	180	786	04 47 01
04 50 00	IZW18	08 28 11	80.0	71.4	-1.1		-95.0	-40	786	No stop
04 57 10	---	08 35 23	81.0	70.7	-1.0		-97.1	390	841	04 50 01
04 58 00	J0932+5306	08 36 13	81.4	84.7	-1.0		-83.8	7	841	04 58 00
05 01 00	---	08 39 13	81.8	85.0	-0.9		-84.1	180	864	04 58 01
05 01 00	IZW18	08 39 13	81.6	70.2	-0.9		-98.4	-45	864	No stop
05 08 10	---	08 46 24	82.6	69.0	-0.8		-101.1	385	919	05 01 01
05 09 00	J0932+5306	08 47 15	83.0	85.9	-0.8		-84.8	1	919	05 09 00
05 12 00	---	08 50 15	83.5	86.2	-0.7		-85.1	180	942	05 09 01
05 12 00	IZW18	08 50 15	83.1	68.1	-0.7		-102.8	-52	942	No stop
05 19 10	---	08 57 26	84.1	65.7	-0.6		-106.6	378	997	05 12 01
05 20 00	J0932+5306	08 58 16	84.7	87.1	-0.6		-85.8	-8	997	05 20 00
05 23 00	---	09 01 17	85.1	87.5	-0.5		-86.0	172	1021	05 20 01
05 23 00	IZW18	09 01 17	84.6	64.0	-0.6		-109.1	-63	1021	No stop
05 30 10	---	09 08 28	85.6	59.5	-0.4		-115.1	367	1076	05 23 01
05 31 00	J0932+5306	09 09 18	86.3	88.6	-0.4		-86.5	-23	1076	05 31 00
05 34 00	---	09 12 19	86.8	89.0	-0.4		-86.7	157	1099	05 31 01

Schedule for TORUN (Code Tr) Page 4
EVN-6CM-IZw18

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 27 Oct 2016 Day 301 ---										
05 34 00	IZW18	09 12 19	86.1	56.0	-0.4		-119.3	-84	1099	No stop
05 41 00	---	09 19 20	86.9	46.7	-0.3		-130.0	336	1153	05 34 01
05 42 00	J0932+5306	09 20 20	88.0	90.5	-0.2		-86.8	-43	1153	05 42 00
05 45 00	---	09 23 21	88.4	91.3	-0.2		-86.6	137	1176	05 42 01
05 45 00	IZW18	09 23 21	87.3	38.8	-0.2		-138.8	-129	1176	No stop
05 52 00	---	09 30 22	87.8	18.4	-0.1		-160.6	291	1229	05 45 01
05 53 00	J0932+5306	09 31 22	89.6	99.8	-0.0		-79.8	-173	1229	05 53 00
05 56 00	---	09 34 22	89.9	232.2	0.0		52.1	7	1253	05 53 01
05 56 00	IZW18	09 34 22	87.9	363.2	-0.0		-176.6	-242	1253	No stop
06 03 00	---	09 41 23	87.7	336.9	0.1		155.6	178	1306	05 56 01
06 04 00	J0932+5306	09 42 24	88.7	268.0	0.1		86.3	-92	1306	06 04 00
06 07 00	---	09 45 24	88.3	269.0	0.2		86.7	88	1329	06 04 01
06 07 00	IZW18	09 45 24	87.4	325.1	0.2		143.0	-117	1329	No stop
06 14 00	---	09 52 25	86.7	311.0	0.3		127.5	303	1383	06 07 01
06 15 00	J0932+5306	09 53 25	87.1	270.7	0.3		86.8	-35	1383	06 15 00
06 18 00	---	09 56 26	86.6	271.2	0.4		86.6	145	1406	06 15 01
06 18 00	IZW18	09 56 26	86.3	305.7	0.4		121.4	-81	1406	No stop
06 25 00	---	10 03 27	85.4	299.4	0.5		113.6	339	1460	06 18 01
06 26 00	J0932+5306	10 04 27	85.4	272.3	0.5		86.1	-9	1460	06 26 00
06 29 00	---	10 07 28	84.9	272.6	0.6		85.9	171	1483	06 26 01
06 29 00	IZW18	10 07 28	84.8	296.8	0.5		110.3	-62	1483	No stop
06 36 00	---	10 14 29	83.9	293.7	0.7		105.7	358	1537	06 29 01
06 37 00	J0932+5306	10 15 29	83.7	273.6	0.7		85.2	5	1537	06 37 00
06 40 00	---	10 18 30	83.3	273.9	0.7		85.0	180	1560	06 37 01
06 40 00	IZW18	10 18 30	83.3	292.4	0.7		103.6	-51	1560	No stop
06 47 00	---	10 25 31	82.4	290.7	0.8		100.5	369	1614	06 40 01
06 48 00	J0932+5306	10 26 31	82.1	274.8	0.9		84.3	13	1614	06 48 00
06 51 00	---	10 29 31	81.6	275.1	0.9		84.0	180	1637	06 48 01
06 51 00	IZW18	10 29 31	81.8	290.0	0.9		99.0	-45	1637	No stop
06 58 00	---	10 36 32	80.8	289.1	1.0		96.6	375	1691	06 51 01

Schedule for TORUN (Code Tr) Page 5

EVN-6CM-IZw18

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 27 Oct 2016 Day 301 ---										
06 59 00	J0932+5306	10 37 33	80.4	276.0	1.1		83.2	19	1691	06 59 00
07 02 00	---	10 40 33	80.0	276.3	1.1		82.9	180	1714	06 59 01
07 02 00	IZW18	10 40 33	80.2	288.7	1.1		95.5	-40	1714	No stop
07 09 00	---	10 47 34	79.2	288.3	1.2		93.6	380	1768	07 02 01
07 10 00	J0932+5306	10 48 34	78.8	277.2	1.2		82.2	23	1768	07 10 00
07 13 00	---	10 51 35	78.4	277.5	1.3		81.9	180	1791	07 10 01
07 13 00	IZW18	10 51 35	78.7	288.1	1.3		92.6	-36	1791	No stop
07 20 00	---	10 58 36	77.7	288.0	1.4		91.0	384	1845	07 13 01
07 21 00	J0932+5306	10 59 36	77.2	278.3	1.4		81.1	26	1845	07 21 00
07 24 00	---	11 02 37	76.7	278.6	1.5		80.8	180	1868	07 21 01
07 24 00	IZW18	11 02 37	77.1	287.9	1.5		90.2	-34	1868	No stop
07 31 00	---	11 09 38	76.1	288.0	1.6		88.8	386	1922	07 24 01
07 32 00	J0932+5306	11 10 38	75.5	279.5	1.6		80.0	28	1922	07 32 00
07 35 00	---	11 13 39	75.1	279.8	1.7		79.7	180	1945	07 32 01
07 35 00	IZW18	11 13 39	75.5	288.1	1.6		88.0	-32	1945	No stop
07 42 00	---	11 20 40	74.5	288.2	1.8		86.7	388	1999	07 35 01
07 43 00	J0932+5306	11 21 40	73.9	280.6	1.8		78.9	30	1999	07 43 00
07 46 00	---	11 24 40	73.4	280.9	1.8		78.6	180	2022	07 43 01
07 46 00	IZW18	11 24 40	73.9	288.4	1.8		86.0	-30	2022	No stop
07 53 00	---	11 31 42	72.9	288.6	1.9		84.9	390	2076	07 46 01
07 54 00	J0932+5306	11 32 42	72.3	281.8	2.0		77.8	31	2076	07 54 00
07 57 00	---	11 35 42	71.8	282.1	2.0		77.5	180	2099	07 54 01
07 57 00	IZW18	11 35 42	72.4	288.8	2.0		84.2	-29	2099	No stop
08 04 00	---	11 42 43	71.4	289.2	2.1		83.1	391	2153	07 57 01
08 05 00	J0932+5306	11 43 44	70.7	282.9	2.2		76.7	32	2153	08 05 00
08 08 00	---	11 46 44	70.2	283.2	2.2		76.4	180	2176	08 05 01
08 08 00	IZW18	11 46 44	70.8	289.4	2.2		82.5	-27	2176	No stop
08 15 00	---	11 53 45	69.8	289.8	2.3		81.4	393	2229	08 08 01
08 16 00	J0932+5306	11 54 45	69.0	284.1	2.3		75.6	33	2229	08 16 00
08 19 00	---	11 57 46	68.6	284.4	2.4		75.3	180	2253	08 16 01

```
Schedule for TORUN     (Code Tr )                                  Page   6
               EVN-6CM-IZw18
  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  27 Oct 2016   Day 301 ---

08 19 00  IZW18        11 57 46  69.2 290.1  2.4      80.9   -26     2253   No stop
08 26 00  ---          12 04 47  68.3 290.5  2.5      79.9   394     2306   08 19 01

08 27 00  J0932+5306   12 05 47  67.4 285.2  2.5      74.5    34     2306   08 27 00
08 30 00  ---          12 08 48  67.0 285.5  2.6      74.1   180     2329   08 27 01

08 30 00  IZW18        12 08 48  67.7 290.8  2.6      79.3   -26     2329   No stop
08 37 00  ---          12 15 49  66.7 291.3  2.7      78.3   394     2383   08 30 01

08 38 00  J0932+5306   12 16 49  65.8 286.4  2.7      73.3    35     2383   08 38 00
08 41 00  ---          12 19 49  65.4 286.7  2.8      73.0   180     2406   08 38 01

08 41 00  IZW18        12 19 49  66.1 291.6  2.7      77.8   -25     2406   No stop
08 48 00  ---          12 26 51  65.2 292.1  2.9      76.8   395     2460   08 41 01

08 49 00  J0932+5306   12 27 51  64.3 287.6  2.9      72.2    36     2460   08 49 00
08 52 00  ---          12 30 51  63.8 287.9  3.0      71.9   180     2483   08 49 01

08 52 00  4C39.25      12 30 51  56.0 264.2  3.0      50.2   -62     2483   No stop
09 00 00  ---          12 38 53  54.8 265.9  3.2      50.4   418     2545   08 52 01



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


 ======== Setup file: sess316.C1024

   Setup group:   12         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 64.000
   Number of channels:  8    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
 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         3         7         3         7
 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:   6  Setup file default.  Used with PCAL = off
 LO sum=   4958.49  4958.49  4958.49  4958.49  5022.49  5022.49  5022.49  5022.49
 BBC fr=    758.49   758.49   758.49   758.49   822.49   822.49   822.49   822.49
 Bandwd=     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00
  Matching frequency sets:   6

 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)

* IZW18             09 30 30.145467   * 09 34 01.970000     09 35 10.936903       0.00
                    55 27 49.06976    * 55 14 28.23000      55 09 42.60251        0.00

* J0932+5306        09 29 13.304143   * 09 32 41.150836     09 33 48.923080       0.00
                    53 19 51.18011    * 53 06 33.80055      53 01 49.89506        0.00

* 4C39.25           09 23 55.319215   * 09 27 03.013936     09 28 04.630997       0.30
  J0927+3902        39 15 23.56645    * 39 02 20.85186      38 57 46.10851        0.16
  0923+392          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
  J0927+39          GSFC 2015a astro solution, unpublished 245753 observations.
```

eg094btr

RadioAstron Imaging of high-redshift quasars

PI: *Leonid Gurvits*

```
Address:  Joint Institute for VLBI in Europe

Observing mode: L-band, dual-pol
Schedule for TORUN     (Code Tr )                                    Page   2
               RadioAstron Imaging of high-redshift quasars
  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  27 Oct 2016   Day 301 ---
 Next scan frequencies:  4836.00  4836.00  4836.00  4836.00
 Next BBC frequencies:    636.00   636.00   636.00   636.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

12 51 30  2215+020     16 31 01   3.8  91.0 -5.8     -36.9     0        0   12 51 30
12 56 30  ---          16 36 01   4.5  92.0 -5.7     -36.9   300       10   12 51 31

12 57 00  2215+020     16 36 31   4.6  92.1 -5.7     -36.9    24       10   12 57 00
13 02 00  ---          16 41 32   5.4  93.1 -5.6     -36.9   300       19   12 57 01

13 02 30  2215+020     16 42 02   5.4  93.2 -5.6     -36.9    24       19   13 02 30
13 07 30  ---          16 47 03   6.2  94.2 -5.5     -36.8   300       29   13 02 31

13 08 00  2215+020     16 47 33   6.3  94.3 -5.5     -36.8    24       29   13 08 00
13 13 00  ---          16 52 34   7.0  95.3 -5.4     -36.8   300       38   13 08 01

13 13 30  2215+020     16 53 04   7.1  95.4 -5.4     -36.7    24       38   13 13 30
13 18 30  ---          16 58 05   7.8  96.5 -5.3     -36.7   300       48   13 13 31

13 19 00  2215+020     16 58 35   7.9  96.6 -5.3     -36.7    24       48   13 19 00
13 24 00  ---          17 03 36   8.7  97.6 -5.3     -36.6   300       58   13 19 01

13 24 30  2215+020     17 04 06   8.7  97.7 -5.2     -36.6    24       58   13 24 30
13 29 30  ---          17 09 07   9.5  98.7 -5.2     -36.4   300       67   13 24 31

13 30 00  2215+020     17 09 37   9.6  98.8 -5.2     -36.4    24       67   13 30 00
13 35 00  ---          17 14 38  10.3  99.8 -5.1     -36.3   300       77   13 30 01

13 35 30  2215+020     17 15 08  10.4  99.9 -5.1     -36.3    24       77   13 35 30
13 40 30  ---          17 20 09  11.1 100.9 -5.0     -36.2   300       87   13 35 31

13 41 00  2215+020     17 20 39  11.2 101.1 -5.0     -36.1    24       87   13 41 00
13 46 00  ---          17 25 40  11.9 102.1 -4.9     -36.0   300       96   13 41 01

13 46 30  2215+020     17 26 10  12.0 102.2 -4.9     -36.0    24       96   13 46 30
13 51 30  ---          17 31 10  12.7 103.2 -4.8     -35.8   300      106   13 46 31

13 52 00  2215+020     17 31 41  12.8 103.3 -4.8     -35.8    24      106   13 52 00
13 57 00  ---          17 36 41  13.5 104.4 -4.7     -35.6   300      115   13 52 01

13 57 30  2215+020     17 37 11  13.6 104.5 -4.7     -35.6    24      115   13 57 30
14 02 30  ---          17 42 12  14.3 105.5 -4.6     -35.4   300      125   13 57 31
```

Schedule for TORUN (Code Tr) Page 3

RadioAstron Imaging of high-redshift quasars

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 27 Oct 2016 Day 301 ---										
14 03 00	2215+020	17 42 42	14.4	105.6	-4.6		-35.4	24	125	14 03 00
14 08 00	---	17 47 43	15.1	106.7	-4.5		-35.1	300	135	14 03 01
14 08 30	2215+020	17 48 13	15.2	106.8	-4.5		-35.1	24	135	14 08 30
14 13 30	---	17 53 14	15.9	107.9	-4.4		-34.9	300	144	14 08 31
14 14 00	2215+020	17 53 44	16.0	108.0	-4.4		-34.9	24	144	14 14 00
14 19 00	---	17 58 45	16.7	109.0	-4.3		-34.6	300	154	14 14 01
14 19 30	2215+020	17 59 15	16.8	109.2	-4.3		-34.6	24	154	14 19 30
14 24 30	---	18 04 16	17.5	110.2	-4.2		-34.3	300	163	14 19 31
14 25 00	2215+020	18 04 46	17.6	110.3	-4.2		-34.3	24	163	14 25 00
14 30 00	---	18 09 47	18.3	111.4	-4.1		-34.0	300	173	14 25 01
14 30 30	2215+020	18 10 17	18.3	111.5	-4.1		-34.0	24	173	14 30 30
14 35 30	---	18 15 18	19.0	112.6	-4.1		-33.7	300	183	14 30 31
14 36 00	2215+020	18 15 48	19.1	112.7	-4.0		-33.7	24	183	14 36 00
14 41 00	---	18 20 49	19.8	113.9	-4.0		-33.3	300	192	14 36 01
14 41 30	2215+020	18 21 19	19.9	114.0	-4.0		-33.3	24	192	14 41 30
14 46 30	---	18 26 19	20.5	115.1	-3.9		-33.0	300	202	14 41 31
14 47 00	2215+020	18 26 50	20.6	115.2	-3.9		-32.9	24	202	14 47 00
14 52 00	---	18 31 50	21.3	116.3	-3.8		-32.6	300	212	14 47 01
14 52 30	2215+020	18 32 20	21.4	116.4	-3.8		-32.6	24	212	14 52 30
14 57 30	---	18 37 21	22.0	117.6	-3.7		-32.2	300	221	14 52 31
14 58 00	2215+020	18 37 51	22.1	117.7	-3.7		-32.2	24	221	14 58 00
15 03 00	---	18 42 52	22.8	118.8	-3.6		-31.8	300	231	14 58 01
15 03 30	2215+020	18 43 22	22.8	119.0	-3.6		-31.7	24	231	15 03 30
15 08 30	---	18 48 23	23.5	120.1	-3.5		-31.3	300	240	15 03 31
15 09 00	2215+020	18 48 53	23.5	120.2	-3.5		-31.3	24	240	15 09 00
15 14 00	---	18 53 54	24.2	121.4	-3.4		-30.9	300	250	15 09 01
15 14 30	2215+020	18 54 24	24.3	121.5	-3.4		-30.8	24	250	15 14 30
15 19 30	---	18 59 25	24.9	122.7	-3.3		-30.4	300	260	15 14 31
15 20 00	2215+020	18 59 55	25.0	122.8	-3.3		-30.3	24	260	15 20 00
15 25 00	---	19 04 56	25.6	124.0	-3.2		-29.9	300	269	15 20 01
15 25 30	2215+020	19 05 26	25.6	124.1	-3.2		-29.8	24	269	15 25 30
15 30 30	---	19 10 27	26.3	125.4	-3.1		-29.4	300	279	15 25 31

```
Schedule for TORUN     (Code Tr )                                  Page   4
              RadioAstron Imaging of high-redshift quasars
  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  27 Oct 2016   Day 301 ---

15 31 50  2251+158     19 11 47  33.2 108.4 -3.7     -36.4    31      279   15 31 50
15 40 40  ---          19 20 38  34.5 110.5 -3.6     -35.9   530      296   15 31 51

15 42 00  2215+020     19 21 59  27.7 128.2 -2.9     -28.2    30      296   15 42 00
15 47 00  ---          19 26 59  28.2 129.4 -2.9     -27.7   300      305   15 42 01

 ---------- C-band VLBI scans. Space segment 04 ----------

15 50 00  2215+020     19 30 00  28.6 130.2 -2.8     -27.3   173      305   15 50 00
16 07 30  ---          19 47 33  30.5 134.7 -2.5     -25.3  1050      339   15 50 01

16 08 00  2215+020     19 48 03  30.6 134.8 -2.5     -25.2    24      339   16 08 00
16 25 00  ---          20 05 06  32.3 139.4 -2.2     -23.0  1020      372   16 08 01

16 25 30  2215+020     20 05 36  32.4 139.5 -2.2     -23.0    24      372   16 25 30
16 42 30  ---          20 22 39  34.0 144.3 -1.9     -20.5  1020      404   16 25 31

16 43 00  2215+020     20 23 09  34.0 144.4 -1.9     -20.5    24      404   16 43 00
17 00 00  ---          20 40 11  35.4 149.3 -1.6     -17.9  1020      437   16 43 01



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


 ======== Setup file: ra6cm2.set

   Setup group:   23         Station: TORUN            Total bit rate:   256
   Format: MARK5B            Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type: DBBC_DDC        Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4200.00   4200.00   4200.00   4200.00
  Net SB=         U         U         L         L
  IF SB =         U         U         U         U
  Pol.  =       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5
  BBC SB=         U         U         L         L
  IF    =        A1        B1        A1        B1

 The following frequency sets based on these setups were used.

  Frequency Set:  35  Setup file default.  Used with PCAL = 1MHz
  LO sum=   4836.00  4836.00  4836.00  4836.00
  BBC fr=    636.00   636.00   636.00   636.00
  Bandwd=     16.00    16.00    16.00    16.00
   Matching frequency sets:  35

  Track assignments are:
   track1=   2,  4,  6,  8
   barrel=roll_off



POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 32.808792       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 14.78603        0.00
                    fake circumpolar target for a TS to look at

* 1934-638          04 20 04.230487   * 19 39 25.024972     04 20 47.461629       0.00
                   -63 49 48.04871    *-63 42 45.62440     -63 40 21.75670        0.00
                    ATCA flux calibrator

* 2215+020          22 15 15.584186   * 22 17 48.237927     22 18 39.727739       0.00
  J2217+0220        02 05 08.96683    * 02 20 10.71214      02 25 23.50610        0.00
                    ./eg094b_sources.radioastron
                    AGN, HIGHz, rfc_2013d Petrov, 2013, unpublished 383 observations, RA-AO3-04, RA-

* 2251+158          22 51 29.519741   * 22 53 57.747940     22 54 48.149055       0.00
  J2253+1608        15 52 54.34791    * 16 08 53.56074      16 14 27.30715        0.00
  3C454.3           ./eg094b_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 40570 observations, RA-AO3-04, RA-AO2-1
```

rk16bttr

RadioAstron AGN Monitoring

PI: *Yuri Kovalev*


```
Address:  ASC Lebedev          Profsoyuznaya 84/32          117997 Moscow, Russia
Phone:    +7-495-3332512                EMAIL:    kirx@scan.sai.msu.ru
Fax:      +7-495-3332378                Phone during observation: +7-903-6614865
```


```
Observing mode: C/K-band, dual-pol

Schedule for TORUN     (Code Tr )                                   Page   2
               RadioAstron AGN Monitoring
  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  28 Oct 2016   Day 302 ---

 ---------- C-band VLBI scans ----------

 Next scan frequencies:  4836.00  4836.00  4836.00  4836.00
 Next BBC frequencies:    736.00   736.00   736.00   736.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

00 00 00  2230+114     03 41 20  17.2 266.8  5.1      37.8     0        0   00 00 00
00 14 30  ---          03 55 53  15.1 269.7  5.4      37.8   870       28   00 00 01

00 15 00  2230+114     03 56 23  15.0 269.8  5.4      37.8    24       28   00 15 00
00 29 30  ---          04 10 55  12.8 272.7  5.6      37.8   870       56   00 15 01

00 30 00  2230+114     04 11 25  12.7 272.8  5.6      37.8    24       56   00 30 00
00 44 30  ---          04 25 58  10.5 275.7  5.9      37.6   870       84   00 30 01

00 45 00  2230+114     04 26 28  10.5 275.8  5.9      37.6    24       84   00 45 00
01 00 00  ---          04 41 30   8.2 278.7  6.1      37.3   900      112   00 45 01



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


 ======== Setup file: ra6cm2.set

   Setup group:    4         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4100.00   4100.00   4100.00   4100.00
  Net SB=         L         L         U         U
  IF SB =         U         U         U         U
  Pol.  =      RCP       LCP       RCP       LCP
  BBC   =         1         2         1         2
  BBC SB=         L         L         U         U
  IF    =        C         A         C         A

 The following frequency sets based on these setups were used.

  Frequency Set:   3  Setup file default.  Used with PCAL = 1MHz
  LO sum=   4836.00  4836.00  4836.00  4836.00
  BBC fr=    736.00   736.00   736.00   736.00
  Bandwd=     16.00    16.00    16.00    16.00
   Matching frequency sets:   3

  Track assignments are:
   track1=   2, 18,  3, 19
   barrel=roll_off
```

POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 32.940081       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 14.47324        0.00
                    fake circumpolar target for a TS to look at

* 2230+114          22 30 07.803947   * 22 32 36.408905     22 33 26.733044       0.00
  J2232+1143        11 28 22.81067    * 11 43 50.90395      11 49 14.35662        0.00
  CTA102            ./rk16bt_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 5100 observations, RA-AO4-06, RA-AO3-04
```

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)
  2230+114           127.0

 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
```

n16l3tr

Network Monitoring Experiment

PI: *Ross Burns*

```
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
-------------------------------------------------------------------------------------------
 --- Fri  28 Oct 2016   Day 302 ---
 Next scan frequencies:  1642.49  1642.49  1642.49  1642.49  1674.49  1674.49  1674.49  1674.49
 Next BBC frequencies:    657.51   657.51   657.51   657.51   625.51   625.51   625.51   625.51
 Next scan bandwidths:     16.00    16.00    16.00    16.00    16.00    16.00    16.00    16.00

11 30 00  J1751+0939   15 13 14  36.1 128.7 -2.7     -28.4     0        0   11 30 00
11 44 00  =1749+096    15 27 16  37.7 132.5 -2.4     -26.7   840       54   11 30 01

11 45 00  J1751+0939   15 28 16  37.8 132.8 -2.4     -26.5    54       54   11 45 00
11 59 00  =1749+096    15 42 18  39.3 136.8 -2.2     -24.6   840      108   11 45 01

12 01 00  J1832+2833   15 44 19  50.6 111.5 -2.8     -39.5    54      108   12 01 00
12 14 00  =1830+285    15 57 21  52.4 115.0 -2.6     -38.3   780      158   12 01 01

12 15 00  J1832+2833   15 58 21  52.5 115.3 -2.6     -38.2    54      158   12 15 00
12 29 00  =1830+285    16 12 23  54.4 119.4 -2.4     -36.6   840      212   12 15 01

12 30 00  J1832+2833   16 13 24  54.5 119.7 -2.3     -36.4    54      212   12 30 00
12 44 00  =1830+285    16 27 26  56.3 124.2 -2.1     -34.5   840      265   12 30 01

12 45 00  J1832+2833   16 28 26  56.4 124.5 -2.1     -34.3    54      265   12 45 00
12 59 00  =1830+285    16 42 28  58.1 129.3 -1.9     -32.0   840      319   12 45 01

13 00 00  J1832+2833   16 43 29  58.2 129.6 -1.8     -31.8    53      319   13 00 00
13 14 00  =1830+285    16 57 31  59.8 134.8 -1.6     -29.0   840      373   13 00 01

13 15 00  J1832+2833   16 58 31  59.9 135.2 -1.6     -28.8    53      373   13 15 00
13 29 00  =1830+285    17 12 33  61.3 140.7 -1.3     -25.6   840      427   13 15 01

13 31 00  J2031+1219   17 14 34  33.5 117.0 -3.3     -33.2     2      427   13 31 00
13 44 00  =2029+121    17 27 36  35.2 120.2 -3.1     -32.1   780      477   13 31 01

13 45 00  J2031+1219   17 28 36  35.4 120.5 -3.1     -32.0    54      477   13 45 00
13 59 00  =2029+121    17 42 38  37.1 124.1 -2.8     -30.6   840      531   13 45 01

14 00 00  J2031+1219   17 43 38  37.3 124.4 -2.8     -30.5    54      531   14 00 00
14 14 00  =2029+121    17 57 41  39.0 128.1 -2.6     -28.9   840      585   14 00 01

14 15 00  J2031+1219   17 58 41  39.1 128.4 -2.6     -28.8    54      585   14 15 00
14 29 00  =2029+121    18 12 43  40.7 132.4 -2.3     -27.0   840      638   14 15 01


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

```
======== Setup file: sess316.L512nme

  Setup group:   17         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=   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
  IF SB =         L         L         L         L         L         L         L         L
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         3         7         3         7
  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:   8  Setup file default.  Used with PCAL = off
  LO sum=   1642.49  1642.49  1642.49  1642.49  1674.49  1674.49  1674.49  1674.49
  BBC fr=    657.51   657.51   657.51   657.51   625.51   625.51   625.51   625.51
  Bandwd=     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,  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)

  1749+096          17 49 10.387931   * 17 51 32.818574     17 52 19.437138       0.00
* J1751+0939        09 39 42.82591    * 09 39 00.72847      09 39 06.43683        0.00
  J1751+09          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                    GSFC 2015a astro solution, unpublished 144578 observations.

  1830+285          18 30 52.379793   * 18 32 50.185624     18 33 28.745909       0.03
* J1832+2833        28 31 17.07922    * 28 33 35.95533      28 34 46.37958        0.03
  J1832+28          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                    GSFC 2015a astro solution, unpublished   1329 observations.

  2029+121          20 29 32.681261   * 20 31 54.994268     20 32 42.484158       0.01
* J2031+1219        12 09 28.75308    * 12 19 41.34024      12 23 24.71806        0.02
  J2031+12          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                    GSFC 2015a astro solution, unpublished   3281 observations.
```

ea058atr

EA058A - NGC660 HI

PI: *Argo*

```
Address:  Jeremiah Horrocks Institute  University of Central Lancashire  Preston  UK

Schedule for TORUN     (Code Tr )                                   Page   2
               EA058A - NGC660 HI
  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  28 Oct 2016   Day 302 ---
 Next scan frequencies:  1328.63  1328.63  1328.63  1328.63  1360.54  1360.54  1360.54  1360.54
                         1392.45  1392.45  1392.45  1392.45  1424.36  1424.36  1424.36  1424.36
 Next BBC frequencies:    771.37   771.37   771.37   771.37   739.46   739.46   739.46   739.46
                          707.55   707.55   707.55   707.55   675.64   675.64   675.64   675.64
 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

15 30 00  3C84         19 13 53  17.1  41.7 -8.1     -32.3     0        0   15 30 00
15 45 00  ---          19 28 56  18.6  44.2 -7.9     -34.0   900      115   15 30 01

15 46 30  J0143+1215   19 30 26   7.8  79.8 -6.2     -37.2     4      115   15 46 30
15 49 30  ---          19 33 26   8.2  80.4 -6.2     -37.3   180      138   15 46 31

15 49 30  NGC660       19 33 26   9.4  79.6 -6.2     -37.4   -18      138   No stop
15 56 30  ---          19 40 28  10.4  81.0 -6.1     -37.6   402      192   15 49 31

15 57 00  J0143+1215   19 40 58   9.3  81.8 -6.1     -37.5    13      192   15 57 00
16 00 00  ---          19 43 58   9.8  82.4 -6.0     -37.5   180      215   15 57 01

16 00 00  NGC660       19 43 58  10.9  81.7 -6.0     -37.7   -18      215   No stop
16 07 00  ---          19 50 59  12.0  83.0 -5.9     -37.8   402      269   16 00 01

16 07 30  J0143+1215   19 51 29  10.9  83.9 -5.9     -37.7    13      269   16 07 30
16 10 30  ---          19 54 30  11.3  84.5 -5.8     -37.7   180      292   16 07 31

16 10 30  NGC660       19 54 30  12.5  83.7 -5.8     -37.9   -18      292   No stop
16 17 30  ---          20 01 31  13.6  85.1 -5.7     -38.0   402      346   16 10 31

16 18 00  J0143+1215   20 02 01  12.5  86.0 -5.7     -37.8    13      346   16 18 00
16 21 00  ---          20 05 02  12.9  86.6 -5.7     -37.9   180      369   16 18 01

16 21 00  NGC660       20 05 02  14.1  85.8 -5.6     -38.1   -18      369   No stop
16 28 00  ---          20 12 03  15.1  87.2 -5.5     -38.1   402      423   16 21 01

16 28 30  J0143+1215   20 12 33  14.0  88.1 -5.5     -37.9    13      423   16 28 30
16 31 30  ---          20 15 33  14.5  88.7 -5.5     -37.9   180      446   16 28 31

16 31 30  NGC660       20 15 33  15.7  87.9 -5.5     -38.1   -18      446   No stop
16 38 30  ---          20 22 34  16.7  89.3 -5.4     -38.2   402      500   16 31 31

16 39 00  J0143+1215   20 23 04  15.6  90.2 -5.4     -37.9    13      500   16 39 00
16 42 00  ---          20 26 05  16.1  90.8 -5.3     -37.9   180      523   16 39 01

16 42 00  NGC660       20 26 05  17.2  90.0 -5.3     -38.2   -18      523   No stop
16 49 00  ---          20 33 06  18.3  91.4 -5.2     -38.2   402      577   16 42 01
```

Schedule for TORUN (Code Tr) Page 3

EA058A - NGC660 HI

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 28 Oct 2016 Day 302 ---										
16 49 30	J0143+1215	20 33 36	17.2	92.3	-5.2		-37.9	13	577	16 49 30
16 52 30	---	20 36 37	17.7	92.9	-5.1		-37.9	180	600	16 49 31
16 52 30	NGC660	20 36 37	18.8	92.1	-5.1		-38.2	-18	600	No stop
16 59 30	---	20 43 38	19.9	93.5	-5.0		-38.1	402	654	16 52 31
17 00 00	J0143+1215	20 44 08	18.8	94.4	-5.0		-37.8	13	654	17 00 00
17 03 00	---	20 47 08	19.2	95.0	-5.0		-37.8	180	677	17 00 01
17 03 00	NGC660	20 47 08	20.4	94.2	-4.9		-38.1	-18	677	No stop
17 10 00	---	20 54 10	21.5	95.7	-4.8		-38.0	402	731	17 03 01
17 10 30	J0143+1215	20 54 40	20.4	96.6	-4.8		-37.6	13	731	17 10 30
17 13 30	---	20 57 40	20.8	97.2	-4.8		-37.6	180	754	17 10 31
17 13 30	NGC660	20 57 40	22.0	96.4	-4.8		-37.9	-18	754	No stop
17 20 30	---	21 04 41	23.0	97.8	-4.7		-37.8	402	808	17 13 31
17 21 00	J0143+1215	21 05 11	21.9	98.8	-4.7		-37.4	13	808	17 21 00
17 24 00	---	21 08 12	22.4	99.4	-4.6		-37.3	180	831	17 21 01
17 24 00	NGC660	21 08 12	23.5	98.6	-4.6		-37.7	-18	831	No stop
17 31 00	---	21 15 13	24.6	100.0	-4.5		-37.5	402	885	17 24 01
17 31 30	J0143+1215	21 15 43	23.5	101.0	-4.5		-37.1	13	885	17 31 30
17 34 30	---	21 18 44	23.9	101.6	-4.4		-37.0	180	908	17 31 31
17 34 30	NGC660	21 18 44	25.1	100.8	-4.4		-37.4	-18	908	No stop
17 41 30	---	21 25 45	26.1	102.3	-4.3		-37.2	402	962	17 34 31
17 42 00	J0143+1215	21 26 15	25.0	103.2	-4.3		-36.8	13	962	17 42 00
17 45 00	---	21 29 15	25.5	103.9	-4.3		-36.6	180	985	17 42 01
17 45 00	NGC660	21 29 15	26.6	103.1	-4.2		-37.0	-18	985	No stop
17 52 00	---	21 36 16	27.7	104.6	-4.1		-36.7	402	1038	17 45 01
17 52 30	J0143+1215	21 36 47	26.6	105.5	-4.1		-36.3	13	1038	17 52 30
17 55 30	---	21 39 47	27.0	106.2	-4.1		-36.2	180	1062	17 52 31
17 55 30	NGC660	21 39 47	28.2	105.4	-4.1		-36.6	-18	1062	No stop
18 02 30	---	21 46 48	29.2	106.9	-4.0		-36.3	402	1115	17 55 31
18 03 00	J0143+1215	21 47 18	28.1	107.9	-4.0		-35.8	13	1115	18 03 00
18 06 00	---	21 50 19	28.5	108.5	-3.9		-35.6	180	1138	18 03 01

Schedule for TORUN (Code Tr) Page 4

EA058A - NGC660 HI

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 28 Oct 2016 Day 302 ---										
18 06 00	NGC660	21 50 19	29.7	107.7	-3.9		-36.1	-18	1138	No stop
18 13 00	---	21 57 20	30.7	109.3	-3.8		-35.7	402	1192	18 06 01
18 13 30	J0143+1215	21 57 50	29.6	110.3	-3.8		-35.2	13	1192	18 13 30
18 16 30	---	22 00 51	30.0	110.9	-3.7		-35.0	180	1215	18 13 31
18 16 30	NGC660	22 00 51	31.2	110.1	-3.7		-35.5	-18	1215	No stop
18 23 30	---	22 07 52	32.2	111.8	-3.6		-35.0	402	1269	18 16 31
18 24 00	J0143+1215	22 08 22	31.0	112.7	-3.6		-34.5	12	1269	18 24 00
18 27 00	---	22 11 22	31.5	113.4	-3.6		-34.3	180	1292	18 24 01
18 27 00	NGC660	22 11 22	32.7	112.6	-3.5		-34.8	-18	1292	No stop
18 34 00	---	22 18 23	33.6	114.3	-3.4		-34.3	402	1346	18 27 01
18 34 30	J0143+1215	22 18 53	32.5	115.2	-3.4		-33.8	12	1346	18 34 30
18 37 30	---	22 21 54	32.9	115.9	-3.4		-33.6	180	1369	18 34 31
18 37 30	NGC660	22 21 54	34.1	115.1	-3.4		-34.0	-18	1369	No stop
18 44 30	---	22 28 55	35.1	116.8	-3.3		-33.5	402	1423	18 37 31
18 45 00	J0143+1215	22 29 25	33.9	117.8	-3.3		-33.0	12	1423	18 45 00
18 48 00	---	22 32 26	34.3	118.5	-3.2		-32.7	180	1446	18 45 01
18 48 00	NGC660	22 32 26	35.5	117.7	-3.2		-33.2	-18	1446	No stop
18 55 00	---	22 39 27	36.4	119.5	-3.1		-32.6	402	1500	18 48 01
18 55 30	J0143+1215	22 39 57	35.3	120.4	-3.1		-32.0	12	1500	18 55 30
18 58 30	---	22 42 57	35.7	121.2	-3.0		-31.7	180	1523	18 55 31
18 58 30	NGC660	22 42 57	36.9	120.4	-3.0		-32.2	-18	1523	No stop
19 05 30	---	22 49 59	37.8	122.2	-2.9		-31.5	402	1577	18 58 31
19 06 00	J0143+1215	22 50 29	36.6	123.1	-2.9		-31.0	12	1577	19 06 00
19 09 00	---	22 53 29	37.0	123.9	-2.8		-30.7	180	1600	19 06 01
19 11 00	3C84	22 55 29	45.3	77.0	-4.4		-51.4	11	1600	19 11 00
19 21 00	---	23 05 31	46.8	78.6	-4.3		-51.9	600	1677	19 11 01
19 23 00	J0143+1215	23 07 31	38.7	127.7	-2.6		-29.1	7	1677	19 23 00
19 28 00	---	23 12 32	39.3	129.0	-2.5		-28.5	300	1715	19 23 01
19 28 00	NGC660	23 12 32	40.6	128.3	-2.5		-29.0	-18	1715	No stop
19 35 00	---	23 19 33	41.4	130.3	-2.4		-28.1	402	1769	19 28 01

Schedule for TORUN (Code Tr) Page 5

EA058A - NGC660 HI

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 28 Oct 2016 Day 302 ---										
19 35 30	J0143+1215	23 20 03	40.2	131.1	-2.4		-27.6	12	1769	19 35 30
19 38 30	---	23 23 04	40.5	132.0	-2.4		-27.2	180	1792	19 35 31
19 38 30	NGC660	23 23 04	41.8	131.3	-2.3		-27.7	-18	1792	No stop
19 45 30	---	23 30 05	42.6	133.3	-2.2		-26.7	402	1846	19 38 31
19 46 00	J0143+1215	23 30 35	41.3	134.2	-2.2		-26.2	12	1846	19 46 00
19 49 00	---	23 33 36	41.6	135.1	-2.2		-25.7	180	1869	19 46 01
19 49 00	NGC660	23 33 36	42.9	134.4	-2.2		-26.2	-18	1869	No stop
19 56 00	---	23 40 37	43.7	136.5	-2.1		-25.2	402	1923	19 49 01
19 56 30	J0143+1215	23 41 07	42.4	137.3	-2.1		-24.6	12	1923	19 56 30
19 59 30	---	23 44 07	42.7	138.2	-2.0		-24.2	180	1946	19 56 31
19 59 30	NGC660	23 44 07	44.0	137.6	-2.0		-24.7	-18	1946	No stop
20 06 30	---	23 51 09	44.7	139.7	-1.9		-23.5	402	2000	19 59 31
20 07 00	J0143+1215	23 51 39	43.5	140.5	-1.9		-23.0	12	2000	20 07 00
20 10 00	---	23 54 39	43.8	141.4	-1.8		-22.5	180	2023	20 07 01
20 10 00	NGC660	23 54 39	45.1	140.8	-1.8		-23.0	-18	2023	No stop
20 17 00	---	00 01 40	45.7	143.1	-1.7		-21.8	402	2077	20 10 01
20 17 30	J0143+1215	00 02 10	44.4	143.8	-1.7		-21.3	12	2077	20 17 30
20 20 30	---	00 05 11	44.7	144.8	-1.7		-20.8	180	2100	20 17 31
20 20 30	NGC660	00 05 11	46.0	144.2	-1.6		-21.2	-18	2100	No stop
20 27 30	---	00 12 12	46.6	146.5	-1.5		-19.9	402	2154	20 20 31
20 28 00	J0143+1215	00 12 42	45.3	147.2	-1.5		-19.4	12	2154	20 28 00
20 31 00	---	00 15 43	45.6	148.2	-1.5		-18.9	180	2177	20 28 01
20 31 00	NGC660	00 15 43	46.9	147.7	-1.5		-19.3	-18	2177	No stop
20 38 00	---	00 22 44	47.5	150.1	-1.4		-18.0	402	2231	20 31 01
20 38 30	J0143+1215	00 23 14	46.1	150.7	-1.4		-17.5	12	2231	20 38 30
20 41 30	---	00 26 14	46.4	151.7	-1.3		-16.9	180	2254	20 38 31
20 41 30	NGC660	00 26 14	47.7	151.3	-1.3		-17.3	-19	2254	No stop
20 48 30	---	00 33 15	48.2	153.7	-1.2		-15.9	401	2308	20 41 31
20 49 00	J0143+1215	00 33 46	46.9	154.3	-1.2		-15.5	12	2308	20 49 00
20 52 00	---	00 36 46	47.1	155.3	-1.1		-14.9	180	2331	20 49 01

Schedule for TORUN (Code Tr) Page 6

EA058A - NGC660 HI

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 28 Oct 2016 Day 302 ---										
20 52 00	NGC660	00 36 46	48.4	155.0	-1.1		-15.2	-19	2331	No stop
20 59 00	---	00 43 47	48.9	157.5	-1.0		-13.7	401	2385	20 52 01
20 59 30	J0143+1215	00 44 17	47.5	158.0	-1.0		-13.3	12	2385	20 59 30
21 02 30	---	00 47 18	47.7	159.0	-1.0		-12.7	180	2408	20 59 31
21 02 30	NGC660	00 47 18	49.1	158.7	-0.9		-13.0	-19	2408	No stop
21 09 30	---	00 54 19	49.4	161.3	-0.8		-11.4	401	2462	21 02 31
21 10 00	J0143+1215	00 54 49	48.1	161.7	-0.8		-11.1	11	2462	21 10 00
21 13 00	---	00 57 50	48.2	162.8	-0.8		-10.5	180	2485	21 10 01
21 13 00	NGC660	00 57 50	49.6	162.6	-0.8		-10.7	-19	2485	No stop
21 20 00	---	01 04 51	49.9	165.2	-0.7		-9.1	401	2538	21 13 01
21 20 30	J0143+1215	01 05 21	48.5	165.5	-0.7		-8.8	11	2538	21 20 30
21 23 30	---	01 08 21	48.6	166.6	-0.6		-8.2	180	2562	21 20 31
21 23 30	NGC660	01 08 21	50.0	166.5	-0.6		-8.3	-19	2562	No stop
21 30 30	---	01 15 22	50.2	169.1	-0.5		-6.7	401	2615	21 23 31
21 31 00	J0143+1215	01 15 52	48.9	169.4	-0.5		-6.5	11	2615	21 31 00
21 34 00	---	01 18 53	48.9	170.5	-0.4		-5.8	180	2638	21 31 01
21 34 00	NGC660	01 18 53	50.3	170.4	-0.4		-5.9	-19	2638	No stop
21 41 00	---	01 25 54	50.5	173.1	-0.3		-4.3	401	2692	21 34 01
21 41 30	J0143+1215	01 26 24	49.1	173.3	-0.3		-4.1	11	2692	21 41 30
21 44 30	---	01 29 25	49.1	174.4	-0.3		-3.4	180	2715	21 41 31
21 44 30	NGC660	01 29 25	50.5	174.4	-0.2		-3.4	-19	2715	No stop
21 51 30	---	01 36 26	50.6	177.1	-0.1		-1.8	401	2769	21 44 31
21 52 00	J0143+1215	01 36 56	49.2	177.2	-0.1		-1.7	11	2769	21 52 00
21 55 00	---	01 39 56	49.2	178.3	-0.1		-1.0	180	2792	21 52 01
21 55 00	NGC660	01 39 56	50.6	178.5	-0.1		-1.0	-19	2792	No stop
22 02 00	---	01 46 58	50.6	181.1	0.1		0.7	401	2846	21 55 01
22 02 30	J0143+1215	01 47 28	49.2	181.1	0.1		0.7	11	2846	22 02 30
22 05 30	---	01 50 28	49.2	182.3	0.1		1.4	180	2869	22 02 31
22 05 30	NGC660	01 50 28	50.6	182.5	0.1		1.5	-19	2869	No stop
22 12 30	---	01 57 29	50.5	185.2	0.2		3.2	401	2923	22 05 31

Schedule for TORUN (Code Tr) Page 7

EA058A - NGC660 HI

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 28 Oct 2016 Day 302 ---										
22 13 00	J0143+1215	01 57 59	49.2	185.1	0.2		3.1	11	2923	22 13 00
22 16 00	---	02 01 00	49.1	186.2	0.3		3.8	180	2946	22 13 01
22 16 00	NGC660	02 01 00	50.5	186.5	0.3		4.0	-19	2946	No stop
22 23 00	---	02 08 01	50.3	189.2	0.4		5.7	401	3000	22 16 01
22 23 30	J0143+1215	02 08 31	49.0	189.0	0.4		5.5	11	3000	22 23 30
22 26 30	---	02 11 32	48.9	190.1	0.5		6.2	180	3023	22 23 31
22 26 30	NGC660	02 11 32	50.3	190.5	0.5		6.5	-18	3023	No stop
22 33 30	---	02 18 33	50.0	193.1	0.6		8.1	402	3077	22 26 31
22 34 00	J0143+1215	02 19 03	48.7	192.9	0.6		7.9	12	3077	22 34 00
22 37 00	---	02 22 03	48.6	194.0	0.6		8.5	180	3100	22 34 01
22 37 00	NGC660	02 22 03	49.9	194.5	0.6		8.9	-18	3100	No stop
22 44 00	---	02 29 04	49.6	197.1	0.8		10.4	402	3154	22 37 01
22 44 30	J0143+1215	02 29 35	48.3	196.7	0.8		10.2	12	3154	22 44 30
22 47 30	---	02 32 35	48.1	197.8	0.8		10.8	180	3177	22 44 31
22 47 30	NGC660	02 32 35	49.5	198.3	0.8		11.2	-18	3177	No stop
22 54 30	---	02 39 36	49.1	200.9	0.9		12.7	402	3231	22 47 31
22 55 00	J0143+1215	02 40 06	47.8	200.5	0.9		12.4	12	3231	22 55 00
22 58 00	---	02 43 07	47.6	201.5	1.0		13.0	180	3254	22 55 01
23 00 40	3C120	02 45 47	37.4	145.2	-1.8		-20.1	32	3254	23 00 40
23 10 40	---	02 55 49	38.2	148.2	-1.6		-18.5	600	3331	23 00 41
23 12 40	J0143+1215	02 57 49	46.7	206.6	1.2		16.0	-12	3331	23 12 40
23 15 40	---	03 00 50	46.5	207.7	1.3		16.6	168	3354	23 12 41
23 15 40	NGC660	03 00 50	47.8	208.4	1.3		17.1	-18	3354	No stop
23 22 40	---	03 07 51	47.3	210.8	1.4		18.5	402	3408	23 15 41
23 23 10	J0143+1215	03 08 21	45.9	210.2	1.4		18.0	12	3408	23 23 10
23 26 10	---	03 11 21	45.7	211.2	1.4		18.6	180	3431	23 23 11
23 26 10	NGC660	03 11 21	47.0	212.0	1.5		19.1	-18	3431	No stop
23 33 10	---	03 18 23	46.4	214.3	1.6		20.4	402	3485	23 26 11
23 33 40	J0143+1215	03 18 53	45.1	213.7	1.6		19.9	12	3485	23 33 40
23 36 40	---	03 21 53	44.9	214.6	1.6		20.5	180	3508	23 33 41

Schedule for TORUN (Code Tr) Page 8

EA058A - NGC660 HI

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 28 Oct 2016 Day 302 ---										
23 36 40	NGC660	03 21 53	46.1	215.5	1.6		21.0	-18	3508	No stop
23 43 40	---	03 28 54	45.5	217.8	1.7		22.2	402	3562	23 36 41
23 44 10	J0143+1215	03 29 24	44.2	217.0	1.7		21.7	12	3562	23 44 10
23 47 10	---	03 32 25	43.9	218.0	1.8		22.2	180	3585	23 44 11
23 47 10	NGC660	03 32 25	45.2	218.9	1.8		22.8	-18	3585	No stop
23 54 10	---	03 39 26	44.5	221.1	1.9		24.0	402	3638	23 47 11
23 54 40	J0143+1215	03 39 56	43.2	220.3	1.9		23.4	12	3638	23 54 40
23 57 40	---	03 42 57	42.9	221.3	2.0		23.9	180	3662	23 54 41
--- Start: Fri 28 Oct 2016 Day 302 -- Stop: Sat 29 Oct 2016 Day 303 ---										
23 57 40	NGC660	03 42 57	44.1	222.2	2.0		24.5	-18	3662	No stop
00 04 40	---	03 49 58	43.4	224.3	2.1		25.6	402	3715	23 57 41
00 05 10	J0143+1215	03 50 28	42.2	223.5	2.1		25.0	12	3715	00 05 10
00 08 10	---	03 53 28	41.8	224.4	2.2		25.5	180	3738	00 05 11
00 08 10	NGC660	03 53 28	43.0	225.4	2.2		26.1	-18	3738	No stop
00 15 10	---	04 00 29	42.3	227.4	2.3		27.1	402	3792	00 08 11
00 15 40	J0143+1215	04 01 00	41.0	226.6	2.3		26.5	12	3792	00 15 40
00 18 40	---	04 04 00	40.7	227.5	2.3		26.9	180	3815	00 15 41
00 18 40	NGC660	04 04 00	41.9	228.5	2.3		27.6	-17	3815	No stop
00 25 40	---	04 11 01	41.1	230.5	2.5		28.5	403	3869	00 18 41
00 26 10	J0143+1215	04 11 31	39.9	229.6	2.5		27.9	12	3869	00 26 10
00 29 10	---	04 14 32	39.5	230.5	2.5		28.3	180	3892	00 26 11
00 29 10	NGC660	04 14 32	40.7	231.5	2.5		28.9	-17	3892	No stop
00 36 10	---	04 21 33	39.8	233.4	2.6		29.8	403	3946	00 29 11
00 36 40	J0143+1215	04 22 03	38.6	232.5	2.6		29.2	12	3946	00 36 40
00 39 40	---	04 25 03	38.3	233.4	2.7		29.6	180	3969	00 36 41
00 39 40	NGC660	04 25 03	39.4	234.4	2.7		30.2	-17	3969	No stop
00 46 40	---	04 32 05	38.5	236.3	2.8		30.9	403	4023	00 39 41
00 47 10	J0143+1215	04 32 35	37.3	235.4	2.8		30.4	13	4023	00 47 10
00 50 10	---	04 35 35	37.0	236.2	2.9		30.7	180	4046	00 47 11

Schedule for TORUN (Code Tr) Page 9

EA058A - NGC660 HI

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 29 Oct 2016 Day 303 ---										
00 50 10	NGC660	04 35 35	38.1	237.2	2.9		31.3	-17	4046	No stop
00 57 10	---	04 42 36	37.2	239.0	3.0		32.0	403	4100	00 50 11
00 57 40	J0143+1215	04 43 06	36.0	238.1	3.0		31.5	13	4100	00 57 40
01 00 40	---	04 46 07	35.6	238.9	3.0		31.8	180	4123	00 57 41
01 00 40	NGC660	04 46 07	36.8	239.9	3.0		32.3	-17	4123	No stop
01 07 40	---	04 53 08	35.8	241.7	3.2		33.0	403	4177	01 00 41
01 08 10	J0143+1215	04 53 38	34.7	240.8	3.2		32.4	13	4177	01 08 10
01 11 10	---	04 56 39	34.3	241.5	3.2		32.7	180	4200	01 08 11
01 11 10	NGC660	04 56 39	35.4	242.6	3.2		33.3	-17	4200	No stop
01 18 10	---	05 03 40	34.4	244.3	3.3		33.9	403	4254	01 11 11
01 18 40	J0143+1215	05 04 10	33.3	243.4	3.3		33.3	13	4254	01 18 40
01 21 40	---	05 07 10	32.9	244.1	3.4		33.6	180	4277	01 18 41
01 21 40	NGC660	05 07 10	33.9	245.2	3.4		34.1	-17	4277	No stop
01 28 40	---	05 14 12	33.0	246.9	3.5		34.6	403	4331	01 21 41
01 29 10	J0143+1215	05 14 42	31.8	245.9	3.5		34.1	13	4331	01 29 10
01 32 10	---	05 17 42	31.4	246.6	3.6		34.4	180	4354	01 29 11
01 32 10	NGC660	05 17 42	32.5	247.7	3.6		34.9	-17	4354	No stop
01 39 10	---	05 24 43	31.5	249.3	3.7		35.3	403	4408	01 32 11
01 39 40	J0143+1215	05 25 13	30.4	248.4	3.7		34.9	13	4408	01 39 40
01 42 40	---	05 28 14	30.0	249.1	3.7		35.0	180	4431	01 39 41
01 42 40	NGC660	05 28 14	31.0	250.1	3.7		35.5	-17	4431	No stop
01 49 40	---	05 35 15	30.0	251.7	3.9		35.9	403	4485	01 42 41
01 50 10	J0143+1215	05 35 45	28.9	250.8	3.9		35.5	13	4485	01 50 10
01 53 10	---	05 38 46	28.5	251.5	3.9		35.7	180	4508	01 50 11
01 53 10	NGC660	05 38 46	29.5	252.5	3.9		36.1	-17	4508	No stop
02 00 10	---	05 45 47	28.5	254.1	4.0		36.5	403	4562	01 53 11
02 00 40	J0143+1215	05 46 17	27.4	253.2	4.0		36.0	13	4562	02 00 40
02 03 40	---	05 49 17	27.0	253.9	4.1		36.2	180	4585	02 00 41
02 03 40	NGC660	05 49 17	28.0	254.9	4.1		36.6	-17	4585	No stop
02 10 40	---	05 56 18	27.0	256.4	4.2		36.9	403	4638	02 03 41

Schedule for TORUN (Code Tr) Page 10

EA058A - NGC660 HI

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 29 Oct 2016 Day 303 ---										
02 11 10	J0143+1215	05 56 48	25.9	255.5	4.2		36.5	13	4638	02 11 10
02 14 10	---	05 59 49	25.4	256.2	4.3		36.6	180	4662	02 11 11
02 14 10	NGC660	05 59 49	26.5	257.2	4.3		37.1	-17	4662	No stop
02 21 10	---	06 06 50	25.4	258.7	4.4		37.3	403	4715	02 14 11
02 21 40	J0143+1215	06 07 20	24.3	257.8	4.4		36.9	13	4715	02 21 40
02 24 40	---	06 10 21	23.9	258.4	4.4		37.0	180	4738	02 21 41
02 24 40	NGC660	06 10 21	24.9	259.5	4.4		37.4	-17	4738	No stop
02 31 40	---	06 17 22	23.9	260.9	4.6		37.6	403	4792	02 24 41
02 32 10	J0143+1215	06 17 52	22.8	260.0	4.6		37.3	13	4792	02 32 10
02 35 10	---	06 20 52	22.3	260.7	4.6		37.3	180	4815	02 32 11
02 35 10	NGC660	06 20 52	23.4	261.7	4.6		37.7	-17	4815	No stop
02 42 10	---	06 27 54	22.3	263.1	4.7		37.9	403	4869	02 35 11
02 42 40	J0143+1215	06 28 24	21.2	262.2	4.7		37.5	13	4869	02 42 40
02 45 40	---	06 31 24	20.8	262.9	4.8		37.6	180	4892	02 42 41
02 48 20	3C120	06 34 05	36.4	218.2	2.0		21.9	55	4892	02 48 20
02 58 20	---	06 44 06	35.4	221.0	2.2		23.3	600	4969	02 48 21
02 58 50	J0143+1215	06 44 36	18.8	265.6	5.0		37.8	-75	4969	02 58 50
03 01 50	---	06 47 37	18.4	266.2	5.1		37.8	105	4992	02 58 51
03 01 50	NGC660	06 47 37	19.4	267.2	5.1		38.1	-16	4992	No stop
03 08 50	---	06 54 38	18.3	268.6	5.2		38.2	404	5046	03 01 51
03 09 20	J0143+1215	06 55 08	17.2	267.7	5.2		37.9	13	5046	03 09 20
03 12 20	---	06 58 09	16.8	268.3	5.2		37.9	180	5069	03 09 21
03 12 20	NGC660	06 58 09	17.8	269.3	5.2		38.2	-16	5069	No stop
03 19 20	---	07 05 10	16.7	270.7	5.4		38.2	404	5123	03 12 21
03 19 50	J0143+1215	07 05 40	15.6	269.8	5.4		37.9	13	5123	03 19 50
03 22 50	---	07 08 40	15.2	270.4	5.4		37.9	180	5146	03 19 51
03 22 50	NGC660	07 08 40	16.2	271.4	5.4		38.2	-16	5146	No stop
03 29 50	---	07 15 41	15.2	272.8	5.5		38.1	404	5200	03 22 51

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

 ======== Setup file: sess316.H1024

   Setup group:   15         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=   2100.00   2100.00   2100.00   2100.00   2100.00   2100.00   2100.00   2100.00
             2100.00   2100.00   2100.00   2100.00   2100.00   2100.00   2100.00   2100.00
   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   =         2         6         2         6         4         8         4         8
                   1         5         1         5         3         7         3         7
   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  Based on FREQ, BW, and/or DOPPLER in schedule.  Used with PCAL = off
   LO sum=   1328.63  1328.63  1328.63  1328.63  1360.54  1360.54  1360.54  1360.54
             1392.45  1392.45  1392.45  1392.45  1424.36  1424.36  1424.36  1424.36
   BBC fr=    771.37   771.37   771.37   771.37   739.46   739.46   739.46   739.46
              707.55   707.55   707.55   707.55   675.64   675.64   675.64   675.64
   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=   4, 12, 20, 28,  8, 16, 24, 32,  2, 10, 18, 26,  6, 14, 22, 30
    barrel=roll_off

 POSITIONS OF SOURCES USED IN RECORDING SCANS

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

 * NGC660            01 40 21.634647   * 01 43 02.291000     01 43 57.358625       0.00
                     13 23 39.27430    * 13 38 44.30000      13 43 48.70484        0.00

 * J0143+1215        01 40 51.136762   * 01 43 31.092000     01 44 25.901774       0.00
                     12 00 38.81443    * 12 15 42.93400      12 20 46.94292        0.00

 * 3C84              03 16 29.567263   * 03 19 48.160094     03 20 56.596563       1.30
   J0319+4130        41 19 51.91701    * 41 30 42.10413      41 34 12.38196        2.69

 * 3C120             04 30 31.602058   * 04 33 11.095527     04 34 05.469235       0.48
   J0433+0521        05 14 59.61642    * 05 21 15.61920      05 23 16.38427        0.35

                     Doppler based on other sources.
```

```
Address:  ASTRON

Schedule for TORUN     (Code Tr )                                    Page   2
               Resolving the AGN/starburst connection in a high redshift quasar on 150
  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  29 Oct 2016   Day 303 ---
 Next scan frequencies:  1626.49  1626.49  1626.49  1626.49  1690.49  1690.49  1690.49  1690.49
 Next BBC frequencies:    673.51   673.51   673.51   673.51   609.51   609.51   609.51   609.51
 Next scan bandwidths:     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00

04 30 00  J1415+1320   08 16 01  10.5  81.8 -6.0     -37.6     0        0   04 30 00
04 33 00  =1413+135    08 19 02  10.9  82.4 -6.0     -37.7   180       23   04 30 01

04 33 00  H1413+117    08 19 02   9.5  83.6 -6.0     -37.5   -19       23   No stop
04 36 30  ---          08 22 32  10.0  84.3 -5.9     -37.6   191       50   04 33 01

04 37 00  J1415+1320   08 23 02  11.5  83.2 -5.9     -37.8    11       50   04 37 00
04 38 30  =1413+135    08 24 33  11.7  83.5 -5.9     -37.8    90       62   04 37 01

04 38 30  H1413+117    08 24 33  10.3  84.7 -5.9     -37.6   -19       62   No stop
04 42 00  ---          08 28 03  10.8  85.4 -5.8     -37.6   191       88   04 38 31

04 42 00  J1415+1320   08 28 03  12.3  84.2 -5.8     -37.9   -19       88   No stop
04 43 30  =1413+135    08 29 34  12.5  84.5 -5.8     -37.9    71      100   04 42 01

04 43 30  H1413+117    08 29 34  11.1  85.6 -5.8     -37.7   -19      100   No stop
04 47 00  ---          08 33 04  11.6  86.3 -5.7     -37.7   191      127   04 43 31

04 47 30  J1415+1320   08 33 34  13.1  85.2 -5.7     -37.9    11      127   04 47 30
04 49 00  =1413+135    08 35 04  13.3  85.5 -5.7     -38.0    90      138   04 47 31

04 49 00  H1413+117    08 35 04  11.9  86.7 -5.7     -37.7   -19      138   No stop
04 52 30  ---          08 38 35  12.4  87.4 -5.6     -37.7   191      165   04 49 01

04 52 30  J1415+1320   08 38 35  13.8  86.2 -5.6     -38.0   -19      165   No stop
04 54 00  =1413+135    08 40 05  14.1  86.5 -5.6     -38.0    71      177   04 52 31

04 54 00  H1413+117    08 40 05  12.6  87.7 -5.6     -37.7   -19      177   No stop
04 57 30  ---          08 43 36  13.2  88.4 -5.5     -37.8   191      204   04 54 01

04 58 00  J1415+1320   08 44 06  14.7  87.3 -5.5     -38.0    11      204   04 58 00
04 59 30  =1413+135    08 45 36  14.9  87.6 -5.5     -38.1    90      215   04 58 01

04 59 30  H1413+117    08 45 36  13.5  88.8 -5.5     -37.8   -19      215   No stop
05 03 00  ---          08 49 07  14.0  89.5 -5.5     -37.8   191      242   04 59 31

05 03 00  J1415+1320   08 49 07  15.4  88.3 -5.5     -38.1   -19      242   No stop
05 04 30  =1413+135    08 50 37  15.6  88.6 -5.4     -38.1    71      254   05 03 01

05 09 30  3C345        08 55 38  17.6  45.9 -7.8     -34.2   198      254   05 09 30
05 17 30  ---          09 03 39  18.5  47.3 -7.7     -35.0   480      315   05 09 31
```

Schedule for TORUN (Code Tr) Page 3

Resolving the AGN/starburst connection in a high redshift quasar on 150

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 29 Oct 2016 Day 303 ---										
05 19 30	J1415+1320	09 05 39	17.9	91.6	-5.2		-38.1	16	315	05 19 30
05 22 00	=1413+135	09 08 10	18.3	92.1	-5.1		-38.1	150	335	05 19 31
05 22 00	H1413+117	09 08 10	16.8	93.4	-5.1		-37.7	-19	335	No stop
05 25 30	---	09 11 40	17.4	94.1	-5.1		-37.7	191	362	05 22 01
05 26 00	J1415+1320	09 12 10	18.9	92.9	-5.1		-38.0	11	362	05 26 00
05 27 30	=1413+135	09 13 41	19.1	93.2	-5.1		-38.0	90	373	05 26 01
05 27 30	H1413+117	09 13 41	17.7	94.5	-5.0		-37.6	-19	373	No stop
05 31 00	---	09 17 11	18.2	95.2	-5.0		-37.6	191	400	05 27 31
05 31 00	J1415+1320	09 17 11	19.6	94.0	-5.0		-38.0	-19	400	No stop
05 32 30	=1413+135	09 18 42	19.8	94.3	-5.0		-38.0	71	412	05 31 01
05 32 30	H1413+117	09 18 42	18.4	95.5	-5.0		-37.6	-19	412	No stop
05 36 00	---	09 22 12	18.9	96.2	-4.9		-37.5	191	438	05 32 31
05 36 30	J1415+1320	09 22 42	20.4	95.1	-4.9		-37.9	11	438	05 36 30
05 38 00	=1413+135	09 24 12	20.7	95.4	-4.9		-37.9	90	450	05 36 31
05 38 00	H1413+117	09 24 12	19.2	96.6	-4.9		-37.5	-19	450	No stop
05 41 30	---	09 27 43	19.8	97.4	-4.8		-37.4	191	477	05 38 01
05 41 30	J1415+1320	09 27 43	21.2	96.1	-4.8		-37.8	-19	477	No stop
05 43 00	=1413+135	09 29 13	21.4	96.4	-4.8		-37.8	71	488	05 41 31
05 43 00	H1413+117	09 29 13	20.0	97.7	-4.8		-37.4	-19	488	No stop
05 46 30	---	09 32 44	20.5	98.4	-4.7		-37.3	191	515	05 43 01
05 47 00	J1415+1320	09 33 14	22.0	97.3	-4.7		-37.7	11	515	05 47 00
05 48 30	=1413+135	09 34 44	22.2	97.6	-4.7		-37.7	90	527	05 47 01
05 48 30	H1413+117	09 34 44	20.8	98.8	-4.7		-37.3	-19	527	No stop
05 52 00	---	09 38 15	21.3	99.6	-4.6		-37.2	191	554	05 48 31
05 52 00	J1415+1320	09 38 15	22.8	98.3	-4.6		-37.6	-19	554	No stop
05 53 30	=1413+135	09 39 45	23.0	98.6	-4.6		-37.6	71	565	05 52 01
05 53 30	H1413+117	09 39 45	21.6	99.9	-4.6		-37.1	-19	565	No stop
05 57 00	---	09 43 16	22.1	100.6	-4.6		-37.0	191	592	05 53 31
05 57 30	J1415+1320	09 43 46	23.6	99.5	-4.6		-37.5	11	592	05 57 30
05 59 00	=1413+135	09 45 16	23.8	99.8	-4.5		-37.4	90	604	05 57 31

Schedule for TORUN (Code Tr) Page 4

Resolving the AGN/starburst connection in a high redshift quasar on 150

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 29 Oct 2016 Day 303 ---										
05 59 00	H1413+117	09 45 16	22.4	101.0	-4.5		-37.0	-19	604	No stop
06 02 30	---	09 48 46	22.9	101.8	-4.5		-36.8	191	631	05 59 01
06 02 30	J1415+1320	09 48 46	24.3	100.5	-4.5		-37.3	-19	631	No stop
06 04 00	=1413+135	09 50 17	24.5	100.8	-4.4		-37.3	71	642	06 02 31
06 04 00	H1413+117	09 50 17	23.1	102.1	-4.4		-36.8	-19	642	No stop
06 07 30	---	09 53 47	23.6	102.8	-4.4		-36.7	191	669	06 04 01
06 08 00	J1415+1320	09 54 17	25.1	101.7	-4.4		-37.2	11	669	06 08 00
06 09 30	=1413+135	09 55 48	25.4	102.0	-4.3		-37.1	90	681	06 08 01
06 09 30	H1413+117	09 55 48	23.9	103.3	-4.3		-36.6	-19	681	No stop
06 13 00	---	09 59 18	24.4	104.0	-4.3		-36.5	191	708	06 09 31
06 13 00	J1415+1320	09 59 18	25.9	102.8	-4.3		-37.0	-19	708	No stop
06 14 30	=1413+135	10 00 48	26.1	103.1	-4.3		-36.9	71	719	06 13 01
06 14 30	H1413+117	10 00 48	24.6	104.4	-4.3		-36.4	-19	719	No stop
06 18 00	---	10 04 19	25.2	105.1	-4.2		-36.3	191	746	06 14 31
06 18 30	J1415+1320	10 04 49	26.7	104.0	-4.2		-36.8	11	746	06 18 30
06 20 00	=1413+135	10 06 19	26.9	104.3	-4.2		-36.7	90	758	06 18 31
06 20 00	H1413+117	10 06 19	25.4	105.6	-4.2		-36.2	-19	758	No stop
06 23 30	---	10 09 50	25.9	106.3	-4.1		-36.0	191	785	06 20 01
06 23 30	J1415+1320	10 09 50	27.4	105.1	-4.1		-36.6	-19	785	No stop
06 25 00	=1413+135	10 11 20	27.6	105.4	-4.1		-36.5	71	796	06 23 31
06 25 00	H1413+117	10 11 20	26.2	106.7	-4.1		-35.9	-19	796	No stop
06 28 30	---	10 14 51	26.7	107.4	-4.0		-35.8	191	823	06 25 01
06 29 00	J1415+1320	10 15 21	28.2	106.3	-4.0		-36.3	11	823	06 29 00
06 30 30	=1413+135	10 16 51	28.4	106.6	-4.0		-36.2	90	835	06 29 01
06 30 30	H1413+117	10 16 51	27.0	107.9	-4.0		-35.7	-19	835	No stop
06 34 00	---	10 20 22	27.5	108.7	-3.9		-35.5	191	862	06 30 31
06 34 00	J1415+1320	10 20 22	28.9	107.4	-3.9		-36.1	-19	862	No stop
06 35 30	=1413+135	10 21 52	29.1	107.7	-3.9		-36.0	71	873	06 34 01
06 35 30	H1413+117	10 21 52	27.7	109.0	-3.9		-35.4	-19	873	No stop
06 39 00	---	10 25 22	28.2	109.8	-3.9		-35.2	191	900	06 35 31

```
Schedule for TORUN     (Code Tr )                                   Page   5
               Resolving the AGN/starburst connection in a high redshift quasar on 150
  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  29 Oct 2016   Day 303 ---

06 39 30  J1415+1320   10 25 53  29.7 108.7 -3.8     -35.8    11      900   06 39 30
06 41 00  =1413+135    10 27 23  29.9 109.0 -3.8     -35.7    90      912   06 39 31

06 41 00  H1413+117    10 27 23  28.4 110.3 -3.8     -35.1   -19      912   No stop
06 44 30  ---          10 30 53  28.9 111.1 -3.8     -34.9   191      938   06 41 01

06 44 30  J1415+1320   10 30 53  30.4 109.8 -3.8     -35.5   -19      938   No stop
06 46 00  =1413+135    10 32 24  30.6 110.1 -3.7     -35.4    71      950   06 44 31

06 46 00  H1413+117    10 32 24  29.2 111.4 -3.7     -34.8   -19      950   No stop
06 49 30  ---          10 35 54  29.6 112.2 -3.7     -34.5   191      977   06 46 01

06 50 00  J1415+1320   10 36 24  31.2 111.1 -3.7     -35.1    11      977   06 50 00
06 51 30  =1413+135    10 37 55  31.4 111.4 -3.6     -35.1    90      988   06 50 01

06 55 00  H1413+117    10 41 25  30.4 113.5 -3.6     -34.2   191      988   06 55 00
06 58 30  ---          10 44 56  30.9 114.3 -3.5     -33.9   210     1015   06 55 01

06 59 00  J1415+1320   10 45 26  32.5 113.2 -3.5     -34.5    11     1015   06 59 00
07 00 30  =1413+135    10 46 56  32.7 113.6 -3.5     -34.4    90     1027   06 59 01

07 00 30  H1413+117    10 46 56  31.2 114.8 -3.5     -33.8   -19     1027   No stop
07 04 00  ---          10 50 27  31.6 115.7 -3.4     -33.5   191     1054   07 00 31

07 04 00  J1415+1320   10 50 27  33.1 114.4 -3.4     -34.2   -19     1054   No stop
07 05 30  =1413+135    10 51 57  33.3 114.8 -3.4     -34.1    71     1065   07 04 01

07 05 30  H1413+117    10 51 57  31.8 116.0 -3.4     -33.4   -19     1065   No stop
07 09 00  ---          10 55 27  32.3 116.9 -3.4     -33.1   191     1092   07 05 31

07 09 30  J1415+1320   10 55 57  33.9 115.7 -3.3     -33.8    11     1092   07 09 30
07 11 00  =1413+135    10 57 28  34.1 116.1 -3.3     -33.6    90     1104   07 09 31

07 11 00  H1413+117    10 57 28  32.6 117.4 -3.3     -33.0   -19     1104   No stop
07 14 30  ---          11 00 58  33.0 118.2 -3.3     -32.7   191     1131   07 11 01

07 14 30  J1415+1320   11 00 58  34.6 117.0 -3.3     -33.4   -19     1131   No stop
07 16 00  =1413+135    11 02 29  34.8 117.3 -3.2     -33.2    71     1142   07 14 31

07 16 00  H1413+117    11 02 29  33.2 118.6 -3.2     -32.5   -19     1142   No stop
07 19 30  ---          11 05 59  33.7 119.5 -3.2     -32.2   191     1169   07 16 01

07 20 00  J1415+1320   11 06 29  35.3 118.3 -3.2     -32.9    11     1169   07 20 00
07 22 00  =1413+135    11 08 30  35.6 118.8 -3.1     -32.7   120     1185   07 20 01
```

```
Schedule for TORUN     (Code Tr )                                  Page   6
               Resolving the AGN/starburst connection in a high redshift quasar on 150
  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  29 Oct 2016   Day 303 ---

07 22 00  H1413+117    11 08 30  34.0 120.1 -3.1     -32.0   -19     1185   No stop
07 25 30  ---          11 12 00  34.5 121.0 -3.1     -31.7   191     1212   07 22 01

07 26 00  J1415+1320   11 12 30  36.1 119.9 -3.1     -32.4    11     1212   07 26 00
07 27 30  =1413+135    11 14 00  36.3 120.2 -3.0     -32.2    90     1223   07 26 01

07 27 30  H1413+117    11 14 00  34.7 121.5 -3.0     -31.5   -19     1223   No stop
07 31 00  ---          11 17 31  35.2 122.4 -3.0     -31.2   191     1250   07 27 31

07 31 00  J1415+1320   11 17 31  36.7 121.1 -3.0     -31.9   -20     1250   No stop
07 32 30  =1413+135    11 19 01  36.9 121.5 -3.0     -31.7    70     1262   07 31 01

07 32 30  H1413+117    11 19 01  35.4 122.8 -3.0     -31.0   -19     1262   No stop
07 36 00  ---          11 22 32  35.8 123.7 -2.9     -30.7   191     1288   07 32 31

07 36 30  J1415+1320   11 23 02  37.4 122.6 -2.9     -31.3    10     1288   07 36 30
07 38 00  =1413+135    11 24 32  37.6 123.0 -2.9     -31.2    90     1300   07 36 31

07 38 00  H1413+117    11 24 32  36.1 124.2 -2.9     -30.4   -19     1300   No stop
07 41 30  ---          11 28 03  36.5 125.1 -2.8     -30.1   191     1327   07 38 01

07 41 30  J1415+1320   11 28 03  38.1 123.9 -2.8     -30.8   -20     1327   No stop
07 43 00  =1413+135    11 29 33  38.3 124.3 -2.8     -30.6    70     1338   07 41 31

07 43 00  H1413+117    11 29 33  36.7 125.5 -2.8     -29.9   -19     1338   No stop
07 45 30  ---          11 32 03  37.0 126.2 -2.7     -29.6   131     1358   07 43 01

07 45 30  J1415+1320   11 32 03  38.6 125.0 -2.7     -30.4   -20     1358   No stop
07 46 30  =1413+135    11 33 04  38.7 125.2 -2.7     -30.3    40     1365   07 45 31

07 51 30  4C39.25      11 38 04  63.7 250.6  2.2      46.8    35     1365   07 51 30
07 59 30  ---          11 46 06  62.6 253.0  2.3      47.6   480     1427   07 51 31

08 03 30  J1415+1320   11 50 06  40.7 129.9 -2.4     -28.2   -21     1427   08 03 30
08 05 00  =1413+135    11 51 37  40.9 130.4 -2.4     -28.0    69     1438   08 03 31

08 05 00  H1413+117    11 51 37  39.3 131.5 -2.4     -27.3   -20     1438   No stop
08 08 30  ---          11 55 07  39.7 132.5 -2.4     -26.8   190     1465   08 05 01

08 08 30  J1415+1320   11 55 07  41.3 131.4 -2.4     -27.6   -20     1465   No stop
08 10 00  =1413+135    11 56 37  41.5 131.8 -2.3     -27.4    70     1477   08 08 31

08 10 00  H1413+117    11 56 37  39.8 133.0 -2.3     -26.6   -20     1477   No stop
08 13 30  ---          12 00 08  40.2 134.0 -2.3     -26.2   190     1504   08 10 01
```

```
Schedule for TORUN     (Code Tr )                                  Page   7
               Resolving the AGN/starburst connection in a high redshift quasar on 150
  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  29 Oct 2016   Day 303 ---

08 14 00  J1415+1320   12 00 38  41.9 133.0 -2.3     -26.8    10     1504   08 14 00
08 15 30  =1413+135    12 02 08  42.1 133.4 -2.2     -26.6    90     1515   08 14 01

08 15 30  H1413+117    12 02 08  40.4 134.5 -2.2     -25.9   -20     1515   No stop
08 19 00  ---          12 05 39  40.8 135.6 -2.2     -25.4   190     1542   08 15 31

08 19 00  J1415+1320   12 05 39  42.4 134.4 -2.2     -26.1   -20     1542   No stop
08 20 30  =1413+135    12 07 09  42.6 134.9 -2.2     -25.9    70     1554   08 19 01

08 20 30  H1413+117    12 07 09  41.0 136.0 -2.2     -25.2   -20     1554   No stop
08 24 00  ---          12 10 40  41.3 137.0 -2.1     -24.7   190     1581   08 20 31

08 24 30  J1415+1320   12 11 10  43.0 136.1 -2.1     -25.3    10     1581   08 24 30
08 26 00  =1413+135    12 12 40  43.2 136.5 -2.1     -25.1    90     1592   08 24 31

08 26 00  H1413+117    12 12 40  41.5 137.6 -2.1     -24.4   -20     1592   No stop
08 29 30  ---          12 16 11  41.9 138.7 -2.0     -23.9   190     1619   08 26 01

08 29 30  J1415+1320   12 16 11  43.5 137.6 -2.0     -24.6   -20     1619   No stop
08 31 00  =1413+135    12 17 41  43.7 138.1 -2.0     -24.4    70     1631   08 29 31

08 31 00  H1413+117    12 17 41  42.0 139.1 -2.0     -23.6   -20     1631   No stop
08 34 30  ---          12 21 11  42.4 140.2 -1.9     -23.1   190     1658   08 31 01

08 35 00  J1415+1320   12 21 42  44.1 139.3 -1.9     -23.7    10     1658   08 35 00
08 36 30  =1413+135    12 23 12  44.2 139.8 -1.9     -23.5    90     1669   08 35 01

08 36 30  H1413+117    12 23 12  42.6 140.8 -1.9     -22.8   -20     1669   No stop
08 40 00  ---          12 26 42  42.9 141.9 -1.8     -22.2   190     1696   08 36 31

08 40 00  J1415+1320   12 26 42  44.6 140.9 -1.8     -22.9   -20     1696   No stop
08 41 30  =1413+135    12 28 13  44.7 141.3 -1.8     -22.7    70     1708   08 40 01

08 41 30  H1413+117    12 28 13  43.0 142.4 -1.8     -22.0   -20     1708   No stop
08 45 00  ---          12 31 43  43.3 143.5 -1.7     -21.4   190     1735   08 41 31

08 45 30  J1415+1320   12 32 13  45.1 142.6 -1.7     -22.0    10     1735   08 45 30
08 47 00  =1413+135    12 33 44  45.2 143.1 -1.7     -21.7    90     1746   08 45 31

08 47 00  H1413+117    12 33 44  43.5 144.1 -1.7     -21.1   -20     1746   No stop
08 50 30  ---          12 37 14  43.8 145.2 -1.7     -20.5   190     1773   08 47 01

08 50 30  J1415+1320   12 37 14  45.5 144.2 -1.7     -21.1   -20     1773   No stop
08 52 00  =1413+135    12 38 44  45.7 144.7 -1.6     -20.9    70     1785   08 50 31
```

Schedule for TORUN (Code Tr) Page 8

Resolving the AGN/starburst connection in a high redshift quasar on 150

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 29 Oct 2016 Day 303 ---										
08 52 00	H1413+117	12 38 44	44.0	145.7	-1.6		-20.2	-20	1785	No stop
08 55 30	---	12 42 15	44.3	146.8	-1.6		-19.6	190	1812	08 52 01
08 56 00	J1415+1320	12 42 45	46.0	146.0	-1.6		-20.2	10	1812	08 56 00
08 57 30	=1413+135	12 44 15	46.1	146.5	-1.5		-19.9	90	1823	08 56 01
08 57 30	H1413+117	12 44 15	44.4	147.5	-1.5		-19.2	-20	1823	No stop
09 01 00	---	12 47 46	44.7	148.6	-1.5		-18.6	190	1850	08 57 31
09 01 00	J1415+1320	12 47 46	46.4	147.7	-1.5		-19.3	-20	1850	No stop
09 02 30	=1413+135	12 49 16	46.5	148.2	-1.5		-19.0	70	1862	09 01 01
09 02 30	H1413+117	12 49 16	44.8	149.1	-1.5		-18.3	-20	1862	No stop
09 06 00	---	12 52 47	45.1	150.3	-1.4		-17.7	190	1888	09 02 31
09 06 30	J1415+1320	12 53 17	46.9	149.5	-1.4		-18.2	10	1888	09 06 30
09 08 00	=1413+135	12 54 47	47.0	150.0	-1.4		-17.9	90	1900	09 06 31
09 08 00	H1413+117	12 54 47	45.2	150.9	-1.4		-17.3	-20	1900	No stop
09 11 30	---	12 58 18	45.5	152.1	-1.3		-16.7	190	1927	09 08 01
09 11 30	J1415+1320	12 58 18	47.2	151.2	-1.3		-17.3	-20	1927	No stop
09 13 00	=1413+135	12 59 48	47.3	151.8	-1.3		-17.0	70	1938	09 11 31
09 13 00	H1413+117	12 59 48	45.6	152.6	-1.3		-16.4	-20	1938	No stop
09 16 30	---	13 03 18	45.8	153.8	-1.2		-15.7	190	1965	09 13 01
09 17 00	J1415+1320	13 03 48	47.6	153.1	-1.2		-16.2	10	1965	09 17 00
09 18 00	=1413+135	13 04 49	47.7	153.5	-1.2		-16.0	60	1973	09 17 01
09 22 00	J1415+1320	13 08 49	47.9	154.9	-1.1		-15.2	233	1973	09 22 00
09 23 30	=1413+135	13 10 20	48.0	155.4	-1.1		-14.9	90	1985	09 22 01
09 23 30	H1413+117	13 10 20	46.3	156.2	-1.1		-14.3	-20	1985	No stop
09 27 00	---	13 13 50	46.5	157.4	-1.0		-13.6	190	2012	09 23 31
09 27 00	J1415+1320	13 13 50	48.3	156.7	-1.0		-14.2	-20	2012	No stop
09 28 30	=1413+135	13 15 20	48.3	157.2	-1.0		-13.8	70	2023	09 27 01
09 28 30	H1413+117	13 15 20	46.6	157.9	-1.0		-13.3	-20	2023	No stop
09 32 00	---	13 18 51	46.8	159.1	-1.0		-12.6	190	2050	09 28 31
09 32 30	J1415+1320	13 19 21	48.6	158.6	-1.0		-13.0	10	2050	09 32 30
09 34 00	=1413+135	13 20 51	48.6	159.2	-0.9		-12.7	90	2062	09 32 31

Schedule for TORUN (Code Tr) Page 9

Resolving the AGN/starburst connection in a high redshift quasar on 150

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 29 Oct 2016 Day 303 ---										
09 34 00	H1413+117	13 20 51	46.9	159.8	-0.9		-12.2	-20	2062	No stop
09 37 30	---	13 24 22	47.0	161.1	-0.9		-11.5	190	2088	09 34 01
09 37 30	J1415+1320	13 24 22	48.8	160.4	-0.9		-11.9	-21	2088	No stop
09 39 00	=1413+135	13 25 52	48.9	161.0	-0.8		-11.6	69	2100	09 37 31
09 39 00	H1413+117	13 25 52	47.1	161.6	-0.8		-11.2	-20	2100	No stop
09 42 30	---	13 29 23	47.3	162.8	-0.8		-10.4	190	2127	09 39 01
09 43 00	J1415+1320	13 29 53	49.1	162.4	-0.8		-10.7	9	2127	09 43 00
09 44 30	=1413+135	13 31 23	49.2	163.0	-0.8		-10.4	90	2138	09 43 01
09 44 30	H1413+117	13 31 23	47.4	163.5	-0.8		-10.0	-20	2138	No stop
09 48 00	---	13 34 54	47.5	164.8	-0.7		-9.2	190	2165	09 44 31
09 48 00	J1415+1320	13 34 54	49.3	164.3	-0.7		-9.6	-21	2165	No stop
09 49 30	=1413+135	13 36 24	49.4	164.8	-0.7		-9.3	69	2177	09 48 01
09 49 30	H1413+117	13 36 24	47.6	165.3	-0.7		-8.9	-21	2177	No stop
09 53 00	---	13 39 54	47.7	166.6	-0.6		-8.2	189	2204	09 49 31
09 53 30	J1415+1320	13 40 24	49.5	166.3	-0.6		-8.4	9	2204	09 53 30
09 55 00	=1413+135	13 41 55	49.6	166.9	-0.6		-8.1	90	2215	09 53 31
09 55 00	H1413+117	13 41 55	47.8	167.3	-0.6		-7.7	-21	2215	No stop
09 58 30	---	13 45 25	47.9	168.6	-0.5		-7.0	189	2242	09 55 01
09 58 30	J1415+1320	13 45 25	49.7	168.2	-0.5		-7.3	-21	2242	No stop
10 00 00	=1413+135	13 46 56	49.7	168.7	-0.5		-6.9	69	2254	09 58 31
10 00 00	H1413+117	13 46 56	47.9	169.1	-0.5		-6.6	-21	2254	No stop
10 03 30	---	13 50 26	48.0	170.4	-0.4		-5.9	189	2281	10 00 01
10 04 00	J1415+1320	13 50 56	49.8	170.2	-0.4		-6.0	9	2281	10 04 00
10 05 30	=1413+135	13 52 26	49.9	170.8	-0.4		-5.7	90	2292	10 04 01
10 05 30	H1413+117	13 52 26	48.0	171.1	-0.4		-5.4	-21	2292	No stop
10 09 00	---	13 55 57	48.1	172.4	-0.3		-4.6	189	2319	10 05 31
10 09 00	J1415+1320	13 55 57	50.0	172.1	-0.3		-4.9	-21	2319	No stop
10 10 30	=1413+135	13 57 27	50.0	172.7	-0.3		-4.5	69	2331	10 09 01
10 10 30	H1413+117	13 57 27	48.2	173.0	-0.3		-4.3	-21	2331	No stop
10 14 00	---	14 00 58	48.2	174.3	-0.3		-3.5	189	2358	10 10 31

Schedule for TORUN (Code Tr) Page 10

Resolving the AGN/starburst connection in a high redshift quasar on 150

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 29 Oct 2016 Day 303 ---										
10 14 30	J1415+1320	14 01 28	50.1	174.2	-0.3		-3.6	9	2358	10 14 30
10 16 00	=1413+135	14 02 58	50.1	174.8	-0.2		-3.2	90	2369	10 14 31
10 16 00	H1413+117	14 02 58	48.2	175.0	-0.2		-3.1	-21	2369	No stop
10 19 30	---	14 06 29	48.3	176.3	-0.2		-2.3	189	2396	10 16 01
10 19 30	J1415+1320	14 06 29	50.1	176.1	-0.2		-2.4	-21	2396	No stop
10 21 00	=1413+135	14 07 59	50.1	176.7	-0.1		-2.1	69	2408	10 19 31
10 21 00	H1413+117	14 07 59	48.3	176.8	-0.1		-1.9	-21	2408	No stop
10 24 30	---	14 11 30	48.3	178.1	-0.1		-1.1	189	2435	10 21 01
10 25 00	J1415+1320	14 12 00	50.2	178.2	-0.1		-1.1	9	2435	10 25 00
10 26 30	=1413+135	14 13 30	50.2	178.8	-0.1		-0.8	90	2446	10 25 01
10 26 30	H1413+117	14 13 30	48.3	178.9	-0.1		-0.7	-21	2446	No stop
10 30 00	---	14 17 00	48.3	180.2	0.0		0.1	189	2473	10 26 31
10 30 00	J1415+1320	14 17 00	50.2	180.1	0.0		0.1	-21	2473	No stop
10 31 30	=1413+135	14 18 31	50.2	180.7	0.0		0.4	69	2485	10 30 01
10 31 30	H1413+117	14 18 31	48.3	180.7	0.0		0.4	-21	2485	No stop
10 36 00	---	14 23 01	48.3	182.4	0.1		1.5	249	2519	10 31 31
10 36 30	J1415+1320	14 23 31	50.1	182.6	0.1		1.6	9	2519	10 36 30
10 38 00	=1413+135	14 25 02	50.1	183.1	0.1		1.9	90	2531	10 36 31
10 38 00	H1413+117	14 25 02	48.3	183.1	0.1		1.9	-21	2531	No stop
10 42 30	---	14 29 32	48.2	184.8	0.2		2.9	249	2565	10 38 01
10 43 00	J1415+1320	14 30 03	50.1	185.0	0.2		3.1	9	2565	10 43 00
10 44 30	=1413+135	14 31 33	50.1	185.6	0.2		3.5	90	2577	10 43 01
10 49 30	3C345	14 36 34	64.7	108.9	-2.1		-47.7	130	2577	10 49 30
10 57 30	---	14 44 35	65.8	111.4	-2.0		-46.7	480	2638	10 49 31
10 59 00	H1413+117	14 46 05	47.9	190.8	0.5		6.6	-85	2638	10 59 00
11 02 30	---	14 49 36	47.8	192.1	0.6		7.4	125	2665	10 59 01
11 03 00	J1415+1320	14 50 06	49.6	192.6	0.6		7.7	9	2665	11 03 00
11 04 30	=1413+135	14 51 36	49.6	193.1	0.6		8.1	90	2677	11 03 01
11 04 30	H1413+117	14 51 36	47.7	192.8	0.6		7.8	-21	2677	No stop
11 08 00	---	14 55 07	47.6	194.1	0.6		8.6	189	2704	11 04 31

Schedule for TORUN (Code Tr) Page 11

Resolving the AGN/starburst connection in a high redshift quasar on 150

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 29 Oct 2016 Day 303 ---										
11 08 00	J1415+1320	14 55 07	49.4	194.4	0.6		8.8	-21	2704	No stop
11 09 30	=1413+135	14 56 37	49.4	195.0	0.7		9.2	69	2715	11 08 01
11 09 30	H1413+117	14 56 37	47.6	194.6	0.7		8.9	-21	2715	No stop
11 13 00	---	15 00 07	47.4	195.9	0.7		9.7	189	2742	11 09 31
11 13 30	J1415+1320	15 00 38	49.2	196.5	0.7		10.1	9	2742	11 13 30
11 15 00	=1413+135	15 02 08	49.2	197.0	0.8		10.4	90	2754	11 13 31
11 15 00	H1413+117	15 02 08	47.3	196.6	0.8		10.1	-21	2754	No stop
11 18 30	---	15 05 38	47.2	197.8	0.8		10.8	189	2781	11 15 01
11 18 30	J1415+1320	15 05 38	49.0	198.3	0.8		11.2	-21	2781	No stop
11 20 00	=1413+135	15 07 09	48.9	198.8	0.8		11.5	69	2792	11 18 31
11 20 00	H1413+117	15 07 09	47.1	198.4	0.8		11.1	-21	2792	No stop
11 23 30	---	15 10 39	46.9	199.6	0.9		11.9	189	2819	11 20 01
11 24 00	J1415+1320	15 11 09	48.7	200.3	0.9		12.4	10	2819	11 24 00
11 25 30	=1413+135	15 12 40	48.6	200.8	0.9		12.7	90	2831	11 24 01
11 25 30	H1413+117	15 12 40	46.8	200.3	0.9		12.3	-21	2831	No stop
11 29 00	---	15 16 10	46.6	201.5	1.0		13.0	189	2858	11 25 31
11 29 00	J1415+1320	15 16 10	48.5	202.1	1.0		13.4	-20	2858	No stop
11 30 30	=1413+135	15 17 40	48.4	202.6	1.0		13.7	70	2869	11 29 01
11 30 30	H1413+117	15 17 40	46.6	202.1	1.0		13.3	-21	2869	No stop
11 34 00	---	15 21 11	46.4	203.3	1.1		14.0	189	2896	11 30 31
11 34 30	J1415+1320	15 21 41	48.1	204.1	1.1		14.6	10	2896	11 34 30
11 36 00	=1413+135	15 23 11	48.0	204.6	1.1		14.9	90	2908	11 34 31
11 36 00	H1413+117	15 23 11	46.2	204.0	1.1		14.4	-21	2908	No stop
11 39 30	---	15 26 42	46.0	205.2	1.2		15.1	189	2935	11 36 01
11 39 30	J1415+1320	15 26 42	47.8	205.8	1.2		15.6	-20	2935	No stop
11 41 00	=1413+135	15 28 12	47.7	206.3	1.2		15.9	70	2946	11 39 31
11 41 00	H1413+117	15 28 12	45.9	205.7	1.2		15.4	-21	2946	No stop
11 44 30	---	15 31 43	45.7	206.9	1.3		16.1	189	2973	11 41 01
11 45 00	J1415+1320	15 32 13	47.4	207.7	1.3		16.7	10	2973	11 45 00
11 46 30	=1413+135	15 33 43	47.3	208.2	1.3		17.0	90	2985	11 45 01

Schedule for TORUN (Code Tr) Page 12

Resolving the AGN/starburst connection in a high redshift quasar on 150

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 29 Oct 2016 Day 303 ---										
11 46 30	H1413+117	15 33 43	45.6	207.5	1.3		16.5	-20	2985	No stop
11 50 00	---	15 37 14	45.3	208.7	1.3		17.1	190	3012	11 46 31
11 50 00	J1415+1320	15 37 14	47.1	209.4	1.3		17.7	-20	3012	No stop
11 51 30	=1413+135	15 38 44	47.0	210.0	1.4		17.9	70	3023	11 50 01
11 51 30	H1413+117	15 38 44	45.2	209.2	1.4		17.4	-20	3023	No stop
11 55 00	---	15 42 14	44.9	210.4	1.4		18.0	190	3050	11 51 31
11 55 30	J1415+1320	15 42 44	46.7	211.3	1.4		18.7	10	3050	11 55 30
11 57 00	=1413+135	15 44 15	46.5	211.8	1.5		19.0	90	3062	11 55 31
11 57 00	H1413+117	15 44 15	44.8	211.0	1.5		18.4	-20	3062	No stop
12 00 30	---	15 47 45	44.5	212.2	1.5		19.0	190	3088	11 57 01
12 00 30	J1415+1320	15 47 45	46.3	213.0	1.5		19.6	-20	3088	No stop
12 02 00	=1413+135	15 49 16	46.1	213.5	1.5		19.9	70	3100	12 00 31
12 02 00	H1413+117	15 49 16	44.4	212.7	1.5		19.3	-20	3100	No stop
12 05 30	---	15 52 46	44.1	213.8	1.6		19.9	190	3127	12 02 01
12 06 00	J1415+1320	15 53 16	45.8	214.8	1.6		20.6	10	3127	12 06 00
12 07 30	=1413+135	15 54 46	45.7	215.3	1.6		20.9	90	3138	12 06 01
12 07 30	H1413+117	15 54 46	43.9	214.4	1.6		20.3	-20	3138	No stop
12 11 00	---	15 58 17	43.6	215.6	1.7		20.9	190	3165	12 07 31
12 11 00	J1415+1320	15 58 17	45.4	216.4	1.7		21.5	-20	3165	No stop
12 12 30	=1413+135	15 59 47	45.2	216.9	1.7		21.7	70	3177	12 11 01
12 12 30	H1413+117	15 59 47	43.5	216.0	1.7		21.1	-20	3177	No stop
12 16 00	---	16 03 18	43.2	217.1	1.8		21.7	190	3204	12 12 31
12 16 30	J1415+1320	16 03 48	44.9	218.2	1.8		22.4	10	3204	12 16 30
12 18 00	=1413+135	16 05 18	44.7	218.7	1.8		22.7	90	3215	12 16 31
12 18 00	H1413+117	16 05 18	43.0	217.8	1.8		22.0	-20	3215	No stop
12 21 30	---	16 08 49	42.7	218.8	1.9		22.6	190	3242	12 18 01
12 21 30	J1415+1320	16 08 49	44.4	219.8	1.9		23.2	-20	3242	No stop
12 23 00	=1413+135	16 10 19	44.2	220.2	1.9		23.5	70	3254	12 21 31
12 23 00	H1413+117	16 10 19	42.5	219.3	1.9		22.8	-20	3254	No stop
12 26 30	---	16 13 50	42.2	220.4	2.0		23.4	190	3281	12 23 01

Schedule for TORUN (Code Tr) Page 13

Resolving the AGN/starburst connection in a high redshift quasar on 150

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 29 Oct 2016 Day 303 ---										
12 27 00	J1415+1320	16 14 20	43.8	221.5	2.0		24.1	10	3281	12 27 00
12 28 30	=1413+135	16 15 50	43.7	221.9	2.0		24.4	90	3292	12 27 01
12 28 30	H1413+117	16 15 50	42.0	221.0	2.0		23.7	-20	3292	No stop
12 32 00	---	16 19 20	41.6	222.0	2.0		24.2	190	3319	12 28 31
12 32 00	J1415+1320	16 19 20	43.3	223.0	2.0		24.9	-20	3319	No stop
12 33 30	=1413+135	16 20 51	43.2	223.5	2.1		25.1	70	3331	12 32 01
12 33 30	H1413+117	16 20 51	41.5	222.5	2.1		24.4	-20	3331	No stop
12 37 00	---	16 24 21	41.1	223.5	2.1		25.0	190	3358	12 33 31
12 42 00	4C39.25	16 29 22	22.3	305.9	7.0		38.8	121	3358	12 42 00
12 50 00	---	16 37 23	21.3	307.2	7.2		38.0	480	3419	12 42 01
12 50 00	H1413+117	16 37 23	39.7	227.3	2.3		26.8	-173	3419	No stop
12 53 30	---	16 40 54	39.3	228.3	2.4		27.2	37	3446	12 50 01
12 54 00	J1415+1320	16 41 24	40.9	229.5	2.4		28.0	10	3446	12 54 00
12 55 30	=1413+135	16 42 54	40.8	229.9	2.4		28.2	90	3458	12 54 01
12 55 30	H1413+117	16 42 54	39.1	228.9	2.4		27.5	-20	3458	No stop
12 59 00	---	16 46 25	38.7	229.8	2.5		27.9	190	3485	12 55 31
12 59 00	J1415+1320	16 46 25	40.4	230.9	2.5		28.6	-20	3485	No stop
13 00 30	=1413+135	16 47 55	40.2	231.3	2.5		28.8	70	3496	12 59 01
13 00 30	H1413+117	16 47 55	38.5	230.3	2.5		28.1	-20	3496	No stop
13 04 00	---	16 51 26	38.1	231.2	2.6		28.5	190	3523	13 00 31
13 04 30	J1415+1320	16 51 56	39.7	232.4	2.6		29.3	10	3523	13 04 30
13 06 00	=1413+135	16 53 26	39.5	232.9	2.6		29.5	90	3535	13 04 31
13 06 00	H1413+117	16 53 26	37.9	231.8	2.6		28.8	-20	3535	No stop
13 09 30	---	16 56 57	37.5	232.7	2.7		29.2	190	3562	13 06 01
13 09 30	J1415+1320	16 56 57	39.1	233.8	2.7		29.9	-20	3562	No stop
13 11 00	=1413+135	16 58 27	38.9	234.2	2.7		30.0	70	3573	13 09 31
13 11 00	H1413+117	16 58 27	37.3	233.1	2.7		29.3	-20	3573	No stop
13 14 30	---	17 01 57	36.9	234.1	2.8		29.7	190	3600	13 11 01
13 15 00	J1415+1320	17 02 28	38.4	235.3	2.8		30.5	10	3600	13 15 00
13 16 30	=1413+135	17 03 58	38.3	235.7	2.8		30.6	90	3612	13 15 01

Schedule for TORUN (Code Tr) Page 14

Resolving the AGN/starburst connection in a high redshift quasar on 150

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 29 Oct 2016 Day 303 ---										
13 16 30	H1413+117	17 03 58	36.6	234.6	2.8		30.0	-20	3612	No stop
13 20 00	---	17 07 28	36.2	235.5	2.8		30.3	190	3638	13 16 31
13 20 00	J1415+1320	17 07 28	37.8	236.6	2.8		31.0	-20	3638	No stop
13 21 30	=1413+135	17 08 59	37.6	237.0	2.9		31.2	70	3650	13 20 01
13 21 30	H1413+117	17 08 59	36.0	235.9	2.9		30.5	-20	3650	No stop
13 25 00	---	17 12 29	35.6	236.8	2.9		30.8	190	3677	13 21 31
13 25 30	J1415+1320	17 12 59	37.1	238.1	2.9		31.6	11	3677	13 25 30
13 27 00	=1413+135	17 14 30	36.9	238.5	3.0		31.7	90	3688	13 25 31
13 27 00	H1413+117	17 14 30	35.3	237.3	3.0		31.0	-20	3688	No stop
13 30 30	---	17 18 00	34.9	238.2	3.0		31.4	190	3715	13 27 01
13 30 30	J1415+1320	17 18 00	36.5	239.4	3.0		32.1	-19	3715	No stop
13 32 00	=1413+135	17 19 30	36.3	239.8	3.0		32.2	71	3727	13 30 31
13 32 00	H1413+117	17 19 30	34.7	238.6	3.0		31.5	-20	3727	No stop
13 35 30	---	17 23 01	34.2	239.5	3.1		31.9	190	3754	13 32 01
13 36 00	J1415+1320	17 23 31	35.8	240.8	3.1		32.6	11	3754	13 36 00
13 37 30	=1413+135	17 25 01	35.6	241.2	3.1		32.7	90	3765	13 36 01
13 37 30	H1413+117	17 25 01	34.0	240.0	3.1		32.0	-20	3765	No stop
13 41 00	---	17 28 32	33.5	240.9	3.2		32.4	190	3792	13 37 31
13 41 00	J1415+1320	17 28 32	35.1	242.0	3.2		33.0	-19	3792	No stop
13 42 30	=1413+135	17 30 02	34.9	242.4	3.2		33.1	71	3804	13 41 01
13 42 30	H1413+117	17 30 02	33.3	241.3	3.2		32.5	-20	3804	No stop
13 46 00	---	17 33 33	32.9	242.1	3.3		32.8	190	3831	13 42 31
13 46 30	J1415+1320	17 34 03	34.4	243.4	3.3		33.5	11	3831	13 46 30
13 48 00	=1413+135	17 35 33	34.2	243.8	3.3		33.6	90	3842	13 46 31
13 48 00	H1413+117	17 35 33	32.6	242.6	3.3		33.0	-20	3842	No stop
13 51 30	---	17 39 04	32.1	243.5	3.4		33.2	190	3869	13 48 01
13 51 30	J1415+1320	17 39 04	33.7	244.6	3.4		33.9	-19	3869	No stop
13 53 00	=1413+135	17 40 34	33.5	245.0	3.4		34.0	71	3881	13 51 31
13 53 00	H1413+117	17 40 34	31.9	243.8	3.4		33.4	-20	3881	No stop
13 56 30	---	17 44 04	31.4	244.7	3.5		33.6	190	3908	13 53 01

Schedule for TORUN (Code Tr) Page 15

Resolving the AGN/starburst connection in a high redshift quasar on 150

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 29 Oct 2016 Day 303 ---										
13 57 00	J1415+1320	17 44 34	32.9	246.0	3.5		34.3	11	3908	13 57 00
13 58 30	=1413+135	17 46 05	32.7	246.3	3.5		34.4	90	3919	13 57 01
13 58 30	H1413+117	17 46 05	31.2	245.2	3.5		33.8	-20	3919	No stop
14 02 00	---	17 49 35	30.7	246.0	3.6		34.0	190	3946	13 58 31
14 02 00	J1415+1320	17 49 35	32.2	247.2	3.5		34.6	-19	3946	No stop
14 03 30	=1413+135	17 51 06	32.0	247.5	3.6		34.8	71	3958	14 02 01
14 03 30	H1413+117	17 51 06	30.5	246.3	3.6		34.1	-20	3958	No stop
14 07 00	---	17 54 36	30.0	247.2	3.6		34.4	190	3985	14 03 31
14 07 30	J1415+1320	17 55 06	31.5	248.5	3.6		35.0	11	3985	14 07 30
14 09 00	=1413+135	17 56 36	31.3	248.8	3.7		35.1	90	3996	14 07 31
14 09 00	H1413+117	17 56 36	29.7	247.6	3.7		34.5	-19	3996	No stop
14 12 30	---	18 00 07	29.2	248.4	3.7		34.7	191	4023	14 09 01
14 12 30	J1415+1320	18 00 07	30.8	249.6	3.7		35.3	-19	4023	No stop
14 14 00	=1413+135	18 01 37	30.6	250.0	3.7		35.4	71	4035	14 12 31
14 14 00	H1413+117	18 01 37	29.0	248.8	3.8		34.8	-19	4035	No stop
14 17 30	---	18 05 08	28.5	249.6	3.8		35.0	191	4062	14 14 01
14 18 00	J1415+1320	18 05 38	30.0	250.9	3.8		35.7	11	4062	14 18 00
14 19 30	=1413+135	18 07 08	29.8	251.2	3.8		35.7	90	4073	14 18 01
14 19 30	H1413+117	18 07 08	28.3	250.0	3.8		35.2	-19	4073	No stop
14 23 00	---	18 10 39	27.8	250.8	3.9		35.4	191	4100	14 19 31
14 23 00	J1415+1320	18 10 39	29.3	252.0	3.9		35.9	-19	4100	No stop
14 24 30	=1413+135	18 12 09	29.1	252.4	3.9		36.0	71	4112	14 23 01
14 24 30	H1413+117	18 12 09	27.5	251.2	3.9		35.4	-19	4112	No stop
14 28 00	---	18 15 40	27.0	252.0	4.0		35.6	191	4138	14 24 31
14 28 30	J1415+1320	18 16 10	28.5	253.3	4.0		36.2	11	4138	14 28 30
14 30 00	=1413+135	18 17 40	28.3	253.6	4.0		36.3	90	4150	14 28 31
14 30 30	H1413+117	18 18 10	26.7	252.5	4.0		35.8	11	4150	14 30 30
14 34 00	---	18 21 41	26.2	253.3	4.1		35.9	210	4177	14 30 31
14 34 00	J1415+1320	18 21 41	27.7	254.5	4.1		36.5	-19	4177	No stop
14 35 30	=1413+135	18 23 11	27.5	254.8	4.1		36.5	71	4188	14 34 01

Schedule for TORUN (Code Tr) Page 16

Resolving the AGN/starburst connection in a high redshift quasar on 150

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 29 Oct 2016 Day 303 ---										
14 35 30	H1413+117	18 23 11	26.0	253.6	4.1		36.0	-19	4188	No stop
14 39 00	---	18 26 41	25.5	254.4	4.2		36.2	191	4215	14 35 31
14 39 30	J1415+1320	18 27 11	26.9	255.7	4.2		36.7	11	4215	14 39 30
14 41 00	=1413+135	18 28 42	26.7	256.0	4.2		36.8	90	4227	14 39 31
14 41 30	H1413+117	18 29 12	25.1	255.0	4.2		36.3	11	4227	14 41 30
14 45 00	---	18 32 42	24.6	255.7	4.3		36.4	210	4254	14 41 31
14 45 00	J1415+1320	18 32 42	26.1	256.9	4.3		36.9	-19	4254	No stop
14 46 30	=1413+135	18 34 13	25.9	257.2	4.3		37.0	71	4265	14 45 01
14 46 30	H1413+117	18 34 13	24.4	256.0	4.3		36.5	-19	4265	No stop
14 50 00	---	18 37 43	23.9	256.8	4.4		36.6	191	4292	14 46 31
14 50 30	J1415+1320	18 38 13	25.3	258.1	4.4		37.1	11	4292	14 50 30
14 52 00	=1413+135	18 39 43	25.1	258.4	4.4		37.2	90	4304	14 50 31
14 52 30	H1413+117	18 40 14	23.5	257.3	4.4		36.7	11	4304	14 52 30
14 56 00	---	18 43 44	23.0	258.1	4.5		36.8	210	4331	14 52 31
14 56 00	J1415+1320	18 43 44	24.5	259.3	4.4		37.3	-19	4331	No stop
14 57 30	=1413+135	18 45 14	24.3	259.6	4.5		37.4	71	4342	14 56 01
14 57 30	H1413+117	18 45 14	22.8	258.4	4.5		36.9	-19	4342	No stop
15 01 00	---	18 48 45	22.2	259.2	4.5		37.0	191	4369	14 57 31
15 01 30	J1415+1320	18 49 15	23.7	260.4	4.5		37.5	11	4369	15 01 30
15 03 00	=1413+135	18 50 45	23.4	260.8	4.6		37.5	90	4381	15 01 31
15 03 30	H1413+117	18 51 15	21.9	259.7	4.6		37.1	11	4381	15 03 30
15 07 00	---	18 54 46	21.3	260.4	4.6		37.2	210	4408	15 03 31
15 07 00	J1415+1320	18 54 46	22.8	261.6	4.6		37.6	-19	4408	No stop
15 08 30	=1413+135	18 56 16	22.6	261.9	4.7		37.6	71	4419	15 07 01
15 08 30	H1413+117	18 56 16	21.1	260.7	4.7		37.2	-19	4419	No stop
15 12 00	---	18 59 47	20.6	261.5	4.7		37.3	191	4446	15 08 31
15 12 30	J1415+1320	19 00 17	22.0	262.7	4.7		37.7	11	4446	15 12 30
15 14 00	=1413+135	19 01 47	21.8	263.1	4.8		37.8	90	4458	15 12 31
15 14 30	H1413+117	19 02 17	20.2	262.0	4.8		37.3	11	4458	15 14 30
15 18 00	---	19 05 48	19.7	262.7	4.8		37.4	210	4485	15 14 31

Schedule for TORUN (Code Tr) Page 17

Resolving the AGN/starburst connection in a high redshift quasar on 150

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 29 Oct 2016 Day 303 ---										
15 18 00	J1415+1320	19 05 48	21.2	263.9	4.8		37.8	-19	4485	No stop
15 19 30	=1413+135	19 07 18	21.0	264.2	4.8		37.9	71	4496	15 18 01
15 24 30	3C345	19 12 19	61.6	257.2	2.5		49.7	133	4496	15 24 30
15 32 30	---	19 20 20	60.4	259.3	2.6		50.2	480	4558	15 24 31
15 34 00	H1413+117	19 21 50	17.3	266.0	5.1		37.7	-86	4558	15 34 00
15 37 30	---	19 25 21	16.8	266.7	5.1		37.7	124	4585	15 34 01
15 38 00	J1415+1320	19 25 51	18.2	268.0	5.2		38.1	11	4585	15 38 00
15 39 30	=1413+135	19 27 21	18.0	268.3	5.2		38.1	90	4596	15 38 01
15 39 30	H1413+117	19 27 21	16.5	267.1	5.2		37.7	-19	4596	No stop
15 43 00	---	19 30 52	16.0	267.8	5.2		37.7	191	4623	15 39 31
15 43 00	J1415+1320	19 30 52	17.4	269.0	5.2		38.1	-19	4623	No stop
15 44 30	=1413+135	19 32 22	17.2	269.3	5.3		38.1	71	4635	15 43 01
15 44 30	H1413+117	19 32 22	15.7	268.1	5.3		37.8	-19	4635	No stop
15 48 00	---	19 35 53	15.2	268.8	5.3		37.8	191	4662	15 44 31
15 48 30	J1415+1320	19 36 23	16.6	270.1	5.3		38.1	11	4662	15 48 30
15 50 00	=1413+135	19 37 53	16.4	270.4	5.4		38.1	90	4673	15 48 31
15 50 00	H1413+117	19 37 53	14.9	269.2	5.4		37.8	-19	4673	No stop
15 53 30	---	19 41 24	14.4	269.9	5.4		37.8	191	4700	15 50 01
15 53 30	J1415+1320	19 41 24	15.9	271.1	5.4		38.1	-19	4700	No stop
15 55 00	=1413+135	19 42 54	15.6	271.4	5.4		38.1	71	4712	15 53 31
15 55 00	H1413+117	19 42 54	14.2	270.2	5.4		37.8	-19	4712	No stop
15 58 30	---	19 46 24	13.6	270.9	5.5		37.8	191	4738	15 55 01
15 58 50	J1415+1320	19 46 44	15.1	272.1	5.5		38.1	1	4738	15 58 50
16 00 20	=1413+135	19 48 15	14.8	272.4	5.5		38.1	90	4750	15 58 51
16 00 20	H1413+117	19 48 15	13.3	271.3	5.5		37.8	-19	4750	No stop
16 01 50	---	19 49 45	13.1	271.6	5.6		37.8	71	4762	16 00 21
16 01 50	J1415+1320	19 49 45	14.6	272.7	5.5		38.0	-19	4762	No stop
16 03 20	=1413+135	19 51 15	14.4	273.0	5.6		38.0	71	4773	16 01 51
16 03 20	H1413+117	19 51 15	12.9	271.9	5.6		37.8	-19	4773	No stop
16 06 50	---	19 54 46	12.4	272.6	5.6		37.7	191	4800	16 03 21

```
Schedule for TORUN     (Code Tr )                                  Page  18
              Resolving the AGN/starburst connection in a high redshift quasar on 150
  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  29 Oct 2016   Day 303 ---

16 07 10  J1415+1320   19 55 06  13.8 273.8  5.6      38.0     1     4800   16 07 10
16 08 40  =1413+135    19 56 36  13.6 274.1  5.7      38.0    90     4812   16 07 11

16 08 40  H1413+117    19 56 36  12.1 273.0  5.7      37.7   -19     4812   No stop
16 10 10  ---          19 58 06  11.9 273.3  5.7      37.7    71     4823   16 08 41

16 10 10  J1415+1320   19 58 06  13.4 274.4  5.7      38.0   -19     4823   No stop
16 11 40  =1413+135    19 59 37  13.1 274.7  5.7      37.9    71     4835   16 10 11

16 11 40  H1413+117    19 59 37  11.6 273.6  5.7      37.7   -19     4835   No stop
16 15 10  ---          20 03 07  11.1 274.3  5.8      37.7   191     4862   16 11 41

16 15 30  J1415+1320   20 03 27  12.6 275.4  5.8      37.9     1     4862   16 15 30
16 17 00  =1413+135    20 04 57  12.3 275.7  5.8      37.9    90     4873   16 15 31

16 17 00  H1413+117    20 04 57  10.8 274.6  5.8      37.6   -19     4873   No stop
16 18 30  ---          20 06 28  10.6 274.9  5.8      37.6    71     4885   16 17 01

16 18 30  J1415+1320   20 06 28  12.1 276.0  5.8      37.8   -19     4885   No stop
16 20 00  =1413+135    20 07 58  11.9 276.3  5.9      37.8    71     4896   16 18 31

16 20 30  J1415+1320   20 08 28  11.8 276.4  5.9      37.8    24     4896   16 20 30
16 21 30  =1413+135    20 09 28  11.7 276.6  5.9      37.8    60     4904   16 20 31

16 21 30  H1413+117    20 09 28  10.2 275.5  5.9      37.6   -19     4904   No stop
16 24 00  ---          20 11 59   9.8 276.0  5.9      37.5   131     4923   16 21 31

16 24 00  J1415+1320   20 11 59  11.3 277.1  5.9      37.7   -19     4923   No stop
16 25 00  =1413+135    20 12 59  11.1 277.3  5.9      37.7    41     4931   16 24 01


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

 ======== Setup file: sess316.L1024

   Setup group:   18         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 64.000
   Number of channels:  8    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
 Net SB=         L         L         U         U         L         L         U         U
 IF SB =         L         L         L         L         L         L         L         L
 Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
 BBC   =         1         5         1         5         3         7         3         7
 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:   4  Setup file default.  Used with PCAL = off
 LO sum=   1626.49  1626.49  1626.49  1626.49  1690.49  1690.49  1690.49  1690.49
 BBC fr=    673.51   673.51   673.51   673.51   609.51   609.51   609.51   609.51
 Bandwd=     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00
  Matching frequency sets:   4

 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)

* H1413+117         14 13 20.070317   * 14 15 46.240000     14 16 33.560987       0.00
                    11 43 37.83508    * 11 29 43.60000      11 25 17.55330        0.00

* 4C39.25           09 23 55.319215   * 09 27 03.013936     09 28 04.691098       0.30
  J0927+3902        39 15 23.56645    * 39 02 20.85186      38 57 45.78487        0.16

  1413+135          14 13 33.910859   * 14 15 58.817511     14 16 45.688516       0.02
* J1415+1320        13 34 17.40463    * 13 20 23.71287      13 15 57.74131        0.03

* 3C345             16 41 17.606228   * 16 42 58.809966     16 43 30.949244       0.76
  J1642+3948        39 54 10.81496    * 39 48 36.99402      39 47 06.76484        0.52
```

em123btr

EVN-18CM-IZw18

PI: *Mar Mezcua*

```
Address:  2900 Bould. Edouard Montpetit   H3T1J4 Montreal   Canada

Schedule for TORUN     (Code Tr )                                  Page   2
               EVN-18CM-IZw18
  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  30 Oct 2016   Day 304 ---
 Next scan frequencies:  1626.49  1626.49  1626.49  1626.49  1690.49  1690.49  1690.49  1690.49
 Next BBC frequencies:    673.51   673.51   673.51   673.51   609.51   609.51   609.51   609.51
 Next scan bandwidths:     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00

00 00 00  4C39.25      03 49 13  33.1  67.5 -5.6     -45.5     0        0   00 00 00
00 05 00  ---          03 54 14  33.8  68.3 -5.6     -45.9   300       38   00 00 01

00 05 00  J0932+5306   03 54 14  42.1  53.9 -5.7     -53.8   -46       38   No stop
00 08 00  ---          03 57 15  42.5  54.2 -5.6     -54.1   134       62   00 05 01

00 08 00  IZW18        03 57 15  43.6  51.7 -5.6     -55.6   -19       62   No stop
00 15 20  ---          04 04 36  44.4  52.5 -5.5     -56.5   421      118   00 08 01

00 16 00  J0932+5306   04 05 16  43.5  55.2 -5.5     -55.1    20      118   00 16 00
00 19 00  ---          04 08 17  43.9  55.6 -5.4     -55.4   180      141   00 16 01

00 19 00  IZW18        04 08 17  44.9  52.9 -5.4     -57.0   -19      141   No stop
00 26 20  ---          04 15 38  45.8  53.7 -5.3     -57.9   421      197   00 19 01

00 27 00  J0932+5306   04 16 18  44.9  56.5 -5.3     -56.4    20      197   00 27 00
00 30 00  ---          04 19 18  45.2  56.9 -5.2     -56.7   180      221   00 27 01

00 30 00  IZW18        04 19 18  46.2  54.1 -5.3     -58.4   -20      221   No stop
00 37 20  ---          04 26 40  47.1  54.9 -5.1     -59.3   420      277   00 30 01

00 38 00  J0932+5306   04 27 20  46.3  57.8 -5.1     -57.7    20      277   00 38 00
00 41 00  ---          04 30 20  46.6  58.1 -5.1     -58.0   180      300   00 38 01

00 41 00  IZW18        04 30 20  47.6  55.3 -5.1     -59.8   -20      300   No stop
00 48 20  ---          04 37 41  48.5  56.1 -5.0     -60.7   420      356   00 41 01

00 49 00  J0932+5306   04 38 22  47.7  59.1 -4.9     -58.9    20      356   00 49 00
00 52 00  ---          04 41 22  48.1  59.4 -4.9     -59.3   180      379   00 49 01

00 52 00  IZW18        04 41 22  48.9  56.5 -4.9     -61.2   -20      379   No stop
00 59 20  ---          04 48 43  49.9  57.2 -4.8     -62.1   420      436   00 52 01

01 00 00  J0932+5306   04 49 23  49.1  60.3 -4.7     -60.2    19      436   01 00 00
01 03 00  ---          04 52 24  49.5  60.7 -4.7     -60.5   180      459   01 00 01

01 03 00  IZW18        04 52 24  50.3  57.6 -4.7     -62.6   -21      459   No stop
01 10 20  ---          04 59 45  51.3  58.4 -4.6     -63.5   419      515   01 03 01

01 11 00  J0932+5306   05 00 25  50.5  61.6 -4.6     -61.4    19      515   01 11 00
01 14 00  ---          05 03 26  50.9  61.9 -4.5     -61.8   180      538   01 11 01
```

Schedule for TORUN (Code Tr) Page 3

EVN-18CM-IZw18

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 30 Oct 2016 Day 304 ---										
01 14 00	IZW18	05 03 26	51.7	58.7	-4.5		-64.0	-21	538	No stop
01 21 20	---	05 10 47	52.7	59.5	-4.4		-64.9	419	595	01 14 01
01 22 00	J0932+5306	05 11 27	52.0	62.8	-4.4		-62.7	19	595	01 22 00
01 25 00	---	05 14 27	52.4	63.2	-4.3		-63.0	180	618	01 22 01
01 25 00	IZW18	05 14 27	53.2	59.9	-4.3		-65.4	-21	618	No stop
01 32 20	---	05 21 49	54.1	60.6	-4.2		-66.3	419	674	01 25 01
01 33 00	J0932+5306	05 22 29	53.5	64.1	-4.2		-63.9	18	674	01 33 00
01 36 00	---	05 25 29	53.9	64.4	-4.1		-64.2	180	697	01 33 01
01 36 00	IZW18	05 25 29	54.6	60.9	-4.2		-66.8	-22	697	No stop
01 43 20	---	05 32 50	55.6	61.6	-4.0		-67.7	418	754	01 36 01
01 44 00	J0932+5306	05 33 31	55.0	65.3	-4.0		-65.1	18	754	01 44 00
01 47 00	---	05 36 31	55.4	65.6	-4.0		-65.4	180	777	01 44 01
01 47 00	IZW18	05 36 31	56.1	62.0	-4.0		-68.1	-22	777	No stop
01 54 20	---	05 43 52	57.0	62.7	-3.9		-69.1	418	833	01 47 01
01 55 00	J0932+5306	05 44 32	56.5	66.5	-3.8		-66.3	18	833	01 55 00
01 58 00	---	05 47 33	56.9	66.8	-3.8		-66.6	180	856	01 55 01
01 58 00	IZW18	05 47 33	57.5	63.0	-3.8		-69.5	-22	856	No stop
02 05 20	---	05 54 54	58.5	63.7	-3.7		-70.5	418	913	01 58 01
02 06 00	J0932+5306	05 55 34	58.0	67.7	-3.6		-67.5	17	913	02 06 00
02 09 00	---	05 58 35	58.4	68.0	-3.6		-67.8	180	936	02 06 01
02 09 00	IZW18	05 58 35	59.0	64.1	-3.6		-70.9	-23	936	No stop
02 16 20	---	06 05 56	60.0	64.7	-3.5		-71.9	417	992	02 09 01
02 17 00	J0932+5306	06 06 36	59.6	68.9	-3.5		-68.7	17	992	02 17 00
02 20 00	---	06 09 36	60.0	69.2	-3.4		-69.0	180	1015	02 17 01
02 20 00	IZW18	06 09 36	60.5	65.0	-3.4		-72.4	-23	1015	No stop
02 27 20	---	06 16 58	61.5	65.7	-3.3		-73.3	417	1072	02 20 01
02 28 00	J0932+5306	06 17 38	61.1	70.1	-3.3		-69.8	16	1072	02 28 00
02 31 00	---	06 20 38	61.5	70.4	-3.2		-70.2	180	1095	02 28 01
02 31 00	IZW18	06 20 38	62.0	66.0	-3.2		-73.8	-24	1095	No stop
02 38 20	---	06 28 00	63.0	66.6	-3.1		-74.7	416	1151	02 31 01

Schedule for TORUN (Code Tr) Page 4

EVN-18CM-IZw18

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 30 Oct 2016 Day 304 ---										
02 39 00	J0932+5306	06 28 40	62.7	71.3	-3.1		-71.0	16	1151	02 39 00
02 42 00	---	06 31 40	63.1	71.6	-3.0		-71.3	180	1174	02 39 01
02 42 00	IZW18	06 31 40	63.5	66.9	-3.1		-75.2	-24	1174	No stop
02 49 20	---	06 39 01	64.5	67.5	-2.9		-76.2	416	1231	02 42 01
02 50 00	J0932+5306	06 39 41	64.2	72.4	-2.9		-72.2	15	1231	02 50 00
02 53 00	---	06 42 42	64.7	72.8	-2.9		-72.5	180	1254	02 50 01
02 53 00	IZW18	06 42 42	65.1	67.8	-2.9		-76.7	-25	1254	No stop
03 00 20	---	06 50 03	66.1	68.4	-2.8		-77.7	415	1310	02 53 01
03 01 00	J0932+5306	06 50 43	65.8	73.6	-2.7		-73.3	15	1310	03 01 00
03 04 00	---	06 53 44	66.3	73.9	-2.7		-73.6	180	1333	03 01 01
03 04 00	4C39.25	06 53 44	60.2	102.6	-2.6		-48.9	-73	1333	No stop
03 11 00	---	07 00 45	61.2	104.4	-2.5		-48.4	347	1387	03 04 01
03 11 20	4C39.25	07 01 05	61.3	104.5	-2.4		-48.4	14	1387	03 11 20
03 14 00	---	07 03 45	61.7	105.3	-2.4		-48.2	160	1408	03 11 21
03 14 00	J0932+5306	07 03 45	67.7	75.0	-2.5		-74.7	-75	1408	No stop
03 17 00	---	07 06 46	68.2	75.3	-2.5		-75.0	105	1431	03 14 01
03 17 00	IZW18	07 06 46	68.4	69.5	-2.5		-80.0	-26	1431	No stop
03 24 30	---	07 14 17	69.5	70.0	-2.3		-81.1	424	1488	03 17 01
03 25 10	J0932+5306	07 14 57	69.3	76.1	-2.3		-75.8	13	1488	03 25 10
03 28 00	---	07 17 48	69.8	76.4	-2.3		-76.1	170	1510	03 25 11
03 28 00	IZW18	07 17 48	70.0	70.3	-2.3		-81.6	-27	1510	No stop
03 35 30	---	07 25 19	71.0	70.7	-2.2		-82.8	423	1568	03 28 01
03 36 10	J0932+5306	07 25 59	71.0	77.3	-2.1		-76.9	12	1568	03 36 10
03 39 00	---	07 28 49	71.4	77.6	-2.1		-77.2	170	1590	03 36 11
03 39 00	IZW18	07 28 49	71.5	70.9	-2.1		-83.3	-28	1590	No stop
03 46 30	---	07 36 21	72.6	71.3	-2.0		-84.5	422	1647	03 39 01
03 47 10	J0932+5306	07 37 01	72.6	78.4	-1.9		-78.0	11	1647	03 47 10
03 50 00	---	07 39 51	73.0	78.7	-1.9		-78.3	170	1669	03 47 11
03 50 00	IZW18	07 39 51	73.1	71.4	-1.9		-85.1	-30	1669	No stop
03 57 30	---	07 47 23	74.2	71.7	-1.8		-86.3	420	1727	03 50 01

Schedule for TORUN (Code Tr) Page 5

EVN-18CM-IZw18

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 30 Oct 2016 Day 304 ---										
03 58 10	J0932+5306	07 48 03	74.2	79.6	-1.8		-79.1	9	1727	03 58 10
04 01 00	---	07 50 53	74.6	79.9	-1.7		-79.4	170	1749	03 58 11
04 01 00	IZW18	07 50 53	74.7	71.8	-1.7		-86.9	-31	1749	No stop
04 08 30	---	07 58 24	75.7	72.0	-1.6		-88.3	419	1806	04 01 01
04 09 10	J0932+5306	07 59 04	75.8	80.7	-1.6		-80.2	8	1806	04 09 10
04 12 00	---	08 01 55	76.3	81.0	-1.5		-80.5	170	1828	04 09 11
04 12 00	IZW18	08 01 55	76.2	72.0	-1.6		-89.0	-33	1828	No stop
04 19 30	---	08 09 26	77.3	72.0	-1.4		-90.5	417	1886	04 12 01
04 20 10	J0932+5306	08 10 06	77.5	81.9	-1.4		-81.3	5	1886	04 20 10
04 23 00	---	08 12 57	77.9	82.2	-1.3		-81.6	170	1908	04 20 11
04 23 00	IZW18	08 12 57	77.8	72.0	-1.4		-91.3	-35	1908	No stop
04 30 30	---	08 20 28	78.9	71.8	-1.2		-93.0	415	1965	04 23 01
04 31 20	J0932+5306	08 21 18	79.1	83.1	-1.2		-82.4	13	1965	04 31 20
04 34 00	---	08 23 59	79.5	83.4	-1.2		-82.6	160	1986	04 31 21
04 34 00	IZW18	08 23 59	79.4	71.7	-1.2		-93.9	-38	1986	No stop
04 41 30	---	08 31 30	80.5	71.1	-1.1		-95.9	412	2044	04 34 01
04 42 20	J0932+5306	08 32 20	80.8	84.2	-1.0		-83.4	9	2044	04 42 20
04 45 00	---	08 35 00	81.2	84.5	-1.0		-83.7	160	2064	04 42 21
04 45 00	IZW18	08 35 00	81.0	70.8	-1.0		-97.0	-43	2064	No stop
04 52 30	---	08 42 32	82.0	69.7	-0.9		-99.6	407	2122	04 45 01
04 53 20	J0932+5306	08 43 22	82.4	85.4	-0.8		-84.5	4	2122	04 53 20
04 56 00	---	08 46 02	82.8	85.7	-0.8		-84.7	160	2142	04 53 21
04 56 00	IZW18	08 46 02	82.5	69.1	-0.8		-101.0	-49	2142	No stop
05 03 30	---	08 53 33	83.6	67.1	-0.7		-104.4	401	2200	04 56 01
05 04 20	J0932+5306	08 54 23	84.1	86.7	-0.7		-85.4	-4	2200	05 04 20
05 07 00	---	08 57 04	84.5	87.0	-0.6		-85.7	156	2221	05 04 21
05 07 00	IZW18	08 57 04	84.1	65.9	-0.6		-106.4	-58	2221	No stop
05 14 30	---	09 04 35	85.1	62.2	-0.5		-111.6	392	2278	05 07 01
05 15 20	J0932+5306	09 05 25	85.7	88.0	-0.5		-86.3	-17	2278	05 15 20
05 18 00	---	09 08 06	86.1	88.4	-0.4		-86.5	143	2299	05 15 21

```
Schedule for TORUN     (Code Tr )                                Page   6
               EVN-18CM-IZw18
  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  30 Oct 2016   Day 304 ---

05 18 00  IZW18        09 08 06  85.5  59.8 -0.5    -114.7   -74     2299   No stop
05 25 30  ---          09 15 37  86.5  52.3 -0.3    -123.8   376     2356   05 18 01

05 26 20  J0932+5306   09 16 27  87.4  89.7 -0.3     -86.8   -40     2356   05 26 20
05 29 00  ---          09 19 08  87.8  90.2 -0.2     -86.8   120     2377   05 26 21

05 29 00  IZW18        09 19 08  86.9  47.1 -0.3    -129.7  -107     2377   No stop
05 36 30  ---          09 26 39  87.6  30.3 -0.1    -147.9   343     2435   05 29 01

05 37 20  J0932+5306   09 27 29  89.0  93.3 -0.1     -85.5   -93     2435   05 37 20
05 40 00  ---          09 30 09  89.4  96.4 -0.1     -82.9    67     2455   05 37 21

05 40 00  IZW18        09 30 09  87.8  19.1 -0.1    -159.9  -190     2455   No stop
05 47 30  ---          09 37 41  87.9  -9.8  0.0     169.7   260     2513   05 40 01

05 51 00  3C273        09 41 11  28.2 130.4 -2.8     -27.2   -86     2513   05 51 00
06 00 00  ---          09 50 13  29.2 132.7 -2.7     -26.2   454     2582   05 51 01



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


 ======== Setup file: sess316.L1024

   Setup group:   12         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 64.000
   Number of channels:  8    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
  Net SB=         L         L         U         U         L         L         U         U
  IF SB =         L         L         L         L         L         L         L         L
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         3         7         3         7
  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:   5  Setup file default.  Used with PCAL = off
  LO sum=   1626.49  1626.49  1626.49  1626.49  1690.49  1690.49  1690.49  1690.49
  BBC fr=    673.51   673.51   673.51   673.51   609.51   609.51   609.51   609.51
  Bandwd=     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00
   Matching frequency sets:   5

  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)

* IZW18             09 30 30.145467   * 09 34 01.970000     09 35 11.047940       0.00
                    55 27 49.06976    * 55 14 28.23000      55 09 42.10373        0.00

* J0932+5306        09 29 13.304143   * 09 32 41.150836     09 33 49.029188       0.00
                    53 19 51.18011    * 53 06 33.80055      53 01 49.40107        0.00

* 4C39.25           09 23 55.319215   * 09 27 03.013936     09 28 04.715668       0.30
  J0927+3902        39 15 23.56645    * 39 02 20.85186      38 57 45.64580        0.16

  3C273B            12 26 33.245833   * 12 29 06.699729     12 29 56.750935       1.05
  J1229+0203        02 19 43.30578    * 02 03 08.59828      01 57 44.43041        1.37
  J1229+02
```

gs038btr

Confirming the detection of a dark matter substructure with Global

PI: *Cristiana Spingola*

Address: University of Groningen - Kapteyn Astronomical Institute

Schedule for TORUN (Code Tr) Page 2

Confirming the detection of a dark matter substructure with Global VLBI

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.

--- Sun 30 Oct 2016 Day 304 ---

Next scan frequencies: 1600.25 1600.25 1600.25 1600.25 1664.25 1664.25 1664.25 1664.25

Next BBC frequencies: 699.75 699.75 699.75 699.75 635.75 635.75 635.75 635.75

Next scan bandwidths: 32.00 32.00 32.00 32.00 32.00 32.00 32.00 32.00

Start UT Stop UT	Source	Start / Stop LST	EL	AZ	HA	UP	ParA	Early Dwell	Disk GBytes	TPStart SYNC
22 30 00	J0720+473	02 22 55	44.2	65.2	-5.0		-53.9	0	0	22 30 00
22 33 00	---	02 25 56	44.6	65.6	-4.9		-54.2	180	23	22 30 01
22 33 30	B0712+472	02 26 26	45.0	66.8	-4.8		-54.2	15	23	22 33 30
22 37 00	---	02 29 56	45.5	67.3	-4.8		-54.5	210	50	22 33 31
22 37 00	J0720+473	02 29 56	45.2	66.2	-4.9		-54.5	-15	50	No stop
22 38 30	---	02 31 27	45.4	66.4	-4.8		-54.7	75	62	22 37 01
22 38 30	B0712+472	02 31 27	45.7	67.5	-4.8		-54.6	-15	62	No stop
22 42 00	---	02 34 57	46.2	68.0	-4.7		-54.9	195	88	22 38 31
22 42 30	B0712+472	02 35 27	46.3	68.1	-4.7		-54.9	24	88	22 42 30
22 46 00	---	02 38 58	46.8	68.6	-4.6		-55.2	210	115	22 42 31
22 46 00	J0720+473	02 38 58	46.4	67.4	-4.7		-55.3	-15	115	No stop
22 48 00	---	02 40 58	46.7	67.7	-4.7		-55.5	105	131	22 46 01
22 48 00	B0712+472	02 40 58	47.0	68.9	-4.6		-55.4	-15	131	No stop
22 52 00	---	02 44 59	47.6	69.4	-4.5		-55.7	225	162	22 48 01
22 52 00	J0720+473	02 44 59	47.3	68.2	-4.6		-55.8	-15	162	No stop
22 54 00	---	02 46 59	47.5	68.5	-4.6		-56.0	105	177	22 52 01
22 54 30	B0712+472	02 47 29	48.0	69.8	-4.5		-55.9	15	177	22 54 30
22 58 00	---	02 51 00	48.4	70.3	-4.4		-56.2	210	204	22 54 31
22 58 00	J0720+473	02 51 00	48.1	69.1	-4.5		-56.3	-15	204	No stop
23 00 00	---	02 53 00	48.4	69.4	-4.5		-56.4	105	219	22 58 01
23 00 00	B0712+472	02 53 00	48.7	70.6	-4.4		-56.3	-15	219	No stop
23 04 00	---	02 57 01	49.3	71.2	-4.3		-56.6	225	250	23 00 01
23 04 00	J0720+473	02 57 01	49.0	69.9	-4.4		-56.8	-15	250	No stop
23 06 00	---	02 59 01	49.2	70.2	-4.4		-56.9	105	265	23 04 01
23 07 40	DA193	03 00 41	57.5	96.1	-2.9		-51.0	33	265	23 07 40
23 17 00	---	03 10 03	58.9	98.3	-2.8		-50.7	560	337	23 07 41
23 18 30	B0712+472	03 11 33	51.4	73.3	-4.1		-57.7	25	337	23 18 30
23 22 00	---	03 15 04	51.9	73.8	-4.0		-57.9	210	364	23 18 31

```
Schedule for TORUN     (Code Tr )                                   Page   3
              Confirming the detection of a dark matter substructure with Global VLBI
  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  30 Oct 2016   Day 304 ---

23 22 00  J0720+473    03 15 04  51.5  72.5 -4.1     -58.1   -15      364   No stop
23 24 00  ---          03 17 04  51.8  72.8 -4.1     -58.3   105      379   23 22 01

23 24 00  B0712+472    03 17 04  52.2  74.1 -4.0     -58.0   -15      379   No stop
23 28 00  ---          03 21 05  52.8  74.7 -3.9     -58.3   225      410   23 24 01

23 28 00  J0720+473    03 21 05  52.4  73.4 -4.0     -58.6   -15      410   No stop
23 30 00  ---          03 23 05  52.7  73.6 -4.0     -58.7   105      426   23 28 01

23 30 30  B0712+472    03 23 35  53.1  75.0 -3.9     -58.5    15      426   23 30 30
23 34 00  ---          03 27 06  53.6  75.6 -3.8     -58.7   210      453   23 30 31

23 34 00  J0720+473    03 27 06  53.3  74.2 -3.9     -59.0   -15      453   No stop
23 36 00  ---          03 29 06  53.5  74.5 -3.9     -59.1   105      468   23 34 01

23 36 00  B0712+472    03 29 06  53.9  75.9 -3.8     -58.8   -15      468   No stop
23 40 00  ---          03 33 07  54.5  76.5 -3.7     -59.1   225      499   23 36 01

23 40 00  J0720+473    03 33 07  54.1  75.1 -3.8     -59.4   -15      499   No stop
23 42 00  ---          03 35 07  54.4  75.4 -3.8     -59.5   105      514   23 40 01

23 42 30  B0712+472    03 35 37  54.9  76.8 -3.7     -59.2    14      514   23 42 30
23 46 00  ---          03 39 08  55.4  77.4 -3.6     -59.4   210      541   23 42 31

23 46 00  J0720+473    03 39 08  55.0  76.0 -3.7     -59.8   -15      541   No stop
23 48 00  ---          03 41 08  55.3  76.3 -3.7     -59.9   105      556   23 46 01

23 48 00  B0712+472    03 41 08  55.7  77.7 -3.6     -59.5   -16      556   No stop
23 52 00  ---          03 45 09  56.3  78.3 -3.5     -59.8   224      587   23 48 01

23 52 00  J0720+473    03 45 09  55.9  76.9 -3.6     -60.1   -15      587   No stop
23 54 00  ---          03 47 09  56.2  77.2 -3.6     -60.3   105      603   23 52 01

23 54 30  B0712+472    03 47 39  56.6  78.7 -3.5     -59.9    14      603   23 54 30
23 58 00  ---          03 51 10  57.1  79.2 -3.4     -60.1   210      629   23 54 31

23 58 00  J0720+473    03 51 10  56.8  77.8 -3.5     -60.5   -16      629   No stop
23 59 59  ---          03 53 10  57.0  78.1 -3.5     -60.6   103      645   23 58 01

 --- Mon  31 Oct 2016   Day 305 ---

00 00 00  B0712+472    03 53 10  57.4  79.5 -3.4     -60.2   -16      645   No stop
00 04 00  ---          03 57 11  58.0  80.2 -3.3     -60.4   224      676   00 00 00
```

Schedule for TORUN (Code Tr) Page 4

Confirming the detection of a dark matter substructure with Global VLBI

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
--- Mon 31 Oct 2016 Day 305 ---										
00 04 00	J0720+473	03 57 11	57.6	78.7	-3.4		-60.8	-16	676	No stop
00 06 00	---	03 59 11	57.9	79.0	-3.4		-60.9	104	691	00 04 01
00 06 30	B0712+472	03 59 41	58.4	80.6	-3.3		-60.5	14	691	00 06 30
00 10 00	---	04 03 12	58.9	81.1	-3.2		-60.7	210	718	00 06 31
00 10 00	J0720+473	04 03 12	58.5	79.6	-3.3		-61.1	-16	718	No stop
00 12 00	---	04 05 12	58.8	80.0	-3.3		-61.3	104	733	00 10 01
00 12 00	B0712+472	04 05 12	59.2	81.5	-3.2		-60.8	-16	733	No stop
00 16 00	---	04 09 13	59.8	82.1	-3.1		-60.9	224	764	00 12 01
00 16 00	J0720+473	04 09 13	59.4	80.6	-3.2		-61.5	-16	764	No stop
00 18 00	---	04 11 13	59.7	80.9	-3.2		-61.5	104	779	00 16 01
00 18 30	B0712+472	04 11 43	60.2	82.5	-3.1		-61.0	14	779	00 18 30
00 22 00	---	04 15 14	60.7	83.1	-3.0		-61.2	210	806	00 18 31
00 22 00	J0720+473	04 15 14	60.3	81.5	-3.1		-61.7	-16	806	No stop
00 24 00	---	04 17 14	60.6	81.9	-3.1		-61.8	104	822	00 22 01
00 24 00	B0712+472	04 17 14	61.0	83.5	-3.0		-61.2	-16	822	No stop
00 28 00	---	04 21 15	61.6	84.1	-2.9		-61.4	224	853	00 24 01
00 28 00	J0720+473	04 21 15	61.2	82.5	-3.0		-62.0	-16	853	No stop
00 30 00	---	04 23 15	61.5	82.9	-3.0		-62.1	104	868	00 28 01
00 30 30	B0712+472	04 23 45	62.0	84.6	-2.9		-61.4	13	868	00 30 30
00 34 00	---	04 27 16	62.5	85.2	-2.8		-61.5	210	895	00 30 31
00 34 00	J0720+473	04 27 16	62.1	83.5	-2.9		-62.2	-16	895	No stop
00 36 00	---	04 29 16	62.4	83.9	-2.9		-62.3	104	910	00 34 01
00 36 00	B0712+472	04 29 16	62.8	85.5	-2.8		-61.6	-17	910	No stop
00 40 00	---	04 33 17	63.4	86.2	-2.7		-61.7	223	941	00 36 01
00 40 00	J0720+473	04 33 17	63.0	84.5	-2.8		-62.4	-17	941	No stop
00 42 00	---	04 35 17	63.3	84.9	-2.8		-62.5	103	956	00 40 01
00 42 30	B0712+472	04 35 47	63.8	86.7	-2.7		-61.7	13	956	00 42 30
00 46 00	---	04 39 18	64.3	87.3	-2.6		-61.8	210	983	00 42 31
00 46 00	J0720+473	04 39 18	63.9	85.6	-2.7		-62.6	-17	983	No stop
00 48 00	---	04 41 18	64.2	86.0	-2.7		-62.6	103	999	00 46 01

```
Schedule for TORUN     (Code Tr )                                   Page   5
              Confirming the detection of a dark matter substructure with Global VLBI
  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  31 Oct 2016   Day 305 ---

00 48 00  B0712+472    04 41 18  64.6  87.7 -2.6     -61.8   -17      999   No stop
00 52 00  ---          04 45 19  65.2  88.5 -2.5     -61.9   223     1029   00 48 01

00 52 00  J0720+473    04 45 19  64.8  86.7 -2.6     -62.7   -17     1029   No stop
00 54 00  ---          04 47 19  65.1  87.0 -2.6     -62.8   103     1045   00 52 01

00 54 30  B0712+472    04 47 49  65.6  89.0 -2.5     -61.9    13     1045   00 54 30
00 58 00  ---          04 51 20  66.1  89.7 -2.4     -61.9   210     1072   00 54 31

00 58 00  J0720+473    04 51 20  65.7  87.8 -2.5     -62.8   -17     1072   No stop
01 00 00  ---          04 53 20  66.0  88.2 -2.5     -62.9   103     1087   00 58 01

01 00 00  B0712+472    04 53 20  66.4  90.0 -2.4     -61.9   -17     1087   No stop
01 04 00  ---          04 57 21  67.0  90.9 -2.3     -61.9   223     1118   01 00 01

01 04 00  J0720+473    04 57 21  66.6  88.9 -2.4     -62.9   -17     1118   No stop
01 06 00  ---          04 59 21  66.9  89.3 -2.4     -62.9   103     1133   01 04 01

01 06 30  B0712+472    04 59 51  67.4  91.4 -2.3     -61.9    12     1133   01 06 30
01 10 00  ---          05 03 22  67.9  92.1 -2.2     -61.9   210     1160   01 06 31

01 10 00  J0720+473    05 03 22  67.5  90.1 -2.3     -62.9   -18     1160   No stop
01 12 00  ---          05 05 22  67.8  90.5 -2.3     -62.9   102     1176   01 10 01

01 12 00  B0712+472    05 05 22  68.2  92.6 -2.2     -61.8   -18     1176   No stop
01 16 00  ---          05 09 23  68.8  93.4 -2.1     -61.7   222     1206   01 12 01

01 16 00  J0720+473    05 09 23  68.4  91.3 -2.2     -62.9   -18     1206   No stop
01 18 00  ---          05 11 23  68.7  91.8 -2.2     -62.9   102     1222   01 16 01

01 18 30  B0712+472    05 11 53  69.2  94.0 -2.1     -61.7    12     1222   01 18 30
01 22 00  ---          05 15 24  69.7  94.8 -2.0     -61.5   210     1249   01 18 31

01 22 00  J0720+473    05 15 24  69.3  92.6 -2.1     -62.8   -18     1249   No stop
01 24 00  ---          05 17 24  69.6  93.1 -2.1     -62.8   102     1264   01 22 01

01 24 00  B0712+472    05 17 24  70.0  95.3 -2.0     -61.5   -18     1264   No stop
01 28 00  ---          05 21 25  70.6  96.3 -1.9     -61.3   222     1295   01 24 01

01 28 00  J0720+473    05 21 25  70.2  94.0 -2.0     -62.7   -18     1295   No stop
01 30 00  ---          05 23 25  70.5  94.4 -2.0     -62.6   102     1310   01 28 01

01 30 30  B0712+472    05 23 55  71.0  96.9 -1.9     -61.2    11     1310   01 30 30
01 34 00  ---          05 27 25  71.5  97.8 -1.8     -61.0   210     1337   01 30 31
```

Schedule for TORUN (Code Tr) Page 6

Confirming the detection of a dark matter substructure with Global VLBI

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
--- Mon 31 Oct 2016 Day 305 ---										
01 34 00	J0720+473	05 27 25	71.1	95.4	-1.9		-62.4	-19	1337	No stop
01 36 00	---	05 29 26	71.4	95.9	-1.9		-62.3	101	1353	01 34 01
01 36 00	B0712+472	05 29 26	71.8	98.3	-1.8		-60.8	-19	1353	No stop
01 40 00	---	05 33 26	72.4	99.4	-1.7		-60.5	221	1383	01 36 01
01 40 00	J0720+473	05 33 26	72.0	96.9	-1.8		-62.1	-19	1383	No stop
01 42 00	---	05 35 27	72.3	97.4	-1.8		-62.0	101	1399	01 40 01
01 42 30	B0712+472	05 35 57	72.8	100.1	-1.7		-60.3	10	1399	01 42 30
01 46 00	---	05 39 27	73.3	101.1	-1.6		-60.0	210	1426	01 42 31
01 46 00	J0720+473	05 39 27	72.9	98.5	-1.7		-61.7	-19	1426	No stop
01 48 00	---	05 41 28	73.2	99.0	-1.7		-61.6	101	1441	01 46 01
01 48 00	B0712+472	05 41 28	73.6	101.7	-1.6		-59.8	-20	1441	No stop
01 52 00	---	05 45 28	74.2	103.0	-1.5		-59.3	220	1472	01 48 01
01 52 00	J0720+473	05 45 28	73.8	100.1	-1.6		-61.2	-20	1472	No stop
01 54 00	---	05 47 29	74.1	100.7	-1.6		-61.0	100	1487	01 52 01
01 54 30	B0712+472	05 47 59	74.6	103.8	-1.5		-59.0	10	1487	01 54 30
01 58 00	---	05 51 29	75.1	105.0	-1.4		-58.5	210	1514	01 54 31
01 58 00	J0720+473	05 51 29	74.7	102.0	-1.5		-60.6	-20	1514	No stop
02 00 00	---	05 53 30	75.0	102.6	-1.5		-60.3	100	1529	01 58 01
02 00 00	B0712+472	05 53 30	75.4	105.7	-1.4		-58.2	-21	1529	No stop
02 04 00	---	05 57 30	75.9	107.1	-1.3		-57.5	219	1560	02 00 01
02 04 00	J0720+473	05 57 30	75.6	103.9	-1.4		-59.8	-21	1560	No stop
02 06 00	---	05 59 31	75.9	104.6	-1.4		-59.5	99	1576	02 04 01
02 07 40	4C39.25	06 01 11	52.4	90.7	-3.4		-50.6	-2	1576	02 07 40
02 16 00	---	06 09 32	53.6	92.4	-3.3		-50.5	498	1640	02 07 41
02 18 30	B0712+472	06 12 03	78.0	113.3	-1.1		-54.1	45	1640	02 18 30
02 22 00	---	06 15 33	78.5	115.0	-1.0		-53.1	210	1667	02 18 31
02 22 00	J0720+473	06 15 33	78.2	111.0	-1.1		-56.2	-23	1667	No stop
02 24 00	---	06 17 34	78.4	112.0	-1.1		-55.7	97	1682	02 22 01
02 24 00	B0712+472	06 17 34	78.7	116.1	-1.0		-52.4	-24	1682	No stop
02 28 00	---	06 21 34	79.3	118.3	-0.9		-51.0	216	1713	02 24 01

Schedule for TORUN (Code Tr) Page 7

Confirming the detection of a dark matter substructure with Global VLBI

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
--- Mon 31 Oct 2016 Day 305 ---										
02 28 00	J0720+473	06 21 34	79.0	113.9	-1.0		-54.5	-23	1713	No stop
02 30 00	---	06 23 35	79.3	115.0	-1.0		-53.8	97	1728	02 28 01
02 30 30	B0712+472	06 24 05	79.6	119.8	-0.9		-50.0	6	1728	02 30 30
02 34 00	---	06 27 35	80.1	122.0	-0.8		-48.4	210	1755	02 30 31
02 34 00	J0720+473	06 27 35	79.8	117.2	-0.9		-52.4	-24	1755	No stop
02 36 00	---	06 29 36	80.1	118.4	-0.9		-51.5	96	1771	02 34 01
02 36 00	B0712+472	06 29 36	80.3	123.3	-0.8		-47.5	-25	1771	No stop
02 40 00	---	06 33 36	80.8	126.2	-0.7		-45.4	215	1801	02 36 01
02 40 00	J0720+473	06 33 36	80.6	121.0	-0.8		-49.8	-25	1801	No stop
02 42 00	---	06 35 37	80.8	122.3	-0.8		-48.8	95	1817	02 40 01
02 42 30	B0712+472	06 36 07	81.1	128.1	-0.7		-44.0	4	1817	02 42 30
02 46 00	---	06 39 37	81.5	131.0	-0.6		-41.7	210	1844	02 42 31
02 46 00	J0720+473	06 39 37	81.3	125.3	-0.7		-46.6	-26	1844	No stop
02 48 00	---	06 41 38	81.6	126.9	-0.7		-45.4	94	1859	02 46 01
02 48 00	B0712+472	06 41 38	81.7	132.8	-0.6		-40.4	-28	1859	No stop
02 52 00	---	06 45 38	82.2	136.6	-0.5		-37.3	212	1890	02 48 01
02 52 00	J0720+473	06 45 38	82.1	130.3	-0.6		-42.8	-27	1890	No stop
02 54 00	---	06 47 39	82.3	132.1	-0.6		-41.3	93	1905	02 52 01
02 54 30	B0712+472	06 48 09	82.4	139.1	-0.5		-35.3	1	1905	02 54 30
02 58 00	---	06 51 39	82.7	143.0	-0.4		-32.1	210	1932	02 54 31
02 58 00	J0720+473	06 51 39	82.7	136.1	-0.5		-38.1	-28	1932	No stop
03 00 00	---	06 53 40	82.9	138.3	-0.5		-36.4	92	1947	02 58 01
03 00 00	B0712+472	06 53 40	82.9	145.3	-0.4		-30.1	-30	1947	No stop
03 04 00	---	06 57 40	83.2	150.3	-0.3		-25.9	210	1978	03 00 01
03 04 00	J0720+473	06 57 40	83.3	142.9	-0.4		-32.5	-29	1978	No stop
03 06 00	---	06 59 41	83.5	145.4	-0.4		-30.4	91	1994	03 04 01
03 06 30	B0712+472	07 00 11	83.4	153.7	-0.3		-23.0	-1	1994	03 06 30
03 10 00	---	07 03 41	83.6	158.6	-0.2		-18.8	209	2021	03 06 31
03 10 00	J0720+473	07 03 41	83.8	150.8	-0.3		-25.7	-29	2021	No stop
03 12 00	---	07 05 42	83.9	153.7	-0.3		-23.2	91	2036	03 10 01

Schedule for TORUN (Code Tr) Page 8

Confirming the detection of a dark matter substructure with Global VLBI

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
--- Mon 31 Oct 2016 Day 305 ---										
03 12 00	B0712+472	07 05 42	83.7	161.6	-0.2		-16.2	-32	2036	No stop
03 16 00	---	07 09 42	83.9	167.8	-0.1		-10.8	208	2067	03 12 01
03 16 00	J0720+473	07 09 42	84.2	159.8	-0.2		-17.9	-30	2067	No stop
03 18 00	---	07 11 43	84.3	163.0	-0.2		-15.1	90	2082	03 16 01
03 18 30	B0712+472	07 12 13	84.0	171.7	-0.1		-7.3	-2	2082	03 18 30
03 22 00	---	07 15 43	84.0	177.4	-0.0		-2.3	208	2109	03 18 31
03 22 00	J0720+473	07 15 43	84.4	169.8	-0.1		-9.1	-29	2109	No stop
03 24 00	---	07 17 44	84.5	173.2	-0.1		-6.0	91	2124	03 22 01
03 24 00	B0712+472	07 17 44	84.0	180.7	0.0		0.6	-31	2124	No stop
03 28 00	---	07 21 44	84.0	187.2	0.1		6.4	209	2155	03 24 01
03 28 00	J0720+473	07 21 44	84.5	180.2	0.0		0.2	-28	2155	No stop
03 30 00	---	07 23 45	84.5	183.8	0.0		3.3	92	2171	03 28 01
03 30 30	B0712+472	07 24 15	83.9	191.2	0.1		9.9	0	2171	03 30 30
03 34 00	---	07 27 45	83.8	196.7	0.2		14.7	210	2197	03 30 31
03 34 00	J0720+473	07 27 45	84.4	190.7	0.1		9.5	-26	2197	No stop
03 36 00	---	07 29 46	84.3	194.1	0.1		12.5	94	2213	03 34 01
03 36 00	B0712+472	07 29 46	83.7	199.7	0.2		17.3	-27	2213	No stop
03 40 00	---	07 33 46	83.5	205.4	0.3		22.3	213	2244	03 36 01
03 40 00	J0720+473	07 33 46	84.2	200.6	0.2		18.3	-24	2244	No stop
03 42 00	---	07 35 47	84.1	203.7	0.2		21.0	96	2259	03 40 01
03 42 30	B0712+472	07 36 17	83.3	208.8	0.3		25.2	5	2259	03 42 30
03 46 00	---	07 39 47	83.0	213.3	0.4		28.9	210	2286	03 42 31
03 46 00	J0720+473	07 39 47	83.8	209.6	0.3		26.1	-21	2286	No stop
03 48 00	---	07 41 48	83.6	212.3	0.3		28.4	99	2301	03 46 01
03 48 00	B0712+472	07 41 48	82.8	215.7	0.4		31.0	-22	2301	No stop
03 52 00	---	07 45 48	82.5	220.2	0.5		34.7	218	2332	03 48 01
03 52 00	J0720+473	07 45 48	83.3	217.4	0.4		32.8	-19	2332	No stop
03 54 00	---	07 47 48	83.1	219.8	0.4		34.7	101	2347	03 52 01
03 54 30	B0712+472	07 48 19	82.2	222.8	0.5		36.8	10	2347	03 54 30
03 58 00	---	07 51 49	81.9	226.2	0.6		39.5	210	2374	03 54 31

Schedule for TORUN (Code Tr) Page 9

Confirming the detection of a dark matter substructure with Global VLBI

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
--- Mon 31 Oct 2016 Day 305 ---										
03 58 00	J0720+473	07 51 49	82.7	224.2	0.5		38.4	-17	2374	No stop
04 00 00	---	07 53 49	82.5	226.2	0.5		40.0	103	2390	03 58 01
04 00 00	B0712+472	07 53 49	81.6	228.0	0.6		40.9	-17	2390	No stop
04 04 00	---	07 57 50	81.2	231.4	0.7		43.6	223	2421	04 00 01
04 04 00	J0720+473	07 57 50	82.0	230.0	0.6		43.0	-16	2421	No stop
04 06 00	---	07 59 50	81.8	231.7	0.6		44.3	104	2436	04 04 01
04 06 30	B0712+472	08 00 21	80.9	233.3	0.7		45.0	14	2436	04 06 30
04 10 00	---	08 03 51	80.5	235.9	0.8		46.9	210	2463	04 06 31
04 10 00	J0720+473	08 03 51	81.3	234.9	0.7		46.8	-16	2463	No stop
04 12 00	---	08 05 51	81.1	236.4	0.7		47.9	104	2478	04 10 01
04 12 00	B0712+472	08 05 51	80.2	237.2	0.8		47.9	-16	2478	No stop
04 16 00	---	08 09 52	79.7	239.8	0.9		49.7	224	2509	04 12 01
04 16 00	J0720+473	08 09 52	80.6	239.2	0.8		49.9	-16	2509	No stop
04 18 00	---	08 11 52	80.3	240.5	0.8		50.8	104	2524	04 16 01
04 18 30	B0712+472	08 12 23	79.4	241.3	0.9		50.7	14	2524	04 18 30
04 22 00	---	08 15 53	78.9	243.3	1.0		52.0	210	2551	04 18 31
04 22 00	J0720+473	08 15 53	79.8	242.9	0.9		52.5	-16	2551	No stop
04 24 00	---	08 17 53	79.5	244.1	0.9		53.2	104	2567	04 22 01
04 24 00	B0712+472	08 17 53	78.6	244.4	1.0		52.7	-16	2567	No stop
04 28 00	---	08 21 54	78.1	246.4	1.1		53.9	224	2597	04 24 01
04 28 00	J0720+473	08 21 54	78.9	246.2	1.0		54.6	-16	2597	No stop
04 30 00	---	08 23 54	78.7	247.2	1.0		55.2	104	2613	04 28 01
04 30 30	B0712+472	08 24 24	77.7	247.6	1.1		54.6	14	2613	04 30 30
04 34 00	---	08 27 55	77.2	249.1	1.2		55.5	210	2640	04 30 31
04 34 00	J0720+473	08 27 55	78.1	249.1	1.1		56.3	-16	2640	No stop
04 36 00	---	08 29 55	77.8	250.0	1.1		56.8	104	2655	04 34 01
04 36 00	B0712+472	08 29 55	77.0	250.0	1.2		56.0	-16	2655	No stop
04 40 00	---	08 33 56	76.4	251.6	1.3		56.9	224	2686	04 36 01
04 40 00	J0720+473	08 33 56	77.3	251.7	1.2		57.7	-16	2686	No stop
04 42 00	---	08 35 56	77.0	252.5	1.2		58.1	104	2701	04 40 01

Schedule for TORUN (Code Tr) Page 10

Confirming the detection of a dark matter substructure with Global VLBI

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
--- Mon 31 Oct 2016 Day 305 ---										
04 42 30	B0712+472	08 36 26	76.0	252.6	1.3		57.4	14	2701	04 42 30
04 46 00	---	08 39 57	75.5	253.9	1.4		58.0	210	2728	04 42 31
04 46 00	J0720+473	08 39 57	76.4	254.0	1.3		58.9	-16	2728	No stop
04 48 00	---	08 41 57	76.1	254.8	1.3		59.2	104	2744	04 46 01
04 48 00	B0712+472	08 41 57	75.2	254.6	1.4		58.3	-16	2744	No stop
04 52 00	---	08 45 58	74.7	256.0	1.5		58.9	224	2774	04 48 01
04 52 00	J0720+473	08 45 58	75.5	256.2	1.4		59.8	-16	2774	No stop
04 54 00	---	08 47 58	75.2	256.8	1.4		60.1	104	2790	04 52 01
04 54 30	B0712+472	08 48 28	74.3	256.8	1.5		59.2	14	2790	04 54 30
04 58 00	---	08 51 59	73.8	257.9	1.6		59.6	210	2817	04 54 31
04 58 00	J0720+473	08 51 59	74.6	258.1	1.5		60.6	-16	2817	No stop
05 00 00	---	08 53 59	74.4	258.7	1.5		60.8	104	2832	04 58 01
05 00 00	B0712+472	08 53 59	73.5	258.5	1.6		59.9	-16	2832	No stop
05 04 00	---	08 58 00	72.9	259.7	1.7		60.2	224	2863	05 00 01
05 04 00	J0720+473	08 58 00	73.8	259.9	1.6		61.2	-16	2863	No stop
05 06 00	---	09 00 00	73.5	260.5	1.6		61.4	104	2878	05 04 01
05 06 30	B0712+472	09 00 30	72.5	260.4	1.7		60.5	14	2878	05 06 30
05 10 00	---	09 04 01	72.0	261.4	1.8		60.7	210	2905	05 06 31
05 10 00	J0720+473	09 04 01	72.9	261.6	1.7		61.7	-16	2905	No stop
05 12 00	---	09 06 01	72.6	262.2	1.7		61.9	104	2921	05 10 01
05 12 00	B0712+472	09 06 01	71.7	261.9	1.8		60.9	-16	2921	No stop
05 16 00	---	09 10 02	71.1	263.0	1.9		61.1	224	2951	05 12 01
05 16 00	J0720+473	09 10 02	72.0	263.2	1.8		62.1	-16	2951	No stop
05 18 00	---	09 12 02	71.7	263.7	1.8		62.3	104	2967	05 16 01
05 18 30	B0712+472	09 12 32	70.7	263.6	1.9		61.3	14	2967	05 18 30
05 22 00	---	09 16 03	70.2	264.4	2.0		61.4	210	2994	05 18 31
05 22 00	J0720+473	09 16 03	71.1	264.7	1.9		62.4	-16	2994	No stop
05 24 00	---	09 18 03	70.8	265.2	1.9		62.5	104	3009	05 22 01
05 24 00	B0712+472	09 18 03	69.9	264.9	2.0		61.5	-16	3009	No stop
05 28 00	---	09 22 04	69.3	265.9	2.1		61.6	224	3040	05 24 01

Schedule for TORUN (Code Tr) Page 11

Confirming the detection of a dark matter substructure with Global VLBI

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
--- Mon 31 Oct 2016 Day 305 ---										
05 28 00	J0720+473	09 22 04	70.2	266.1	2.0		62.7	-16	3040	No stop
05 30 00	---	09 24 04	69.9	266.5	2.0		62.7	104	3055	05 28 01
05 31 40	DA193	09 25 45	52.6	270.8	3.5		51.4	22	3055	05 31 40
05 41 00	---	09 35 06	51.2	272.6	3.6		51.3	560	3127	05 31 41
05 42 30	B0712+472	09 36 36	67.1	269.0	2.3		61.9	16	3127	05 42 30
05 46 00	---	09 40 07	66.6	269.7	2.4		61.9	210	3154	05 42 31
05 46 00	J0720+473	09 40 07	67.5	269.9	2.3		62.9	-16	3154	No stop
05 48 00	---	09 42 07	67.2	270.3	2.3		62.9	104	3169	05 46 01
05 48 00	B0712+472	09 42 07	66.3	270.1	2.4		61.9	-16	3169	No stop
05 52 00	---	09 46 08	65.7	270.9	2.5		61.9	224	3200	05 48 01
05 52 00	J0720+473	09 46 08	66.6	271.1	2.4		62.9	-16	3200	No stop
05 54 00	---	09 48 08	66.3	271.5	2.4		62.9	104	3215	05 52 01
05 54 30	B0712+472	09 48 38	65.3	271.4	2.5		61.9	14	3215	05 54 30
05 58 00	---	09 52 09	64.8	272.1	2.6		61.9	210	3242	05 54 31
05 58 00	J0720+473	09 52 09	65.7	272.3	2.5		62.8	-16	3242	No stop
06 00 00	---	09 54 09	65.4	272.6	2.5		62.8	104	3258	05 58 01
06 00 00	B0712+472	09 54 09	64.5	272.4	2.6		61.8	-16	3258	No stop
06 04 00	---	09 58 10	63.9	273.2	2.7		61.8	224	3288	06 00 01
06 04 00	J0720+473	09 58 10	64.8	273.4	2.6		62.7	-16	3288	No stop
06 06 00	---	10 00 10	64.5	273.7	2.6		62.7	104	3304	06 04 01
06 06 30	B0712+472	10 00 40	63.5	273.6	2.7		61.7	14	3304	06 06 30
06 10 00	---	10 04 11	63.0	274.3	2.8		61.6	210	3331	06 06 31
06 10 00	J0720+473	10 04 11	63.9	274.5	2.7		62.6	-16	3331	No stop
06 12 00	---	10 06 11	63.6	274.8	2.7		62.5	104	3346	06 10 01
06 12 00	B0712+472	10 06 11	62.7	274.6	2.8		61.6	-16	3346	No stop
06 16 00	---	10 10 12	62.1	275.3	2.9		61.5	224	3377	06 12 01
06 16 00	J0720+473	10 10 12	63.0	275.5	2.8		62.4	-16	3377	No stop
06 18 00	---	10 12 12	62.7	275.8	2.8		62.3	104	3392	06 16 01
06 18 30	B0712+472	10 12 42	61.7	275.8	2.9		61.4	14	3392	06 18 30
06 22 00	---	10 16 13	61.2	276.4	3.0		61.3	210	3419	06 18 31

Schedule for TORUN (Code Tr) Page 12

Confirming the detection of a dark matter substructure with Global VLBI

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
--- Mon 31 Oct 2016 Day 305 ---										
06 22 00	J0720+473	10 16 13	62.1	276.5	2.9		62.2	-16	3419	No stop
06 24 00	---	10 18 13	61.8	276.9	2.9		62.1	104	3435	06 22 01
06 24 00	B0712+472	10 18 13	60.9	276.7	3.0		61.2	-16	3435	No stop
06 28 00	---	10 22 14	60.3	277.4	3.1		61.1	224	3465	06 24 01
06 28 00	J0720+473	10 22 14	61.2	277.5	3.0		62.0	-16	3465	No stop
06 30 00	---	10 24 14	60.9	277.8	3.0		61.9	104	3481	06 28 01
06 30 30	B0712+472	10 24 44	59.9	277.8	3.1		61.0	14	3481	06 30 30
06 34 00	---	10 28 15	59.4	278.4	3.2		60.8	210	3508	06 30 31
06 34 00	J0720+473	10 28 15	60.3	278.5	3.1		61.7	-16	3508	No stop
06 36 00	---	10 30 15	60.0	278.8	3.1		61.6	104	3523	06 34 01
06 36 00	B0712+472	10 30 15	59.1	278.7	3.2		60.7	-16	3523	No stop
06 40 00	---	10 34 16	58.5	279.3	3.3		60.5	224	3554	06 36 01
06 40 00	J0720+473	10 34 16	59.4	279.5	3.2		61.4	-16	3554	No stop
06 42 00	---	10 36 16	59.1	279.8	3.2		61.3	104	3569	06 40 01
06 42 30	B0712+472	10 36 46	58.1	279.7	3.3		60.4	14	3569	06 42 30
06 46 00	---	10 40 17	57.6	280.3	3.4		60.2	210	3596	06 42 31
06 46 00	J0720+473	10 40 17	58.5	280.4	3.3		61.1	-16	3596	No stop
06 48 00	---	10 42 17	58.2	280.7	3.3		61.0	104	3612	06 46 01
06 48 00	B0712+472	10 42 17	57.3	280.6	3.4		60.1	-16	3612	No stop
06 52 00	---	10 46 18	56.7	281.2	3.5		59.9	224	3642	06 48 01
06 52 00	J0720+473	10 46 18	57.6	281.3	3.4		60.8	-16	3642	No stop
06 54 00	---	10 48 18	57.3	281.6	3.4		60.7	104	3658	06 52 01
06 54 30	B0712+472	10 48 48	56.4	281.6	3.5		59.8	14	3658	06 54 30
06 58 00	---	10 52 19	55.8	282.2	3.6		59.6	210	3685	06 54 31
06 58 00	J0720+473	10 52 19	56.7	282.2	3.5		60.5	-16	3685	No stop
07 00 00	---	10 54 19	56.4	282.5	3.5		60.4	104	3700	06 58 01
07 00 00	B0712+472	10 54 19	55.6	282.5	3.6		59.5	-16	3700	No stop
07 04 00	---	10 58 20	55.0	283.1	3.7		59.3	224	3731	07 00 01
07 04 00	J0720+473	10 58 20	55.8	283.2	3.6		60.1	-16	3731	No stop
07 06 00	---	11 00 20	55.5	283.5	3.6		60.0	104	3746	07 04 01

Schedule for TORUN (Code Tr) Page 13

Confirming the detection of a dark matter substructure with Global VLBI

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 31 Oct 2016 Day 305 ---										
07 06 30	B0712+472	11 00 50	54.6	283.4	3.7		59.1	14	3746	07 06 30
07 10 00	---	11 04 21	54.1	284.0	3.8		58.9	210	3773	07 06 31
07 10 00	J0720+473	11 04 21	55.0	284.0	3.7		59.7	-16	3773	No stop
07 12 00	---	11 06 21	54.7	284.3	3.7		59.6	104	3788	07 10 01
07 12 00	B0712+472	11 06 21	53.8	284.3	3.8		58.8	-16	3788	No stop
07 16 00	---	11 10 22	53.2	284.9	3.9		58.5	224	3819	07 12 01
07 16 00	J0720+473	11 10 22	54.1	284.9	3.8		59.4	-16	3819	No stop
07 18 00	---	11 12 22	53.8	285.2	3.8		59.2	104	3835	07 16 01
07 18 30	B0712+472	11 12 52	52.8	285.2	3.9		58.4	14	3835	07 18 30
07 22 00	---	11 16 23	52.3	285.8	4.0		58.1	210	3862	07 18 31
07 22 00	J0720+473	11 16 23	53.2	285.8	3.9		58.9	-16	3862	No stop
07 24 00	---	11 18 23	52.9	286.1	3.9		58.8	104	3877	07 22 01
07 24 00	B0712+472	11 18 23	52.0	286.1	4.0		58.0	-16	3877	No stop
07 28 00	---	11 22 24	51.5	286.6	4.1		57.7	224	3908	07 24 01
07 28 00	J0720+473	11 22 24	52.3	286.7	4.0		58.5	-16	3908	No stop
07 30 00	---	11 24 24	52.1	287.0	4.0		58.4	104	3923	07 28 01
07 30 30	B0712+472	11 24 54	51.1	287.0	4.1		57.5	14	3923	07 30 30
07 34 00	---	11 28 25	50.6	287.5	4.2		57.3	210	3950	07 30 31
07 34 00	J0720+473	11 28 25	51.5	287.5	4.1		58.1	-16	3950	No stop
07 36 00	---	11 30 25	51.2	287.8	4.1		58.0	104	3965	07 34 01
07 36 00	B0712+472	11 30 25	50.3	287.8	4.2		57.1	-16	3965	No stop
07 40 00	---	11 34 26	49.7	288.4	4.3		56.9	224	3996	07 36 01
07 40 00	J0720+473	11 34 26	50.6	288.4	4.2		57.7	-16	3996	No stop
07 42 00	---	11 36 26	50.3	288.7	4.2		57.5	104	4012	07 40 01
07 42 30	B0712+472	11 36 56	49.4	288.7	4.3		56.7	14	4012	07 42 30
07 46 00	---	11 40 27	48.9	289.3	4.4		56.4	210	4038	07 42 31
07 46 00	J0720+473	11 40 27	49.8	289.3	4.3		57.2	-16	4038	No stop
07 48 00	---	11 42 27	49.5	289.5	4.3		57.0	104	4054	07 46 01
07 48 00	B0712+472	11 42 27	48.6	289.5	4.4		56.3	-16	4054	No stop
07 52 00	---	11 46 28	48.0	290.1	4.5		55.9	224	4085	07 48 01

Schedule for TORUN (Code Tr) Page 14

Confirming the detection of a dark matter substructure with Global VLBI

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
--- Mon 31 Oct 2016 Day 305 ---										
07 52 00	J0720+473	11 46 28	48.9	290.1	4.4		56.7	-16	4085	No stop
07 54 00	---	11 48 28	48.6	290.4	4.4		56.6	104	4100	07 52 01
07 54 30	B0712+472	11 48 58	47.7	290.5	4.5		55.8	14	4100	07 54 30
07 58 00	---	11 52 29	47.2	291.0	4.6		55.5	210	4127	07 54 31
07 58 00	J0720+473	11 52 29	48.1	290.9	4.5		56.3	-16	4127	No stop
08 00 00	---	11 54 29	47.8	291.2	4.5		56.1	104	4142	07 58 01
08 00 00	B0712+472	11 54 29	46.9	291.2	4.6		55.3	-16	4142	No stop
08 04 00	---	11 58 30	46.4	291.8	4.7		55.0	224	4173	08 00 01
08 04 00	J0720+473	11 58 30	47.2	291.8	4.6		55.8	-16	4173	No stop
08 06 00	---	12 00 30	47.0	292.1	4.6		55.6	104	4188	08 04 01
08 06 30	B0712+472	12 01 00	46.0	292.2	4.7		54.8	14	4188	08 06 30
08 10 00	---	12 04 31	45.5	292.7	4.8		54.5	210	4215	08 06 31
08 10 00	J0720+473	12 04 31	46.4	292.6	4.7		55.3	-16	4215	No stop
08 12 00	---	12 06 31	46.1	292.9	4.7		55.1	104	4231	08 10 01
08 12 00	B0712+472	12 06 31	45.2	292.9	4.8		54.3	-16	4231	No stop
08 16 00	---	12 10 32	44.7	293.5	4.9		54.0	224	4262	08 12 01
08 16 00	J0720+473	12 10 32	45.6	293.5	4.8		54.8	-16	4262	No stop
08 18 00	---	12 12 32	45.3	293.7	4.8		54.6	104	4277	08 16 01
08 18 30	B0712+472	12 13 02	44.3	293.9	4.9		53.8	14	4277	08 18 30
08 22 00	---	12 16 33	43.9	294.4	5.0		53.5	210	4304	08 18 31
08 22 00	J0720+473	12 16 33	44.7	294.3	4.9		54.2	-16	4304	No stop
08 24 00	---	12 18 33	44.5	294.6	4.9		54.1	104	4319	08 22 01
08 24 00	B0712+472	12 18 33	43.6	294.6	5.0		53.3	-16	4319	No stop
08 28 00	---	12 22 34	43.0	295.2	5.1		53.0	224	4350	08 24 01
08 28 00	J0720+473	12 22 34	43.9	295.1	5.0		53.7	-16	4350	No stop
08 30 00	---	12 24 34	43.6	295.4	5.0		53.5	104	4365	08 28 01
08 30 30	B0712+472	12 25 04	42.7	295.6	5.1		52.8	14	4365	08 30 30
08 34 00	---	12 28 34	42.2	296.0	5.2		52.4	210	4392	08 30 31
08 34 00	J0720+473	12 28 34	43.1	296.0	5.1		53.2	-16	4392	No stop
08 36 00	---	12 30 35	42.8	296.2	5.1		53.0	104	4408	08 34 01

Schedule for TORUN (Code Tr) Page 15

Confirming the detection of a dark matter substructure with Global VLBI

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
--- Mon 31 Oct 2016 Day 305 ---										
08 36 00	B0712+472	12 30 35	42.0	296.3	5.2		52.3	-16	4408	No stop
08 40 00	---	12 34 35	41.4	296.9	5.3		51.9	224	4438	08 36 01
08 40 00	J0720+473	12 34 35	42.3	296.8	5.2		52.6	-16	4438	No stop
08 42 00	---	12 36 36	42.0	297.1	5.2		52.4	104	4454	08 40 01
08 44 00	4C39.25	12 38 36	54.8	265.9	3.2		50.4	42	4454	08 44 00
08 52 00	---	12 46 37	53.6	267.6	3.3		50.5	480	4515	08 44 01
08 54 30	B0712+472	12 49 08	39.5	298.9	5.5		50.6	73	4515	08 54 30
08 58 00	---	12 52 38	39.0	299.4	5.6		50.2	210	4542	08 54 31
08 58 00	J0720+473	12 52 38	39.9	299.3	5.5		50.9	-16	4542	No stop
09 00 00	---	12 54 39	39.6	299.6	5.6		50.7	104	4558	08 58 01
09 00 00	B0712+472	12 54 39	38.8	299.7	5.6		50.0	-16	4558	No stop
09 04 00	---	12 58 39	38.2	300.3	5.7		49.7	224	4588	09 00 01
09 04 00	J0720+473	12 58 39	39.1	300.1	5.6		50.4	-16	4588	No stop
09 06 00	---	13 00 40	38.9	300.4	5.7		50.2	104	4604	09 04 01
09 06 30	B0712+472	13 01 10	37.9	300.6	5.7		49.4	14	4604	09 06 30
09 10 00	---	13 04 40	37.5	301.1	5.8		49.1	210	4631	09 06 31
09 10 00	J0720+473	13 04 40	38.3	301.0	5.7		49.8	-16	4631	No stop
09 12 00	---	13 06 41	38.1	301.2	5.8		49.6	104	4646	09 10 01
09 12 00	B0712+472	13 06 41	37.2	301.4	5.8		48.9	-16	4646	No stop
09 16 00	---	13 10 41	36.7	302.0	5.9		48.5	224	4677	09 12 01
09 16 00	J0720+473	13 10 41	37.6	301.8	5.8		49.2	-16	4677	No stop
09 18 00	---	13 12 42	37.3	302.1	5.9		49.0	104	4692	09 16 01
09 18 30	B0712+472	13 13 12	36.4	302.3	5.9		48.2	14	4692	09 18 30
09 22 00	---	13 16 42	35.9	302.8	6.0		47.9	210	4719	09 18 31
09 22 00	J0720+473	13 16 42	36.8	302.6	5.9		48.6	-16	4719	No stop
09 24 00	---	13 18 43	36.6	302.9	6.0		48.4	104	4735	09 22 01
09 24 00	B0712+472	13 18 43	35.7	303.1	6.0		47.7	-16	4735	No stop
09 28 00	---	13 22 43	35.2	303.6	6.1		47.3	224	4765	09 24 01
09 28 00	J0720+473	13 22 43	36.0	303.5	6.0		48.0	-16	4765	No stop
09 30 00	---	13 24 44	35.8	303.8	6.1		47.8	104	4781	09 28 01

Schedule for TORUN (Code Tr) Page 16

Confirming the detection of a dark matter substructure with Global VLBI

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
--- Mon 31 Oct 2016 Day 305 ---										
09 30 30	B0712+472	13 25 14	34.9	304.0	6.1		47.0	14	4781	09 30 30
09 34 00	---	13 28 44	34.4	304.5	6.2		46.6	210	4808	09 30 31
09 34 00	J0720+473	13 28 44	35.3	304.3	6.1		47.3	-16	4808	No stop
09 36 00	---	13 30 45	35.0	304.6	6.2		47.1	104	4823	09 34 01
09 36 00	B0712+472	13 30 45	34.2	304.8	6.2		46.4	-16	4823	No stop
09 40 00	---	13 34 45	33.7	305.4	6.3		46.0	224	4854	09 36 01
09 40 00	J0720+473	13 34 45	34.6	305.2	6.2		46.7	-16	4854	No stop
09 42 00	---	13 36 46	34.3	305.4	6.3		46.5	104	4869	09 40 01
09 42 30	B0712+472	13 37 16	33.4	305.7	6.3		45.8	14	4869	09 42 30
09 46 00	---	13 40 46	33.0	306.2	6.4		45.4	210	4896	09 42 31
09 46 00	J0720+473	13 40 46	33.8	306.0	6.3		46.1	-16	4896	No stop
09 48 00	---	13 42 47	33.6	306.3	6.4		45.9	104	4912	09 46 01
09 48 00	B0712+472	13 42 47	32.7	306.5	6.4		45.2	-16	4912	No stop
09 52 00	---	13 46 47	32.2	307.1	6.5		44.8	224	4942	09 48 01
09 52 00	J0720+473	13 46 47	33.1	306.9	6.4		45.4	-16	4942	No stop
09 54 00	---	13 48 48	32.9	307.1	6.5		45.2	104	4958	09 52 01
09 54 30	B0712+472	13 49 18	31.9	307.4	6.5		44.5	14	4958	09 54 30
09 58 00	---	13 52 48	31.5	307.9	6.6		44.1	210	4985	09 54 31
09 58 00	J0720+473	13 52 48	32.4	307.7	6.5		44.8	-16	4985	No stop
10 00 00	---	13 54 49	32.1	308.0	6.6		44.6	104	5000	09 58 01
10 00 00	B0712+472	13 54 49	31.3	308.2	6.6		43.9	-16	5000	No stop
10 04 00	---	13 58 49	30.8	308.8	6.7		43.5	224	5031	10 00 01
10 04 00	J0720+473	13 58 49	31.7	308.6	6.6		44.1	-16	5031	No stop
10 06 00	---	14 00 50	31.4	308.8	6.7		43.9	104	5046	10 04 01
10 06 30	B0712+472	14 01 20	30.5	309.1	6.7		43.2	14	5046	10 06 30
10 10 00	---	14 04 50	30.1	309.7	6.8		42.8	210	5073	10 06 31
10 10 00	J0720+473	14 04 50	31.0	309.4	6.7		43.5	-16	5073	No stop
10 12 00	---	14 06 51	30.7	309.7	6.8		43.2	104	5088	10 10 01
10 12 00	B0712+472	14 06 51	29.9	309.9	6.8		42.6	-16	5088	No stop
10 16 00	---	14 10 51	29.4	310.5	6.9		42.1	224	5119	10 12 01

Schedule for TORUN (Code Tr) Page 17

Confirming the detection of a dark matter substructure with Global VLBI

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
--- Mon 31 Oct 2016 Day 305 ---										
10 16 00	J0720+473	14 10 51	30.3	310.3	6.8		42.8	-15	5119	No stop
10 18 00	---	14 12 52	30.0	310.6	6.9		42.6	105	5135	10 16 01
10 19 30	DA193	14 14 22	14.6	319.1	8.3		30.8	18	5135	10 19 30
10 29 00	---	14 23 53	13.6	320.7	8.5		29.7	570	5208	10 19 31
10 30 30	B0712+472	14 25 24	27.8	312.6	7.1		40.5	23	5208	10 30 30
10 34 00	---	14 28 54	27.4	313.2	7.2		40.1	210	5235	10 30 31
10 34 00	J0720+473	14 28 54	28.2	312.9	7.1		40.7	-15	5235	No stop
10 36 00	---	14 30 55	28.0	313.2	7.2		40.5	105	5250	10 34 01
10 36 00	B0712+472	14 30 55	27.2	313.5	7.2		39.8	-16	5250	No stop
10 40 00	---	14 34 55	26.8	314.0	7.3		39.4	224	5281	10 36 01
10 40 00	J0720+473	14 34 55	27.6	313.8	7.2		40.0	-15	5281	No stop
10 42 00	---	14 36 56	27.4	314.0	7.3		39.8	105	5296	10 40 01
10 42 30	B0712+472	14 37 26	26.5	314.4	7.3		39.1	14	5296	10 42 30
10 46 00	---	14 40 56	26.1	314.9	7.4		38.7	210	5323	10 42 31
10 46 00	J0720+473	14 40 56	26.9	314.6	7.3		39.3	-15	5323	No stop
10 48 00	---	14 42 56	26.7	314.9	7.4		39.1	105	5338	10 46 01
10 48 00	B0712+472	14 42 56	25.9	315.2	7.4		38.4	-16	5338	No stop
10 52 00	---	14 46 57	25.5	315.8	7.5		37.9	224	5369	10 48 01
10 52 00	J0720+473	14 46 57	26.3	315.5	7.4		38.6	-15	5369	No stop
10 54 00	---	14 48 57	26.1	315.8	7.5		38.4	105	5385	10 52 01
10 54 30	B0712+472	14 49 28	25.2	316.2	7.5		37.6	14	5385	10 54 30
10 58 00	---	14 52 58	24.8	316.7	7.6		37.2	210	5412	10 54 31
10 58 00	J0720+473	14 52 58	25.7	316.4	7.5		37.9	-15	5412	No stop
11 00 00	---	14 54 58	25.5	316.7	7.6		37.6	105	5427	10 58 01
11 00 00	B0712+472	14 54 58	24.6	317.0	7.6		37.0	-16	5427	No stop
11 04 00	---	14 58 59	24.2	317.6	7.7		36.5	224	5458	11 00 01
11 04 00	J0720+473	14 58 59	25.1	317.3	7.6		37.2	-15	5458	No stop
11 06 00	---	15 00 59	24.9	317.6	7.7		36.9	105	5473	11 04 01
11 06 30	B0712+472	15 01 30	24.0	318.0	7.7		36.2	14	5473	11 06 30
11 10 00	---	15 05 00	23.6	318.5	7.8		35.8	210	5500	11 06 31

Schedule for TORUN (Code Tr) Page 18

Confirming the detection of a dark matter substructure with Global VLBI

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
--- Mon 31 Oct 2016 Day 305 ---										
11 10 00	J0720+473	15 05 00	24.4	318.2	7.7		36.4	-15	5500	No stop
11 12 00	---	15 07 00	24.2	318.5	7.8		36.2	105	5515	11 10 01
11 12 00	B0712+472	15 07 00	23.4	318.8	7.8		35.5	-16	5515	No stop
11 16 00	---	15 11 01	23.0	319.4	7.9		35.0	224	5546	11 12 01
11 16 00	J0720+473	15 11 01	23.8	319.1	7.8		35.7	-15	5546	No stop
11 18 00	---	15 13 01	23.7	319.4	7.9		35.4	105	5562	11 16 01
11 18 30	B0712+472	15 13 32	22.8	319.8	7.9		34.7	14	5562	11 18 30
11 22 00	---	15 17 02	22.5	320.3	8.0		34.3	210	5588	11 18 31
11 22 00	J0720+473	15 17 02	23.3	320.0	7.9		34.9	-15	5588	No stop
11 24 00	---	15 19 02	23.1	320.3	8.0		34.7	105	5604	11 22 01
11 24 00	B0712+472	15 19 02	22.3	320.6	8.0		34.0	-15	5604	No stop
11 28 00	---	15 23 03	21.9	321.3	8.1		33.5	225	5635	11 24 01
11 28 00	J0720+473	15 23 03	22.7	320.9	8.0		34.2	-15	5635	No stop
11 30 00	---	15 25 03	22.5	321.2	8.1		33.9	105	5650	11 28 01
11 30 30	B0712+472	15 25 33	21.6	321.6	8.1		33.2	15	5650	11 30 30
11 34 00	---	15 29 04	21.3	322.2	8.2		32.8	210	5677	11 30 31
11 34 00	J0720+473	15 29 04	22.1	321.8	8.1		33.4	-15	5677	No stop
11 36 00	---	15 31 04	21.9	322.1	8.2		33.1	105	5692	11 34 01
11 36 00	B0712+472	15 31 04	21.1	322.5	8.2		32.5	-15	5692	No stop
11 40 00	---	15 35 05	20.8	323.1	8.3		32.0	225	5723	11 36 01
11 40 00	J0720+473	15 35 05	21.6	322.7	8.2		32.6	-15	5723	No stop
11 42 00	---	15 37 05	21.4	323.0	8.3		32.4	105	5738	11 40 01
11 42 30	B0712+472	15 37 35	20.6	323.5	8.3		31.7	15	5738	11 42 30
11 46 00	---	15 41 06	20.2	324.0	8.4		31.2	210	5765	11 42 31
11 46 00	J0720+473	15 41 06	21.0	323.6	8.3		31.9	-15	5765	No stop
11 48 00	---	15 43 06	20.9	324.0	8.4		31.6	105	5781	11 46 01
11 48 00	B0712+472	15 43 06	20.1	324.4	8.4		30.9	-15	5781	No stop
11 52 00	---	15 47 07	19.7	325.0	8.5		30.4	225	5812	11 48 01
11 52 00	J0720+473	15 47 07	20.5	324.6	8.4		31.1	-15	5812	No stop
11 54 00	---	15 49 07	20.3	324.9	8.5		30.8	105	5827	11 52 01

```
Schedule for TORUN     (Code Tr )                                  Page  19
              Confirming the detection of a dark matter substructure with Global VLBI
  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  31 Oct 2016   Day 305 ---

11 54 30  B0712+472    15 49 37  19.5 325.4  8.5      30.1    15     5827   11 54 30
11 58 00  ---          15 53 08  19.2 325.9  8.6      29.6   210     5854   11 54 31

11 58 00  J0720+473    15 53 08  20.0 325.5  8.5      30.3   -15     5854   No stop
12 00 00  ---          15 55 08  19.8 325.8  8.6      30.0   105     5869   11 58 01

12 00 00  B0712+472    15 55 08  19.0 326.2  8.6      29.4   -15     5869   No stop
12 04 00  ---          15 59 09  18.7 326.9  8.7      28.8   225     5900   12 00 01

12 04 00  J0720+473    15 59 09  19.5 326.4  8.6      29.5   -15     5900   No stop
12 06 00  ---          16 01 09  19.3 326.7  8.7      29.2   105     5915   12 04 01

12 06 30  B0712+472    16 01 39  18.5 327.3  8.7      28.5    15     5915   12 06 30
12 10 00  ---          16 05 10  18.2 327.8  8.8      28.0   210     5942   12 06 31

12 10 00  J0720+473    16 05 10  19.0 327.4  8.7      28.7   -15     5942   No stop
12 12 00  ---          16 07 10  18.8 327.7  8.8      28.4   105     5958   12 10 01

12 12 00  B0712+472    16 07 10  18.1 328.1  8.8      27.8   -15     5958   No stop
12 16 00  ---          16 11 11  17.7 328.8  8.9      27.2   225     5988   12 12 01

12 16 00  J0720+473    16 11 11  18.5 328.3  8.8      27.9   -15     5988   No stop
12 18 00  ---          16 13 11  18.3 328.6  8.9      27.6   105     6004   12 16 01

12 18 30  B0712+472    16 13 41  17.5 329.2  8.9      26.9    15     6004   12 18 30
12 22 00  ---          16 17 12  17.3 329.7  9.0      26.4   210     6031   12 18 31

12 22 00  J0720+473    16 17 12  18.0 329.3  8.9      27.1   -15     6031   No stop
12 24 00  ---          16 19 12  17.9 329.6  9.0      26.8   105     6046   12 22 01

12 24 00  B0712+472    16 19 12  17.1 330.0  9.0      26.1   -15     6046   No stop
12 28 00  ---          16 23 13  16.8 330.7  9.1      25.6   225     6077   12 24 01

12 28 00  J0720+473    16 23 13  17.6 330.2  9.0      26.2   -15     6077   No stop
12 30 00  ---          16 25 13  17.4 330.5  9.1      26.0   105     6092   12 28 01



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


 ======== Setup file: sess316.L2048glob

   Setup group:   23         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 64.000
   Number of channels:  8    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
 Net SB=         L         L         U         U         L         L         U         U
 IF SB =         L         L         L         L         L         L         L         L
 Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
 BBC   =         1         5         1         5         3         7         3         7
 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:   7  Setup file default.  Used with PCAL = off
 LO sum=   1600.25  1600.25  1600.25  1600.25  1664.25  1664.25  1664.25  1664.25
 BBC fr=    699.75   699.75   699.75   699.75   635.75   635.75   635.75   635.75
 Bandwd=     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00
  Matching frequency sets:   7

 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)

* B0712+472         07 12 21.530378   * 07 16 03.640000     07 17 18.101409       0.00
                    47 14 08.95037    * 47 08 50.15000      47 06 43.35499        0.00

* J0720+473         07 16 38.668004   * 07 20 21.497762     07 21 36.148000       0.00
                    47 43 20.65409    * 47 37 44.12483      47 35 31.23994        0.00

  0552+398          05 52 01.407169   * 05 55 30.805611     05 56 41.798805       0.00
  J0555+3948        39 48 21.94581    * 39 48 49.16496      39 48 41.89482        0.00
* DA193             /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
  J0555+39          GSFC 2015a astro solution, unpublished 394383 observations.

* 4C39.25           09 23 55.319215   * 09 27 03.013936     09 28 04.745385       0.30
  J0927+3902        39 15 23.56645    * 39 02 20.85186      38 57 45.47708        0.16
  0923+392          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
  J0927+39          GSFC 2015a astro solution, unpublished 245753 observations.
```

rk16cbtr

RadioAstron AGN Monitoring

PI: *Yuri Kovalev*


```
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Fax:      +7-495-3332378                Phone during observation: +7-903-6614865
```


```
Observing mode: C/L-band, dual-pol

Schedule for TORUN     (Code Tr )                                    Page   2
               RadioAstron AGN Monitoring
  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  31 Oct 2016   Day 305 ---

 ---------- C-band VLBI scans ----------

 Next scan frequencies:  4836.00  4836.00  4836.00  4836.00
 Next BBC frequencies:    736.00   736.00   736.00   736.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

18 00 00  0814+425     21 56 07   7.7  17.8-10.4     -14.4     0        0   18 00 00
18 14 30  ---          22 10 40   8.4  20.4-10.1     -16.5   870       28   18 00 01

18 15 00  0814+425     22 11 10   8.4  20.5-10.1     -16.5    24       28   18 15 00
18 25 00  ---          22 21 12   9.0  22.3-10.0     -17.9   600       47   18 15 01

 ---------- L-band VLBI scans ----------

 Next scan frequencies:  1668.00  1668.00  1668.00  1668.00
 Next BBC frequencies:    732.00   732.00   732.00   732.00

18 30 00  0814+425     22 26 12   9.2  23.2 -9.9     -18.6   294       47   18 30 00
18 44 30  ---          22 40 45  10.1  25.7 -9.6     -20.7   870       75   18 30 01

18 45 00  0814+425     22 41 15  10.2  25.8 -9.6     -20.7    24       75   18 45 00
19 00 00  ---          22 56 17  11.2  28.5 -9.4     -22.8   900      104   18 45 01



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


 ======== Setup file: ra6cm2.set

   Setup group:    2         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4100.00   4100.00   4100.00   4100.00
  Net SB=         L         L         U         U
  IF SB =         U         U         U         U
  Pol.  =       RCP       LCP       RCP       LCP
  BBC   =         1         2         1         2
  BBC SB=         L         L         U         U
  IF    =         C         A         C         A

 The following frequency sets based on these setups were used.

  Frequency Set:   4  Setup file default.  Used with PCAL = 1MHz
  LO sum=   4836.00  4836.00  4836.00  4836.00
  BBC fr=    736.00   736.00   736.00   736.00
  Bandwd=     16.00    16.00    16.00    16.00
   Matching frequency sets:   4

  Track assignments are:
   track1=   2, 18,  3, 19
   barrel=roll_off


======== Setup file: ra18cm2.set

  Setup group:    6         Station: TORUN            Total bit rate:   256
  Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
  Number of channels:  4    DBE type:                 Speedup factor:   1.00

  Disk used to record data.
```

```
  1st LO=   2400.00   2400.00   2400.00   2400.00
  Net SB=         L         L         U         U
  IF SB =         L         L         L         L
  Pol.  =      RCP       LCP       RCP       LCP
  BBC   =         1         2         1         2
  BBC SB=         U         U         L         L
  IF    =        C         A         C         A

 The following frequency sets based on these setups were used.

  Frequency Set:   5  Setup file default.  Used with PCAL = 1MHz
  LO sum=   1668.00  1668.00  1668.00  1668.00
  BBC fr=    732.00   732.00   732.00   732.00
  Bandwd=     16.00    16.00    16.00    16.00
   Matching frequency sets:   5

  Track assignments are:
   track1=   2, 18,  3, 19
   barrel=roll_off



 POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 33.398712       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 13.28595        0.00
                    fake circumpolar target for a TS to look at

* 0814+425          08 14 51.669840   * 08 18 15.999600     08 19 23.901883       0.00
  J0818+4222        42 32 07.73231    * 42 22 45.41481      42 19 19.60346        0.00
                    ./rk16cb_sources.radioastron
                    AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 3620 observations, RA-AO4-07, RA



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)
  0814+425           100.8

 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
```

ek036btr

Long overdue - Measuring the Parallax and proper motion of the Crab

PI: *Franz Kirsten*

```
Address:  Curtin Institute of Radio Astronomy         Australia

Observing mode: Continuum 18cm (1 Gb/s), pulsar gating
Schedule for TORUN     (Code Tr )                                   Page   2
               Long overdue - Measuring the Parallax and proper motion of the Crab. Ste
  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  31 Oct 2016   Day 305 ---
 Next scan frequencies:  1626.49  1626.49  1626.49  1626.49  1690.49  1690.49  1690.49  1690.49
 Next BBC frequencies:    673.51   673.51   673.51   673.51   609.51   609.51   609.51   609.51
 Next scan bandwidths:     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00

23 30 00  J0530+1331   03 27 02  43.4 136.1 -2.1     -25.3     0        0   23 30 00
23 36 00  =0528+134    03 33 03  44.0 138.0 -2.0     -24.4   360       46   23 30 01

23 36 50  CRAB         03 33 53  51.3 131.4 -2.0     -29.1     9       46   23 36 50
23 49 20  ---          03 46 25  52.6 135.6 -1.8     -27.0   750      142   23 36 51

 --- Start: Mon  31 Oct 2016   Day 305 -- Stop: Tue   1 Nov 2016   Day 306 ---
23 49 35  CRAB         03 46 40  52.6 135.7 -1.8     -26.9     9      142   23 49 35
00 02 05  ---          03 59 12  53.9 140.0 -1.6     -24.6   750      238   23 49 36

00 02 45  J0518+2054   03 59 52  54.4 147.1 -1.3     -20.5    11      238   00 02 45
00 03 50  =0515+208    04 00 57  54.5 147.5 -1.3     -20.2    65      247   00 02 46

00 04 30  CRAB         04 01 37  54.1 140.9 -1.6     -24.1    12      247   00 04 30
00 17 00  ---          04 14 09  55.3 145.5 -1.4     -21.5   750      343   00 04 31

00 17 15  CRAB         04 14 24  55.3 145.6 -1.4     -21.4     9      343   00 17 15
00 29 45  ---          04 26 56  56.3 150.5 -1.1     -18.6   750      439   00 17 16

00 30 35  J0530+1331   04 27 47  48.4 156.1 -1.1     -14.5     7      439   00 30 35
00 34 35  =0528+134    04 31 47  48.7 157.6 -1.0     -13.6   240      470   00 30 36

00 35 25  CRAB         04 32 37  56.7 152.8 -1.0     -17.2     6      470   00 35 25
00 47 55  ---          04 45 09  57.5 157.9 -0.8     -14.1   750      566   00 35 26

00 48 10  CRAB         04 45 25  57.5 158.0 -0.8     -14.0     9      566   00 48 10
01 00 40  ---          04 57 57  58.1 163.3 -0.6     -10.7   750      662   00 48 11

01 01 20  J0518+2054   04 58 37  57.6 171.1 -0.3      -5.7    10      662   01 01 20
01 02 25  =0515+208    04 59 42  57.6 171.5 -0.3      -5.4    65      671   01 01 21

01 03 05  CRAB         05 00 22  58.2 164.4 -0.6     -10.0    10      671   01 03 05
01 15 35  ---          05 12 54  58.6 169.9 -0.4      -6.5   750      767   01 03 06

01 15 50  CRAB         05 13 09  58.6 170.0 -0.4      -6.5     9      767   01 15 50
01 28 20  ---          05 25 41  58.9 175.6 -0.2      -2.9   750      863   01 15 51

01 29 00  J0518+2054   05 26 21  57.8 183.2  0.1       2.1    10      863   01 29 00
01 30 00  =0515+208    05 27 21  57.8 183.6  0.1       2.3    60      871   01 29 01
```

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


 ======== Setup file: sess316.L1024

   Setup group:   14         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 64.000
   Number of channels:  8    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
   Net SB=         L         L         U         U         L         L         U         U
   IF SB =         L         L         L         L         L         L         L         L
   Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
   BBC   =         1         5         1         5         3         7         3         7
   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:   6  Setup file default.  Used with PCAL = off
   LO sum=   1626.49  1626.49  1626.49  1626.49  1690.49  1690.49  1690.49  1690.49
   BBC fr=    673.51   673.51   673.51   673.51   609.51   609.51   609.51   609.51
   Bandwd=     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00
    Matching frequency sets:   6

   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)

 * CRAB              05 31 31.388685   * 05 34 31.934000     05 35 33.256066       0.00
                     21 58 54.53487    * 22 00 52.19100      22 01 20.93389        0.00

   0515+208          05 15 05.041798   * 05 18 03.824513     05 19 04.639263       0.02
 * J0518+2054        20 51 43.76307    * 20 54 52.49736      20 55 45.76148        0.03
                     /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                     GSFC 2015a astro solution, unpublished   1774 observations.

   0528+134          05 28 06.759216   * 05 30 56.416747     05 31 54.061268       0.21
 * J0530+1331        13 29 42.28885    * 13 31 55.14952      13 32 31.33510        0.24
   J0530+13          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                     GSFC 2015a astro solution, unpublished 135789 observations.
```

ed040btr

EVN follow up of binary SMBH candidates

PI: *Roger Deane*

Address: Rhodes University South Africa

Observing mode: 1024-16-2

Schedule for TORUN (Code Tr) Page 2

EVN follow up of binary SMBH candidates

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 1 Nov 2016 Day 306 ---										
Next scan frequencies:		1626.49	1626.49	1626.49	1626.49	1690.49	1690.49	1690.49	1690.49	
Next BBC frequencies:		673.51	673.51	673.51	673.51	609.51	609.51	609.51	609.51	
Next scan bandwidths:		32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	
03 00 00	0849+287	06 57 36	57.5	127.8	-1.9		-32.7	0	0	03 00 00
03 05 00	---	07 02 37	58.1	129.5	-1.8		-31.8	300	38	03 00 01
03 05 00	PM46	07 02 37	60.6	132.7	-1.6		-30.6	-23	38	No stop
03 08 15	---	07 05 53	60.9	133.9	-1.6		-29.9	172	63	03 05 01
03 09 00	0849+287	07 06 38	58.6	131.0	-1.8		-31.1	22	63	03 09 00
03 10 30	---	07 08 08	58.7	131.5	-1.7		-30.8	90	75	03 09 01
03 10 30	PM46	07 08 08	61.2	134.8	-1.5		-29.4	-23	75	No stop
03 14 00	---	07 11 38	61.5	136.2	-1.5		-28.6	187	102	03 10 31
03 14 00	0849+287	07 11 38	59.1	132.8	-1.7		-30.1	-23	102	No stop
03 15 30	---	07 13 09	59.3	133.4	-1.7		-29.8	67	113	03 14 01
03 15 30	PM46	07 13 09	61.7	136.8	-1.5		-28.3	-23	113	No stop
03 18 45	---	07 16 24	62.0	138.1	-1.4		-27.5	172	138	03 15 31
03 19 30	0849+287	07 17 09	59.7	134.9	-1.6		-29.0	22	138	03 19 30
03 21 00	---	07 18 40	59.9	135.4	-1.6		-28.6	90	150	03 19 31
03 21 00	PM46	07 18 40	62.2	139.0	-1.4		-27.0	-23	150	No stop
03 24 30	---	07 22 10	62.6	140.5	-1.3		-26.1	187	177	03 21 01
03 24 30	0849+287	07 22 10	60.3	136.8	-1.5		-27.9	-22	177	No stop
03 26 00	---	07 23 40	60.4	137.4	-1.5		-27.6	68	188	03 24 31
03 26 00	PM46	07 23 40	62.7	141.1	-1.3		-25.7	-23	188	No stop
03 29 15	---	07 26 56	63.0	142.5	-1.2		-24.9	172	213	03 26 01
03 30 00	0849+287	07 27 41	60.8	139.0	-1.4		-26.6	23	213	03 30 00
03 31 30	---	07 29 11	61.0	139.6	-1.4		-26.3	90	225	03 30 01
03 31 30	PM46	07 29 11	63.2	143.5	-1.2		-24.3	-23	225	No stop
03 35 00	---	07 32 42	63.5	145.1	-1.1		-23.3	187	252	03 31 31
03 35 00	0849+287	07 32 42	61.3	141.0	-1.3		-25.4	-23	252	No stop
03 36 30	---	07 34 12	61.4	141.7	-1.3		-25.1	67	263	03 35 01
03 36 30	PM46	07 34 12	63.7	145.8	-1.1		-22.9	-23	263	No stop
03 40 00	---	07 37 43	63.9	147.4	-1.1		-21.9	187	290	03 36 31

Schedule for TORUN (Code Tr) Page 3

EVN follow up of binary SMBH candidates

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
--- Tue 1 Nov 2016 Day 306 ---										
03 40 45	0849+287	07 38 28	61.8	143.5	-1.2		-24.0	22	290	03 40 45
03 44 10	---	07 41 53	62.1	144.9	-1.2		-23.1	205	317	03 40 46
03 44 40	1015+359	07 42 24	57.6	106.7	-2.6		-45.0	-61	317	03 44 40
03 49 40	---	07 47 24	58.3	108.1	-2.5		-44.6	239	355	03 44 41
03 49 40	PM39	07 47 24	58.6	107.3	-2.5		-45.2	-13	355	No stop
03 53 04	---	07 50 49	59.1	108.2	-2.5		-44.9	191	381	03 49 41
03 53 40	1015+359	07 51 25	58.9	109.2	-2.5		-44.2	23	381	03 53 40
03 55 10	---	07 52 55	59.1	109.6	-2.4		-44.1	90	393	03 53 41
03 55 10	PM39	07 52 55	59.4	108.8	-2.4		-44.7	-13	393	No stop
03 58 40	---	07 56 26	59.9	109.8	-2.4		-44.4	197	420	03 55 11
03 58 40	1015+359	07 56 26	59.6	110.6	-2.4		-43.7	-13	420	No stop
04 00 10	---	07 57 56	59.8	111.0	-2.4		-43.6	77	431	03 58 41
04 00 10	PM39	07 57 56	60.1	110.2	-2.4		-44.2	-13	431	No stop
04 03 34	---	08 01 21	60.6	111.2	-2.3		-43.9	191	457	04 00 11
04 04 10	1015+359	08 01 57	60.3	112.2	-2.3		-43.1	23	457	04 04 10
04 05 40	---	08 03 27	60.6	112.7	-2.3		-43.0	90	469	04 04 11
04 05 40	PM39	08 03 27	60.9	111.8	-2.3		-43.6	-13	469	No stop
04 09 10	---	08 06 58	61.4	112.9	-2.2		-43.2	197	496	04 05 41
04 09 10	1015+359	08 06 58	61.0	113.8	-2.2		-42.5	-13	496	No stop
04 10 40	---	08 08 28	61.2	114.2	-2.2		-42.4	77	507	04 09 11
04 10 40	PM39	08 08 28	61.6	113.4	-2.2		-43.0	-13	507	No stop
04 14 04	---	08 11 52	62.0	114.4	-2.1		-42.6	191	534	04 10 41
04 14 40	1015+359	08 12 28	61.8	115.5	-2.1		-41.8	23	534	04 14 40
04 16 10	---	08 13 59	62.0	116.0	-2.1		-41.6	90	545	04 14 41
04 16 10	PM39	08 13 59	62.3	115.1	-2.1		-42.3	-13	545	No stop
04 19 40	---	08 17 29	62.8	116.3	-2.0		-41.8	197	572	04 16 11
04 19 40	1015+359	08 17 29	62.5	117.1	-2.0		-41.1	-14	572	No stop
04 21 10	---	08 19 00	62.7	117.6	-2.0		-40.9	76	584	04 19 41
04 21 10	PM39	08 19 00	63.0	116.8	-2.0		-41.6	-13	584	No stop
04 24 40	---	08 22 30	63.5	117.9	-2.0		-41.1	197	611	04 21 11

Schedule for TORUN (Code Tr) Page 4

EVN follow up of binary SMBH candidates

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
--- Tue 1 Nov 2016 Day 306 ---										
04 25 10	1015+359	08 23 00	63.2	119.0	-1.9		-40.3	16	611	04 25 10
04 28 50	---	08 26 41	63.7	120.3	-1.9		-39.6	220	639	04 25 11
---------- fringe-finder ----------										
04 30 50	4C39.25	08 28 41	72.6	138.3	-1.0		-30.9	70	639	04 30 50
04 38 50	---	08 36 42	73.3	142.9	-0.9		-27.8	480	700	04 30 51
04 39 20	1100+122	08 37 12	39.5	130.8	-2.4		-27.7	-110	700	04 39 20
04 43 20	---	08 41 13	39.9	131.9	-2.4		-27.2	130	731	04 39 21
04 43 20	PM64	08 41 13	40.1	135.9	-2.2		-25.2	-23	731	No stop
04 46 50	---	08 44 44	40.4	136.9	-2.1		-24.7	187	758	04 43 21
04 47 26	1100+122	08 45 20	40.4	133.1	-2.3		-26.6	13	758	04 47 26
04 48 50	---	08 46 44	40.5	133.5	-2.3		-26.4	84	769	04 47 27
04 48 50	PM64	08 46 44	40.6	137.5	-2.1		-24.4	-23	769	No stop
04 52 20	---	08 50 15	41.0	138.5	-2.0		-23.9	187	796	04 48 51
04 52 41	1100+122	08 50 36	41.0	134.6	-2.2		-25.9	-2	796	04 52 41
04 53 50	---	08 51 45	41.1	134.9	-2.2		-25.7	67	804	04 52 42
04 53 50	PM64	08 51 45	41.1	139.0	-2.0		-23.7	-23	804	No stop
04 57 20	---	08 55 15	41.5	140.0	-2.0		-23.1	187	831	04 53 51
04 57 56	1100+122	08 55 52	41.5	136.1	-2.1		-25.2	13	831	04 57 56
04 59 20	---	08 57 16	41.7	136.6	-2.1		-25.0	84	842	04 57 57
04 59 20	PM64	08 57 16	41.7	140.6	-1.9		-22.8	-23	842	No stop
05 02 50	---	09 00 46	42.0	141.7	-1.9		-22.3	187	869	04 59 21
05 03 11	1100+122	09 01 07	42.1	137.7	-2.0		-24.4	-2	869	05 03 11
05 04 20	---	09 02 17	42.2	138.1	-2.0		-24.2	67	878	05 03 12
05 04 20	PM64	09 02 17	42.2	142.1	-1.8		-22.0	-23	878	No stop
05 07 50	---	09 05 47	42.5	143.2	-1.8		-21.5	187	905	05 04 21
05 08 26	1100+122	09 06 23	42.6	139.3	-2.0		-23.6	13	905	05 08 26
05 09 50	---	09 07 48	42.7	139.7	-1.9		-23.4	84	916	05 08 27
05 09 50	PM64	09 07 48	42.6	143.9	-1.7		-21.1	-23	916	No stop
05 13 20	---	09 11 18	43.0	145.0	-1.7		-20.5	187	943	05 09 51

Schedule for TORUN (Code Tr) Page 5

EVN follow up of binary SMBH candidates

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
--- Tue 1 Nov 2016 Day 306 ---										
05 13 41	1100+122	09 11 39	43.1	140.9	-1.9		-22.8	-2	943	05 13 41
05 14 50	---	09 12 48	43.2	141.3	-1.9		-22.6	67	951	05 13 42
05 14 50	PM64	09 12 48	43.1	145.4	-1.7		-20.3	-23	951	No stop
05 18 20	---	09 16 19	43.4	146.5	-1.6		-19.7	187	978	05 14 51
05 19 00	1100+122	09 16 59	43.6	142.6	-1.8		-21.9	17	978	05 19 00
05 22 30	---	09 20 30	43.9	143.7	-1.7		-21.3	210	1005	05 19 01
05 23 00	0917+624	09 21 00	80.9	1.4	-0.0		-178.2	-276	1005	05 23 00
05 28 00	---	09 26 00	80.9	-2.3	0.1		177.0	24	1044	05 23 01
05 28 00	PM01	09 26 00	81.7	9.2	-0.2		-168.4	-37	1044	No stop
05 31 14	---	09 29 15	81.8	6.6	-0.1		-171.8	157	1069	05 28 01
05 32 00	0917+624	09 30 01	80.9	-5.2	0.1		173.2	8	1069	05 32 00
05 33 30	---	09 31 31	80.8	-6.3	0.1		171.8	90	1080	05 32 01
05 33 30	PM01	09 31 31	81.8	4.7	-0.1		-174.1	-36	1080	No stop
05 37 00	---	09 35 02	81.8	1.7	-0.0		-177.8	174	1107	05 33 31
05 37 00	0917+624	09 35 02	80.8	-8.9	0.2		168.6	-37	1107	No stop
05 38 30	---	09 36 32	80.7	-9.9	0.2		167.2	53	1119	05 37 01
05 38 30	PM01	09 36 32	81.8	0.5	-0.0		-179.4	-35	1119	No stop
05 41 44	---	09 39 47	81.8	-2.3	0.0		177.2	159	1143	05 38 31
05 42 30	0917+624	09 40 33	80.6	-12.7	0.3		163.5	10	1143	05 42 30
05 44 00	---	09 42 03	80.6	-13.7	0.3		162.2	90	1155	05 42 31
05 44 00	PM01	09 42 03	81.8	-4.2	0.1		174.8	-33	1155	No stop
05 47 30	---	09 45 34	81.7	-7.1	0.1		171.1	177	1182	05 44 01
05 47 30	0917+624	09 45 34	80.4	-16.1	0.4		159.1	-34	1182	No stop
05 49 00	---	09 47 04	80.4	-17.1	0.4		157.8	56	1193	05 47 31
05 49 00	PM01	09 47 04	81.7	-8.3	0.2		169.6	-32	1193	No stop
05 52 14	---	09 50 18	81.6	-11.0	0.2		166.2	162	1218	05 49 01
05 53 00	0917+624	09 51 05	80.2	-19.6	0.5		154.4	14	1218	05 53 00
05 54 30	---	09 52 35	80.1	-20.5	0.5		153.2	90	1230	05 53 01
05 54 30	PM01	09 52 35	81.6	-12.8	0.3		164.0	-30	1230	No stop
05 58 00	---	09 56 05	81.4	-15.5	0.3		160.5	180	1257	05 54 31

Schedule for TORUN (Code Tr) Page 6

EVN follow up of binary SMBH candidates

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
--- Tue 1 Nov 2016 Day 306 ---										
05 58 00	0917+624	09 56 05	79.9	-22.6	0.6		150.4	-30	1257	No stop
05 59 30	---	09 57 36	79.8	-23.4	0.6		149.2	60	1268	05 58 01
05 59 30	PM01	09 57 36	81.4	-16.6	0.3		159.0	-28	1268	No stop
06 03 00	---	10 01 06	81.2	-19.2	0.4		155.7	182	1295	05 59 31
06 03 30	0917+624	10 01 36	79.6	-25.7	0.6		146.1	2	1295	06 03 30
06 07 10	---	10 05 17	79.3	-27.6	0.7		143.4	220	1323	06 03 31
06 12 40	PM46	10 10 48	61.5	224.0	1.5		28.7	-190	1323	06 12 40
06 15 55	---	10 14 03	61.1	225.2	1.6		29.4	5	1348	06 12 41
06 16 40	0849+287	10 14 48	61.2	219.5	1.4		25.8	18	1348	06 16 40
06 18 10	---	10 16 19	61.0	220.1	1.4		26.1	90	1360	06 16 41
06 18 10	PM46	10 16 19	60.9	226.1	1.6		29.9	-27	1360	No stop
06 21 40	---	10 19 49	60.5	227.5	1.6		30.6	183	1387	06 18 11
06 21 40	0849+287	10 19 49	60.7	221.5	1.4		26.9	-27	1387	No stop
06 23 10	---	10 21 20	60.5	222.1	1.5		27.3	63	1398	06 21 41
06 23 10	PM46	10 21 20	60.3	228.0	1.7		30.9	-27	1398	No stop
06 26 25	---	10 24 35	60.0	229.2	1.7		31.6	168	1423	06 23 11
06 27 10	0849+287	10 25 20	60.1	223.7	1.5		28.2	19	1423	06 27 10
06 28 40	---	10 26 50	60.0	224.3	1.6		28.5	90	1435	06 27 11
06 28 40	PM46	10 26 50	59.7	230.1	1.8		32.0	-27	1435	No stop
06 32 10	---	10 30 21	59.3	231.3	1.8		32.7	183	1462	06 28 41
06 32 10	0849+287	10 30 21	59.6	225.6	1.6		29.2	-26	1462	No stop
06 33 40	---	10 31 51	59.4	226.2	1.6		29.6	64	1473	06 32 11
06 33 40	PM46	10 31 51	59.1	231.9	1.8		33.0	-27	1473	No stop
06 36 55	---	10 35 07	58.8	233.0	1.9		33.5	168	1498	06 33 41
06 37 40	0849+287	10 35 52	59.0	227.7	1.7		30.4	19	1498	06 37 40
06 39 10	---	10 37 22	58.8	228.3	1.7		30.6	90	1510	06 37 41
06 39 10	PM46	10 37 22	58.5	233.8	1.9		33.9	-26	1510	No stop
06 42 40	---	10 40 53	58.1	235.0	2.0		34.5	184	1537	06 39 11
06 42 40	0849+287	10 40 53	58.4	229.5	1.8		31.3	-26	1537	No stop
06 44 10	---	10 42 23	58.3	230.1	1.8		31.6	64	1548	06 42 41

Schedule for TORUN (Code Tr) Page 7

EVN follow up of binary SMBH candidates

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 1 Nov 2016 Day 306 ---										
06 44 10	PM46	10 42 23	57.9	235.5	2.0		34.8	-26	1548	No stop
06 47 40	---	10 45 54	57.4	236.7	2.1		35.3	184	1575	06 44 11
06 48 10	0849+287	10 46 24	57.8	231.5	1.9		32.3	4	1575	06 48 10
06 51 50	---	10 50 04	57.4	232.7	1.9		32.9	220	1604	06 48 11
06 52 20	1015+359	10 50 34	71.7	200.7	0.5		15.1	-48	1604	06 52 20
06 57 20	---	10 55 35	71.4	203.8	0.6		17.3	252	1642	06 52 21
06 57 20	PM39	10 55 35	71.9	204.0	0.6		17.6	-13	1642	No stop
07 00 44	---	10 59 00	71.7	206.1	0.7		19.1	191	1668	06 57 21
07 01 20	1015+359	10 59 36	71.1	206.2	0.7		19.0	23	1668	07 01 20
07 02 50	---	11 01 06	71.0	207.1	0.7		19.7	90	1680	07 01 21
07 02 50	PM39	11 01 06	71.5	207.4	0.7		20.0	-13	1680	No stop
07 06 20	---	11 04 37	71.3	209.5	0.8		21.5	197	1707	07 02 51
07 06 20	1015+359	11 04 37	70.8	209.1	0.8		21.1	-13	1707	No stop
07 07 50	---	11 06 07	70.7	210.0	0.8		21.7	77	1718	07 06 21
07 07 50	PM39	11 06 07	71.2	210.4	0.8		22.1	-13	1718	No stop
07 11 14	---	11 09 31	70.9	212.3	0.8		23.4	191	1744	07 07 51
07 11 50	1015+359	11 10 08	70.4	212.3	0.8		23.2	23	1744	07 11 50
07 13 20	---	11 11 38	70.2	213.1	0.9		23.8	90	1756	07 11 51
07 13 20	PM39	11 11 38	70.7	213.5	0.9		24.2	-13	1756	No stop
07 16 50	---	11 15 08	70.4	215.4	0.9		25.5	197	1783	07 13 21
07 16 50	1015+359	11 15 08	69.9	215.0	0.9		25.1	-13	1783	No stop
07 18 20	---	11 16 39	69.8	215.8	1.0		25.6	77	1794	07 16 51
07 18 20	PM39	11 16 39	70.3	216.3	1.0		26.1	-13	1794	No stop
07 21 44	---	11 20 03	70.0	218.1	1.0		27.3	191	1821	07 18 21
07 22 20	1015+359	11 20 39	69.5	217.9	1.0		27.0	23	1821	07 22 20
07 23 50	---	11 22 10	69.3	218.7	1.1		27.5	90	1832	07 22 21
07 23 50	PM39	11 22 10	69.8	219.2	1.0		28.0	-13	1832	No stop
07 27 20	---	11 25 40	69.5	220.9	1.1		29.2	197	1859	07 23 51
07 27 20	1015+359	11 25 40	69.0	220.4	1.1		28.6	-13	1859	No stop
07 28 50	---	11 27 10	68.8	221.2	1.1		29.1	77	1871	07 27 21

Schedule for TORUN (Code Tr) Page 8

EVN follow up of binary SMBH candidates

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
--- Tue 1 Nov 2016 Day 306 ---										
07 28 50	PM39	11 27 10	69.3	221.7	1.1		29.6	-13	1871	No stop
07 32 20	---	11 30 41	69.0	223.4	1.2		30.7	197	1897	07 28 51
07 32 50	1015+359	11 31 11	68.4	223.1	1.2		30.3	17	1897	07 32 50
07 36 30	---	11 34 52	68.0	224.9	1.3		31.4	220	1926	07 32 51
07 36 30	1100+122	11 34 52	48.3	191.4	0.5		7.0	-88	1926	No stop
07 40 30	---	11 38 52	48.2	192.9	0.6		7.9	152	1956	07 36 31
07 40 30	PM64	11 38 52	46.6	196.7	0.8		10.1	-23	1956	No stop
07 43 45	---	11 42 08	46.4	197.8	0.8		10.8	172	1981	07 40 31
07 44 30	1100+122	11 42 53	48.1	194.3	0.6		8.7	23	1981	07 44 30
07 46 00	---	11 44 23	48.0	194.9	0.7		9.1	90	1993	07 44 31
07 46 00	PM64	11 44 23	46.3	198.6	0.9		11.2	-22	1993	No stop
07 49 30	---	11 47 54	46.1	199.8	0.9		12.0	188	2020	07 46 01
07 49 30	1100+122	11 47 54	47.9	196.1	0.7		9.8	-22	2020	No stop
07 51 00	---	11 49 24	47.8	196.7	0.8		10.1	68	2031	07 49 31
07 51 00	PM64	11 49 24	46.1	200.3	0.9		12.3	-22	2031	No stop
07 54 15	---	11 52 40	45.9	201.5	1.0		12.9	173	2056	07 51 01
07 55 00	1100+122	11 53 25	47.6	198.1	0.8		11.0	23	2056	07 55 00
07 56 30	---	11 54 55	47.5	198.7	0.8		11.3	90	2068	07 55 01
07 56 30	PM64	11 54 55	45.8	202.2	1.0		13.4	-22	2068	No stop
08 00 00	---	11 58 25	45.6	203.4	1.1		14.1	188	2095	07 56 31
08 00 00	1100+122	11 58 25	47.4	199.9	0.9		12.1	-22	2095	No stop
08 01 30	---	11 59 56	47.3	200.4	0.9		12.4	68	2106	08 00 01
08 01 30	PM64	11 59 56	45.5	203.9	1.1		14.4	-22	2106	No stop
08 04 45	---	12 03 11	45.3	205.0	1.2		15.0	173	2131	08 01 31
08 05 30	1100+122	12 03 56	47.1	201.8	1.0		13.2	24	2131	08 05 30
08 07 00	---	12 05 27	47.0	202.4	1.0		13.5	90	2143	08 05 31
08 07 00	PM64	12 05 27	45.1	205.8	1.2		15.4	-22	2143	No stop
08 10 30	---	12 08 57	44.9	207.0	1.3		16.1	188	2170	08 07 01
08 10 30	1100+122	12 08 57	46.8	203.6	1.1		14.2	-21	2170	No stop
08 12 00	---	12 10 27	46.7	204.1	1.1		14.5	69	2181	08 10 31

Schedule for TORUN (Code Tr) Page 9

EVN follow up of binary SMBH candidates

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 1 Nov 2016 Day 306 ---										
08 12 00	PM64	12 10 27	44.8	207.5	1.3		16.4	-22	2181	No stop
08 15 30	---	12 13 58	44.5	208.6	1.4		17.0	188	2208	08 12 01
08 16 15	1100+122	12 14 43	46.4	205.6	1.2		15.4	24	2208	08 16 15
08 19 40	---	12 18 09	46.2	206.7	1.2		16.0	205	2235	08 16 16
08 20 25	0849+287	12 18 54	45.3	257.6	3.4		41.9	-72	2235	08 20 25
08 25 10	---	12 23 40	44.6	258.7	3.5		42.1	213	2271	08 20 26
08 25 10	PM46	12 23 40	43.7	262.6	3.7		43.3	-23	2271	No stop
08 28 35	---	12 27 05	43.2	263.3	3.8		43.4	182	2297	08 25 11
08 29 10	0849+287	12 27 40	44.0	259.6	3.6		42.2	13	2297	08 29 10
08 30 40	---	12 29 10	43.8	259.9	3.6		42.3	90	2309	08 29 11
08 30 40	PM46	12 29 10	42.9	263.7	3.8		43.4	-23	2309	No stop
08 34 10	---	12 32 41	42.4	264.5	3.9		43.5	187	2336	08 30 41
08 34 10	0849+287	12 32 41	43.2	260.7	3.7		42.4	-22	2336	No stop
08 35 40	---	12 34 11	43.0	261.0	3.7		42.5	68	2347	08 34 11
08 35 40	PM46	12 34 11	42.1	264.8	3.9		43.5	-23	2347	No stop
08 39 05	---	12 37 37	41.6	265.5	3.9		43.6	182	2374	08 35 41
08 39 40	0849+287	12 38 12	42.4	261.9	3.8		42.6	13	2374	08 39 40
08 41 10	---	12 39 42	42.2	262.3	3.8		42.6	90	2385	08 39 41
08 41 10	PM46	12 39 42	41.3	266.0	4.0		43.6	-22	2385	No stop
08 44 40	---	12 43 13	40.8	266.7	4.0		43.7	188	2412	08 41 11
08 44 40	0849+287	12 43 13	41.7	263.0	3.8		42.7	-22	2412	No stop
08 46 10	---	12 44 43	41.4	263.3	3.9		42.7	68	2424	08 44 41
08 46 10	PM46	12 44 43	40.6	267.0	4.1		43.7	-22	2424	No stop
08 49 35	---	12 48 09	40.0	267.7	4.1		43.7	183	2450	08 46 11
08 50 10	0849+287	12 48 44	40.8	264.2	3.9		42.8	13	2450	08 50 10
08 51 40	---	12 50 14	40.6	264.5	4.0		42.9	90	2462	08 50 11
08 51 40	PM46	12 50 14	39.7	268.2	4.2		43.7	-22	2462	No stop
08 55 10	---	12 53 45	39.2	268.9	4.2		43.8	188	2488	08 51 41
08 55 10	0849+287	12 53 45	40.1	265.3	4.0		42.9	-22	2488	No stop
08 56 40	---	12 55 15	39.9	265.6	4.0		42.9	68	2500	08 55 11

Schedule for TORUN (Code Tr) Page 10

EVN follow up of binary SMBH candidates

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
--- Tue 1 Nov 2016 Day 306 ---										
08 56 40	PM46	12 55 15	39.0	269.2	4.2		43.8	-22	2500	No stop
09 00 10	---	12 58 45	38.5	269.9	4.3		43.8	188	2527	08 56 41
09 00 45	0849+287	12 59 20	39.3	266.4	4.1		43.0	13	2527	09 00 45
09 04 20	---	13 02 56	38.7	267.2	4.2		43.0	215	2554	09 00 46
09 04 50	0917+624	13 03 26	60.2	309.7	3.7		82.0	-70	2554	09 04 50
09 09 50	---	13 08 27	59.6	309.9	3.8		81.0	230	2593	09 04 51
09 09 50	PM01	13 08 27	61.1	307.5	3.5		82.1	-19	2593	No stop
09 13 14	---	13 11 51	60.7	307.7	3.6		81.5	185	2619	09 09 51
09 13 50	0917+624	13 12 28	59.1	310.0	3.8		80.3	17	2619	09 13 50
09 15 20	---	13 13 58	58.9	310.1	3.9		80.0	90	2631	09 13 51
09 15 20	PM01	13 13 58	60.5	307.7	3.6		81.1	-19	2631	No stop
09 18 50	---	13 17 28	60.0	307.9	3.7		80.4	191	2658	09 15 21
09 18 50	0917+624	13 17 28	58.5	310.2	3.9		79.3	-19	2658	No stop
09 20 20	---	13 18 59	58.4	310.3	3.9		79.0	71	2669	09 18 51
09 20 20	PM01	13 18 59	59.9	307.9	3.7		80.2	-19	2669	No stop
09 23 44	---	13 22 23	59.5	308.1	3.8		79.5	185	2695	09 20 21
09 24 20	0917+624	13 22 59	57.9	310.5	4.0		78.3	17	2695	09 24 20
09 25 50	---	13 24 30	57.7	310.5	4.0		78.0	90	2707	09 24 21
09 25 50	PM01	13 24 30	59.2	308.2	3.8		79.1	-19	2707	No stop
09 29 20	---	13 28 00	58.8	308.3	3.8		78.5	191	2734	09 25 51
09 29 20	0917+624	13 28 00	57.3	310.7	4.1		77.4	-19	2734	No stop
09 30 50	---	13 29 30	57.2	310.8	4.1		77.1	71	2745	09 29 21
09 30 50	PM01	13 29 30	58.6	308.4	3.9		78.2	-19	2745	No stop
09 34 14	---	13 32 55	58.2	308.6	3.9		77.6	185	2771	09 30 51
09 34 50	0917+624	13 33 31	56.7	311.0	4.2		76.4	17	2771	09 34 50
09 36 20	---	13 35 01	56.5	311.0	4.2		76.1	90	2783	09 34 51
09 36 20	PM01	13 35 01	58.0	308.7	4.0		77.3	-19	2783	No stop
09 39 50	---	13 38 32	57.6	308.9	4.0		76.6	191	2810	09 36 21
09 39 50	0917+624	13 38 32	56.1	311.2	4.3		75.5	-19	2810	No stop
09 41 20	---	13 40 02	56.0	311.3	4.3		75.2	71	2821	09 39 51

```
Schedule for TORUN     (Code Tr )                                Page  11
               EVN follow up of binary SMBH candidates
  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   1 Nov 2016   Day 306 ---

09 41 20  PM01         13 40 02  57.4 308.9  4.0      76.4   -19     2821   No stop
09 44 44  ---          13 43 27  57.0 309.1  4.1      75.8   185     2848   09 41 21

09 45 20  0917+624     13 44 03  55.5 311.5  4.4      74.5    17     2848   09 45 20
09 49 00  ---          13 47 43  55.1 311.7  4.4      73.9   220     2876   09 45 21

 ---------- fringe-finder ----------

09 50 00  OQ208        13 48 44  65.0 170.1 -0.3      -6.8  -234     2876   09 50 00
10 00 00  ---          13 58 45  65.2 175.3 -0.1      -3.2   366     2953   09 50 01

10 00 30  1015+359     13 59 15  48.2 268.0  3.7      47.6  -172     2953   10 00 30
10 05 30  ---          14 04 16  47.5 269.1  3.8      47.6   128     2991   10 00 31

10 05 30  PM39         14 04 16  47.9 269.6  3.7      48.0   -12     2991   No stop
10 09 00  ---          14 07 47  47.3 270.3  3.8      48.0   198     3018   10 05 31

10 09 30  1015+359     14 08 17  46.8 269.9  3.8      47.6    18     3018   10 09 30
10 11 00  ---          14 09 47  46.6 270.2  3.8      47.6    90     3030   10 09 31

10 11 00  PM39         14 09 47  47.0 270.7  3.8      48.0   -12     3030   No stop
10 14 30  ---          14 13 18  46.5 271.3  3.9      48.0   198     3057   10 11 01

10 14 30  1015+359     14 13 18  46.1 270.9  3.9      47.6   -12     3057   No stop
10 16 00  ---          14 14 48  45.9 271.2  3.9      47.6    78     3068   10 14 31

10 16 00  PM39         14 14 48  46.3 271.6  3.9      48.0   -12     3068   No stop
10 19 30  ---          14 18 18  45.7 272.3  4.0      48.0   198     3095   10 16 01

10 20 00  1015+359     14 18 48  45.3 272.0  4.0      47.6    18     3095   10 20 00
10 21 30  ---          14 20 19  45.0 272.2  4.0      47.6    90     3107   10 20 01

10 21 30  PM39         14 20 19  45.4 272.7  4.0      48.0   -12     3107   No stop
10 25 00  ---          14 23 49  44.9 273.4  4.1      47.9   198     3133   10 21 31

10 25 00  1015+359     14 23 49  44.5 272.9  4.1      47.5   -12     3133   No stop
10 26 30  ---          14 25 20  44.3 273.2  4.1      47.5    78     3145   10 25 01

10 26 30  PM39         14 25 20  44.7 273.7  4.1      47.9   -12     3145   No stop
10 30 00  ---          14 28 50  44.2 274.3  4.2      47.9   198     3172   10 26 31

10 30 30  1015+359     14 29 20  43.7 274.0  4.2      47.5    17     3172   10 30 30
10 32 00  ---          14 30 50  43.5 274.3  4.2      47.5    90     3183   10 30 31
```

Schedule for TORUN (Code Tr) Page 12

EVN follow up of binary SMBH candidates

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
--- Tue 1 Nov 2016 Day 306 ---										
10 32 00	PM39	14 30 50	43.9	274.7	4.2		47.8	-12	3183	No stop
10 35 30	---	14 34 21	43.3	275.4	4.2		47.8	198	3210	10 32 01
10 35 30	1015+359	14 34 21	42.9	274.9	4.3		47.4	-12	3210	No stop
10 37 00	---	14 35 51	42.7	275.2	4.3		47.4	78	3222	10 35 31
10 37 00	PM39	14 35 51	43.1	275.7	4.3		47.7	-12	3222	No stop
10 40 30	---	14 39 22	42.6	276.3	4.3		47.7	198	3249	10 37 01
10 41 00	1015+359	14 39 52	42.1	276.0	4.3		47.3	17	3249	10 41 00
10 44 40	---	14 43 33	41.6	276.6	4.4		47.2	220	3277	10 41 01
10 44 40	1100+122	14 43 33	30.2	247.8	3.7		34.6	-72	3277	No stop
10 48 40	---	14 47 33	29.6	248.8	3.7		34.9	168	3308	10 44 41
10 48 40	PM64	14 47 33	27.0	250.6	3.9		35.2	-24	3308	No stop
10 51 55	---	14 50 49	26.6	251.3	4.0		35.4	171	3333	10 48 41
10 52 40	1100+122	14 51 34	29.0	249.7	3.8		35.1	22	3333	10 52 40
10 54 10	---	14 53 04	28.8	250.0	3.8		35.2	90	3344	10 52 41
10 54 10	PM64	14 53 04	26.2	251.8	4.0		35.5	-24	3344	No stop
10 57 40	---	14 56 35	25.7	252.6	4.1		35.7	186	3371	10 54 11
10 57 40	1100+122	14 56 35	28.3	250.8	3.9		35.4	-23	3371	No stop
10 59 10	---	14 58 05	28.1	251.2	3.9		35.5	67	3383	10 57 41
10 59 10	PM64	14 58 05	25.5	252.9	4.1		35.7	-24	3383	No stop
11 02 25	---	15 01 20	25.0	253.6	4.1		35.9	171	3408	10 59 11
11 03 10	1100+122	15 02 06	27.5	252.1	4.0		35.7	21	3408	11 03 10
11 04 40	---	15 03 36	27.3	252.4	4.0		35.8	90	3419	11 03 11
11 04 40	PM64	15 03 36	24.7	254.1	4.2		36.0	-24	3419	No stop
11 08 10	---	15 07 06	24.2	254.9	4.2		36.1	186	3446	11 04 41
11 08 10	1100+122	15 07 06	26.8	253.2	4.1		36.0	-24	3446	No stop
11 09 40	---	15 08 37	26.6	253.5	4.1		36.0	66	3458	11 08 11
11 09 40	PM64	15 08 37	24.0	255.2	4.3		36.2	-24	3458	No stop
11 12 55	---	15 11 52	23.5	255.9	4.3		36.3	171	3483	11 09 41
11 13 40	1100+122	15 12 37	26.0	254.4	4.1		36.2	21	3483	11 13 40
11 15 10	---	15 14 08	25.8	254.7	4.2		36.3	90	3494	11 13 41

Schedule for TORUN (Code Tr) Page 13

EVN follow up of binary SMBH candidates

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 1 Nov 2016 Day 306 ---										
11 15 10	PM64	15 14 08	23.2	256.4	4.4		36.4	-24	3494	No stop
11 18 40	---	15 17 38	22.7	257.2	4.4		36.6	186	3521	11 15 11
11 18 40	1100+122	15 17 38	25.3	255.5	4.2		36.4	-24	3521	No stop
11 20 10	---	15 19 08	25.1	255.8	4.3		36.5	66	3533	11 18 41
11 20 10	PM64	15 19 08	22.5	257.5	4.4		36.6	-24	3533	No stop
11 23 40	---	15 22 39	21.9	258.2	4.5		36.7	186	3560	11 20 11
11 24 25	1100+122	15 23 24	24.5	256.7	4.3		36.7	21	3560	11 24 25
11 27 50	---	15 26 50	24.0	257.5	4.4		36.8	205	3586	11 24 26
11 28 20	0917+624	15 27 20	44.6	319.1	6.1		57.4	-109	3586	11 28 20
11 33 20	---	15 32 21	44.1	319.5	6.2		56.6	191	3624	11 28 21
11 33 20	PM01	15 32 21	45.0	317.2	5.9		58.1	-19	3624	No stop
11 36 44	---	15 35 45	44.7	317.5	6.0		57.6	185	3651	11 33 21
11 37 20	0917+624	15 36 21	43.7	319.9	6.2		56.0	17	3651	11 37 20
11 38 50	---	15 37 51	43.5	320.0	6.2		55.8	90	3662	11 37 21
11 38 50	PM01	15 37 51	44.4	317.7	6.0		57.3	-19	3662	No stop
11 42 20	---	15 41 22	44.1	318.0	6.1		56.7	191	3689	11 38 51
11 42 20	0917+624	15 41 22	43.2	320.3	6.3		55.2	-19	3689	No stop
11 43 50	---	15 42 52	43.1	320.5	6.3		55.0	71	3701	11 42 21
11 43 50	PM01	15 42 52	43.9	318.1	6.1		56.5	-19	3701	No stop
11 47 14	---	15 46 17	43.6	318.5	6.2		56.0	185	3727	11 43 51
11 47 50	0917+624	15 46 53	42.7	320.9	6.4		54.3	17	3727	11 47 50
11 49 20	---	15 48 23	42.5	321.0	6.4		54.1	90	3738	11 47 51
11 49 20	PM01	15 48 23	43.4	318.7	6.2		55.6	-19	3738	No stop
11 52 50	---	15 51 54	43.0	319.0	6.2		55.1	191	3765	11 49 21
11 52 50	0917+624	15 51 54	42.2	321.3	6.5		53.5	-19	3765	No stop
11 54 20	---	15 53 24	42.1	321.5	6.5		53.3	71	3777	11 52 51
11 54 20	PM01	15 53 24	42.9	319.1	6.3		54.8	-19	3777	No stop
11 57 44	---	15 56 49	42.6	319.4	6.3		54.3	185	3803	11 54 21
11 58 20	0917+624	15 57 25	41.7	321.8	6.6		52.7	17	3803	11 58 20
11 59 50	---	15 58 55	41.6	322.0	6.6		52.4	90	3814	11 58 21

Schedule for TORUN (Code Tr) Page 14

EVN follow up of binary SMBH candidates

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 1 Nov 2016 Day 306 ---										
11 59 50	PM01	15 58 55	42.4	319.6	6.4		54.0	-19	3814	No stop
12 03 20	---	16 02 25	42.0	320.0	6.4		53.4	191	3841	11 59 51
12 03 20	0917+624	16 02 25	41.2	322.3	6.7		51.9	-19	3841	No stop
12 04 50	---	16 03 56	41.1	322.5	6.7		51.6	71	3853	12 03 21
12 04 50	PM01	16 03 56	41.9	320.1	6.4		53.2	-19	3853	No stop
12 08 20	---	16 07 26	41.5	320.5	6.5		52.7	191	3880	12 04 51
12 08 50	0917+624	16 07 56	40.7	322.9	6.8		51.0	11	3880	12 08 50
12 12 30	---	16 11 37	40.4	323.2	6.8		50.4	220	3908	12 08 51
12 18 00	PM36	16 17 08	75.7	154.1	-0.5		-20.0	-23	3908	12 18 00
12 21 20	---	16 20 28	75.9	156.6	-0.5		-18.1	177	3934	12 18 01
12 22 00	1645+410	16 21 08	77.1	157.2	-0.4		-17.9	23	3934	12 22 00
12 23 30	---	16 22 39	77.2	158.4	-0.4		-17.0	90	3945	12 22 01
12 23 30	PM36	16 22 39	76.0	158.2	-0.4		-16.9	-17	3945	No stop
12 27 00	---	16 26 09	76.2	160.9	-0.4		-14.8	193	3972	12 23 31
12 27 00	1645+410	16 26 09	77.3	161.3	-0.4		-14.7	-17	3972	No stop
12 28 30	---	16 27 40	77.4	162.6	-0.3		-13.8	73	3984	12 27 01
12 28 30	PM36	16 27 40	76.3	162.1	-0.4		-13.9	-17	3984	No stop
12 31 50	---	16 31 00	76.4	164.8	-0.3		-11.9	183	4009	12 28 31
12 32 30	1645+410	16 31 40	77.6	166.0	-0.3		-11.1	23	4009	12 32 30
12 34 00	---	16 33 10	77.6	167.3	-0.2		-10.1	90	4021	12 32 31
12 34 00	PM36	16 33 10	76.5	166.5	-0.3		-10.5	-17	4021	No stop
12 37 30	---	16 36 41	76.6	169.4	-0.2		-8.3	193	4048	12 34 01
12 37 30	1645+410	16 36 41	77.7	170.4	-0.2		-7.6	-17	4048	No stop
12 39 00	---	16 38 11	77.8	171.7	-0.2		-6.6	73	4059	12 37 31
12 39 00	PM36	16 38 11	76.7	170.6	-0.2		-7.3	-17	4059	No stop
12 42 20	---	16 41 32	76.7	173.4	-0.1		-5.2	183	4085	12 39 01
12 43 00	1645+410	16 42 12	77.8	175.3	-0.1		-3.8	23	4085	12 43 00
12 44 30	---	16 43 42	77.9	176.6	-0.1		-2.7	90	4097	12 43 01
12 44 30	PM36	16 43 42	76.8	175.2	-0.1		-3.8	-17	4097	No stop
12 48 00	---	16 47 13	76.8	178.1	-0.0		-1.5	193	4123	12 44 31

Schedule for TORUN (Code Tr) Page 15

EVN follow up of binary SMBH candidates

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
--- Tue 1 Nov 2016 Day 306 ---										
12 48 00	1645+410	16 47 13	77.9	179.8	-0.0		-0.2	-17	4123	No stop
12 49 30	---	16 48 43	77.9	181.1	0.0		0.9	73	4135	12 48 01
12 49 30	PM36	16 48 43	76.8	179.4	-0.0		-0.5	-17	4135	No stop
12 53 00	---	16 52 14	76.8	182.3	0.0		1.8	193	4162	12 49 31
12 53 30	1645+410	16 52 44	77.8	184.7	0.1		3.7	12	4162	12 53 30
12 57 10	---	16 56 24	77.8	188.0	0.1		6.3	220	4190	12 53 31
12 57 40	1151+598	16 56 54	49.9	310.2	5.0		64.6	-230	4190	12 57 40
13 02 40	---	17 01 55	49.3	310.7	5.1		63.8	70	4229	12 57 41
13 02 40	PM04	17 01 55	49.4	308.5	5.0		63.3	-18	4229	No stop
13 06 10	---	17 05 26	49.0	308.8	5.1		62.8	192	4256	13 02 41
13 06 40	1151+598	17 05 56	48.9	311.0	5.2		63.2	12	4256	13 06 40
13 08 10	---	17 07 26	48.7	311.1	5.2		63.0	90	4267	13 06 41
13 08 10	PM04	17 07 26	48.7	309.0	5.1		62.5	-18	4267	No stop
13 11 40	---	17 10 57	48.3	309.3	5.2		62.0	192	4294	13 08 11
13 11 40	1151+598	17 10 57	48.3	311.4	5.3		62.5	-18	4294	No stop
13 13 10	---	17 12 27	48.2	311.6	5.3		62.2	72	4306	13 11 41
13 13 10	PM04	17 12 27	48.2	309.5	5.2		61.7	-18	4306	No stop
13 16 40	---	17 15 57	47.7	309.8	5.3		61.2	192	4332	13 13 11
13 17 10	1151+598	17 16 28	47.7	311.9	5.4		61.6	12	4332	13 17 10
13 18 40	---	17 17 58	47.5	312.1	5.4		61.4	90	4344	13 17 11
13 18 40	PM04	17 17 58	47.5	310.0	5.3		61.0	-18	4344	No stop
13 22 10	---	17 21 28	47.1	310.3	5.4		60.5	192	4371	13 18 41
13 22 10	1151+598	17 21 28	47.1	312.4	5.4		60.9	-18	4371	No stop
13 23 40	---	17 22 59	47.0	312.5	5.5		60.7	72	4382	13 22 11
13 23 40	PM04	17 22 59	46.9	310.5	5.4		60.2	-18	4382	No stop
13 27 10	---	17 26 29	46.5	310.8	5.4		59.7	192	4409	13 23 41
13 27 40	1151+598	17 26 59	46.5	312.9	5.5		60.1	12	4409	13 27 40
13 29 10	---	17 28 30	46.4	313.0	5.6		59.8	90	4421	13 27 41
13 29 10	PM04	17 28 30	46.3	311.0	5.5		59.5	-18	4421	No stop
13 32 40	---	17 32 00	45.9	311.3	5.5		59.0	192	4448	13 29 11

Schedule for TORUN (Code Tr) Page 16

EVN follow up of binary SMBH candidates

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
--- Tue 1 Nov 2016 Day 306 ---										
13 32 40	1151+598	17 32 00	46.0	313.3	5.6		59.3	-18	4448	No stop
13 34 10	---	17 33 30	45.8	313.5	5.6		59.1	72	4459	13 32 41
13 34 10	PM04	17 33 30	45.7	311.5	5.6		58.7	-18	4459	No stop
13 37 40	---	17 37 01	45.4	311.8	5.6		58.2	192	4486	13 34 11
13 38 10	1151+598	17 37 31	45.4	313.9	5.7		58.5	12	4486	13 38 10
13 41 50	---	17 41 12	45.0	314.2	5.8		58.0	220	4514	13 38 11
13 42 20	1645+410	17 41 42	74.8	222.5	0.9		32.5	-165	4514	13 42 20
13 47 20	---	17 46 43	74.3	225.4	1.0		34.5	135	4553	13 42 21
13 47 20	PM36	17 46 43	73.6	222.2	1.0		31.7	-21	4553	No stop
13 50 40	---	17 50 03	73.2	224.1	1.0		33.0	179	4579	13 47 21
13 51 20	1645+410	17 50 43	73.8	227.7	1.1		36.0	18	4579	13 51 20
13 52 50	---	17 52 13	73.7	228.5	1.1		36.6	90	4590	13 51 21
13 52 50	PM36	17 52 13	73.0	225.3	1.0		33.8	-21	4590	No stop
13 56 20	---	17 55 44	72.6	227.1	1.1		35.0	189	4617	13 52 51
13 56 20	1645+410	17 55 44	73.3	230.4	1.1		37.8	-21	4617	No stop
13 57 50	---	17 57 14	73.1	231.1	1.2		38.3	69	4629	13 56 21
13 57 50	PM36	17 57 14	72.5	227.9	1.1		35.5	-21	4629	No stop
14 01 10	---	18 00 35	72.1	229.6	1.2		36.6	179	4654	13 57 51
14 01 50	1645+410	18 01 15	72.6	233.1	1.2		39.5	19	4654	14 01 50
14 03 20	---	18 02 45	72.4	233.9	1.3		40.0	90	4666	14 01 51
14 03 20	PM36	18 02 45	71.8	230.7	1.2		37.3	-21	4666	No stop
14 06 50	---	18 06 16	71.4	232.4	1.3		38.3	189	4693	14 03 21
14 06 50	1645+410	18 06 16	72.0	235.5	1.3		41.0	-21	4693	No stop
14 08 20	---	18 07 46	71.8	236.2	1.3		41.4	69	4704	14 06 51
14 08 20	PM36	18 07 46	71.2	233.1	1.3		38.7	-20	4704	No stop
14 11 40	---	18 11 07	70.8	234.6	1.4		39.7	180	4730	14 08 21
14 12 20	1645+410	18 11 47	71.3	238.0	1.4		42.4	19	4730	14 12 20
14 13 50	---	18 13 17	71.1	238.6	1.4		42.8	90	4741	14 12 21
14 13 50	PM36	18 13 17	70.6	235.6	1.4		40.2	-20	4741	No stop
14 17 20	---	18 16 47	70.1	237.1	1.5		41.1	190	4768	14 13 51

Schedule for TORUN (Code Tr) Page 17

EVN follow up of binary SMBH candidates

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
--- Tue 1 Nov 2016 Day 306 ---										
14 17 20	1645+410	18 16 47	70.7	240.1	1.5		43.6	-21	4768	No stop
14 18 50	---	18 18 18	70.5	240.7	1.5		43.9	69	4780	14 17 21
14 18 50	PM36	18 18 18	69.9	237.8	1.5		41.4	-20	4780	No stop
14 22 20	---	18 21 48	69.5	239.2	1.5		42.2	190	4807	14 18 51
14 22 50	1645+410	18 22 18	70.0	242.3	1.6		44.8	9	4807	14 22 50
14 26 30	---	18 25 59	69.5	243.7	1.6		45.5	220	4835	14 22 51
14 27 00	1151+598	18 26 29	40.3	318.7	6.5		51.3	-135	4835	14 27 00
14 32 00	---	18 31 30	39.8	319.3	6.6		50.5	165	4873	14 27 01
14 32 00	PM04	18 31 30	39.5	317.5	6.5		50.5	-17	4873	No stop
14 35 30	---	18 35 00	39.2	317.9	6.6		50.0	193	4900	14 32 01
14 36 00	1151+598	18 35 31	39.4	319.7	6.7		49.9	13	4900	14 36 00
14 37 30	---	18 37 01	39.3	319.8	6.7		49.7	90	4912	14 36 01
14 37 30	PM04	18 37 01	39.0	318.1	6.6		49.7	-17	4912	No stop
14 41 00	---	18 40 31	38.6	318.5	6.7		49.2	193	4939	14 37 31
14 41 00	1151+598	18 40 31	38.9	320.2	6.8		49.2	-17	4939	No stop
14 42 30	---	18 42 02	38.8	320.4	6.8		49.0	73	4950	14 41 01
14 42 30	PM04	18 42 02	38.5	318.6	6.7		48.9	-17	4950	No stop
14 46 00	---	18 45 32	38.1	319.0	6.8		48.4	193	4977	14 42 31
14 46 30	1151+598	18 46 02	38.4	320.8	6.9		48.4	13	4977	14 46 30
14 48 00	---	18 47 32	38.3	321.0	6.9		48.1	90	4989	14 46 31
14 48 00	PM04	18 47 32	37.9	319.2	6.8		48.2	-17	4989	No stop
14 51 30	---	18 51 03	37.6	319.6	6.9		47.6	193	5016	14 48 01
14 51 30	1151+598	18 51 03	37.9	321.3	6.9		47.6	-17	5016	No stop
14 53 00	---	18 52 33	37.8	321.5	7.0		47.4	73	5027	14 51 31
14 53 00	PM04	18 52 33	37.4	319.8	6.9		47.4	-17	5027	No stop
14 56 30	---	18 56 04	37.1	320.2	6.9		46.9	193	5054	14 53 01
14 57 00	1151+598	18 56 34	37.4	322.0	7.0		46.8	13	5054	14 57 00
15 00 40	---	19 00 15	37.1	322.4	7.1		46.2	220	5082	14 57 01
15 01 10	1645+410	19 00 45	64.6	255.0	2.2		50.2	-119	5082	15 01 10
15 06 10	---	19 05 45	63.8	256.4	2.3		50.6	181	5121	15 01 11

Schedule for TORUN (Code Tr) Page 18

EVN follow up of binary SMBH candidates

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
--- Tue 1 Nov 2016 Day 306 ---										
15 06 10	PM36	19 05 45	63.4	254.0	2.3		48.8	-19	5121	No stop
15 09 40	---	19 09 16	62.9	255.0	2.3		49.1	191	5148	15 06 11
15 10 10	1645+410	19 09 46	63.3	257.5	2.4		50.9	11	5148	15 10 10
15 11 40	---	19 11 16	63.0	257.9	2.4		51.0	90	5159	15 10 11
15 11 40	PM36	19 11 16	62.6	255.5	2.4		49.3	-19	5159	No stop
15 15 10	---	19 14 47	62.1	256.5	2.4		49.5	191	5186	15 11 41
15 15 10	1645+410	19 14 47	62.5	258.8	2.5		51.3	-19	5186	No stop
15 16 40	---	19 16 17	62.3	259.2	2.5		51.4	71	5198	15 15 11
15 16 40	PM36	19 16 17	61.9	256.9	2.4		49.7	-18	5198	No stop
15 20 10	---	19 19 48	61.4	257.8	2.5		49.9	192	5225	15 16 41
15 20 40	1645+410	19 20 18	61.7	260.2	2.5		51.6	11	5225	15 20 40
15 22 10	---	19 21 48	61.5	260.6	2.6		51.7	90	5236	15 20 41
15 22 10	PM36	19 21 48	61.1	258.3	2.5		50.0	-18	5236	No stop
15 25 40	---	19 25 19	60.6	259.2	2.6		50.2	192	5263	15 22 11
15 25 40	1645+410	19 25 19	61.0	261.4	2.6		51.8	-18	5263	No stop
15 27 10	---	19 26 49	60.7	261.8	2.7		51.9	72	5275	15 25 41
15 27 10	PM36	19 26 49	60.4	259.6	2.6		50.3	-18	5275	No stop
15 30 40	---	19 30 19	59.8	260.4	2.7		50.5	192	5302	15 27 11
15 31 10	1645+410	19 30 50	60.1	262.7	2.7		52.1	12	5302	15 31 10
15 32 40	---	19 32 20	59.9	263.1	2.7		52.1	90	5313	15 31 11
15 32 40	PM36	19 32 20	59.5	260.9	2.7		50.6	-18	5313	No stop
15 36 10	---	19 35 50	59.0	261.8	2.8		50.8	192	5340	15 32 41
15 36 10	1645+410	19 35 50	59.4	263.9	2.8		52.2	-18	5340	No stop
15 37 40	---	19 37 21	59.2	264.2	2.8		52.3	72	5352	15 36 11
15 37 40	PM36	19 37 21	58.8	262.1	2.8		50.8	-18	5352	No stop
15 41 10	---	19 40 51	58.3	262.9	2.9		51.0	192	5379	15 37 41
15 41 40	1645+410	19 41 21	58.6	265.1	2.9		52.4	12	5379	15 41 40
15 45 20	---	19 45 02	58.0	265.9	3.0		52.5	220	5407	15 41 41
15 45 50	1151+598	19 45 32	33.2	327.5	7.8		39.5	-109	5407	15 45 50
15 50 50	---	19 50 33	32.8	328.1	7.9		38.7	191	5445	15 45 51

Schedule for TORUN (Code Tr) Page 19

EVN follow up of binary SMBH candidates

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
--- Tue 1 Nov 2016 Day 306 ---										
15 50 50	PM04	19 50 33	32.2	326.6	7.8		39.0	-16	5445	No stop
15 54 20	---	19 54 03	31.9	327.0	7.9		38.4	194	5472	15 50 51
15 54 50	1151+598	19 54 33	32.5	328.6	8.0		38.1	14	5472	15 54 50
15 56 20	---	19 56 04	32.3	328.7	8.0		37.9	90	5484	15 54 51
15 56 20	PM04	19 56 04	31.8	327.2	7.9		38.1	-16	5484	No stop
15 59 50	---	19 59 34	31.5	327.7	8.0		37.6	194	5511	15 56 21
15 59 50	1151+598	19 59 34	32.1	329.2	8.1		37.3	-16	5511	No stop
16 01 20	---	20 01 05	32.0	329.3	8.1		37.1	74	5522	15 59 51
16 01 20	PM04	20 01 05	31.4	327.8	8.0		37.4	-16	5522	No stop
16 04 50	---	20 04 35	31.1	328.3	8.1		36.9	194	5549	16 01 21
16 05 20	1151+598	20 05 05	31.7	329.8	8.2		36.5	14	5549	16 05 20
16 06 50	---	20 06 35	31.5	330.0	8.2		36.3	90	5561	16 05 21
16 06 50	PM04	20 06 35	30.9	328.5	8.1		36.6	-16	5561	No stop
16 10 20	---	20 10 06	30.7	329.0	8.2		36.0	194	5588	16 06 51
16 10 20	1151+598	20 10 06	31.3	330.4	8.3		35.7	-16	5588	No stop
16 11 50	---	20 11 36	31.2	330.6	8.3		35.5	74	5599	16 10 21
16 11 50	PM04	20 11 36	30.5	329.1	8.2		35.8	-16	5599	No stop
16 15 20	---	20 15 07	30.3	329.6	8.3		35.3	194	5626	16 11 51
16 15 50	1151+598	20 15 37	30.9	331.1	8.3		34.9	14	5626	16 15 50
16 19 30	---	20 19 18	30.6	331.5	8.4		34.3	220	5654	16 15 51
16 25 00	PM83	20 24 48	32.4	147.6	-1.8		-18.8	-52	5654	16 25 00
16 28 29	---	20 28 18	32.7	148.6	-1.7		-18.2	157	5681	16 25 01
16 29 00	2217-011	20 28 49	31.3	146.7	-1.9		-19.2	12	5681	16 29 00
16 30 30	---	20 30 19	31.4	147.1	-1.8		-19.0	90	5693	16 29 01
16 30 30	PM83	20 30 19	32.9	149.2	-1.7		-17.9	-19	5693	No stop
16 34 00	---	20 33 50	33.1	150.2	-1.6		-17.4	191	5719	16 30 31
16 34 00	2217-011	20 33 50	31.7	148.1	-1.8		-18.5	-19	5719	No stop
16 35 30	---	20 35 20	31.8	148.5	-1.8		-18.3	71	5731	16 34 01
16 35 30	PM83	20 35 20	33.2	150.6	-1.6		-17.1	-19	5731	No stop
16 38 59	---	20 38 50	33.5	151.6	-1.6		-16.6	190	5758	16 35 31

Schedule for TORUN (Code Tr) Page 20

EVN follow up of binary SMBH candidates

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
--- Tue 1 Nov 2016 Day 306 ---										
16 39 30	2217-011	20 39 21	32.1	149.7	-1.7		-17.7	12	5758	16 39 30
16 41 00	---	20 40 51	32.3	150.1	-1.7		-17.4	90	5769	16 39 31
16 41 00	PM83	20 40 51	33.6	152.2	-1.5		-16.3	-19	5769	No stop
16 44 30	---	20 44 22	33.9	153.2	-1.5		-15.7	191	5796	16 41 01
16 44 30	2217-011	20 44 22	32.5	151.1	-1.6		-16.9	-18	5796	No stop
16 46 00	---	20 45 52	32.6	151.5	-1.6		-16.6	72	5808	16 44 31
16 46 00	PM83	20 45 52	34.0	153.6	-1.4		-15.5	-19	5808	No stop
16 49 30	---	20 49 22	34.2	154.7	-1.4		-14.9	191	5835	16 46 01
16 50 00	2217-011	20 49 53	32.9	152.6	-1.5		-16.0	12	5835	16 50 00
16 53 40	---	20 53 33	33.1	153.7	-1.5		-15.4	220	5863	16 50 01
16 54 10	1645+410	20 54 03	47.7	279.1	4.1		51.7	-237	5863	16 54 10
16 59 10	---	20 59 04	47.0	280.0	4.2		51.5	63	5901	16 54 11
16 59 10	PM36	20 59 04	46.6	278.4	4.2		50.7	-16	5901	No stop
17 02 40	---	21 02 35	46.1	279.1	4.2		50.6	194	5928	16 59 11
17 03 10	1645+410	21 03 05	46.4	280.7	4.3		51.4	14	5928	17 03 10
17 04 40	---	21 04 35	46.1	280.9	4.3		51.3	90	5940	17 03 11
17 04 40	PM36	21 04 35	45.8	279.4	4.3		50.5	-16	5940	No stop
17 08 10	---	21 08 06	45.2	280.0	4.3		50.4	194	5967	17 04 41
17 08 10	1645+410	21 08 06	45.6	281.5	4.3		51.2	-16	5967	No stop
17 09 40	---	21 09 36	45.4	281.8	4.4		51.1	74	5978	17 08 11
17 09 40	PM36	21 09 36	45.0	280.3	4.3		50.4	-16	5978	No stop
17 13 10	---	21 13 06	44.5	280.9	4.4		50.2	194	6005	17 09 41
17 13 40	1645+410	21 13 36	44.8	282.5	4.4		50.9	14	6005	17 13 40
17 15 10	---	21 15 07	44.6	282.7	4.5		50.9	90	6017	17 13 41
17 15 10	PM36	21 15 07	44.2	281.2	4.4		50.1	-16	6017	No stop
17 18 40	---	21 18 37	43.7	281.8	4.5		50.0	194	6044	17 15 11
17 18 40	1645+410	21 18 37	44.1	283.3	4.5		50.7	-16	6044	No stop
17 20 10	---	21 20 07	43.9	283.6	4.5		50.6	74	6055	17 18 41
17 20 10	PM36	21 20 07	43.5	282.1	4.5		49.9	-16	6055	No stop
17 23 40	---	21 23 38	42.9	282.7	4.6		49.8	194	6082	17 20 11

Schedule for TORUN (Code Tr) Page 21

EVN follow up of binary SMBH candidates

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
--- Tue 1 Nov 2016 Day 306 ---										
17 24 10	1645+410	21 24 08	43.3	284.2	4.6		50.4	14	6082	17 24 10
17 25 40	---	21 25 38	43.1	284.5	4.6		50.4	90	6094	17 24 11
17 25 40	PM36	21 25 38	42.7	283.0	4.6		49.7	-16	6094	No stop
17 29 10	---	21 29 09	42.1	283.6	4.7		49.5	194	6121	17 25 41
17 29 10	1645+410	21 29 09	42.5	285.1	4.7		50.2	-16	6121	No stop
17 30 40	---	21 30 39	42.3	285.3	4.7		50.1	74	6132	17 29 11
17 30 40	PM36	21 30 39	41.9	283.9	4.7		49.4	-16	6132	No stop
17 34 10	---	21 34 10	41.4	284.4	4.7		49.3	194	6159	17 30 41
17 34 40	1645+410	21 34 40	41.7	286.0	4.8		49.9	14	6159	17 34 40
17 38 20	---	21 38 20	41.2	286.6	4.8		49.7	220	6187	17 34 41
17 38 50	2217-011	21 38 51	35.4	167.1	-0.7		-7.7	-222	6187	17 38 50
17 43 50	---	21 43 51	35.6	168.7	-0.6		-6.8	78	6226	17 38 51
17 43 50	PM83	21 43 51	36.6	171.1	-0.5		-5.3	-19	6226	No stop
17 47 08	---	21 47 10	36.7	172.2	-0.4		-4.7	179	6251	17 43 51
17 47 50	2217-011	21 47 52	35.7	169.9	-0.5		-6.1	23	6251	17 47 50
17 49 20	---	21 49 22	35.7	170.4	-0.5		-5.8	90	6263	17 47 51
17 49 20	PM83	21 49 22	36.7	172.8	-0.4		-4.3	-19	6263	No stop
17 52 50	---	21 52 53	36.8	173.9	-0.3		-3.6	191	6290	17 49 21
17 52 50	2217-011	21 52 53	35.8	171.4	-0.5		-5.1	-19	6290	No stop
17 54 20	---	21 54 23	35.9	171.9	-0.4		-4.9	71	6301	17 52 51
17 54 20	PM83	21 54 23	36.8	174.4	-0.3		-3.4	-19	6301	No stop
17 57 38	---	21 57 42	36.9	175.4	-0.2		-2.7	179	6327	17 54 21
17 58 20	2217-011	21 58 24	35.9	173.1	-0.4		-4.1	23	6327	17 58 20
17 59 50	---	21 59 54	36.0	173.6	-0.3		-3.8	90	6338	17 58 21
17 59 50	PM83	21 59 54	36.9	176.1	-0.2		-2.3	-19	6338	No stop
18 03 20	---	22 03 25	36.9	177.2	-0.1		-1.7	191	6365	17 59 51
18 03 20	2217-011	22 03 25	36.0	174.7	-0.3		-3.2	-19	6365	No stop
18 04 50	---	22 04 55	36.0	175.1	-0.3		-2.9	71	6377	18 03 21
18 04 50	PM83	22 04 55	36.9	177.7	-0.1		-1.4	-19	6377	No stop
18 08 08	---	22 08 13	36.9	178.7	-0.1		-0.8	179	6402	18 04 51

Schedule for TORUN (Code Tr) Page 22

EVN follow up of binary SMBH candidates

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
--- Tue 1 Nov 2016 Day 306 ---										
18 08 50	2217-011	22 08 55	36.1	176.4	-0.2		-2.2	23	6402	18 08 50
18 10 20	---	22 10 26	36.1	176.8	-0.2		-1.9	90	6413	18 08 51
18 10 20	PM83	22 10 26	36.9	179.4	-0.0		-0.4	-20	6413	No stop
18 13 50	---	22 13 56	36.9	180.5	0.0		0.3	190	6440	18 10 21
18 13 50	2217-011	22 13 56	36.1	177.9	-0.1		-1.2	-19	6440	No stop
18 15 20	---	22 15 27	36.1	178.4	-0.1		-1.0	71	6452	18 13 51
18 15 20	PM83	22 15 27	36.9	181.0	0.1		0.6	-20	6452	No stop
18 18 50	---	22 18 57	36.9	182.1	0.1		1.2	190	6479	18 15 21
18 19 20	2217-011	22 19 27	36.1	179.6	-0.0		-0.2	11	6479	18 19 20
18 23 00	---	22 23 08	36.1	180.8	0.0		0.5	220	6507	18 19 21
18 23 30	2217-011	22 23 38	36.1	180.9	0.0		0.6	24	6507	18 23 30
18 28 30	---	22 28 39	36.1	182.5	0.1		1.5	300	6545	18 23 31
18 28 30	PM83	22 28 39	36.8	185.1	0.3		3.1	-20	6545	No stop
18 31 48	---	22 31 57	36.8	186.1	0.3		3.7	178	6571	18 28 31
18 32 30	2217-011	22 32 39	36.1	183.7	0.2		2.2	23	6571	18 32 30
18 34 00	---	22 34 10	36.1	184.2	0.2		2.5	90	6582	18 32 31
18 34 00	PM83	22 34 10	36.7	186.8	0.4		4.1	-20	6582	No stop
18 37 30	---	22 37 40	36.7	187.9	0.4		4.7	190	6609	18 34 01
18 37 30	2217-011	22 37 40	36.0	185.3	0.3		3.2	-19	6609	No stop
18 39 00	---	22 39 10	36.0	185.7	0.3		3.4	71	6621	18 37 31
18 39 00	PM83	22 39 10	36.6	188.4	0.4		5.0	-20	6621	No stop
18 42 18	---	22 42 29	36.6	189.4	0.5		5.6	178	6646	18 39 01
18 43 00	2217-011	22 43 11	35.9	187.0	0.4		4.2	23	6646	18 43 00
18 44 30	---	22 44 41	35.9	187.4	0.4		4.5	90	6658	18 43 01
18 44 30	PM83	22 44 41	36.5	190.1	0.5		6.0	-20	6658	No stop
18 48 00	---	22 48 12	36.4	191.2	0.6		6.7	190	6685	18 44 31
18 48 00	2217-011	22 48 12	35.8	188.5	0.5		5.1	-19	6685	No stop
18 49 30	---	22 49 42	35.8	189.0	0.5		5.4	71	6696	18 48 01
18 49 30	PM83	22 49 42	36.4	191.6	0.6		7.0	-20	6696	No stop
18 53 00	---	22 53 13	36.3	192.7	0.7		7.6	190	6723	18 49 31

```
Schedule for TORUN     (Code Tr )                                Page  23
               EVN follow up of binary SMBH candidates
  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   1 Nov 2016   Day 306 ---

18 53 30  2217-011     22 53 43  35.7 190.2  0.6       6.1    11     6723   18 53 30
18 57 10  ---          22 57 23  35.6 191.3  0.6       6.8   220     6751   18 53 31




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


 ======== Setup file: sess316.L1024

   Setup group:   13         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 64.000
   Number of channels:  8    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
 Net SB=         L         L         U         U         L         L         U         U
 IF SB =         L         L         L         L         L         L         L         L
 Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
 BBC   =         1         5         1         5         3         7         3         7
 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:   7  Setup file default.  Used with PCAL = off
 LO sum=   1626.49  1626.49  1626.49  1626.49  1690.49  1690.49  1690.49  1690.49
 BBC fr=    673.51   673.51   673.51   673.51   609.51   609.51   609.51   609.51
 Bandwd=     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00
  Matching frequency sets:   7

 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)

* PM01              09 32 04.772519   * 09 35 51.600000     09 37 05.340576       0.00
                    61 34 36.61931    * 61 21 11.34000      61 16 21.62817        0.00

* PM04              11 56 30.960769   * 11 59 05.760000     11 59 54.350347       0.00
                    58 37 17.30490    * 58 20 35.52000      58 14 53.29691        0.00

* PM46              08 36 59.061818   * 08 40 02.400000     08 41 03.278554       0.00
                    29 59 41.69474    * 29 49 02.64000      29 45 16.32253        0.00

* PM83              22 08 53.486780   * 22 11 27.360000     22 12 19.107363       0.00
                   -00 17 51.47175    *-00 03 02.19000      00 02 05.75137        0.00

* PM39              10 15 38.551992   * 10 18 33.640000     10 19 30.871561       0.00
                    36 28 29.27575    * 36 13 26.65000      36 08 15.02185        0.00

* PM36              16 47 15.363407   * 16 48 55.920000     16 49 27.828581       0.00
                    39 59 46.59580    * 39 54 37.44000      39 53 15.16886        0.00

* PM64              10 49 05.674781   * 10 51 43.272000     10 52 34.998147       0.00
                    11 01 21.03842    * 10 45 24.84000      10 40 05.69773        0.00

* 0849+287          08 49 04.565576   * 08 52 05.169573     08 53 05.056227       0.18
  J0852+2833        28 45 18.52176    * 28 33 59.73088      28 30 01.03257        0.25
                    /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                    GSFC 2015a astro solution, unpublished    157 observations.

* 0917+624          09 17 40.306854   * 09 21 36.231067     09 22 53.144563       0.02
  J0921+6215        62 28 38.64015    * 62 15 52.18037      62 11 14.30039        0.01
  J0921+62          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                    GSFC 2015a astro solution, unpublished   7302 observations.

* 4C39.25           09 23 55.319215   * 09 27 03.013936     09 28 04.786036       0.30
  J0927+3902        39 15 23.56645    * 39 02 20.85186      38 57 45.25121        0.16
  0923+392          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
```

```
  J0927+39          GSFC 2015a astro solution, unpublished 245753 observations.

* 1015+359          10 15 16.226759   * 10 18 10.988102     10 19 08.127636       0.01
  J1018+3542        35 57 41.35613    * 35 42 39.44094      35 37 28.19341        0.02
  J1018+35          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                    GSFC 2015a astro solution, unpublished   3262 observations.

* 1100+122          11 00 26.171568   * 11 03 03.529836     11 03 55.102217       0.06
  J1103+1158        12 14 26.46455    * 11 58 16.62425      11 52 53.19155        0.11
                    /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                    GSFC 2015a astro solution, unpublished    272 observations.

* 1151+598          11 51 23.972718   * 11 54 01.366207     11 54 50.723387       0.18
  J1154+5934        59 51 35.52205    * 59 34 54.19972      59 29 11.34523        0.14
                    /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                    GSFC 2015a astro solution, unpublished    105 observations.

* OQ208             14 04 45.615156   * 14 07 00.394414     14 07 43.586634       0.24
  J1407+2827        28 41 29.23518    * 28 27 14.69022      28 22 39.15474        0.34
  1404+286          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
  J1407+28          GSFC 2015a astro solution, unpublished  67871 observations.

* 1645+410          16 45 18.214795   * 16 46 56.858702     16 47 28.088830       0.08
  J1646+4059        41 04 34.49966    * 40 59 17.17206      40 57 52.08359        0.12
                    /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                    GSFC 2015a astro solution, unpublished    111 observations.

* 2217-011          22 17 13.011370   * 22 19 47.282466     22 20 39.199252       0.24
  J2219-0051       -01 06 38.04237    *-00 51 32.55595     -00 46 19.82742        0.54
                    /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                    GSFC 2015a astro solution, unpublished    124 observations.
```

rk16cftr

RadioAstron AGN Monitoring

PI: *Yuri Kovalev*


```
Address:  ASC Lebedev          Profsoyuznaya 84/32          117997 Moscow, Russia
Phone:    +7-495-3332512                EMAIL:    kirx@scan.sai.msu.ru
Fax:      +7-495-3332378                Phone during observation: +7-903-6614865
```


```
Observing mode: C/L-band, dual-pol

Schedule for TORUN     (Code Tr )                                    Page   2
               RadioAstron AGN Monitoring
  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   2 Nov 2016   Day 307 ---

 ---------- C-band VLBI scans ----------

 Next scan frequencies:  4836.00  4836.00  4836.00  4836.00
 Next BBC frequencies:    736.00   736.00   736.00   736.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

03 00 00  0727-115     07 01 33  24.9 172.0 -0.5      -4.9     0        0   03 00 00
03 14 30  ---          07 16 05  25.1 175.9 -0.3      -2.5   870       28   03 00 01

03 15 00  0727-115     07 16 35  25.1 176.1 -0.2      -2.4    24       28   03 15 00
03 29 30  ---          07 31 08  25.2 180.0  0.0       0.0   870       56   03 15 01

03 30 00  0727-115     07 31 38  25.2 180.1  0.0       0.1    24       56   03 30 00
03 44 30  ---          07 46 10  25.1 184.1  0.3       2.5   870       84   03 30 01

03 45 00  0727-115     07 46 40  25.1 184.2  0.3       2.6    24       84   03 45 00
04 00 00  ---          08 01 43  24.9 188.3  0.5       5.1   900      112   03 45 01



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


 ======== Setup file: ra6cm2.set

   Setup group:    3         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4100.00   4100.00   4100.00   4100.00
  Net SB=         L         L         U         U
  IF SB =         U         U         U         U
  Pol.  =      RCP       LCP       RCP       LCP
  BBC   =         1         2         1         2
  BBC SB=         L         L         U         U
  IF    =        C         A         C         A

 The following frequency sets based on these setups were used.

  Frequency Set:   2  Setup file default.  Used with PCAL = 1MHz
  LO sum=   4836.00  4836.00  4836.00  4836.00
  BBC fr=    736.00   736.00   736.00   736.00
  Bandwd=     16.00    16.00    16.00    16.00
   Matching frequency sets:   2

  Track assignments are:
   track1=   2, 18,  3, 19
   barrel=roll_off
```

POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 33.578470       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 12.82370        0.00
                    fake circumpolar target for a TS to look at

* 0727-115          07 27 58.097813   * 07 30 19.112473     07 31 06.662561       0.00
  J0730-1141       -11 34 52.58107    *-11 41 12.60063     -11 43 19.63578        0.00
                    ./rk16cf_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 155894 observations, RA-AO4-07, RA-AO3-
```

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)
  0727-115           101.1

 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
```

eg092ctr

VHS1256-1257 -EPOCH 3

PI: *Jose C. Guirado*

```
Address:  Dpto. Astronomia, Univ. Valencia  Spain

Observing mode: Phase-referencing at 18cm (1024 Mb/s)
Schedule for TORUN     (Code Tr )                                  Page   2
               vhs1256-1257 -Epoch 3
  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   2 Nov 2016   Day 307 ---
 Next scan frequencies:  1626.49  1626.49  1626.49  1626.49  1690.49  1690.49  1690.49  1690.49
 Next BBC frequencies:    673.51   673.51   673.51   673.51   609.51   609.51   609.51   609.51
 Next scan bandwidths:     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00

05 00 00  4C39.25      09 01 52  75.2 159.7 -0.4     -15.5     0        0   05 00 00
05 04 00  ---          09 05 53  75.4 162.7 -0.4     -13.3   240       31   05 00 01

05 04 30  4C39.25      09 06 23  75.4 163.1 -0.4     -13.0    23       31   05 04 30
05 07 40  ---          09 09 34  75.5 165.5 -0.3     -11.2   190       55   05 04 31

05 08 10  4C39.25      09 10 04  75.5 165.9 -0.3     -10.9    23       55   05 08 10
05 12 10  ---          09 14 04  75.7 168.9 -0.2      -8.5   240       86   05 08 11

05 21 46  J1303-1051   09 23 42  10.7 125.0 -3.7     -30.1   316       86   05 21 46
05 23 26  =1300-105    09 25 22  10.9 125.3 -3.6     -29.9   100       99   05 21 47

05 23 26  VHS1256      09 25 22   9.9 127.9 -3.5     -29.1   -20       99   No stop
05 27 06  ---          09 29 03  10.4 128.7 -3.5     -28.7   200      127   05 23 27

05 27 06  J1254-1317   09 29 03  10.3 129.2 -3.4     -28.6   -11      127   No stop
05 28 46  =1251-130    09 30 43  10.4 129.6 -3.4     -28.4    89      140   05 27 07

05 29 26  J1303-1051   09 31 23  11.6 126.6 -3.5     -29.4    19      140   05 29 26
05 31 06  =1300-105    09 33 03  11.8 127.0 -3.5     -29.2   100      153   05 29 27

05 31 06  VHS1256      09 33 03  10.8 129.6 -3.4     -28.3   -20      153   No stop
05 34 46  ---          09 36 44  11.3 130.4 -3.3     -28.0   200      181   05 31 07

05 34 46  J1254-1317   09 36 44  11.1 130.9 -3.3     -27.8   -11      181   No stop
05 36 26  =1251-130    09 38 24  11.3 131.3 -3.3     -27.6    89      194   05 34 47

05 37 06  J1303-1051   09 39 04  12.5 128.3 -3.4     -28.7    19      194   05 37 06
05 38 46  =1300-105    09 40 45  12.7 128.7 -3.4     -28.5   100      206   05 37 07

05 38 46  VHS1256      09 40 45  11.7 131.3 -3.3     -27.6   -20      206   No stop
05 42 26  ---          09 44 25  12.1 132.1 -3.2     -27.2   200      235   05 38 47

05 42 26  J1254-1317   09 44 25  12.0 132.6 -3.2     -27.0   -11      235   No stop
05 44 06  =1251-130    09 46 06  12.2 133.0 -3.2     -26.8    89      247   05 42 27

05 44 46  J1303-1051   09 46 46  13.4 130.0 -3.3     -27.9    19      247   05 44 46
05 46 26  =1300-105    09 48 26  13.6 130.4 -3.3     -27.8   100      260   05 44 47
```

Schedule for TORUN (Code Tr) Page 3

vhs1256-1257 -Epoch 3

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 2 Nov 2016 Day 307 ---										
05 46 26	VHS1256	09 48 26	12.6	133.0	-3.1		-26.8	-20	260	No stop
05 50 06	---	09 52 07	13.0	133.8	-3.1		-26.4	200	288	05 46 27
05 50 06	J1254-1317	09 52 07	12.8	134.3	-3.1		-26.2	-11	288	No stop
05 51 46	=1251-130	09 53 47	13.0	134.7	-3.0		-26.0	89	301	05 50 07
05 52 26	J1303-1051	09 54 27	14.3	131.8	-3.2		-27.1	19	301	05 52 26
05 54 06	=1300-105	09 56 07	14.5	132.1	-3.1		-27.0	100	314	05 52 27
05 54 06	VHS1256	09 56 07	13.4	134.7	-3.0		-26.0	-20	314	No stop
05 57 46	---	09 59 48	13.8	135.6	-3.0		-25.6	200	342	05 54 07
05 57 46	J1254-1317	09 59 48	13.7	136.0	-2.9		-25.4	-11	342	No stop
05 59 26	=1251-130	10 01 28	13.8	136.4	-2.9		-25.2	89	355	05 57 47
06 00 06	J1303-1051	10 02 08	15.2	133.5	-3.0		-26.3	19	355	06 00 06
06 01 46	=1300-105	10 03 49	15.3	133.9	-3.0		-26.2	100	368	06 00 07
06 01 46	VHS1256	10 03 49	14.2	136.5	-2.9		-25.1	-20	368	No stop
06 05 26	---	10 07 29	14.6	137.3	-2.8		-24.7	200	396	06 01 47
06 05 26	J1254-1317	10 07 29	14.4	137.8	-2.8		-24.5	-11	396	No stop
06 07 06	=1251-130	10 09 09	14.6	138.2	-2.8		-24.3	89	409	06 05 27
06 07 46	J1303-1051	10 09 50	16.0	135.3	-2.9		-25.5	19	409	06 07 46
06 09 26	=1300-105	10 11 30	16.2	135.6	-2.9		-25.3	100	422	06 07 47
06 09 26	VHS1256	10 11 30	15.0	138.2	-2.8		-24.2	-20	422	No stop
06 13 06	---	10 15 10	15.4	139.1	-2.7		-23.8	200	450	06 09 27
06 13 06	J1254-1317	10 15 10	15.2	139.6	-2.7		-23.6	-11	450	No stop
06 14 46	=1251-130	10 16 51	15.4	139.9	-2.6		-23.4	89	463	06 13 07
06 15 26	J1303-1051	10 17 31	16.8	137.0	-2.8		-24.6	20	463	06 15 26
06 17 06	=1300-105	10 19 11	17.0	137.4	-2.7		-24.4	100	476	06 15 27
06 17 06	VHS1256	10 19 11	15.7	140.0	-2.6		-23.3	-19	476	No stop
06 20 46	---	10 22 52	16.1	140.9	-2.6		-22.9	201	504	06 17 07
06 20 46	J1254-1317	10 22 52	15.9	141.3	-2.5		-22.7	-11	504	No stop
06 22 26	=1251-130	10 24 32	16.1	141.7	-2.5		-22.5	89	517	06 20 47
06 23 06	J1303-1051	10 25 12	17.6	138.8	-2.6		-23.7	20	517	06 23 06
06 24 46	=1300-105	10 26 52	17.7	139.2	-2.6		-23.5	100	529	06 23 07
06 24 46	VHS1256	10 26 52	16.5	141.8	-2.5		-22.4	-19	529	No stop
06 28 26	---	10 30 33	16.8	142.7	-2.4		-22.0	201	558	06 24 47

Schedule for TORUN (Code Tr) Page 4

vhs1256-1257 -Epoch 3

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 2 Nov 2016 Day 307 ---										
06 28 26	J1254-1317	10 30 33	16.6	143.1	-2.4		-21.7	-11	558	No stop
06 30 06	=1251-130	10 32 13	16.8	143.5	-2.4		-21.5	89	571	06 28 27
06 30 46	J1303-1051	10 32 53	18.3	140.7	-2.5		-22.8	20	571	06 30 46
06 32 26	=1300-105	10 34 34	18.5	141.1	-2.5		-22.6	100	583	06 30 47
06 32 26	VHS1256	10 34 34	17.2	143.6	-2.4		-21.5	-19	583	No stop
06 36 06	---	10 38 14	17.5	144.5	-2.3		-21.0	201	612	06 32 27
06 36 06	J1254-1317	10 38 14	17.3	145.0	-2.3		-20.8	-11	612	No stop
06 37 46	=1251-130	10 39 54	17.5	145.4	-2.3		-20.5	89	624	06 36 07
06 38 26	J1303-1051	10 40 35	19.0	142.5	-2.4		-21.9	20	624	06 38 26
06 40 06	=1300-105	10 42 15	19.2	142.9	-2.4		-21.6	100	637	06 38 27
06 40 06	VHS1256	10 42 15	17.8	145.4	-2.2		-20.5	-19	637	No stop
06 43 46	---	10 45 55	18.2	146.3	-2.2		-20.0	201	665	06 40 07
06 43 46	J1254-1317	10 45 55	18.0	146.8	-2.2		-19.8	-11	665	No stop
06 45 26	=1251-130	10 47 36	18.1	147.2	-2.1		-19.5	89	678	06 43 47
06 46 06	J1303-1051	10 48 16	19.7	144.4	-2.3		-20.9	20	678	06 46 06
06 47 46	=1300-105	10 49 56	19.9	144.8	-2.2		-20.7	100	691	06 46 07
06 47 46	VHS1256	10 49 56	18.5	147.3	-2.1		-19.5	-19	691	No stop
06 51 26	---	10 53 37	18.8	148.2	-2.1		-19.0	201	719	06 47 47
06 51 26	J1254-1317	10 53 37	18.6	148.7	-2.0		-18.7	-11	719	No stop
06 53 06	=1251-130	10 55 17	18.7	149.1	-2.0		-18.5	89	732	06 51 27
06 53 06	J1303-1051	10 55 17	20.3	146.1	-2.1		-20.0	-20	732	No stop
06 54 46	=1300-105	10 56 57	20.4	146.5	-2.1		-19.7	80	745	06 53 07
06 54 46	VHS1256	10 56 57	19.0	149.0	-2.0		-18.5	-19	745	No stop
06 58 26	---	11 00 38	19.3	149.9	-1.9		-18.0	201	773	06 54 47
06 58 26	J1254-1317	11 00 38	19.1	150.4	-1.9		-17.8	-11	773	No stop
07 00 06	=1251-130	11 02 18	19.2	150.8	-1.9		-17.5	89	786	06 58 27
07 00 46	J1303-1051	11 02 58	20.9	148.0	-2.0		-18.9	20	786	07 00 46
07 02 26	=1300-105	11 04 38	21.1	148.4	-2.0		-18.7	100	799	07 00 47
07 02 26	VHS1256	11 04 38	19.6	150.9	-1.9		-17.5	-19	799	No stop
07 06 06	---	11 08 19	19.9	151.8	-1.8		-16.9	201	827	07 02 27

Schedule for TORUN (Code Tr) Page 5

vhs1256-1257 -Epoch 3

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
--- Wed 2 Nov 2016 Day 307 ---										
07 06 06	J1254-1317	11 08 19	19.7	152.3	-1.8		-16.7	-11	827	No stop
07 07 46	=1251-130	11 09 59	19.8	152.7	-1.8		-16.5	89	840	07 06 07
07 07 46	J1303-1051	11 09 59	21.5	149.7	-1.9		-17.9	-20	840	No stop
07 09 26	=1300-105	11 11 40	21.6	150.2	-1.9		-17.7	80	853	07 07 47
07 09 26	VHS1256	11 11 40	20.1	152.6	-1.8		-16.5	-19	853	No stop
07 13 06	---	11 15 20	20.4	153.5	-1.7		-15.9	201	881	07 09 27
07 13 06	J1254-1317	11 15 20	20.1	154.0	-1.7		-15.7	-11	881	No stop
07 14 46	=1251-130	11 17 01	20.3	154.4	-1.6		-15.4	89	894	07 13 07
07 15 26	J1303-1051	11 17 41	22.0	151.7	-1.8		-16.9	20	894	07 15 26
07 17 06	=1300-105	11 19 21	22.2	152.1	-1.7		-16.6	100	906	07 15 27
07 17 06	VHS1256	11 19 21	20.6	154.5	-1.6		-15.4	-19	906	No stop
07 20 46	---	11 23 02	20.9	155.5	-1.6		-14.8	201	935	07 17 07
07 20 46	J1254-1317	11 23 02	20.6	155.9	-1.5		-14.6	-11	935	No stop
07 22 26	=1251-130	11 24 42	20.7	156.4	-1.5		-14.3	89	947	07 20 47
07 22 26	J1303-1051	11 24 42	22.5	153.5	-1.7		-15.9	-21	947	No stop
07 24 06	=1300-105	11 26 22	22.6	153.9	-1.6		-15.6	79	960	07 22 27
07 24 06	VHS1256	11 26 22	21.1	156.3	-1.5		-14.3	-19	960	No stop
07 27 46	---	11 30 03	21.3	157.2	-1.4		-13.8	201	988	07 24 07
07 27 46	J1254-1317	11 30 03	21.1	157.7	-1.4		-13.5	-11	988	No stop
07 29 26	=1251-130	11 31 43	21.1	158.1	-1.4		-13.3	89	1001	07 27 47
07 30 06	J1303-1051	11 32 23	23.0	155.4	-1.5		-14.7	19	1001	07 30 06
07 31 46	=1300-105	11 34 03	23.1	155.9	-1.5		-14.5	100	1014	07 30 07
07 31 46	VHS1256	11 34 03	21.5	158.3	-1.4		-13.2	-20	1014	No stop
07 35 26	---	11 37 44	21.7	159.2	-1.3		-12.6	200	1042	07 31 47
07 35 26	J1254-1317	11 37 44	21.5	159.7	-1.3		-12.4	-11	1042	No stop
07 37 06	=1251-130	11 39 24	21.6	160.1	-1.3		-12.1	89	1055	07 35 27
07 37 06	J1303-1051	11 39 24	23.5	157.3	-1.4		-13.7	-21	1055	No stop
07 38 46	=1300-105	11 41 04	23.5	157.7	-1.4		-13.4	79	1068	07 37 07
07 38 46	VHS1256	11 41 04	21.9	160.1	-1.3		-12.1	-20	1068	No stop
07 42 26	---	11 44 45	22.1	161.0	-1.2		-11.6	200	1096	07 38 47

Schedule for TORUN (Code Tr) Page 6

vhs1256-1257 -Epoch 3

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
--- Wed 2 Nov 2016 Day 307 ---										
07 42 26	J1254-1317	11 44 45	21.8	161.5	-1.2		-11.3	-11	1096	No stop
07 44 06	=1251-130	11 46 25	21.9	161.9	-1.1		-11.1	89	1109	07 42 27
07 44 46	J1303-1051	11 47 05	23.9	159.3	-1.3		-12.5	19	1109	07 44 46
07 46 26	=1300-105	11 48 46	24.0	159.7	-1.3		-12.2	100	1122	07 44 47
07 46 26	VHS1256	11 48 46	22.3	162.0	-1.1		-11.0	-20	1122	No stop
07 50 06	---	11 52 26	22.4	163.0	-1.1		-10.4	200	1150	07 46 27
07 50 06	J1254-1317	11 52 26	22.2	163.4	-1.0		-10.1	-11	1150	No stop
07 51 46	=1251-130	11 54 07	22.2	163.9	-1.0		-9.9	89	1163	07 50 07
07 51 46	J1303-1051	11 54 07	24.2	161.1	-1.2		-11.4	-21	1163	No stop
07 53 26	=1300-105	11 55 47	24.3	161.6	-1.1		-11.2	79	1176	07 51 47
07 53 26	VHS1256	11 55 47	22.6	163.9	-1.0		-9.9	-20	1176	No stop
07 57 06	---	11 59 27	22.7	164.8	-1.0		-9.3	200	1204	07 53 27
07 57 06	J1254-1317	11 59 27	22.5	165.3	-0.9		-9.0	-11	1204	No stop
07 58 46	=1251-130	12 01 08	22.5	165.7	-0.9		-8.8	89	1217	07 57 07
07 59 26	J1303-1051	12 01 48	24.6	163.1	-1.0		-10.2	18	1217	07 59 26
08 01 06	=1300-105	12 03 28	24.7	163.6	-1.0		-9.9	100	1229	07 59 27
08 01 06	VHS1256	12 03 28	22.9	165.9	-0.9		-8.7	-20	1229	No stop
08 04 46	---	12 07 09	23.0	166.8	-0.8		-8.1	200	1258	08 01 07
08 04 46	J1254-1317	12 07 09	22.7	167.3	-0.8		-7.8	-11	1258	No stop
08 06 26	=1251-130	12 08 49	22.8	167.7	-0.8		-7.6	89	1271	08 04 47
08 06 26	J1303-1051	12 08 49	24.9	165.0	-0.9		-9.1	-22	1271	No stop
08 08 06	=1300-105	12 10 29	24.9	165.5	-0.9		-8.8	78	1283	08 06 27
08 08 06	VHS1256	12 10 29	23.1	167.7	-0.8		-7.5	-21	1283	No stop
08 11 46	---	12 14 10	23.2	168.7	-0.7		-7.0	199	1312	08 08 07
08 11 46	J1254-1317	12 14 10	22.9	169.1	-0.7		-6.7	-11	1312	No stop
08 13 26	=1251-130	12 15 50	23.0	169.5	-0.7		-6.4	89	1324	08 11 47
08 14 06	J1303-1051	12 16 30	25.2	167.1	-0.8		-7.9	18	1324	08 14 06
08 15 46	=1300-105	12 18 11	25.2	167.5	-0.8		-7.6	100	1337	08 14 07
08 15 46	VHS1256	12 18 11	23.3	169.7	-0.6		-6.3	-21	1337	No stop
08 19 26	---	12 21 51	23.4	170.7	-0.6		-5.7	199	1365	08 15 47

Schedule for TORUN (Code Tr) Page 7

vhs1256-1257 -Epoch 3

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
--- Wed 2 Nov 2016 Day 307 ---										
08 19 26	J1254-1317	12 21 51	23.1	171.1	-0.6		-5.5	-11	1365	No stop
08 21 06	=1251-130	12 23 31	23.2	171.6	-0.5		-5.2	89	1378	08 19 27
08 21 06	J1303-1051	12 23 31	25.4	169.0	-0.7		-6.7	-22	1378	No stop
08 22 46	=1300-105	12 25 12	25.4	169.4	-0.6		-6.4	78	1391	08 21 07
08 22 46	VHS1256	12 25 12	23.5	171.6	-0.5		-5.2	-21	1391	No stop
08 26 26	---	12 28 52	23.6	172.6	-0.5		-4.6	199	1419	08 22 47
08 26 26	J1254-1317	12 28 52	23.3	173.0	-0.4		-4.3	-11	1419	No stop
08 28 06	=1251-130	12 30 33	23.3	173.4	-0.4		-4.1	89	1432	08 26 27
08 28 46	J1303-1051	12 31 13	25.6	171.0	-0.5		-5.5	18	1432	08 28 46
08 30 26	=1300-105	12 32 53	25.6	171.5	-0.5		-5.2	100	1445	08 28 47
08 30 26	VHS1256	12 32 53	23.7	173.6	-0.4		-3.9	-21	1445	No stop
08 34 06	---	12 36 34	23.7	174.6	-0.3		-3.3	199	1473	08 30 27
08 34 06	J1254-1317	12 36 34	23.4	175.0	-0.3		-3.1	-11	1473	No stop
08 35 46	=1251-130	12 38 14	23.4	175.5	-0.3		-2.8	89	1486	08 34 07
08 35 46	J1303-1051	12 38 14	25.7	173.0	-0.4		-4.3	-23	1486	No stop
08 37 26	=1300-105	12 39 54	25.8	173.4	-0.4		-4.0	77	1499	08 35 47
08 37 26	VHS1256	12 39 54	23.8	175.5	-0.3		-2.8	-21	1499	No stop
08 41 06	---	12 43 35	23.8	176.5	-0.2		-2.2	199	1527	08 37 27
08 41 06	J1254-1317	12 43 35	23.5	176.9	-0.2		-1.9	-11	1527	No stop
08 42 46	=1251-130	12 45 15	23.5	177.3	-0.2		-1.7	89	1540	08 41 07
08 43 26	J1303-1051	12 45 55	25.8	175.0	-0.3		-3.0	17	1540	08 43 26
08 45 06	=1300-105	12 47 35	25.9	175.5	-0.3		-2.8	100	1553	08 43 27
08 45 06	VHS1256	12 47 35	23.8	177.5	-0.2		-1.5	-21	1553	No stop
08 48 46	---	12 51 16	23.8	178.5	-0.1		-0.9	199	1581	08 45 07
08 48 46	J1254-1317	12 51 16	23.5	178.9	-0.1		-0.7	-12	1581	No stop
08 50 26	=1251-130	12 52 56	23.5	179.4	-0.0		-0.4	88	1594	08 48 47
08 50 26	J1303-1051	12 52 56	25.9	177.0	-0.2		-1.9	-23	1594	No stop
08 52 06	=1300-105	12 54 37	25.9	177.4	-0.2		-1.6	77	1606	08 50 27
08 52 06	VHS1256	12 54 37	23.9	179.4	-0.0		-0.4	-22	1606	No stop
08 55 46	---	12 58 17	23.9	180.4	0.0		0.2	198	1635	08 52 07

Schedule for TORUN (Code Tr) Page 8

vhs1256-1257 -Epoch 3

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
--- Wed 2 Nov 2016 Day 307 ---										
08 55 46	J1254-1317	12 58 17	23.5	180.8	0.0		0.5	-12	1635	No stop
08 57 26	=1251-130	12 59 57	23.5	181.2	0.1		0.7	88	1647	08 55 47
08 58 06	J1303-1051	13 00 37	26.0	179.1	-0.1		-0.6	17	1647	08 58 06
08 59 46	=1300-105	13 02 18	26.0	179.5	-0.0		-0.3	100	1660	08 58 07
08 59 46	VHS1256	13 02 18	23.9	181.4	0.1		0.9	-22	1660	No stop
09 03 26	---	13 05 58	23.8	182.4	0.2		1.5	198	1688	08 59 47
09 03 26	J1254-1317	13 05 58	23.5	182.8	0.2		1.7	-12	1688	No stop
09 05 06	=1251-130	13 07 39	23.5	183.3	0.2		2.0	88	1701	09 03 27
09 05 06	J1303-1051	13 07 39	26.0	181.0	0.1		0.6	-23	1701	No stop
09 06 46	=1300-105	13 09 19	26.0	181.4	0.1		0.9	77	1714	09 05 07
09 06 46	VHS1256	13 09 19	23.8	183.3	0.2		2.0	-22	1714	No stop
09 10 26	---	13 13 00	23.8	184.3	0.3		2.6	198	1742	09 06 47
09 10 26	J1254-1317	13 13 00	23.4	184.7	0.3		2.9	-12	1742	No stop
09 12 06	=1251-130	13 14 40	23.4	185.1	0.3		3.2	88	1755	09 10 27
09 12 46	J1303-1051	13 15 20	25.9	183.1	0.2		1.9	17	1755	09 12 46
09 14 26	=1300-105	13 17 00	25.9	183.5	0.2		2.2	100	1768	09 12 47
09 14 26	VHS1256	13 17 00	23.7	185.4	0.3		3.3	-22	1768	No stop
09 18 06	---	13 20 41	23.7	186.3	0.4		3.9	198	1796	09 14 27
09 18 06	J1254-1317	13 20 41	23.3	186.7	0.4		4.1	-12	1796	No stop
09 19 46	=1251-130	13 22 21	23.3	187.1	0.4		4.4	88	1809	09 18 07
09 19 46	J1303-1051	13 22 21	25.8	185.0	0.3		3.0	-23	1809	No stop
09 21 26	=1300-105	13 24 01	25.8	185.4	0.3		3.3	77	1822	09 19 47
09 21 26	VHS1256	13 24 01	23.6	187.2	0.5		4.4	-22	1822	No stop
09 25 06	---	13 27 42	23.5	188.2	0.5		5.0	198	1850	09 21 27
09 25 06	J1254-1317	13 27 42	23.2	188.6	0.5		5.3	-12	1850	No stop
09 26 46	=1251-130	13 29 22	23.1	189.0	0.6		5.5	88	1863	09 25 07
09 27 26	J1303-1051	13 30 02	25.7	187.1	0.4		4.3	16	1863	09 27 26
09 29 06	=1300-105	13 31 43	25.7	187.5	0.5		4.6	100	1876	09 27 27
09 29 06	VHS1256	13 31 43	23.4	189.2	0.6		5.7	-22	1876	No stop
09 32 46	---	13 35 23	23.3	190.2	0.6		6.3	198	1904	09 29 07

Schedule for TORUN (Code Tr) Page 9

vhs1256-1257 -Epoch 3

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
--- Wed 2 Nov 2016 Day 307 ---										
09 32 46	J1254-1317	13 35 23	23.0	190.6	0.7		6.5	-12	1904	No stop
09 34 26	=1251-130	13 37 03	22.9	191.0	0.7		6.8	88	1917	09 32 47
09 34 26	J1303-1051	13 37 03	25.6	189.0	0.5		5.5	-24	1917	No stop
09 36 06	=1300-105	13 38 44	25.5	189.4	0.6		5.8	76	1929	09 34 27
09 36 06	VHS1256	13 38 44	23.3	191.1	0.7		6.8	-22	1929	No stop
09 39 46	---	13 42 24	23.1	192.1	0.8		7.4	198	1958	09 36 07
09 39 46	J1254-1317	13 42 24	22.8	192.4	0.8		7.6	-12	1958	No stop
09 41 26	=1251-130	13 44 05	22.7	192.8	0.8		7.9	88	1971	09 39 47
09 42 06	J1303-1051	13 44 45	25.4	191.1	0.7		6.7	16	1971	09 42 06
09 43 46	=1300-105	13 46 25	25.3	191.5	0.7		7.0	100	1983	09 42 07
09 43 46	VHS1256	13 46 25	23.0	193.1	0.8		8.0	-23	1983	No stop
09 47 26	---	13 50 06	22.9	194.1	0.9		8.6	197	2012	09 43 47
09 47 26	J1254-1317	13 50 06	22.5	194.4	0.9		8.8	-12	2012	No stop
09 49 06	=1251-130	13 51 46	22.4	194.9	0.9		9.1	88	2024	09 47 27
09 49 06	J1303-1051	13 51 46	25.2	192.9	0.8		7.9	-24	2024	No stop
09 50 46	=1300-105	13 53 26	25.1	193.4	0.8		8.1	76	2037	09 49 07
09 50 46	VHS1256	13 53 26	22.8	195.0	0.9		9.2	-23	2037	No stop
09 54 26	---	13 57 07	22.6	195.9	1.0		9.7	197	2065	09 50 47
09 54 26	J1254-1317	13 57 07	22.2	196.2	1.0		9.9	-12	2065	No stop
09 56 06	=1251-130	13 58 47	22.1	196.7	1.1		10.2	88	2078	09 54 27
09 56 46	J1303-1051	13 59 27	24.9	195.0	0.9		9.1	16	2078	09 56 46
09 58 26	=1300-105	14 01 07	24.8	195.5	1.0		9.4	100	2091	09 56 47
09 58 26	VHS1256	14 01 07	22.4	197.0	1.1		10.4	-23	2091	No stop
10 02 06	---	14 04 48	22.3	197.9	1.1		10.9	197	2119	09 58 27
10 02 06	J1254-1317	14 04 48	21.9	198.2	1.2		11.1	-12	2119	No stop
10 03 46	=1251-130	14 06 28	21.8	198.7	1.2		11.4	88	2132	10 02 07
10 03 46	J1303-1051	14 06 28	24.6	196.9	1.0		10.2	-24	2132	No stop
10 05 26	=1300-105	14 08 09	24.5	197.3	1.1		10.5	76	2145	10 03 47
10 05 26	VHS1256	14 08 09	22.1	198.8	1.2		11.4	-23	2145	No stop
10 09 06	---	14 11 49	21.9	199.7	1.2		12.0	197	2173	10 05 27

Schedule for TORUN (Code Tr) Page 10

vhs1256-1257 -Epoch 3

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
--- Wed 2 Nov 2016 Day 307 ---										
10 09 06	J1254-1317	14 11 49	21.5	200.0	1.3		12.2	-12	2173	No stop
10 10 46	=1251-130	14 13 29	21.4	200.4	1.3		12.5	88	2186	10 09 07
10 11 26	J1303-1051	14 14 10	24.2	198.9	1.2		11.4	16	2186	10 11 26
10 13 06	=1300-105	14 15 50	24.2	199.4	1.2		11.7	100	2199	10 11 27
10 13 06	VHS1256	14 15 50	21.7	200.7	1.3		12.6	-23	2199	No stop
10 16 46	---	14 19 30	21.5	201.7	1.4		13.2	197	2227	10 13 07
10 16 46	J1254-1317	14 19 30	21.1	202.0	1.4		13.4	-12	2227	No stop
10 18 26	=1251-130	14 21 11	21.0	202.4	1.4		13.6	88	2240	10 16 47
10 18 26	J1303-1051	14 21 11	23.9	200.8	1.3		12.5	-25	2240	No stop
10 20 06	=1300-105	14 22 51	23.8	201.2	1.3		12.8	75	2253	10 18 27
10 20 06	VHS1256	14 22 51	21.3	202.5	1.4		13.7	-23	2253	No stop
10 23 46	---	14 26 32	21.1	203.5	1.5		14.2	197	2281	10 20 07
10 23 46	J1254-1317	14 26 32	20.7	203.8	1.5		14.4	-12	2281	No stop
10 25 26	=1251-130	14 28 12	20.6	204.2	1.5		14.6	88	2294	10 23 47
10 26 06	J1303-1051	14 28 52	23.4	202.8	1.4		13.7	15	2294	10 26 06
10 27 46	=1300-105	14 30 32	23.4	203.2	1.4		13.9	100	2306	10 26 07
10 27 46	VHS1256	14 30 32	20.9	204.5	1.6		14.8	-23	2306	No stop
10 31 26	---	14 34 13	20.6	205.4	1.6		15.3	197	2335	10 27 47
10 31 26	J1254-1317	14 34 13	20.2	205.7	1.6		15.5	-13	2335	No stop
10 33 06	=1251-130	14 35 53	20.1	206.1	1.7		15.8	87	2347	10 31 27
10 33 06	J1303-1051	14 35 53	23.0	204.6	1.5		14.7	-25	2347	No stop
10 34 46	=1300-105	14 37 33	22.9	205.0	1.6		15.0	75	2360	10 33 07
10 34 46	VHS1256	14 37 33	20.4	206.2	1.7		15.8	-23	2360	No stop
10 38 26	---	14 41 14	20.2	207.2	1.7		16.3	197	2388	10 34 47
10 38 26	J1254-1317	14 41 14	19.8	207.4	1.8		16.5	-13	2388	No stop
10 40 06	=1251-130	14 42 54	19.6	207.8	1.8		16.8	87	2401	10 38 27
10 40 46	J1303-1051	14 43 34	22.5	206.6	1.7		15.9	15	2401	10 40 46
10 42 26	=1300-105	14 45 15	22.4	207.0	1.7		16.1	100	2414	10 40 47
10 42 26	VHS1256	14 45 15	19.9	208.2	1.8		16.9	-23	2414	No stop
10 46 06	---	14 48 55	19.6	209.1	1.9		17.4	197	2442	10 42 27

Schedule for TORUN (Code Tr) Page 11

vhs1256-1257 -Epoch 3

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 2 Nov 2016 Day 307 ---										
10 46 06	J1254-1317	14 48 55	19.2	209.3	1.9		17.6	-13	2442	No stop
10 47 46	=1251-130	14 50 36	19.1	209.7	1.9		17.8	87	2455	10 46 07
10 47 46	J1303-1051	14 50 36	22.0	208.3	1.8		16.9	-25	2455	No stop
10 49 26	=1300-105	14 52 16	21.9	208.8	1.8		17.1	75	2468	10 47 47
10 49 26	VHS1256	14 52 16	19.4	209.9	1.9		17.9	-23	2468	No stop
10 53 06	---	14 55 56	19.1	210.8	2.0		18.4	197	2496	10 49 27
10 53 06	J1254-1317	14 55 56	18.7	211.0	2.0		18.6	-13	2496	No stop
10 54 46	=1251-130	14 57 37	18.5	211.4	2.0		18.8	87	2509	10 53 07
10 55 26	J1303-1051	14 58 17	21.5	210.3	1.9		18.0	15	2509	10 55 26
10 57 06	=1300-105	14 59 57	21.3	210.7	1.9		18.2	100	2522	10 55 27
10 57 06	VHS1256	14 59 57	18.8	211.8	2.1		18.9	-24	2522	No stop
11 00 46	---	15 03 38	18.5	212.7	2.1		19.4	196	2550	10 57 07
11 00 46	J1254-1317	15 03 38	18.1	212.9	2.1		19.6	-13	2550	No stop
11 02 26	=1251-130	15 05 18	17.9	213.3	2.2		19.8	87	2563	11 00 47
11 02 26	J1303-1051	15 05 18	20.9	212.0	2.0		18.9	-25	2563	No stop
11 04 06	=1300-105	15 06 58	20.8	212.4	2.0		19.2	75	2576	11 02 27
11 04 06	VHS1256	15 06 58	18.2	213.5	2.2		19.9	-24	2576	No stop
11 07 46	---	15 10 39	17.9	214.3	2.2		20.4	196	2604	11 04 07
11 07 46	J1254-1317	15 10 39	17.5	214.6	2.3		20.5	-13	2604	No stop
11 09 26	=1251-130	15 12 19	17.3	215.0	2.3		20.7	87	2617	11 07 47
11 10 06	J1303-1051	15 12 59	20.3	213.9	2.1		20.0	15	2617	11 10 06
11 11 46	=1300-105	15 14 39	20.2	214.3	2.2		20.2	100	2629	11 10 07
11 11 46	VHS1256	15 14 39	17.6	215.3	2.3		20.9	-24	2629	No stop
11 15 26	---	15 18 20	17.3	216.2	2.4		21.3	196	2658	11 11 47
11 15 26	J1254-1317	15 18 20	16.8	216.4	2.4		21.5	-13	2658	No stop
11 17 06	=1251-130	15 20 00	16.7	216.8	2.4		21.7	87	2671	11 15 27
11 17 06	J1303-1051	15 20 00	19.7	215.7	2.3		20.9	-25	2671	No stop
11 18 46	=1300-105	15 21 41	19.6	216.1	2.3		21.1	75	2683	11 17 07
11 18 46	VHS1256	15 21 41	17.0	217.0	2.4		21.8	-24	2683	No stop
11 22 26	---	15 25 21	16.6	217.8	2.5		22.2	196	2712	11 18 47

Schedule for TORUN (Code Tr) Page 12

vhs1256-1257 -Epoch 3

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
--- Wed 2 Nov 2016 Day 307 ---										
11 22 26	J1254-1317	15 25 21	16.2	218.1	2.5		22.4	-13	2712	No stop
11 24 06	=1251-130	15 27 01	16.0	218.5	2.5		22.6	87	2724	11 22 27
11 24 46	J1303-1051	15 27 42	19.0	217.5	2.4		21.9	15	2724	11 24 46
11 26 26	=1300-105	15 29 22	18.9	217.9	2.4		22.1	100	2737	11 24 47
11 26 26	VHS1256	15 29 22	16.2	218.8	2.5		22.7	-24	2737	No stop
11 30 06	---	15 33 02	15.9	219.6	2.6		23.2	196	2765	11 26 27
11 30 06	J1254-1317	15 33 02	15.4	219.9	2.6		23.3	-13	2765	No stop
11 31 46	=1251-130	15 34 43	15.3	220.2	2.7		23.5	87	2778	11 30 07
11 31 46	J1303-1051	15 34 43	18.4	219.2	2.5		22.7	-25	2778	No stop
11 33 26	=1300-105	15 36 23	18.2	219.6	2.5		22.9	75	2791	11 31 47
11 33 26	VHS1256	15 36 23	15.6	220.4	2.7		23.6	-24	2791	No stop
11 37 06	---	15 40 04	15.2	221.3	2.7		24.0	196	2819	11 33 27
11 37 06	J1254-1317	15 40 04	14.8	221.5	2.7		24.1	-13	2819	No stop
11 38 46	=1251-130	15 41 44	14.6	221.9	2.8		24.3	87	2832	11 37 07
11 39 26	J1303-1051	15 42 24	17.6	221.0	2.6		23.7	15	2832	11 39 26
11 41 06	=1300-105	15 44 04	17.5	221.4	2.7		23.9	100	2845	11 39 27
11 41 06	VHS1256	15 44 04	14.8	222.2	2.8		24.5	-24	2845	No stop
11 44 46	---	15 47 45	14.4	223.0	2.8		24.9	196	2873	11 41 07
11 44 46	J1254-1317	15 47 45	14.0	223.2	2.9		25.0	-13	2873	No stop
11 46 26	=1251-130	15 49 25	13.8	223.6	2.9		25.2	87	2886	11 44 47
11 46 26	J1303-1051	15 49 25	16.9	222.7	2.8		24.5	-25	2886	No stop
11 48 06	=1300-105	15 51 05	16.7	223.1	2.8		24.7	75	2899	11 46 27
11 48 06	VHS1256	15 51 05	14.1	223.8	2.9		25.2	-24	2899	No stop
11 51 46	---	15 54 46	13.7	224.6	3.0		25.7	196	2927	11 48 07
11 51 46	J1254-1317	15 54 46	13.3	224.8	3.0		25.8	-13	2927	No stop
11 53 26	=1251-130	15 56 26	13.1	225.2	3.0		26.0	87	2940	11 51 47
11 54 06	J1303-1051	15 57 06	16.1	224.5	2.9		25.4	15	2940	11 54 06
11 55 46	=1300-105	15 58 47	15.9	224.8	2.9		25.5	100	2953	11 54 07
11 55 46	VHS1256	15 58 47	13.3	225.5	3.0		26.1	-24	2953	No stop
11 59 26	---	16 02 27	12.9	226.4	3.1		26.5	196	2981	11 55 47

Schedule for TORUN (Code Tr) Page 13

vhs1256-1257 -Epoch 3

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
--- Wed 2 Nov 2016 Day 307 ---										
11 59 26	J1254-1317	16 02 27	12.4	226.5	3.1		26.6	-13	2981	No stop
12 01 06	=1251-130	16 04 08	12.2	226.9	3.1		26.8	87	2994	11 59 27
12 01 06	J1303-1051	16 04 08	15.4	226.1	3.0		26.1	-25	2994	No stop
12 02 46	=1300-105	16 05 48	15.2	226.4	3.0		26.3	75	3006	12 01 07
12 02 46	VHS1256	16 05 48	12.5	227.1	3.1		26.8	-24	3006	No stop
12 06 26	---	16 09 28	12.1	227.9	3.2		27.2	196	3035	12 02 47
12 06 26	J1254-1317	16 09 28	11.7	228.1	3.2		27.3	-13	3035	No stop
12 08 06	=1251-130	16 11 09	11.5	228.5	3.3		27.5	87	3047	12 06 27
12 08 46	J1303-1051	16 11 49	14.5	227.8	3.1		26.9	14	3047	12 08 46
12 10 26	=1300-105	16 13 29	14.3	228.2	3.2		27.1	100	3060	12 08 47
12 10 26	VHS1256	16 13 29	11.7	228.8	3.3		27.6	-24	3060	No stop
12 14 06	---	16 17 10	11.2	229.6	3.3		28.0	196	3088	12 10 27
12 14 06	J1254-1317	16 17 10	10.8	229.8	3.4		28.1	-13	3088	No stop
12 15 46	=1251-130	16 18 50	10.6	230.1	3.4		28.3	87	3101	12 14 07
12 15 46	J1303-1051	16 18 50	13.7	229.4	3.2		27.7	-26	3101	No stop
12 17 26	=1300-105	16 20 30	13.5	229.8	3.3		27.8	74	3114	12 15 47
12 17 26	VHS1256	16 20 30	10.9	230.3	3.4		28.3	-24	3114	No stop
12 21 06	---	16 24 11	10.4	231.1	3.5		28.7	196	3142	12 17 27
12 21 06	J1254-1317	16 24 11	10.0	231.3	3.5		28.8	-13	3142	No stop
12 22 46	=1251-130	16 25 51	9.8	231.7	3.5		29.0	87	3155	12 21 07
12 23 26	J1303-1051	16 26 31	12.8	231.1	3.4		28.4	14	3155	12 23 26
12 25 06	=1300-105	16 28 12	12.7	231.5	3.4		28.6	100	3168	12 23 27
12 25 06	VHS1256	16 28 12	10.0	232.0	3.5		29.1	-24	3168	No stop
12 28 46	---	16 31 52	9.5	232.8	3.6		29.4	196	3196	12 25 07
12 28 46	J1254-1317	16 31 52	9.1	233.0	3.6		29.5	-13	3196	No stop
12 30 26	=1251-130	16 33 32	8.9	233.3	3.6		29.7	87	3209	12 28 47
12 30 26	J1303-1051	16 33 32	12.0	232.6	3.5		29.1	-26	3209	No stop
12 32 06	=1300-105	16 35 13	11.8	233.0	3.5		29.2	74	3222	12 30 27
12 32 06	VHS1256	16 35 13	9.1	233.5	3.6		29.7	-24	3222	No stop
12 35 46	---	16 38 53	8.7	234.3	3.7		30.0	196	3250	12 32 07

```
Schedule for TORUN     (Code Tr )                                Page  14
               vhs1256-1257 -Epoch 3
  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   2 Nov 2016   Day 307 ---

12 35 46  J1254-1317   16 38 53   8.2 234.5  3.7      30.1   -13     3250   No stop
12 37 26  =1251-130    16 40 34   8.0 234.8  3.8      30.3    87     3263   12 35 47

12 55 59  1424+366     16 59 10  58.8 253.0  2.5      45.5   901     3263   12 55 59
12 59 59  ---          17 03 11  58.2 254.0  2.6      45.8   240     3294   12 56 00



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


 ======== Setup file: sess316.L1024

   Setup group:   12         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 64.000
   Number of channels:  8    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
  Net SB=         L         L         U         U         L         L         U         U
  IF SB =         L         L         L         L         L         L         L         L
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         3         7         3         7
  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:   8  Setup file default.  Used with PCAL = off
  LO sum=   1626.49  1626.49  1626.49  1626.49  1690.49  1690.49  1690.49  1690.49
  BBC fr=    673.51   673.51   673.51   673.51   609.51   609.51   609.51   609.51
  Bandwd=     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00
   Matching frequency sets:   8

  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)

* VHS1256            12 53 24.456272   * 12 56 01.818400     12 56 53.316305       0.00
                    -12 41 11.49359    *-12 57 25.24400     -13 02 39.10815        0.00

* 4C39.25            09 23 55.319215   * 09 27 03.013936     09 28 04.826146       0.30
  J0927+3902         39 15 23.56645    * 39 02 20.85186      38 57 45.03840        0.16
  0923+392           /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
  J0927+39           GSFC 2015a astro solution, unpublished 245753 observations.

  1251-130           12 51 54.110022   * 12 54 31.468276     12 55 22.972021       0.20
* J1254-1317        -13 01 00.92342    *-13 17 16.21192     -13 22 30.58811        0.48
                     /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                     GSFC 2015a astro solution, unpublished    113 observations.

  1300-105           13 00 36.725057   * 13 03 13.867950     13 04 05.254359       0.06
* J1303-1051        -10 35 11.31965    *-10 51 17.12968     -10 56 28.41058        0.13
                     /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                     GSFC 2015a astro solution, unpublished    247 observations.

* 1424+366           14 24 32.676820   * 14 26 37.087501     14 27 16.595579       0.03
  J1426+3625         36 38 36.02432    * 36 25 09.57362      36 20 50.50364        0.03
                     /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                     GSFC 2015a astro solution, unpublished   1287 observations.
```

rk16citr

RadioAstron AGN Monitoring

PI: *Yuri Kovalev*


```
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Observing mode: C/L-band, dual-pol

Schedule for TORUN     (Code Tr )                                   Page   2
               RadioAstron AGN Monitoring
  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   3 Nov 2016   Day 308 ---

 ---------- C-band VLBI scans ----------

 Next scan frequencies:  4836.00  4836.00  4836.00  4836.00
 Next BBC frequencies:    736.00   736.00   736.00   736.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

01 00 00  0727-115     05 05 10  18.1 142.2 -2.4     -22.1     0        0   01 00 00
01 14 30  ---          05 19 42  19.4 145.7 -2.2     -20.2   870       28   01 00 01

01 15 00  0727-115     05 20 12  19.4 145.9 -2.2     -20.1    24       28   01 15 00
01 29 30  ---          05 34 44  20.6 149.4 -1.9     -18.2   870       56   01 15 01

01 30 00  0727-115     05 35 14  20.6 149.6 -1.9     -18.1    24       56   01 30 00
01 44 30  ---          05 49 47  21.7 153.2 -1.7     -16.0   870       84   01 30 01

01 45 00  0727-115     05 50 17  21.7 153.3 -1.7     -16.0    24       84   01 45 00
02 00 00  ---          06 05 19  22.6 157.2 -1.4     -13.8   900      112   01 45 01



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


 ======== Setup file: ra6cm2.set

   Setup group:    2         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4100.00   4100.00   4100.00   4100.00
  Net SB=         L         L         U         U
  IF SB =         U         U         U         U
  Pol.  =      RCP       LCP       RCP       LCP
  BBC   =         1         2         1         2
  BBC SB=         L         L         U         U
  IF    =        C         A         C         A

 The following frequency sets based on these setups were used.

  Frequency Set:   1  Setup file default.  Used with PCAL = 1MHz
  LO sum=   4836.00  4836.00  4836.00  4836.00
  BBC fr=    736.00   736.00   736.00   736.00
  Bandwd=     16.00    16.00    16.00    16.00
   Matching frequency sets:   1

  Track assignments are:
   track1=   2, 18,  3, 19
   barrel=roll_off
```

POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 33.708999       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 12.50839        0.00
                    fake circumpolar target for a TS to look at

* 0727-115          07 27 58.097813   * 07 30 19.112473     07 31 06.691868       0.00
  J0730-1141       -11 34 52.58107    *-11 41 12.60063     -11 43 19.79153        0.00
                    ./rk16ci_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 155894 observations, RA-AO4-07, RA-AO3-
```

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)
  0727-115           101.8

 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
```

em122btr

NGC3310

PI: *Mar Mezcua*

```
Address:  Scheduled by Megan Argo  Jeremiah Horrocks Institute  University of Central Lancashire

Schedule for TORUN     (Code Tr )                                   Page   2
               NGC3310
  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   3 Nov 2016   Day 308 ---
 Next scan frequencies:  1626.49  1626.49  1626.49  1626.49  1690.49  1690.49  1690.49  1690.49
 Next BBC frequencies:    673.51   673.51   673.51   673.51   609.51   609.51   609.51   609.51
 Next scan bandwidths:     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00

03 00 00  DA193        07 05 29  72.3 228.3  1.1      35.7     0        0   03 00 00
03 07 40  ---          07 13 11  71.4 232.1  1.3      38.1   460       59   03 00 01

03 08 00  DA193        07 13 31  71.4 232.3  1.3      38.2    13       59   03 08 00
03 10 00  ---          07 15 31  71.1 233.2  1.3      38.7   120       74   03 08 01

03 12 00  J1044+5322   07 17 31  59.6  68.4 -3.5     -69.0  -224       74   03 12 00
03 16 00  ---          07 21 32  60.2  68.8 -3.4     -69.5    16      105   03 12 01

03 16 00  NGC3310      07 21 32  61.0  69.1 -3.3     -70.3   -16      105   No stop
03 23 00  ---          07 28 33  61.9  69.9 -3.2     -71.0   404      159   03 16 01

03 23 30  J1044+5322   07 29 03  61.2  69.6 -3.3     -70.3    15      159   03 23 30
03 26 30  ---          07 32 04  61.6  69.9 -3.2     -70.6   180      182   03 23 31

03 26 30  NGC3310      07 32 04  62.4  70.2 -3.1     -71.4   -16      182   No stop
03 33 30  ---          07 39 05  63.4  70.9 -3.0     -72.2   404      236   03 26 31

03 34 00  J1044+5322   07 39 35  62.7  70.7 -3.1     -71.4    15      236   03 34 00
03 37 00  ---          07 42 35  63.1  71.0 -3.0     -71.7   180      259   03 34 01

03 37 00  NGC3310      07 42 35  63.9  71.3 -3.0     -72.6   -16      259   No stop
03 44 00  ---          07 49 37  64.9  72.0 -2.8     -73.4   404      313   03 37 01

03 44 30  J1044+5322   07 50 07  64.2  71.8 -2.9     -72.6    15      313   03 44 30
03 47 30  ---          07 53 07  64.6  72.1 -2.9     -72.9   180      336   03 44 31

03 47 30  NGC3310      07 53 07  65.4  72.4 -2.8     -73.7   -16      336   No stop
03 54 30  ---          08 00 08  66.4  73.1 -2.7     -74.5   404      390   03 47 31

03 55 00  J1044+5322   08 00 38  65.7  72.9 -2.7     -73.7    15      390   03 55 00
03 58 00  ---          08 03 39  66.1  73.2 -2.7     -74.0   180      413   03 55 01

03 58 00  NGC3310      08 03 39  66.9  73.4 -2.6     -74.9   -16      413   No stop
04 05 00  ---          08 10 40  68.0  74.1 -2.5     -75.7   404      467   03 58 01

04 05 30  J1044+5322   08 11 10  67.2  73.9 -2.6     -74.8    15      467   04 05 30
04 08 30  ---          08 14 11  67.6  74.2 -2.5     -75.1   180      490   04 05 31

04 08 30  NGC3310      08 14 11  68.5  74.4 -2.4     -76.0   -16      490   No stop
04 15 30  ---          08 21 12  69.5  75.1 -2.3     -76.8   404      544   04 08 31
```

Schedule for TORUN (Code Tr) Page 3

NGC3310

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 3 Nov 2016 Day 308 ---										
04 16 00	J1044+5322	08 21 42	68.7	75.0	-2.4		-76.0	15	544	04 16 00
04 19 00	---	08 24 42	69.2	75.3	-2.3		-76.3	180	567	04 16 01
04 19 00	NGC3310	08 24 42	70.0	75.5	-2.3		-77.2	-16	567	No stop
04 26 00	---	08 31 43	71.0	76.1	-2.1		-78.0	404	621	04 19 01
04 26 30	J1044+5322	08 32 13	70.3	76.0	-2.2		-77.1	15	621	04 26 30
04 29 30	---	08 35 14	70.7	76.3	-2.2		-77.4	180	644	04 26 31
04 29 30	NGC3310	08 35 14	71.5	76.5	-2.1		-78.4	-16	644	No stop
04 36 30	---	08 42 15	72.5	77.1	-2.0		-79.1	404	697	04 29 31
04 37 00	J1044+5322	08 42 45	71.8	77.1	-2.0		-78.2	15	697	04 37 00
04 40 00	---	08 45 46	72.2	77.4	-2.0		-78.5	180	721	04 37 01
04 40 00	NGC3310	08 45 46	73.1	77.5	-1.9		-79.5	-16	721	No stop
04 47 00	---	08 52 47	74.1	78.1	-1.8		-80.3	404	774	04 40 01
04 47 30	J1044+5322	08 53 17	73.3	78.1	-1.9		-79.3	15	774	04 47 30
04 50 30	---	08 56 17	73.8	78.4	-1.8		-79.7	180	797	04 47 31
04 50 30	NGC3310	08 56 17	74.6	78.4	-1.7		-80.7	-16	797	No stop
04 57 30	---	09 03 19	75.6	79.1	-1.6		-81.5	404	851	04 50 31
04 58 00	J1044+5322	09 03 49	74.9	79.1	-1.7		-80.5	15	851	04 58 00
05 01 00	---	09 06 49	75.3	79.4	-1.6		-80.8	180	874	04 58 01
05 01 00	NGC3310	09 06 49	76.2	79.4	-1.5		-81.9	-16	874	No stop
05 08 00	---	09 13 50	77.2	80.0	-1.4		-82.7	404	928	05 01 01
05 08 30	J1044+5322	09 14 20	76.5	80.1	-1.5		-81.6	15	928	05 08 30
05 11 30	---	09 17 21	76.9	80.4	-1.5		-82.0	180	951	05 08 31
05 11 30	NGC3310	09 17 21	77.7	80.3	-1.4		-83.2	-16	951	No stop
05 18 30	---	09 24 22	78.8	80.8	-1.3		-84.0	404	1005	05 11 31
05 19 00	J1044+5322	09 24 52	78.0	81.1	-1.3		-82.8	15	1005	05 19 00
05 22 00	---	09 27 53	78.5	81.3	-1.3		-83.1	180	1028	05 19 01
05 22 00	NGC3310	09 27 53	79.3	81.1	-1.2		-84.4	-16	1028	No stop
05 29 00	---	09 34 54	80.3	81.6	-1.1		-85.3	404	1082	05 22 01
05 29 30	J1044+5322	09 35 24	79.6	82.0	-1.2		-84.0	15	1082	05 29 30
05 32 30	---	09 38 24	80.0	82.2	-1.1		-84.4	180	1105	05 29 31

Schedule for TORUN (Code Tr) Page 4

NGC3310

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 3 Nov 2016 Day 308 ---										
05 32 30	NGC3310	09 38 24	80.8	81.9	-1.0		-85.8	-16	1105	No stop
05 39 30	---	09 45 25	81.9	82.3	-0.9		-86.8	404	1159	05 32 31
05 40 00	J1044+5322	09 45 56	81.1	82.9	-1.0		-85.2	15	1159	05 40 00
05 43 00	---	09 48 56	81.6	83.1	-0.9		-85.6	180	1182	05 40 01
05 43 00	3C273	09 48 56	29.0	132.4	-2.7		-26.3	-210	1182	No stop
05 55 50	---	10 01 48	30.4	135.7	-2.5		-24.8	560	1281	05 43 01
05 56 10	3C273	10 02 08	30.5	135.8	-2.5		-24.8	14	1281	05 56 10
05 58 00	---	10 03 59	30.7	136.3	-2.4		-24.5	110	1295	05 56 11
05 59 30	J1044+5322	10 05 29	84.1	84.2	-0.7		-87.8	-125	1295	05 59 30
06 03 30	---	10 09 29	84.7	84.4	-0.6		-88.4	115	1326	05 59 31
06 03 30	NGC3310	10 09 29	85.5	83.0	-0.5		-90.9	-16	1326	No stop
06 10 30	---	10 16 31	86.5	82.5	-0.4		-92.8	404	1379	06 03 31
06 11 00	J1044+5322	10 17 01	85.8	84.7	-0.5		-89.7	12	1379	06 11 00
06 14 00	---	10 20 01	86.2	84.7	-0.4		-90.3	180	1403	06 11 01
06 14 00	NGC3310	10 20 01	87.0	81.9	-0.3		-94.1	-20	1403	No stop
06 21 00	---	10 27 02	88.1	79.3	-0.2		-98.1	400	1456	06 14 01
06 21 30	J1044+5322	10 27 32	87.4	84.2	-0.3		-92.2	5	1456	06 21 30
06 24 30	---	10 30 33	87.8	83.7	-0.2		-93.4	180	1479	06 21 31
06 24 30	NGC3310	10 30 33	88.6	76.2	-0.2		-102.0	-31	1479	No stop
06 31 30	---	10 37 34	89.5	45.8	-0.0		-133.8	389	1533	06 24 31
06 32 00	J1044+5322	10 38 04	88.9	79.4	-0.1		-99.2	-50	1533	06 32 00
06 35 00	---	10 41 05	89.4	72.8	-0.1		-106.4	130	1556	06 32 01
06 45 30	NGC3310	10 51 36	88.2	281.3	0.2		98.9	191	1556	06 45 30
06 52 30	---	10 58 37	87.2	278.3	0.3		94.5	420	1610	06 45 31
06 53 00	J1044+5322	10 59 08	87.9	276.5	0.2		93.7	13	1610	06 53 00
06 56 00	---	11 02 08	87.5	275.9	0.3		92.5	180	1633	06 53 01
06 56 00	NGC3310	11 02 08	86.6	277.6	0.4		93.1	-17	1633	No stop
07 03 00	---	11 09 09	85.6	277.0	0.5		91.1	403	1687	06 56 01
07 03 30	J1044+5322	11 09 39	86.3	275.3	0.4		90.4	13	1687	07 03 30
07 06 30	---	11 12 40	85.9	275.3	0.5		89.8	180	1710	07 03 31

Schedule for TORUN (Code Tr) Page 5

NGC3310

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 3 Nov 2016 Day 308 ---										
07 06 30	NGC3310	11 12 40	85.1	277.0	0.5		90.4	-16	1710	No stop
07 13 30	---	11 19 41	84.0	277.0	0.7		89.0	404	1764	07 06 31
07 14 00	J1044+5322	11 20 11	84.8	275.5	0.6		88.5	14	1764	07 14 00
07 17 00	---	11 23 12	84.3	275.7	0.6		88.1	180	1787	07 14 01
07 17 00	NGC3310	11 23 12	83.5	277.1	0.7		88.4	-16	1787	No stop
07 24 00	---	11 30 13	82.5	277.4	0.8		87.3	404	1841	07 17 01
07 24 30	J1044+5322	11 30 43	83.2	276.1	0.8		87.0	15	1841	07 24 30
07 27 30	---	11 33 43	82.7	276.3	0.8		86.6	180	1864	07 24 31
07 27 30	NGC3310	11 33 43	81.9	277.6	0.9		86.8	-15	1864	No stop
07 34 30	---	11 40 44	80.9	278.1	1.0		85.8	405	1918	07 27 31
07 35 00	J1044+5322	11 41 14	81.6	276.9	0.9		85.6	15	1918	07 35 00
07 38 00	---	11 44 15	81.2	277.1	1.0		85.3	180	1941	07 35 01
07 38 00	NGC3310	11 44 15	80.4	278.3	1.1		85.4	-15	1941	No stop
07 45 00	---	11 51 16	79.3	278.9	1.2		84.5	405	1995	07 38 01
07 45 30	J1044+5322	11 51 46	80.0	277.7	1.1		84.4	15	1995	07 45 30
07 48 30	---	11 54 47	79.6	278.0	1.2		84.0	180	2018	07 45 31
07 48 30	NGC3310	11 54 47	78.8	279.1	1.3		84.1	-15	2018	No stop
07 55 30	---	12 01 48	77.8	279.7	1.4		83.2	405	2072	07 48 31
07 56 00	J1044+5322	12 02 18	78.5	278.7	1.3		83.2	15	2072	07 56 00
07 59 00	---	12 05 18	78.0	278.9	1.3		82.8	180	2095	07 56 01
07 59 00	NGC3310	12 05 18	77.2	280.0	1.4		82.8	-15	2095	No stop
08 06 00	---	12 12 20	76.2	280.6	1.5		82.0	405	2149	07 59 01
08 06 30	J1044+5322	12 12 50	76.9	279.6	1.5		82.0	15	2149	08 06 30
08 09 30	---	12 15 50	76.5	279.9	1.5		81.7	180	2172	08 06 31
08 09 30	NGC3310	12 15 50	75.7	280.9	1.6		81.6	-15	2172	No stop
08 16 30	---	12 22 51	74.7	281.5	1.7		80.8	405	2226	08 09 31
08 17 00	J1044+5322	12 23 21	75.4	280.6	1.6		80.8	15	2226	08 17 00
08 20 00	---	12 26 22	74.9	280.9	1.7		80.5	180	2249	08 17 01
08 20 00	NGC3310	12 26 22	74.1	281.9	1.8		80.4	-15	2249	No stop
08 27 00	---	12 33 23	73.1	282.5	1.9		79.6	405	2303	08 20 01

```
Schedule for TORUN     (Code Tr )                                Page   6
               NGC3310
  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   3 Nov 2016   Day 308 ---

08 27 30  J1044+5322   12 33 53  73.8 281.6  1.8      79.7    15     2303   08 27 30
08 30 30  ---          12 36 54  73.4 281.9  1.9      79.4   180     2326   08 27 31

08 30 30  NGC3310      12 36 54  72.6 282.8  2.0      79.2   -15     2326   No stop
08 37 30  ---          12 43 55  71.6 283.5  2.1      78.4   405     2379   08 30 31

08 38 00  J1044+5322   12 44 25  72.3 282.6  2.0      78.6    15     2379   08 38 00
08 41 00  ---          12 47 25  71.8 282.9  2.0      78.2   180     2403   08 38 01

08 41 00  NGC3310      12 47 25  71.1 283.8  2.1      78.0   -15     2403   No stop
08 48 00  ---          12 54 26  70.0 284.5  2.2      77.2   405     2456   08 41 01

08 48 00  3C273        12 54 26  38.6 187.8  0.4       4.7  -206     2456   No stop
08 54 00  ---          13 00 27  38.5 189.8  0.5       5.8   154     2503   08 48 01

08 54 20  3C273        13 00 47  38.5 189.9  0.5       5.9    14     2503   08 54 20
09 00 00  ---          13 06 28  38.3 191.7  0.6       7.0   340     2546   08 54 21



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


 ======== Setup file: sess316.H1024

   Setup group:   17         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 64.000
   Number of channels:  8    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
  Net SB=         L         L         U         U         L         L         U         U
  IF SB =         L         L         L         L         L         L         L         L
  Pol.  =       RCP       LCP       RCP       LCP       RCP       LCP       RCP       LCP
  BBC   =         1         5         1         5         3         7         3         7
  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:   8  Setup file default.  Used with PCAL = off
  LO sum=   1626.49  1626.49  1626.49  1626.49  1690.49  1690.49  1690.49  1690.49
  BBC fr=    673.51   673.51   673.51   673.51   609.51   609.51   609.51   609.51
  Bandwd=     32.00    32.00    32.00    32.00    32.00    32.00    32.00    32.00
   Matching frequency sets:   8

  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)

* NGC3310           10 35 39.087142   * 10 38 44.900000     10 39 44.894647       0.00
                    53 45 42.18763    * 53 30 05.00000      53 24 37.52663        0.00

* J1044+5322        10 41 07.025414   * 10 44 10.673016     10 45 09.904602       0.00
                    53 38 05.88012    * 53 22 20.54138      53 16 50.81995        0.00

  0552+398          05 52 01.407169   * 05 55 30.805611     05 56 41.909363       0.00
  J0555+3948        39 48 21.94581    * 39 48 49.16496      39 48 41.97252        0.00
* DA193             /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
  J0555+39          GSFC 2015a astro solution, unpublished 394383 observations.

  3C273B            12 26 33.245833   * 12 29 06.699729     12 29 56.826671       1.05
  J1229+0203        02 19 43.30578    * 02 03 08.59828      01 57 43.84932        1.37
* 3C273             /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
  1226+023          GSFC 2015a astro solution, unpublished  31967 observations.
  J1229+02
```

rk16cktr

RadioAstron AGN Monitoring

PI: *Yuri Kovalev*


```
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Fax:      +7-495-3332378                 Phone during observation: +7-903-6614865
```


```
Observing mode: C/K-band, dual-pol

Schedule for TORUN     (Code Tr )                                   Page   2
               RadioAstron AGN Monitoring
  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   3 Nov 2016   Day 308 ---

 ---------- K-band VLBI scans ----------

 Next scan frequencies:  22236.00  22236.00  22236.00  22236.00
 Next BBC frequencies:     736.00    736.00    736.00    736.00
 Next scan bandwidths:      16.00     16.00     16.00     16.00

23 00 00  0823+033     03 08 46   8.8  96.6 -5.3     -36.7     0        0   23 00 00
23 14 30  ---          03 23 19  10.9  99.5 -5.1     -36.4   870       28   23 00 01

23 15 00  0823+033     03 23 49  11.0  99.6 -5.0     -36.4    24       28   23 15 00
23 29 30  ---          03 38 21  13.2 102.6 -4.8     -35.9   870       56   23 15 01

23 30 00  0823+033     03 38 51  13.2 102.7 -4.8     -35.9    24       56   23 30 00
23 44 30  ---          03 53 24  15.3 105.8 -4.6     -35.4   870       84   23 30 01

23 45 00  0823+033     03 53 54  15.4 105.9 -4.5     -35.3    24       84   23 45 00
23 59 59  ---          04 08 56  17.6 109.1 -4.3     -34.6   899      112   23 45 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
   Matching groups in ./rk16ck_freq.dat:
     tr1cm

   Setup group:    8         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
 1st LO=  21500.00  21500.00  21500.00  21500.00
 Net SB=         L         L         U         U
 IF SB =         U         U         U         U
 Pol.  =       RCP       LCP       RCP       LCP
 BBC   =         1         2         1         2
 BBC SB=         L         L         U         U
 IF    =         C         A         C         A

The following frequency sets based on these setups were used.

 Frequency Set:   4  Setup file default.  Used with PCAL = 1MHz
 LO sum=   22236.00  22236.00  22236.00  22236.00
 BBC fr=     736.00    736.00    736.00    736.00
 Bandwd=      16.00     16.00     16.00     16.00
  Matching frequency sets:   4

 Track assignments are:
  track1=   2, 18,  3, 19
  barrel=roll_off



POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 33.850071       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 12.19022        0.00
                    fake circumpolar target for a TS to look at

* 0823+033          08 23 13.540326   * 08 25 50.338355     08 26 42.805197       0.00
  J0825+0309        03 19 15.40169    * 03 09 24.51995      03 06 03.25943        0.00
                    ./rk16ck_sources.radioastron
                    AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 57025 observations, RA-AO4-07, R


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)
  0823+033            93.6

 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
```

rk16cltr

RadioAstron AGN Monitoring

PI: *Yuri Kovalev*


```
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Phone:    +7-495-3332512                EMAIL:    kirx@scan.sai.msu.ru
Fax:      +7-495-3332378                Phone during observation: +7-903-6614865
```


```
Observing mode: C/K-band, dual-pol

Schedule for TORUN     (Code Tr )                                   Page   2
               RadioAstron AGN Monitoring
  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   4 Nov 2016   Day 309 ---

 ---------- C-band VLBI scans ----------

 Next scan frequencies:  4836.00  4836.00  4836.00  4836.00
 Next BBC frequencies:    736.00   736.00   736.00   736.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

05 00 00  0648-165     09 09 46  14.1 214.2  2.3      20.6     0        0   05 00 00
05 14 30  ---          09 24 18  12.9 217.5  2.6      22.4   870       28   05 00 01

05 15 00  0648-165     09 24 48  12.8 217.6  2.6      22.5    24       28   05 15 00
05 29 30  ---          09 39 20  11.4 220.9  2.8      24.2   870       56   05 15 01

05 30 00  0648-165     09 39 50  11.4 221.0  2.8      24.3    24       56   05 30 00
05 44 30  ---          09 54 23   9.9 224.2  3.1      25.9   870       84   05 30 01

05 45 00  0648-165     09 54 53   9.9 224.3  3.1      26.0    24       84   05 45 00
06 00 00  ---          10 09 55   8.2 227.6  3.3      27.6   900      112   05 45 01



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


 ======== Setup file: ra6cm2.set

   Setup group:    3         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
 1st LO=   4100.00   4100.00   4100.00   4100.00
 Net SB=         L         L         U         U
 IF SB =         U         U         U         U
 Pol.  =       RCP       LCP       RCP       LCP
 BBC   =         1         2         1         2
 BBC SB=         L         L         U         U
 IF    =         C         A         C         A

The following frequency sets based on these setups were used.

 Frequency Set:   3  Setup file default.  Used with PCAL = 1MHz
 LO sum=   4836.00  4836.00  4836.00  4836.00
 BBC fr=    736.00   736.00   736.00   736.00
 Bandwd=     16.00    16.00    16.00    16.00
  Matching frequency sets:   3

 Track assignments are:
  track1=   2, 18,  3, 19
  barrel=roll_off



POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 33.888851       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 12.10687        0.00
                    fake circumpolar target for a TS to look at

* 0648-165          06 48 10.295571   * 06 50 24.581861     06 51 10.176759       0.00
  J0650-1637       -16 34 05.88130    *-16 37 39.72548     -16 38 51.19553        0.00
                    ./rk16cl_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 10699 observations, RA-AO4-07, RA-AO3-0



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)
  0648-165           110.0

 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
```

rk16cmtr

RadioAstron AGN Monitoring

PI: *Yuri Kovalev*


```
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Phone:    +7-495-3332512                EMAIL:    kirx@scan.sai.msu.ru
Fax:      +7-495-3332378                Phone during observation: +7-903-6614865
```


```
Observing mode: C/L-band, dual-pol

Schedule for TORUN     (Code Tr )                                   Page   2
               RadioAstron AGN Monitoring
  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   4 Nov 2016   Day 309 ---

 ---------- C-band VLBI scans ----------

 Next scan frequencies:  4836.00  4836.00  4836.00  4836.00
 Next BBC frequencies:    736.00   736.00   736.00   736.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

09 20 00  0827+243     13 30 28  28.2 273.4  5.0      41.1     0        0   09 20 00
09 39 30  ---          13 50 01  25.2 277.2  5.3      40.8  1170       37   09 20 01

09 40 00  0827+243     13 50 32  25.2 277.3  5.3      40.7    24       37   09 40 00
10 00 00  ---          14 10 35  22.2 281.1  5.6      40.2  1200       76   09 40 01



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


 ======== Setup file: ra6cm2.set

   Setup group:    2         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4100.00   4100.00   4100.00   4100.00
  Net SB=         L         L         U         U
  IF SB =         U         U         U         U
  Pol.  =      RCP       LCP       RCP       LCP
  BBC   =         1         2         1         2
  BBC SB=         L         L         U         U
  IF    =        C         A         C         A

 The following frequency sets based on these setups were used.

  Frequency Set:   4  Setup file default.  Used with PCAL = 1MHz
  LO sum=   4836.00  4836.00  4836.00  4836.00
  BBC fr=    736.00   736.00   736.00   736.00
  Bandwd=     16.00    16.00    16.00    16.00
   Matching frequency sets:   4

  Track assignments are:
   track1=   2, 18,  3, 19
   barrel=roll_off
```

POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 33.918550       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 12.04421        0.00
                    fake circumpolar target for a TS to look at

* 0827+243          08 27 54.398594   * 08 30 52.086193     08 31 51.331536       0.00
  J0830+2410        24 21 07.66367    * 24 10 59.82026      24 07 25.22797        0.00
                    ./rk16cm_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 3847 observations, RA-AO4-07, RA-AO3-04
```

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)
  0827+243            98.1

 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
```

n16k2tr

Network Monitoring Experiment

PI: *Ross Burns*

```
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
-------------------------------------------------------------------------------------------
 --- Fri   4 Nov 2016   Day 309 ---
 Next scan frequencies:  22203.49  22203.49  22203.49  22203.49  22267.49  22267.49  22267.49  22267.4
 Next BBC frequencies:     703.49    703.49    703.49    703.49    767.49    767.49    767.49    767.4
 Next scan bandwidths:      32.00     32.00     32.00     32.00     32.00     32.00     32.00     32.0

12 00 00  J1801+4404   16 10 55  69.7 105.1 -1.9     -53.8     0        0   12 00 00
12 14 00  =1800+440    16 24 57  71.7 109.7 -1.6     -51.9   840      108   12 00 01

12 15 00  J1801+4404   16 25 57  71.9 110.1 -1.6     -51.7    53      108   12 15 00
12 29 00  =1800+440    16 39 59  73.8 115.6 -1.4     -49.0   840      215   12 15 01

12 31 00  J1801+4404   16 42 00  74.1 116.4 -1.3     -48.5   113      215   12 31 00
12 44 00  =1800+440    16 55 02  75.8 122.6 -1.1     -44.8   780      315   12 31 01

12 45 00  J1801+4404   16 56 02  75.9 123.1 -1.1     -44.4    53      315   12 45 00
12 59 00  =1800+440    17 10 04  77.6 131.3 -0.9     -38.9   840      423   12 45 01

13 00 00  J2123+0535   17 11 04  20.3 108.5 -4.2     -34.9  -167      423   13 00 00
13 14 00  =2121+053    17 25 07  22.3 111.6 -4.0     -34.1   673      531   13 00 01

13 15 00  J2123+0535   17 26 07  22.4 111.8 -4.0     -34.1    54      531   13 15 00
13 29 00  =2121+053    17 40 09  24.3 115.0 -3.7     -33.2   840      638   13 15 01

13 30 00  J2123+0535   17 41 09  24.5 115.2 -3.7     -33.1    54      638   13 30 00
13 44 00  =2121+053    17 55 12  26.4 118.4 -3.5     -32.0   840      746   13 30 01

13 45 00  J2123+0535   17 56 12  26.5 118.7 -3.5     -32.0    54      746   13 45 00
13 59 00  =2121+053    18 10 14  28.3 122.0 -3.2     -30.8   840      854   13 45 01

14 00 00  J2123+0535   18 11 14  28.4 122.3 -3.2     -30.7    54      854   14 00 00
14 14 00  =2121+053    18 25 17  30.2 125.8 -3.0     -29.3   840      962   14 00 01

14 15 00  J2123+0535   18 26 17  30.3 126.0 -3.0     -29.2    54      962   14 15 00
14 29 00  =2121+053    18 40 19  32.0 129.6 -2.7     -27.7   840     1069   14 15 01

14 30 00  J2148+0657   18 41 19  30.3 122.9 -3.1     -30.5    31     1069   14 30 00
14 44 00  =2145+067    18 55 21  32.1 126.4 -2.9     -29.1   840     1177   14 30 01

14 45 00  J2148+0657   18 56 22  32.2 126.7 -2.9     -29.0    54     1177   14 45 00
14 59 00  =2145+067    19 10 24  33.8 130.3 -2.6     -27.5   840     1285   14 45 01

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

```
======== Setup file: sess316.K1024nme

  Setup group:   17         Station: TORUN            Total bit rate:  1024
  Format: MARK5B            Bits per sample: 2        Sample rate: 64.000
  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=         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         3         7         3         7
  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:   7  Setup file default.  Used with PCAL = off
  LO sum=   22203.49  22203.49  22203.49  22203.49  22267.49  22267.49  22267.49  22267.49
  BBC fr=     703.49    703.49    703.49    703.49    767.49    767.49    767.49    767.49
  Bandwd=      32.00     32.00     32.00     32.00     32.00     32.00     32.00     32.00
   Matching frequency sets:   7

  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)

  1800+440          18 00 03.197728   * 18 01 32.314822     18 02 00.743197       0.01
* J1801+4404        44 04 18.35299    * 44 04 21.90029      44 04 47.20854        0.01
  J1801+44          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                    GSFC 2015a astro solution, unpublished   6350 observations.

  2121+053          21 21 14.801996   * 21 23 44.517403     21 24 34.620392       0.29
* J2123+0535        05 22 27.44225    * 05 35 22.09305      05 39 55.53160        0.31
  J2123+05          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                    GSFC 2015a astro solution, unpublished  51201 observations.

  2145+067          21 45 36.078475   * 21 48 05.458673     21 48 55.612186       0.26
* J2148+0657        06 43 40.90460    * 06 57 38.60421      07 02 32.54349        0.25
  J2148+06          /home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc
                    GSFC 2015a astro solution, unpublished 103488 observations.
```

gb079tr

RadioAstron AGN polarization imaging

PI: *Baczko*

```
Address:  Max Planck Institute for Radio Astronomy

Schedule for TORUN     (Code Tr )                                  Page   2
               RadioAstron AGN 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   5 Nov 2016   Day 310 ---
 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

17 32 00  0238-084     21 47 46   3.1 108.1 -4.9     -35.2     0        0   17 31 49
17 41 30  ---          21 57 17   4.5 110.0 -4.7     -34.8   570       37   17 31 50

17 42 00  0238-084     21 57 47   4.6 110.1 -4.7     -34.7    24       37   17 41 49
17 51 30  ---          22 07 19   5.9 112.1 -4.6     -34.2   570       74   17 41 50

17 52 00  0238-084     22 07 49   6.0 112.2 -4.6     -34.2    24       74   17 51 49
18 01 30  ---          22 17 20   7.3 114.1 -4.4     -33.6   570      112   17 51 50

18 02 00  0238-084     22 17 51   7.3 114.2 -4.4     -33.6    24      112   18 01 49
18 11 30  ---          22 27 22   8.6 116.2 -4.2     -33.0   570      149   18 01 50

18 12 00  0238-084     22 27 52   8.7 116.3 -4.2     -32.9    24      149   18 11 49
18 21 30  ---          22 37 24  10.0 118.3 -4.1     -32.3   570      186   18 11 50

18 22 00  0238-084     22 37 54  10.0 118.5 -4.1     -32.2    24      186   18 21 49
18 31 30  ---          22 47 25  11.3 120.5 -3.9     -31.5   570      223   18 21 50

18 32 00  0238-084     22 47 55  11.3 120.6 -3.9     -31.5    24      223   18 31 49
18 41 30  ---          22 57 27  12.6 122.7 -3.7     -30.7   570      261   18 31 50

18 42 00  0238-084     22 57 57  12.6 122.8 -3.7     -30.7    24      261   18 41 49
18 51 30  ---          23 07 29  13.8 124.9 -3.6     -29.9   570      298   18 41 50
 ---------- EVN FF scan ----------
18 53 30  0234+285     23 09 29  45.0 101.2 -3.5     -42.3   -11      298   18 53 19
19 01 30  ---          23 17 30  46.2 103.1 -3.4     -41.9   469      329   18 53 20

19 03 30  0238-084     23 19 31  15.3 127.5 -3.4     -28.8   -10      329   19 03 19
19 13 00  ---          23 29 02  16.4 129.7 -3.2     -27.8   560      367   19 03 20
 ---------- K-band VLBI scans. Space segment 03: 0238-084 with EVN+KVN+HART ----------
19 15 00  0238-084     23 31 03  16.6 130.2 -3.2     -27.6   114      367   19 14 49
19 25 00  ---          23 41 04  17.8 132.5 -3.0     -26.6   600      406   19 14 50

19 25 30  0238-084     23 41 34  17.8 132.6 -3.0     -26.5    24      406   19 25 19
19 35 00  ---          23 51 06  18.8 134.8 -2.8     -25.5   570      443   19 25 20

19 35 30  0238-084     23 51 36  18.9 134.9 -2.8     -25.4    24      443   19 35 19
19 45 00  ---          00 01 07  19.9 137.2 -2.7     -24.3   570      480   19 35 20
```

Schedule for TORUN (Code Tr) Page 3

RadioAstron AGN 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 5 Nov 2016 Day 310 ---										
19 45 30	0238-084	00 01 38	19.9	137.3	-2.7		-24.3	24	480	19 45 19
19 55 00	---	00 11 09	20.9	139.6	-2.5		-23.1	570	518	19 45 20
19 55 30	0238-084	00 11 39	20.9	139.8	-2.5		-23.1	24	518	19 55 19
20 05 00	---	00 21 11	21.8	142.1	-2.3		-21.9	570	555	19 55 20
---------- K-band VLBI scans. Ground segment 03: 0238-084 with EVN+KVN+Hart ----------										
20 06 00	0238-084	00 22 11	21.9	142.3	-2.3		-21.8	54	555	20 05 49
20 16 00	---	00 32 13	22.8	144.8	-2.2		-20.4	600	594	20 05 50
---------- EVN FF scan ----------										
20 18 00	0234+285	00 34 13	56.7	124.3	-2.1		-34.5	-21	594	20 17 49
20 26 00	---	00 42 14	57.7	127.0	-1.9		-33.2	459	625	20 17 50
20 26 30	0238-084	00 42 44	23.7	147.5	-2.0		-19.0	-111	625	20 26 19
20 36 00	---	00 52 16	24.4	150.0	-1.8		-17.7	459	663	20 26 20
20 36 30	0238-084	00 52 46	24.5	150.1	-1.8		-17.6	24	663	20 36 19
20 46 00	---	01 02 18	25.2	152.6	-1.7		-16.2	570	700	20 36 20
20 46 30	0238-084	01 02 48	25.2	152.7	-1.7		-16.2	24	700	20 46 19
20 56 00	---	01 12 19	25.8	155.2	-1.5		-14.7	570	737	20 46 20
20 56 30	0238-084	01 12 49	25.9	155.4	-1.5		-14.7	24	737	20 56 19
21 06 00	---	01 22 21	26.4	157.9	-1.3		-13.2	570	774	20 56 20
21 06 30	0238-084	01 22 51	26.5	158.0	-1.3		-13.1	24	774	21 06 19
21 16 00	---	01 32 22	27.0	160.6	-1.2		-11.6	570	812	21 06 20
21 16 30	0238-084	01 32 53	27.0	160.8	-1.2		-11.5	24	812	21 16 19
21 26 00	---	01 42 24	27.4	163.4	-1.0		-10.0	570	849	21 16 20
21 26 30	0238-084	01 42 54	27.4	163.5	-1.0		-9.9	24	849	21 26 19
21 36 00	---	01 52 26	27.8	166.1	-0.8		-8.4	570	886	21 26 20
21 36 30	0238-084	01 52 56	27.8	166.3	-0.8		-8.3	24	886	21 36 19
21 46 00	---	02 02 27	28.1	168.9	-0.7		-6.7	570	923	21 36 20
21 46 30	0238-084	02 02 57	28.2	169.0	-0.6		-6.6	24	923	21 46 19
21 56 00	---	02 12 29	28.4	171.7	-0.5		-5.0	570	961	21 46 20
21 56 30	0238-084	02 12 59	28.4	171.9	-0.5		-4.9	24	961	21 56 19
22 06 00	---	02 22 31	28.6	174.5	-0.3		-3.3	570	998	21 56 20

```
Schedule for TORUN     (Code Tr )                                  Page   4
              RadioAstron AGN 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   5 Nov 2016   Day 310 ---

22 06 30  0238-084     02 23 01  28.6 174.7 -0.3      -3.2    24      998   22 06 19
22 16 00  ---          02 32 32  28.7 177.4 -0.2      -1.6   570     1035   22 06 20

22 16 30  0238-084     02 33 02  28.7 177.5 -0.1      -1.5    24     1035   22 16 19
22 26 00  ---          02 42 34  28.7 180.2  0.0       0.1   570     1072   22 16 20

22 26 30  0238-084     02 43 04  28.7 180.3  0.0       0.2    24     1072   22 26 19
22 36 00  ---          02 52 36  28.7 183.0  0.2       1.8   570     1110   22 26 20

22 36 30  0238-084     02 53 06  28.7 183.2  0.2       1.9    24     1110   22 36 19
22 44 30  ---          03 01 07  28.6 185.4  0.3       3.3   480     1141   22 36 20

 ---------- K-band VLBI scans. Space segment 04: 0238-084 with HART+EVN+VLBA (23:00-..) ----------

22 45 00  0238-084     03 01 37  28.6 185.6  0.3       3.4    24     1141   22 44 49
22 55 00  ---          03 11 39  28.4 188.4  0.5       5.1   600     1180   22 44 50

22 55 30  0238-084     03 12 09  28.4 188.5  0.5       5.1    24     1180   22 55 19
23 05 00  ---          03 21 40  28.1 191.2  0.7       6.7   570     1217   22 55 20

23 05 30  0238-084     03 22 10  28.1 191.3  0.7       6.8    24     1217   23 05 19
23 15 00  ---          03 31 42  27.8 194.0  0.8       8.4   570     1255   23 05 20

23 15 30  0238-084     03 32 12  27.8 194.1  0.8       8.5    24     1255   23 15 19
23 25 00  ---          03 41 44  27.4 196.7  1.0      10.1   570     1292   23 15 20

23 25 30  0238-084     03 42 14  27.4 196.9  1.0      10.1    24     1292   23 25 19
23 35 00  ---          03 51 45  26.9 199.5  1.2      11.7   570     1329   23 25 20

 ---------- EVN FF scan ----------

23 38 00  0234+285     03 54 46  62.1 217.4  1.3      24.6    34     1329   23 37 49
23 46 00  ---          04 02 47  61.3 220.7  1.4      26.6   480     1361   23 37 50

 ---------- K-band VLBI scans. Ground segment 4: 0238-084 with VLBA+EVN+KVN+Hart ----------

23 46 30  0238-084     04 03 17  26.3 202.6  1.4      13.5  -115     1361   23 46 19
23 56 00  ---          04 12 49  25.7 205.1  1.5      14.9   455     1398   23 46 20

 --- Start: Sat   5 Nov 2016   Day 310 -- Stop: Sun   6 Nov 2016   Day 311 ---

23 56 30  0238-084     04 13 19  25.7 205.3  1.5      15.0    24     1398   23 56 19
00 06 00  ---          04 22 50  25.1 207.8  1.7      16.4   570     1435   23 56 20
```

```
Schedule for TORUN     (Code Tr )                                  Page   5
               RadioAstron AGN 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
-------------------------------------------------------------------------------------------

 --- Sun   6 Nov 2016   Day 311 ---

00 06 30  0238-084     04 23 20  25.0 207.9  1.7      16.5    24     1435   00 06 19
00 16 00  ---          04 32 52  24.3 210.4  1.8      17.9   570     1472   00 06 20

00 16 30  0238-084     04 33 22  24.3 210.5  1.9      17.9    24     1472   00 16 19
00 26 00  ---          04 42 54  23.6 212.9  2.0      19.3   570     1510   00 16 20

00 26 30  0238-084     04 43 24  23.5 213.1  2.0      19.3    24     1510   00 26 19
00 36 00  ---          04 52 55  22.7 215.5  2.2      20.6   570     1547   00 26 20

00 36 30  0238-084     04 53 25  22.7 215.6  2.2      20.7    24     1547   00 36 19
00 46 00  ---          05 02 57  21.8 218.0  2.4      21.9   570     1584   00 36 20

00 46 30  0238-084     05 03 27  21.8 218.1  2.4      22.0    24     1584   00 46 19
00 56 00  ---          05 12 59  20.9 220.4  2.5      23.2   570     1621   00 46 20



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:   34         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         3         7         3         7
  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:  16  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:  16

  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)

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 34.104620       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 11.67342        0.00
                    fake circumpolar target for a TS to look at

* 1934-638          04 20 04.230487   * 19 39 25.024972     04 20 47.695161       0.00
                   -63 49 48.04871    *-63 42 45.62440     -63 40 24.82043        0.00
                    ATCA flux calibrator

* 0134+329          01 34 49.826373   * 01 37 41.299439     01 38 40.499141       0.00
  J0137+3309        32 54 20.25866    * 33 09 35.13284      33 14 44.81588        0.00
  3C48              ./gb079_sources.radioastron
                    rfc_2016c Petrov and Kovalev, in preparation  147 observations

* 2251+158          22 51 29.519741   * 22 53 57.747940     22 54 48.031641       0.00
  J2253+1608        15 52 54.34791    * 16 08 53.56074      16 14 27.51855        0.00
  3C454.3           ./gb079_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 40570 observations, RA-AO4-06, RA-AO3-0

* 0234+285          02 34 55.589591   * 02 37 52.405678     02 38 53.303332       0.00
  J0237+2848        28 35 11.40774    * 28 48 08.98999      28 52 27.53754        0.00
                    ./gb079_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 57147 observations, RA-AO4-07, RA-AO3-0

* 0238-084          02 38 37.351926   * 02 41 04.798502     02 41 55.301775       0.00
  J0241-0815       -08 28 08.92072    *-08 15 20.75192     -08 11 06.03352        0.00
  NGC1052           ./gb079_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, RA-AO4-09

* 0528+134          05 28 06.759218   * 05 30 56.416749     05 31 54.185533       0.00
  J0530+1331        13 29 42.28878    * 13 31 55.14945      13 32 31.09082        0.00
                    ./gb079_sources.radioastron
                    AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 139206 observations, RA-AO3-04,
```

ep099btr

Snapshot observations of high Rotation Measure (RM) sources - 6 sou

PI: *A. Pasetto*

Address: Max-Planck-Institut fuer Radioastronomie

Schedule for TORUN (Code Tr) Page 2

Snapshot observations of high Rotation Measure (RM) sources - 6 sources

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 6 Nov 2016 Day 311 ---										
Next scan frequencies:		22203.49	22203.49	22203.49	22203.49		22267.49	22267.49	22267.49	22267.4
Next BBC frequencies:		703.49	703.49	703.49	703.49		767.49	767.49	767.49	767.4
Next scan bandwidths:		32.00	32.00	32.00	32.00		32.00	32.00	32.00	32.0
03 00 00	J0920+4441	07 17 19	68.0	100.0	-2.1		-56.2	0	0	03 00 00
03 05 00	=0917+449	07 22 20	68.8	101.4	-2.0		-55.8	300	38	03 00 01
03 05 17	J0920+4441	07 22 37	68.8	101.5	-2.0		-55.8	11	38	03 05 17
03 06 17	=0917+449	07 23 37	69.0	101.7	-2.0		-55.7	60	46	03 05 18
03 08 27	0958+32	07 25 47	55.6	111.7	-2.6		-41.3	65	46	03 08 27
03 18 20	---	07 35 42	57.0	114.5	-2.4		-40.3	593	122	03 08 28
03 20 30	1146+53	07 37 52	54.1	63.0	-4.2		-65.1	12	122	03 20 30
03 30 30	---	07 47 54	55.4	64.0	-4.0		-66.2	600	199	03 20 31
03 33 30	J1310+3220	07 50 54	30.9	76.2	-5.3		-43.6	74	199	03 33 30
03 34 30	=1308+326	07 51 55	31.1	76.4	-5.3		-43.6	60	207	03 33 31
03 34 44	J1310+3220	07 52 09	31.1	76.5	-5.3		-43.7	8	207	03 34 44
03 36 10	=1308+326	07 53 35	31.3	76.7	-5.3		-43.7	86	218	03 34 45
03 38 33	0958+32	07 55 58	59.7	120.9	-2.1		-37.6	23	218	03 38 33
03 48 20	---	08 05 47	60.9	124.2	-1.9		-36.0	587	293	03 38 34
03 50 30	0958+32	08 07 57	61.2	125.0	-1.9		-35.6	123	293	03 50 30
04 00 30	---	08 17 59	62.4	128.7	-1.7		-33.7	600	370	03 50 31
04 03 11	1146+53	08 20 40	59.9	67.4	-3.4		-70.0	23	370	04 03 11
04 12 40	---	08 30 11	61.2	68.4	-3.3		-71.1	569	443	04 03 12
04 14 50	0958+32	08 32 21	64.0	134.4	-1.4		-30.5	-17	443	04 14 50
04 24 50	---	08 42 23	65.0	138.7	-1.3		-28.0	583	520	04 14 51
04 27 50	J1407+2827	08 45 23	27.8	78.9	-5.4		-42.0	26	520	04 27 50
04 28 50	=OQ208	08 46 24	28.0	79.1	-5.4		-42.1	60	528	04 27 51
04 29 07	J1407+2827	08 46 41	28.0	79.1	-5.4		-42.1	11	528	04 29 07
04 30 37	=OQ208	08 48 11	28.2	79.4	-5.3		-42.1	90	539	04 29 08
04 32 47	1146+53	08 50 21	64.0	70.3	-3.0		-73.4	-18	539	04 32 47
04 42 40	---	09 00 16	65.5	71.3	-2.8		-74.6	575	615	04 32 48
04 42 57	1146+53	09 00 33	65.5	71.3	-2.8		-74.6	11	615	04 42 57
04 52 50	---	09 10 27	66.9	72.2	-2.6		-75.8	593	691	04 42 58

Schedule for TORUN (Code Tr) Page 3

Snapshot observations of high Rotation Measure (RM) sources - 6 sources

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 6 Nov 2016 Day 311 ---										
04 55 50	0958+32	09 13 28	67.6	153.8	-0.8		-18.3	2	691	04 55 50
05 05 50	---	09 23 30	68.2	159.2	-0.6		-14.6	600	768	04 55 51
05 06 08	0958+32	09 23 48	68.3	159.4	-0.6		-14.5	11	768	05 06 08
05 16 00	---	09 33 41	68.7	164.9	-0.4		-10.6	592	844	05 06 09
05 18 10	J1310+3220	09 35 52	46.6	96.6	-3.6		-44.9	-22	844	05 18 10
05 19 10	=1308+326	09 36 52	46.7	96.8	-3.6		-44.8	38	852	05 18 11
05 19 27	J1310+3220	09 37 09	46.8	96.8	-3.6		-44.8	11	852	05 19 27
05 20 50	=1308+326	09 38 32	47.0	97.1	-3.5		-44.8	83	862	05 19 28
05 21 40	3C286	09 39 22	42.7	94.7	-3.9		-44.0	20	862	05 21 40
05 22 40	---	09 40 22	42.9	94.9	-3.9		-43.9	60	870	05 21 41
05 22 57	3C286	09 40 39	42.9	95.0	-3.9		-43.9	11	870	05 22 57
05 24 20	---	09 42 03	43.1	95.3	-3.8		-43.9	83	881	05 22 58
05 26 32	1146+53	09 44 15	71.8	75.2	-2.1		-79.8	11	881	05 26 32
05 36 30	---	09 54 15	73.2	76.0	-1.9		-81.0	598	957	05 26 33
05 39 10	J1407+2827	09 56 55	38.5	92.7	-4.2		-43.0	16	957	05 39 10
05 40 10	=OQ208	09 57 55	38.6	92.9	-4.2		-43.0	60	965	05 39 11
05 40 27	J1407+2827	09 58 12	38.7	93.0	-4.2		-43.0	11	965	05 40 27
05 41 57	=OQ208	09 59 43	38.9	93.3	-4.1		-42.9	90	977	05 40 28
05 44 37	1146+53	10 02 23	74.4	76.7	-1.8		-82.1	13	977	05 44 37
05 54 30	---	10 12 18	75.9	77.4	-1.6		-83.4	593	1053	05 44 38
05 54 48	1146+53	10 12 36	75.9	77.4	-1.6		-83.4	12	1053	05 54 48
06 04 40	---	10 22 29	77.4	78.0	-1.4		-84.8	592	1128	05 54 49
06 06 10	1312+5548	10 24 00	65.6	66.7	-2.8		-78.3	32	1128	06 06 10
06 16 10	---	10 34 01	67.0	67.4	-2.7		-79.7	600	1205	06 06 11
06 16 27	1312+5548	10 34 18	67.0	67.4	-2.7		-79.8	11	1205	06 16 27
06 26 20	---	10 44 13	68.4	68.0	-2.5		-81.3	593	1281	06 16 28
06 28 20	J1407+2827	10 46 13	45.8	103.5	-3.4		-41.6	21	1281	06 28 20
06 29 20	=OQ208	10 47 13	46.0	103.8	-3.3		-41.5	60	1289	06 28 21
06 29 37	J1407+2827	10 47 30	46.0	103.9	-3.3		-41.5	11	1289	06 29 37
06 31 00	=OQ208	10 48 54	46.2	104.2	-3.3		-41.4	83	1300	06 29 38

Schedule for TORUN (Code Tr) Page 4

Snapshot observations of high Rotation Measure (RM) sources - 6 sources

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 6 Nov 2016 Day 311 ---										
06 32 00	3C286	10 49 54	53.0	111.5	-2.7		-40.4	21	1300	06 32 00
06 33 00	---	10 50 54	53.1	111.7	-2.7		-40.3	60	1307	06 32 01
06 33 17	3C286	10 51 11	53.2	111.8	-2.7		-40.3	11	1307	06 33 17
06 34 40	---	10 52 34	53.4	112.2	-2.7		-40.1	83	1318	06 33 18
06 35 40	J1310+3220	10 53 34	57.7	116.4	-2.3		-39.5	30	1318	06 35 40
06 36 40	=1308+326	10 54 35	57.9	116.7	-2.3		-39.4	60	1326	06 35 41
06 36 58	J1310+3220	10 54 53	57.9	116.8	-2.3		-39.3	12	1326	06 36 58
06 38 20	=1308+326	10 56 15	58.1	117.2	-2.2		-39.2	82	1336	06 36 59
06 40 20	1312+5548	10 58 15	70.3	68.8	-2.3		-83.5	8	1336	06 40 20
06 50 20	---	11 08 17	71.7	69.2	-2.1		-85.1	600	1413	06 40 21
06 50 37	1312+5548	11 08 34	71.8	69.2	-2.1		-85.2	11	1413	06 50 37
07 00 30	---	11 18 28	73.2	69.5	-1.9		-86.9	593	1489	06 50 38
07 02 30	3C286	11 20 29	57.1	120.5	-2.2		-36.9	3	1489	07 02 30
07 03 30	---	11 21 29	57.3	120.8	-2.2		-36.7	60	1497	07 02 31
07 03 48	3C286	11 21 47	57.3	120.9	-2.2		-36.7	12	1497	07 03 48
07 05 10	---	11 23 09	57.5	121.3	-2.1		-36.5	82	1507	07 03 49
07 06 01	J1310+3220	11 24 00	61.6	126.6	-1.8		-34.8	22	1507	07 06 01
07 07 00	=1308+326	11 25 00	61.8	126.9	-1.8		-34.6	59	1515	07 06 02
07 07 19	J1310+3220	11 25 19	61.8	127.1	-1.8		-34.5	13	1515	07 07 19
07 08 40	=1308+326	11 26 40	62.0	127.6	-1.7		-34.3	81	1525	07 07 20
07 11 48	1312+5548	11 29 48	74.8	69.7	-1.7		-89.1	57	1525	07 11 48
07 21 40	---	11 39 42	76.2	69.7	-1.6		-91.1	592	1601	07 11 49
07 21 58	1312+5548	11 40 00	76.2	69.7	-1.6		-91.2	12	1601	07 21 58
07 31 50	---	11 49 54	77.6	69.4	-1.4		-93.5	592	1677	07 21 59
07 35 57	1616+0459	11 54 01	18.3	106.8	-4.4		-35.2	11	1677	07 35 57
07 45 50	---	12 03 56	19.7	108.9	-4.2		-34.8	593	1753	07 35 58
07 50 01	1312+5548	12 08 08	80.2	68.0	-1.1		-98.6	11	1753	07 50 01
07 59 50	---	12 17 58	81.5	66.5	-0.9		-102.2	589	1829	07 50 02
08 03 50	1616+0459	12 21 59	22.2	112.9	-3.9		-33.7	4	1829	08 03 50
08 13 50	---	12 32 01	23.6	115.2	-3.8		-33.1	600	1906	08 03 51

Schedule for TORUN (Code Tr) Page 5

Snapshot observations of high Rotation Measure (RM) sources - 6 sources

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 6 Nov 2016 Day 311 ---										
08 16 50	J1407+2827	12 35 01	60.0	136.2	-1.5		-28.2	30	1906	08 16 50
08 17 50	=OQ208	12 36 01	60.1	136.6	-1.5		-28.0	60	1913	08 16 51
08 18 08	J1407+2827	12 36 19	60.1	136.7	-1.5		-27.9	12	1913	08 18 08
08 19 30	=OQ208	12 37 41	60.2	137.3	-1.5		-27.6	82	1924	08 18 09
08 22 20	1616+0459	12 40 32	24.8	117.1	-3.6		-32.4	23	1924	08 22 20
08 32 20	---	12 50 34	26.1	119.5	-3.4		-31.7	600	2001	08 22 21
08 32 37	1616+0459	12 50 51	26.1	119.5	-3.4		-31.6	11	2001	08 32 37
08 42 30	---	13 00 45	27.4	121.9	-3.3		-30.8	593	2077	08 32 38
08 56 40	1616+0459	13 14 58	29.2	125.4	-3.0		-29.4	843	2077	08 56 40
09 06 40	---	13 24 59	30.4	127.9	-2.9		-28.4	600	2154	08 56 41
09 31 30	1616+0459	13 49 53	33.2	134.4	-2.5		-25.5	1482	2154	09 31 30
09 41 30	---	13 59 55	34.3	137.1	-2.3		-24.2	600	2231	09 31 31
09 44 30	J1310+3220	14 02 55	67.2	209.2	0.9		20.3	21	2231	09 44 30
09 45 30	=1308+326	14 03 56	67.1	209.7	0.9		20.6	60	2238	09 44 31
09 45 40	J1310+3220	14 04 06	67.1	209.8	0.9		20.7	4	2238	09 45 40
09 47 10	=1308+326	14 05 36	67.0	210.5	0.9		21.2	90	2250	09 45 41
09 48 10	3C286	14 06 36	66.5	199.0	0.6		13.1	21	2250	09 48 10
09 49 10	---	14 07 36	66.4	199.5	0.6		13.5	60	2258	09 48 11
09 49 27	3C286	14 07 53	66.4	199.7	0.6		13.6	10	2258	09 49 27
09 50 50	---	14 09 16	66.3	200.4	0.6		14.1	83	2268	09 49 28
10 17 30	J1407+2827	14 36 01	64.7	194.7	0.5		10.0	1546	2268	10 17 30
10 18 30	=OQ208	14 37 01	64.7	195.2	0.5		10.3	60	2276	10 17 31
10 18 47	J1407+2827	14 37 18	64.7	195.4	0.5		10.4	10	2276	10 18 47
10 20 10	=OQ208	14 38 41	64.6	196.1	0.5		10.9	83	2287	10 18 48
10 21 40	3C286	14 40 12	64.1	215.5	1.1		23.9	37	2287	10 21 40
10 22 40	---	14 41 12	64.1	216.0	1.2		24.1	60	2294	10 21 41
10 22 50	3C286	14 41 22	64.0	216.0	1.2		24.2	4	2294	10 22 50
10 24 20	---	14 42 52	63.9	216.7	1.2		24.6	90	2306	10 22 51
10 25 30	J1310+3220	14 44 02	63.3	227.9	1.5		31.8	33	2306	10 25 30
10 26 30	=1308+326	14 45 02	63.2	228.3	1.6		32.0	60	2313	10 25 31

```
Schedule for TORUN     (Code Tr )                                  Page   6
              Snapshot observations of high Rotation Measure (RM) sources - 6 sources
  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   6 Nov 2016   Day 311 ---

10 26 47  J1310+3220   14 45 19  63.2 228.4  1.6      32.1    11     2313   10 26 47
10 28 15  =1308+326    14 46 48  63.0 229.0  1.6      32.4    88     2325   10 26 48

11 05 58  2147+0929    15 24 37   4.2  79.6 -6.4     -36.8  1936     2325   11 05 58
11 15 45  ---          15 34 25   5.6  81.5 -6.2     -37.0   587     2400   11 05 59

11 31 25  J1407+2827   15 50 08  58.9 227.4  1.7      30.2   641     2400   11 31 25
11 32 25  =OQ208       15 51 08  58.8 227.8  1.7      30.4    60     2408   11 31 26

11 32 42  J1407+2827   15 51 25  58.8 227.9  1.7      30.4    11     2408   11 32 42
11 34 04  =OQ208       15 52 47  58.6 228.4  1.8      30.7    82     2418   11 32 43

11 35 34  3C286        15 54 18  55.7 242.9  2.4      38.3    46     2418   11 35 34
11 36 34  ---          15 55 18  55.5 243.2  2.4      38.4    60     2426   11 35 35

11 36 51  3C286        15 55 35  55.5 243.3  2.4      38.5    11     2426   11 36 51
11 38 13  ---          15 56 57  55.3 243.7  2.4      38.6    82     2436   11 36 52

11 39 13  J1310+3220   15 57 57  53.7 251.8  2.8      42.4    29     2436   11 39 13
11 40 13  =1308+326    15 58 57  53.6 252.1  2.8      42.5    60     2444   11 39 14

11 40 30  J1310+3220   15 59 14  53.5 252.2  2.8      42.5    11     2444   11 40 30
11 41 52  =1308+326    16 00 37  53.3 252.5  2.8      42.6    82     2455   11 40 31

11 44 52  2147+0929    16 03 37  10.0  87.3 -5.7     -37.5  -164     2455   11 44 52
11 54 52  ---          16 13 39  11.5  89.3 -5.6     -37.5   436     2532   11 44 53

11 55 09  2147+0929    16 13 56  11.5  89.4 -5.6     -37.5    11     2532   11 55 09
12 00 00  ---          16 18 48  12.3  90.3 -5.5     -37.5   291     2569   11 55 10



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


 ======== Setup file: evn_pol.1.3cm

   Setup group:   16         Station: TORUN            Total bit rate:  1024
   Format: MARK5B            Bits per sample: 2        Sample rate: 64.000
   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=         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         3         7         3         7
  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:   7  Setup file default.  Used with PCAL = off
  LO sum=   22203.49  22203.49  22203.49  22203.49  22267.49  22267.49  22267.49  22267.49
  BBC fr=     703.49    703.49    703.49    703.49    767.49    767.49    767.49    767.49
  Bandwd=      32.00     32.00     32.00     32.00     32.00     32.00     32.00     32.00
   Matching frequency sets:   7

  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) (B1950)	(J2000)	(Date)	Error (mas)
* 0958+32	09 55 25.395126	* 09 58 20.939000	09 59 18.747080	0.00
	32 38 22.98256	* 32 24 02.16000	32 19 03.43038	0.00
* 1146+53	11 44 04.561185	* 11 46 44.186000	11 47 35.008632	0.00
	54 13 23.17562	* 53 56 43.36000	53 50 59.89702	0.00
* 1312+5548	13 10 49.899272	* 13 12 53.193000	13 13 31.369379	0.00
	56 04 06.18676	* 55 48 13.21000	55 42 53.63955	0.00
* 1616+0459	16 14 09.049716	* 16 16 37.530000	16 17 25.824274	0.00
	05 06 53.62193	* 04 59 31.96000	04 57 20.82927	0.00
* 2147+0929	21 44 42.474294	* 21 47 10.162000	21 47 59.755156	0.00
	09 15 51.12554	* 09 29 46.63000	09 34 40.64828	0.00
* 2245+0324	22 42 55.747011	* 22 45 28.284000	22 46 19.767353	0.00
	03 08 20.87931	* 03 24 08.71000	03 29 35.62400	0.00
0917+449	09 17 41.919218	* 09 20 58.458481	09 22 03.306219	0.02
* J0920+4441	44 54 39.62460	* 44 41 53.98511	44 37 20.93535	0.02
1308+326	13 08 07.560130	* 13 10 28.663849	13 11 13.996162	0.21
* J1310+3220	32 36 40.23886	* 32 20 43.78293	32 15 27.43602	0.20
* 3C286	13 28 49.657758	* 13 31 08.288051	13 31 52.808534	0.18
J1331+3030	30 45 58.64059	* 30 30 32.95924	30 25 28.97779	0.17
OQ208	14 04 45.615156	* 14 07 00.394414	14 07 43.644883	0.24
* J1407+2827	28 41 29.23518	* 28 27 14.69022	28 22 37.69955	0.34

rk16cntr

RadioAstron AGN Monitoring

PI: *Yuri Kovalev*


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```


```
Observing mode: C/L-band, dual-pol

Schedule for TORUN     (Code Tr )                                    Page   2
               RadioAstron AGN Monitoring
  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   6 Nov 2016   Day 311 ---

 ---------- L-band VLBI scans ----------

 Next scan frequencies:  1668.00  1668.00  1668.00  1668.00
 Next BBC frequencies:    732.00   732.00   732.00   732.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

21 00 00  2251+158     01 20 16  43.5 231.7  2.4      29.4     0        0   21 00 00
21 14 30  ---          01 34 49  41.7 235.8  2.7      31.1   870       28   21 00 01

21 15 00  2251+158     01 35 19  41.6 235.9  2.7      31.2    24       28   21 15 00
21 29 30  ---          01 49 51  39.8 239.8  2.9      32.7   870       56   21 15 01

21 30 00  2251+158     01 50 21  39.7 239.9  2.9      32.8    24       56   21 30 00
21 44 30  ---          02 04 54  37.8 243.7  3.2      34.1   870       84   21 30 01

21 45 00  2251+158     02 05 24  37.7 243.8  3.2      34.1    24       84   21 45 00
22 00 00  ---          02 20 26  35.7 247.5  3.4      35.3   900      112   21 45 01



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


 ======== Setup file: ra18cm2.set

   Setup group:    9         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   2400.00   2400.00   2400.00   2400.00
  Net SB=         L         L         U         U
  IF SB =         L         L         L         L
  Pol.  =      RCP       LCP       RCP       LCP
  BBC   =         1         2         1         2
  BBC SB=         U         U         L         L
  IF    =        C         A         C         A

 The following frequency sets based on these setups were used.

  Frequency Set:   6  Setup file default.  Used with PCAL = 1MHz
  LO sum=   1668.00  1668.00  1668.00  1668.00
  BBC fr=    732.00   732.00   732.00   732.00
  Bandwd=     16.00    16.00    16.00    16.00
   Matching frequency sets:   6

  Track assignments are:
   track1=   2, 18,  3, 19
   barrel=roll_off



 POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA           11 57 21.769299   * 12 00 00.000000     12 00 34.369108       0.00
                   85 16 41.77889    * 85 00 00.00000      84 54 11.20302        0.00
                   fake circumpolar target for a TS to look at

* 2251+158         22 51 29.519741   * 22 53 57.747940     22 54 48.017062       0.00
  J2253+1608       15 52 54.34791    * 16 08 53.56074      16 14 27.54528        0.00
  3C454.3          ./rk16cn_sources.radioastron
                   AGN, rfc_2013d Petrov, 2013, unpublished 40570 observations, RA-AO4-06, RA-AO3-0



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)
  2251+158           123.8

 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
```

rk16cotr

RadioAstron AGN Monitoring

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```


```
Observing mode: K-band, dual-pol

Schedule for TORUN     (Code Tr )                                    Page   2
               RadioAstron AGN Monitoring
  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   7 Nov 2016   Day 312 ---

 ---------- K-band VLBI scans ----------

 Next scan frequencies:  22236.00  22236.00  22236.00  22236.00
 Next BBC frequencies:     736.00    736.00    736.00    736.00
 Next scan bandwidths:      16.00     16.00     16.00     16.00

02 00 00  2200+420     06 21 06  16.7 -39.5  8.3      31.2     0        0   02 00 00
02 19 30  ---          06 40 39  14.9 -36.3  8.6      28.7  1170       37   02 00 01

02 20 00  2200+420     06 41 09  14.9 -36.2  8.6      28.7    24       37   02 20 00
02 39 30  ---          07 00 42  13.2 -32.9  9.0      26.2  1170       75   02 20 01

02 40 00  2200+420     07 01 12  13.2 -32.8  9.0      26.1    24       75   02 40 00
03 00 00  ---          07 21 16  11.6 -29.4  9.3      23.5  1200      113   02 40 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
   Matching groups in ./rk16co_freq.dat:
     tr1cm

   Setup group:    3         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
 1st LO=  21500.00  21500.00  21500.00  21500.00
 Net SB=         L         L         U         U
 IF SB =         U         U         U         U
 Pol.  =       RCP       LCP       RCP       LCP
 BBC   =         1         2         1         2
 BBC SB=         L         L         U         U
 IF    =         C         A         C         A

The following frequency sets based on these setups were used.

 Frequency Set:   4  Setup file default.  Used with PCAL = 1MHz
 LO sum=   22236.00  22236.00  22236.00  22236.00
 BBC fr=     736.00    736.00    736.00    736.00
 Bandwd=      16.00     16.00     16.00     16.00
  Matching frequency sets:   4

 Track assignments are:
  track1=   2, 18,  3, 19
  barrel=roll_off



POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 34.409762       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 11.13571        0.00
                    fake circumpolar target for a TS to look at

* 2200+420          22 00 39.362504   * 22 02 43.291371     22 03 25.565192       0.00
  J2202+4216        42 02 08.59073    * 42 16 39.97987      42 21 53.55559        0.00
  BLLAC             ./rk16co_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 59417 observations, RA-AO4-07, RA-AO3-0


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)
  2200+420           114.3

 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
```

rk16cptr

RadioAstron AGN Monitoring

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Fax:      +7-495-3332378                Phone during observation: +7-903-6614865
```


```
Observing mode: C/K-band, dual-pol

Schedule for TORUN     (Code Tr )                                    Page   2
               RadioAstron AGN Monitoring
  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   7 Nov 2016   Day 312 ---

 ---------- C-band VLBI scans ----------

 Next scan frequencies:  4836.00  4836.00  4836.00  4836.00
 Next BBC frequencies:    736.00   736.00   736.00   736.00
 Next scan bandwidths:     16.00    16.00    16.00    16.00

09 00 00  0851+202     13 22 15  29.9 263.9  4.4      39.5     0        0   09 00 00
09 19 30  ---          13 41 48  26.9 267.9  4.8      39.7  1170       37   09 00 01

09 20 00  0851+202     13 42 18  26.9 268.0  4.8      39.7    24       37   09 20 00
09 39 30  ---          14 01 51  23.9 271.9  5.1      39.7  1170       75   09 20 01

09 40 00  0851+202     14 02 21  23.8 272.0  5.1      39.7    24       75   09 40 00
10 00 00  ---          14 22 25  20.8 275.9  5.4      39.5  1200      113   09 40 01



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


 ======== Setup file: ra6cm2.set

   Setup group:    2         Station: TORUN            Total bit rate:   256
   Format: MKIV1:4           Bits per sample: 2        Sample rate: 32.000
   Number of channels:  4    DBE type:                 Speedup factor:   1.00

   Disk used to record data.
```

```
  1st LO=   4100.00   4100.00   4100.00   4100.00
  Net SB=         L         L         U         U
  IF SB =         U         U         U         U
  Pol.  =      RCP       LCP       RCP       LCP
  BBC   =         1         2         1         2
  BBC SB=         L         L         U         U
  IF    =        C         A         C         A

 The following frequency sets based on these setups were used.

  Frequency Set:   3  Setup file default.  Used with PCAL = 1MHz
  LO sum=   4836.00  4836.00  4836.00  4836.00
  BBC fr=    736.00   736.00   736.00   736.00
  Bandwd=     16.00    16.00    16.00    16.00
   Matching frequency sets:   3

  Track assignments are:
   track1=   2, 18,  3, 19
   barrel=roll_off
```

POSITIONS OF SOURCES USED IN RECORDING SCANS

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

* FAKERA            11 57 21.769299   * 12 00 00.000000     12 00 34.469843       0.00
                    85 16 41.77889    * 85 00 00.00000      84 54 11.03834        0.00
                    fake circumpolar target for a TS to look at

* 0851+202          08 51 57.250618   * 08 54 48.874930     08 55 46.073341       0.00
  J0854+2006        20 17 58.41733    * 20 06 30.64078      20 02 31.19605        0.00
  OJ287             ./rk16cp_sources.radioastron
                    AGN, rfc_2013d Petrov, 2013, unpublished 213710 observations, RA-AO4-06, RA-AO3-
```

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)
  0851+202            94.7

 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
```

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