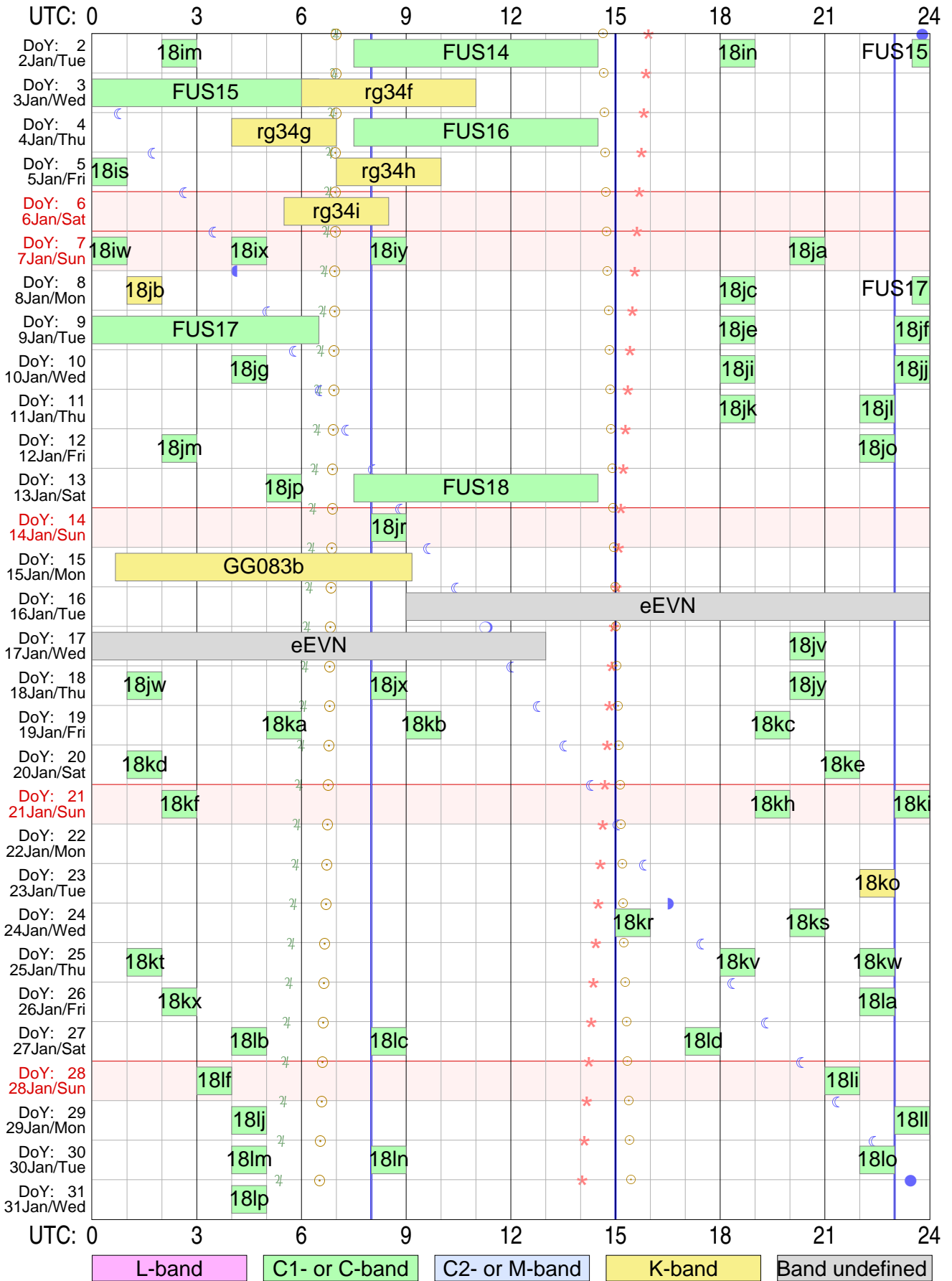


# Tr VLBI plan for Jan 2018



Version: 2018.01.08

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: 136.5 hours in 62 experiments scheduled

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

Strona zostawiona celowo pusta

# RadioAstron & EVN Experiments

## Jan 2018

Uytkownik ftp dla logw i schedulw RA: grt

ftp://webinet.asc.rssi.ru

Przykad dla log files: cd GRT\_log\_files/2014\_09/2014\_09\_01\_raks08ak

Przykad dla sched files: cd schedule/grtsched/RAKS/rk08ak

Year = 2018, 2nd line is: Year	Date	UTstart	UTstop	Exper.	xxComment
Nr	D	M	<=Dur	Exper. name	Comment
1	2.01	1.0	18im		C
2	2.01	1.0	18in		C
3	3.01	5.0	rg34f		K
4	4.01	3.0	rg34g		K
5	5.01	1.0	18is		C
6	5.01	3.0	rg34h		K
7	6.01	3.0	rg34i		K
8	7.01	1.0	18iw		C
9	7.01	1.0	18ix		C
10	7.01	1.0	18iy		C
11	7.01	1.0	18ja		C
12	8.01	1.0	18jb		K
13	8.01	1.0	18jc		C
14	9.01	1.0	18je		C
15	9.01	1.0	18jf		C
16	10.01	1.0	18jg		C
17	10.01	1.0	18ji		C
18	10.01	1.0	18jj		C
19	11.01	1.0	18jk		C
20	11.01	1.0	18jl		C
21	12.01	1.0	18jm		C
22	12.01	1.0	18jo		C
23	13.01	1.0	18jp		C
24	14.01	1.0	18jr		C
25	15.01	19.0	21b		K K:00
26	17.01	1.0	18jv		C
27	18.01	1.0	18jw		C
28	18.01	1.0	18jx		C
29	18.01	1.0	18jy		C
30	19.01	1.0	18ka		C
31	19.01	1.0	18kb		C
32	19.01	1.0	18kc		C
33	20.01	1.0	18kd		C
34	20.01	1.0	18ke		C
35	21.01	1.0	18kf		C
36	21.01	1.0	18kh		C
37	21.01	1.0	18ki		C
38	23.01	1.0	18ko		K
39	24.01	1.0	18kr		C

40	24.01	1.0	18ks	C
41	25.01	1.0	18kt	C
42	25.01	1.0	18kv	C
43	25.01	1.0	18kw	C
44	26.01	1.0	18kx	C
45	26.01	1.0	18la	C
46	27.01	1.0	18lb	C
47	27.01	1.0	18lc	C
48	27.01	1.0	18ld	C
49	28.01	1.0	18lf	C
50	28.01	1.0	18li	C
51	29.01	1.0	18lj	C
52	29.01	1.0	18ll	C
53	30.01	1.0	18lm	C
54	30.01	1.0	18ln	C
55	30.01	1.0	18lo	C
56	31.01	1.0	18lp	C
57	2.01	7.0	FUS14	C
58	2.01	7.0	FUS15	C
59	4.01	7.0	FUS16	C
60	8.01	7.0	FUS17	C
61	13.01	7.0	FUS18	C
62	16.01	28.0	eEVN	

Summer time (DST): Mar 25 to Oct 28, 2018

Total observing time: 147.0 hours in 62 experiments

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

<http://paulo.astro.uni.torun.pl/~pw/VLBI/schedules/jan18.pdf>

**rk18intr**

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  
-----

--- Tue    2 Jan 2018    Day    2 ---

----- 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	1642+690	02 03 33	35.4	-16.4	9.4		28.0	0	0	18 00 00
18 19 30	---	02 23 06	34.6	-14.4	9.7		24.6	1170	37	18 00 01
18 20 00	1642+690	02 23 36	34.6	-14.4	9.7		24.5	24	37	18 20 00
18 39 30	---	02 43 10	33.9	-12.4	10.0		21.0	1170	75	18 20 01
18 40 00	1642+690	02 43 40	33.9	-12.4	10.0		20.9	24	75	18 40 00
19 00 00	---	03 03 43	33.3	-10.3	10.4		17.4	1200	113	18 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) (B1950)	(Date)	Error (mas)	
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 51.657524	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.24089	0.00
	fake circumpolar target for a TS to look at			
* 1642+690	16 42 18.064877	* 16 42 07.848507	16 42 00.666452	0.00
J1642+6856	69 02 13.21708	* 68 56 39.75636	68 54 37.32193	0.00
	./rk18in_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 18956 observations, RA-A04-07, RA-A03-0			

#### 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)
1642+690	94.8

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  $60 \text{ deg } F^{-0.6}$  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

rg34ftr

RADIOASTRON MEGAMASER OBSERVATIONS

PI: Willem Baan Alexei Alakoz

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: K-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron Megamaser observations

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 3 Jan 2018 Day 3 ---

----- K-band VLBI scan of space-ground clock/ delay calibrator -----

Next scan frequencies: 22196.00 22196.00 22196.00 22196.00
Next BBC frequencies: 696.00 696.00 696.00 696.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

06 00 00 0716+714 14 05 31 46.3 -27.1 6.7 58.7 0 0 06 00 00
06 15 00 --- 14 20 34 45.3 -26.2 6.9 55.8 900 29 06 00 01

----- K-band VLBI scan of ground-only delay calibrator /FF -----

06 20 25 4C39.25 14 26 00 38.9 -74.3 5.0 48.0 213 29 06 20 25
06 25 18 --- 14 30 54 38.2 -73.5 5.0 47.8 293 38 06 20 26

----- K-band space-VLBI scans on NGC4258 -----

06 37 00 NGC4258 14 42 38 66.6 269.9 2.4 62.1 0 38 06 37 00
06 57 40 --- 15 03 21 63.5 273.8 2.7 61.9 1240 78 06 37 01
06 58 10 NGC4258 15 03 51 63.5 273.9 2.7 61.9 24 78 06 58 10
07 18 50 --- 15 24 34 60.4 277.5 3.1 61.2 1240 118 06 58 11
07 19 20 NGC4258 15 25 04 60.3 277.6 3.1 61.2 24 118 07 19 20
07 40 00 --- 15 45 48 57.2 280.9 3.4 60.2 1240 157 07 19 21

----- K-band VLBI scan of ground-only delay calibrator -----

07 41 00 1150+497 15 46 48 54.5 288.2 3.9 61.3 31 157 07 41 00
07 51 00 --- 15 56 50 53.0 289.5 4.0 60.5 600 177 07 41 01

----- K-band ground-VLBI scans on NGC4258 -----

07 51 30 NGC4258 15 57 20 55.5 282.7 3.6 59.6 1 177 07 51 30
08 01 00 --- 16 06 51 54.1 284.1 3.8 59.0 570 195 07 51 31
08 01 30 NGC4258 16 07 21 54.1 284.2 3.8 59.0 24 195 08 01 30
08 11 00 --- 16 16 53 52.7 285.6 4.0 58.4 570 213 08 01 31

Schedule for TORUN (Code Tr )

Page 3

RadioAstron Megamaser observations

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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   3 Jan 2018   Day   3 ---
----- K-band VLBI scan of ground-only delay calibrator -----
08 12 00  1150+497    16 17 53  50.1 292.3  4.4    58.6   32    213  08 12 00
08 20 00  ---          16 25 54  49.0 293.4  4.5    57.9  480    229  08 12 01
----- K-band ground-VLBI scans on NGC4258 -----
08 20 30  NGC4258    16 26 25  51.3 287.0  4.1    57.7    2    229  08 20 30
08 30 00  ---          16 35 56  49.9 288.4  4.3    57.0  570    247  08 20 31
08 30 30  NGC4258    16 36 26  49.9 288.4  4.3    57.0   24    247  08 30 30
08 40 00  ---          16 45 58  48.5 289.8  4.4    56.3  570    265  08 30 31
08 40 30  NGC4258    16 46 28  48.4 289.9  4.4    56.2   24    265  08 40 30
08 50 00  ---          16 55 59  47.1 291.2  4.6    55.5  570    283  08 40 31
08 50 30  NGC4258    16 56 29  47.0 291.3  4.6    55.4   24    283  08 50 30
09 00 00  ---          17 06 01  45.7 292.6  4.8    54.7  570    302  08 50 31
09 00 30  NGC4258    17 06 31  45.6 292.7  4.8    54.6   24    302  09 00 30
09 07 30  ---          17 13 32  44.7 293.7  4.9    54.0  420    315  09 00 31
----- K-band VLBI scan of ground-only delay calibrator -----
09 09 00  1150+497    17 15 02  42.4 299.8  5.3    53.2   63    315  09 09 00
09 19 00  ---          17 25 04  41.1 301.1  5.5    52.2  600    334  09 09 01
----- K-band space-VLBI scans on NGC4258 -----
09 20 00  NGC4258    17 26 04  43.0 295.4  5.1    53.0   33    334  09 20 00
09 39 00  ---          17 45 07  40.4 298.1  5.4    51.2 1140    371  09 20 01
09 39 30  NGC4258    17 45 37  40.3 298.2  5.4    51.2   24    371  09 39 30
09 59 30  ---          18 05 41  37.7 301.0  5.8    49.3 1200    409  09 39 31
10 00 00  NGC4258    18 06 11  37.7 301.0  5.8    49.2   24    409  10 00 00
10 20 00  ---          18 26 14  35.1 303.9  6.1    47.2 1200    448  10 00 01
----- K-band VLBI scan of ground-only delay calibrator -----
10 21 00  1150+497    18 27 14  33.5 309.5  6.5    45.4   34    448  10 21 00
10 31 00  ---          18 37 16  32.3 310.9  6.7    44.3  600    467  10 21 01
----- K-band VLBI scan of ground-only delay calibrator -----
10 33 00  0716+714    18 39 16  34.7 355.7 11.3     8.1   15    467  10 33 00
10 41 00  ---          18 47 18  34.6 356.4 11.4     6.7  480    482  10 33 01

```



Schedule for TORUN (Code Tr )

Page 4

RadioAstron Megamaser observations

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 3 Jan 2018 Day 3 ---

----- K-band VLBI scan of space-ground clock/ delay calibrator -----

```
10 42 00 0716+714      18 48 18 34.6 356.5 11.4      6.5   54   482 10 42 00
11 00 00 ---          19 06 21 34.4 358.3 11.7      3.2 1080   517 10 42 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:      3          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= 21500.00 21500.00 21500.00 21500.00
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:  3  Setup file default.  Used with PCAL = off
LO sum= 22196.00 22196.00 22196.00 22196.00
BBC fr=  696.00  696.00  696.00  696.00
Bandwd=  16.00  16.00  16.00  16.00
Matching frequency sets:  3

```

Track assignments are:

```

track1=  2,  4,  6,  8
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 51.801374	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.21806	0.00
	fake circumpolar target for a TS to look at			
* 0716+714	07 16 13.029739	* 07 21 53.448474	07 23 57.625097	0.00
J0721+7120	71 26 15.17406	* 71 20 36.36340	71 18 19.68202	0.00
	./rg34f_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 42370 observations, RA-A04-07, RA-A03-0			
* NGC4258	12 16 29.364915	* 12 18 57.504600	12 19 49.728504	0.00
NGC4258_H2O	47 34 53.16919	* 47 18 14.30300	47 12 03.45017	0.00
	./rg34f_sources.radioastron H2O maser; positions from Herrnstein et al. 2005, RA-A04-05, RA-A03-10, RA-A02-1			
0923+392	09 23 55.319218	* 09 27 03.013939	09 28 10.612512	0.00
J0927+3902	39 15 23.56637	* 39 02 20.85177	38 57 26.02756	0.00
* 4C39.25	./rg34f_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 245863 observations, RA-A03-04, RA-A03-			
* 1150+497	11 50 47.999856	* 11 53 24.466639	11 54 19.806026	0.00
J1153+4931	49 47 50.09409	* 49 31 08.83012	49 24 55.84344	0.00
	./rg34f_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 1816 observations, RA-A03-04, RA-A02-12			

rg34gtr

RADIOASTRON MEGAMASER OBSERVATIONS

PI: Willem Baan Alexei Alakoz

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: K-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron Megamaser observations

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 4 Jan 2018 Day 4 ---

----- K-band ground-VLBI scans on NGC4258 -----

Next scan frequencies: 22196.00 22196.00 22196.00 22196.00  
Next BBC frequencies: 696.00 696.00 696.00 696.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

04 00 00 NGC4258 12 09 08 83.9 162.8 -0.2 -15.2 0 0 04 00 00  
04 10 00 --- 12 19 10 84.1 178.9 -0.0 -1.0 600 19 04 00 01  
  
04 10 30 NGC4258 12 19 40 84.1 179.7 -0.0 -0.2 21 19 04 10 30  
04 20 30 --- 12 29 42 83.9 196.0 0.2 14.1 600 38 04 10 31

----- K-band VLBI scan of FF -----

04 25 30 3C279 12 34 42 30.8 173.5 -0.4 -3.9 87 38 04 25 30  
04 30 30 --- 12 39 43 30.9 175.0 -0.3 -3.0 300 48 04 25 31

----- K-band VLBI scan of ground-only delay calibrator -----

04 34 40 1150+497 12 43 54 81.4 249.5 0.8 59.9 46 48 04 34 40  
04 44 40 --- 12 53 56 80.0 254.4 1.0 62.8 600 67 04 34 41

----- K-band ground-VLBI scans on NGC4258 -----

04 46 00 NGC4258 12 55 16 81.8 227.4 0.6 40.6 11 67 04 46 00  
04 59 00 --- 13 08 18 80.3 237.6 0.8 48.2 780 92 04 46 01

----- K-band space-VLBI scans on NGC4258 -----

05 00 00 NGC4258 13 09 18 80.1 238.2 0.8 48.7 52 92 05 00 00  
05 22 30 --- 13 31 52 77.1 250.1 1.2 56.2 1350 136 05 00 01  
  
05 23 00 NGC4258 13 32 22 77.0 250.3 1.2 56.3 23 136 05 23 00  
05 45 00 --- 13 54 26 73.8 258.2 1.6 59.9 1320 178 05 23 01  
  
05 45 30 NGC4258 13 54 56 73.8 258.3 1.6 59.9 24 178 05 45 30  
06 07 30 --- 14 16 59 70.5 264.3 2.0 61.6 1320 220 05 45 31

Schedule for TORUN (Code Tr )

Page 3

RadioAstron Megamaser observations

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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   4 Jan 2018   Day   4 ---
06 08 00  NGC4258          14 17 29  70.4 264.4  2.0      61.6   24    220  06 08 00
06 30 00  ---              14 39 33  67.1 269.3  2.3      62.1 1320    262  06 08 01
-----
----- K-band VLBI scan of ground-only delay calibrator -----
06 31 00  1150+497        14 40 33  64.1 278.8  2.8      65.8   26    262  06 31 00
06 40 00  ---              14 49 35  62.8 280.2  2.9      65.3   540    280  06 31 01
-----
----- K-band ground-VLBI scans on NGC4258 -----
06 40 30  NGC4258          14 50 05  65.5 271.4  2.5      62.1   -3    280  06 40 30
06 50 00  ---              14 59 36  64.1 273.2  2.7      61.9   567    298  06 40 31
06 50 30  NGC4258          15 00 06  64.0 273.2  2.7      61.9   24    298  06 50 30
07 00 00  ---              15 09 38  62.6 275.0  2.8      61.7   570    316  06 50 31

```

## 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:    6          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= 21500.00 21500.00 21500.00 21500.00
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: 3 Setup file default. Used with PCAL = off
LO sum= 22196.00 22196.00 22196.00 22196.00
BBC fr= 696.00 696.00 696.00 696.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 3

```

Track assignments are:

```

track1= 2, 4, 6, 8
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 52.077870	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.19244	0.00
	fake circumpolar target for a TS to look at			
1253-055	12 53 35.831289	* 12 56 11.166557	12 57 06.462530	0.00
J1256-0547	-05 31 07.99603	*-05 47 21.52489	-05 53 05.20828	0.00
* 3C279	./rg34g_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 7924 observations, RA-A04-07, RA-A03-04			
* NGC4258	12 16 29.364915	* 12 18 57.504600	12 19 49.775040	0.00
NGC4258_H2O	47 34 53.16919	* 47 18 14.30300	47 12 03.30665	0.00
	./rg34g_sources.radioastron H2O maser; positions from Herrnstein et al. 2005, RA-A04-05, RA-A03-10, RA-A02-1			
* 1150+497	11 50 47.999856	* 11 53 24.466639	11 54 19.854170	0.00
J1153+4931	49 47 50.09409	* 49 31 08.83012	49 24 55.73591	0.00
	./rg34g_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 1816 observations, RA-A03-04, RA-A02-12			



```

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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 52.329128	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.19136	0.00
	fake circumpolar target for a TS to look at			
* 0925+504	09 25 51.973728	* 09 29 15.440209	09 30 28.730554	0.00
J0929+5013	50 26 44.31059	* 50 13 35.98961	50 08 37.48355	0.00
	./rk18is_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 223 observations, RA-A03-04, 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)
0925+504	140.3

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  $60 \text{ deg } F^{-0.6}$  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

**rg34htr**

RADIOASTRON MEGAMASER OBSERVATIONS

PI: *Willem Baan Alexei Alakoz*

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: K-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron Megamaser observations

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.

Early: Seconds between end of slew and start.    Dwell: On source seconds.

Disk: GBytes 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    5 Jan 2018    Day    5 ---

----- K-band ground-VLBI scans on NGC4258 -----

Next scan frequencies: 22196.00 22196.00 22196.00 22196.00  
Next BBC frequencies:    696.00    696.00    696.00    696.00  
Next scan bandwidths:    16.00    16.00    16.00    16.00

07 00 00	NGC4258	15 13 34	62.0	275.6	2.9		61.6	0	0	07 00 00
07 10 00	---	15 23 36	60.5	277.3	3.1		61.2	600	19	07 00 01
07 10 30	NGC4258	15 24 06	60.4	277.4	3.1		61.2	24	19	07 10 30
07 20 00	---	15 33 38	59.0	279.0	3.2		60.8	570	37	07 10 31
07 20 30	NGC4258	15 34 08	58.9	279.0	3.2		60.8	24	37	07 20 30
07 30 00	---	15 43 39	57.5	280.6	3.4		60.3	570	56	07 20 31
07 30 30	NGC4258	15 44 09	57.5	280.6	3.4		60.3	24	56	07 30 30
07 40 00	---	15 53 41	56.1	282.1	3.6		59.8	570	74	07 30 31

----- K-band VLBI scan of FF -----

07 43 00	3C279	15 56 41	19.9	228.3	3.0		26.8	31	74	07 43 00
07 53 00	---	16 06 43	18.8	230.7	3.2		27.8	600	93	07 43 01

----- K-band VLBI scan of ground-only delay calibrator -----

07 57 10	1150+497	16 10 54	51.0	291.4	4.3		59.3	114	93	07 57 10
08 07 10	---	16 20 55	49.7	292.7	4.4		58.4	600	112	07 57 11

----- K-band ground-VLBI scans on NGC4258 -----

08 08 00	NGC4258	16 21 46	52.0	286.3	4.0		58.0	22	112	08 08 00
08 17 00	---	16 30 47	50.7	287.6	4.2		57.4	540	130	08 08 01
08 17 30	NGC4258	16 31 17	50.6	287.7	4.2		57.4	24	130	08 17 30
08 27 00	---	16 40 49	49.2	289.1	4.3		56.7	570	148	08 17 31



Schedule for TORUN (Code Tr )

Page 3

RadioAstron Megamaser observations

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 5 Jan 2018 Day 5 ---

----- K-band VLBI scan of space-ground clock/ delay calibrator -----

```
08 30 00 0716+714    16 43 49 37.6 344.9 9.3    29.2   53   148 08 30 00
08 45 00 ---          16 58 52 37.0 346.3 9.6    26.4  900   177 08 30 01
```

----- K-band VLBI scan of ground-only delay calibrator -----

```
08 47 30 1150+497    17 01 22 44.2 298.0 5.1    54.6   38   177 08 47 30
08 53 30 ---          17 07 23 43.4 298.8 5.2    54.0  360   188 08 47 31
```

----- K-band VLBI scan of ground-only delay calibrator -----

```
08 57 00 0716+714    17 10 54 36.6 347.3 9.8    24.2   98   188 08 57 00
09 04 00 ---          17 17 55 36.4 348.0 9.9    22.9  420   202 08 57 01
```

----- K-band space-VLBI scans on NGC4258 -----

```
09 07 00 NGC4258    17 20 55 43.7 294.7 5.0    53.4   58   202 09 07 00
09 24 40 ---          17 38 38 41.3 297.2 5.3    51.8 1060   236 09 07 01
```

```
09 25 10 NGC4258    17 39 08 41.2 297.3 5.3    51.8   24   236 09 25 10
09 42 20 ---          17 56 21 38.9 299.7 5.6    50.2 1030   269 09 25 11
```

```
09 42 50 NGC4258    17 56 51 38.9 299.7 5.6    50.1   24   269 09 42 50
10 00 00 ---          18 14 04 36.7 302.2 5.9    48.4 1030   302 09 42 51
```

## 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: 3          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= 21500.00 21500.00 21500.00 21500.00
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: 3 Setup file default. Used with PCAL = off
LO sum= 22196.00 22196.00 22196.00 22196.00
BBC fr= 696.00 696.00 696.00 696.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 3

```

Track assignments are:

```

track1= 2, 4, 6, 8
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 52.415476	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.19588	0.00
	fake circumpolar target for a TS to look at			
* 0716+714	07 16 13.029739	* 07 21 53.448474	07 23 57.705860	0.00
J0721+7120	71 26 15.17406	* 71 20 36.36340	71 18 20.29047	0.00
	./rg34h_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 42370 observations, RA-A04-07, RA-A03-0			
1253-055	12 53 35.831289	* 12 56 11.166557	12 57 06.499705	0.00
J1256-0547	-05 31 07.99603	*-05 47 21.52489	-05 53 05.46066	0.00
* 3C279	./rg34h_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 7924 observations, RA-A04-07, RA-A03-04			
* NGC4258	12 16 29.364915	* 12 18 57.504600	12 19 49.828275	0.00
NGC4258_H2O	47 34 53.16919	* 47 18 14.30300	47 12 03.16353	0.00
	./rg34h_sources.radioastron			
	H2O maser; positions from Herrnstein et al. 2005, RA-A04-05, RA-A03-10, RA-A02-1			
* 1150+497	11 50 47.999856	* 11 53 24.466639	11 54 19.909095	0.00
J1153+4931	49 47 50.09409	* 49 31 08.83012	49 24 55.63763	0.00
	./rg34h_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 1816 observations, RA-A03-04, RA-A02-12			

RADIOASTRON MEGAMASER OBSERVATIONS

PI: *Willem Baan Alexei Alakoz*

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: K-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron Megamaser observations

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time. Frequencies are L0 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    6 Jan 2018    Day    6 ---

----- K-band VLBI scan of space-ground clock/ delay calibrator -----

Next scan frequencies: 22196.00 22196.00 22196.00 22196.00  
 Next BBC frequencies:    696.00    696.00    696.00    696.00  
 Next scan bandwidths:    16.00    16.00    16.00    16.00

05 30 00	1044+719	13 47 16	63.4	-29.5	3.0	110.3	0	0	05 30 00
05 40 00	---	13 57 18	62.7	-30.1	3.1	107.4	600	19	05 30 01

----- K-band space-VLBI scans on NGC4258 -----

05 55 00	NGC4258	14 12 20	71.2	263.1	1.9	61.3	301	19	05 55 00
06 17 30	---	14 34 54	67.8	268.3	2.3	62.1	1350	62	05 55 01
06 18 00	NGC4258	14 35 24	67.7	268.4	2.3	62.1	24	62	06 18 00
06 40 00	---	14 57 28	64.4	272.8	2.6	62.0	1320	105	06 18 01

----- K-band VLBI scan of ground-only delay calibrator -----

06 41 00	1150+497	14 58 28	61.5	281.5	3.1	64.8	28	105	06 41 00
06 51 00	---	15 08 29	60.0	282.9	3.2	64.1	600	124	06 41 01

----- K-band ground-VLBI scans on NGC4258 -----

06 52 00	NGC4258	15 09 30	62.6	274.9	2.8	61.7	29	124	06 52 00
07 02 00	---	15 19 31	61.1	276.6	3.0	61.4	600	143	06 52 01
07 02 30	NGC4258	15 20 01	61.0	276.7	3.0	61.4	24	143	07 02 30
07 12 00	---	15 29 33	59.6	278.3	3.2	61.0	570	162	07 02 31
07 12 30	NGC4258	15 30 03	59.5	278.4	3.2	61.0	24	162	07 12 30
07 22 00	---	15 39 35	58.1	279.9	3.3	60.5	570	180	07 12 31
07 22 30	NGC4258	15 40 05	58.1	280.0	3.3	60.5	24	180	07 22 30
07 32 00	---	15 49 36	56.7	281.5	3.5	60.0	570	198	07 22 31

Schedule for TORUN (Code Tr )

Page 3

RadioAstron Megamaser observations

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 6 Jan 2018 Day 6 ---

----- K-band VLBI scan of FF -----

```
07 36 00 3C279          15 53 37 20.3 227.6 2.9      26.5   90    198  07 36 00
07 46 00 ---          16 03 39 19.2 230.0 3.1      27.5  600    217  07 36 01
```

----- K-band ground-VLBI scans on NGC4258 -----

```
07 50 00 NGC4258          16 07 39 54.0 284.2 3.8      59.0   94    217  07 50 00
08 00 00 ---          16 17 41 52.6 285.7 4.0      58.3  600    237  07 50 01
08 00 30 NGC4258          16 18 11 52.5 285.8 4.0      58.3   24    237  08 00 30
08 10 00 ---          16 27 42 51.1 287.2 4.1      57.6  570    255  08 00 31

08 10 30 NGC4258          16 28 13 51.0 287.2 4.1      57.6   24    255  08 10 30
08 20 00 ---          16 37 44 49.7 288.6 4.3      56.9  570    273  08 10 31
```

----- K-band VLBI scan of ground-only delay calibrator -----

```
08 21 00 1150+497       16 38 44 47.2 295.0 4.7      56.7   32    273  08 21 00
08 30 00 ---          16 47 46 46.0 296.2 4.9      55.9  540    290  08 21 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: 3          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= 21500.00 21500.00 21500.00 21500.00
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: 3 Setup file default. Used with PCAL = off
LO sum= 22196.00 22196.00 22196.00 22196.00
BBC fr= 696.00 696.00 696.00 696.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 3

```

Track assignments are:

```

track1= 2, 4, 6, 8
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 52.687057	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.22564	0.00
	fake circumpolar target for a TS to look at			
* 1044+719	10 44 49.735111	* 10 48 27.619927	10 49 45.153934	0.00
J1048+7143	71 59 26.88535	* 71 43 35.93838	71 37 36.73868	0.00
	./rg34i_sources.radioastron AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 141793 observations, RA-A04-07,			
1253-055	12 53 35.831289	* 12 56 11.166557	12 57 06.527497	0.00
J1256-0547	-05 31 07.99603	*-05 47 21.52489	-05 53 05.64881	0.00
* 3C279	./rg34i_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 7924 observations, RA-A04-07, RA-A03-04			
* NGC4258	12 16 29.364915	* 12 18 57.504600	12 19 49.868923	0.00
NGC4258_H2O	47 34 53.16919	* 47 18 14.30300	47 12 03.07052	0.00
	./rg34i_sources.radioastron H2O maser; positions from Herrnstein et al. 2005, RA-A04-05, RA-A03-10, RA-A02-1			
* 1150+497	11 50 47.999856	* 11 53 24.466639	11 54 19.950865	0.00
J1153+4931	49 47 50.09409	* 49 31 08.83012	49 24 55.58126	0.00
	./rg34i_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 1816 observations, RA-A03-04, RA-A02-12			



```

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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 52.904648	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.26475	0.00
	fake circumpolar target for a TS to look at			
* 0648-165	06 48 10.295571	* 06 50 24.581861	06 51 13.838835	0.00
J0650-1637	-16 34 05.88130	*-16 37 39.72548	-16 39 07.58005	0.00
	./rk18iw_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 10699 observations, RA-A04-07, RA-A03-0			

#### 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    140.6

```

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  $60 \text{ deg } F^{-0.6}$  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

```

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
-----
```

--- Sun    7 Jan 2018    Day    7 ---

----- 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	1005+066	12 20 58	36.0	222.0	2.2		23.8	0	0	04 00 00
04 19 30	---	12 40 31	33.9	227.4	2.5		26.4	1170	37	04 00 01
04 20 00	1005+066	12 41 01	33.9	227.5	2.5		26.5	24	37	04 20 00
04 39 30	---	13 00 34	31.6	232.6	2.9		28.7	1170	75	04 20 01
04 40 00	1005+066	13 01 05	31.6	232.8	2.9		28.7	24	75	04 40 00
05 00 00	---	13 21 08	29.1	237.8	3.2		30.7	1200	113	04 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:    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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 52.949539	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.27425	0.00
	fake circumpolar target for a TS to look at			
* 1005+066	10 05 23.466064	* 10 08 00.816157	10 08 57.668057	0.00
J1008+0621	06 36 03.30797	* 06 21 21.21593	06 15 58.64832	0.00
	./rk18ix_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 317 observations, RA-A04-07, 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)
1005+066	134.6

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  $60 \text{ deg } F^{-0.6}$  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



```

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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 52.993991	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.28409	0.00
	fake circumpolar target for a TS to look at			
* 1253-055	12 53 35.831289	* 12 56 11.166557	12 57 06.558373	0.00
J1256-0547	-05 31 07.99603	*-05 47 21.52489	-05 53 05.85362	0.00
3C279	./rk18iy_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 7924 observations, RA-A04-07, RA-A03-04			

#### 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)
1253-055	91.6

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  $60 \text{ deg } F^{-0.6}$  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



```

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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.124791	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.31520	0.00
	fake circumpolar target for a TS to look at			
* 0925+504	09 25 51.973728	* 09 29 15.440209	09 30 28.819797	0.00
J0929+5013	50 26 44.31059	* 50 13 35.98961	50 08 37.80955	0.00
	./rk18ja_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 223 observations, RA-A03-04, 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)
0925+504    141.7

```

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  $60 \text{ deg } F^{-0.6}$  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

```

rk18jbtr

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 L0 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 8 Jan 2018 Day 8 ---

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

Table with columns: Start UT, Stop UT, Source, LST, EL, AZ, HA, UP, ParA, Early Dwell, Disk GBytes, TPStart SYNC. Contains scan data for 01:00:00 to 02:00:00.

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 ./rk18jb\_freq.dat:
tr1cm

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= 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:  5  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:  5

```

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 53.174754	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.32780	0.00
	fake circumpolar target for a TS to look at			
* 0648-165	06 48 10.295571	* 06 50 24.581861	06 51 13.840572	0.00
J0650-1637	-16 34 05.88130	*-16 37 39.72548	-16 39 07.79732	0.00
	./rk18jb_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 10699 observations, RA-A04-07, RA-A03-0			

#### 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    140.6

```

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  $60 \text{ deg } F^{-0.6}$  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

```





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) (B1950)	(Date)	Error (mas)
* FAKERA	11 57 21.769299 * 12 00 00.000000	12 00 53.355546	0.00
	85 16 41.77889 * 85 00 00.000000	84 53 43.37568	0.00
	fake circumpolar target for a TS to look at		
* 0814+425	08 14 51.669840 * 08 18 15.999600	08 19 30.070203	0.00
J0818+4222	42 32 07.73231 * 42 22 45.41481	42 19 10.24126	0.00
	./rk18jc_sources.radioastron AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 3620 observations, RA-A04-07, 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	156.3

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  $60 \text{ deg } F^{-0.6}$  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

**fus17tr**

HUNTING THE UNIDENTIFIED GAMMA-RAY SOURCES

PI: *Marcello Giroletti*

Address: INAF IRA

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
-----

```

--- Mon 8 Jan 2018 Day 8 ---

```

Next scan frequencies: 4898.49 4898.49 4898.49 4898.49 4930.49 4930.49 4930.49 4930.49
                        4962.49 4962.49 4962.49 4962.49 4994.49 4994.49 4994.49 4994.49
Next BBC frequencies:  698.49  698.49  698.49  698.49  730.49  730.49  730.49  730.49
                        762.49  762.49  762.49  762.49  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

```

```

23 30 00 J100228+3953 07 58 07 64.9 109.3 -2.1 -47.5 0 0 23 30 00
23 38 57 --- 08 07 05 66.2 112.2 -1.9 -46.4 537 69 23 30 01

```

```

23 39 17 J100037+3959 08 07 25 66.6 112.7 -1.9 -46.2 8 69 23 39 17
23 48 14 --- 08 16 24 67.8 115.8 -1.8 -44.8 537 138 23 39 18

```

```

23 48 34 J100046+3940 08 16 44 67.6 116.5 -1.8 -44.2 8 138 23 48 34
23 57 31 --- 08 25 42 68.8 119.8 -1.6 -42.5 537 207 23 48 35

```

--- Start: Mon 8 Jan 2018 Day 8 -- Stop: Tue 9 Jan 2018 Day 9 ---

```

23 57 51 J100048+3808 08 26 02 67.7 122.7 -1.6 -39.9 0 207 23 57 51
00 06 48 --- 08 35 01 68.8 126.4 -1.4 -37.9 537 275 23 57 52

```

```

00 07 08 J100324+3815 08 35 21 68.6 125.2 -1.5 -38.6 5 275 00 07 08
00 16 05 --- 08 44 19 69.7 129.2 -1.3 -36.3 537 344 00 07 09

```

```

00 16 58 J0927+3902 08 45 12 74.1 148.2 -0.7 -24.0 0 344 00 16 58
00 21 58 =0923+392 08 50 13 74.4 151.5 -0.6 -21.7 300 383 00 16 59

```

```

00 22 58 J100257+3735 08 51 13 69.9 133.7 -1.2 -33.1 9 383 00 22 58
00 31 55 --- 09 00 12 70.9 138.3 -1.1 -30.3 537 452 00 22 59

```

```

00 32 15 J100216+3736 09 00 32 71.0 138.8 -1.0 -29.9 10 452 00 32 15
00 41 12 --- 09 09 30 71.8 143.7 -0.9 -26.6 537 520 00 32 16

```

```

00 41 32 J100022+3718 09 09 50 71.8 145.4 -0.9 -25.4 4 520 00 41 32
00 50 29 --- 09 18 49 72.5 150.7 -0.7 -21.7 537 589 00 41 33

```

```

00 50 49 J100024+3746 09 19 09 72.9 150.3 -0.7 -22.1 7 589 00 50 49
00 59 46 --- 09 28 07 73.5 156.1 -0.6 -17.9 537 658 00 50 50

```

Schedule for TORUN (Code Tr )

Page 3

Hunting the unidentified gamma-ray sources

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 9 Jan 2018	Day 9	---		
01 00 11	J100009+3609	09 28 32 72.0 158.1 -0.5	-16.1	6	658 01 00 11
01 09 08	---	09 37 31 72.5 163.9 -0.4	-11.9	537	727 01 00 12
01 09 28	J100230+3643	09 37 51 72.9 162.2 -0.4	-13.2	3	727 01 09 28
01 18 25	---	09 46 49 73.3 168.2 -0.3	-8.8	537	796 01 09 29
01 19 34	J0927+3902	09 47 59 75.5 195.5 0.3	11.9	0	796 01 19 34
01 24 34	=0923+392	09 53 00 75.2 199.3 0.4	14.8	300	834 01 19 35
01 25 44	J100003+3019	09 54 10 67.1 176.1 -0.1	-2.7	9	834 01 25 44
01 34 41	---	10 03 08 67.1 181.1 0.0	0.8	537	903 01 25 45
01 35 01	J100156+3112	10 03 28 68.0 180.3 0.0	0.2	4	903 01 35 01
01 43 58	---	10 12 27 68.0 185.4 0.2	3.8	537	972 01 35 02
01 44 18	J100233+3042	10 12 47 67.5 185.2 0.2	3.6	7	972 01 44 18
01 53 15	---	10 21 45 67.3 190.2 0.3	7.1	537	1041 01 44 19
01 53 35	J100329+3000	10 22 06 66.6 189.6 0.3	6.6	6	1041 01 53 35
02 02 32	---	10 31 04 66.3 194.4 0.4	9.9	537	1110 01 53 36
02 02 52	J100338+3003	10 31 24 66.4 194.6 0.4	10.0	12	1110 02 02 52
02 11 49	---	10 40 23 66.0 199.3 0.6	13.2	537	1178 02 02 53
02 12 09	J100049+3108	10 40 43 66.9 201.6 0.6	14.9	2	1178 02 12 09
02 21 06	---	10 49 41 66.3 206.2 0.8	18.0	537	1247 02 12 10
02 22 20	J0927+3902	10 50 55 70.0 233.4 1.4	38.3	5	1247 02 22 20
02 27 20	=0923+392	10 55 56 69.4 235.6 1.5	39.6	300	1286 02 22 21
02 28 30	J100357+3244	10 57 06 67.5 209.7 0.9	20.7	3	1286 02 28 30
02 37 27	---	11 06 05 66.8 214.2 1.0	23.7	537	1355 02 28 31
02 37 47	J100243+3209	11 06 25 66.1 214.4 1.0	23.6	6	1355 02 37 47
02 46 44	---	11 15 23 65.3 218.6 1.2	26.3	537	1423 02 37 48
02 47 04	J100245+3208	11 15 43 65.3 218.8 1.2	26.3	14	1423 02 47 04
02 56 01	---	11 24 42 64.4 222.7 1.3	28.7	537	1492 02 47 05
02 56 21	J100123+3200	11 25 02 64.1 223.3 1.4	29.0	9	1492 02 56 21
03 05 18	---	11 34 00 63.2 227.0 1.5	31.2	537	1561 02 56 22
03 05 38	J100204+3248	11 34 20 63.9 227.8 1.5	31.9	5	1561 03 05 38
03 14 35	---	11 43 19 62.9 231.3 1.7	33.9	537	1630 03 05 39
03 14 55	J100415+3155	11 43 39 62.3 229.6 1.6	32.6	3	1630 03 14 55
03 23 52	---	11 52 37 61.3 232.9 1.8	34.3	537	1699 03 14 56
03 25 07	J0927+3902	11 53 52 61.5 255.1 2.4	48.3	15	1699 03 25 07
03 30 07	=0923+392	11 58 53 60.7 256.4 2.5	48.7	300	1737 03 25 08

Schedule for TORUN (Code Tr )

Page 4

Hunting the unidentified gamma-ray sources

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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	9 Jan 2018	Day	9	---					
03 30 47	J100118+3851	11 59 33	65.4	246.3	2.0		44.8	5	1737	03 30 47
03 39 44	---	12 08 31	64.1	249.1	2.1		46.0	537	1806	03 30 48
03 40 04	J100124+3847	12 08 52	64.1	249.1	2.1		46.0	12	1806	03 40 04
03 49 01	---	12 17 50	62.8	251.8	2.3		47.0	537	1875	03 40 05
03 49 21	J100152+3818	12 18 10	62.5	251.0	2.3		46.3	7	1875	03 49 21
03 58 18	---	12 27 09	61.2	253.6	2.4		47.1	537	1944	03 49 22
03 58 38	J100155+3848	12 27 29	61.5	254.4	2.4		47.9	7	1944	03 58 38
04 07 35	---	12 36 27	60.2	256.8	2.6		48.5	537	2013	03 58 39
04 08 00	J100148+3733	12 36 52	59.2	255.1	2.6		47.0	8	2013	04 08 00
04 16 57	---	12 45 51	57.9	257.4	2.7		47.6	537	2082	04 08 01
04 17 17	J100102+3751	12 46 11	58.0	258.1	2.7		48.0	8	2082	04 17 17
04 26 14	---	12 55 09	56.7	260.3	2.9		48.5	537	2150	04 17 18
04 26 47	J0927+3902	12 55 42	52.3	269.4	3.5		50.5	0	2150	04 26 47
04 31 47	=0923+392	13 00 43	51.5	270.4	3.5		50.6	300	2189	04 26 48
04 32 37	J100027+3437	13 01 33	53.4	257.9	3.0		45.5	10	2189	04 32 37
04 41 34	---	13 10 32	52.1	260.0	3.2		45.9	537	2258	04 32 38
04 41 54	J100054+3412	13 10 52	51.8	259.5	3.1		45.5	8	2258	04 41 54
04 50 51	---	13 19 50	50.5	261.5	3.3		45.8	537	2327	04 41 55
04 51 11	J100320+3453	13 20 10	51.3	261.9	3.3		46.4	5	2327	04 51 11
05 00 08	---	13 29 09	49.9	263.9	3.4		46.6	537	2395	04 51 12
05 00 28	J100239+3439	13 29 29	49.6	263.8	3.4		46.5	9	2395	05 00 28
05 09 25	---	13 38 27	48.3	265.7	3.6		46.7	537	2464	05 00 29
05 09 45	J100402+3302	13 38 47	47.3	263.8	3.6		45.3	2	2464	05 09 45
05 18 42	---	13 47 46	46.0	265.7	3.7		45.5	537	2533	05 09 46
05 19 02	J100423+3401	13 48 06	46.7	266.7	3.7		46.3	5	2533	05 19 02
05 27 59	---	13 57 04	45.3	268.6	3.9		46.3	537	2602	05 19 03
05 28 39	J0927+3902	13 57 44	43.0	280.9	4.5		49.3	0	2602	05 28 39
05 33 39	=0923+392	14 02 45	42.3	281.8	4.6		49.1	300	2640	05 28 40
05 34 14	J100059+3642	14 03 20	45.7	273.3	4.0		48.3	3	2640	05 34 14
05 43 11	---	14 12 19	44.3	275.0	4.2		48.2	537	2709	05 34 15

Schedule for TORUN (Code Tr )

Page 5

Hunting the unidentified gamma-ray sources

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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   9 Jan 2018   Day   9 ---

05 43 31 J100026+3505  14 12 39  43.1 273.5  4.2      47.0    2    2709  05 43 31
05 52 28 ---          14 21 37  41.8 275.2  4.3      46.9   537    2778  05 43 32

05 52 48 J100033+3504  14 21 57  41.7 275.3  4.3      46.9   14    2778  05 52 48
06 01 45 ---          14 30 56  40.4 276.9  4.5      46.7   537    2847  05 52 49

06 02 05 J100036+3545  14 31 16  40.8 277.6  4.5      47.1    7    2847  06 02 05
06 11 02 ---          14 40 14  39.5 279.3  4.6      46.8   537    2916  06 02 06

06 11 22 J100114+3505  14 40 34  39.1 278.6  4.6      46.5    7    2916  06 11 22
06 20 19 ---          14 49 33  37.8 280.2  4.8      46.2   537    2985  06 11 23

06 20 39 J100111+3424  14 49 53  37.2 279.6  4.8      45.8    7    2985  06 20 39
06 29 36 ---          14 58 51  35.9 281.3  4.9      45.5   537    3053  06 20 40

```

## 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	4200.00	4200.00
Net SB=	L	L	U	U	L	L	U	U	U
	L	L	U	U	L	L	U	U	U
IF SB =	U	U	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	LCP
	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP	LCP
BBC =	1	5	1	5	2	6	2	6	6
	3	7	3	7	4	8	4	8	8
BBC SB=	L	L	U	U	L	L	U	U	U
	L	L	U	U	L	L	U	U	U
IF =	A1	B1	A1	B1	A1	B1	A1	B1	B1
	A1	B1	A1	B1	A1	B1	A1	B1	B1

The following frequency sets based on these setups were used.

Frequency Set: 3 Setup file default. Used with PCAL = off

LO sum=	4898.49	4898.49	4898.49	4898.49	4930.49	4930.49	4930.49	4930.49
	4962.49	4962.49	4962.49	4962.49	4994.49	4994.49	4994.49	4994.49
BBC fr=	698.49	698.49	698.49	698.49	730.49	730.49	730.49	730.49
	762.49	762.49	762.49	762.49	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) (B1950)	(J2000)	(Date)	Error (mas)
* J100003+3019	09 57 09.633487	* 10 00 03.220000	10 01 05.783995	0.00
	30 33 49.55539	* 30 19 24.90000	30 14 02.64606	0.00
* J100009+3609	09 57 11.264401	* 10 00 09.770000	10 01 14.069167	0.00
	36 23 36.48612	* 36 09 11.70000	36 03 48.29023	0.00
* J100022+3718	09 57 22.757100	* 10 00 22.290000	10 01 26.951496	0.00
	37 33 09.62380	* 37 18 44.40000	37 13 20.62569	0.00
* J100024+3746	09 57 24.883454	* 10 00 24.850000	10 01 29.664825	0.00
	38 01 23.10838	* 37 46 57.80000	37 41 33.91192	0.00
* J100026+3505	09 57 29.400737	* 10 00 26.900000	10 01 30.841546	0.00
	35 19 32.83768	* 35 05 07.40000	34 59 43.95495	0.00
* J100027+3437	09 57 30.181998	* 10 00 27.280000	10 01 31.079720	0.00
	34 52 08.76051	* 34 37 43.30000	34 32 19.93179	0.00
* J100033+3504	09 57 36.414874	* 10 00 33.890000	10 01 37.822298	0.00
	35 19 18.99464	* 35 04 53.30000	34 59 29.76449	0.00
* J100036+3545	09 57 38.060245	* 10 00 36.130000	10 01 40.272281	0.00
	35 59 57.96366	* 35 45 32.20000	35 40 08.51504	0.00

* J100037+3959	09 57 35.267306 40 13 41.52129	* 10 00 37.340000 * 39 59 15.80000	10 01 42.900292 39 53 51.38140	0.00 0.00
* J100046+3940	09 57 44.406745 39 55 11.05100	* 10 00 46.140000 * 39 40 45.00000	10 01 51.578914 39 35 20.51663	0.00 0.00
* J100048+3808	09 57 48.707078 38 23 15.48577	* 10 00 48.940000 * 38 08 49.30000	10 01 53.846671 38 03 25.03524	0.00 0.00
* J100049+3108	09 57 55.576719 31 22 58.24880	* 10 00 49.700000 * 31 08 31.90000	10 01 52.448301 31 03 08.88615	0.00 0.00
* J100054+3412	09 57 57.559129 34 26 33.15706	* 10 00 54.210000 * 34 12 06.70000	10 01 57.849046 34 06 43.05844	0.00 0.00
* J100059+3642	09 58 00.145620 36 56 42.08371	* 10 00 59.000000 * 36 42 15.50000	10 02 03.417471 36 36 51.35147	0.00 0.00
* J100102+3751	09 58 02.136750 38 05 45.47219	* 10 01 02.050000 * 37 51 18.80000	10 02 06.842042 37 45 54.41377	0.00 0.00
* J100111+3424	09 58 15.137560 34 39 17.40116	* 10 01 11.920000 * 34 24 50.30000	10 02 15.603691 34 19 26.39021	0.00 0.00
* J100114+3505	09 58 16.723134 35 20 04.96743	* 10 01 14.090000 * 35 05 37.80000	10 02 17.979906 35 00 13.73962	0.00 0.00
* J100118+3851	09 58 17.778565 39 06 17.45684	* 10 01 18.600000 * 38 51 50.20000	10 02 23.712107 38 46 25.42809	0.00 0.00
* J100123+3200	09 58 29.232496 32 15 10.98619	* 10 01 23.970000 * 32 00 43.40000	10 02 26.931179 31 55 19.77836	0.00 0.00
* J100124+3847	09 58 23.861942 39 02 23.07737	* 10 01 24.600000 * 38 47 55.60000	10 02 29.681916 38 42 30.76094	0.00 0.00
* J100148+3733	09 58 48.972518 37 47 34.07235	* 10 01 48.450000 * 37 33 05.70000	10 02 53.082842 37 27 40.76311	0.00 0.00
* J100152+3818	09 58 52.104059 38 33 00.09642	* 10 01 52.280000 * 38 18 31.60000	10 02 57.159794 38 13 06.48430	0.00 0.00
* J100155+3848	09 58 54.880270 39 03 27.00426	* 10 01 55.530000 * 38 48 58.40000	10 03 00.577324 38 43 33.15662	0.00 0.00
* J100156+3112	09 59 02.542958 31 27 06.38721	* 10 01 56.550000 * 31 12 37.60000	10 02 59.250686 31 07 13.71133	0.00 0.00
* J100204+3248	09 59 09.393178 33 02 41.95318	* 10 02 04.670000 * 32 48 12.90000	10 03 07.817107 32 42 48.60583	0.00 0.00
* J100216+3736	09 59 16.598008 37 51 05.67374	* 10 02 16.040000 * 37 36 36.30000	10 03 20.657368 37 31 10.99654	0.00 0.00
* J100228+3953	09 59 27.122230 40 07 40.78612	* 10 02 28.700000 * 39 53 11.00000	10 03 34.072778 39 47 45.14973	0.00 0.00
* J100230+3643	09 59 31.475499 36 57 53.39939	* 10 02 30.060000 * 36 43 23.50000	10 03 34.372466 36 37 58.16991	0.00 0.00
* J100233+3042	09 59 39.508682 30 56 32.51856	* 10 02 33.020000 * 30 42 02.40000	10 03 35.542613 30 36 38.14257	0.00 0.00
* J100239+3439	09 59 42.735866	* 10 02 39.470000	10 03 43.127617	0.00

	34 53 45.27960	* 34 39 15.00000	34 33 49.91829	0.00
* J100243+3209	09 59 48.673599	* 10 02 43.320000	10 03 46.241057	0.00
	32 24 03.36478	* 32 09 32.90000	32 04 08.23197	0.00
* J100245+3208	09 59 51.060175	* 10 02 45.690000	10 03 48.604978	0.00
	32 23 17.75063	* 32 08 47.20000	32 03 22.50412	0.00
* J100257+3735	09 59 58.065776	* 10 02 57.350000	10 04 01.907154	0.00
	37 49 37.66881	* 37 35 06.80000	37 29 40.96944	0.00
* J100320+3453	10 00 23.894818	* 10 03 20.710000	10 04 24.391949	0.00
	35 07 56.66229	* 34 53 24.90000	34 47 59.24828	0.00
* J100324+3815	10 00 24.824448	* 10 03 24.650000	10 04 29.395873	0.00
	38 30 25.13869	* 38 15 53.30000	38 10 27.00296	0.00
* J100329+3000	10 00 36.792712	* 10 03 29.620000	10 04 31.896483	0.00
	30 14 34.17067	* 30 00 02.00000	29 54 37.15951	0.00
* J100338+3003	10 00 45.695146	* 10 03 38.540000	10 04 40.821758	0.00
	30 17 39.48989	* 30 03 07.00000	29 57 42.03658	0.00
* J100357+3244	10 01 02.718149	* 10 03 57.630000	10 05 00.636955	0.00
	32 58 36.82643	* 32 44 03.70000	32 38 37.97865	0.00
* J100402+3302	10 01 07.473943	* 10 04 02.620000	10 05 05.708947	0.00
	33 16 53.49947	* 33 02 20.20000	32 56 54.35816	0.00
* J100415+3155	10 01 21.595497	* 10 04 15.810000	10 05 18.569576	0.00
	32 10 11.19065	* 31 55 37.40000	31 50 11.60248	0.00
* J100423+3401	10 01 27.383326	* 10 04 23.280000	10 05 26.631375	0.00
	34 15 44.61962	* 34 01 10.60000	33 55 44.31408	0.00
* J0927+3902	09 23 55.319217	* 09 27 03.013938	09 28 10.774461	0.13
0923+392	39 15 23.56637	* 39 02 20.85177	38 57 26.30537	0.10
4C39.25	/irasoft/sched/catalogs/sources.vlba			
J0927+39	rfc_2012b Petrov, 2012, unpublished 239566 observations			



**rk18jetr**

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 L0 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    9 Jan 2018    Day    9 ---

----- 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	0925+504	02 31 09	31.0	46.3	-7.0	-42.6	0	0	18 00 00		
18 19 30	---	02 50 42	33.2	49.0	-6.7	-45.0	1170	37	18 00 01		
18 20 00	0925+504	02 51 12	33.2	49.0	-6.7	-45.0	24	37	18 20 00		
18 39 30	---	03 10 46	35.5	51.7	-6.3	-47.3	1170	75	18 20 01		
18 40 00	0925+504	03 11 16	35.6	51.7	-6.3	-47.4	24	75	18 40 00		
19 00 00	---	03 31 19	38.0	54.4	-6.0	-49.6	1200	113	18 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:    1	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) (B1950)	(Date)	Error (mas)	
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.596863	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.44180	0.00
	fake circumpolar target for a TS to look at			
* 0925+504	09 25 51.973728	* 09 29 15.440209	09 30 28.869837	0.00
J0929+5013	50 26 44.31059	* 50 13 35.98961	50 08 38.01042	0.00
	./rk18je_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 223 observations, RA-A03-04, 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)
0925+504	142.6

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  $60 \text{ deg } F^{-0.6}$  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

rk18jfr

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 L0 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 9 Jan 2018 Day 9 ---

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

Table with columns: Time, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. Rows include scan frequencies, BBC frequencies, and bandwidths, followed by a list of scan events with their respective parameters.

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: 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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.646171	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.45516	0.00
	fake circumpolar target for a TS to look at			
* 0234+285	02 34 55.589591	* 02 37 52.405678	02 38 56.268806	0.00
J0237+2848	28 35 11.40774	* 28 48 08.98999	28 52 46.18165	0.00
	./rk18jf_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 57147 observations, RA-A04-07, RA-A03-0			

#### 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)
0234+285	116.0

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  $60 \text{ deg } F^{-0.6}$  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

rk18jgtr

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 L0 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 10 Jan 2018 Day 10 ---

----- 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	1124-186	12 32 48	16.5	196.0	1.1		10.1	0	0	04 00 00
04 14 30	---	12 47 20	15.8	199.5	1.3		12.2	870	28	04 00 01
04 15 00	1124-186	12 47 50	15.8	199.6	1.3		12.3	24	28	04 15 00
04 29 30	---	13 02 22	15.0	203.1	1.6		14.4	870	56	04 15 01
04 30 00	1124-186	13 02 53	15.0	203.2	1.6		14.5	24	56	04 30 00
04 44 30	---	13 17 25	14.1	206.6	1.8		16.5	870	84	04 30 01
04 45 00	1124-186	13 17 55	14.0	206.7	1.8		16.6	24	84	04 45 00
05 00 00	---	13 32 57	13.0	210.2	2.1		18.6	900	112	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:  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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.694428	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.46809	0.00
	fake circumpolar target for a TS to look at			
* 1124-186	11 24 34.018124	* 11 27 04.392449	11 27 58.773986	0.00
J1127-1857	-18 40 46.35977	*-18 57 17.44185	-19 03 08.18649	0.00
	./rk18jg_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 41937 observations, RA-A03-04, RA-A02-1			

#### 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)
1124-186	108.0

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  $60 \text{ deg } F^{-0.6}$  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

**rk18jitr**

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 10 Jan 2018 Day 10 ---

----- 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	0716+714	02 35 06	54.7	31.9	-4.8	-81.8	0	0	18 00 00
18 19 30	---	02 54 39	56.3	32.2	-4.5	-86.2	1170	37	18 00 01
18 20 00	0716+714	02 55 09	56.3	32.2	-4.5	-86.3	24	37	18 20 00
18 39 30	---	03 14 42	57.9	32.3	-4.2	-90.9	1170	75	18 20 01
18 40 00	0716+714	03 15 12	57.9	32.3	-4.1	-91.0	24	75	18 40 00
19 00 00	---	03 35 15	59.5	32.1	-3.8	-95.9	1200	113	18 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:    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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.831767	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.50383	0.00
	fake circumpolar target for a TS to look at			
* 0716+714	07 16 13.029739	* 07 21 53.448474	07 23 57.798401	0.00
J0721+7120	71 26 15.17406	* 71 20 36.36340	71 18 21.81245	0.00
	./rk18ji_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 42370 observations, RA-A04-07, RA-A03-0			

#### 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    130.6

```

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  $60 \text{ deg } F^{-0.6}$  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

```



rk18jjtr

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 10 Jan 2018 Day 10 ---

----- 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

Table with 12 columns: Start UT, Stop UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. Rows show scan data for 1005+066 source at various times.

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: 1 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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.880340	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.51602	0.00
	fake circumpolar target for a TS to look at			
* 1005+066	10 05 23.466064	* 10 08 00.816157	10 08 57.748211	0.00
J1008+0621	06 36 03.30797	* 06 21 21.21593	06 15 58.11178	0.00
	./rk18jj_sources.radioastron AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 317 observations, RA-A04-07, 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)
1005+066	138.5

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  $60 \text{ deg } F^{-0.6}$  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

## 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 L0 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 11 Jan 2018    Day 11 ---

----- 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 0925+504    02 39 02 31.9 47.4 -6.9    -43.6    0            0    18 00 00
18 19 30 ---            02 58 35 34.1 50.0 -6.5    -45.9 1170            37    18 00 01

18 20 00 0925+504    02 59 05 34.1 50.1 -6.5    -46.0    24            37    18 20 00
18 39 30 ---            03 18 39 36.4 52.7 -6.2    -48.2 1170            75    18 20 01

18 40 00 0925+504    03 19 09 36.5 52.8 -6.2    -48.3    24            75    18 40 00
19 00 00 ---            03 39 12 38.9 55.4 -5.9    -50.5 1200            113    18 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:    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:  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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 54.064970	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.55989	0.00
	fake circumpolar target for a TS to look at			
* 0925+504	09 25 51.973728	* 09 29 15.440209	09 30 28.925687	0.00
J0929+5013	50 26 44.31059	* 50 13 35.98961	50 08 38.18211	0.00
	./rk18jk_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 223 observations, RA-A03-04, 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)
0925+504        143.4

```

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  $60 \text{ deg } F^{-0.6}$  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

```

**rk18jlr**

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 L0 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 11 Jan 2018 Day 11 ---

----- 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					

22 00 00	0648-165	06 39 42	20.2	177.1	-0.2		-1.8	0	0	22 00 00
22 19 30	---	06 59 15	20.2	182.0	0.1		1.3	1170	37	22 00 01
22 20 00	0648-165	06 59 45	20.2	182.2	0.1		1.4	24	37	22 20 00
22 39 30	---	07 19 18	20.0	187.2	0.5		4.5	1170	75	22 20 01
22 40 00	0648-165	07 19 48	20.0	187.3	0.5		4.6	24	75	22 40 00
23 00 00	---	07 39 51	19.5	192.4	0.8		7.7	1200	113	22 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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 54.103979	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.56865	0.00
	fake circumpolar target for a TS to look at			
* 0648-165	06 48 10.295571	* 06 50 24.581861	06 51 13.851259	0.00
J0650-1637	-16 34 05.88130	*-16 37 39.72548	-16 39 08.74333	0.00
	./rk18jl_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 10699 observations, RA-A04-07, RA-A03-0			

#### 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    140.3

```

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  $60 \text{ deg } F^{-0.6}$  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

```

**rk18jmtr**

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 L0 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 12 Jan 2018 Day 12 ---

----- 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

02 00 00	0823+033	10 40 21	32.9	220.9	2.2	23.2	0	0	02 00 00
02 19 30	---	10 59 54	30.9	226.1	2.6	25.7	1170	37	02 00 01
02 20 00	0823+033	11 00 24	30.9	226.3	2.6	25.8	24	37	02 20 00
02 39 30	---	11 19 58	28.7	231.3	2.9	28.0	1170	75	02 20 01
02 40 00	0823+033	11 20 28	28.6	231.4	2.9	28.0	24	75	02 40 00
03 00 00	---	11 40 31	26.2	236.3	3.2	30.0	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: 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:  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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 54.143077	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.57726	0.00
	fake circumpolar target for a TS to look at			
* 0823+033	08 23 13.540326	* 08 25 50.338355	08 26 47.436443	0.00
J0825+0309	03 19 15.40169	* 03 09 24.51995	03 05 42.80689	0.00
	./rk18jm_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 57025 observations, RA-A04-07, 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    157.5

```

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  $60 \text{ deg } F^{-0.6}$  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

```





```

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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 54.339621	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.61816	0.00
	fake circumpolar target for a TS to look at			
* 0454-234	04 54 57.297216	* 04 57 03.179228	04 57 49.174512	0.00
J0457-2324	-23 29 28.31965	*-23 24 52.02024	-23 23 30.38246	0.00
	./rk18jo_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 69420 observations, RA-A04-07, RA-A03-0			

#### 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)
0454-234    120.5

```

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  $60 \text{ deg } F^{-0.6}$  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

```

rk18jptr

# 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 L0 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 13 Jan 2018 Day 13 ---

----- 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	1253-055	13 44 47	30.2	193.7	0.8	8.2	0	0	05 00 00	05 00 00
05 14 30	---	13 59 20	29.6	197.9	1.0	10.7	870	28	05 00 01	05 00 01
05 15 00	1253-055	13 59 50	29.5	198.0	1.0	10.8	24	28	05 15 00	05 15 00
05 29 30	---	14 14 22	28.8	202.1	1.3	13.1	870	56	05 15 01	05 15 01
05 30 00	1253-055	14 14 52	28.8	202.2	1.3	13.2	24	56	05 30 00	05 30 00
05 44 30	---	14 29 24	27.9	206.2	1.5	15.4	870	84	05 30 01	05 30 01
05 45 00	1253-055	14 29 55	27.8	206.3	1.5	15.5	24	84	05 45 00	05 45 00
06 00 00	---	14 44 57	26.8	210.3	1.8	17.8	900	112	05 45 01	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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 54.409647	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.63195	0.00
	fake circumpolar target for a TS to look at			
* 1253-055	12 53 35.831289	* 12 56 11.166557	12 57 06.736071	0.00
J1256-0547	-05 31 07.99603	*-05 47 21.52489	-05 53 06.95360	0.00
3C279	./rk18jp_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 7924 observations, RA-A04-07, RA-A03-04			

#### 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)
1253-055    97.6

```

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  $60 \text{ deg } F^{-0.6}$  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

```

**fus18tr**

HUNTING THE UNIDENTIFIED GAMMA-RAY SOURCES

PI: *Marcello Giroletti*

Address: INAF IRA

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
-----

```

--- Sat 13 Jan 2018 Day 13 ---

```

Next scan frequencies: 4898.49 4898.49 4898.49 4898.49 4930.49 4930.49 4930.49 4930.49
                       4962.49 4962.49 4962.49 4962.49 4994.49 4994.49 4994.49 4994.49
Next BBC frequencies:  698.49  698.49  698.49  698.49  730.49  730.49  730.49  730.49
                       762.49  762.49  762.49  762.49  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

07 30 00 J172318+3419 16 15 12 67.6 140.2 -1.1   -27.8   0     0   07 30 00
07 38 55 ---          16 24 08 68.4 144.6 -1.0   -24.9  535   69   07 30 01

07 39 15 J172020+3428 16 24 28 68.8 146.1 -0.9   -23.9   4     69   07 39 15
07 48 10 ---          16 33 25 69.5 150.9 -0.8   -20.7  535  137   07 39 16

07 48 30 J172144+3450 16 33 45 69.8 150.0 -0.8   -21.5   6    137   07 48 30
07 57 25 ---          16 42 41 70.4 155.0 -0.7   -18.0  535  206   07 48 31

07 57 50 J172201+3307 16 43 06 68.8 156.6 -0.7   -16.6   5    206   07 57 50
08 06 45 ---          16 52 03 69.3 161.6 -0.5   -13.1  535  274   07 57 51

08 07 05 J172210+3306 16 52 23 69.3 161.7 -0.5   -13.0  13    274   08 07 05
08 16 00 ---          17 01 19 69.6 167.0 -0.4    -9.3  535  343   08 07 06

08 16 20 J172249+3301 17 01 39 69.5 166.8 -0.4    -9.4  10    343   08 16 20
08 25 15 ---          17 10 36 69.8 172.2 -0.2    -5.6  535  412   08 16 21

08 26 26 J1800+3848   17 11 47 73.4 144.5 -0.8   -26.6   0    412   08 26 26
08 31 26 =1758+388   17 16 47 73.8 147.6 -0.7   -24.4  300  450   08 26 27

08 33 11 J172013+3135 17 18 33 68.5 178.6 -0.0    -1.0  29    450   08 33 11
08 42 06 ---          17 27 29 68.4 183.8  0.1     2.7  535  519   08 33 12

08 42 26 J172218+3103 17 27 49 67.9 182.8  0.1     1.9   5    519   08 42 26
08 51 21 ---          17 36 46 67.8 187.8  0.2     5.5  535  587   08 42 27

08 51 41 J172230+3111 17 37 06 67.9 188.0  0.2     5.6  11    587   08 51 41
09 00 36 ---          17 46 02 67.7 193.0  0.4     9.1  535  656   08 51 42

09 00 56 J172214+3133 17 46 22 68.0 193.5  0.4     9.5   8    656   09 00 56
09 09 51 ---          17 55 19 67.7 198.4  0.5    12.9  535  724   09 00 57

```

Schedule for TORUN (Code Tr )

Page 3

Hunting the unidentified gamma-ray sources

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 13 Jan 2018	Day 13	---		
09 10 11	J172314+3106	17 55 39 67.3 197.8 0.5	12.4	7	724 09 10 11
09 19 06	---	18 04 35 66.8 202.6 0.7	15.6	535	793 09 10 12
09 19 26	J172004+3110	18 04 55 66.6 204.4 0.7	16.9	3	793 09 19 26
09 28 21	---	18 13 52 66.0 209.0 0.9	19.9	535	862 09 19 27
09 29 28	J1800+3848	18 15 00 75.5 191.0 0.2	8.4	16	862 09 29 28
09 34 28	=1758+388	18 20 00 75.3 194.8 0.3	11.4	300	900 09 29 29
09 35 53	J172226+3721	18 21 26 71.3 218.6 1.0	28.1	23	900 09 35 53
09 44 48	---	18 30 22 70.4 223.3 1.1	31.2	535	969 09 35 54
09 45 08	J172233+3725	18 30 42 70.4 223.5 1.1	31.4	12	969 09 45 08
09 54 03	---	18 39 39 69.5 227.9 1.3	34.1	535	1037 09 45 09
09 54 28	J172239+3751	18 40 04 69.8 228.7 1.3	34.9	12	1037 09 54 28
10 03 23	---	18 49 00 68.7 232.8 1.4	37.3	535	1106 09 54 29
10 03 43	J172256+3742	18 49 20 68.6 232.5 1.4	37.0	10	1106 10 03 43
10 12 38	---	18 58 17 67.5 236.3 1.6	39.1	535	1174 10 03 44
10 12 58	J172121+3726	18 58 37 67.1 236.6 1.6	39.1	8	1174 10 12 58
10 21 53	---	19 07 33 65.9 240.0 1.8	40.9	535	1243 10 12 59
10 22 18	J172121+3757	19 07 58 66.3 241.0 1.8	41.7	12	1243 10 22 18
10 31 13	---	19 16 55 65.1 244.1 1.9	43.2	535	1312 10 22 19
10 31 57	J1642+3948	19 17 39 60.8 258.6 2.6	50.0	0	1312 10 31 57
10 36 57	=3C345	19 22 40 60.0 259.8 2.7	50.3	300	1350 10 31 58
10 38 12	J172052+3015	19 23 55 58.1 236.4 2.0	35.4	13	1350 10 38 12
10 47 07	---	19 32 51 57.0 239.3 2.2	36.7	535	1419 10 38 13
10 47 27	J172230+3051	19 33 11 57.6 239.6 2.2	37.1	6	1419 10 47 27
10 56 22	---	19 42 08 56.5 242.4 2.3	38.3	535	1487 10 47 28
10 56 42	J172308+3017	19 42 28 56.1 241.6 2.3	37.7	7	1487 10 56 42
11 05 37	---	19 51 24 54.9 244.3 2.5	38.8	535	1556 10 56 43
11 05 57	J172153+3002	19 51 44 54.5 244.5 2.5	38.8	8	1556 11 05 57
11 14 52	---	20 00 41 53.2 247.0 2.6	39.7	535	1624 11 05 58
11 15 17	J172301+3225	20 01 06 55.1 249.5 2.6	41.8	4	1624 11 15 17
11 24 12	---	20 10 02 53.9 251.9 2.8	42.5	535	1693 11 15 18
11 25 03	J1800+3848	20 10 53 63.6 250.4 2.2	46.5	0	1693 11 25 03
11 30 03	=1758+388	20 15 54 62.9 251.8 2.2	47.1	300	1731 11 25 04
11 31 03	J172223+3201	20 16 54 52.5 253.4 2.9	42.7	7	1731 11 31 03
11 39 58	---	20 25 50 51.2 255.6 3.0	43.3	535	1800 11 31 04

Schedule for TORUN (Code Tr )

Page 4

Hunting the unidentified gamma-ray sources

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 13 Jan 2018 Day 13 ---										
11 40 18	J172016+3257	20 26 11	51.5	257.3	3.1		44.3	4	1800	11 40 18
11 49 13	---	20 35 07	50.2	259.4	3.2		44.7	535	1869	11 40 19
11 49 33	J172026+3216	20 35 27	49.7	258.7	3.2		44.1	7	1869	11 49 33
11 58 28	---	20 44 23	48.4	260.8	3.4		44.5	535	1937	11 49 34
11 58 48	J172055+3333	20 44 44	49.3	262.1	3.4		45.5	4	1937	11 58 48
12 07 43	---	20 53 40	48.0	264.1	3.5		45.8	535	2006	11 58 49
12 08 03	J172102+3307	20 54 00	47.6	263.7	3.5		45.4	9	2006	12 08 03
12 16 58	---	21 02 57	46.3	265.6	3.7		45.6	535	2074	12 08 04
12 17 48	J1800+3848	21 03 47	55.9	264.0	3.0		50.0	0	2074	12 17 48
12 22 48	=1758+388	21 08 47	55.1	265.1	3.1		50.2	300	2113	12 17 49
12 23 28	J172154+3953	21 09 27	49.9	274.3	3.8		51.3	7	2113	12 23 28
12 32 23	---	21 18 24	48.6	276.0	3.9		51.1	535	2181	12 23 29
12 32 43	J172217+3932	21 18 44	48.4	275.6	3.9		50.8	9	2181	12 32 43
12 41 38	---	21 27 40	47.1	277.2	4.1		50.6	535	2250	12 32 44
12 41 58	J172010+3825	21 28 01	46.0	276.4	4.1		49.6	3	2250	12 41 58
12 50 53	---	21 36 57	44.6	278.0	4.3		49.4	535	2319	12 41 59
12 51 13	J172232+3829	21 37 17	45.0	277.7	4.2		49.5	8	2319	12 51 13
13 00 08	---	21 46 14	43.7	279.3	4.4		49.2	535	2387	12 51 14
13 00 28	J172220+3816	21 46 34	43.4	279.1	4.4		49.0	10	2387	13 00 28
13 09 23	---	21 55 30	42.1	280.7	4.5		48.7	535	2456	13 00 29
13 09 43	J172225+3809	21 55 50	42.0	280.7	4.5		48.6	12	2456	13 09 43
13 18 38	---	22 04 47	40.7	282.2	4.7		48.3	535	2524	13 09 44
13 19 14	J1800+3848	22 05 23	46.7	276.3	4.1		50.0	0	2524	13 19 14
13 24 14	=1758+388	22 10 24	45.9	277.2	4.2		49.9	300	2563	13 19 15
13 24 59	J172317+3558	22 11 09	38.4	281.1	4.8		46.7	3	2563	13 24 59
13 33 54	---	22 20 05	37.1	282.7	4.9		46.4	535	2631	13 25 00
13 34 14	J172027+3555	22 20 25	36.6	283.2	5.0		46.2	7	2631	13 34 14
13 43 09	---	22 29 22	35.3	284.7	5.1		45.8	535	2700	13 34 15
13 43 29	J172004+3524	22 29 42	34.8	284.4	5.2		45.5	7	2700	13 43 29
13 52 24	---	22 38 38	33.5	285.9	5.3		45.1	535	2769	13 43 30

Schedule for TORUN (Code Tr )

Page 5

Hunting the unidentified gamma-ray sources

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 13 Jan 2018  Day 13 ---

13 52 44 J172005+3514  22 38 58  33.4 285.9  5.3      45.0   11    2769   13 52 44
14 01 39 ---          22 47 55  32.1 287.4  5.5      44.5  535    2837   13 52 45

14 01 59 J172008+3453  22 48 15  31.8 287.1  5.5      44.4    9    2837   14 01 59
14 10 54 ---          22 57 11  30.5 288.7  5.6      43.9  535    2906   14 02 00

14 11 14 J172002+3417  22 57 32  30.0 288.3  5.6      43.6    7    2906   14 11 14
14 20 09 ---          23 06 28  28.8 289.8  5.8      43.1  535    2974   14 11 15

14 20 29 J172006+3341  23 06 48  28.3 289.4  5.8      42.9    7    2974   14 20 29
14 29 24 ---          23 15 44  27.0 290.9  5.9      42.4  535    3043   14 20 30

```

## 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	4200.00	4200.00
Net SB=	L	L	U	U	L	L	U	U	U
	L	L	U	U	L	L	U	U	U
IF SB =	U	U	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	LCP
	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP	LCP
BBC =	1	5	1	5	2	6	2	6	6
	3	7	3	7	4	8	4	8	8
BBC SB=	L	L	U	U	L	L	U	U	U
	L	L	U	U	L	L	U	U	U
IF =	A1	B1	A1	B1	A1	B1	A1	B1	B1
	A1	B1	A1	B1	A1	B1	A1	B1	B1

The following frequency sets based on these setups were used.

Frequency Set: 3 Setup file default. Used with PCAL = off

LO sum=	4898.49	4898.49	4898.49	4898.49	4930.49	4930.49	4930.49	4930.49
	4962.49	4962.49	4962.49	4962.49	4994.49	4994.49	4994.49	4994.49
BBC fr=	698.49	698.49	698.49	698.49	730.49	730.49	730.49	730.49
	762.49	762.49	762.49	762.49	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) (B1950)	(Date)	Error (mas)
* J172002+3417	17 18 13.108492 34 20 50.88634	* 17 20 02.010000 34 17 53.20000	17 20 39.311203 34 16 50.14683 0.00 0.00
* J172004+3524	17 18 17.599899 35 27 40.93077	* 17 20 04.600000 35 24 43.50000	17 20 41.202178 35 23 40.37250 0.00 0.00
* J172004+3110	17 18 10.919956 31 13 30.36642	* 17 20 04.890000 31 10 32.70000	17 20 44.051676 31 09 30.13846 0.00 0.00
* J172005+3514	17 18 17.837379 35 17 50.80385	* 17 20 05.120000 35 14 53.40000	17 20 41.826043 35 13 50.30703 0.00 0.00
* J172006+3341	17 18 16.354326 33 44 41.71849	* 17 20 06.260000 33 41 44.30000	17 20 43.929971 33 40 41.43733 0.00 0.00
* J172008+3453	17 18 20.376178 34 56 02.20005	* 17 20 08.280000 34 53 05.00000	17 20 45.214313 34 52 02.03678 0.00 0.00
* J172010+3825	17 18 28.573010 38 28 50.73434	* 17 20 10.140000 38 25 53.90000	17 20 44.742223 38 24 50.54769 0.00 0.00
* J172013+3135	17 18 20.490396 31 38 28.30310	* 17 20 13.800000 31 35 31.30000	17 20 52.719143 31 34 28.91632 0.00 0.00

* J172016+3257	17 18 25.114766 32 59 59.94764	* 17 20 16.240000 * 32 57 03.20000	17 20 54.357471 32 56 00.69846	0.00 0.00
* J172020+3428	17 18 32.250505 34 31 11.32410	* 17 20 20.850000 * 34 28 15.00000	17 20 58.039572 34 27 12.42160	0.00 0.00
* J172026+3216	17 18 33.915983 32 19 26.27837	* 17 20 26.130000 * 32 16 30.20000	17 21 04.646757 32 15 28.04907	0.00 0.00
* J172027+3555	17 18 41.121389 35 58 16.17534	* 17 20 27.220000 * 35 55 20.40000	17 21 03.489866 35 54 17.80563	0.00 0.00
* J172052+3015	17 18 56.674647 30 18 41.33579	* 17 20 52.040000 * 30 15 47.00000	17 21 31.711461 30 14 45.80487	0.00 0.00
* J172055+3333	17 19 05.728605 33 36 33.66981	* 17 20 55.830000 * 33 33 39.80000	17 21 33.570140 33 32 38.26234	0.00 0.00
* J172102+3307	17 19 12.032862 33 09 58.09204	* 17 21 02.860000 * 33 07 04.70000	17 21 40.866400 33 06 03.40569	0.00 0.00
* J172121+3726	17 19 37.933233 37 29 48.69556	* 17 21 21.270000 * 37 26 56.90000	17 21 56.521688 37 25 55.54730	0.00 0.00
* J172121+3757	17 19 39.339215 38 00 03.22717	* 17 21 21.750000 * 37 57 11.50000	17 21 56.660694 37 56 10.09966	0.00 0.00
* J172144+3450	17 19 56.445574 34 53 37.40590	* 17 21 44.360000 * 34 50 47.10000	17 22 21.294944 34 49 46.67877	0.00 0.00
* J172153+3002	17 19 57.560435 30 05 13.75442	* 17 21 53.240000 * 30 02 23.80000	17 22 33.024385 30 01 24.24674	0.00 0.00
* J172154+3953	17 20 15.573839 39 56 37.15632	* 17 21 54.270000 * 39 53 47.90000	17 22 27.810774 39 52 47.13495	0.00 0.00
* J172201+3307	17 20 11.039971 33 10 29.25754	* 17 22 01.820000 * 33 07 40.10000	17 22 39.807063 33 06 40.36009	0.00 0.00
* J172210+3306	17 20 19.837474 33 09 07.22455	* 17 22 10.650000 * 33 06 18.70000	17 22 48.648690 33 05 19.19610	0.00 0.00
* J172214+3133	17 20 21.090421 31 36 25.64760	* 17 22 14.390000 * 31 33 37.30000	17 22 53.301194 31 32 38.09821	0.00 0.00
* J172217+3932	17 20 38.149189 39 35 36.61144	* 17 22 17.510000 * 39 32 49.00000	17 22 51.295077 39 31 48.89098	0.00 0.00
* J172218+3103	17 20 24.649494 31 06 13.46433	* 17 22 18.740000 * 31 03 25.40000	17 22 57.941071 31 02 26.38033	0.00 0.00
* J172220+3816	17 20 38.851148 38 18 52.67550	* 17 22 20.640000 * 38 16 05.20000	17 22 55.319710 38 15 05.32193	0.00 0.00
* J172223+3201	17 20 31.233178 32 04 14.04498	* 17 22 23.790000 * 32 01 26.40000	17 23 02.428408 32 00 27.38454	0.00 0.00
* J172225+3809	17 20 43.342337 38 12 42.04621	* 17 22 25.320000 * 38 09 54.90000	17 23 00.069106 38 08 55.15799	0.00 0.00
* J172226+3721	17 20 43.520633 37 24 42.38163	* 17 22 26.970000 * 37 21 55.30000	17 23 02.260996 37 20 55.69642	0.00 0.00
* J172230+3051	17 20 36.034418	* 17 22 30.420000	17 23 09.728835	0.00

	30 54 40.83617	* 30 51 53.60000	30 50 54.91409	0.00
* J172230+3111	17 20 36.825455	* 17 22 30.690000	17 23 09.807800	0.00
	31 14 37.79754	* 31 11 50.60000	31 10 51.87653	0.00
* J172232+3829	17 20 50.904522	* 17 22 32.260000	17 23 06.779689	0.00
	38 32 31.12482	* 38 29 44.50000	38 28 44.90322	0.00
* J172233+3725	17 20 50.125882	* 17 22 33.460000	17 23 08.708355	0.00
	37 28 21.81113	* 37 25 35.20000	37 24 35.76099	0.00
* J172239+3751	17 20 57.252055	* 17 22 39.790000	17 23 14.744989	0.00
	37 54 15.62713	* 37 51 29.50000	37 50 30.17748	0.00
* J172249+3301	17 20 58.685589	* 17 22 49.620000	17 23 27.662098	0.00
	33 03 52.72935	* 33 01 07.00000	33 00 08.53620	0.00
* J172256+3742	17 21 13.603897	* 17 22 56.400000	17 23 31.449518	0.00
	37 45 30.44299	* 37 42 45.50000	37 41 46.63470	0.00
* J172301+3225	17 21 09.511254	* 17 23 01.400000	17 23 39.791973	0.00
	32 28 25.81796	* 32 25 40.90000	32 24 42.82399	0.00
* J172308+3017	17 21 13.426718	* 17 23 08.690000	17 23 48.319159	0.00
	30 20 01.71856	* 30 17 17.20000	30 16 19.60078	0.00
* J172314+3106	17 21 20.238718	* 17 23 14.230000	17 23 53.392738	0.00
	31 08 57.37338	* 31 06 13.30000	31 05 15.73730	0.00
* J172317+3558	17 21 31.120666	* 17 23 17.030000	17 23 53.224594	0.00
	36 01 10.47446	* 35 58 26.90000	35 57 28.78955	0.00
* J172318+3419	17 21 29.860927	* 17 23 18.610000	17 23 55.848502	0.00
	34 22 12.26530	* 34 19 28.70000	34 18 30.83559	0.00
* J1642+3948	16 41 17.606228	* 16 42 58.809965	16 43 33.360739	0.77
3C345	39 54 10.81496	* 39 48 36.99402	39 46 35.46135	0.52
1641+399	/irasoft/sched/catalogs/sources.vlba			
J1642+39	GSFC 2011B astro solution 52621 Observations			
* J1800+3848	17 58 44.703952	* 18 00 24.765361	18 00 58.747717	0.13
1758+388	38 48 32.47341	* 38 48 30.69739	38 48 31.80849	0.10
J1800+38	/irasoft/sched/catalogs/sources.vlba			
	rfc_2012b Petrov, 2012, unpublished 2965 observations			

rk18jrtr

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 L0 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 14 Jan 2018 Day 14 ---

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

Table with columns: Time, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. Rows show scan data for 08:00:00 to 09:00:00.

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: 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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 54.686565	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.68451	0.00
	fake circumpolar target for a TS to look at			
* 1222+216	12 22 23.408709	* 12 24 54.458394	12 25 48.424990	0.00
J1224+2122	21 39 23.03696	* 21 22 46.38857	21 16 42.01984	0.00
	./rk18jr_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 406 observations, RA-A04-07, RA-A03-04,			

#### 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)
1222+216	115.0

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  $60 \text{ deg } F^{-0.6}$  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

RADIOASTRON AGN POLARIZATION IMAGING

PI: *Jose L. Gomez*

Address: Instituto de Astrofisica de Andalucia-CSIC

Observing mode: K-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 15 Jan 2018 Day 15 ---

----- K-band VLBI scans. Ground segment 01: 1253-055 with EVN+KVN+T6 -----

```
Next scan frequencies: 22236.00 22236.00 22236.00 22236.00 22268.00 22268.00 22268.00 22268.00
Next BBC frequencies:   736.00   736.00   736.00   736.00   768.00   768.00   768.00   768.00
Next scan bandwidths:  16.00   16.00   16.00   16.00   16.00   16.00   16.00   16.00
```

```
00 40 00 1243-072    09 31 58 16.6 128.9 -3.3   -28.1    0     0  00 39 49
00 49 30 ---          09 41 29 17.7 131.1 -3.1   -27.2   570    37  00 39 50

00 50 00 1253-055    09 41 59 18.2 128.1 -3.3   -28.4    9    37  00 49 49
00 59 30 ---          09 51 31 19.3 130.3 -3.1   -27.4   570    74  00 49 50

01 00 00 1253-055    09 52 01 19.3 130.4 -3.1   -27.4   24    74  00 59 49
01 09 30 ---          10 01 32 20.4 132.6 -2.9   -26.4   570   112  00 59 50

01 10 00 1253-055    10 02 02 20.4 132.7 -2.9   -26.3   24   112  01 09 49
01 19 30 ---          10 11 34 21.5 135.0 -2.8   -25.3   570   149  01 09 50

01 20 00 1253-055    10 12 04 21.5 135.2 -2.8   -25.2   24   149  01 19 49
01 29 30 ---          10 21 36 22.5 137.5 -2.6   -24.1   570   186  01 19 50
```

----- K-band VLBI scans. Space segment 01: 1253-055 with EVN+KVN+T6 -----

```
01 30 00 1253-055    10 22 06 22.6 137.6 -2.6   -24.0   24   186  01 29 49
01 40 00 ---          10 32 07 23.6 140.1 -2.4   -22.8   600   225  01 29 50
```

----- K-band VLBI scans. Space segment 01: 1253-055 with EVN+T6 -----

```
01 40 30 1253-055    10 32 37 23.6 140.2 -2.4   -22.7   24   225  01 40 19
01 50 00 ---          10 42 09 24.5 142.6 -2.2   -21.5   570   263  01 40 20

01 50 30 1253-055    10 42 39 24.5 142.7 -2.2   -21.4   24   263  01 50 19
02 00 00 ---          10 52 11 25.4 145.2 -2.1   -20.2   570   300  01 50 20

02 00 30 1253-055    10 52 41 25.4 145.3 -2.1   -20.1   24   300  02 00 19
02 10 00 ---          11 02 12 26.2 147.8 -1.9   -18.8   570   337  02 00 20
```

Schedule for TORUN (Code Tr )

Page 3

RadioAstron AGN polarization imaging

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 15 Jan 2018 Day 15 ---
----- K-band VLBI scans. Ground segment 02: 1253-055 with EVN+T6 -----
02 11 00 1253-055    11 03 12 26.3 148.1 -1.9    -18.6   54    337   02 10 49
02 21 00 ---          11 13 14 27.1 150.7 -1.7    -17.2   600   376   02 10 50

----- K-band VLBI scans. Ground segment 02: 1253-055 with EVN -----
02 21 30 1253-055    11 13 44 27.1 150.8 -1.7    -17.1   24    376   02 21 19
02 31 00 ---          11 23 16 27.8 153.4 -1.6    -15.7   570   414   02 21 20
02 31 30 1253-055    11 23 46 27.8 153.5 -1.6    -15.6   24    414   02 31 19
02 41 00 ---          11 33 17 28.4 156.1 -1.4    -14.1   570   451   02 31 20

02 41 30 1253-055    11 33 47 28.4 156.3 -1.4    -14.1   24    451   02 41 19
02 51 00 ---          11 43 19 29.0 158.9 -1.2    -12.5   570   488   02 41 20

02 51 30 1253-055    11 43 49 29.0 159.0 -1.2    -12.5   24    488   02 51 19
03 01 30 ---          11 53 51 29.5 161.8 -1.1    -10.8   600   527   02 51 20

03 02 00 1253-055    11 54 21 29.5 162.0 -1.0    -10.8   24    527   03 01 49
03 12 00 ---          12 04 23 30.0 164.8 -0.9    -9.1    600   566   03 01 50

03 12 30 1253-055    12 04 53 30.0 165.0 -0.9    -9.0    24    566   03 12 19
03 22 30 ---          12 14 54 30.3 167.8 -0.7    -7.3    600   606   03 12 20

03 23 00 1253-055    12 15 24 30.4 168.0 -0.7    -7.2    24    606   03 22 49
03 33 00 ---          12 25 26 30.6 170.8 -0.5    -5.5    600   645   03 22 50

03 33 30 1243-072    12 25 56 29.1 174.0 -0.4    -3.6    9     645   03 33 19
03 43 30 ---          12 35 58 29.2 176.9 -0.2    -1.9    600   684   03 33 20

03 44 30 1253-055    12 36 58 30.9 174.2 -0.3    -3.5    40    684   03 44 19
03 54 00 ---          12 46 29 31.0 176.9 -0.2    -1.9    570   721   03 44 20

----- K-band VLBI scans. Space segment 02: 1253-055 with EVN -----
03 55 00 1253-055    12 47 30 31.0 177.2 -0.2    -1.7    54    721   03 54 49
04 05 00 ---          12 57 31 31.0 180.1  0.0     0.1    600   760   03 54 50

04 05 30 1253-055    12 58 01 31.0 180.3  0.0     0.2    24    760   04 05 19
04 15 00 ---          13 07 33 31.0 183.0  0.2     1.8    570   797   04 05 20

04 15 30 1253-055    13 08 03 31.0 183.2  0.2     1.9    24    797   04 15 19
04 25 00 ---          13 17 34 30.9 185.9  0.3     3.6    570   835   04 15 20

04 25 30 1253-055    13 18 05 30.9 186.1  0.3     3.7    24    835   04 25 19
04 35 00 ---          13 27 36 30.7 188.8  0.5     5.3    570   872   04 25 20

04 35 30 1253-055    13 28 06 30.7 189.0  0.5     5.4    24    872   04 35 19
04 45 00 ---          13 37 38 30.4 191.7  0.7     7.0    570   909   04 35 20

```

Schedule for TORUN (Code Tr )

Page 4

RadioAstron AGN polarization imaging

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 15 Jan 2018 Day 15 ---

----- K-band VLBI scans. Ground segment 03: 1253-055 with EVN -----

```
04 45 30 1253-055    13 38 08 30.4 191.8 0.7      7.1   24   909  04 45 19
04 55 00 ---          13 47 39 30.1 194.6 0.8      8.7  570   946  04 45 20

04 56 00 1253-055    13 48 40 30.0 194.8 0.9      8.9   54   946  04 55 49
05 06 00 ---          13 58 41 29.6 197.7 1.0     10.6  600   986  04 55 50

05 06 30 1253-055    13 59 11 29.6 197.8 1.0     10.6   24   986  05 06 19
05 16 00 ---          14 08 43 29.1 200.5 1.2     12.2  570  1023  05 06 20

05 16 30 1253-055    14 09 13 29.1 200.6 1.2     12.3   24  1023  05 16 19
05 26 00 ---          14 18 45 28.5 203.3 1.4     13.8  570  1060  05 16 20

05 26 30 1253-055    14 19 15 28.5 203.4 1.4     13.9   24  1060  05 26 19
05 39 00 ---          14 31 47 27.7 206.8 1.6     15.8  750  1109  05 26 20
```

----- K-band VLBI scans. Ground segment 03: 1253-055 with EVN+GBT -----

```
05 40 00 1253-055    14 32 47 27.6 207.1 1.6     16.0   54  1109  05 39 49
05 49 30 ---          14 42 18 27.0 209.6 1.8     17.4  570  1146  05 39 50

05 50 00 1253-055    14 42 48 26.9 209.8 1.8     17.4   24  1146  05 49 49
05 59 30 ---          14 52 20 26.2 212.3 1.9     18.8  570  1183  05 49 50

06 00 00 1253-055    14 52 50 26.2 212.4 1.9     18.9   24  1183  05 59 49
06 09 30 ---          15 02 22 25.4 214.9 2.1     20.2  570  1221  05 59 50

06 10 00 1253-055    15 02 52 25.3 215.0 2.1     20.3   24  1221  06 09 49
06 19 30 ---          15 12 23 24.5 217.5 2.3     21.5  570  1258  06 09 50

06 20 00 1253-055    15 12 53 24.4 217.6 2.3     21.6   24  1258  06 19 49
06 29 30 ---          15 22 25 23.5 220.0 2.4     22.8  570  1295  06 19 50

06 30 10 1243-072    15 23 05 20.9 221.9 2.6     23.9   16  1295  06 29 59
06 39 20 ---          15 32 17 19.9 224.1 2.8     24.9  550  1331  06 30 00
```

----- K-band VLBI scans. Space segment 04: 1253-055 with EVN+GBT -----

```
06 40 00 1253-055    15 32 57 22.5 222.6 2.6     24.1   16  1331  06 39 49
06 50 00 ---          15 42 58 21.4 225.0 2.8     25.3  600  1370  06 39 50

06 50 30 1253-055    15 43 28 21.4 225.2 2.8     25.3   24  1370  06 50 19
07 00 00 ---          15 53 00 20.4 227.4 2.9     26.4  570  1407  06 50 20

07 00 30 1253-055    15 53 30 20.3 227.6 2.9     26.5   24  1407  07 00 19
07 10 00 ---          16 03 02 19.2 229.8 3.1     27.5  570  1445  07 00 20
```



Schedule for TORUN (Code Tr )

Page 5

RadioAstron AGN polarization imaging

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 15 Jan 2018 Day 15 ---

```
07 10 30 1253-055    16 03 32 19.2 229.9 3.1      27.5   24   1445  07 10 19
07 20 00 ---          16 13 03 18.1 232.1 3.3      28.5  570   1482  07 10 20

07 20 30 1253-055    16 13 33 18.0 232.2 3.3      28.5   24   1482  07 20 19
07 30 00 ---          16 23 05 16.9 234.4 3.4      29.4  570   1519  07 20 20

07 30 30 1253-055    16 23 35 16.8 234.5 3.4      29.5   24   1519  07 30 19
07 40 00 ---          16 33 07 15.6 236.7 3.6      30.3  570   1556  07 30 20
```

----- K-band VLBI scans. Ground segment 04: 1253-055 with EVN -----

```
07 41 00 1253-055    16 34 07 15.5 236.9 3.6      30.4   54   1556  07 40 49
07 49 30 ---          16 42 38 14.4 238.8 3.8      31.1  510   1590  07 40 50
```

----- K-band VLBI scans. Ground segment 04: 1253-055 with EVN+GBT -----

```
07 50 00 1253-055    16 43 08 14.3 238.9 3.8      31.1   24   1590  07 49 49
07 59 30 ---          16 52 40 13.1 241.0 3.9      31.9  570   1627  07 49 50

08 00 00 1253-055    16 53 10 13.0 241.1 3.9      31.9   24   1627  07 59 49
08 09 30 ---          17 02 41 11.8 243.1 4.1      32.6  570   1664  07 59 50

08 10 00 1253-055    17 03 11 11.7 243.2 4.1      32.6   24   1664  08 09 49
08 19 30 ---          17 12 43 10.4 245.3 4.3      33.2  570   1702  08 09 50

08 20 00 1253-055    17 13 13 10.3 245.4 4.3      33.3   24   1702  08 19 49
08 29 30 ---          17 22 45  9.0 247.4 4.4      33.9  570   1739  08 19 50

08 30 00 1253-055    17 23 15  9.0 247.5 4.4      33.9   24   1739  08 29 49
08 39 30 ---          17 32 46  7.6 249.5 4.6      34.4  570   1776  08 29 50

08 40 00 1243-072    17 33 16  4.7 250.7 4.8      34.9    5   1776  08 39 49
08 49 30 ---          17 42 48  3.4 252.6 4.9      35.3  570   1813  08 39 50

08 50 00 1253-055    17 43 18  6.1 251.6 4.8      35.0    6   1813  08 49 49
09 02 50 ---          17 56 10  4.3 254.3 5.0      35.5  770   1863  08 49 50
```

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: 12                    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	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: 4 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: 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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 54.860482	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.71775	0.00
	fake circumpolar target for a TS to look at			
* 1243-072	12 43 28.787938	* 12 46 04.232100	12 46 59.983801	0.00
	-07 14 23.49374	*-07 30 46.57500	-07 36 35.63480	0.00
	possble EVPA calibrator source			
* 1253-055	12 53 35.831289	* 12 56 11.166557	12 57 06.801012	0.00
J1256-0547	-05 31 07.99603	*-05 47 21.52489	-05 53 07.36107	0.00
3C279	./gg083b_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 7924 observations, RA-A03-04, RA-A03-05			

eg102btr

E-EVN: EG102B, EG096E, RP030A, EL058E

PI: *Gabanyi, Gawronski, Perez-Torres, Lobanov*

Address: JIVE

Observing mode: realtime e-vlbi

Schedule for TORUN (Code Tr ) Page 2

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 16 Jan 2018 Day 16 ---

----- clock-search -----

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	J2212+2355	18 57 26	43.3	108.9	-3.3	-38.4	0	0	10 00 00
10 15 00	=2209+236	19 12 29	45.4	112.7	-3.0	-37.3	900	115	10 00 01
10 17 00	J2212+2355	19 14 29	45.7	113.2	-3.0	-37.2	114	115	10 17 00
10 30 00	=2209+236	19 27 31	47.5	116.7	-2.8	-36.0	780	215	10 17 01
10 32 00	J2212+2355	19 29 31	47.8	117.3	-2.7	-35.8	113	215	10 32 00
10 45 00	=2209+236	19 42 33	49.5	121.0	-2.5	-34.3	780	315	10 32 01
10 47 00	J2212+2355	19 44 34	49.7	121.6	-2.5	-34.1	113	315	10 47 00
11 00 00	=2209+236	19 57 36	51.4	125.5	-2.3	-32.4	780	415	10 47 01
11 02 00	J2212+2355	19 59 36	51.6	126.1	-2.2	-32.1	113	415	11 02 00
11 15 00	=2209+236	20 12 38	53.1	130.3	-2.0	-30.1	780	515	11 02 01
11 17 00	J2212+2355	20 14 39	53.4	130.9	-2.0	-29.8	113	515	11 17 00
11 30 00	=2209+236	20 27 41	54.8	135.4	-1.8	-27.5	780	615	11 17 01
11 32 00	J2212+2355	20 29 41	55.0	136.1	-1.7	-27.1	113	615	11 32 00
11 45 00	=2209+236	20 42 43	56.3	140.8	-1.5	-24.5	780	715	11 32 01
11 47 00	J2212+2355	20 44 44	56.5	141.6	-1.5	-24.1	113	715	11 47 00
12 00 00	=2209+236	20 57 46	57.6	146.7	-1.3	-21.2	780	815	11 47 01
12 02 00	J2212+2355	20 59 46	57.8	147.5	-1.2	-20.7	113	815	12 02 00
12 15 00	=2209+236	21 12 48	58.8	152.8	-1.0	-17.5	780	915	12 02 01
12 17 00	J2212+2355	21 14 49	58.9	153.7	-1.0	-17.0	113	915	12 17 00
12 30 00	=2209+236	21 27 51	59.7	159.3	-0.8	-13.4	780	1015	12 17 01
12 32 00	J2212+2355	21 29 51	59.8	160.2	-0.7	-12.9	113	1015	12 32 00
12 45 00	=2209+236	21 42 53	60.4	166.0	-0.5	-9.1	780	1115	12 32 01
12 47 00	J2212+2355	21 44 54	60.4	166.9	-0.5	-8.5	113	1115	12 47 00
13 00 00	=2209+236	21 57 56	60.8	173.0	-0.2	-4.6	780	1215	12 47 01

Schedule for TORUN (Code Tr )

Page 3

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 16 Jan 2018	Day 16	---							
13 02 00	J2212+2355	21 59 56	60.8	173.9	-0.2		-4.0	113	1215	13 02 00
13 15 00	=2209+236	22 12 58	60.9	180.0	0.0		0.0	780	1315	13 02 01
13 17 00	J2212+2355	22 14 58	60.9	181.0	0.0		0.6	113	1315	13 17 00
13 30 00	=2209+236	22 28 01	60.8	187.1	0.3		4.6	780	1415	13 17 01
13 32 00	J2212+2355	22 30 01	60.7	188.0	0.3		5.3	113	1415	13 32 00
13 45 00	=2209+236	22 43 03	60.4	194.0	0.5		9.2	780	1515	13 32 01
13 47 00	J2212+2355	22 45 03	60.3	194.9	0.5		9.8	113	1515	13 47 00
14 00 00	=2209+236	22 58 06	59.7	200.8	0.8		13.5	780	1615	13 47 01
14 02 00	J2212+2355	23 00 06	59.6	201.6	0.8		14.0	113	1615	14 02 00
14 15 00	=2209+236	23 13 08	58.8	207.2	1.0		17.5	780	1715	14 02 01
14 17 00	J2212+2355	23 15 08	58.6	208.1	1.0		18.0	113	1715	14 17 00
14 30 00	=2209+236	23 28 10	57.6	213.4	1.3		21.2	780	1815	14 17 01
14 33 00	J0006-0623	23 31 11	30.1	169.7	-0.6		-6.2	63	1815	14 33 00
14 44 00	=0003-066	23 42 13	30.4	172.8	-0.4		-4.3	660	1900	14 33 01
----- EG102B -----										
14 45 00	J0006-0623	23 43 13	30.4	173.1	-0.4		-4.2	54	1900	14 45 00
14 47 00	=0003-066	23 45 13	30.4	173.7	-0.4		-3.8	120	1915	14 45 01
14 49 50	J0301+0118	23 48 04	24.6	124.5	-3.2		-29.7	56	1915	14 49 50
14 51 20	=0258+011	23 49 34	24.8	124.8	-3.2		-29.5	90	1927	14 49 51
14 51 20	J0304+0046	23 49 34	23.9	124.4	-3.3		-29.7	-16	1927	No stop
14 54 50	---	23 53 05	24.4	125.2	-3.2		-29.4	194	1954	14 51 21
14 54 50	J0301+0118	23 53 05	25.2	125.7	-3.2		-29.2	-16	1954	No stop
14 56 20	=0258+011	23 54 35	25.4	126.0	-3.1		-29.1	74	1965	14 54 51
14 56 20	J0304+0046	23 54 35	24.6	125.5	-3.2		-29.3	-16	1965	No stop
14 59 50	---	23 58 05	25.0	126.4	-3.1		-28.9	194	1992	14 56 21
14 59 50	J0301+0118	23 58 05	25.8	126.9	-3.1		-28.7	-16	1992	No stop
15 01 20	=0258+011	23 59 36	26.0	127.3	-3.0		-28.6	74	2004	14 59 51
15 01 20	J0304+0046	23 59 36	25.2	126.8	-3.1		-28.8	-16	2004	No stop
15 04 50	---	00 03 06	25.6	127.6	-3.0		-28.4	194	2031	15 01 21
15 05 20	J0301+0118	00 03 36	26.5	128.2	-3.0		-28.1	14	2031	15 05 20
15 06 20	=0258+011	00 04 36	26.6	128.5	-3.0		-28.0	60	2038	15 05 21

Schedule for TORUN (Code Tr )

Page 4

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 16 Jan 2018 Day 16 ---										
15 06 20	J0304+0046	00 04 36	25.8	128.0	-3.0		-28.3	-15	2038	No stop
15 09 50	---	00 08 07	26.2	128.8	-3.0		-27.9	195	2065	15 06 21
15 09 50	J0301+0118	00 08 07	27.0	129.4	-2.9		-27.7	-16	2065	No stop
15 11 20	=0258+011	00 09 37	27.2	129.7	-2.9		-27.5	74	2077	15 09 51
15 11 20	J0304+0046	00 09 37	26.4	129.2	-2.9		-27.7	-15	2077	No stop
15 14 50	---	00 13 08	26.8	130.1	-2.9		-27.4	195	2104	15 11 21
15 14 50	J0301+0118	00 13 08	27.6	130.6	-2.8		-27.1	-16	2104	No stop
15 16 20	=0258+011	00 14 38	27.8	131.0	-2.8		-27.0	74	2115	15 14 51
15 16 20	J0304+0046	00 14 38	26.9	130.5	-2.8		-27.2	-15	2115	No stop
15 19 50	---	00 18 09	27.3	131.3	-2.8		-26.8	195	2142	15 16 21
15 20 20	J0301+0118	00 18 39	28.2	132.0	-2.7		-26.5	14	2142	15 20 20
15 21 20	=0258+011	00 19 39	28.3	132.3	-2.7		-26.4	60	2150	15 20 21
15 21 20	J0304+0046	00 19 39	27.5	131.7	-2.8		-26.6	-15	2150	No stop
15 24 50	---	00 23 09	27.9	132.6	-2.7		-26.2	195	2177	15 21 21
15 24 50	J0301+0118	00 23 09	28.7	133.2	-2.7		-26.0	-16	2177	No stop
15 26 20	=0258+011	00 24 40	28.9	133.5	-2.6		-25.8	74	2188	15 24 51
15 26 20	J0304+0046	00 24 40	28.1	133.0	-2.7		-26.1	-15	2188	No stop
15 29 50	---	00 28 10	28.4	133.9	-2.6		-25.7	195	2215	15 26 21
15 29 50	J0301+0118	00 28 10	29.3	134.4	-2.6		-25.4	-16	2215	No stop
15 31 20	=0258+011	00 29 41	29.4	134.8	-2.5		-25.2	74	2227	15 29 51
15 31 20	J0304+0046	00 29 41	28.6	134.3	-2.6		-25.5	-15	2227	No stop
15 34 50	---	00 33 11	29.0	135.2	-2.5		-25.1	195	2254	15 31 21
15 35 20	J0301+0118	00 33 41	29.8	135.9	-2.5		-24.7	14	2254	15 35 20
15 36 20	=0258+011	00 34 41	29.9	136.1	-2.5		-24.6	60	2262	15 35 21
15 36 20	J0304+0046	00 34 41	29.1	135.6	-2.5		-24.9	-15	2262	No stop
15 39 50	---	00 38 12	29.5	136.5	-2.5		-24.4	195	2288	15 36 21
15 39 50	J0301+0118	00 38 12	30.3	137.1	-2.4		-24.2	-16	2288	No stop
15 41 20	=0258+011	00 39 42	30.5	137.5	-2.4		-24.0	74	2300	15 39 51
15 41 20	J0304+0046	00 39 42	29.7	136.9	-2.4		-24.2	-15	2300	No stop
15 44 50	---	00 43 13	30.0	137.8	-2.4		-23.8	195	2327	15 41 21

Schedule for TORUN (Code Tr )

Page 5

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 16 Jan 2018 Day 16 ---										
15 44 50	J0301+0118	00 43 13	30.8	138.4	-2.3		-23.5	-15	2327	No stop
15 46 20	=0258+011	00 44 43	31.0	138.8	-2.3		-23.3	75	2338	15 44 51
15 46 20	J0304+0046	00 44 43	30.2	138.2	-2.3		-23.6	-15	2338	No stop
15 49 50	---	00 48 14	30.5	139.1	-2.3		-23.1	195	2365	15 46 21
15 50 20	J0301+0118	00 48 44	31.4	139.9	-2.2		-22.8	15	2365	15 50 20
15 51 20	=0258+011	00 49 44	31.5	140.1	-2.2		-22.6	60	2373	15 50 21
15 51 20	J0304+0046	00 49 44	30.7	139.5	-2.3		-22.9	-15	2373	No stop
15 54 50	---	00 53 14	31.0	140.5	-2.2		-22.5	195	2400	15 51 21
15 54 50	J0301+0118	00 53 14	31.8	141.1	-2.2		-22.2	-15	2400	No stop
15 56 20	=0258+011	00 54 45	31.9	141.5	-2.1		-22.0	75	2412	15 54 51
15 56 20	J0304+0046	00 54 45	31.1	140.9	-2.2		-22.3	-15	2412	No stop
15 59 50	---	00 58 15	31.5	141.8	-2.1		-21.8	195	2438	15 56 21
15 59 50	J0301+0118	00 58 15	32.3	142.5	-2.1		-21.5	-15	2438	No stop
16 01 20	=0258+011	00 59 45	32.4	142.9	-2.0		-21.2	75	2450	15 59 51
16 01 20	J0304+0046	00 59 45	31.6	142.2	-2.1		-21.6	-15	2450	No stop
16 04 50	---	01 03 16	31.9	143.2	-2.0		-21.1	195	2477	16 01 21
16 05 20	J0301+0118	01 03 46	32.8	144.0	-2.0		-20.7	15	2477	16 05 20
16 06 20	=0258+011	01 04 46	32.8	144.3	-2.0		-20.5	60	2485	16 05 21
16 06 20	J0304+0046	01 04 46	32.1	143.6	-2.0		-20.9	-15	2485	No stop
16 09 50	---	01 08 17	32.4	144.6	-2.0		-20.4	195	2512	16 06 21
16 09 50	J0301+0118	01 08 17	33.1	145.3	-1.9		-20.0	-15	2512	No stop
16 11 20	=0258+011	01 09 47	33.3	145.7	-1.9		-19.8	75	2523	16 09 51
16 11 20	J0304+0046	01 09 47	32.5	145.0	-1.9		-20.2	-15	2523	No stop
16 14 50	---	01 13 18	32.8	146.0	-1.9		-19.6	195	2550	16 11 21
16 14 50	J0301+0118	01 13 18	33.6	146.7	-1.8		-19.3	-15	2550	No stop
16 16 20	=0258+011	01 14 48	33.7	147.1	-1.8		-19.0	75	2562	16 14 51
16 16 20	J0304+0046	01 14 48	32.9	146.4	-1.8		-19.4	-15	2562	No stop
16 19 50	---	01 18 18	33.2	147.4	-1.8		-18.9	195	2588	16 16 21
16 20 20	J0301+0118	01 18 49	34.0	148.2	-1.7		-18.4	15	2588	16 20 20
16 21 20	=0258+011	01 19 49	34.1	148.5	-1.7		-18.3	60	2596	16 20 21

Schedule for TORUN (Code Tr )

Page 6

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 16 Jan 2018 Day 16 ---										
16 21 20	J0304+0046	01 19 49	33.3	147.8	-1.8		-18.7	-15	2596	No stop
16 24 50	---	01 23 19	33.6	148.8	-1.7		-18.1	195	2623	16 21 21
16 24 50	J0301+0118	01 23 19	34.4	149.5	-1.7		-17.7	-15	2623	No stop
16 26 20	=0258+011	01 24 50	34.5	150.0	-1.6		-17.5	75	2635	16 24 51
16 26 20	J0304+0046	01 24 50	33.7	149.2	-1.7		-17.9	-15	2635	No stop
16 29 50	---	01 28 20	34.0	150.2	-1.6		-17.3	195	2662	16 26 21
16 29 50	J0301+0118	01 28 20	34.7	151.0	-1.6		-16.9	-15	2662	No stop
16 31 20	=0258+011	01 29 50	34.8	151.4	-1.5		-16.7	75	2673	16 29 51
16 31 20	J0304+0046	01 29 50	34.1	150.7	-1.6		-17.1	-15	2673	No stop
16 34 50	---	01 33 21	34.4	151.7	-1.5		-16.5	195	2700	16 31 21
16 35 20	J0301+0118	01 33 51	35.1	152.6	-1.5		-16.0	15	2700	16 35 20
16 36 20	=0258+011	01 34 51	35.2	152.9	-1.5		-15.9	60	2708	16 35 21
16 36 20	J0304+0046	01 34 51	34.5	152.1	-1.5		-16.3	-15	2708	No stop
16 39 50	---	01 38 22	34.7	153.2	-1.5		-15.7	195	2735	16 36 21
16 39 50	J0301+0118	01 38 22	35.4	153.9	-1.4		-15.3	-15	2735	No stop
16 41 20	=0258+011	01 39 52	35.5	154.4	-1.4		-15.1	75	2746	16 39 51
16 43 20	J0006-0623	01 41 52	27.3	206.7	1.6		15.8	0	2746	16 43 20
16 45 20	=0003-066	01 43 53	27.2	207.2	1.6		16.1	120	2762	16 43 21
----- GAP -----										
16 50 20	J0418+3801	01 48 53	60.1	104.9	-2.5		-47.5	80	2762	16 50 20
17 00 20	=0415+379	01 58 55	61.6	107.7	-2.3		-46.6	600	2838	16 50 21
17 05 20	J0418+3801	02 03 56	62.3	109.1	-2.3		-46.1	293	2838	17 05 20
17 15 20	=0415+379	02 13 58	63.7	112.2	-2.1		-44.9	600	2915	17 05 21
17 20 20	J0418+3801	02 18 58	64.4	113.8	-2.0		-44.3	293	2915	17 20 20
17 30 20	=0415+379	02 29 00	65.8	117.2	-1.8		-42.7	600	2992	17 20 21
17 35 20	J0418+3801	02 34 01	66.4	119.0	-1.8		-41.9	293	2992	17 35 20
17 45 20	=0415+379	02 44 03	67.7	122.8	-1.6		-39.9	600	3069	17 35 21
17 50 20	J0418+3801	02 49 03	68.3	124.8	-1.5		-38.8	292	3069	17 50 20
18 00 20	=0415+379	02 59 05	69.5	129.2	-1.3		-36.2	600	3146	17 50 21

Schedule for TORUN (Code Tr )

Page 7

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 16 Jan 2018 Day 16 ---										
18 05 20	J0418+3801	03 04 06	70.1	131.5	-1.3		-34.8	292	3146	18 05 20
18 15 20	=0415+379	03 14 07	71.2	136.5	-1.1		-31.7	600	3223	18 05 21
18 20 20	J0418+3801	03 19 08	71.7	139.2	-1.0		-29.9	292	3223	18 20 20
18 30 20	=0415+379	03 29 10	72.6	144.9	-0.8		-26.0	600	3300	18 20 21
18 35 20	J0418+3801	03 34 11	73.1	147.9	-0.8		-23.9	291	3300	18 35 20
18 45 20	=0415+379	03 44 12	73.8	154.3	-0.6		-19.3	600	3377	18 35 21
18 50 20	J0418+3801	03 49 13	74.1	157.7	-0.5		-16.8	291	3377	18 50 20
19 00 20	=0415+379	03 59 15	74.6	164.8	-0.3		-11.5	600	3454	18 50 21
19 05 20	J0418+3801	04 04 16	74.7	168.5	-0.3		-8.8	291	3454	19 05 20
19 15 20	=0415+379	04 14 17	74.9	176.0	-0.1		-3.1	600	3531	19 05 21
19 20 20	J0418+3801	04 19 18	75.0	179.8	-0.0		-0.2	291	3531	19 20 20
19 30 20	=0415+379	04 29 20	74.9	187.4	0.2		5.6	600	3608	19 20 21
19 35 20	J0418+3801	04 34 21	74.8	191.1	0.2		8.5	291	3608	19 35 20
19 45 20	=0415+379	04 44 22	74.4	198.4	0.4		13.9	600	3685	19 35 21
19 50 20	J0418+3801	04 49 23	74.1	201.9	0.5		16.5	291	3685	19 50 20
20 00 20	=0415+379	04 59 25	73.5	208.6	0.7		21.4	600	3762	19 50 21
20 05 20	J0927+3902	05 04 26	43.9	80.1	-4.4		-49.5	28	3762	20 05 20
20 14 20	=0923+392	05 13 27	45.2	81.7	-4.2		-49.8	540	3831	20 05 21
----- EG096E -----										
20 14 40	J0927+3902	05 13 47	45.3	81.7	-4.2		-49.8	14	3831	20 14 40
20 19 40	=0923+392	05 18 48	46.0	82.6	-4.2		-50.0	300	3869	20 14 41
20 22 40	J1108+4330	05 21 48	35.0	62.3	-5.8		-47.0	124	3869	20 22 40
20 24 40	---	05 23 49	35.2	62.6	-5.8		-47.2	120	3885	20 22 41
20 25 20	J1108+4330	05 24 29	35.3	62.7	-5.7		-47.3	34	3885	20 25 20
20 26 20	---	05 25 29	35.5	62.8	-5.7		-47.3	60	3892	20 25 21
20 26 20	J1112+4301	05 25 29	34.6	62.6	-5.8		-46.7	-16	3892	No stop
20 29 50	---	05 29 00	35.0	63.2	-5.7		-47.0	194	3919	20 26 21
20 29 50	J1108+4330	05 29 00	35.9	63.4	-5.7		-47.6	-16	3919	No stop
20 31 20	---	05 30 30	36.1	63.6	-5.6		-47.8	74	3931	20 29 51



Schedule for TORUN (Code Tr )

Page 8

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 16 Jan 2018 Day 16 ---										
20 31 20	ARUMA	05 30 30	34.8	63.0	-5.8		-46.9	-18	3931	No stop
20 34 50	---	05 34 00	35.3	63.5	-5.7		-47.2	192	3958	20 31 21
20 35 30	J1108+4330	05 34 40	36.7	64.2	-5.6		-48.1	21	3958	20 35 30
20 36 30	---	05 35 41	36.8	64.4	-5.6		-48.2	60	3965	20 35 31
20 36 30	ARUMA	05 35 41	35.5	63.8	-5.7		-47.3	-18	3965	No stop
20 40 00	---	05 39 11	35.9	64.3	-5.6		-47.6	192	3992	20 36 31
20 40 00	J1108+4330	05 39 11	37.3	64.9	-5.5		-48.5	-19	3992	No stop
20 41 30	---	05 40 41	37.5	65.1	-5.5		-48.6	71	4004	20 40 01
20 41 30	ARUMA	05 40 41	36.2	64.5	-5.6		-47.7	-18	4004	No stop
20 45 00	---	05 44 12	36.6	65.1	-5.5		-48.0	192	4031	20 41 31
20 45 40	J1108+4330	05 44 52	38.1	65.8	-5.4		-48.9	21	4031	20 45 40
20 46 40	---	05 45 52	38.2	65.9	-5.4		-49.0	60	4038	20 45 41
20 46 40	ARUMA	05 45 52	36.9	65.3	-5.5		-48.1	-18	4038	No stop
20 50 10	---	05 49 23	37.3	65.8	-5.5		-48.4	192	4065	20 46 41
20 50 10	J1108+4330	05 49 23	38.7	66.4	-5.3		-49.3	-19	4065	No stop
20 51 40	---	05 50 53	38.9	66.7	-5.3		-49.4	71	4077	20 50 11
20 51 40	ARUMA	05 50 53	37.5	66.1	-5.4		-48.5	-18	4077	No stop
20 55 10	---	05 54 24	38.0	66.6	-5.4		-48.8	192	4104	20 51 41
20 55 50	J1108+4330	05 55 04	39.5	67.3	-5.2		-49.7	21	4104	20 55 50
20 56 50	---	05 56 04	39.6	67.5	-5.2		-49.8	60	4112	20 55 51
20 56 50	J1112+4301	05 56 04	38.7	67.3	-5.3		-49.2	-16	4112	No stop
21 00 20	---	05 59 35	39.2	67.9	-5.2		-49.4	194	4138	20 56 51
21 00 20	J1108+4330	05 59 35	40.1	68.0	-5.2		-50.0	-16	4138	No stop
21 01 50	---	06 01 05	40.3	68.2	-5.1		-50.1	74	4150	21 00 21
21 01 50	ARUMA	06 01 05	39.0	67.6	-5.3		-49.3	-18	4150	No stop
21 05 20	---	06 04 35	39.4	68.2	-5.2		-49.5	192	4177	21 01 51
21 06 00	J1108+4330	06 05 15	40.9	68.9	-5.1		-50.4	21	4177	21 06 00
21 07 00	---	06 06 16	41.0	69.0	-5.1		-50.5	60	4185	21 06 01
21 07 00	ARUMA	06 06 16	39.7	68.4	-5.2		-49.6	-18	4185	No stop
21 10 30	---	06 09 46	40.2	69.0	-5.1		-49.9	192	4212	21 07 01

Schedule for TORUN (Code Tr )

Page 9

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 16 Jan 2018 Day 16 ---										
21 10 30	J1108+4330	06 09 46	41.5	69.6	-5.0		-50.8	-19	4212	No stop
21 12 00	---	06 11 16	41.8	69.8	-5.0		-50.9	71	4223	21 10 31
21 12 00	ARUMA	06 11 16	40.4	69.2	-5.1		-50.0	-18	4223	No stop
21 15 30	---	06 14 47	40.9	69.8	-5.0		-50.2	192	4250	21 12 01
21 16 10	J1108+4330	06 15 27	42.3	70.4	-4.9		-51.2	21	4250	21 16 10
21 17 10	---	06 16 27	42.5	70.6	-4.9		-51.2	60	4258	21 16 11
21 17 10	ARUMA	06 16 27	41.1	70.0	-5.0		-50.4	-18	4258	No stop
21 20 40	---	06 19 58	41.6	70.6	-4.9		-50.6	192	4285	21 17 11
21 20 40	J1108+4330	06 19 58	43.0	71.1	-4.8		-51.5	-19	4285	No stop
21 22 10	---	06 21 28	43.2	71.4	-4.8		-51.6	71	4296	21 20 41
21 22 10	ARUMA	06 21 28	41.8	70.8	-4.9		-50.7	-18	4296	No stop
21 25 40	---	06 24 59	42.3	71.3	-4.9		-50.9	192	4323	21 22 11
21 26 20	J1108+4330	06 25 39	43.8	72.0	-4.7		-51.8	21	4323	21 26 20
21 27 20	---	06 26 39	43.9	72.2	-4.7		-51.9	60	4331	21 26 21
21 27 20	J1112+4301	06 26 39	43.0	72.0	-4.8		-51.3	-16	4331	No stop
21 30 50	---	06 30 10	43.5	72.6	-4.7		-51.5	194	4358	21 27 21
21 30 50	J1108+4330	06 30 10	44.4	72.7	-4.7		-52.1	-16	4358	No stop
21 32 20	---	06 31 40	44.7	72.9	-4.6		-52.2	74	4369	21 30 51
21 32 20	ARUMA	06 31 40	43.3	72.4	-4.8		-51.3	-18	4369	No stop
21 35 50	---	06 35 10	43.8	72.9	-4.7		-51.6	192	4396	21 32 21
21 36 30	J1108+4330	06 35 51	45.3	73.6	-4.6		-52.5	21	4396	21 36 30
21 37 30	---	06 36 51	45.4	73.8	-4.5		-52.5	60	4404	21 36 31
21 37 30	ARUMA	06 36 51	44.0	73.2	-4.7		-51.7	-18	4404	No stop
21 41 00	---	06 40 21	44.5	73.8	-4.6		-51.9	192	4431	21 37 31
21 41 00	J1108+4330	06 40 21	45.9	74.3	-4.5		-52.7	-19	4431	No stop
21 42 30	---	06 41 51	46.1	74.5	-4.5		-52.8	71	4442	21 41 01
21 42 30	ARUMA	06 41 51	44.7	74.0	-4.6		-52.0	-18	4442	No stop
21 46 00	---	06 45 22	45.2	74.6	-4.5		-52.2	192	4469	21 42 31
21 46 40	J1108+4330	06 46 02	46.7	75.2	-4.4		-53.1	21	4469	21 46 40
21 47 40	---	06 47 02	46.9	75.4	-4.4		-53.1	60	4477	21 46 41

Schedule for TORUN (Code Tr )

Page 10

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 16 Jan 2018 Day 16 ---										
21 47 40	ARUMA	06 47 02	45.5	74.8	-4.5		-52.3	-18	4477	No stop
21 51 10	---	06 50 33	46.0	75.4	-4.4		-52.5	192	4504	21 47 41
21 51 10	J1108+4330	06 50 33	47.4	75.9	-4.3		-53.3	-19	4504	No stop
21 52 40	---	06 52 03	47.6	76.2	-4.3		-53.4	71	4515	21 51 11
21 52 40	ARUMA	06 52 03	46.2	75.6	-4.4		-52.5	-18	4515	No stop
21 56 10	---	06 55 34	46.7	76.2	-4.4		-52.7	192	4542	21 52 41
21 56 10	J1108+4330	06 55 34	48.1	76.7	-4.2		-53.6	-19	4542	No stop
21 57 40	---	06 57 04	48.3	77.0	-4.2		-53.6	71	4554	21 56 11
21 59 40	J0927+3902	06 59 04	61.0	104.0	-2.5		-48.5	52	4554	21 59 40
22 04 40	=0923+392	07 04 05	61.7	105.3	-2.4		-48.1	300	4592	21 59 41
22 06 40	J1108+4330	07 06 05	49.7	78.5	-4.1		-54.1	51	4592	22 06 40
22 08 40	---	07 08 06	50.0	78.8	-4.0		-54.2	120	4608	22 06 41
22 09 20	J1108+4330	07 08 46	50.1	78.9	-4.0		-54.2	34	4608	22 09 20
22 10 20	---	07 09 46	50.2	79.1	-4.0		-54.3	60	4615	22 09 21
22 10 20	J1112+4301	07 09 46	49.3	79.0	-4.1		-53.6	-16	4615	No stop
22 13 50	---	07 13 17	49.8	79.6	-4.0		-53.8	194	4642	22 10 21
22 13 50	J1108+4330	07 13 17	50.7	79.6	-3.9		-54.4	-16	4642	No stop
22 15 20	---	07 14 47	50.9	79.9	-3.9		-54.5	74	4654	22 13 51
22 15 20	ARUMA	07 14 47	49.5	79.4	-4.0		-53.6	-19	4654	No stop
22 18 50	---	07 18 17	50.1	79.9	-4.0		-53.8	191	4681	22 15 21
22 19 30	J1108+4330	07 18 58	51.6	80.6	-3.8		-54.6	21	4681	22 19 30
22 20 30	---	07 19 58	51.7	80.8	-3.8		-54.7	60	4688	22 19 31
22 20 30	ARUMA	07 19 58	50.3	80.2	-3.9		-53.8	-19	4688	No stop
22 24 00	---	07 23 28	50.8	80.8	-3.9		-54.0	191	4715	22 20 31
22 24 00	J1108+4330	07 23 28	52.2	81.4	-3.8		-54.8	-19	4715	No stop
22 25 30	---	07 24 59	52.4	81.6	-3.7		-54.9	71	4727	22 24 01
22 25 30	ARUMA	07 24 59	51.0	81.1	-3.9		-54.0	-19	4727	No stop
22 29 00	---	07 28 29	51.6	81.7	-3.8		-54.2	191	4754	22 25 31
22 29 40	J1108+4330	07 29 09	53.1	82.3	-3.7		-55.0	21	4754	22 29 40
22 30 40	---	07 30 09	53.2	82.5	-3.7		-55.0	60	4762	22 29 41

Schedule for TORUN (Code Tr )

Page 11

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 16 Jan 2018 Day 16 ---										
22 30 40	ARUMA	07 30 09	51.8	82.0	-3.8		-54.2	-19	4762	No stop
22 34 10	---	07 33 40	52.3	82.6	-3.7		-54.3	191	4788	22 30 41
22 34 10	J1108+4330	07 33 40	53.7	83.1	-3.6		-55.2	-19	4788	No stop
22 35 40	---	07 35 10	54.0	83.4	-3.6		-55.2	71	4800	22 34 11
22 35 40	ARUMA	07 35 10	52.6	82.8	-3.7		-54.4	-19	4800	No stop
22 39 10	---	07 38 41	53.1	83.5	-3.6		-54.5	191	4827	22 35 41
22 39 50	J1108+4330	07 39 21	54.6	84.1	-3.5		-55.3	21	4827	22 39 50
22 40 50	---	07 40 21	54.7	84.3	-3.5		-55.3	60	4835	22 39 51
22 40 50	J1112+4301	07 40 21	53.8	84.3	-3.6		-54.7	-16	4835	No stop
22 44 20	---	07 43 52	54.4	84.9	-3.5		-54.8	194	4862	22 40 51
22 44 20	J1108+4330	07 43 52	55.3	84.9	-3.4		-55.4	-16	4862	No stop
22 45 50	---	07 45 22	55.5	85.2	-3.4		-55.5	74	4873	22 44 21
22 45 50	ARUMA	07 45 22	54.1	84.7	-3.5		-54.7	-19	4873	No stop
22 49 20	---	07 48 52	54.6	85.3	-3.5		-54.7	191	4900	22 45 51
22 50 00	J1108+4330	07 49 33	56.1	86.0	-3.3		-55.5	21	4900	22 50 00
22 51 00	---	07 50 33	56.3	86.2	-3.3		-55.6	60	4908	22 50 01
22 51 00	ARUMA	07 50 33	54.9	85.6	-3.4		-54.8	-19	4908	No stop
22 54 30	---	07 54 03	55.4	86.3	-3.4		-54.8	191	4935	22 51 01
22 54 30	J1108+4330	07 54 03	56.8	86.8	-3.3		-55.6	-19	4935	No stop
22 56 00	---	07 55 34	57.0	87.1	-3.2		-55.6	71	4946	22 54 31
22 56 00	ARUMA	07 55 34	55.6	86.5	-3.4		-54.9	-19	4946	No stop
22 59 30	---	07 59 04	56.1	87.2	-3.3		-54.9	191	4973	22 56 01
23 00 10	J1108+4330	07 59 44	57.6	87.9	-3.2		-55.7	21	4973	23 00 10
23 01 10	---	08 00 44	57.8	88.1	-3.1		-55.7	60	4981	23 00 11
23 01 10	ARUMA	08 00 44	56.4	87.5	-3.3		-54.9	-19	4981	No stop
23 04 40	---	08 04 15	56.9	88.2	-3.2		-55.0	191	5008	23 01 11
23 04 40	J1108+4330	08 04 15	58.3	88.8	-3.1		-55.7	-19	5008	No stop
23 06 10	---	08 05 45	58.5	89.1	-3.1		-55.7	71	5019	23 04 41
23 06 10	ARUMA	08 05 45	57.1	88.5	-3.2		-55.0	-19	5019	No stop
23 09 40	---	08 09 16	57.7	89.2	-3.1		-55.0	191	5046	23 06 11

Schedule for TORUN (Code Tr )

Page 12

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 16 Jan 2018 Day 16 ---										
23 10 20	J1108+4330	08 09 56	59.2	89.9	-3.0		-55.8	21	5046	23 10 20
23 11 20	---	08 10 56	59.3	90.1	-3.0		-55.8	60	5054	23 10 21
23 11 20	J1112+4301	08 10 56	58.4	90.0	-3.0		-55.1	-16	5054	No stop
23 14 50	---	08 14 27	58.9	90.8	-3.0		-55.1	194	5081	23 11 21
23 14 50	J1108+4330	08 14 27	59.8	90.8	-2.9		-55.7	-16	5081	No stop
23 16 20	---	08 15 57	60.1	91.1	-2.9		-55.7	74	5092	23 14 51
23 16 20	ARUMA	08 15 57	58.7	90.5	-3.0		-55.0	-19	5092	No stop
23 19 50	---	08 19 27	59.2	91.2	-3.0		-55.0	191	5119	23 16 21
23 20 30	J1108+4330	08 20 08	60.7	92.0	-2.8		-55.7	21	5119	23 20 30
23 21 30	---	08 21 08	60.9	92.2	-2.8		-55.7	60	5127	23 20 31
23 21 30	ARUMA	08 21 08	59.4	91.5	-2.9		-55.0	-19	5127	No stop
23 25 00	---	08 24 38	60.0	92.3	-2.9		-55.0	191	5154	23 21 31
23 25 00	J1108+4330	08 24 38	61.4	92.9	-2.7		-55.6	-19	5154	No stop
23 26 30	---	08 26 09	61.6	93.2	-2.7		-55.6	71	5165	23 25 01
23 26 30	ARUMA	08 26 09	60.2	92.6	-2.8		-54.9	-19	5165	No stop
23 30 00	---	08 29 39	60.7	93.3	-2.8		-54.9	191	5192	23 26 31
23 30 40	J1108+4330	08 30 19	62.2	94.2	-2.7		-55.5	21	5192	23 30 40
23 31 40	---	08 31 19	62.4	94.4	-2.6		-55.5	60	5200	23 30 41
23 31 40	ARUMA	08 31 19	61.0	93.7	-2.8		-54.8	-19	5200	No stop
23 35 10	---	08 34 50	61.5	94.5	-2.7		-54.8	191	5227	23 31 41
23 35 10	J1108+4330	08 34 50	62.9	95.2	-2.6		-55.4	-19	5227	No stop
23 36 40	---	08 36 20	63.1	95.5	-2.6		-55.4	71	5238	23 35 11
23 36 40	ARUMA	08 36 20	61.7	94.8	-2.7		-54.7	-19	5238	No stop
23 40 10	---	08 39 51	62.2	95.6	-2.6		-54.6	191	5265	23 36 41
23 40 50	J1108+4330	08 40 31	63.8	96.5	-2.5		-55.2	21	5265	23 40 50
23 41 50	---	08 41 31	63.9	96.7	-2.5		-55.2	60	5273	23 40 51
23 41 50	J1112+4301	08 41 31	63.0	96.6	-2.5		-54.5	-16	5273	No stop
23 45 20	---	08 45 02	63.5	97.5	-2.5		-54.4	194	5300	23 41 51
23 45 20	J1108+4330	08 45 02	64.4	97.5	-2.4		-55.0	-16	5300	No stop
23 46 50	---	08 46 32	64.7	97.9	-2.4		-55.0	74	5312	23 45 21

Schedule for TORUN (Code Tr )

Page 13

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 16 Jan 2018 Day 16 ---

23 46 50	ARUMA	08 46 32	63.2	97.2	-2.5	-54.4	-19	5312	No stop
23 50 20	---	08 50 02	63.8	98.0	-2.4	-54.2	191	5338	23 46 51
23 51 00	J1108+4330	08 50 43	65.3	98.9	-2.3	-54.7	21	5338	23 51 00
23 52 00	---	08 51 43	65.4	99.2	-2.3	-54.7	60	5346	23 51 01
23 52 00	ARUMA	08 51 43	64.0	98.4	-2.4	-54.1	-19	5346	No stop
23 55 30	---	08 55 13	64.5	99.3	-2.4	-54.0	191	5373	23 52 01
23 55 30	J1108+4330	08 55 13	65.9	100.1	-2.2	-54.5	-19	5373	No stop
23 57 00	---	08 56 44	66.2	100.5	-2.2	-54.4	71	5385	23 55 31

--- Start: Tue 16 Jan 2018 Day 16 -- Stop: Wed 17 Jan 2018 Day 17 ---

23 57 00	ARUMA	08 56 44	64.8	99.7	-2.3	-53.9	-19	5385	No stop
00 00 30	---	09 00 14	65.3	100.6	-2.3	-53.7	191	5412	23 57 01
00 01 10	J1108+4330	09 00 54	66.8	101.6	-2.1	-54.1	21	5412	00 01 10
00 02 10	---	09 01 54	66.9	101.9	-2.1	-54.0	60	5419	00 01 11
00 02 10	ARUMA	09 01 54	65.5	101.0	-2.2	-53.5	-18	5419	No stop
00 05 40	---	09 05 25	66.0	101.9	-2.2	-53.3	192	5446	00 02 11
00 05 40	J1108+4330	09 05 25	67.4	102.8	-2.1	-53.7	-19	5446	No stop
00 07 10	---	09 06 55	67.7	103.3	-2.0	-53.6	71	5458	00 05 41
00 09 10	J1310+3220	09 08 56	42.5	90.9	-4.0	-45.2	12	5458	00 09 10
00 11 10	=1308+326	09 10 56	42.8	91.3	-4.0	-45.2	120	5473	00 09 11

----- RP030A -----

00 15 10	J1118+1234	09 14 57	42.4	136.7	-2.1	-24.9	136	5473	00 15 10
00 17 10	=1116+128	09 16 57	42.6	137.3	-2.0	-24.6	120	5488	00 15 11
00 19 10	J1118-1232	09 18 57	19.4	148.8	-2.0	-18.6	19	5488	00 19 10
00 20 10	---	09 19 57	19.5	149.0	-2.0	-18.5	60	5496	00 19 11
00 20 10	GRB171205A	09 19 57	20.1	151.2	-1.8	-17.3	-18	5496	No stop
00 22 40	---	09 22 28	20.3	151.8	-1.8	-16.9	132	5515	00 20 11
00 22 40	J1118-1232	09 22 28	19.7	149.7	-1.9	-18.1	-18	5515	No stop
00 24 00	---	09 23 48	19.8	150.0	-1.9	-17.9	62	5526	00 22 41
00 24 00	GRB171205A	09 23 48	20.4	152.1	-1.8	-16.7	-18	5526	No stop
00 26 30	---	09 26 18	20.5	152.8	-1.7	-16.4	132	5545	00 24 01

Schedule for TORUN (Code Tr )

Page 14

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 17 Jan 2018 Day 17 ---										
00 26 30	J1118-1232	09 26 18	19.9	150.6	-1.9		-17.6	-18	5545	No stop
00 27 50	---	09 27 39	20.0	150.9	-1.9		-17.4	62	5555	00 26 31
00 27 50	GRB171205A	09 27 39	20.6	153.1	-1.7		-16.2	-18	5555	No stop
00 30 20	---	09 30 09	20.8	153.7	-1.7		-15.8	132	5574	00 27 51
00 31 00	J1118-1232	09 30 49	20.3	151.7	-1.8		-17.0	22	5574	00 31 00
00 31 40	---	09 31 29	20.3	151.9	-1.8		-16.9	40	5579	00 31 01
00 31 40	GRB171205A	09 31 29	20.9	154.1	-1.7		-15.6	-18	5579	No stop
00 34 10	---	09 34 00	21.0	154.7	-1.6		-15.3	132	5599	00 31 41
00 34 10	J1118-1232	09 34 00	20.5	152.5	-1.8		-16.5	-18	5599	No stop
00 35 30	---	09 35 20	20.6	152.8	-1.7		-16.3	62	5609	00 34 11
00 35 30	GRB171205A	09 35 20	21.1	155.0	-1.6		-15.1	-18	5609	No stop
00 38 00	---	09 37 50	21.3	155.7	-1.5		-14.7	132	5628	00 35 31
00 38 00	J1118-1232	09 37 50	20.8	153.5	-1.7		-16.0	-18	5628	No stop
00 39 20	---	09 39 11	20.9	153.8	-1.7		-15.8	62	5638	00 38 01
00 39 20	GRB171205A	09 39 11	21.4	156.0	-1.5		-14.5	-18	5638	No stop
00 41 50	---	09 41 41	21.5	156.6	-1.5		-14.1	132	5658	00 39 21
00 42 30	J1118-1232	09 42 21	21.1	154.6	-1.6		-15.3	22	5658	00 42 30
00 43 10	---	09 43 01	21.1	154.8	-1.6		-15.2	40	5663	00 42 31
00 43 10	GRB171205A	09 43 01	21.6	157.0	-1.5		-13.9	-18	5663	No stop
00 45 40	---	09 45 32	21.7	157.6	-1.4		-13.6	132	5682	00 43 11
00 45 40	J1118-1232	09 45 32	21.3	155.4	-1.6		-14.8	-18	5682	No stop
00 47 00	---	09 46 52	21.3	155.7	-1.5		-14.6	62	5692	00 45 41
00 47 00	GRB171205A	09 46 52	21.8	158.0	-1.4		-13.4	-18	5692	No stop
00 49 30	---	09 49 22	22.0	158.6	-1.4		-13.0	132	5712	00 47 01
00 49 30	J1118-1232	09 49 22	21.5	156.4	-1.5		-14.3	-18	5712	No stop
00 50 50	---	09 50 42	21.6	156.7	-1.5		-14.1	62	5722	00 49 31
00 50 50	GRB171205A	09 50 42	22.0	158.9	-1.3		-12.8	-18	5722	No stop
00 53 20	---	09 53 13	22.2	159.6	-1.3		-12.4	132	5741	00 50 51
00 54 00	J1118-1232	09 53 53	21.8	157.5	-1.4		-13.6	22	5741	00 54 00
00 54 40	---	09 54 33	21.8	157.7	-1.4		-13.5	40	5746	00 54 01

Schedule for TORUN (Code Tr )

Page 15

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 17 Jan 2018 Day 17 ---										
00 54 40	GRB171205A	09 54 33	22.2	159.9	-1.3		-12.2	-19	5746	No stop
00 57 10	---	09 57 03	22.4	160.6	-1.2		-11.8	131	5765	00 54 41
00 57 10	J1118-1232	09 57 03	21.9	158.3	-1.4		-13.1	-18	5765	No stop
00 58 30	---	09 58 24	22.0	158.7	-1.3		-12.9	62	5776	00 57 11
00 58 30	GRB171205A	09 58 24	22.4	160.9	-1.2		-11.6	-19	5776	No stop
01 01 00	---	10 00 54	22.5	161.6	-1.2		-11.2	131	5795	00 58 31
01 01 00	J1118-1232	10 00 54	22.1	159.3	-1.3		-12.5	-18	5795	No stop
01 02 20	---	10 02 14	22.2	159.7	-1.3		-12.3	62	5805	01 01 01
01 02 20	GRB171205A	10 02 14	22.6	161.9	-1.1		-11.0	-19	5805	No stop
01 04 50	---	10 04 45	22.7	162.6	-1.1		-10.6	131	5824	01 02 21
01 05 30	J1118-1232	10 05 25	22.4	160.5	-1.2		-11.9	22	5824	01 05 30
01 06 10	---	10 06 05	22.4	160.7	-1.2		-11.8	40	5829	01 05 31
01 06 10	GRB171205A	10 06 05	22.8	162.9	-1.1		-10.4	-19	5829	No stop
01 08 40	---	10 08 35	22.9	163.6	-1.0		-10.0	131	5849	01 06 11
01 08 40	J1118-1232	10 08 35	22.5	161.3	-1.2		-11.4	-18	5849	No stop
01 10 00	---	10 09 56	22.6	161.7	-1.2		-11.2	62	5859	01 08 41
01 10 00	GRB171205A	10 09 56	22.9	163.9	-1.0		-9.8	-19	5859	No stop
01 12 30	---	10 12 26	23.0	164.6	-1.0		-9.4	131	5878	01 10 01
01 12 30	J1118-1232	10 12 26	22.7	162.3	-1.1		-10.8	-18	5878	No stop
01 13 50	---	10 13 46	22.8	162.7	-1.1		-10.6	62	5888	01 12 31
01 13 50	GRB171205A	10 13 46	23.1	164.9	-0.9		-9.2	-19	5888	No stop
01 16 20	---	10 16 17	23.2	165.6	-0.9		-8.8	131	5908	01 13 51
01 17 00	J1118-1232	10 16 57	22.9	163.5	-1.0		-10.1	22	5908	01 17 00
01 17 40	---	10 17 37	22.9	163.7	-1.0		-10.0	40	5913	01 17 01
01 18 20	J1107-1226	10 18 17	23.5	166.8	-0.8		-8.1	20	5913	01 18 20
01 19 20	---	10 19 17	23.5	167.0	-0.8		-7.9	60	5921	01 18 21
01 20 00	J1118-1232	10 19 57	23.0	164.3	-1.0		-9.6	20	5921	01 20 00
01 20 40	---	10 20 37	23.1	164.4	-1.0		-9.5	40	5926	01 20 01
01 20 40	GRB171205A	10 20 37	23.4	166.7	-0.8		-8.1	-19	5926	No stop
01 23 10	---	10 23 08	23.4	167.4	-0.8		-7.7	131	5945	01 20 41



Schedule for TORUN (Code Tr )

Page 16

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 17 Jan 2018 Day 17 ---										
01 23 10	J1118-1232	10 23 08	23.2	165.1	-0.9		-9.1	-18	5945	No stop
01 24 30	---	10 24 28	23.2	165.5	-0.9		-8.9	62	5955	01 23 11
01 24 30	GRB171205A	10 24 28	23.5	167.7	-0.8		-7.5	-19	5955	No stop
01 27 00	---	10 26 58	23.6	168.4	-0.7		-7.1	131	5974	01 24 31
01 27 00	J1118-1232	10 26 58	23.3	166.1	-0.9		-8.5	-18	5974	No stop
01 28 20	---	10 28 19	23.4	166.5	-0.8		-8.3	62	5985	01 27 01
01 28 20	GRB171205A	10 28 19	23.6	168.7	-0.7		-6.9	-19	5985	No stop
01 30 50	---	10 30 49	23.7	169.4	-0.7		-6.5	131	6004	01 28 21
01 31 30	J1118-1232	10 31 29	23.5	167.3	-0.8		-7.8	22	6004	01 31 30
01 32 10	---	10 32 09	23.5	167.5	-0.8		-7.7	40	6009	01 31 31
01 32 10	GRB171205A	10 32 09	23.7	169.8	-0.6		-6.3	-19	6009	No stop
01 34 40	---	10 34 40	23.8	170.4	-0.6		-5.9	131	6028	01 32 11
01 34 40	J1118-1232	10 34 40	23.6	168.1	-0.7		-7.3	-18	6028	No stop
01 36 00	---	10 36 00	23.6	168.5	-0.7		-7.1	62	6038	01 34 41
01 36 00	GRB171205A	10 36 00	23.8	170.8	-0.6		-5.7	-19	6038	No stop
01 38 30	---	10 38 30	23.9	171.4	-0.5		-5.3	131	6058	01 36 01
01 38 30	J1118-1232	10 38 30	23.7	169.2	-0.7		-6.7	-18	6058	No stop
01 39 50	---	10 39 50	23.7	169.5	-0.7		-6.4	62	6068	01 38 31
01 39 50	GRB171205A	10 39 50	23.9	171.8	-0.5		-5.0	-19	6068	No stop
01 42 20	---	10 42 21	23.9	172.5	-0.5		-4.6	131	6087	01 39 51
01 43 00	J1118-1232	10 43 01	23.8	170.3	-0.6		-5.9	22	6087	01 43 00
01 43 40	---	10 43 41	23.8	170.5	-0.6		-5.8	40	6092	01 43 01
01 43 40	GRB171205A	10 43 41	24.0	172.8	-0.4		-4.4	-19	6092	No stop
01 46 10	---	10 46 12	24.0	173.5	-0.4		-4.0	131	6112	01 43 41
01 46 10	J1118-1232	10 46 12	23.9	171.2	-0.6		-5.4	-18	6112	No stop
01 47 30	---	10 47 32	23.9	171.5	-0.5		-5.2	62	6122	01 46 11
01 47 30	GRB171205A	10 47 32	24.0	173.8	-0.4		-3.8	-19	6122	No stop
01 50 00	---	10 50 02	24.1	174.5	-0.3		-3.4	131	6141	01 47 31
01 50 00	J1118-1232	10 50 02	24.0	172.2	-0.5		-4.8	-18	6141	No stop
01 51 20	---	10 51 22	24.0	172.6	-0.5		-4.6	62	6151	01 50 01

Schedule for TORUN (Code Tr )

Page 17

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 17 Jan 2018 Day 17 ---										
01 51 20	GRB171205A	10 51 22	24.1	174.9	-0.3		-3.2	-19	6151	No stop
01 53 50	---	10 53 53	24.1	175.5	-0.3		-2.7	131	6171	01 51 21
01 54 30	J1118-1232	10 54 33	24.0	173.4	-0.4		-4.0	22	6171	01 54 30
01 55 10	---	10 55 13	24.1	173.6	-0.4		-3.9	40	6176	01 54 31
01 55 10	GRB171205A	10 55 13	24.1	175.9	-0.3		-2.5	-19	6176	No stop
01 57 40	---	10 57 43	24.2	176.6	-0.2		-2.1	131	6195	01 55 11
01 57 40	J1118-1232	10 57 43	24.1	174.3	-0.4		-3.5	-18	6195	No stop
01 59 00	---	10 59 04	24.1	174.6	-0.3		-3.3	62	6205	01 57 41
01 59 00	GRB171205A	10 59 04	24.2	176.9	-0.2		-1.9	-19	6205	No stop
02 01 30	---	11 01 34	24.2	177.6	-0.2		-1.5	131	6224	01 59 01
02 01 30	J1118-1232	11 01 34	24.1	175.3	-0.3		-2.9	-18	6224	No stop
02 02 50	---	11 02 54	24.2	175.6	-0.3		-2.7	62	6235	02 01 31
02 02 50	GRB171205A	11 02 54	24.2	178.0	-0.1		-1.3	-19	6235	No stop
02 05 20	---	11 05 25	24.2	178.6	-0.1		-0.8	131	6254	02 02 51
02 06 00	J1118-1232	11 06 05	24.2	176.5	-0.2		-2.2	22	6254	02 06 00
02 06 40	---	11 06 45	24.2	176.7	-0.2		-2.0	40	6259	02 06 01
02 06 40	GRB171205A	11 06 45	24.2	179.0	-0.1		-0.6	-19	6259	No stop
02 09 10	---	11 09 15	24.2	179.6	-0.0		-0.2	131	6278	02 06 41
02 09 10	J1118-1232	11 09 15	24.2	177.3	-0.2		-1.6	-18	6278	No stop
02 10 30	---	11 10 36	24.2	177.7	-0.1		-1.4	62	6288	02 09 11
02 10 30	GRB171205A	11 10 36	24.2	180.0	0.0		0.0	-19	6288	No stop
02 13 00	---	11 13 06	24.2	180.7	0.0		0.4	131	6308	02 10 31
02 13 00	J1118-1232	11 13 06	24.2	178.4	-0.1		-1.0	-18	6308	No stop
02 14 20	---	11 14 26	24.3	178.7	-0.1		-0.8	62	6318	02 13 01
02 14 20	GRB171205A	11 14 26	24.2	181.0	0.1		0.6	-19	6318	No stop
02 16 50	---	11 16 57	24.2	181.7	0.1		1.0	131	6337	02 14 21
02 17 30	J1118-1232	11 17 37	24.3	179.6	-0.0		-0.3	22	6337	02 17 30
02 18 10	---	11 18 17	24.3	179.8	-0.0		-0.2	40	6342	02 17 31
02 18 50	J1107-1226	11 18 57	24.3	182.9	0.2		1.8	19	6342	02 18 50
02 19 50	---	11 19 57	24.3	183.2	0.2		2.0	60	6350	02 18 51

Schedule for TORUN (Code Tr )

Page 18

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 17 Jan 2018 Day 17 ---										
02 20 30	J1118-1232	11 20 37	24.3	180.4	0.0		0.2	20	6350	02 20 30
02 21 10	---	11 21 17	24.3	180.6	0.0		0.3	40	6355	02 20 31
02 21 10	GRB171205A	11 21 17	24.2	182.9	0.2		1.8	-19	6355	No stop
02 23 40	---	11 23 48	24.2	183.5	0.2		2.2	131	6374	02 21 11
02 23 40	J1118-1232	11 23 48	24.3	181.2	0.1		0.8	-18	6374	No stop
02 25 00	---	11 25 08	24.2	181.6	0.1		1.0	62	6385	02 23 41
02 25 00	GRB171205A	11 25 08	24.1	183.9	0.2		2.4	-19	6385	No stop
02 27 30	---	11 27 38	24.1	184.6	0.3		2.8	131	6404	02 25 01
02 27 30	J1118-1232	11 27 38	24.2	182.3	0.1		1.4	-18	6404	No stop
02 28 50	---	11 28 59	24.2	182.6	0.2		1.6	62	6414	02 27 31
02 28 50	GRB171205A	11 28 59	24.1	184.9	0.3		3.0	-19	6414	No stop
02 31 20	---	11 31 29	24.1	185.6	0.3		3.4	131	6433	02 28 51
02 32 00	J1118-1232	11 32 09	24.2	183.5	0.2		2.1	22	6433	02 32 00
02 32 40	---	11 32 49	24.2	183.6	0.2		2.2	40	6438	02 32 01
02 32 40	GRB171205A	11 32 49	24.0	185.9	0.4		3.7	-19	6438	No stop
02 35 10	---	11 35 20	24.0	186.6	0.4		4.1	131	6458	02 32 41
02 35 10	J1118-1232	11 35 20	24.2	184.3	0.3		2.7	-18	6458	No stop
02 36 30	---	11 36 40	24.2	184.7	0.3		2.9	62	6468	02 35 11
02 36 30	GRB171205A	11 36 40	24.0	187.0	0.4		4.3	-19	6468	No stop
02 39 00	---	11 39 10	23.9	187.6	0.5		4.7	131	6487	02 36 31
02 39 00	J1118-1232	11 39 10	24.1	185.3	0.3		3.3	-18	6487	No stop
02 40 20	---	11 40 30	24.1	185.7	0.4		3.5	62	6497	02 39 01
02 40 20	GRB171205A	11 40 30	23.9	188.0	0.5		4.9	-19	6497	No stop
02 42 50	---	11 43 01	23.9	188.7	0.5		5.3	131	6517	02 40 21
02 43 30	J1118-1232	11 43 41	24.0	186.5	0.4		4.0	22	6517	02 43 30
02 44 10	---	11 44 21	24.0	186.7	0.4		4.1	40	6522	02 43 31
02 44 10	GRB171205A	11 44 21	23.8	189.0	0.6		5.5	-19	6522	No stop
02 46 40	---	11 46 51	23.8	189.7	0.6		5.9	131	6541	02 44 11
02 46 40	J1118-1232	11 46 51	24.0	187.4	0.5		4.5	-18	6541	No stop
02 48 00	---	11 48 12	24.0	187.7	0.5		4.8	62	6551	02 46 41

Schedule for TORUN (Code Tr )

Page 19

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 17 Jan 2018 Day 17 ---										
02 48 00	GRB171205A	11 48 12	23.7	190.0	0.6		6.2	-19	6551	No stop
02 50 30	---	11 50 42	23.7	190.7	0.7		6.6	131	6571	02 48 01
02 50 30	J1118-1232	11 50 42	23.9	188.4	0.5		5.2	-18	6571	No stop
02 51 50	---	11 52 02	23.9	188.8	0.5		5.4	62	6581	02 50 31
02 51 50	GRB171205A	11 52 02	23.6	191.0	0.7		6.8	-19	6581	No stop
02 54 20	---	11 54 33	23.5	191.7	0.7		7.2	131	6600	02 51 51
02 55 00	J1118-1232	11 55 13	23.8	189.6	0.6		5.9	22	6600	02 55 00
02 55 40	---	11 55 53	23.8	189.8	0.6		6.0	40	6605	02 55 01
02 55 40	GRB171205A	11 55 53	23.5	192.1	0.8		7.4	-19	6605	No stop
02 58 10	---	11 58 23	23.4	192.7	0.8		7.8	131	6624	02 55 41
02 58 10	J1118-1232	11 58 23	23.7	190.4	0.7		6.4	-18	6624	No stop
02 59 30	---	11 59 44	23.7	190.8	0.7		6.6	62	6635	02 58 11
02 59 30	GRB171205A	11 59 44	23.4	193.1	0.8		8.0	-19	6635	No stop
03 02 00	---	12 02 14	23.3	193.7	0.9		8.4	131	6654	02 59 31
03 02 00	J1118-1232	12 02 14	23.6	191.5	0.7		7.0	-18	6654	No stop
03 03 20	---	12 03 34	23.6	191.8	0.7		7.2	62	6664	03 02 01
03 03 20	GRB171205A	12 03 34	23.2	194.1	0.9		8.6	-19	6664	No stop
03 05 50	---	12 06 05	23.1	194.7	0.9		9.0	131	6683	03 03 21
03 06 30	J1118-1232	12 06 45	23.5	192.7	0.8		7.7	22	6683	03 06 30
03 07 10	---	12 07 25	23.4	192.8	0.8		7.9	40	6688	03 06 31
03 07 10	GRB171205A	12 07 25	23.1	195.1	0.9		9.2	-19	6688	No stop
03 09 40	---	12 09 55	23.0	195.7	1.0		9.6	131	6708	03 07 11
03 09 40	J1118-1232	12 09 55	23.4	193.5	0.8		8.3	-18	6708	No stop
03 11 00	---	12 11 15	23.3	193.8	0.9		8.5	62	6718	03 09 41
03 11 00	GRB171205A	12 11 15	22.9	196.1	1.0		9.8	-19	6718	No stop
03 13 30	---	12 13 46	22.8	196.8	1.1		10.2	131	6737	03 11 01
03 13 30	J1118-1232	12 13 46	23.2	194.5	0.9		8.9	-18	6737	No stop
03 14 50	---	12 15 06	23.2	194.9	0.9		9.1	62	6747	03 13 31
03 14 50	GRB171205A	12 15 06	22.8	197.1	1.1		10.4	-19	6747	No stop
03 17 20	---	12 17 36	22.7	197.8	1.1		10.8	131	6767	03 14 51

Schedule for TORUN (Code Tr )

Page 20

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 17 Jan 2018 Day 17 ---										
03 18 00	J1118-1232	12 18 17	23.0	195.7	1.0		9.6	22	6767	03 18 00
03 18 40	---	12 18 57	23.0	195.9	1.0		9.7	40	6772	03 18 01
03 19 20	J1107-1226	12 19 37	22.6	199.0	1.2		11.5	20	6772	03 19 20
03 20 20	---	12 20 37	22.5	199.2	1.2		11.7	60	6779	03 19 21
03 20 20	GRB171205A	12 20 37	22.5	198.5	1.2		11.3	-12	6779	No stop
03 22 50	---	12 23 07	22.4	199.2	1.2		11.7	138	6799	03 20 21
03 22 50	J1107-1226	12 23 07	22.4	199.9	1.3		12.1	-13	6799	No stop
03 24 10	---	12 24 28	22.3	200.2	1.3		12.3	67	6809	03 22 51
03 24 10	GRB171205A	12 24 28	22.3	199.5	1.2		11.9	-12	6809	No stop
03 26 40	---	12 26 58	22.2	200.2	1.3		12.3	138	6828	03 24 11
03 26 40	J1107-1226	12 26 58	22.2	200.9	1.3		12.7	-13	6828	No stop
03 28 00	---	12 28 18	22.1	201.2	1.3		12.9	67	6838	03 26 41
03 28 00	GRB171205A	12 28 18	22.1	200.5	1.3		12.5	-12	6838	No stop
03 30 30	---	12 30 49	22.0	201.2	1.3		12.8	138	6858	03 28 01
03 31 10	J1107-1226	12 31 29	22.0	202.0	1.4		13.3	27	6858	03 31 10
03 31 50	---	12 32 09	21.9	202.2	1.4		13.4	40	6863	03 31 11
03 31 50	GRB171205A	12 32 09	21.9	201.5	1.4		13.0	-12	6863	No stop
03 34 20	---	12 34 39	21.8	202.1	1.4		13.4	138	6882	03 31 51
03 34 20	J1107-1226	12 34 39	21.8	202.8	1.4		13.8	-13	6882	No stop
03 35 40	---	12 36 00	21.7	203.2	1.5		14.0	67	6892	03 34 21
03 35 40	GRB171205A	12 36 00	21.7	202.5	1.4		13.6	-12	6892	No stop
03 38 10	---	12 38 30	21.6	203.1	1.5		14.0	138	6912	03 35 41
03 38 10	J1107-1226	12 38 30	21.6	203.8	1.5		14.4	-13	6912	No stop
03 39 30	---	12 39 50	21.5	204.1	1.5		14.6	67	6922	03 38 11
03 39 30	GRB171205A	12 39 50	21.5	203.5	1.5		14.2	-12	6922	No stop
03 42 00	---	12 42 21	21.3	204.1	1.5		14.6	138	6941	03 39 31
03 42 40	J1107-1226	12 43 01	21.3	205.0	1.6		15.0	27	6941	03 42 40
03 43 20	---	12 43 41	21.2	205.1	1.6		15.1	40	6946	03 42 41
03 43 20	GRB171205A	12 43 41	21.3	204.4	1.6		14.8	-12	6946	No stop
03 45 50	---	12 46 11	21.1	205.1	1.6		15.1	138	6965	03 43 21

Schedule for TORUN (Code Tr )

Page 21

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 17 Jan 2018 Day 17 ---										
03 45 50	J1107-1226	12 46 11	21.1	205.8	1.6		15.5	-13	6965	No stop
03 47 10	---	12 47 31	21.0	206.1	1.7		15.7	67	6976	03 45 51
03 47 10	GRB171205A	12 47 31	21.0	205.4	1.6		15.3	-12	6976	No stop
03 49 40	---	12 50 02	20.8	206.0	1.7		15.7	138	6995	03 47 11
03 49 40	J1107-1226	12 50 02	20.8	206.7	1.7		16.1	-13	6995	No stop
03 51 00	---	12 51 22	20.7	207.1	1.7		16.2	67	7005	03 49 41
03 51 00	GRB171205A	12 51 22	20.8	206.4	1.7		15.9	-12	7005	No stop
03 53 30	---	12 53 52	20.6	207.0	1.7		16.2	138	7024	03 51 01
03 54 10	J1107-1226	12 54 33	20.5	207.9	1.8		16.7	27	7024	03 54 10
03 54 50	---	12 55 13	20.5	208.0	1.8		16.8	40	7029	03 54 11
03 54 50	GRB171205A	12 55 13	20.5	207.3	1.7		16.4	-12	7029	No stop
03 57 20	---	12 57 43	20.3	208.0	1.8		16.8	138	7049	03 54 51
03 57 20	J1107-1226	12 57 43	20.3	208.6	1.8		17.1	-13	7049	No stop
03 58 40	---	12 59 03	20.2	209.0	1.9		17.3	67	7059	03 57 21
03 58 40	GRB171205A	12 59 03	20.2	208.3	1.8		17.0	-12	7059	No stop
04 01 10	---	13 01 34	20.1	208.9	1.8		17.3	138	7078	03 58 41
04 01 10	J1107-1226	13 01 34	20.0	209.6	1.9		17.7	-13	7078	No stop
04 02 30	---	13 02 54	19.9	209.9	1.9		17.9	67	7088	04 01 11
04 02 30	GRB171205A	13 02 54	20.0	209.2	1.9		17.5	-12	7088	No stop
04 05 00	---	13 05 24	19.8	209.9	1.9		17.8	138	7108	04 02 31
04 05 40	J1107-1226	13 06 04	19.7	210.7	2.0		18.3	27	7108	04 05 40
04 06 20	---	13 06 45	19.6	210.9	2.0		18.4	40	7113	04 05 41
04 06 20	GRB171205A	13 06 45	19.7	210.2	1.9		18.0	-12	7113	No stop
04 08 50	---	13 09 15	19.5	210.8	2.0		18.4	138	7132	04 06 21
04 08 50	J1107-1226	13 09 15	19.4	211.5	2.0		18.7	-13	7132	No stop
04 10 10	---	13 10 35	19.3	211.8	2.0		18.9	67	7142	04 08 51
04 10 10	GRB171205A	13 10 35	19.4	211.1	2.0		18.6	-12	7142	No stop
04 12 40	---	13 13 06	19.2	211.8	2.0		18.9	138	7162	04 10 11
04 12 40	J1107-1226	13 13 06	19.1	212.4	2.1		19.3	-13	7162	No stop
04 14 00	---	13 14 26	19.0	212.8	2.1		19.4	67	7172	04 12 41

Schedule for TORUN (Code Tr )

Page 22

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 17 Jan 2018 Day 17 ---										
04 14 00	GRB171205A	13 14 26	19.1	212.1	2.1		19.1	-12	7172	No stop
04 16 30	---	13 16 56	18.9	212.7	2.1		19.4	138	7191	04 14 01
04 17 10	J1107-1226	13 17 36	18.7	213.5	2.2		19.9	27	7191	04 17 10
04 17 50	---	13 18 16	18.7	213.7	2.2		19.9	40	7196	04 17 11
04 18 30	J1118-1232	13 18 57	19.4	211.1	2.0		18.5	20	7196	04 18 30
04 19 30	---	13 19 57	19.4	211.3	2.0		18.7	60	7204	04 18 31
04 20 10	J1107-1226	13 20 37	18.5	214.3	2.2		20.3	20	7204	04 20 10
04 20 50	---	13 21 17	18.4	214.4	2.2		20.3	40	7209	04 20 11
04 20 50	GRB171205A	13 21 17	18.5	213.7	2.2		20.0	-12	7209	No stop
04 23 20	---	13 23 47	18.3	214.3	2.2		20.3	138	7228	04 20 51
04 23 20	J1107-1226	13 23 47	18.2	215.0	2.3		20.7	-12	7228	No stop
04 24 40	---	13 25 08	18.1	215.3	2.3		20.8	68	7238	04 23 21
04 24 40	GRB171205A	13 25 08	18.2	214.7	2.2		20.5	-12	7238	No stop
04 27 10	---	13 27 38	18.0	215.3	2.3		20.8	138	7258	04 24 41
04 27 10	J1107-1226	13 27 38	17.9	215.9	2.3		21.2	-12	7258	No stop
04 28 30	---	13 28 58	17.8	216.3	2.3		21.3	68	7268	04 27 11
04 28 30	GRB171205A	13 28 58	17.9	215.6	2.3		21.0	-12	7268	No stop
04 31 00	---	13 31 29	17.6	216.2	2.3		21.3	138	7287	04 28 31
04 31 40	J1107-1226	13 32 09	17.5	217.0	2.4		21.7	28	7287	04 31 40
04 32 20	---	13 32 49	17.4	217.2	2.4		21.8	40	7292	04 31 41
04 32 20	GRB171205A	13 32 49	17.5	216.5	2.4		21.5	-12	7292	No stop
04 34 50	---	13 35 19	17.3	217.1	2.4		21.8	138	7312	04 32 21
04 34 50	J1107-1226	13 35 19	17.2	217.8	2.5		22.1	-12	7312	No stop
04 36 10	---	13 36 39	17.1	218.1	2.5		22.3	68	7322	04 34 51
04 36 10	GRB171205A	13 36 39	17.2	217.4	2.4		22.0	-12	7322	No stop
04 38 40	---	13 39 10	16.9	218.0	2.5		22.3	138	7341	04 36 11
04 38 40	J1107-1226	13 39 10	16.8	218.7	2.5		22.6	-12	7341	No stop
04 40 00	---	13 40 30	16.7	219.0	2.5		22.8	68	7351	04 38 41
04 40 00	GRB171205A	13 40 30	16.8	218.3	2.5		22.4	-12	7351	No stop
04 42 30	---	13 43 00	16.6	218.9	2.5		22.7	138	7371	04 40 01

Schedule for TORUN (Code Tr )

Page 23

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 17 Jan 2018 Day 17 ---										
04 43 10	J1107-1226	13 43 41	16.4	219.7	2.6		23.2	28	7371	04 43 10
04 43 50	---	13 44 21	16.3	219.9	2.6		23.2	40	7376	04 43 11
04 43 50	GRB171205A	13 44 21	16.5	219.2	2.6		22.9	-12	7376	No stop
04 46 20	---	13 46 51	16.2	219.8	2.6		23.2	138	7395	04 43 51
04 46 20	J1107-1226	13 46 51	16.1	220.5	2.6		23.5	-12	7395	No stop
04 47 40	---	13 48 11	16.0	220.8	2.7		23.7	68	7405	04 46 21
04 47 40	GRB171205A	13 48 11	16.1	220.1	2.6		23.4	-12	7405	No stop
04 50 10	---	13 50 42	15.8	220.7	2.7		23.7	138	7424	04 47 41
04 50 10	J1107-1226	13 50 42	15.7	221.4	2.7		24.0	-12	7424	No stop
04 51 30	---	13 52 02	15.6	221.7	2.7		24.1	68	7435	04 50 11
04 51 30	GRB171205A	13 52 02	15.7	221.0	2.7		23.8	-12	7435	No stop
04 54 00	---	13 54 32	15.5	221.6	2.7		24.1	138	7454	04 51 31
04 54 40	J1107-1226	13 55 12	15.3	222.4	2.8		24.5	28	7454	04 54 40
04 55 20	---	13 55 53	15.2	222.6	2.8		24.6	40	7459	04 54 41
04 55 20	GRB171205A	13 55 53	15.3	221.9	2.8		24.3	-12	7459	No stop
04 57 50	---	13 58 23	15.1	222.5	2.8		24.6	138	7478	04 55 21
04 57 50	J1107-1226	13 58 23	14.9	223.1	2.8		24.9	-12	7478	No stop
04 59 10	---	13 59 43	14.8	223.4	2.9		25.0	68	7488	04 57 51
04 59 10	GRB171205A	13 59 43	14.9	222.8	2.8		24.7	-12	7488	No stop
05 01 40	---	14 02 14	14.7	223.4	2.9		25.0	138	7508	04 59 11
05 01 40	J1107-1226	14 02 14	14.5	224.0	2.9		25.3	-12	7508	No stop
05 03 00	---	14 03 34	14.4	224.3	2.9		25.5	68	7518	05 01 41
05 03 00	GRB171205A	14 03 34	14.5	223.7	2.9		25.2	-12	7518	No stop
05 05 30	---	14 06 04	14.3	224.2	2.9		25.4	138	7537	05 03 01
05 06 10	J1107-1226	14 06 44	14.1	225.0	3.0		25.8	28	7537	05 06 10
05 06 50	---	14 07 24	14.0	225.2	3.0		25.9	40	7542	05 06 11
05 06 50	GRB171205A	14 07 24	14.1	224.5	2.9		25.6	-12	7542	No stop
05 09 20	---	14 09 55	13.9	225.1	3.0		25.9	138	7562	05 06 51
05 09 20	J1107-1226	14 09 55	13.7	225.8	3.0		26.1	-12	7562	No stop
05 10 40	---	14 11 15	13.6	226.1	3.1		26.3	68	7572	05 09 21



Schedule for TORUN (Code Tr )

Page 24

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 17 Jan 2018 Day 17 ---										
05 10 40	GRB171205A	14 11 15	13.7	225.4	3.0		26.0	-12	7572	No stop
05 13 10	---	14 13 46	13.5	226.0	3.1		26.3	138	7591	05 10 41
05 13 10	J1107-1226	14 13 46	13.3	226.6	3.1		26.6	-12	7591	No stop
05 14 30	---	14 15 06	13.2	226.9	3.1		26.7	68	7601	05 13 11
05 14 30	GRB171205A	14 15 06	13.3	226.3	3.1		26.4	-12	7601	No stop
05 17 00	---	14 17 36	13.0	226.8	3.1		26.7	138	7621	05 14 31
05 17 40	J1107-1226	14 18 16	12.8	227.6	3.2		27.0	28	7621	05 17 40
05 18 20	---	14 18 56	12.7	227.8	3.2		27.1	40	7626	05 17 41
05 19 00	J1118-1232	14 19 36	13.8	225.4	3.0		26.0	21	7626	05 19 00
05 20 00	---	14 20 37	13.7	225.6	3.0		26.1	60	7633	05 19 01
05 20 40	J1107-1226	14 21 17	12.5	228.3	3.2		27.3	21	7633	05 20 40
05 21 20	---	14 21 57	12.4	228.5	3.2		27.4	40	7638	05 20 41
05 21 20	GRB171205A	14 21 57	12.6	227.8	3.2		27.1	-12	7638	No stop
05 23 50	---	14 24 27	12.3	228.4	3.2		27.4	138	7658	05 21 21
05 23 50	J1107-1226	14 24 27	12.1	229.0	3.3		27.7	-12	7658	No stop
05 25 10	---	14 25 47	12.0	229.3	3.3		27.8	68	7668	05 23 51
05 25 10	GRB171205A	14 25 47	12.1	228.7	3.3		27.5	-12	7668	No stop
05 27 40	---	14 28 18	11.9	229.2	3.3		27.8	138	7687	05 25 11
05 27 40	J1107-1226	14 28 18	11.7	229.9	3.3		28.0	-12	7687	No stop
05 29 00	---	14 29 38	11.5	230.1	3.4		28.2	68	7697	05 27 41
05 29 00	GRB171205A	14 29 38	11.7	229.5	3.3		27.9	-12	7697	No stop
05 31 30	---	14 32 09	11.4	230.1	3.4		28.2	138	7717	05 29 01
05 32 10	J1107-1226	14 32 49	11.2	230.8	3.4		28.5	28	7717	05 32 10
05 32 50	---	14 33 29	11.1	231.0	3.4		28.6	40	7722	05 32 11
05 32 50	GRB171205A	14 33 29	11.3	230.4	3.4		28.3	-12	7722	No stop
05 35 20	---	14 35 59	11.0	230.9	3.4		28.5	138	7741	05 32 51
05 35 20	J1107-1226	14 35 59	10.8	231.5	3.5		28.8	-12	7741	No stop
05 36 40	---	14 37 19	10.6	231.8	3.5		28.9	68	7751	05 35 21
05 36 40	GRB171205A	14 37 19	10.8	231.2	3.4		28.7	-12	7751	No stop
05 39 10	---	14 39 50	10.5	231.7	3.5		28.9	138	7771	05 36 41

Schedule for TORUN (Code Tr )

Page 25

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 17 Jan 2018 Day 17 ---										
05 39 10	J1107-1226	14 39 50	10.3	232.4	3.5		29.2	-12	7771	No stop
05 40 30	---	14 41 10	10.2	232.7	3.6		29.3	68	7781	05 39 11
05 40 30	GRB171205A	14 41 10	10.4	232.0	3.5		29.0	-12	7781	No stop
05 43 00	---	14 43 40	10.1	232.6	3.6		29.3	138	7800	05 40 31
05 43 40	J1107-1226	14 44 21	9.8	233.3	3.6		29.6	28	7800	05 43 40
05 44 20	---	14 45 01	9.7	233.5	3.6		29.6	40	7805	05 43 41
05 44 20	GRB171205A	14 45 01	9.9	232.9	3.6		29.4	-12	7805	No stop
05 46 50	---	14 47 31	9.6	233.4	3.6		29.6	138	7824	05 44 21
05 46 50	J1107-1226	14 47 31	9.4	234.0	3.7		29.9	-12	7824	No stop
05 48 10	---	14 48 51	9.3	234.3	3.7		30.0	68	7835	05 46 51
05 48 10	GRB171205A	14 48 51	9.4	233.7	3.6		29.7	-12	7835	No stop
05 50 40	---	14 51 22	9.1	234.2	3.7		30.0	138	7854	05 48 11
05 50 40	J1107-1226	14 51 22	8.9	234.9	3.7		30.2	-12	7854	No stop
05 52 00	---	14 52 42	8.8	235.1	3.7		30.3	68	7864	05 50 41
05 52 00	GRB171205A	14 52 42	9.0	234.5	3.7		30.1	-12	7864	No stop
05 54 30	---	14 55 12	8.7	235.1	3.7		30.3	138	7883	05 52 01
05 55 10	J1107-1226	14 55 52	8.4	235.8	3.8		30.6	28	7883	05 55 10
05 55 50	---	14 56 33	8.3	236.0	3.8		30.6	40	7888	05 55 11
05 55 50	GRB171205A	14 56 33	8.5	235.3	3.8		30.4	-12	7888	No stop
05 58 20	---	14 59 03	8.2	235.9	3.8		30.6	138	7908	05 55 51
05 58 20	J1107-1226	14 59 03	8.0	236.5	3.9		30.9	-12	7908	No stop
05 59 40	---	15 00 23	7.8	236.8	3.9		31.0	68	7918	05 58 21
05 59 40	GRB171205A	15 00 23	8.0	236.2	3.8		30.7	-12	7918	No stop
06 02 10	---	15 02 54	7.7	236.7	3.9		31.0	138	7937	05 59 41
06 02 10	J1107-1226	15 02 54	7.5	237.3	3.9		31.2	-12	7937	No stop
06 03 30	---	15 04 14	7.3	237.6	3.9		31.3	68	7947	06 02 11
06 03 30	GRB171205A	15 04 14	7.5	237.0	3.9		31.1	-12	7947	No stop
06 06 00	---	15 06 44	7.2	237.5	3.9		31.3	138	7967	06 03 31
06 06 40	J1107-1226	15 07 24	6.9	238.2	4.0		31.5	28	7967	06 06 40
06 07 20	---	15 08 04	6.9	238.4	4.0		31.6	40	7972	06 06 41

Schedule for TORUN (Code Tr )

Page 26

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 17 Jan 2018  Day 17 ---

06 10 20  J1310+3220  15 11 05  60.1 237.8  2.0    36.9  -33   7972  06 10 20
06 13 10  =1308+326    15 13 55  59.7 238.8  2.0    37.4  137   7994  06 10 21

----- EL058E -----

06 18 10  J1310+3220  15 18 56  59.1 240.4  2.1    38.1  293   7994  06 18 10
06 20 10  =1308+326    15 20 57  58.8 241.1  2.2    38.4  120   8009  06 18 11

06 24 10  J1625-2527  15 24 57  10.3 165.8 -1.0   -9.4   44   8009  06 24 10
06 27 10  =1622-253    15 27 58  10.4 166.5 -1.0   -8.9  180   8032  06 24 11

06 27 10  ARSCD       15 27 58  13.0 167.0 -0.9   -8.4  -24   8032  No stop
06 31 25  ---         15 32 13  13.2 168.0 -0.8   -7.8  231   8065  06 27 11

06 31 25  J1625-2527  15 32 13  10.5 167.5 -0.9   -8.3  -24   8065  No stop
06 33 10  =1622-253    15 33 59  10.6 167.9 -0.9   -8.0   81   8078  06 31 26

06 33 10  ARSCD       15 33 59  13.2 168.5 -0.8   -7.5  -24   8078  No stop
06 37 25  ---         15 38 14  13.4 169.5 -0.7   -6.9  231   8111  06 33 11

06 38 00  J1625-2527  15 38 49  10.7 169.0 -0.8   -7.3   11   8111  06 38 00
06 39 10  =1622-253    15 40 00  10.7 169.2 -0.8   -7.1   70   8120  06 38 01

06 39 10  ARSCD       15 40 00  13.4 169.9 -0.7   -6.6  -24   8120  No stop
06 43 25  ---         15 44 15  13.5 170.9 -0.6   -5.9  231   8153  06 39 11

06 43 25  J1621-2241  15 44 15  13.7 170.9 -0.6   -5.9  -10   8153  No stop
06 45 25  ---         15 46 16  13.8 171.4 -0.6   -5.6  110   8168  06 43 26

06 46 00  J1625-2527  15 46 51  10.9 170.8 -0.7   -6.1   10   8168  06 46 00
06 47 10  =1622-253    15 48 01  11.0 171.1 -0.6   -5.9   70   8177  06 46 01

06 47 10  ARSCD       15 48 01  13.6 171.8 -0.6   -5.4  -24   8177  No stop
06 51 25  ---         15 52 17  13.7 172.8 -0.5   -4.7  231   8210  06 47 11

06 51 25  J1625-2527  15 52 17  11.0 172.1 -0.6   -5.3  -24   8210  No stop
06 53 10  =1622-253    15 54 02  11.1 172.5 -0.5   -5.0   81   8223  06 51 26

06 53 10  ARSCD       15 54 02  13.7 173.2 -0.5   -4.4  -24   8223  No stop
06 57 25  ---         15 58 18  13.8 174.2 -0.4   -3.8  231   8256  06 53 11

06 58 00  J1625-2527  15 58 53  11.2 173.6 -0.5   -4.3   11   8256  06 58 00
06 59 10  =1622-253    16 00 03  11.2 173.8 -0.4   -4.1   70   8265  06 58 01

```

Schedule for TORUN (Code Tr )

Page 27

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 17 Jan 2018 Day 17 ---										
06 59 10	ARSCO	16 00 03	13.8	174.6	-0.4		-3.5	-24	8265	No stop
07 03 25	---	16 04 19	13.9	175.6	-0.3		-2.9	231	8297	06 59 11
07 03 25	J1621-2241	16 04 19	14.1	175.7	-0.3		-2.8	-10	8297	No stop
07 05 25	---	16 06 19	14.1	176.1	-0.3		-2.5	110	8313	07 03 26
07 06 00	J1625-2527	16 06 54	11.3	175.4	-0.3		-3.1	11	8313	07 06 00
07 07 10	=1622-253	16 08 04	11.3	175.7	-0.3		-2.9	70	8322	07 06 01
07 07 10	ARSCO	16 08 04	13.9	176.5	-0.2		-2.3	-24	8322	No stop
07 11 25	---	16 12 20	13.9	177.5	-0.2		-1.6	231	8354	07 07 11
07 11 25	J1625-2527	16 12 20	11.3	176.7	-0.2		-2.2	-24	8354	No stop
07 13 10	=1622-253	16 14 05	11.4	177.1	-0.2		-2.0	81	8368	07 11 26
07 13 10	ARSCO	16 14 05	14.0	177.9	-0.1		-1.4	-24	8368	No stop
07 17 25	---	16 18 21	14.0	178.9	-0.1		-0.7	231	8401	07 13 11
07 18 00	J1625-2527	16 18 56	11.4	178.2	-0.1		-1.2	11	8401	07 18 00
07 19 10	=1622-253	16 20 06	11.4	178.4	-0.1		-1.0	70	8410	07 18 01
07 19 10	ARSCO	16 20 06	14.0	179.4	-0.0		-0.4	-24	8410	No stop
07 23 25	---	16 24 22	14.0	180.4	0.0		0.2	231	8442	07 19 11
07 23 25	J1621-2241	16 24 22	14.2	180.4	0.0		0.3	-10	8442	No stop
07 25 25	---	16 26 22	14.2	180.9	0.1		0.6	110	8458	07 23 26
07 26 00	J1625-2527	16 26 57	11.4	180.0	0.0		0.0	11	8458	07 26 00
07 27 10	=1622-253	16 28 08	11.4	180.3	0.0		0.2	70	8467	07 26 01
07 27 10	ARSCO	16 28 08	14.0	181.3	0.1		0.8	-24	8467	No stop
07 31 25	---	16 32 23	14.0	182.3	0.2		1.5	231	8499	07 27 11
07 31 25	J1625-2527	16 32 23	11.4	181.3	0.1		0.8	-23	8499	No stop
07 33 10	=1622-253	16 34 09	11.4	181.7	0.1		1.1	82	8513	07 31 26
07 33 10	ARSCO	16 34 09	13.9	182.7	0.2		1.7	-23	8513	No stop
07 37 25	---	16 38 24	13.9	183.7	0.3		2.4	232	8546	07 33 11
07 38 00	J1625-2527	16 38 59	11.4	182.8	0.2		1.9	12	8546	07 38 00
07 39 10	=1622-253	16 40 10	11.4	183.1	0.2		2.0	70	8554	07 38 01
07 39 10	ARSCO	16 40 10	13.9	184.1	0.3		2.7	-23	8554	No stop
07 43 25	---	16 44 25	13.8	185.1	0.4		3.3	232	8587	07 39 11

Schedule for TORUN (Code Tr )

Page 28

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 17 Jan 2018 Day 17 ---										
07 43 25	J1621-2241	16 44 25	14.0	185.2	0.4		3.4	-10	8587	No stop
07 45 25	---	16 46 26	14.0	185.7	0.4		3.7	110	8603	07 43 26
07 46 00	J1625-2527	16 47 01	11.3	184.6	0.3		3.1	11	8603	07 46 00
07 47 10	=1622-253	16 48 11	11.3	184.9	0.4		3.3	70	8612	07 46 01
07 47 10	ARSCO	16 48 11	13.8	186.0	0.4		3.9	-23	8612	No stop
07 51 25	---	16 52 27	13.7	187.0	0.5		4.6	232	8644	07 47 11
07 51 25	J1625-2527	16 52 27	11.2	185.9	0.4		3.9	-23	8644	No stop
07 53 10	=1622-253	16 54 12	11.2	186.3	0.5		4.2	82	8658	07 51 26
07 53 10	ARSCO	16 54 12	13.7	187.4	0.5		4.8	-23	8658	No stop
07 57 25	---	16 58 28	13.6	188.4	0.6		5.5	232	8690	07 53 11
07 58 00	J1625-2527	16 59 03	11.1	187.4	0.5		4.9	12	8690	07 58 00
07 59 10	=1622-253	17 00 13	11.1	187.7	0.6		5.1	70	8699	07 58 01
07 59 10	ARSCO	17 00 13	13.5	188.8	0.6		5.8	-23	8699	No stop
08 03 25	---	17 04 28	13.4	189.9	0.7		6.4	232	8732	07 59 11
08 03 25	J1621-2241	17 04 28	13.6	189.9	0.7		6.4	-10	8732	No stop
08 05 25	---	17 06 29	13.6	190.4	0.7		6.8	110	8747	08 03 26
08 06 00	J1625-2527	17 07 04	10.9	189.2	0.7		6.1	11	8747	08 06 00
08 07 10	=1622-253	17 08 14	10.9	189.5	0.7		6.3	70	8756	08 06 01
08 07 10	ARSCO	17 08 14	13.3	190.7	0.8		7.0	-23	8756	No stop
08 11 25	---	17 12 30	13.2	191.7	0.8		7.6	232	8789	08 07 11
08 11 25	J1625-2527	17 12 30	10.8	190.5	0.8		6.9	-23	8789	No stop
08 13 10	=1622-253	17 14 15	10.7	190.9	0.8		7.2	82	8803	08 11 26
08 13 10	ARSCO	17 14 15	13.2	192.1	0.9		7.9	-23	8803	No stop
08 17 25	---	17 18 31	13.0	193.1	0.9		8.5	232	8835	08 13 11
08 18 00	J1625-2527	17 19 06	10.6	192.0	0.9		7.9	12	8835	08 18 00
08 19 10	=1622-253	17 20 16	10.6	192.2	0.9		8.1	70	8844	08 18 01
08 19 10	ARSCO	17 20 16	13.0	193.6	1.0		8.8	-23	8844	No stop
08 23 25	---	17 24 32	12.8	194.5	1.0		9.4	232	8877	08 19 11
08 23 25	J1621-2241	17 24 32	13.0	194.6	1.0		9.5	-10	8877	No stop
08 25 25	---	17 26 32	12.9	195.1	1.1		9.8	110	8892	08 23 26

Schedule for TORUN (Code Tr )

Page 29

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 17 Jan 2018 Day 17 ---										
08 26 00	J1625-2527	17 27 07	10.3	193.8	1.0		9.1	11	8892	08 26 00
08 27 10	=1622-253	17 28 17	10.3	194.1	1.0		9.3	70	8901	08 26 01
08 27 10	ARSCO	17 28 17	12.7	195.4	1.1		10.0	-23	8901	No stop
08 31 25	---	17 32 33	12.5	196.4	1.2		10.6	232	8934	08 27 11
08 31 25	J1625-2527	17 32 33	10.1	195.0	1.1		9.9	-23	8934	No stop
08 33 10	=1622-253	17 34 18	10.0	195.4	1.1		10.2	82	8947	08 31 26
08 33 10	ARSCO	17 34 18	12.4	196.8	1.2		10.9	-23	8947	No stop
08 37 25	---	17 38 34	12.2	197.8	1.3		11.5	232	8980	08 33 11
08 38 00	J1625-2527	17 39 09	9.8	196.5	1.2		10.9	12	8980	08 38 00
08 39 10	=1622-253	17 40 19	9.8	196.8	1.2		11.1	70	8989	08 38 01
08 39 10	ARSCO	17 40 19	12.1	198.2	1.3		11.8	-23	8989	No stop
08 43 25	---	17 44 35	11.9	199.2	1.4		12.4	232	9022	08 39 11
08 43 25	J1621-2241	17 44 35	12.1	199.3	1.4		12.4	-10	9022	No stop
08 45 25	---	17 46 35	12.0	199.8	1.4		12.7	110	9037	08 43 26
08 46 00	J1625-2527	17 47 10	9.5	198.3	1.3		12.1	12	9037	08 46 00
08 47 10	=1622-253	17 48 21	9.4	198.6	1.4		12.2	70	9046	08 46 01
08 47 10	ARSCO	17 48 21	11.7	200.1	1.4		12.9	-22	9046	No stop
08 51 25	---	17 52 36	11.5	201.0	1.5		13.5	233	9079	08 47 11
08 51 25	J1625-2527	17 52 36	9.2	199.5	1.4		12.8	-23	9079	No stop
08 53 10	=1622-253	17 54 22	9.1	199.9	1.5		13.1	82	9092	08 51 26
08 53 10	ARSCO	17 54 22	11.4	201.4	1.5		13.8	-22	9092	No stop
08 57 25	---	17 58 37	11.2	202.4	1.6		14.4	233	9125	08 53 11
08 58 00	J1625-2527	17 59 12	8.9	201.0	1.5		13.8	13	9125	08 58 00
08 59 10	=1622-253	18 00 23	8.8	201.3	1.6		14.0	70	9134	08 58 01
08 59 10	ARSCO	18 00 23	11.1	202.8	1.6		14.6	-22	9134	No stop
09 03 25	---	18 04 38	10.8	203.8	1.7		15.2	233	9167	08 59 11
09 03 25	J1621-2241	18 04 38	11.0	203.9	1.7		15.3	-10	9167	No stop
09 05 25	---	18 06 39	10.9	204.3	1.7		15.6	110	9182	09 03 26
09 06 00	J1625-2527	18 07 14	8.4	202.8	1.7		14.9	12	9182	09 06 00
09 07 10	=1622-253	18 08 24	8.4	203.0	1.7		15.1	70	9191	09 06 01

Schedule for TORUN (Code Tr )

Page 30

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 17 Jan 2018 Day 17 ---										
09 07 10	ARSCO	18 08 24	10.6	204.6	1.8		15.8	-22	9191	No stop
09 11 25	---	18 12 40	10.3	205.6	1.8		16.3	233	9224	09 07 11
09 11 25	J1625-2527	18 12 40	8.1	204.0	1.8		15.7	-22	9224	No stop
09 13 10	=1622-253	18 14 25	8.0	204.3	1.8		15.9	83	9237	09 11 26
09 13 10	ARSCO	18 14 25	10.2	206.0	1.9		16.6	-22	9237	No stop
09 17 25	---	18 18 41	9.9	206.9	1.9		17.2	233	9270	09 13 11
09 18 00	J1625-2527	18 19 16	7.7	205.4	1.9		16.6	13	9270	09 18 00
09 19 10	=1622-253	18 20 26	7.6	205.7	1.9		16.7	70	9279	09 18 01
09 19 10	ARSCO	18 20 26	9.8	207.3	2.0		17.4	-22	9279	No stop
09 23 25	---	18 24 42	9.5	208.3	2.0		18.0	233	9312	09 19 11
09 23 25	J1621-2241	18 24 42	9.7	208.4	2.0		18.0	-10	9312	No stop
09 25 25	---	18 26 42	9.5	208.8	2.1		18.3	110	9327	09 23 26
09 26 00	J1625-2527	18 27 17	7.2	207.2	2.0		17.7	12	9327	09 26 00
09 27 10	=1622-253	18 28 27	7.1	207.4	2.0		17.8	70	9336	09 26 01
09 27 10	ARSCO	18 28 27	9.2	209.1	2.1		18.5	-22	9336	No stop
09 31 25	---	18 32 43	8.9	210.0	2.2		19.0	233	9369	09 27 11
09 31 25	J1625-2527	18 32 43	6.8	208.3	2.1		18.4	-22	9369	No stop
09 33 10	=1622-253	18 34 28	6.7	208.7	2.1		18.6	83	9382	09 31 26
09 33 10	ARSCO	18 34 28	8.8	210.4	2.2		19.3	-22	9382	No stop
09 37 25	---	18 38 44	8.5	211.4	2.3		19.8	233	9415	09 33 11
09 38 00	J1625-2527	18 39 19	6.3	209.7	2.2		19.3	13	9415	09 38 00
09 39 10	=1622-253	18 40 29	6.2	210.0	2.2		19.4	70	9424	09 38 01
09 39 10	ARSCO	18 40 29	8.3	211.7	2.3		20.1	-22	9424	No stop
09 43 25	---	18 44 45	8.0	212.7	2.4		20.6	233	9456	09 39 11
09 43 25	J1621-2241	18 44 45	8.2	212.8	2.4		20.6	-10	9456	No stop
09 45 25	---	18 46 45	8.0	213.2	2.4		20.9	110	9472	09 43 26
09 46 00	J1625-2527	18 47 20	5.7	211.5	2.3		20.3	13	9472	09 46 00
09 47 10	=1622-253	18 48 31	5.6	211.7	2.4		20.5	70	9481	09 46 01
09 47 10	ARSCO	18 48 31	7.7	213.5	2.4		21.1	-22	9481	No stop
09 51 25	---	18 52 46	7.3	214.4	2.5		21.6	233	9513	09 47 11

Schedule for TORUN (Code Tr )

Page 31

e-EVN: EG102B, EG096E, RP030A, EL058E

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 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 17 Jan 2018  Day 17 ---

09 51 25  J1625-2527  18 52 46  5.3 212.6  2.4      21.0  -22   9513  No stop
09 53 10  =1622-253    18 54 32  5.1 213.0  2.5      21.2   83   9527  09 51 26

09 53 10  ARSCO      18 54 32  7.2 214.8  2.5      21.8  -21   9527  No stop
09 57 25  ---          18 58 47  6.8 215.7  2.6      22.4  234   9560  09 53 11

09 58 00  J1625-2527  18 59 22  4.7 214.0  2.5      21.8   13   9560  09 58 00
09 59 10  =1622-253    19 00 33  4.6 214.2  2.6      22.0   70   9569  09 58 01

09 59 10  ARSCO      19 00 33  6.6 216.1  2.6      22.6  -21   9569  No stop
10 03 25  ---          19 04 48  6.3 217.0  2.7      23.1  234   9601  09 59 11

10 03 25  J1621-2241  19 04 48  6.4 217.1  2.7      23.1  -10   9601  No stop
10 05 25  ---          19 06 49  6.2 217.5  2.7      23.4  110   9617  10 03 26

10 06 00  J1625-2527  19 07 24  4.0 215.7  2.7      22.8   13   9617  10 06 00
10 07 10  =1622-253    19 08 34  3.9 215.9  2.7      23.0   70   9626  10 06 01

10 14 10  J0013+4051  19 15 35  40.1 72.2 -5.0     -49.2  117   9626  10 14 10
10 15 40  =0010+405    19 17 05  40.3 72.4 -5.0     -49.3   90   9637  10 14 11

```

## SETUP FILE INFORMATION:

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

==== Setup file: sess317.C2048e

```

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: 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) (B1950)	(J2000)	(Date)	Error (mas)
* J0304+0046	03 02 02.887896 00 35 15.44253	* 03 04 37.213000 * 00 46 53.70000	03 05 32.788883 00 50 52.16820	0.00 0.00
* ARUMA	11 12 58.336511 43 14 44.50698	* 11 15 44.462590 * 42 58 22.42090	11 16 44.112674 42 52 16.26029	0.00 0.00
* J1112+4301	11 09 46.149123 43 17 35.70611	* 11 12 33.150600 * 43 01 16.47900	11 13 33.132688 42 55 11.30240	0.00 0.00
* J1108+4330	11 05 35.113895 43 47 08.86359	* 11 08 23.476931 * 43 30 53.65728	11 09 23.968377 43 24 49.79891	0.00 0.00
* GRB171205A	11 07 09.055718 -12 19 01.57826	* 11 09 39.517961 *-12 35 18.45925	11 10 34.108618 -12 41 08.67567	0.00 0.00
* J1118-1232	11 15 46.125715 -12 16 29.65621	* 11 18 17.141395 *-12 32 54.26119	11 19 11.889473 -12 38 46.78740	0.00 0.00
* J1107-1226	11 04 35.985797 -12 10 16.49081	* 11 07 06.329700 *-12 26 30.81900	11 08 00.887402 -12 32 20.30397	0.00 0.00
* ARSCO	16 18 48.001406 -22 46 08.03241	* 16 21 47.288685 *-22 53 10.43853	16 22 50.353383 -22 55 29.04575	0.00 0.00
	Proper motion used. Reference epoch: 2017.27927			
	At epoch: RA = 16 21 47.288000 Dec = -22 53 10.40000			
	Rates: RA = 12.40 mas/yr Dec = -50.50 mas/yr			
	Parallax: 0.0000 mas.			
	Planetary motion (includes proper motion). Ref. MJD: 58134.4271			
	Rates: RA = 0.24567E-05 s/day Dec = -0.13826E-03 arcsec/day			
* J1621-2241	16 18 33.253628 -22 33 58.02036	* 16 21 32.276276 *-22 41 01.40904	16 22 35.248367 -22 43 20.42472	0.00 0.00
0003-066	00 03 40.288770	* 00 06 13.892891	00 07 08.048467	0.10

* J0006-0623	-06 40 17.29984	*-06 23 35.33527	-06 17 44.17816	0.10
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc			
	rfc_2015a Petrov, 2015, unpublished. 34968 observations			
0010+405	00 10 54.297705	* 00 13 31.130202	00 14 26.969968	0.13
* J0013+4051	40 34 56.63340	* 40 51 37.14414	40 57 43.11348	0.10
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc			
	rfc_2015a Petrov, 2015, unpublished. 1713 observations			
0258+011	02 58 48.854672	* 03 01 23.606995	03 02 19.321661	0.24
* J0301+0118	01 06 47.67912	* 01 18 35.99634	01 22 38.32055	0.50
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc			
	rfc_2015a Petrov, 2015, unpublished. 150 observations			
0415+379	04 15 00.610260	* 04 18 21.277233	04 19 34.231698	0.15
* J0418+3801	37 54 19.28092	* 38 01 35.80039	38 04 08.57066	0.13
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc			
	rfc_2015a Petrov, 2015, unpublished. 200 observations			
0923+392	09 23 55.319219	* 09 27 03.013940	09 28 10.973896	0.13
* J0927+3902	39 15 23.56641	* 39 02 20.85181	38 57 26.52245	0.10
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc			
	rfc_2015a Petrov, 2015, unpublished. 252917 observations			
1116+128	11 16 20.775215	* 11 18 57.301437	11 19 53.724115	0.10
* J1118+1234	12 51 06.69005	* 12 34 41.71805	12 28 41.63853	0.11
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc			
	rfc_2015a Petrov, 2015, unpublished. 2563 observations			
1308+326	13 08 07.560134	* 13 10 28.663853	13 11 18.781671	0.12
* J1310+3220	32 36 40.23877	* 32 20 43.78284	32 14 51.72767	0.10
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc			
	rfc_2015a Petrov, 2015, unpublished. 119714 observations			
1622-253	16 22 44.105298	* 16 25 46.891639	16 26 51.174667	0.11
* J1625-2527	-25 20 51.69568	*-25 27 38.32688	-25 29 50.58858	0.10
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc			
	rfc_2015a Petrov, 2015, unpublished. 47503 observations			
2209+236	22 09 45.687922	* 22 12 05.966317	22 12 55.013131	0.11
* J2212+2355	23 40 49.85193	* 23 55 40.54387	24 01 04.33355	0.10
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc			
	rfc_2015a Petrov, 2015, unpublished. 21792 observations			



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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 55.608643	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.89930	0.00
	fake circumpolar target for a TS to look at			
* 0454-234	04 54 57.297216	* 04 57 03.179228	04 57 49.145034	0.00
J0457-2324	-23 29 28.31965	*-23 24 52.02024	-23 23 31.24902	0.00
	./rk18jv_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 69420 observations, RA-A04-07, RA-A03-0			

#### 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)
0454-234	117.7

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  $60 \text{ deg } F^{-0.6}$  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



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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 55.665496	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.91738	0.00
	fake circumpolar target for a TS to look at			
* 0716+714	07 16 13.029739	* 07 21 53.448474	07 23 57.953912	0.00
J0721+7120	71 26 15.17406	* 71 20 36.36340	71 18 23.72954	0.00
	./rk18jw_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 42370 observations, RA-A04-07, RA-A03-0			

#### 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	129.0

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  $60 \text{ deg } F^{-0.6}$  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



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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 55.745136	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.94404	0.00
	fake circumpolar target for a TS to look at			
* 1222+216	12 22 23.408709	* 12 24 54.458394	12 25 48.569187	0.00
J1224+2122	21 39 23.03696	* 21 22 46.38857	21 16 41.37264	0.00
	./rk18jx_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 406 observations, RA-A04-07, RA-A03-04,			

#### 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)
1222+216	118.7

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  $60 \text{ deg } F^{-0.6}$  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





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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 55.880551	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 43.99316	0.00
	fake circumpolar target for a TS to look at			
* 0648-165	06 48 10.295571	* 06 50 24.581861	06 51 13.884400	0.00
J0650-1637	-16 34 05.88130	*-16 37 39.72548	-16 39 10.24075	0.00
	./rk18jy_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 10699 observations, RA-A04-07, RA-A03-0			

#### 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	138.9

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  $60 \text{ deg } F^{-0.6}$  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

**rk18katr**

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 19 Jan 2018    Day 19 ---

----- 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	1253-055	14 08 26	29.1	200.4	1.2		12.2	0	0	05 00 00
05 19 30	---	14 28 00	28.0	205.8	1.5		15.2	1170	37	05 00 01
05 20 00	1253-055	14 28 30	27.9	205.9	1.5		15.3	24	37	05 20 00
05 39 30	---	14 48 03	26.5	211.2	1.8		18.2	1170	75	05 20 01
05 40 00	1253-055	14 48 33	26.5	211.3	1.9		18.3	24	75	05 40 00
06 00 00	---	15 08 36	24.8	216.5	2.2		21.0	1200	113	05 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:	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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 55.983344	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 44.03384	0.00
	fake circumpolar target for a TS to look at			
* 1253-055	12 53 35.831289	* 12 56 11.166557	12 57 06.942554	0.00
J1256-0547	-05 31 07.99603	*-05 47 21.52489	-05 53 08.29383	0.00
3C279	./rk18ka_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 7924 observations, RA-A04-07, RA-A03-04			

#### 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)
1253-055    103.7

```

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  $60 \text{ deg } F^{-0.6}$  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

```



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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 56.028422	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 44.05265	0.00
	fake circumpolar target for a TS to look at			
* 0716+714	07 16 13.029739	* 07 21 53.448474	07 23 57.970236	0.00
J0721+7120	71 26 15.17406	* 71 20 36.36340	71 18 24.14260	0.00
	./rk18kb_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 42370 observations, RA-A04-07, RA-A03-0			

#### 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	128.6

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  $60 \text{ deg } F^{-0.6}$  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

**rk18kctr**

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 19 Jan 2018    Day 19 ---

----- 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						
19 00 00	0814+425	04 10 44	48.2	78.9	-4.1		-52.8	0	0	19 00 00
19 19 30	---	04 30 18	51.1	82.2	-3.8		-53.6	1170	37	19 00 01
19 20 00	0814+425	04 30 48	51.2	82.3	-3.8		-53.6	24	37	19 20 00
19 39 30	---	04 50 21	54.1	85.8	-3.5		-54.1	1170	75	19 20 01
19 40 00	0814+425	04 50 51	54.2	85.9	-3.5		-54.1	24	75	19 40 00
20 00 00	---	05 10 54	57.2	89.8	-3.1		-54.3	1200	113	19 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:	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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 56.140435	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 44.10207	0.00
	fake circumpolar target for a TS to look at			
* 0814+425	08 14 51.669840	* 08 18 15.999600	08 19 30.283670	0.00
J0818+4222	42 32 07.73231	* 42 22 45.41481	42 19 11.36878	0.00
	./rk18kc_sources.radioastron AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 3620 observations, RA-A04-07, 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	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  $60 \text{ deg } F^{-0.6}$  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



**rk18kdr**

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  
-----

--- Sat 20 Jan 2018    Day 20 ---

----- 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	0529+483	10 11 44	47.6	-67.2	4.6	56.5	0	0	01 00 00
01 19 30	---	10 31 17	45.0	-64.5	4.9	54.7	1170	37	01 00 01
01 20 00	0529+483	10 31 47	44.9	-64.5	5.0	54.7	24	37	01 20 00
01 39 30	---	10 51 20	42.3	-61.8	5.3	52.9	1170	75	01 20 01
01 40 00	0529+483	10 51 50	42.2	-61.8	5.3	52.8	24	75	01 40 00
02 00 00	---	11 11 53	39.6	-59.0	5.6	50.8	1200	113	01 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:    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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 56.207072	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 44.13333	0.00
	fake circumpolar target for a TS to look at			
* 0529+483	05 29 27.565384	* 05 33 15.865793	05 34 39.123915	0.00
J0533+4822	48 20 47.97038	* 48 22 52.80771	48 23 32.32456	0.00
	./rk18kd_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 19801 observations, RA-A04-07, RA-A03-0			

#### 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	138.2

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  $60 \text{ deg } F^{-0.6}$  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



```

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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 56.425137	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 44.24584	0.00
	fake circumpolar target for a TS to look at			
* 1055+018	10 55 55.313729	* 10 58 29.605207	10 59 25.545456	0.00
J1058+0133	01 50 03.53709	* 01 33 58.82359	01 28 07.57865	0.00
	./rk18ke_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 8183 observations, RA-A03-04, RA-A02-12			

#### 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)
1055+018	135.1

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  $60 \text{ deg } F^{-0.6}$  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

**rk18kfr**

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

---

--- Sun 21 Jan 2018 Day 21 ---

----- 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						
02 00 00	1124-186	11 15 50	17.8	177.0	-0.2		-1.9	0	0	02 00 00
02 19 30	---	11 35 23	17.8	181.8	0.1		1.2	1170	37	02 00 01
02 20 00	1124-186	11 35 53	17.8	182.0	0.1		1.2	24	37	02 20 00
02 39 30	---	11 55 27	17.6	186.8	0.5		4.3	1170	75	02 20 01
02 40 00	1124-186	11 55 57	17.6	186.9	0.5		4.4	24	75	02 40 00
03 00 00	---	12 16 00	17.1	191.9	0.8		7.5	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: 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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 56.478494	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 44.27582	0.00
	fake circumpolar target for a TS to look at			
* 1124-186	11 24 34.018124	* 11 27 04.392449	11 27 59.095266	0.00
J1127-1857	-18 40 46.35977	*-18 57 17.44185	-19 03 10.95088	0.00
	./rk18kf_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 41937 observations, RA-A03-04, RA-A02-1			

#### 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)
1124-186	118.3

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  $60 \text{ deg } F^{-0.6}$  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

**rk18ktr**

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  
-----

--- Sun 21 Jan 2018    Day 21 ---

----- 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

19 00 00	0454-234	04 18 38	13.0	170.8	-0.7		-6.0	0	0	19 00 00
19 14 30	---	04 33 10	13.3	174.2	-0.4		-3.8	870	28	19 00 01
19 15 00	0454-234	04 33 40	13.3	174.3	-0.4		-3.7	24	28	19 15 00
19 29 30	---	04 48 12	13.5	177.7	-0.2		-1.5	870	56	19 15 01
19 30 00	0454-234	04 48 43	13.5	177.9	-0.2		-1.4	24	56	19 30 00
19 44 30	---	05 03 15	13.5	181.3	0.1		0.8	870	84	19 30 01
19 45 00	0454-234	05 03 45	13.5	181.4	0.1		0.9	24	84	19 45 00
20 00 00	---	05 18 47	13.4	184.9	0.3		3.2	900	112	19 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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 56.654957	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 44.38196	0.00
	fake circumpolar target for a TS to look at			
* 0454-234	04 54 57.297216	* 04 57 03.179228	04 57 49.096974	0.00
J0457-2324	-23 29 28.31965	*-23 24 52.02024	-23 23 31.82218	0.00
	./rk18kh_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 69420 observations, RA-A04-07, RA-A03-0			

#### 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)
0454-234	115.2

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  $60 \text{ deg } F^{-0.6}$  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





```

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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 56.695695	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 44.40798	0.00
	fake circumpolar target for a TS to look at			
* 0234+285	02 34 55.589591	* 02 37 52.405678	02 38 56.095114	0.00
J0237+2848	28 35 11.40774	* 28 48 08.98999	28 52 46.00681	0.00
	./rk18ki_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 57147 observations, RA-A04-07, RA-A03-0			

#### 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)
0234+285	104.1

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  $60 \text{ deg } F^{-0.6}$  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

**rk18kotr**

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: K/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
-----
```

--- Tue 23 Jan 2018 Day 23 ---

----- 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
```

22 00 00	1055+018	07 27 00	22.4	120.2	-3.5		-31.3	0	0	22 00 00
22 14 30	---	07 41 33	24.2	123.6	-3.3		-30.0	870	28	22 00 01
22 15 00	1055+018	07 42 03	24.3	123.7	-3.3		-30.0	24	28	22 15 00
22 29 30	---	07 56 35	26.1	127.2	-3.0		-28.6	870	56	22 15 01
22 30 00	1055+018	07 57 05	26.1	127.3	-3.0		-28.5	24	56	22 30 00
22 44 30	---	08 11 38	27.8	130.9	-2.8		-27.0	870	84	22 30 01
22 45 00	1055+018	08 12 08	27.9	131.0	-2.8		-26.9	24	84	22 45 00
23 00 00	---	08 27 10	29.5	134.9	-2.5		-25.2	900	112	22 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: 11	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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 57.143925	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 44.72752	0.00
	fake circumpolar target for a TS to look at			
* 1055+018	10 55 55.313729	* 10 58 29.605207	10 59 25.601968	0.00
J1058+0133	01 50 03.53709	* 01 33 58.82359	01 28 07.17661	0.00
	./rk18ko_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 8183 observations, RA-A03-04, RA-A02-12			

#### 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)
1055+018	138.2

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  $60 \text{ deg } F^{-0.6}$  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



```

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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 57.293815	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 44.84327	0.00
	fake circumpolar target for a TS to look at			
* 0716+714	07 16 13.029739	* 07 21 53.448474	07 23 57.948850	0.00
J0721+7120	71 26 15.17406	* 71 20 36.36340	71 18 25.69423	0.00
	./rk18kr_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 42370 observations, RA-A04-07, RA-A03-0			

#### 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        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  $60 \text{ deg } F^{-0.6}$  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

```



```

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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 57.336643	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 44.87641	0.00
	fake circumpolar target for a TS to look at			
* 1803+784	18 03 39.193524	* 18 00 45.683902	17 59 37.986458	0.00
J1800+7828	78 27 54.29744	* 78 28 04.01838	78 27 59.60818	0.00
	./rk18ks_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 217073 observations, RA-A03-04, RA-A02-			

#### 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)
1803+784	99.8

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  $60 \text{ deg } F^{-0.6}$  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





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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 57.379079	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 44.90911	0.00
	fake circumpolar target for a TS to look at			
* 1124-186	11 24 34.018124	* 11 27 04.392449	11 27 59.179272	0.00
J1127-1857	-18 40 46.35977	*-18 57 17.44185	-19 03 11.80760	0.00
	./rk18kt_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 41937 observations, RA-A03-04, RA-A02-1			

#### 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)
1124-186	122.0

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  $60 \text{ deg } F^{-0.6}$  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



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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 57.521183	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 45.01625	0.00
	fake circumpolar target for a TS to look at			
* 0529+483	05 29 27.565384	* 05 33 15.865793	05 34 39.032787	0.00
J0533+4822	48 20 47.97038	* 48 22 52.80771	48 23 33.09194	0.00
	./rk18kv_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 19801 observations, RA-A04-07, RA-A03-0			

#### 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	133.6

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  $60 \text{ deg } F^{-0.6}$  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



```

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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 57.553620	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 45.03991	0.00
	fake circumpolar target for a TS to look at			
* 0235+164	02 35 52.630215	* 02 38 38.930107	02 39 38.634831	0.00
J0238+1636	16 24 04.01610	* 16 36 59.27452	16 41 30.93257	0.00
	./rk18kw_sources.radioastron			
	AGN, IDV, rfc_2013d Petrov, 2013, unpublished 65224 observations, RA-A04-07, 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)
0235+164	96.8

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  $60 \text{ deg } F^{-0.6}$  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

**rk18kxtr**

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 26 Jan 2018 Day 26 ---

----- 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

02 00 00 0814+425    11 35 33 56.1 271.7 3.3    54.3    0    0    02 00 00
02 19 30 ---          11 55 06 53.1 275.3 3.6    54.0 1170    37    02 00 01

02 20 00 0814+425    11 55 36 53.1 275.4 3.6    53.9    24    37    02 20 00
02 39 30 ---          12 15 09 50.1 278.9 3.9    53.4 1170    75    02 20 01

02 40 00 0814+425    12 15 39 50.1 279.0 3.9    53.3    24    75    02 40 00
03 00 00 ---          12 35 43 47.1 282.4 4.3    52.5 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: 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: 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) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 57.587389	0.00
	85 16 41.77889	* 85 00 00.000000	84 53 45.06415	0.00
	fake circumpolar target for a TS to look at			
* 0814+425	08 14 51.669840	* 08 18 15.999600	08 19 30.328685	0.00
J0818+4222	42 32 07.73231	* 42 22 45.41481	42 19 12.23962	0.00
	./rk18kx_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 3620 observations, RA-A04-07, 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	156.2

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  $60 \text{ deg } F^{-0.6}$  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



## Contents

Graphical Plan of Experiments in Jan 2018.....	1
Experiment Listing .....	3
rk18intr – RadioAstron AGN Monitoring .....	5
rg34ftr – RadioAstron Megamaser observations .....	7
rg34gtr – RadioAstron Megamaser observations .....	11
rk18istr – RadioAstron AGN Monitoring .....	14
rg34htr – RadioAstron Megamaser observations .....	16
rg34itr – RadioAstron Megamaser observations .....	19
rk18iwtr – RadioAstron AGN Monitoring .....	22
rk18ixtr – RadioAstron AGN Monitoring .....	24
rk18iytr – RadioAstron AGN Monitoring .....	26
rk18jatr – RadioAstron AGN Monitoring .....	28
rk18jbtr – RadioAstron AGN Monitoring .....	30
rk18jctr – RadioAstron AGN Monitoring .....	32
fus17tr – Hunting the unidentified gamma-ray sources .....	34
rk18jetr – RadioAstron AGN Monitoring .....	41
rk18jftr – RadioAstron AGN Monitoring .....	43
rk18jgtr – RadioAstron AGN Monitoring .....	45
rk18jitr – RadioAstron AGN Monitoring .....	47
rk18jjtr – RadioAstron AGN Monitoring .....	49
rk18jktr – RadioAstron AGN Monitoring .....	51
rk18jltr – RadioAstron AGN Monitoring .....	53
rk18jmtr – RadioAstron AGN Monitoring .....	55
rk18jotr – RadioAstron AGN Monitoring .....	57
rk18jptr – RadioAstron AGN Monitoring .....	59
fus18tr – Hunting the unidentified gamma-ray sources .....	61
rk18jrtr – RadioAstron AGN Monitoring .....	68
gg083btr – RadioAstron AGN polarization imaging .....	70
eg102btr – e-EVN: EG102B, EG096E, RP030A, EL058E .....	75
rk18jvtr – RadioAstron AGN Monitoring .....	107
rk18jwtr – RadioAstron AGN Monitoring .....	109
rk18jxtr – RadioAstron AGN Monitoring .....	111
rk18jytr – RadioAstron AGN Monitoring .....	113
rk18katr – RadioAstron AGN Monitoring .....	115
rk18kbtr – RadioAstron AGN Monitoring .....	117
rk18kctr – RadioAstron AGN Monitoring .....	119
rk18kdtr – RadioAstron AGN Monitoring .....	121
rk18ketr – RadioAstron AGN Monitoring .....	123
rk18kftr – RadioAstron AGN Monitoring .....	125
rk18khtr – RadioAstron AGN Monitoring .....	127
rk18kitr – RadioAstron AGN Monitoring .....	129
rk18kotr – RadioAstron AGN Monitoring .....	131
rk18krtr – RadioAstron AGN Monitoring .....	133
rk18kstr – RadioAstron AGN Monitoring .....	135
rk18kttr – RadioAstron AGN Monitoring .....	137
rk18kvtr – RadioAstron AGN Monitoring .....	139
rk18kwtr – RadioAstron AGN Monitoring .....	141
rk18kxtr – RadioAstron AGN Monitoring .....	143