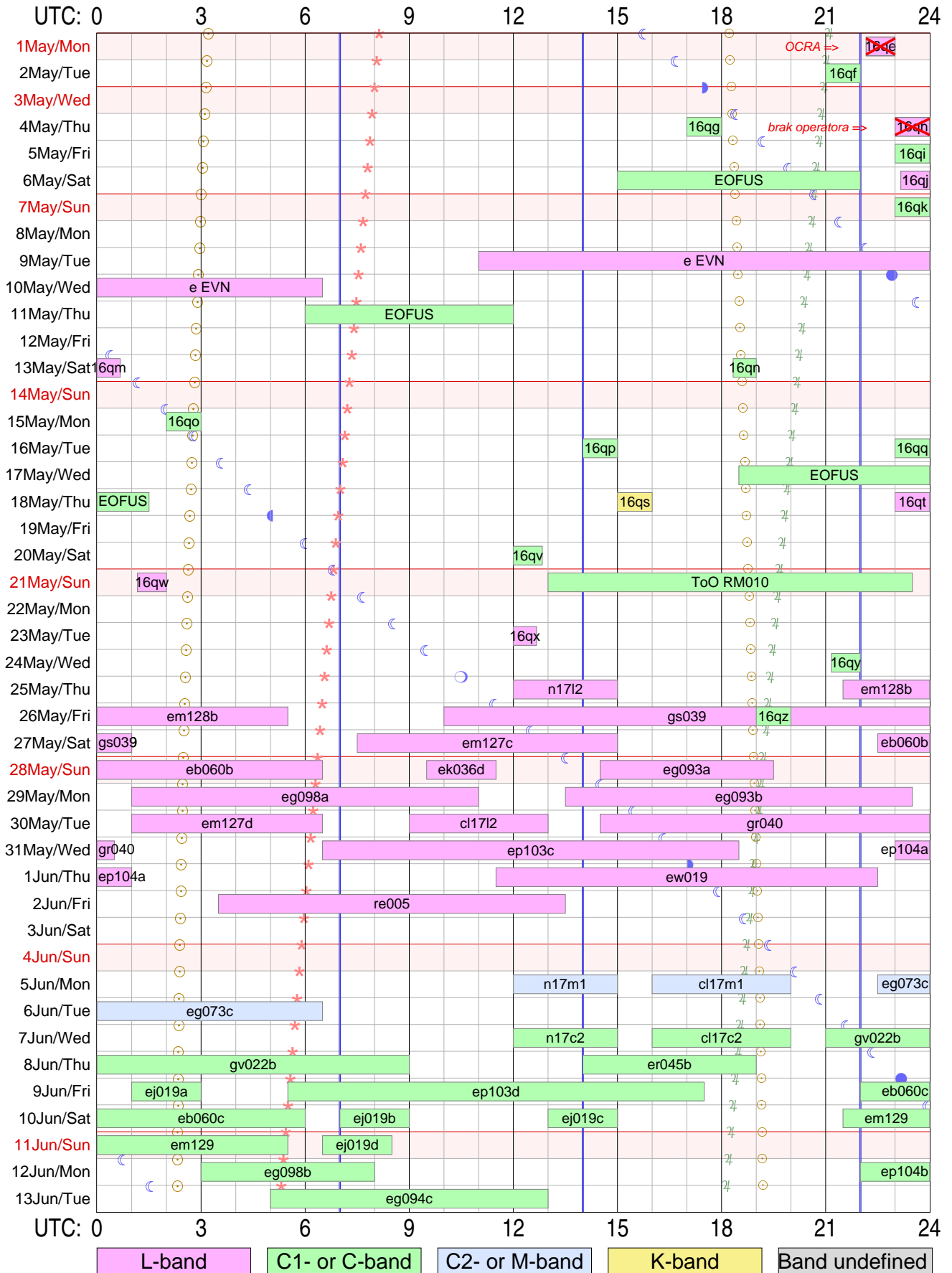


# Tr VLBI plan for May/June 2017



Version: 2017.05.23

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: 295.2 hours in 56 experiments scheduled

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

Strona zostawiona celowo pusta

# RadioAstron & EVN Experiments

## May 2017

Uytownik 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

Nr	D	M	<=Dur	Exper.	name	Comment
121	1	05	Pon	22 10	23 00	rk16qe "L"
122	2	05	Wto	21 00	22 00	rk16qf "C"
124	4	05	Czw	17 00	18 00	rk16qg "C"
124	4	05	Czw	23 00	24 00	rk16qh "L"
125	5	05	Pia	23 00	24 00	rk16qi "C"
126	6	05	Sob	23 10	24 00	rk16qj "L"
127	7	05	Nie	23 00	24 00	rk16qk "C"
133	13	05	Sob	0 00	0 40	rk16qm "L"
133	13	05	Sob	18 20	19 00	rk16qn "C"
135	15	05	Pon	2 00	3 00	rk16qo "C"
136	16	05	Wto	14 00	15 00	rk16qp "C"
136	16	05	Wto	23 00	24 00	rk16qq "C"
138	18	05	Czw	15 00	16 00	rk16qs "K"
138	18	05	Czw	23 00	24 00	rk16qt "L"
140	20	05	Sob	12 00	12 50	rk16qv "C"
141	21	05	Nie	1 10	2 00	rk16qw "L"
143	23	05	Wto	12 00	12 40	rk16qx "L"
144	24	05	Sro	21 10	22 00	rk16qy "C"
146	26	05	Pia	19 00	20 00	rk16qz "C"

Year	Date	UTstart	UTstop	Exper.	xxComment	Nr	Corr	~TB
	D M DoW	hh mm	hh mm	name				
2017	25 05 Czw	12 00	15 00	n1712	"L"	1-	EVN9	0.69
145	25 05 Czw	21 30	5 30	em128b	"L"	2-	EVN3	3.69
146	26 05 Pia	10 00	24 00	gs039	"L"			
147	27 05 Sob	0 00	1 00	gs039	"L"	3-	EVN4	6.91
147	27 05 Sob	7 30	15 00	em127c	"L"	4-	EVN2	3.46
147	27 05 Sob	22 30	24 00	eb060b	"L"			
148	28 05 Nie	0 00	6 30	eb060b	"L"	5-	EVN5	3.69
148	28 05 Nie	9 30	11 30	ek036d	"L"	6-	EVN2	0.92
148	28 05 Nie	14 30	19 30	eg093a	"L"	7-	EVN4	2.30
149	29 05 Pon	1 00	11 00	eg098a	"L"	8-	EVN0	4.61
149	29 05 Pon	13 30	23 30	eg093b	"L"	9-	EVN0	4.61
150	30 05 Wto	1 00	6 30	em127d	"L"	10-	EVN8	2.53
150	30 05 Wto	9 00	13 00	c11712	"L"	11-	---0	0.00
150	30 05 Wto	14 30	24 00	gr040	"L"			

151	31	05	Sro	0	00	0	30	gr040	"L"	12-	EVN0	4.61
151	31	05	Sro	6	30	18	30	ep103c	"L"	13-	EVN2	5.53
151	31	05	Sro	23	00	24	00	ep104a	"L"			
152	1	06	Czw	0	00	1	00	ep104a	"L"	14-	EVN8	0.92
152	1	06	Czw	11	30	22	30	ew019	"L"	15R	EVN1	2.53
153	2	06	Pia	3	30	13	30	re005	"L"	16R	EVN8	0.29
156	5	06	Pon	12	00	15	00	n17m1	"M"	17-	EVN6	0.17
156	5	06	Pon	16	00	20	00	c117m1	"M"	18-	---0	0.00
156	5	06	Pon	22	30	24	00	eg073c	"M"			
157	6	06	Wto	0	00	6	30	eg073c	"M"	19-	EVN5	0.46
158	7	06	Sro	12	00	15	00	n17c2	"C"	20-	EVN7	0.69
158	7	06	Sro	16	00	20	00	c117c2	"C"	21-	---0	0.00
158	7	06	Sro	21	00	24	00	gv022b	"C"			
159	8	06	Czw	0	00	9	00	gv022b	"C"	22-	EVN8	11.06
159	8	06	Czw	14	00	19	00	er045b	"C"	23-	EVN6	2.30
160	9	06	Pia	1	00	3	00	ej019a	"C"	24-	EVN2	0.92
160	9	06	Pia	5	30	17	30	ep103d	"C"	25-	EVN5	11.06
160	9	06	Pia	22	00	24	00	eb060c	"C"			
161	10	06	Sob	0	00	6	00	eb060c	"C"	26-	EVN0	3.69
161	10	06	Sob	7	00	9	00	ej019b	"C"	27-	EVN2	0.92
161	10	06	Sob	13	00	15	00	ej019c	"C"	28-	EVN2	0.92
161	10	06	Sob	21	30	24	00	em129	"C"			
162	11	06	Nie	0	00	5	30	em129	"C"	29R	EVN9	7.37
162	11	06	Nie	6	30	8	30	ej019d	"C"	30-	EVN2	0.92
163	12	06	Pon	3	00	8	00	eg098b	"C"	31-	EVN2	4.62
163	12	06	Pon	22	00	24	00	ep104b	"C"	32-	EVN2	0.92
164	13	06	Wto	5	00	13	00	eg094c	"C"	33-	EVN2	0.92

00	06	05	Sob	15	00	22	00	"EOFUS"	"C"			"
00	09	05	Wto	11	00	106	30	"e EVN"	"L"			"
00	11	05	Czw	06	00	12	00	"EOFUS"	"C"			

Total observing time: 256.2 hours in 55 experiments

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

<http://paulo.astro.uni.torun.pl/~pw/VLBI/schedules/may17.pdf>

rk16qetr

RADIOASTRON AGN MONITORING

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

Schedule for TORUN (Code Tr ) Page 2
RadioAstron AGN Monitoring

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are 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 1 May 2017 Day 121 ---

----- 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

Table with columns: Time, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. Rows include scan times like 22 10 00 and 22 34 30.

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

Disk used to record data.

```

1st LO= 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: 3 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: 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 56.834674	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 29.26064	0.00
	fake circumpolar target for a TS to look at			
* 1642+690	16 42 18.064877	* 16 42 07.848507	16 42 07.251202	0.00
J1642+6856	69 02 13.21708	* 68 56 39.75636	68 54 42.35453	0.00
	./rk16qe_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	92.8

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

**rk16qftr**

RADIOASTRON AGN MONITORING

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

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN Monitoring

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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    2 May 2017    Day 122 ---

----- 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

21 00 00	1642+690	12 58 07	60.1	36.8	-3.7		-92.9	0	0	21 00 00
21 19 30	---	13 17 40	61.9	36.4	-3.4		-97.8	1170	37	21 00 01
21 20 00	1642+690	13 18 10	61.9	36.4	-3.4		-97.9	24	37	21 20 00
21 39 30	---	13 37 43	63.6	35.7	-3.1		-103.1	1170	75	21 20 01
21 40 00	1642+690	13 38 13	63.7	35.7	-3.1		-103.2	24	75	21 40 00
22 00 00	---	13 58 17	65.4	34.5	-2.7		-109.0	1200	113	21 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:  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 56.708186	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 29.44298	0.00
	fake circumpolar target for a TS to look at			
* 1642+690	16 42 18.064877	* 16 42 07.848507	16 42 07.281049	0.00
J1642+6856	69 02 13.21708	* 68 56 39.75636	68 54 42.59792	0.00
	./rk16qf_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    92.7

```

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

```



**rk16qgtr**

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

Schedule for TORUN        (Code Tr )    Page    2  
                                 RadioAstron AGN Monitoring

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are 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 May 2017    Day 124 ---

----- 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

17 00 00	1005+066	09 05 20	41.4	158.7	-1.1		-12.7	0	0	17 00 00
17 19 30	---	09 24 54	42.3	165.1	-0.7		-8.9	1170	37	17 00 01
17 20 00	1005+066	09 25 24	42.3	165.3	-0.7		-8.8	24	37	17 20 00
17 39 30	---	09 44 57	42.9	171.9	-0.4		-4.9	1170	75	17 20 01
17 40 00	1005+066	09 45 27	42.9	172.0	-0.4		-4.8	24	75	17 40 00
18 00 00	---	10 05 30	43.2	178.8	-0.1		-0.7	1200	113	17 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 56.447124	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 29.83859	0.00
	fake circumpolar target for a TS to look at			
* 1005+066	10 05 23.466064	* 10 08 00.816157	10 08 55.026279	0.00
J1008+0621	06 36 03.30797	* 06 21 21.21593	06 16 10.05553	0.00
	./rk16qg_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	107.5

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

**rk16qhtr**

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

Schedule for TORUN        (Code Tr )                      Page    2  
                                    RadioAstron AGN Monitoring

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are 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 May 2017    Day 124 ---

----- 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

23 00 00	1040+244	15 06 19	33.6	266.1	4.4	41.0	0	0	23 00 00
23 14 30	---	15 20 52	31.4	269.0	4.6	41.1	870	28	23 00 01
23 15 00	1040+244	15 21 22	31.3	269.1	4.6	41.1	24	28	23 15 00
23 29 30	---	15 35 54	29.1	272.0	4.9	41.1	870	56	23 15 01
23 30 00	1040+244	15 36 24	29.0	272.1	4.9	41.1	24	56	23 30 00
23 44 30	---	15 50 57	26.9	274.9	5.1	40.9	870	84	23 30 01
23 45 00	1040+244	15 51 27	26.8	275.0	5.1	40.9	24	84	23 45 00
23 59 59	---	16 06 29	24.5	277.9	5.4	40.6	899	112	23 45 01

SETUP FILE INFORMATION:

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

==== Setup file: ra18cm2.set

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

Disk used to record data.

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

The following frequency sets based on these setups were used.

Frequency Set: 3 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: 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 56.409728	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 29.89438	0.00
	fake circumpolar target for a TS to look at			
* 1040+244	10 40 25.199377	* 10 43 09.035778	10 44 05.472032	0.00
J1043+2408	24 24 19.59847	* 24 08 35.40933	24 03 10.03497	0.00
	./rk16qh_sources.radioastron AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 7417 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)
1040+244	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

**rk16qitr**

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

Schedule for TORUN (Code Tr ) Page 2  
RadioAstron AGN Monitoring

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start. Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are 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 May 2017 Day 125 ---

----- 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				

23 00 00	1005+066	15	10	16	13.8	262.0	5.0	36.7	0	0	23 00 00
23 19 30	---	15	29	49	10.9	265.9	5.3	37.1	1170	37	23 00 01
23 20 00	1005+066	15	30	19	10.8	266.1	5.4	37.1	24	37	23 20 00
23 39 30	---	15	49	53	7.9	270.0	5.7	37.2	1170	75	23 20 01
23 40 00	1005+066	15	50	23	7.8	270.1	5.7	37.2	24	75	23 40 00
23 59 59	---	16	10	26	4.8	274.1	6.0	37.1	1199	113	23 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 56.249109	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 30.12548	0.00
	fake circumpolar target for a TS to look at			
* 1005+066	10 05 23.466064	* 10 08 00.816157	10 08 55.004466	0.00
J1008+0621	06 36 03.30797	* 06 21 21.21593	06 16 10.17281	0.00
	./rk16qi_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	106.2

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

**rk16qjtr**

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

Schedule for TORUN (Code Tr ) Page 2  
 RadioAstron AGN Monitoring

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

---

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC

---

--- Sat 6 May 2017 Day 126 ---

----- 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

23 10 00	1005+066	15 24 14	11.7	264.8	5.3		37.0	0	0	23 10 00
23 22 00	---	15 36 16	9.9	267.2	5.5		37.1	720	23	23 10 01
23 22 30	1005+066	15 36 46	9.8	267.4	5.5		37.1	24	23	23 22 30
23 34 30	---	15 48 48	8.0	269.8	5.7		37.2	720	46	23 22 31
23 35 00	1005+066	15 49 18	8.0	269.9	5.7		37.2	24	46	23 35 00
23 47 00	---	16 01 20	6.1	272.3	5.9		37.1	720	69	23 35 01
23 47 30	1005+066	16 01 50	6.1	272.4	5.9		37.1	24	69	23 47 30
23 59 59	---	16 14 22	4.2	274.9	6.1		37.0	749	93	23 47 31

SETUP FILE INFORMATION:

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

==== Setup file: ra18cm2.set

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

Disk used to record data.

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

The following frequency sets based on these setups were used.

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

Track assignments are:

track1= 2, 18, 3, 19  
 barrel=roll\_off

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 56.074544	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 30.35796	0.00
	fake circumpolar target for a TS to look at			
* 1005+066	10 05 23.466064	* 10 08 00.816157	10 08 54.985682	0.00
J1008+0621	06 36 03.30797	* 06 21 21.21593	06 16 10.26667	0.00
	./rk16qj_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	105.3

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





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 55.887824	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 30.58430	0.00
	fake circumpolar target for a TS to look at			
* 1005+066	10 05 23.466064	* 10 08 00.816157	10 08 54.966952	0.00
J1008+0621	06 36 03.30797	* 06 21 21.21593	06 16 10.35342	0.00
	./rk16qk_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	104.3

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

## 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 =&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 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	6 May 2017	Day 126			---					
Next scan frequencies:		4778.49	4778.49	4778.49	4778.49	4778.49	4850.49	4850.49	4850.49	4850.49	
		4922.49	4922.49	4922.49	4922.49	4922.49	4994.49	4994.49	4994.49	4994.49	
Next BBC frequencies:		578.49	578.49	578.49	578.49	578.49	650.49	650.49	650.49	650.49	
		722.49	722.49	722.49	722.49	722.49	794.49	794.49	794.49	794.49	
Next scan bandwidths:		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	
		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	
15 00 00	J090933+4253	07 12 54	68.0	105.9	-2.0		-52.0	0	0	15 00 00	
15 09 00	---	07 21 55	69.3	108.7	-1.8		-50.9	540	69	15 00 01	
15 10 10	J090259+2720	07 23 05	58.1	134.1	-1.7		-29.0	4	69	15 10 10	
15 19 10	---	07 32 07	59.1	137.5	-1.5		-27.1	540	138	15 10 11	
15 19 30	J090332+2719	07 32 27	59.0	137.5	-1.5		-27.2	11	138	15 19 30	
15 28 30	---	07 41 28	59.9	141.0	-1.4		-25.1	540	208	15 19 31	
15 29 15	J083219+2752	07 42 14	63.0	154.5	-0.9		-17.0	3	208	15 29 15	
15 38 15	---	07 51 15	63.5	158.7	-0.7		-14.3	540	277	15 29 16	
15 39 17	J082819+3721	07 52 17	72.9	154.1	-0.6		-19.3	13	277	15 39 17	
15 48 17	---	08 01 19	73.5	160.0	-0.5		-15.0	540	346	15 39 18	
15 49 41	J0927+3902	08 02 43	69.7	125.4	-1.4		-39.0	0	346	15 49 41	
15 54 41	=4C39.25	08 07 44	70.3	127.7	-1.3		-37.7	300	385	15 49 42	
15 56 31	J085136+4847	08 09 34	81.9	118.4	-0.7		-53.2	53	385	15 56 31	
16 05 31	---	08 18 36	83.1	125.6	-0.6		-47.7	540	454	15 56 32	
16 08 01	J094940+5819	08 21 06	76.4	58.8	-1.5		-102.6	1	454	16 08 01	
16 17 01	---	08 30 08	77.6	57.5	-1.3		-105.7	540	523	16 08 02	
16 17 51	J094314+6150	08 30 58	76.9	41.3	-1.2		-123.2	3	523	16 17 51	
16 26 51	---	08 39 59	77.8	38.4	-1.1		-127.9	540	592	16 17 52	
16 29 31	J084243+6657	08 42 40	76.2	0.7	0.0		-179.0	70	592	16 29 31	
16 38 31	---	08 51 41	76.2	-3.0	0.1		175.3	540	662	16 29 32	
16 39 01	J084839+7017	08 52 11	72.9	-0.5	0.0		179.0	4	662	16 39 01	
16 48 01	---	09 01 13	72.8	-3.1	0.2		174.4	540	731	16 39 02	
16 49 16	J085740+8603	09 02 28	57.1	0.0	0.0		180.0	2	731	16 49 16	
16 58 16	---	09 11 29	57.1	-0.3	0.2		177.5	540	800	16 49 17	

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 6 May 2017 Day 126 ---										
16 59 23	J093326+7216	09 12 37	70.7	5.2	-0.4		-169.8	2	800	16 59 23
17 08 23	---	09 21 38	70.8	3.1	-0.2		-173.9	540	869	16 59 24
17 08 43	J093420+7230	09 21 58	70.6	3.2	-0.2		-173.7	9	869	17 08 43
17 17 43	---	09 31 00	70.6	1.1	-0.1		-177.8	540	938	17 08 44
17 18 26	J094152+6533	09 31 43	77.5	5.5	-0.2		-172.0	3	938	17 18 26
17 27 26	---	09 40 44	77.6	1.2	0.0		-178.3	540	1008	17 18 27
17 27 46	J094156+6544	09 41 04	77.4	1.1	0.0		-178.5	10	1008	17 27 46
17 36 46	---	09 50 06	77.4	-3.2	0.1		175.3	540	1077	17 27 47
17 37 06	J094208+6544	09 50 26	77.4	-3.3	0.1		175.2	12	1077	17 37 06
17 46 06	---	09 59 27	77.3	-7.5	0.3		169.1	540	1146	17 37 07
17 53 34	J0927+3902	10 06 56	74.4	209.1	0.6		22.1	0	1146	17 53 34
17 58 34	=4C39.25	10 11 57	74.0	212.4	0.7		24.5	300	1185	17 53 35
18 02 09	J112729+3756	10 15 33	70.2	133.1	-1.2		-33.7	41	1185	18 02 09
18 11 09	---	10 24 34	71.2	137.7	-1.1		-30.8	540	1254	18 02 10
18 12 29	J103503+4419	10 25 54	81.0	168.3	-0.2		-9.8	4	1254	18 12 29
18 21 29	---	10 34 56	81.1	178.7	0.0		-1.1	540	1323	18 12 30
18 21 50	J103532+4409	10 35 17	81.0	178.5	0.0		-1.2	10	1323	18 21 50
18 30 50	---	10 44 18	80.9	188.8	0.1		7.4	540	1392	18 21 51
18 33 45	J112501+2606	10 47 14	62.0	161.3	-0.6		-12.4	90	1392	18 33 45
18 42 45	---	10 56 15	62.3	165.5	-0.5		-9.6	540	1462	18 33 46
18 43 05	J112515+2553	10 56 35	62.2	165.6	-0.5		-9.5	10	1462	18 43 05
18 52 05	---	11 05 37	62.4	170.0	-0.3		-6.7	540	1531	18 43 06
18 52 45	J101439+3208	11 06 17	67.1	208.5	0.8		19.7	-53	1531	18 52 45
19 01 45	---	11 15 19	66.4	213.0	1.0		22.7	487	1600	18 52 46
19 02 35	J105146+3254	11 16 09	69.3	194.0	0.4		10.0	-3	1600	19 02 35
19 11 35	---	11 25 10	68.9	199.2	0.5		13.6	537	1669	19 02 36
19 14 25	J120542+3321	11 28 01	69.0	157.0	-0.6		-16.3	69	1669	19 14 25
19 23 25	---	11 37 02	69.5	162.1	-0.5		-12.7	540	1738	19 14 26
19 27 32	J0927+3902	11 41 10	63.3	251.5	2.2		47.1	54	1738	19 27 32
19 32 32	=4C39.25	11 46 11	62.6	253.0	2.3		47.6	300	1777	19 27 33
19 36 47	J124129+4239	11 50 26	76.4	135.4	-0.9		-34.9	5	1777	19 36 47
19 45 47	---	11 59 28	77.3	141.5	-0.7		-30.5	540	1846	19 36 48

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	6 May 2017	Day 126	---						
19 46 12	J124159+4236	11 59 53	77.2	141.6	-0.7		-30.4	16	1846	19 46 12
19 55 12	---	12 08 54	78.0	148.5	-0.6		-25.2	540	1915	19 46 13
19 55 52	J124211+3949	12 09 34	75.5	153.5	-0.6		-20.4	15	1915	19 55 52
20 04 52	---	12 18 36	76.0	160.2	-0.4		-15.3	540	1985	19 55 53
20 05 32	J124258+3937	12 19 16	75.8	160.4	-0.4		-15.2	29	1985	20 05 32
20 14 32	---	12 28 17	76.2	167.4	-0.3		-9.8	540	2054	20 05 33
20 15 12	J124318+3951	12 28 58	76.4	167.5	-0.3		-9.7	30	2054	20 15 12
20 24 12	---	12 37 59	76.6	174.9	-0.1		-4.0	540	2123	20 15 13
20 25 42	J130249+4755	12 39 29	83.5	141.6	-0.4		-33.8	8	2123	20 25 42
20 34 42	---	12 48 31	84.2	154.0	-0.3		-23.1	540	2192	20 25 43
20 35 22	J130318+3629	12 49 11	73.1	169.6	-0.2		-7.7	-16	2192	20 35 22
20 44 22	---	12 58 12	73.3	175.9	-0.1		-3.1	524	2262	20 35 23
20 47 35	J1642+3948	13 01 26	50.6	86.7	-3.7		-51.3	0	2262	20 47 35
20 52 35	=3C345	13 06 27	51.4	87.7	-3.6		-51.3	300	2300	20 47 36
20 53 15	J130925+3037	13 07 07	67.4	178.2	-0.1		-1.2	-159	2300	20 53 15
21 02 15	---	13 16 09	67.4	183.3	0.1		2.3	381	2369	20 53 16
21 02 55	J130948+3037	13 16 49	67.4	183.5	0.1		2.4	31	2369	21 02 55
21 11 55	---	13 25 50	67.3	188.5	0.3		5.9	540	2438	21 02 56
21 12 35	J132459+2949	13 26 30	66.6	180.4	0.0		0.3	9	2438	21 12 35
21 21 35	---	13 35 32	66.6	185.3	0.2		3.7	540	2508	21 12 36
21 22 15	J133101+2932	13 36 12	66.3	182.4	0.1		1.6	19	2508	21 22 15
21 31 15	---	13 45 13	66.2	187.2	0.2		5.0	540	2577	21 22 16
21 31 55	J132632+5154	13 45 53	86.9	247.6	0.3		63.9	-99	2577	21 31 55
21 40 55	---	13 54 55	85.6	255.9	0.5		70.4	441	2646	21 31 56
21 41 35	J111852+5853	13 55 35	67.8	300.5	2.6		87.8	-64	2646	21 41 35
21 50 35	---	14 04 37	66.6	300.6	2.7		86.0	476	2715	21 41 36
21 51 15	J132429+4743	14 05 17	81.6	233.4	0.7		45.7	-107	2715	21 51 15
22 00 00	---	14 14 03	80.5	239.8	0.8		50.4	418	2783	21 51 16

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

The following frequency sets based on these setups were used.

```

Frequency Set:  3  Setup file default.  Used with PCAL = off
LO sum=  4778.49  4778.49  4778.49  4778.49  4850.49  4850.49  4850.49  4850.49
         4922.49  4922.49  4922.49  4922.49  4994.49  4994.49  4994.49  4994.49
BBC fr=   578.49  578.49  578.49  578.49  650.49  650.49  650.49  650.49
         722.49  722.49  722.49  722.49  794.49  794.49  794.49  794.49
Bandwd=   16.00   16.00   16.00   16.00   16.00   16.00   16.00   16.00
         16.00   16.00   16.00   16.00   16.00   16.00   16.00   16.00
Matching frequency sets:  3
  
```

Track assignments are:

```

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

## POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
* J082819+3721	08 25 04.872982	* 08 28 19.650000	08 29 25.739193	0.00
	37 31 51.15224	* 37 21 52.70000	37 18 25.65129	0.00
* J083219+2752	08 29 17.865056	* 08 32 19.670000	08 33 21.481018	0.00
	28 02 56.77799	* 27 52 44.00000	27 49 09.18653	0.00
* J084243+6657	08 38 09.160064	* 08 42 43.530000	08 44 15.700013	0.00
	67 08 15.17119	* 66 57 29.70000	66 53 54.42286	0.00
* J084839+7017	08 43 45.576106	* 08 48 39.560000	08 50 18.083056	0.00
	70 28 32.05554	* 70 17 27.50000	70 13 46.42043	0.00

* J085136+4847	08 48 06.266116 48 58 47.11566	* 08 51 36.470000 * 48 47 30.70000	08 52 47.707872 48 43 41.20693	0.00 0.00
* J085740+8603	08 42 55.048734 86 15 02.85841	* 08 57 40.930000 * 86 03 44.80000	09 02 20.744041 85 59 55.22731	0.00 0.00
* J090259+2720	09 00 01.849237 27 32 21.16894	* 09 02 59.960000 * 27 20 28.00000	09 04 00.667763 27 16 19.71838	0.00 0.00
* J090332+2719	09 00 34.905542 27 31 23.05682	* 09 03 32.940000 * 27 19 28.20000	09 04 33.624713 27 15 19.35415	0.00 0.00
* J090933+4253	09 06 17.288724 43 05 59.92815	* 09 09 33.530000 * 42 53 47.40000	09 10 40.232212 42 49 37.69329	0.00 0.00
* J093326+7216	09 28 45.599294 72 29 31.45157	* 09 33 26.570000 * 72 16 13.70000	09 35 00.853260 72 11 49.31011	0.00 0.00
* J093420+7230	09 29 38.493553 72 44 04.00353	* 09 34 20.690000 * 72 30 43.90000	09 35 55.366103 72 26 18.77142	0.00 0.00
* J094152+6533	09 37 54.066164 65 47 10.19678	* 09 41 52.610000 * 65 33 29.80000	09 43 13.193947 65 28 56.90570	0.00 0.00
* J094156+6544	09 37 57.516475 65 58 15.25548	* 09 41 56.760000 * 65 44 34.70000	09 43 17.570965 65 40 01.78921	0.00 0.00
* J094208+6544	09 38 09.619314 65 58 37.35928	* 09 42 08.780000 * 65 44 56.30000	09 43 29.564312 65 40 23.22503	0.00 0.00
* J094314+6150	09 39 29.444286 62 04 16.98968	* 09 43 14.500000 * 61 50 32.90000	09 44 30.703773 61 45 58.02562	0.00 0.00
* J094940+5819	09 46 07.121191 58 33 13.48373	* 09 49 40.130000 * 58 19 13.50000	09 50 52.421787 58 14 32.59105	0.00 0.00
* J111852+5853	11 15 58.209752 59 09 57.40087	* 11 18 52.520000 * 58 53 32.80000	11 19 52.391518 58 48 04.39179	0.00 0.00
* J101439+3208	10 11 46.706512 32 23 53.34164	* 10 14 39.410000 * 32 08 58.20000	10 15 38.602439 32 03 51.58310	0.00 0.00
* J103503+4419	10 32 05.883157 44 35 17.50516	* 10 35 03.770000 * 44 19 46.00000	10 36 04.706610 44 14 31.23225	0.00 0.00
* J103532+4409	10 32 34.702958 44 25 03.27312	* 10 35 32.320000 * 44 09 31.00000	10 36 33.169866 44 04 15.93098	0.00 0.00
* J105146+3254	10 48 59.533276 33 10 01.36219	* 10 51 46.280000 * 32 54 05.30000	10 52 43.642337 32 48 39.09188	0.00 0.00
* J112501+2606	11 22 22.078654 26 22 32.81391	* 11 25 01.030000 * 26 06 03.40000	11 25 55.973893 26 00 24.53986	0.00 0.00
* J112515+2553	11 22 36.679207 26 10 19.98167	* 11 25 15.550000 * 25 53 50.40000	11 26 10.469352 25 48 11.42824	0.00 0.00
* J112729+3756	11 24 47.901099 38 12 44.39492	* 11 27 29.360000 * 37 56 13.40000	11 28 25.081004 37 50 37.47570	0.00 0.00
* J120542+3321	12 03 09.896139 33 38 30.03292	* 12 05 42.800000 * 33 21 48.30000	12 06 35.842245 33 16 08.03611	0.00 0.00
* J124129+4239	12 39 06.989265	* 12 41 29.930000	12 42 19.741822	0.00

	42 56 05.51849	* 42 39 39.10000	42 34 06.50642	0.00
* J124159+4236	12 39 36.622409	* 12 41 59.450000	12 42 49.225870	0.00
	42 53 18.43924	* 42 36 52.40000	42 31 19.92537	0.00
* J124211+3949	12 39 47.275087	* 12 42 11.080000	12 43 01.188887	0.00
	40 06 07.40662	* 39 49 41.50000	39 44 08.46483	0.00
* J124258+3937	12 40 35.203799	* 12 42 58.890000	12 43 48.962542	0.00
	39 53 55.48094	* 39 37 30.20000	39 31 57.33529	0.00
* J124318+3951	12 40 55.316492	* 12 43 18.840000	12 44 08.858738	0.00
	40 07 42.31424	* 39 51 17.30000	39 45 44.57690	0.00
* J130249+4755	13 00 35.356054	* 13 02 49.350000	13 03 36.251305	0.00
	48 11 13.65426	* 47 55 07.90000	47 49 43.31116	0.00
* J130318+3629	13 00 57.899903	* 13 03 18.370000	13 04 07.443647	0.00
	36 45 12.99884	* 36 29 07.70000	36 23 41.02757	0.00
* J130925+3037	13 07 03.530379	* 13 09 25.630000	13 10 15.291124	0.00
	30 53 53.63261	* 30 37 55.80000	30 32 30.54574	0.00
* J130948+3037	13 07 26.500144	* 13 09 48.540000	13 10 38.182277	0.00
	30 53 25.54087	* 30 37 28.20000	30 32 03.11473	0.00
* J132429+4743	13 22 21.819627	* 13 24 29.310000	13 25 14.110279	0.00
	47 58 56.89755	* 47 43 20.70000	47 38 05.89760	0.00
* J132459+2949	13 22 39.896001	* 13 24 59.890000	13 25 48.893670	0.00
	30 05 32.44034	* 29 49 56.80000	29 44 39.06987	0.00
* J132632+5154	13 24 29.708511	* 13 26 32.270000	13 27 15.454826	0.00
	52 09 48.59078	* 51 54 15.70000	51 49 02.68577	0.00
* J133101+2932	13 28 42.552894	* 13 31 01.780000	13 31 50.543951	0.00
	29 47 42.77567	* 29 32 16.90000	29 27 02.48447	0.00
4C39.25	09 23 55.319215	* 09 27 03.013936	09 28 06.962861	0.30
* J0927+3902	39 15 23.56645	* 39 02 20.85186	38 57 53.40347	0.16
0923+392	/Users/mgirolet/sched/catalogs/sources.gsfc			
J0927+39	GSFC 2015a astro solution, unpublished 245753 observations.			
3C345	16 41 17.606228	* 16 42 58.809966	16 43 34.919686	0.76
* J1642+3948	39 54 10.81496	* 39 48 36.99402	39 46 42.38011	0.52
1641+399	/Users/mgirolet/sched/catalogs/sources.gsfc			
J1642+39	GSFC 2015a astro solution, unpublished 53430 observations.			

#### EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
J082819+3721	74.8
J083219+2752	77.4
J084243+6657	73.5
J084839+7017	73.8
J085136+4847	77.0
J085740+8603	73.4
J090259+2720	84.2
J090332+2719	84.3



J090933+4253	81.3
J093326+7216	77.0
J093420+7230	77.0
J094152+6533	79.6
J094156+6544	79.5
J094208+6544	79.6
J094314+6150	80.9
J094940+5819	82.8
J111852+5853	92.6
J101439+3208	97.1
J103503+4419	95.1
J103532+4409	95.3
J105146+3254	103.7
J112501+2606	113.4
J112515+2553	113.6
J112729+3756	106.9
J120542+3321	115.7
J124129+4239	113.2
J124159+4236	113.3
J124211+3949	115.6
J124258+3937	115.8
J124318+3951	115.7
J130249+4755	110.7
J130318+3629	120.7
J130925+3037	126.3
J130948+3037	126.4
J132429+4743	112.5
J132459+2949	128.7
J132632+5154	108.8
J133101+2932	129.6
J0927+3902	85.6
J1642+3948	118.1

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

**eh033tr**

E-EVN: EH033, EB061

PI: *Hada, Burns*

Address: JIVE

Observing mode: realtime e-vlbi

Schedule for TORUN (Code Tr ) Page 2  
e-EVN: eh033, eb061

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start. Dwell: On source seconds.  
Disk: GBytes 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 9 May 2017 Day 129 ---

----- CLOCK-SEARCH -----

Next scan frequencies:	1604.22	1604.22	1604.22	1604.22	1642.36	1642.36	1642.36	1642.36	1642.36	1642.36	1642.36	1642.36
	1674.36	1674.36	1674.36	1674.36	1706.36	1706.36	1706.36	1706.36	1706.36	1706.36	1706.36	1706.36
Next BBC frequencies:	695.78	695.78	695.78	695.78	657.64	657.64	657.64	657.64	657.64	657.64	657.64	657.64
	625.64	625.64	625.64	625.64	593.64	593.64	593.64	593.64	593.64	593.64	593.64	593.64
Next scan bandwidths:	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
11 00 00	J2253+1608	03 24 04	26.5	261.8	4.5	38.2	0	0	11 00 00			
11 10 00	=3C454.3	03 34 06	25.0	263.9	4.7	38.5	600	77	11 00 01			
11 11 00	J2253+1608	03 35 06	24.8	264.1	4.7	38.5	54	77	11 11 00			
11 20 00	=3C454.3	03 44 07	23.5	265.9	4.8	38.6	540	146	11 11 01			
11 21 00	J2253+1608	03 45 07	23.3	266.1	4.8	38.6	54	146	11 21 00			
11 30 00	=3C454.3	03 54 09	22.0	268.0	5.0	38.7	540	215	11 21 01			
11 31 00	J2253+1608	03 55 09	21.8	268.2	5.0	38.7	54	215	11 31 00			
11 40 00	=3C454.3	04 04 11	20.5	270.0	5.2	38.7	540	285	11 31 01			
11 41 00	J2253+1608	04 05 11	20.3	270.2	5.2	38.7	54	285	11 41 00			
11 50 00	=3C454.3	04 14 12	19.0	272.0	5.3	38.7	540	354	11 41 01			
11 51 00	J2253+1608	04 15 12	18.8	272.2	5.3	38.7	54	354	11 51 00			
12 00 00	=3C454.3	04 24 14	17.5	274.0	5.5	38.6	540	423	11 51 01			
12 06 00	J0750+1231	04 30 15	33.1	116.1	-3.4	-33.5	29	423	12 06 00			
12 09 00	=0748+126	04 33 15	33.5	116.8	-3.3	-33.3	180	446	12 06 01			
12 10 00	J0750+1231	04 34 15	33.7	117.1	-3.3	-33.2	54	446	12 10 00			
12 19 00	=0748+126	04 43 17	34.9	119.3	-3.1	-32.4	540	515	12 10 01			
12 20 00	J0750+1231	04 44 17	35.0	119.5	-3.1	-32.3	54	515	12 20 00			
12 29 00	=0748+126	04 53 19	36.2	121.8	-3.0	-31.5	540	585	12 20 01			
12 30 00	J0750+1231	04 54 19	36.3	122.1	-3.0	-31.4	54	585	12 30 00			
12 39 00	=0748+126	05 03 20	37.4	124.5	-2.8	-30.5	540	654	12 30 01			
12 40 00	J0750+1231	05 04 20	37.5	124.7	-2.8	-30.4	54	654	12 40 00			
12 49 00	=0748+126	05 13 22	38.6	127.2	-2.6	-29.3	540	723	12 40 01			

Schedule for TORUN (Code Tr )

Page 3

e-EVN: eh033, eb061

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 May 2017	Day 129					---				
12 50 00	J0750+1231	05 14 22	38.8	127.4	-2.6		-29.2	54	723	12 50 00	
12 59 00	=0748+126	05 23 24	39.8	129.9	-2.5		-28.1	540	792	12 50 01	
13 00 00	J0750+1231	05 24 24	39.9	130.2	-2.5		-28.0	54	792	13 00 00	
13 09 00	=0748+126	05 33 25	40.9	132.8	-2.3		-26.8	540	862	13 00 01	
13 10 00	J0750+1231	05 34 25	41.1	133.1	-2.3		-26.7	54	862	13 10 00	
13 19 00	=0748+126	05 43 27	42.0	135.7	-2.1		-25.4	540	931	13 10 01	
13 20 00	J0750+1231	05 44 27	42.1	136.0	-2.1		-25.3	54	931	13 20 00	
13 29 00	=0748+126	05 53 28	43.0	138.7	-2.0		-23.9	540	1000	13 20 01	
13 30 00	J0750+1231	05 54 29	43.1	139.0	-2.0		-23.8	54	1000	13 30 00	
13 39 00	=0748+126	06 03 30	44.0	141.8	-1.8		-22.3	540	1069	13 30 01	
13 40 00	J0750+1231	06 04 30	44.1	142.2	-1.8		-22.2	54	1069	13 40 00	
13 49 00	=0748+126	06 13 32	44.9	145.0	-1.6		-20.6	540	1138	13 40 01	
13 50 00	J0750+1231	06 14 32	45.0	145.4	-1.6		-20.5	54	1138	13 50 00	
13 59 00	=0748+126	06 23 33	45.7	148.3	-1.5		-18.9	540	1208	13 50 01	
14 00 00	J0750+1231	06 24 34	45.8	148.6	-1.5		-18.7	53	1208	14 00 00	
14 09 00	=0748+126	06 33 35	46.5	151.7	-1.3		-17.0	540	1277	14 00 01	
14 10 00	J0750+1231	06 34 35	46.6	152.0	-1.3		-16.8	53	1277	14 10 00	
14 19 00	=0748+126	06 43 37	47.2	155.1	-1.1		-15.0	540	1346	14 10 01	
14 20 00	J0750+1231	06 44 37	47.2	155.4	-1.1		-14.8	53	1346	14 20 00	
14 29 00	=0748+126	06 53 38	47.7	158.6	-1.0		-13.0	540	1415	14 20 01	
14 30 00	J0750+1231	06 54 38	47.8	159.0	-1.0		-12.8	53	1415	14 30 00	
14 39 00	=0748+126	07 03 40	48.3	162.2	-0.8		-10.8	540	1485	14 30 01	
14 40 00	J0750+1231	07 04 40	48.3	162.6	-0.8		-10.6	53	1485	14 40 00	
14 49 00	=0748+126	07 13 42	48.7	165.8	-0.6		-8.7	540	1554	14 40 01	
14 52 00	1156+295	07 16 42	34.1	85.5	-4.7		-43.3	4	1554	14 52 00	
14 59 00	---	07 23 43	35.2	86.9	-4.6		-43.4	420	1608	14 52 01	
15 00 00	1156+295	07 24 43	35.3	87.1	-4.6		-43.4	54	1608	15 00 00	
15 09 00	---	07 33 45	36.7	88.9	-4.4		-43.4	540	1677	15 00 01	
15 10 00	1156+295	07 34 45	36.8	89.1	-4.4		-43.4	54	1677	15 10 00	
15 19 00	---	07 43 47	38.2	90.9	-4.3		-43.4	540	1746	15 10 01	
15 20 00	1156+295	07 44 47	38.3	91.1	-4.3		-43.4	54	1746	15 20 00	
15 29 00	---	07 53 48	39.7	92.9	-4.1		-43.4	540	1815	15 20 01	

Schedule for TORUN (Code Tr )

Page 4

e-EVN: eh033, eb061

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 May 2017 Day 129 ---										
----- EH033 -----										
15 29 30	1156+295	07 54 18	39.8	93.0	-4.1		-43.4	24	1815	15 29 30
15 33 10	---	07 57 59	40.3	93.8	-4.0		-43.3	220	1844	15 29 31
15 36 10	M87	08 00 59	23.1	100.6	-4.5		-37.2	101	1844	15 36 10
15 48 10	---	08 13 01	24.9	103.2	-4.3		-36.8	720	1936	15 36 11
15 48 40	M87	08 13 31	25.0	103.3	-4.3		-36.7	24	1936	15 48 40
16 03 10	---	08 28 04	27.1	106.4	-4.1		-36.1	870	2047	15 48 41
16 03 40	M87	08 28 34	27.2	106.6	-4.1		-36.1	24	2047	16 03 40
16 18 10	---	08 43 06	29.2	109.8	-3.8		-35.3	870	2159	16 03 41
16 18 40	M87	08 43 36	29.3	109.9	-3.8		-35.3	24	2159	16 18 40
16 33 10	---	08 58 09	31.3	113.3	-3.6		-34.4	870	2271	16 18 41
16 33 40	M87	08 58 39	31.4	113.4	-3.6		-34.3	24	2271	16 33 40
16 48 10	---	09 13 11	33.4	116.9	-3.3		-33.2	870	2382	16 33 41
16 48 40	M87	09 13 41	33.5	117.1	-3.3		-33.2	24	2382	16 48 40
17 03 10	---	09 28 14	35.4	120.7	-3.1		-31.9	870	2494	16 48 41
17 03 40	M87	09 28 44	35.4	120.8	-3.0		-31.9	24	2494	17 03 40
17 18 10	---	09 43 16	37.3	124.6	-2.8		-30.4	870	2605	17 03 41
17 18 40	M87	09 43 46	37.3	124.7	-2.8		-30.3	24	2605	17 18 40
17 33 10	---	09 58 19	39.1	128.7	-2.6		-28.7	870	2717	17 18 41
17 33 40	M87	09 58 49	39.1	128.8	-2.5		-28.6	24	2717	17 33 40
17 48 10	---	10 13 21	40.8	132.9	-2.3		-26.8	870	2828	17 33 41
17 48 40	M87	10 13 51	40.8	133.0	-2.3		-26.7	24	2828	17 48 40
18 03 10	---	10 28 24	42.4	137.3	-2.1		-24.6	870	2940	17 48 41
18 03 40	M87	10 28 54	42.4	137.5	-2.0		-24.5	24	2940	18 03 40
18 18 10	---	10 43 26	43.8	141.9	-1.8		-22.3	870	3051	18 03 41
18 18 40	M87	10 43 56	43.9	142.1	-1.8		-22.2	24	3051	18 18 40
18 33 10	---	10 58 28	45.2	146.7	-1.6		-19.7	870	3163	18 18 41
18 33 40	M87	10 58 59	45.2	146.9	-1.5		-19.6	24	3163	18 33 40
18 48 10	---	11 13 31	46.3	151.7	-1.3		-16.9	870	3274	18 33 41

```
-----
```

Schedule for TORUN (Code Tr )

Page 5

e-EVN: eh033, eb061

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 May 2017 Day 129 ---										
18 48 40	M87	11 14 01	46.4	151.9	-1.3		-16.8	24	3274	18 48 40
19 03 10	---	11 28 33	47.3	156.9	-1.1		-13.9	870	3386	18 48 41
19 03 40	M87	11 29 03	47.3	157.1	-1.0		-13.8	24	3386	19 03 40
19 18 10	---	11 43 36	48.1	162.3	-0.8		-10.8	870	3497	19 03 41
19 18 40	M87	11 44 06	48.1	162.4	-0.8		-10.7	24	3497	19 18 40
19 33 10	---	11 58 38	48.7	167.7	-0.6		-7.5	870	3609	19 18 41
19 33 40	M87	11 59 08	48.7	167.9	-0.5		-7.4	24	3609	19 33 40
19 48 10	---	12 13 41	49.0	173.3	-0.3		-4.1	870	3721	19 33 41
19 48 40	M87	12 14 11	49.1	173.5	-0.3		-4.0	24	3721	19 48 40
20 03 10	---	12 28 43	49.2	178.9	-0.0		-0.7	870	3832	19 48 41
20 03 40	M87	12 29 13	49.2	179.1	-0.0		-0.6	24	3832	20 03 40
20 18 10	---	12 43 46	49.1	184.5	0.2		2.8	870	3944	20 03 41
20 21 20	0Q208	12 46 56	61.1	141.0	-1.3		-25.5	87	3944	20 21 20
20 33 20	---	12 58 58	62.2	146.1	-1.1		-22.4	720	4036	20 21 21
20 36 40	M87	13 02 19	48.7	191.4	0.5		7.0	96	4036	20 36 40
20 48 40	---	13 14 21	48.3	195.8	0.7		9.6	720	4128	20 36 41
20 49 10	M87	13 14 51	48.3	196.0	0.7		9.7	24	4128	20 49 10
21 03 40	---	13 29 23	47.6	201.2	1.0		12.8	870	4240	20 49 11
21 04 10	M87	13 29 53	47.6	201.3	1.0		12.9	24	4240	21 04 10
21 18 40	---	13 44 26	46.7	206.4	1.2		15.9	870	4351	21 04 11
21 19 10	M87	13 44 56	46.7	206.6	1.2		16.0	24	4351	21 19 10
21 33 40	---	13 59 28	45.6	211.5	1.5		18.7	870	4463	21 19 11
21 34 10	M87	13 59 58	45.6	211.6	1.5		18.8	24	4463	21 34 10
21 48 40	---	14 14 31	44.3	216.3	1.7		21.4	870	4574	21 34 11
21 49 10	M87	14 15 01	44.3	216.5	1.7		21.4	24	4574	21 49 10
22 03 40	---	14 29 33	42.9	221.0	2.0		23.8	870	4686	21 49 11
22 04 10	M87	14 30 03	42.9	221.2	2.0		23.9	24	4686	22 04 10
22 18 40	---	14 44 35	41.4	225.5	2.2		26.0	870	4797	22 04 11
22 19 10	M87	14 45 06	41.3	225.7	2.2		26.1	24	4797	22 19 10
22 33 40	---	14 59 38	39.7	229.8	2.5		28.0	870	4909	22 19 11

Schedule for TORUN (Code Tr )

Page 6

e-EVN: eh033, eb061

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 May 2017 Day 129 ---										
22 34 10	M87	15 00 08	39.7	230.0	2.5		28.1	24	4909	22 34 10
22 48 40	---	15 14 40	37.9	234.0	2.7		29.8	870	5020	22 34 11
22 49 10	M87	15 15 10	37.9	234.1	2.7		29.9	24	5020	22 49 10
23 03 40	---	15 29 43	36.1	237.9	3.0		31.4	870	5132	22 49 11
23 04 10	M87	15 30 13	36.0	238.0	3.0		31.4	24	5132	23 04 10
23 18 40	---	15 44 45	34.1	241.7	3.2		32.8	870	5244	23 04 11
23 19 10	M87	15 45 15	34.1	241.8	3.2		32.8	24	5244	23 19 10
23 33 40	---	15 59 48	32.1	245.4	3.5		34.0	870	5355	23 19 11
23 34 10	M87	16 00 18	32.0	245.5	3.5		34.0	24	5355	23 34 10
23 48 40	---	16 14 50	30.0	248.9	3.7		35.0	870	5467	23 34 11
-----										
--- Start: Tue 9 May 2017 Day 129 -- Stop: Wed 10 May 2017 Day 130 ---										
23 49 10	M87	16 15 20	29.9	249.0	3.7		35.0	24	5467	23 49 10
00 03 40	---	16 29 53	27.9	252.3	4.0		35.8	870	5578	23 49 11
00 04 10	M87	16 30 23	27.8	252.5	4.0		35.9	24	5578	00 04 10
00 18 40	---	16 44 55	25.7	255.7	4.2		36.5	870	5690	00 04 11
00 20 40	1156+295	16 46 56	33.7	275.0	4.8		43.2	67	5690	00 20 40
00 32 40	---	16 58 57	31.9	277.3	5.0		43.0	720	5782	00 20 41
00 34 40	M87	17 00 58	23.4	259.1	4.5		37.1	68	5782	00 34 40
00 45 40	---	17 12 00	21.7	261.4	4.7		37.4	660	5867	00 34 41
00 46 00	M87	17 12 20	21.7	261.5	4.7		37.4	14	5867	00 46 00
01 00 40	---	17 27 02	19.5	264.5	4.9		37.7	880	5979	00 46 01
01 01 00	M87	17 27 22	19.4	264.6	4.9		37.7	14	5979	01 01 00
01 15 40	---	17 42 05	17.2	267.6	5.2		37.9	880	6092	01 01 01
01 16 00	M87	17 42 25	17.2	267.7	5.2		37.9	14	6092	01 16 00
01 30 40	---	17 57 07	15.0	270.6	5.4		37.9	880	6205	01 16 01
01 31 00	M87	17 57 27	14.9	270.7	5.4		37.9	14	6205	01 31 00
01 45 40	---	18 12 09	12.7	273.6	5.7		37.8	880	6318	01 31 01
01 46 00	M87	18 12 30	12.7	273.7	5.7		37.8	14	6318	01 46 00
02 00 40	---	18 27 12	10.5	276.6	5.9		37.6	880	6431	01 46 01

Schedule for TORUN (Code Tr )

Page 7

e-EVN: eh033, eb061

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 10 May 2017 Day 130 ---										
02 01 00	M87	18 27 32	10.4	276.6	5.9		37.6	14	6431	02 01 00
02 15 40	---	18 42 14	8.2	279.5	6.2		37.3	880	6544	02 01 01
02 16 00	M87	18 42 34	8.2	279.6	6.2		37.3	14	6544	02 16 00
02 27 10	---	18 53 46	6.5	281.8	6.4		37.0	670	6629	02 16 01
----- EB061 -----										
02 30 00	J1733-1304	18 56 37	21.5	201.7	1.4		13.2	-5	6629	02 30 00
02 34 00	=NRA0530	19 00 37	21.3	202.7	1.4		13.8	235	6660	02 30 01
02 35 30	G019.36-0.03	19 02 08	24.4	189.3	0.6		5.7	48	6660	02 35 30
02 46 30	---	19 13 09	24.1	192.3	0.8		7.5	660	6745	02 35 31
02 47 00	G019.36-0.03	19 13 40	24.1	192.4	0.8		7.6	24	6745	02 47 00
02 57 30	---	19 24 11	23.7	195.2	0.9		9.3	630	6826	02 47 01
02 58 20	G023.02-0.42	19 25 01	27.0	193.7	0.8		8.3	24	6826	02 58 20
03 09 20	---	19 36 03	26.6	196.7	1.0		10.1	660	6910	02 58 21
03 09 50	G023.02-0.42	19 36 33	26.6	196.9	1.0		10.2	24	6910	03 09 50
03 20 20	---	19 47 05	26.1	199.7	1.2		11.8	630	6991	03 09 51
03 21 00	G024.94+0.07	19 47 45	28.0	199.9	1.2		11.9	19	6991	03 21 00
03 32 00	---	19 58 47	27.4	202.9	1.4		13.6	660	7076	03 21 01
03 32 30	G024.94+0.07	19 59 17	27.3	203.0	1.4		13.7	24	7076	03 32 30
03 43 00	---	20 09 49	26.7	205.9	1.5		15.3	630	7156	03 32 31
03 43 50	G028.83-0.25	20 10 39	30.4	204.8	1.4		14.6	22	7156	03 43 50
03 54 50	---	20 21 41	29.7	207.8	1.6		16.3	660	7241	03 43 51
03 55 20	G028.83-0.25	20 22 11	29.6	208.0	1.6		16.4	24	7241	03 55 20
04 05 50	---	20 32 43	28.9	210.8	1.8		18.0	630	7322	03 55 21
04 06 40	G034.40+0.23	20 33 33	34.3	210.6	1.7		17.8	16	7322	04 06 40
04 17 40	---	20 44 34	33.4	213.7	1.8		19.5	660	7406	04 06 41
04 18 10	G034.40+0.23	20 45 05	33.4	213.8	1.8		19.5	24	7406	04 18 10
04 28 40	---	20 55 36	32.5	216.8	2.0		21.1	630	7487	04 18 11
04 29 20	G035.03+0.35	20 56 16	33.1	217.1	2.0		21.2	25	7487	04 29 20
04 40 20	---	21 07 18	32.1	220.1	2.2		22.8	660	7572	04 29 21

Schedule for TORUN (Code Tr )

Page 8

e-EVN: eh033, eb061

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 10 May 2017  Day 130 ---

04 40 50 G035.03+0.35 21 07 48 32.0 220.2 2.2      22.8   24   7572 04 40 50
04 51 20 ---          21 18 20 31.0 223.1 2.4      24.2  630   7653 04 40 51

04 52 00 G035.20-0.74 21 19 00 31.0 222.0 2.3      23.7   25   7653 04 52 00
05 03 00 ---          21 30 02 29.9 224.9 2.5      25.1  660   7737 04 52 01

05 03 30 G035.20-0.74 21 30 32 29.8 225.0 2.5      25.1   24   7737 05 03 30
05 14 00 ---          21 41 04 28.7 227.7 2.7      26.4  630   7818 05 03 31

05 15 00 G043.04-0.45 21 42 04 36.4 228.2 2.5      27.0   17   7818 05 15 00
05 26 00 ---          21 53 06 35.2 231.2 2.7      28.3  660   7903 05 15 01

05 26 30 G043.04-0.45 21 53 36 35.1 231.4 2.7      28.3   24   7903 05 26 30
05 37 00 ---          22 04 07 33.9 234.1 2.9      29.5  630   7983 05 26 31

05 37 50 G045.47+0.07 22 04 58 36.2 235.1 2.8      30.1   27   7983 05 37 50
05 48 50 ---          22 15 59 34.8 237.9 3.0      31.2  660   8068 05 37 51

05 49 20 G045.47+0.07 22 16 30 34.7 238.0 3.0      31.3   24   8068 05 49 20
05 59 50 ---          22 27 01 33.4 240.7 3.2      32.3  630   8149 05 49 21

06 00 30 G045.47+0.13 22 27 41 33.3 241.0 3.2      32.4   32   8149 06 00 30
06 11 30 ---          22 38 43 31.8 243.7 3.4      33.3  660   8233 06 00 31

06 12 00 G045.47+0.13 22 39 13 31.7 243.8 3.4      33.3   24   8233 06 12 00
06 22 30 ---          22 49 45 30.3 246.3 3.6      34.1  630   8314 06 12 01

06 25 00 J2101+0341 22 52 15 35.7 214.5 1.8      19.9   71   8314 06 25 00
06 30 00 =2059+034 22 57 16 35.3 215.9 1.9      20.7  300   8353 06 25 01

```

## SETUP FILE INFORMATION:

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

==== Setup file: sess117.L1024e

```

Setup group:      8          Station: TORUN          Total bit rate: 1024
Format: MARK5B    Bits per sample: 2     Sample rate: 32.000
Number of channels: 16  DBE type: DBBC_DDC  Speedup factor: 1.00

```

Disk used to record data.



1st LO=	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
Net SB=	L	L	U	U	L	L	U	U	U
	L	L	U	U	L	L	U	U	U
IF SB =	L	L	L	L	L	L	L	L	L
	L	L	L	L	L	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP	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=	U	U	L	L	U	U	L	L	L
	U	U	L	L	U	U	L	L	L
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: 6 Setup file default. Used with PCAL = off

LO sum=	1604.22	1604.22	1604.22	1604.22	1642.36	1642.36	1642.36	1642.36
	1674.36	1674.36	1674.36	1674.36	1706.36	1706.36	1706.36	1706.36
BBC fr=	695.78	695.78	695.78	695.78	657.64	657.64	657.64	657.64
	625.64	625.64	625.64	625.64	593.64	593.64	593.64	593.64
Bandwd=	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00

Matching frequency sets: 6

Track assignments are:

track1= 2, 10, 18, 26, 4, 12, 20, 28, 6, 14, 22, 30, 8, 16, 24, 32

barrel=roll\_off

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(Date)	Error (mas)
* G019.36-0.03	18 23 37.797345 -12 05 46.15085	* 18 26 25.800000 -12 03 56.90000	18 27 24.299224 -12 03 10.98395 0.00 0.00
* G023.02-0.42	18 31 57.904611 -09 03 06.27008	* 18 34 42.200000 *-09 00 41.00000	18 35 39.382129 -08 59 43.56507 0.00 0.00
* G024.94+0.07	18 33 39.869208 -07 10 45.53975	* 18 36 21.950000 *-07 08 13.00000	18 37 18.364210 -07 07 13.60697 0.00 0.00
* G028.83-0.25	18 42 12.491148 -03 49 13.00940	* 18 44 50.630000 *-03 46 03.80000	18 45 45.653478 -03 44 52.82752 0.00 0.00
* G034.40+0.23	18 50 45.640326 01 16 10.91323	* 18 53 17.950000 * 01 19 56.50000	18 54 10.945826 01 21 18.39918 0.00 0.00
* G035.03+0.35	18 51 29.476378 01 57 43.32975	* 18 54 01.000000 * 02 01 32.00000	18 54 53.725135 02 02 54.74813 0.00 0.00
* G035.20-0.74	18 55 41.068782 01 36 29.50299	* 18 58 13.000000 * 01 40 36.00000	18 59 05.843682 01 42 04.90810 0.00 0.00
* G043.04-0.45	19 09 14.795773 08 41 34.76802	* 19 11 38.800000 * 08 46 38.00000	19 12 28.894106 08 48 24.07340 0.00 0.00

* G045.47+0.07	19 12 04.374269	* 19 14 25.700000	19 15 14.876703	0.00
	11 04 22.10737	* 11 09 37.00000	11 11 26.32970	0.00
* G045.47+0.13	19 11 45.960987	* 19 14 07.230000	19 14 56.388950	0.00
	11 07 02.98351	* 11 12 16.60000	11 14 05.48657	0.00
0748+126	07 48 05.060495	* 07 50 52.045733	07 51 48.692796	0.00
* J0750+1231	12 38 45.47758	* 12 31 04.82825	12 28 15.91860	0.00
J0750+12	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc GSFC 2015a astro solution, unpublished 32130 observations.			
* 1156+295	11 56 57.786211	* 11 59 31.833912	12 00 25.213521	0.00
J1159+2914	29 31 25.73882	* 29 14 43.82692	29 09 02.83867	0.00
J1159+29	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc GSFC 2015a astro solution, unpublished 69878 observations.			
3C274	12 28 17.569280	* 12 30 49.423382	12 31 42.334143	0.00
J1230+1223	12 40 01.74898	* 12 23 28.04381	12 17 46.25013	0.00
1228+126	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc			
J1230+12	GSFC 2015a astro solution, unpublished 56195 observations.			
* M87				
* OQ208	14 04 45.615156	* 14 07 00.394414	14 07 47.740289	0.24
J1407+2827	28 41 29.23518	* 28 27 14.69022	28 22 25.26163	0.34
1404+286	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc			
J1407+28	GSFC 2015a astro solution, unpublished 67871 observations.			
NRA0530	17 30 13.535189	* 17 33 02.705787	17 34 01.863059	0.01
* J1733-1304	-13 02 45.83964	*-13 04 49.54811	-13 05 24.01689	0.02
1730-130	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc			
J1733-13	GSFC 2015a astro solution, unpublished 17155 observations.			
2059+034	20 59 08.011539	* 21 01 38.834158	21 02 30.656974	0.01
* J2101+0341	03 29 41.48361	* 03 41 31.32086	03 45 35.49620	0.01
J2101+03	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc GSFC 2015a astro solution, unpublished 15007 observations.			
3C454.3	22 51 29.519738	* 22 53 57.747938	22 54 48.215197	0.67
* J2253+1608	15 52 54.34810	* 16 08 53.56093	16 14 15.30148	0.70
2251+158	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc			
J2253+16	GSFC 2015a astro solution, unpublished 40748 observations.			

#### EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
G019.36-0.03	131.6
G023.02-0.42	128.9
G024.94+0.07	128.0
G028.83-0.25	124.9
G034.40+0.23	121.2
G035.03+0.35	120.8
G035.20-0.74	119.9
G043.04-0.45	114.1
G045.47+0.07	112.5
G045.47+0.13	112.5
J0750+1231	68.4
1156+295	115.0
M87	131.2
OQ208	131.8

J1733-1304	144.5
J2101+0341	90.1
J2253+1608	60.2

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

## 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 =&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 LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
-----										
--- Thu 11 May 2017 Day 131 ---										
Next scan frequencies:		4778.49	4778.49	4778.49	4778.49	4850.49	4850.49	4850.49	4850.49	
		4922.49	4922.49	4922.49	4922.49	4994.49	4994.49	4994.49	4994.49	
Next BBC frequencies:		578.49	578.49	578.49	578.49	650.49	650.49	650.49	650.49	
		722.49	722.49	722.49	722.49	794.49	794.49	794.49	794.49	
Next scan bandwidths:		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
-----										
06 00 00	J010914+2400	22 31 08	48.4	118.4	-2.7	-35.3	0	0	06 00 00	
06 08 57	---	22 40 06	49.6	121.0	-2.5	-34.3	537	69	06 00 01	
06 09 47	J012811+3324	22 40 56	54.4	106.3	-2.8	-43.7	6	69	06 09 47	
06 18 44	---	22 49 55	55.7	108.7	-2.7	-43.0	537	138	06 09 48	
06 19 09	J012943+3436	22 50 20	56.4	106.9	-2.7	-44.3	8	138	06 19 09	
06 28 06	---	22 59 18	57.7	109.4	-2.5	-43.6	537	207	06 19 10	
06 28 56	J012826+4404	23 00 09	64.1	95.0	-2.5	-56.5	6	207	06 28 56	
06 37 53	---	23 09 07	65.5	97.1	-2.3	-56.2	537	275	06 28 57	
06 38 33	J014559+4605	23 09 47	64.0	89.4	-2.6	-60.1	10	275	06 38 33	
06 47 30	---	23 18 46	65.3	91.2	-2.5	-60.1	537	344	06 38 34	
06 48 10	J015043+4850	23 19 26	66.0	84.5	-2.5	-65.5	11	344	06 48 10	
06 57 07	---	23 28 24	67.3	86.0	-2.4	-65.8	537	413	06 48 11	
06 58 37	J020955+2521	23 29 54	49.2	116.7	-2.7	-36.4	8	413	06 58 37	
07 07 34	---	23 38 53	50.4	119.2	-2.5	-35.5	537	482	06 58 38	
07 07 54	J021002+2517	23 39 13	50.4	119.4	-2.5	-35.4	12	482	07 07 54	
07 16 51	---	23 48 11	51.6	122.0	-2.4	-34.3	537	551	07 07 55	
07 17 28	J0237+2848	23 48 49	50.7	110.9	-2.8	-39.8	0	551	07 17 28	
07 22 28	=0234+285	23 53 50	51.4	112.3	-2.8	-39.4	300	589	07 17 29	
07 23 08	J022631+2311	23 54 30	48.5	120.9	-2.5	-34.1	8	589	07 23 08	
07 32 05	---	00 03 28	49.7	123.5	-2.4	-33.0	537	658	07 23 09	
07 33 05	J023308+3742	00 04 28	60.1	105.6	-2.5	-47.0	7	658	07 33 05	
07 42 02	---	00 13 27	61.4	108.1	-2.3	-46.2	537	727	07 33 06	
07 43 07	J031905+4146	00 14 32	57.3	91.1	-3.1	-53.7	16	727	07 43 07	
07 52 04	---	00 23 30	58.7	93.0	-2.9	-53.6	537	796	07 43 08	

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	
-----											
---	Thu 11 May 2017	Day 131					---				
07 54 49	J035830+7649	00 26 16	59.3	21.0	-3.6		-108.9	6	796	07 54 49	
08 03 46	---	00 35 14	59.8	20.6	-3.4		-111.4	537	865	07 54 50	
08 04 31	J022734+8206	00 35 59	59.8	7.4	-1.9		-145.3	4	865	08 04 31	
08 13 28	---	00 44 58	59.9	6.9	-1.8		-148.0	537	933	08 04 32	
08 16 48	J041208+3333	00 48 18	49.1	97.4	-3.4		-45.6	4	933	08 16 48	
08 25 45	---	00 57 17	50.4	99.5	-3.3		-45.3	537	1002	08 16 49	
08 26 25	J040203+2737	00 57 57	47.6	108.2	-3.1		-40.1	8	1002	08 26 25	
08 35 22	---	01 06 56	48.9	110.5	-2.9		-39.4	537	1071	08 26 26	
08 36 02	J041602+3206	01 07 36	50.3	102.6	-3.2		-43.8	9	1071	08 36 02	
08 44 59	---	01 16 34	51.6	104.8	-3.0		-43.3	537	1140	08 36 03	
08 46 08	J0319+4130	01 17 44	66.4	106.8	-2.1		-50.2	0	1140	08 46 08	
08 51 08	=3C84	01 22 44	67.1	108.3	-2.0		-49.6	300	1178	08 46 09	
08 52 23	J041809+3411	01 24 00	53.9	103.7	-2.9		-44.9	11	1178	08 52 23	
09 01 20	---	01 32 58	55.2	106.0	-2.8		-44.3	537	1247	08 52 24	
09 01 45	J041815+3210	01 33 23	53.8	108.4	-2.8		-42.3	6	1247	09 01 45	
09 10 42	---	01 42 22	55.1	110.8	-2.6		-41.5	537	1316	09 01 46	
09 11 07	J042531+3125	01 42 47	53.5	109.8	-2.7		-41.5	6	1316	09 11 07	
09 20 04	---	01 51 45	54.8	112.3	-2.6		-40.6	537	1385	09 11 08	
09 20 24	J042612+3120	01 52 05	54.7	112.3	-2.6		-40.6	11	1385	09 20 24	
09 29 21	---	02 01 04	55.9	114.9	-2.4		-39.7	537	1454	09 20 25	
09 29 46	J042616+3120	02 01 29	56.0	115.0	-2.4		-39.6	19	1454	09 29 46	
09 38 43	---	02 10 27	57.2	117.7	-2.3		-38.5	537	1523	09 29 47	
09 39 28	J043950+2555	02 11 12	51.2	119.4	-2.5		-35.6	8	1523	09 39 28	
09 48 25	---	02 20 11	52.3	122.1	-2.3		-34.5	537	1592	09 39 29	
09 51 05	J044240+6140	02 22 51	69.4	51.3	-2.4		-98.6	3	1592	09 51 05	
10 00 02	---	02 31 50	70.5	50.8	-2.2		-101.0	537	1660	09 51 06	
10 02 42	J2005+7752	02 34 30	50.0	-18.8	6.5		67.8	6	1660	10 02 42	
10 07 42	=2007+777	02 39 31	49.7	-18.7	6.6		66.7	300	1699	10 02 43	
10 08 22	J214514+7711	02 40 11	54.8	-21.5	4.9		88.8	7	1699	10 08 22	
10 17 19	---	02 49 10	54.3	-21.5	5.1		86.6	537	1768	10 08 23	
10 17 59	J215612+7145	02 49 50	54.4	-30.9	4.9		81.5	6	1768	10 17 59	
10 26 56	---	02 58 48	53.7	-30.7	5.0		79.6	537	1837	10 18 00	

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
-----
--- Thu 11 May 2017  Day 131 ---

10 27 46 J211030+6405 02 59 38 47.1 -39.8 5.8      61.8   11   1837  10 27 46
10 36 43 ---          03 08 37 46.2 -39.1 6.0      60.2   537   1905  10 27 47

10 37 58 J225358+8153 03 09 52 56.0 -12.9 4.3      105.5   8   1905  10 37 58
10 46 55 ---          03 18 50 55.7 -13.1 4.4      103.2  537   1974  10 37 59

10 56 22 J2253+1608 03 28 18 25.9 262.7 4.6      38.3    0   1974  10 56 22
11 01 22 =3C454.3 03 33 19 25.1 263.7 4.6      38.4   300   2013  10 56 23

11 02 52 J225355+4308 03 34 49 44.2 287.2 4.7      51.9    4   2013  11 02 52
11 11 49 ---          03 43 48 42.9 288.6 4.8      51.3   537   2082  11 02 53

11 12 04 J225355+4304 03 44 03 42.8 288.6 4.8      51.3    8   2082  11 12 04
11 21 01 ---          03 53 01 41.6 290.0 5.0      50.7   537   2150  11 12 05

11 22 01 J220847+3720 03 54 02 31.2 292.1 5.7      44.5    7   2150  11 22 01
11 30 58 ---          04 03 00 30.0 293.6 5.9      43.9   537   2219  11 22 02

11 31 48 J222839+2211 04 03 50 21.4 279.0 5.6      39.9    4   2219  11 31 48
11 40 45 ---          04 12 49 20.1 280.7 5.7      39.6   537   2288  11 31 49

11 41 25 J223015+2753 04 13 29 24.6 284.5 5.7      41.2    9   2288  11 41 25
11 50 22 ---          04 22 27 23.3 286.1 5.9      40.8   537   2357  11 41 26

11 51 12 J223626+3707 04 23 17 30.8 292.2 5.8      44.3    8   2357  11 51 12
12 00 09 ---          04 32 16 29.6 293.7 5.9      43.7   537   2426  11 51 13

```

## 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=	4778.49	4778.49	4778.49	4778.49	4850.49	4850.49	4850.49	4850.49
	4922.49	4922.49	4922.49	4922.49	4994.49	4994.49	4994.49	4994.49
BBC fr=	578.49	578.49	578.49	578.49	650.49	650.49	650.49	650.49
	722.49	722.49	722.49	722.49	794.49	794.49	794.49	794.49
Bandwd=	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00

Matching frequency sets: 3

Track assignments are:

track1= 18, 26, 2, 10, 20, 28, 4, 12, 22, 30, 6, 14, 24, 32, 8, 16

barrel=roll\_off

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
* J010914+2400	01 06 32.254383	* 01 09 14.650000	01 10 09.508373	0.00
	23 44 35.52814	* 24 00 33.90000	24 05 50.12117	0.00
* J012811+3324	01 25 21.719467	* 01 28 11.690000	01 29 09.117957	0.00
	33 09 01.61160	* 33 24 32.60000	33 29 38.11634	0.00
* J012826+4404	01 25 28.430495	* 01 28 26.040000	01 29 26.097009	0.00
	43 48 59.64757	* 44 04 30.30000	44 09 34.85516	0.00
* J012943+3436	01 26 52.351929	* 01 29 43.360000	01 30 41.141006	0.00
	34 21 31.09359	* 34 36 59.60000	34 42 04.14760	0.00
* J014559+4605	01 42 55.362874	* 01 45 59.530000	01 47 01.755360	0.00
	45 50 09.38503	* 46 05 09.00000	46 10 02.93493	0.00
* J015043+4850	01 47 34.866804	* 01 50 43.520000	01 51 47.251570	0.00
	48 36 09.32137	* 48 50 59.70000	48 55 50.41536	0.00
* J020955+2521	02 07 05.032606	* 02 09 55.540000	02 10 52.995397	0.00
	25 07 31.42495	* 25 21 40.00000	25 26 17.69356	0.00
* J021002+2517	02 07 12.092502	* 02 10 02.560000	02 11 00.001186	0.00
	25 03 17.29749	* 25 17 25.60000	25 22 03.20419	0.00

* J022631+2311	02 23 40.722680 22 57 57.28962	* 02 26 31.320000 * 23 11 25.10000	02 27 28.758064 23 15 48.83732	0.00 0.00
* J022734+8206	02 20 21.506836 81 53 00.73281	* 02 27 34.430000 * 82 06 31.30000	02 30 01.486690 82 10 54.43914	0.00 0.00
* J023308+3742	02 30 02.665415 37 28 50.66632	* 02 33 08.010000 * 37 42 01.30000	02 34 10.492270 37 46 18.62844	0.00 0.00
* J031905+4146	03 15 46.123911 41 35 33.91688	* 03 19 05.010000 * 41 46 26.50000	03 20 11.987109 41 49 57.26207	0.00 0.00
* J035830+7649	03 51 53.907854 76 40 47.27349	* 03 58 30.330000 * 76 49 26.20000	04 00 43.382340 76 52 12.91010	0.00 0.00
* J040203+2737	03 58 59.279355 27 28 55.58546	* 04 02 03.250000 * 27 37 14.60000	04 03 05.132231 27 39 52.79059	0.00 0.00
* J041208+3333	04 08 55.379448 33 25 35.42112	* 04 12 08.380000 * 33 33 16.00000	04 13 13.316703 33 35 41.64153	0.00 0.00
* J041602+3206	04 12 51.767272 31 58 48.42157	* 04 16 02.970000 * 32 06 13.70000	04 17 07.297795 32 08 34.05484	0.00 0.00
* J041809+3411	04 14 55.484674 34 04 18.22985	* 04 18 09.980000 * 34 11 35.30000	04 19 15.419243 34 13 53.07248	0.00 0.00
* J041815+3210	04 15 04.262810 32 03 16.60024	* 04 18 15.750000 * 32 10 33.20000	04 19 20.173346 32 12 50.63189	0.00 0.00
* J042531+3125	04 22 20.660965 31 18 21.71522	* 04 25 31.600000 * 31 25 09.50000	04 26 35.836868 31 27 17.13555	0.00 0.00
* J042612+3120	04 23 01.476277 31 14 06.23151	* 04 26 12.360000 * 31 20 51.30000	04 27 16.578123 31 22 58.01170	0.00 0.00
* J042616+3120	04 23 05.887666 31 14 14.62583	* 04 26 16.780000 * 31 20 59.40000	04 27 21.001027 31 23 06.01260	0.00 0.00
* J043950+2555	04 36 45.987639 25 50 04.92932	* 04 39 50.110000 * 25 55 54.60000	04 40 52.041777 25 57 42.00327	0.00 0.00
* J044240+6140	04 38 10.708024 61 35 00.55234	* 04 42 40.770000 * 61 40 41.40000	04 44 11.422678 61 42 29.49248	0.00 0.00
* J211030+6405	21 09 29.207138 63 53 17.12164	* 21 10 30.510000 * 64 05 35.80000	21 10 52.498609 64 09 35.53966	0.00 0.00
* J214514+7711	21 45 22.340371 76 57 59.72366	* 21 45 14.670000 * 77 11 53.50000	21 45 12.863817 77 16 23.77757	0.00 0.00
* J215612+7145	21 55 22.658440 71 31 01.89293	* 21 56 12.660000 * 71 45 20.20000	21 56 30.521769 71 49 59.16968	0.00 0.00
* J220847+3720	22 06 37.759984 37 05 19.39830	* 22 08 47.670000 * 37 20 03.50000	22 09 32.350567 37 24 55.73825	0.00 0.00
* J222839+2211	22 26 16.398574 21 56 03.02635	* 22 28 39.540000 * 22 11 24.50000	22 29 28.498927 22 16 32.68610	0.00 0.00
* J223015+2753	22 27 55.250094 27 38 17.98865	* 22 30 15.440000 * 27 53 42.20000	22 31 03.434366 27 58 49.77824	0.00 0.00
* J223626+3707	22 34 10.776316	* 22 36 26.380000	22 37 12.858990	0.00



	36 51 38.76542	* 37 07 13.10000	37 12 21.85378	0.00
* J225355+4308	22 51 39.571571	* 22 53 55.340000	22 54 41.835654	0.00
	42 52 14.43529	* 43 08 13.60000	43 13 29.31645	0.00
* J225355+4304	22 51 40.040396	* 22 53 55.850000	22 54 42.359159	0.00
	42 48 31.02472	* 43 04 30.20000	43 09 45.93057	0.00
* J225358+8153	22 53 35.507847	* 22 53 58.010000	22 54 05.150458	0.00
	81 37 09.89467	* 81 53 10.20000	81 58 23.27592	0.00
0234+285	02 34 55.589590	* 02 37 52.405677	02 38 51.960211	0.00
* J0237+2848	28 35 11.40776	* 28 48 08.99001	28 52 22.10190	0.00
J0237+28	/Users/mgirolet/sched/catalogs/sources.gsfc			
	GSFC 2015a astro solution, unpublished 54650 observations.			
3C84	03 16 29.567263	* 03 19 48.160094	03 20 55.037099	1.30
* J0319+4130	41 19 51.91701	* 41 30 42.10413	41 34 12.05241	2.69
0316+413	/Users/mgirolet/sched/catalogs/sources.gsfc			
J0319+41	GSFC 2015a astro solution, unpublished 10208 observations.			
2007+777	20 07 20.430197	* 20 05 30.998526	20 04 55.936311	0.03
* J2005+7752	77 43 58.12302	* 77 52 43.24755	77 55 29.79783	0.01
J2005+77	/Users/mgirolet/sched/catalogs/sources.gsfc			
	GSFC 2015a astro solution, unpublished 15597 observations.			
3C454.3	22 51 29.519738	* 22 53 57.747938	22 54 48.264610	0.67
* J2253+1608	15 52 54.34810	* 16 08 53.56093	16 14 15.50585	0.70
2251+158	/Users/mgirolet/sched/catalogs/sources.gsfc			
J2253+16	GSFC 2015a astro solution, unpublished 40748 observations.			

#### EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
J010914+2400	29.4
J012811+3324	28.1
J012826+4404	34.1
J012943+3436	28.4
J014559+4605	33.4
J015043+4850	35.1
J020955+2521	16.4
J021002+2517	16.3
J022631+2311	12.0
J022734+8206	64.4
J023308+3742	21.6
J031905+4146	23.9
J035830+7649	59.2
J040203+2737	14.9
J041208+3333	20.5
J041602+3206	20.1
J041809+3411	21.9
J041815+3210	20.5
J042531+3125	21.3
J042612+3120	21.4
J042616+3120	21.4
J043950+2555	21.7
J044240+6140	46.5
J211030+6405	74.2
J214514+7711	70.8

J215612+7145	69.6
J220847+3720	68.3
J222839+2211	66.3
J223015+2753	65.0
J223626+3707	62.8
J225355+4308	59.5
J225355+4304	59.5
J225358+8153	68.8
J0237+2848	13.5
J0319+4130	23.6
J2005+7752	75.9
J2253+1608	61.6

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

**rk16qmr**

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 May 2017 Day 133 ---

----- 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

00 00 00	1040+244	16 38 02	19.9 -76.1	5.9	39.7	0	0	00 00 00
00 09 30	---	16 47 33	18.5 -74.3	6.1	39.3	570	18	00 00 01
00 10 00	1040+244	16 48 03	18.4 -74.3	6.1	39.3	24	18	00 10 00
00 19 30	---	16 57 35	17.1 -72.5	6.2	38.8	570	36	00 10 01
00 20 00	1040+244	16 58 05	17.0 -72.4	6.2	38.8	24	36	00 20 00
00 29 30	---	17 07 37	15.6 -70.6	6.4	38.3	570	55	00 20 01
00 30 00	1040+244	17 08 07	15.6 -70.5	6.4	38.3	24	55	00 30 00
00 40 00	---	17 18 08	14.2 -68.7	6.6	37.8	600	74	00 30 01

SETUP FILE INFORMATION:

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

=====  
Setup file: ra18cm2.set

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

Disk used to record data.

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

The following frequency sets based on these setups were used.

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

Track assignments are:

track1= 2, 18, 3, 19  
 barrel=roll\_off

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(Date)	Error (mas)
* FAKERA	11 57 21.769299 * 12 00 00.000000	12 00 54.852557	0.00
	85 16 41.77889 * 85 00 00.000000	84 54 31.52135	0.00
	fake circumpolar target for a TS to look at		
* 1040+244	10 40 25.199377 * 10 43 09.035778	10 44 05.335524	0.00
J1043+2408	24 24 19.59847 * 24 08 35.40933	24 03 10.90596	0.00
	./rk16qm_sources.radioastron AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 7417 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)
1040+244	100.5

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:  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 54.701044	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 31.63058	0.00
	fake circumpolar target for a TS to look at			
* 1101+384	11 01 40.567856	* 11 04 27.313945	11 05 24.563511	0.00
J1104+3812	38 28 42.95187	* 38 12 31.79894	38 07 03.24699	0.00
MRK421	./rk16qn_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 17168 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)
1101+384    97.2

```

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

```

rk16qotr

RADIOASTRON AGN MONITORING

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

Schedule for TORUN (Code Tr ) Page 2  
 RadioAstron AGN Monitoring

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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 May 2017 Day 135 ---

----- 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 1101+384    18 46 15 17.0 -48.1 7.7      34.6    0        0  02 00 00
02 20 00 ---         19 06 18 14.8 -44.7 8.0      32.5 1200    38  02 00 01

02 20 30 1101+384    19 06 48 14.8 -44.6 8.0      32.4    24       38  02 20 30
02 40 00 ---         19 26 21 12.8 -41.2 8.3      30.2 1170    76  02 20 31

02 40 30 1101+384    19 26 51 12.7 -41.1 8.4      30.1    24       76  02 40 30
03 00 00 ---         19 46 24 10.9 -37.7 8.7      27.8 1170   113  02 40 31
```

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 54.448741	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 31.80910	0.00
	fake circumpolar target for a TS to look at			
* 1101+384	11 01 40.567856	* 11 04 27.313945	11 05 24.546747	0.00
J1104+3812	38 28 42.95187	* 38 12 31.79894	38 07 03.36785	0.00
MRK421	./rk16qo_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 17168 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)
1101+384	96.1

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



rk16qptr

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

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN Monitoring

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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 May 2017 Day 136 ---

----- 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						
14 00 00	1101+384	06 52 09	44.9	82.9	-4.2		-49.2	0	0	14 00 00
14 19 30	---	07 11 43	47.8	86.5	-3.9		-49.6	1170	37	14 00 01
14 20 00	1101+384	07 12 13	47.9	86.6	-3.9		-49.6	24	37	14 20 00
14 39 30	---	07 31 46	50.8	90.4	-3.6		-49.8	1170	75	14 20 01
14 40 00	1101+384	07 32 16	50.9	90.5	-3.6		-49.7	24	75	14 40 00
15 00 00	---	07 52 19	53.9	94.7	-3.2		-49.5	1200	113	14 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 54.178868	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 32.00558	0.00
	fake circumpolar target for a TS to look at			
* 1101+384	11 01 40.567856	* 11 04 27.313945	11 05 24.528214	0.00
J1104+3812	38 28 42.95187	* 38 12 31.79894	38 07 03.51037	0.00
MRK421	./rk16qp_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 17168 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)
1101+384    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

```



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 54.113209	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 32.05554	0.00
	fake circumpolar target for a TS to look at			
* 1040+244	10 40 25.199377	* 10 43 09.035778	10 44 05.295288	0.00
J1043+2408	24 24 19.59847	* 24 08 35.40933	24 03 11.18171	0.00
	./rk16qq_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 7417 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)
1040+244	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

**rk16qstr**

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

Schedule for TORUN                      (Code Tr )    Page     2  
   RadioAstron AGN Monitoring

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.     Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are 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 18 May 2017 Day 138 ---

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

Next scan frequencies:	22236.00	22236.00	22236.00	22236.00	22236.00				
Next BBC frequencies:	736.00	736.00	736.00	736.00	736.00				
Next scan bandwidths:	16.00	16.00	16.00	16.00	16.00				
15 00 00	1642+690	08 00 12	37.3	20.1	-8.7	-35.0	0	0	15 00 00
15 14 30	---	08 14 45	38.1	21.5	-8.5	-37.6	870	28	15 00 01
15 15 00	1642+690	08 15 15	38.1	21.5	-8.4	-37.7	25	28	15 15 00
15 29 30	---	08 29 47	38.9	22.8	-8.2	-40.3	870	56	15 15 01
15 30 00	1642+690	08 30 17	38.9	22.8	-8.2	-40.4	24	56	15 30 00
15 44 30	---	08 44 50	39.8	24.1	-8.0	-43.0	870	84	15 30 01
15 45 00	1642+690	08 45 20	39.8	24.1	-7.9	-43.1	24	84	15 45 00
16 00 00	---	09 00 22	40.8	25.4	-7.7	-45.7	900	112	15 45 01

SETUP FILE INFORMATION:

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

=====  
Setup file: ra1cm2.set  
Matching groups in ./rk16qs\_freq.dat:  
tr1cm

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

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

Frequency Set:  4  Setup file default.  Used with PCAL = 1MHz
LO sum= 22236.00 22236.00 22236.00 22236.00
BBC fr=  736.00  736.00  736.00  736.00
Bandwd=  16.00  16.00  16.00  16.00
Matching frequency sets:  4

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(Date)	Error (mas)	
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.823754	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 32.28819	0.00
	fake circumpolar target for a TS to look at			
* 1642+690	16 42 18.064877	* 16 42 07.848507	16 42 07.631729	0.00
J1642+6856	69 02 13.21708	* 68 56 39.75636	68 54 47.55336	0.00
	./rk16qs_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	90.7

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

rk16qttr

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

Schedule for TORUN (Code Tr ) Page 2
RadioAstron AGN Monitoring

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are 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 18 May 2017 Day 138 ---

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

Table with 12 columns: Start UT, Stop UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. It lists VLBI scan data for L-band, including next scan frequencies, BBC frequencies, and bandwidths, followed by a grid of scan parameters.

SETUP FILE INFORMATION:

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

==== Setup file: ra18cm2.set

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

Disk used to record data.

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

The following frequency sets based on these setups were used.

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

Track assignments are:

track1= 2, 18, 3, 19  
 barrel=roll\_off

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.764271	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 32.33805	0.00
	fake circumpolar target for a TS to look at			
* 1642+690	16 42 18.064877	* 16 42 07.848507	16 42 07.637277	0.00
J1642+6856	69 02 13.21708	* 68 56 39.75636	68 54 47.65358	0.00
	./rk16qt_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	90.7

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



**rk16qvtr**

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

Schedule for TORUN        (Code Tr )                              Page    2  
                                        RadioAstron AGN Monitoring

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are 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 20 May 2017 Day 140 ---

----- 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

12 00 00	1101+384	05 07 36	29.9	65.1	-6.0	-43.8	0	0	12 00 00
12 24 30	---	05 32 10	33.3	69.2	-5.6	-45.5	1470	47	12 00 01
12 25 00	1101+384	05 32 40	33.3	69.2	-5.5	-45.5	24	47	12 25 00
12 50 00	---	05 57 44	36.9	73.4	-5.1	-47.0	1500	95	12 25 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)	(Date)	Error (mas)	
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.479013	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 32.57816	0.00
	fake circumpolar target for a TS to look at			
* 1101+384	11 01 40.567856	* 11 04 27.313945	11 05 24.463531	0.00
J1104+3812	38 28 42.95187	* 38 12 31.79894	38 07 03.97754	0.00
MRK421	./rk16qv_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 17168 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)
1101+384    91.5

```

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

```

**rk16qwtr**

**RADIOASTRON AGN MONITORING**

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

Schedule for TORUN            (Code Tr )                                    Page   2

RadioAstron AGN Monitoring

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

-----  
 Start UT    Source                                    Start / Stop                    Early    Disk    TPStart  
 Stop UT    Dwell    GBytes   SYNC  
 -----

--- Sun 21 May 2017 Day 141 ---

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

```

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

```

01 10 00	1101+384	18 19 46	20.1 -52.5	7.2	37.3	0	0	01 10 00
01 34 30	---	18 44 20	17.2 -48.4	7.6	34.8	1470	47	01 10 01
01 35 00	1101+384	18 44 50	17.2 -48.3	7.7	34.8	24	47	01 35 00
02 00 00	---	19 09 54	14.4 -44.1	8.1	32.1	1500	95	01 35 01

**SETUP FILE INFORMATION:**

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

==== Setup file: ra18cm2.set

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

Disk used to record data.

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

The following frequency sets based on these setups were used.

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

Track assignments are:

track1= 2, 18, 3, 19  
 barrel=roll\_off

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.374058	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 32.66362	0.00
	fake circumpolar target for a TS to look at			
* 1101+384	11 01 40.567856	* 11 04 27.313945	11 05 24.452012	0.00
J1104+3812	38 28 42.95187	* 38 12 31.79894	38 07 04.04936	0.00
MRK421	./rk16qw_sources.radioastron AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 17168 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)
1101+384	91.1

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  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=	2400.00	2400.00	2400.00	2400.00
Net SB=	L	L	U	U
IF SB =	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP
BBC =	1	2	1	2
BBC SB=	U	U	L	L
IF =	C	A	C	A

The following frequency sets based on these setups were used.

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

Track assignments are:

track1= 2, 18, 3, 19  
 barrel=roll\_off

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 52.828257	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 33.03855	0.00
	fake circumpolar target for a TS to look at			
* 1055+018	10 55 55.313729	* 10 58 29.605207	10 59 22.844659	0.00
J1058+0133	01 50 03.53709	* 01 33 58.82359	01 28 21.14052	0.00
	./rk16qx_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	102.9

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

rk16qytr

RADIOASTRON AGN MONITORING

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

Schedule for TORUN        (Code Tr )                                  Page    2  
                                RadioAstron AGN Monitoring

UP:    D => Below limits;    H => Below horizon mask;    W => still slewing at end;    blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time.    Frequencies are 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 24 May 2017    Day 144 ---

----- 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

21 10 00	1055+018	14 34 53	22.0	240.6	3.6		31.5	0	0	21 10 00
21 34 30	---	14 59 27	18.7	246.1	4.0		33.3	1470	47	21 10 01
21 35 00	1055+018	14 59 57	18.6	246.2	4.0		33.3	24	47	21 35 00
22 00 00	---	15 25 01	15.1	251.6	4.4		34.8	1500	95	21 35 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: 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 52.494584	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 33.19484	0.00
	fake circumpolar target for a TS to look at			
* 1055+018	10 55 55.313729	* 10 58 29.605207	10 59 22.827243	0.00
J1058+0133	01 50 03.53709	* 01 33 58.82359	01 28 21.22043	0.00
	./rk16qy_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	101.5

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



**fus06tr**

HUNTING THE UNIDENTIFIED GAMMA-RAY SOURCES

PI: *Marcello Giroletti*

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

Schedule for TORUN (Code Tr )

Page 2

Hunting the unidentified gamma-ray sources

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

```

-----
Start UT  Source          Start / Stop          Early  Disk  TPStart
Stop UT          LST    EL    AZ    HA  UP    ParA  Dwell  GBytes  SYNC
-----

```

--- Wed 17 May 2017 Day 137 ---

```

Next scan frequencies: 4778.49 4778.49 4778.49 4778.49 4850.49 4850.49 4850.49 4850.49
                        4922.49 4922.49 4922.49 4922.49 4994.49 4994.49 4994.49 4994.49
Next BBC frequencies:  578.49  578.49  578.49  578.49  650.49  650.49  650.49  650.49
                        722.49  722.49  722.49  722.49  794.49  794.49  794.49  794.49
Next scan bandwidths:  16.00   16.00   16.00   16.00   16.00   16.00   16.00   16.00
                        16.00   16.00   16.00   16.00   16.00   16.00   16.00   16.00

18 30 00 J134300+7335 11 26 50 65.2 22.3 -2.3 -126.5 0 0 18 30 00
18 39 15 --- 11 36 07 65.7 21.3 -2.1 -129.7 555 71 18 30 01

18 39 45 J134317+7336 11 36 37 65.7 21.3 -2.1 -129.7 23 71 18 39 45
18 49 00 --- 11 45 53 66.2 20.2 -2.0 -132.9 555 142 18 39 46

18 49 30 J134339+7340 11 46 24 66.2 20.1 -2.0 -133.1 22 142 18 49 30
18 58 45 --- 11 55 40 66.6 18.9 -1.8 -136.4 555 213 18 49 31

18 59 15 J134608+7320 11 56 10 66.8 19.8 -1.8 -135.1 17 213 18 59 15
19 08 30 --- 12 05 27 67.2 18.5 -1.7 -138.5 555 285 18 59 16

19 09 10 J135403+6931 12 06 07 69.5 27.1 -1.8 -128.8 8 285 19 09 10
19 18 25 --- 12 15 23 70.1 25.6 -1.7 -132.4 555 356 19 09 11

19 20 26 J1642+3948 12 17 25 44.1 78.8 -4.4 -50.0 0 356 19 20 26
19 25 26 =3C345 12 22 26 44.8 79.7 -4.4 -50.2 300 394 19 20 27

19 27 56 J134545+5332 12 24 56 77.9 80.1 -1.4 -83.5 12 394 19 27 56
19 37 11 --- 12 34 13 79.2 80.8 -1.2 -84.7 555 465 19 27 57

19 37 41 J134559+5329 12 34 43 79.3 81.1 -1.2 -84.4 20 465 19 37 41
19 46 56 --- 12 43 59 80.6 81.8 -1.0 -85.6 555 537 19 37 42

19 47 41 J134807+5120 12 44 45 80.0 94.2 -1.1 -73.1 5 537 19 47 41
19 56 56 --- 12 54 01 81.4 96.9 -0.9 -72.3 555 608 19 47 42

19 57 21 J134815+5126 12 54 26 81.5 96.4 -0.9 -72.9 13 608 19 57 21
20 06 36 --- 13 03 43 82.9 99.6 -0.8 -71.4 555 679 19 57 22

20 07 01 J134819+5128 13 04 08 82.9 99.4 -0.7 -71.7 15 679 20 07 01
20 16 16 --- 13 13 24 84.3 103.8 -0.6 -69.2 555 750 20 07 02

20 19 51 J130321+4806 13 17 00 84.5 203.2 0.2 20.7 2 750 20 19 51
20 29 06 --- 13 26 16 83.8 216.9 0.4 32.6 555 821 20 19 52

```

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	
-----											
---	Wed 17 May 2017	Day 137				---					
20 29 26	J130328+4754	13 26 36	83.6	216.2	0.4		31.9	6	821	20 29 26	
20 38 41	---	13 35 53	82.7	226.8	0.5		40.7	555	892	20 29 27	
20 39 06	J130334+4754	13 36 18	82.7	227.1	0.5		40.9	19	892	20 39 06	
20 48 21	---	13 45 35	81.6	235.3	0.7		47.3	555	963	20 39 07	
20 48 46	J130336+4748	13 46 00	81.5	235.1	0.7		47.0	14	963	20 48 46	
20 58 01	---	13 55 16	80.3	241.5	0.8		51.7	555	1035	20 48 47	
21 03 01	J1642+3948	14 00 17	59.4	99.1	-2.7		-50.5	0	1035	21 03 01	
21 08 01	=3C345	14 05 17	60.2	100.4	-2.6		-50.2	300	1073	21 03 02	
21 12 00	J130018+2328	14 09 17	57.6	210.1	1.1		19.2	5	1073	21 12 00	
21 21 15	---	14 18 34	56.9	213.8	1.3		21.3	555	1144	21 12 01	
21 21 40	J130053+2349	14 18 59	57.2	214.0	1.3		21.5	13	1144	21 21 40	
21 30 55	---	14 28 15	56.4	217.6	1.4		23.6	555	1215	21 21 41	
21 31 20	J130111+2306	14 28 40	55.7	217.1	1.4		23.2	11	1215	21 31 20	
21 40 35	---	14 37 57	54.8	220.5	1.6		25.1	555	1287	21 31 21	
21 41 40	J130407+3709	14 39 02	67.1	235.0	1.6		38.0	5	1287	21 41 40	
21 50 55	---	14 48 19	65.9	238.6	1.7		40.0	555	1358	21 41 41	
21 51 20	J130509+3712	14 48 44	66.1	238.4	1.7		39.9	15	1358	21 51 20	
22 00 35	---	14 58 00	64.9	241.8	1.9		41.6	555	1429	21 51 21	
22 01 05	J130537+3617	14 58 30	64.2	240.4	1.9		40.3	14	1429	22 01 05	
22 10 20	---	15 07 47	62.9	243.6	2.0		41.8	555	1500	22 01 06	
22 10 45	J130551+3639	15 08 12	63.2	244.2	2.0		42.3	14	1500	22 10 45	
22 20 00	---	15 17 28	61.9	247.2	2.2		43.6	555	1571	22 10 46	
22 22 09	J0927+3902	15 19 37	31.3	294.5	5.9		44.6	0	1571	22 22 09	
22 27 09	=4C39.25	15 24 38	30.7	295.3	5.9		44.3	300	1610	22 22 10	
22 29 19	J130551+3622	15 26 48	60.4	249.6	2.3		44.3	4	1610	22 29 19	
22 38 34	---	15 36 05	59.1	252.2	2.5		45.2	555	1681	22 29 20	
22 39 04	J130555+3644	15 36 35	59.3	252.8	2.5		45.6	19	1681	22 39 04	
22 48 19	---	15 45 51	57.9	255.3	2.7		46.4	555	1752	22 39 05	
22 48 49	J130618+3631	15 46 22	57.8	255.1	2.7		46.2	20	1752	22 48 49	
22 58 04	---	15 55 38	56.4	257.4	2.8		46.8	555	1823	22 48 50	
22 59 54	J141302+5019	15 57 28	73.8	270.4	1.7		69.9	31	1823	22 59 54	
23 09 09	---	16 06 45	72.4	272.1	1.9		69.8	555	1894	22 59 55	

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
--- Wed 17 May 2017 Day 137 ---										
23 09 34	J141349+5025	16 07 10	72.5	272.4	1.9		70.1	16	1894	23 09 34
23 18 49	---	16 16 26	71.1	274.0	2.0		69.9	555	1965	23 09 35
23 20 39	J135936+3607	16 18 17	60.5	248.6	2.3		43.7	44	1965	23 20 39
23 29 54	---	16 27 33	59.2	251.2	2.5		44.7	555	2037	23 20 40
23 30 39	J135202+2846	16 28 18	52.6	244.9	2.6		38.3	6	2037	23 30 39
23 39 54	---	16 37 35	51.3	247.5	2.7		39.2	555	2108	23 30 40
23 40 39	J141154+2134	16 38 20	48.0	235.5	2.4		32.2	6	2108	23 40 39
23 49 54	---	16 47 37	46.8	238.2	2.6		33.3	555	2179	23 40 40
23 50 36	J141959+2706	16 48 19	52.3	241.0	2.5		36.1	7	2179	23 50 36
23 59 51	---	16 57 35	51.1	243.6	2.6		37.2	555	2250	23 50 37
--- Thu 18 May 2017 Day 138 ---										
00 02 20	J0927+3902	17 00 05	18.7	310.9	7.5		35.7	0	2250	00 02 20
00 07 20	=4C39.25	17 05 06	18.1	311.8	7.6		35.2	300	2288	00 02 21
00 09 50	J141958+2701	17 07 36	49.6	246.3	2.8		38.1	4	2288	00 09 50
00 19 05	---	17 16 53	48.4	248.8	2.9		38.9	555	2360	00 09 51
00 19 25	J142005+2659	17 17 13	48.3	248.8	2.9		38.9	13	2360	00 19 25
00 28 40	---	17 26 29	47.0	251.2	3.1		39.6	555	2431	00 19 26
00 29 10	J142536+2317	17 27 00	44.8	246.6	3.0		36.9	6	2431	00 29 10
00 38 25	---	17 36 16	43.5	249.0	3.2		37.6	555	2502	00 29 11
00 38 50	J142613+2259	17 36 41	43.3	248.7	3.2		37.4	14	2502	00 38 50
00 48 05	---	17 45 58	42.0	251.0	3.3		38.0	555	2573	00 38 51
00 48 25	J142626+2304	17 46 18	42.0	251.1	3.3		38.1	12	2573	00 48 25
00 57 40	---	17 55 34	40.7	253.3	3.5		38.7	555	2644	00 48 26
00 58 50	J144418+3645	17 56 44	53.2	263.2	3.2		48.0	9	2644	00 58 50
01 08 05	---	18 06 01	51.8	265.2	3.3		48.3	555	2715	00 58 51
01 08 35	J145223+3414	18 06 31	51.2	260.6	3.2		45.7	6	2715	01 08 35
01 17 50	---	18 15 48	49.8	262.7	3.4		46.1	555	2787	01 08 36
01 19 45	J145852+6128	18 17 43	62.7	307.5	3.3		84.9	11	2787	01 19 45
01 29 00	---	18 26 59	61.6	307.7	3.5		83.1	555	2858	01 19 46

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

The following frequency sets based on these setups were used.

Frequency Set: 3	Setup file default.	Used with PCAL = off						
LO sum=	4778.49	4778.49	4778.49	4778.49	4850.49	4850.49	4850.49	4850.49
	4922.49	4922.49	4922.49	4922.49	4994.49	4994.49	4994.49	4994.49
BBC fr=	578.49	578.49	578.49	578.49	650.49	650.49	650.49	650.49
	722.49	722.49	722.49	722.49	794.49	794.49	794.49	794.49
Bandwd=	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
Matching frequency sets:	3							

Track assignments are:

track1= 18, 26, 2, 10, 20, 28, 4, 12, 22, 30, 6, 14, 24, 32, 8, 16  
 barrel=roll\_off

## POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
* J130018+2328	12 57 51.949491	* 13 00 18.270000	13 01 09.294015	0.00
	23 44 49.04848	* 23 28 40.20000	23 23 11.43423	0.00
* J130053+2349	12 58 27.203248	* 13 00 53.330000	13 01 44.288428	0.00
	24 05 10.39032	* 23 49 02.20000	23 43 33.75439	0.00
* J130111+2306	12 58 45.074427	* 13 01 11.420000	13 02 02.459226	0.00
	23 22 21.65591	* 23 06 13.80000	23 00 45.30123	0.00
* J130321+4806	13 01 07.965163	* 13 03 21.660000	13 04 08.327185	0.00
	48 22 19.92171	* 48 06 14.80000	48 00 53.01415	0.00

* J130328+4754	13 01 14.350052 48 10 29.49646	* 13 03 28.150000 * 47 54 24.50000	13 04 14.853237 47 49 02.71532	0.00 0.00
* J130334+4754	13 01 20.885857 48 10 39.16871	* 13 03 34.650000 * 47 54 34.30000	13 04 21.341778 47 49 12.55927	0.00 0.00
* J130336+4748	13 01 22.586180 48 04 46.53511	* 13 03 36.410000 * 47 48 41.70000	13 04 23.122069 47 43 19.95013	0.00 0.00
* J130407+3709	13 01 47.320884 37 25 12.03012	* 13 04 07.290000 * 37 09 07.70000	13 04 56.102695 37 03 43.78049	0.00 0.00
* J130509+3712	13 02 49.617738 37 28 13.89108	* 13 05 09.340000 * 37 12 10.80000	13 05 58.074105 37 06 47.32258	0.00 0.00
* J130537+3617	13 03 17.828221 36 33 36.12288	* 13 05 37.910000 * 36 17 33.60000	13 06 26.771591 36 12 10.11282	0.00 0.00
* J130551+3639	13 03 31.830112 36 55 30.83988	* 13 05 51.680000 * 36 39 28.60000	13 06 40.462823 36 34 05.29440	0.00 0.00
* J130551+3622	13 03 31.800765 36 38 55.74029	* 13 05 51.790000 * 36 22 53.50000	13 06 40.621056 36 17 30.13137	0.00 0.00
* J130555+3644	13 03 35.883209 37 00 07.85776	* 13 05 55.680000 * 36 44 05.70000	13 06 44.444890 36 38 42.44043	0.00 0.00
* J130618+3631	13 03 59.141226 36 47 57.58447	* 13 06 18.960000 * 36 31 55.90000	13 07 07.735004 36 26 32.75886	0.00 0.00
* J134300+7335	13 42 06.086377 73 50 45.33588	* 13 43 00.880000 * 73 35 42.20000	13 43 22.111516 73 30 44.82137	0.00 0.00
* J134317+7336	13 42 23.527821 73 51 25.59051	* 13 43 17.990000 * 73 36 23.00000	13 43 39.115477 73 31 25.79823	0.00 0.00
* J134339+7340	13 42 45.958963 73 55 57.39327	* 13 43 39.600000 * 73 40 55.50000	13 44 00.464289 73 35 58.52939	0.00 0.00
* J134545+5332	13 43 51.935041 53 47 53.76391	* 13 45 45.590000 * 53 32 54.90000	13 46 25.768396 53 27 56.31928	0.00 0.00
* J134559+5329	13 44 06.150206 53 44 15.10617	* 13 45 59.810000 * 53 29 16.70000	13 46 39.990686 53 24 18.26169	0.00 0.00
* J134608+7320	13 45 15.186549 73 35 53.40864	* 13 46 08.770000 * 73 20 56.30000	13 46 29.605378 73 16 00.84538	0.00 0.00
* J134807+5120	13 46 11.718397 51 35 05.18882	* 13 48 07.690000 * 51 20 10.90000	13 48 48.640606 51 15 13.48544	0.00 0.00
* J134815+5126	13 46 19.663366 51 40 55.53032	* 13 48 15.460000 * 51 26 01.50000	13 48 56.353138 51 21 04.18734	0.00 0.00
* J134819+5128	13 46 23.666991 51 43 39.19987	* 13 48 19.380000 * 51 28 45.30000	13 49 00.245685 51 23 48.03816	0.00 0.00
* J135202+2846	13 49 45.799853 29 00 54.58990	* 13 52 02.420000 * 28 46 07.70000	13 52 50.337968 28 41 08.82967	0.00 0.00
* J135403+6931	13 52 54.980107 69 46 30.65156	* 13 54 03.160000 * 69 31 49.20000	13 54 28.616026 69 26 58.46572	0.00 0.00
* J135936+3607	13 57 27.051953	* 13 59 36.610000	14 00 22.149022	0.00

	36 21 56.85119	* 36 07 26.00000	36 02 33.92645	0.00
* J141154+2134	14 09 35.437347	* 14 11 54.860000	14 12 43.828352	0.00
	21 48 27.37212	* 21 34 24.10000	21 29 39.10777	0.00
* J141302+5019	14 11 12.646743	* 14 13 02.340000	14 13 41.285166	0.00
	50 33 27.79849	* 50 19 27.90000	50 14 48.43933	0.00
* J141349+5025	14 11 59.979594	* 14 13 49.270000	14 14 28.083995	0.00
	50 39 56.42128	* 50 25 58.40000	50 21 19.57871	0.00
* J141959+2706	14 17 45.047709	* 14 19 59.250000	14 20 46.449093	0.00
	27 20 10.35517	* 27 06 26.80000	27 01 49.46385	0.00
* J141958+2701	14 17 44.530711	* 14 19 58.800000	14 20 46.022027	0.00
	27 15 27.17560	* 27 01 43.60000	26 57 06.24522	0.00
* J142005+2659	14 17 51.437969	* 14 20 05.730000	14 20 52.960227	0.00
	27 12 48.68858	* 26 59 05.40000	26 54 28.13737	0.00
* J142536+2317	14 23 19.281868	* 14 25 36.010000	14 26 24.096070	0.00
	23 31 16.40580	* 23 17 47.00000	23 13 13.98967	0.00
* J142613+2259	14 23 57.002602	* 14 26 13.920000	14 27 02.073366	0.00
	23 12 39.28004	* 22 59 11.50000	22 54 39.00791	0.00
* J142626+2304	14 24 09.362902	* 14 26 26.190000	14 27 14.312934	0.00
	23 17 46.44838	* 23 04 19.20000	22 59 46.90330	0.00
* J144418+3645	14 42 17.753757	* 14 44 18.790000	14 45 01.598045	0.00
	36 57 45.30891	* 36 45 07.20000	36 40 53.40330	0.00
* J145223+3414	14 50 20.628998	* 14 52 23.360000	14 53 06.758564	0.00
	34 27 11.71105	* 34 14 57.10000	34 10 50.96811	0.00
* J145852+6128	14 57 45.546993	* 14 58 52.720000	14 59 17.807191	0.00
	61 40 08.33144	* 61 28 14.80000	61 24 18.17881	0.00
4C39.25	09 23 55.319215	* 09 27 03.013936	09 28 06.752539	0.30
* J0927+3902	39 15 23.56645	* 39 02 20.85186	38 57 53.81474	0.16
0923+392	/Users/mgirolet/sched/catalogs/sources.gsfc			
J0927+39	GSFC 2015a astro solution, unpublished 245753 observations.			
3C345	16 41 17.606228	* 16 42 58.809966	16 43 35.092503	0.76
* J1642+3948	39 54 10.81496	* 39 48 36.99402	39 46 45.50740	0.52
1641+399	/Users/mgirolet/sched/catalogs/sources.gsfc			
J1642+39	GSFC 2015a astro solution, unpublished 53430 observations.			

rm010atr

E-EVN: RM010A
PI: Miller-Jones

Address: JIVE

Observing mode: realtime e-vlbi

Schedule for TORUN (Code Tr ) Page 2
e-EVN: RM010A

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
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 21 May 2017 Day 141 ---

----- 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

Table with columns: Start UT, Stop UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. Contains observation schedule data for J0927+3902 and J0956+2515.

Schedule for TORUN (Code Tr )  
 e-EVN: RM010A

Page 3

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start. Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time. Frequencies are 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 21 May 2017 Day 141 ---										
16 21 00	J0956+2515	09 33 15	61.7	168.2	-0.4		-7.8	53	1215	16 21 00
16 35 00	=0953+254	09 47 18	62.0	174.9	-0.2		-3.4	840	1323	16 21 01
16 36 00	J0956+2515	09 48 18	62.0	175.4	-0.2		-3.0	53	1323	16 36 00
16 50 00	=0953+254	10 02 20	62.1	182.2	0.1		1.5	840	1431	16 36 01
16 51 00	J0956+2515	10 03 20	62.1	182.7	0.1		1.8	53	1431	16 51 00
17 05 00	=0953+254	10 17 23	61.8	189.4	0.3		6.2	840	1538	16 51 01
17 06 00	J0956+2515	10 18 23	61.8	189.9	0.3		6.5	53	1538	17 06 00
17 20 00	=0953+254	10 32 25	61.3	196.5	0.6		10.9	840	1646	17 06 01
----- RM010A -----										
17 24 00	J1408-0752	10 36 26	14.1	125.0	-3.6		-29.8	49	1646	17 24 00
17 30 00	=1406-076	10 42 27	14.9	126.3	-3.5		-29.3	360	1692	17 24 01
17 30 20	J1408-0752	10 42 47	14.9	126.4	-3.5		-29.2	14	1692	17 30 20
17 33 00	=1406-076	10 45 27	15.2	127.0	-3.4		-29.0	160	1713	17 30 21
17 33 30	J1401-0916	10 45 57	15.0	129.5	-3.3		-28.0	11	1713	17 33 30
17 35 00	=1358-090	10 47 28	15.2	129.9	-3.2		-27.8	90	1724	17 33 31
17 35 00	SJ1357.2	10 47 28	15.4	130.9	-3.2		-27.4	-14	1724	No stop
17 37 30	---	10 49 58	15.6	131.5	-3.1		-27.2	136	1744	17 35 01
17 37 30	J1401-0916	10 49 58	15.4	130.5	-3.2		-27.6	-14	1744	No stop
17 39 00	=1358-090	10 51 28	15.6	130.8	-3.2		-27.4	76	1755	17 37 31
17 39 00	SJ1357.2	10 51 28	15.8	131.8	-3.1		-27.0	-14	1755	No stop
17 41 30	---	10 53 59	16.1	132.4	-3.1		-26.7	136	1774	17 39 01
17 42 00	J1401-0916	10 54 29	16.0	131.5	-3.1		-27.1	16	1774	17 42 00
17 43 00	=1358-090	10 55 29	16.1	131.7	-3.1		-27.0	60	1782	17 42 01
17 43 00	SJ1357.2	10 55 29	16.3	132.7	-3.0		-26.6	-14	1782	No stop
17 45 30	---	10 57 59	16.5	133.3	-3.0		-26.3	136	1801	17 43 01
17 45 30	J1401-0916	10 57 59	16.3	132.3	-3.1		-26.8	-14	1801	No stop
17 47 00	=1358-090	10 59 30	16.5	132.6	-3.0		-26.6	76	1813	17 45 31
17 47 00	J1400-1023	10 59 30	15.6	133.3	-3.0		-26.4	-16	1813	No stop
17 49 30	---	11 02 00	15.9	133.9	-3.0		-26.1	134	1832	17 47 01
17 50 00	J1401-0916	11 02 30	16.8	133.3	-3.0		-26.3	14	1832	17 50 00
17 51 00	=1358-090	11 03 30	17.0	133.6	-3.0		-26.2	60	1840	17 50 01



Schedule for TORUN (Code Tr )

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e-EVN: RM010A

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
-----										
--- Sun 21 May 2017 Day 141 ---										
17 51 00	SJ1357.2	11 03 30	17.1	134.6	-2.9		-25.7	-14	1840	No stop
17 53 30	---	11 06 01	17.4	135.1	-2.9		-25.4	136	1859	17 51 01
17 53 30	J1401-0916	11 06 01	17.2	134.1	-2.9		-25.9	-14	1859	No stop
17 55 00	=1358-090	11 07 31	17.4	134.5	-2.9		-25.7	76	1871	17 53 31
17 55 00	SJ1357.2	11 07 31	17.5	135.5	-2.8		-25.3	-14	1871	No stop
17 57 30	---	11 10 01	17.8	136.1	-2.8		-25.0	136	1890	17 55 01
17 58 00	J1401-0916	11 10 31	17.7	135.2	-2.9		-25.4	16	1890	17 58 00
17 59 00	=1358-090	11 11 31	17.8	135.4	-2.8		-25.3	60	1897	17 58 01
17 59 00	SJ1357.2	11 11 31	18.0	136.4	-2.8		-24.8	-14	1897	No stop
18 01 30	---	11 14 02	18.2	137.0	-2.7		-24.5	136	1917	17 59 01
18 01 30	J1401-0916	11 14 02	18.1	136.0	-2.8		-25.0	-14	1917	No stop
18 03 00	=1358-090	11 15 32	18.2	136.4	-2.8		-24.8	76	1928	18 01 31
18 03 00	J1400-1023	11 15 32	17.3	137.0	-2.8		-24.6	-16	1928	No stop
18 05 30	---	11 18 03	17.5	137.6	-2.7		-24.3	134	1947	18 03 01
18 06 00	J1401-0916	11 18 33	18.5	137.1	-2.7		-24.5	14	1947	18 06 00
18 07 00	=1358-090	11 19 33	18.6	137.3	-2.7		-24.4	60	1955	18 06 01
18 07 00	SJ1357.2	11 19 33	18.8	138.3	-2.6		-23.9	-14	1955	No stop
18 09 30	---	11 22 03	19.0	138.9	-2.6		-23.6	136	1974	18 07 01
18 10 00	J1401-0916	11 22 33	18.9	138.0	-2.7		-24.0	16	1974	18 10 00
18 11 00	=1358-090	11 23 33	19.0	138.3	-2.6		-23.9	60	1982	18 10 01
18 11 00	SJ1357.2	11 23 33	19.2	139.3	-2.6		-23.4	-14	1982	No stop
18 13 30	---	11 26 04	19.4	139.9	-2.5		-23.1	136	2001	18 11 01
18 13 30	J1401-0916	11 26 04	19.3	138.9	-2.6		-23.6	-14	2001	No stop
18 15 00	=1358-090	11 27 34	19.4	139.2	-2.6		-23.4	76	2013	18 13 31
18 15 00	SJ1357.2	11 27 34	19.6	140.3	-2.5		-22.9	-14	2013	No stop
18 17 30	---	11 30 05	19.8	140.9	-2.5		-22.6	136	2032	18 15 01
18 18 00	J1401-0916	11 30 35	19.7	140.0	-2.5		-23.1	16	2032	18 18 00
18 19 00	=1358-090	11 31 35	19.8	140.2	-2.5		-22.9	60	2040	18 18 01
18 19 00	SJ1357.2	11 31 35	19.9	141.2	-2.4		-22.4	-14	2040	No stop
18 21 30	---	11 34 05	20.2	141.8	-2.4		-22.1	136	2059	18 19 01

Schedule for TORUN (Code Tr )

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e-EVN: RM010A

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
-----										
--- Sun 21 May 2017 Day 141 ---										
18 21 30	J1401-0916	11 34 05	20.1	140.8	-2.5		-22.6	-14	2059	No stop
18 23 00	=1358-090	11 35 35	20.2	141.2	-2.4		-22.4	76	2071	18 21 31
18 23 00	SJ1357.2	11 35 35	20.3	142.2	-2.4		-21.9	-14	2071	No stop
18 25 30	---	11 38 06	20.6	142.8	-2.3		-21.6	136	2090	18 23 01
18 26 00	J1401-0916	11 38 36	20.5	141.9	-2.4		-22.1	16	2090	18 26 00
18 27 00	=1358-090	11 39 36	20.6	142.1	-2.4		-21.9	60	2097	18 26 01
18 27 00	SJ1357.2	11 39 36	20.7	143.2	-2.3		-21.4	-14	2097	No stop
18 29 30	---	11 42 06	20.9	143.8	-2.3		-21.1	136	2117	18 27 01
18 29 30	J1401-0916	11 42 06	20.8	142.8	-2.3		-21.6	-14	2117	No stop
18 31 00	=1358-090	11 43 37	21.0	143.1	-2.3		-21.4	76	2128	18 29 31
18 31 00	SJ1357.2	11 43 37	21.0	144.2	-2.2		-20.9	-14	2128	No stop
18 33 30	---	11 46 07	21.3	144.8	-2.2		-20.6	136	2147	18 31 01
18 34 00	J1401-0916	11 46 37	21.2	143.9	-2.3		-21.0	16	2147	18 34 00
18 35 00	=1358-090	11 47 37	21.3	144.1	-2.2		-20.9	60	2155	18 34 01
18 35 00	SJ1357.2	11 47 37	21.4	145.2	-2.2		-20.4	-14	2155	No stop
18 37 30	---	11 50 08	21.6	145.8	-2.1		-20.0	136	2174	18 35 01
18 37 30	J1401-0916	11 50 08	21.5	144.7	-2.2		-20.6	-14	2174	No stop
18 39 00	=1358-090	11 51 38	21.7	145.1	-2.2		-20.4	76	2186	18 37 31
18 39 00	J1400-1023	11 51 38	20.7	145.7	-2.2		-20.1	-16	2186	No stop
18 41 30	---	11 54 08	20.9	146.3	-2.1		-19.8	134	2205	18 39 01
18 42 00	J1401-0916	11 54 39	21.9	145.9	-2.1		-20.0	13	2205	18 42 00
18 43 00	=1358-090	11 55 39	22.0	146.1	-2.1		-19.8	60	2213	18 42 01
18 43 00	SJ1357.2	11 55 39	22.1	147.2	-2.0		-19.3	-14	2213	No stop
18 45 30	---	11 58 09	22.3	147.8	-2.0		-18.9	136	2232	18 43 01
18 45 30	J1401-0916	11 58 09	22.2	146.7	-2.1		-19.5	-14	2232	No stop
18 47 00	=1358-090	11 59 39	22.3	147.1	-2.0		-19.3	76	2244	18 45 31
18 47 00	SJ1357.2	11 59 39	22.4	148.2	-2.0		-18.7	-14	2244	No stop
18 49 30	---	12 02 10	22.6	148.8	-1.9		-18.4	136	2263	18 47 01
18 50 00	J1401-0916	12 02 40	22.6	147.9	-2.0		-18.9	16	2263	18 50 00
18 51 00	=1358-090	12 03 40	22.7	148.1	-2.0		-18.7	60	2271	18 50 01

Schedule for TORUN (Code Tr )  
 e-EVN: RM010A

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UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 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 21 May 2017 Day 141 ---										
18 51 00	SJ1357.2	12 03 40	22.7	149.2	-1.9		-18.2	-14	2271	No stop
18 53 30	---	12 06 10	22.9	149.8	-1.9		-17.8	136	2290	18 51 01
18 53 30	J1401-0916	12 06 10	22.9	148.8	-1.9		-18.4	-14	2290	No stop
18 55 00	=1358-090	12 07 41	23.0	149.2	-1.9		-18.2	76	2301	18 53 31
18 55 00	SJ1357.2	12 07 41	23.0	150.2	-1.8		-17.6	-14	2301	No stop
18 57 30	---	12 10 11	23.2	150.9	-1.8		-17.3	136	2321	18 55 01
18 58 00	J1401-0916	12 10 41	23.2	149.9	-1.9		-17.8	16	2321	18 58 00
18 59 00	=1358-090	12 11 41	23.3	150.2	-1.8		-17.6	60	2328	18 58 01
18 59 00	SJ1357.2	12 11 41	23.3	151.2	-1.8		-17.0	-14	2328	No stop
19 01 30	---	12 14 12	23.5	151.9	-1.7		-16.7	136	2347	18 59 01
19 01 30	J1401-0916	12 14 12	23.5	150.8	-1.8		-17.3	-14	2347	No stop
19 03 00	=1358-090	12 15 42	23.6	151.2	-1.8		-17.0	76	2359	19 01 31
19 03 00	J1400-1023	12 15 42	22.6	151.7	-1.8		-16.8	-17	2359	No stop
19 05 30	---	12 18 12	22.7	152.4	-1.7		-16.4	133	2378	19 03 01
19 06 00	J1401-0916	12 18 42	23.8	152.0	-1.7		-16.6	13	2378	19 06 00
19 07 00	=1358-090	12 19 43	23.9	152.2	-1.7		-16.5	60	2386	19 06 01
19 07 00	SJ1357.2	12 19 43	23.9	153.3	-1.6		-15.9	-14	2386	No stop
19 09 30	---	12 22 13	24.0	154.0	-1.6		-15.5	136	2405	19 07 01
19 09 30	J1401-0916	12 22 13	24.0	152.9	-1.7		-16.1	-14	2405	No stop
19 11 00	=1358-090	12 23 43	24.1	153.3	-1.6		-15.9	76	2417	19 09 31
19 11 00	SJ1357.2	12 23 43	24.1	154.4	-1.6		-15.3	-14	2417	No stop
19 13 30	---	12 26 14	24.3	155.0	-1.5		-14.9	136	2436	19 11 01
19 14 00	J1401-0916	12 26 44	24.3	154.1	-1.6		-15.4	16	2436	19 14 00
19 15 00	=1358-090	12 27 44	24.4	154.3	-1.6		-15.3	60	2444	19 14 01
19 15 00	SJ1357.2	12 27 44	24.4	155.4	-1.5		-14.7	-14	2444	No stop
19 17 30	---	12 30 14	24.5	156.1	-1.5		-14.3	136	2463	19 15 01
19 17 30	J1401-0916	12 30 14	24.6	155.0	-1.5		-14.9	-14	2463	No stop
19 19 00	=1358-090	12 31 45	24.7	155.4	-1.5		-14.7	76	2474	19 17 31
19 19 00	SJ1357.2	12 31 45	24.6	156.5	-1.4		-14.1	-14	2474	No stop
19 21 30	---	12 34 15	24.8	157.1	-1.4		-13.7	136	2494	19 19 01

Schedule for TORUN (Code Tr )

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e-EVN: RM010A

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
-----										
--- Sun 21 May 2017 Day 141 ---										
19 22 00	J1401-0916	12 34 45	24.8	156.2	-1.5		-14.2	16	2494	19 22 00
19 23 00	=1358-090	12 35 45	24.9	156.4	-1.4		-14.1	60	2501	19 22 01
19 23 00	SJ1357.2	12 35 45	24.9	157.5	-1.4		-13.5	-14	2501	No stop
19 25 30	---	12 38 16	25.0	158.2	-1.3		-13.1	136	2521	19 23 01
19 25 30	J1401-0916	12 38 16	25.0	157.1	-1.4		-13.7	-14	2521	No stop
19 27 00	=1358-090	12 39 46	25.1	157.5	-1.4		-13.5	76	2532	19 25 31
19 27 00	J1400-1023	12 39 46	24.1	158.0	-1.4		-13.2	-17	2532	No stop
19 29 30	---	12 42 16	24.2	158.6	-1.3		-12.9	133	2551	19 27 01
19 30 00	J1401-0916	12 42 46	25.3	158.3	-1.3		-13.0	13	2551	19 30 00
19 31 00	=1358-090	12 43 47	25.4	158.6	-1.3		-12.9	60	2559	19 30 01
19 31 00	SJ1357.2	12 43 47	25.3	159.6	-1.2		-12.2	-14	2559	No stop
19 33 30	---	12 46 17	25.4	160.3	-1.2		-11.8	136	2578	19 31 01
19 33 30	J1401-0916	12 46 17	25.5	159.2	-1.3		-12.5	-14	2578	No stop
19 35 00	=1358-090	12 47 47	25.6	159.6	-1.2		-12.2	76	2590	19 33 31
19 35 00	SJ1357.2	12 47 47	25.5	160.7	-1.2		-11.6	-14	2590	No stop
19 37 30	---	12 50 18	25.6	161.4	-1.1		-11.2	136	2609	19 35 01
19 38 00	J1401-0916	12 50 48	25.7	160.4	-1.2		-11.8	16	2609	19 38 00
19 39 00	=1358-090	12 51 48	25.8	160.7	-1.2		-11.6	60	2617	19 38 01
19 39 00	SJ1357.2	12 51 48	25.7	161.8	-1.1		-11.0	-14	2617	No stop
19 41 30	---	12 54 18	25.8	162.5	-1.1		-10.6	136	2636	19 39 01
19 41 30	J1401-0916	12 54 18	25.9	161.4	-1.1		-11.2	-14	2636	No stop
19 43 00	=1358-090	12 55 49	26.0	161.8	-1.1		-11.0	76	2647	19 41 31
19 43 00	SJ1357.2	12 55 49	25.9	162.9	-1.0		-10.3	-14	2647	No stop
19 45 30	---	12 58 19	26.0	163.5	-1.0		-9.9	136	2667	19 43 01
19 46 00	J1401-0916	12 58 49	26.1	162.6	-1.1		-10.5	16	2667	19 46 00
19 47 00	=1358-090	12 59 49	26.2	162.9	-1.0		-10.3	60	2674	19 46 01
19 47 00	SJ1357.2	12 59 49	26.1	163.9	-1.0		-9.7	-14	2674	No stop
19 49 30	---	13 02 20	26.2	164.6	-0.9		-9.3	136	2694	19 47 01
19 49 30	J1401-0916	13 02 20	26.3	163.5	-1.0		-9.9	-14	2694	No stop
19 51 00	=1358-090	13 03 50	26.3	163.9	-1.0		-9.7	76	2705	19 49 31

Schedule for TORUN (Code Tr )

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e-EVN: RM010A

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
-----										
--- Sun 21 May 2017 Day 141 ---										
19 51 00	J1400-1023	13 03 50	25.3	164.4	-1.0		-9.5	-17	2705	No stop
19 53 30	---	13 06 20	25.4	165.0	-0.9		-9.1	133	2724	19 51 01
19 54 00	J1401-0916	13 06 50	26.4	164.8	-0.9		-9.2	13	2724	19 54 00
19 55 00	=1358-090	13 07 51	26.5	165.0	-0.9		-9.0	60	2732	19 54 01
19 55 00	SJ1357.2	13 07 51	26.4	166.1	-0.8		-8.4	-14	2732	No stop
19 57 30	---	13 10 21	26.5	166.8	-0.8		-8.0	136	2751	19 55 01
19 57 30	J1401-0916	13 10 21	26.6	165.7	-0.9		-8.6	-14	2751	No stop
19 59 00	=1358-090	13 11 51	26.6	166.1	-0.8		-8.4	76	2763	19 57 31
19 59 00	SJ1357.2	13 11 51	26.5	167.2	-0.8		-7.7	-14	2763	No stop
20 01 30	---	13 14 22	26.6	167.9	-0.7		-7.3	136	2782	19 59 01
20 02 00	J1401-0916	13 14 52	26.7	167.0	-0.8		-7.9	16	2782	20 02 00
20 03 00	=1358-090	13 15 52	26.8	167.2	-0.8		-7.7	60	2790	20 02 01
20 03 00	SJ1357.2	13 15 52	26.6	168.3	-0.7		-7.1	-14	2790	No stop
20 05 30	---	13 18 22	26.7	169.0	-0.7		-6.7	136	2809	20 03 01
20 05 30	J1401-0916	13 18 22	26.9	167.9	-0.7		-7.3	-14	2809	No stop
20 07 00	=1358-090	13 19 53	26.9	168.3	-0.7		-7.1	76	2821	20 05 31
20 07 00	SJ1357.2	13 19 53	26.7	169.4	-0.6		-6.4	-14	2821	No stop
20 09 30	---	13 22 23	26.8	170.1	-0.6		-6.0	136	2840	20 07 01
20 10 00	J1401-0916	13 22 53	27.0	169.2	-0.7		-6.6	16	2840	20 10 00
20 11 00	=1358-090	13 23 53	27.0	169.4	-0.6		-6.4	60	2847	20 10 01
20 11 00	SJ1357.2	13 23 53	26.9	170.5	-0.6		-5.8	-14	2847	No stop
20 13 30	---	13 26 24	26.9	171.2	-0.5		-5.3	136	2867	20 11 01
20 13 30	J1401-0916	13 26 24	27.1	170.1	-0.6		-6.0	-14	2867	No stop
20 15 00	=1358-090	13 27 54	27.1	170.5	-0.6		-5.7	76	2878	20 13 31
20 15 00	J1400-1023	13 27 54	26.0	170.9	-0.6		-5.6	-17	2878	No stop
20 17 30	---	13 30 24	26.1	171.5	-0.5		-5.2	133	2897	20 15 01
20 18 00	J1401-0916	13 30 54	27.2	171.4	-0.5		-5.2	13	2897	20 18 00
20 19 00	=1358-090	13 31 54	27.2	171.6	-0.5		-5.1	60	2905	20 18 01
20 19 00	SJ1357.2	13 31 54	27.0	172.7	-0.4		-4.4	-14	2905	No stop
20 21 30	---	13 34 25	27.1	173.4	-0.4		-4.0	136	2924	20 19 01

Schedule for TORUN (Code Tr )

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e-EVN: RM010A

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
-----										
--- Sun 21 May 2017 Day 141 ---										
20 21 30	J1401-0916	13 34 25	27.3	172.3	-0.5		-4.7	-14	2924	No stop
20 23 00	=1358-090	13 35 55	27.3	172.8	-0.4		-4.4	76	2936	20 21 31
20 23 00	SJ1357.2	13 35 55	27.1	173.8	-0.4		-3.8	-14	2936	No stop
20 25 30	---	13 38 26	27.1	174.5	-0.3		-3.3	136	2955	20 23 01
20 26 00	J1401-0916	13 38 56	27.4	173.6	-0.4		-3.9	16	2955	20 26 00
20 27 00	=1358-090	13 39 56	27.4	173.9	-0.4		-3.7	60	2963	20 26 01
20 27 00	SJ1357.2	13 39 56	27.2	174.9	-0.3		-3.1	-14	2963	No stop
20 29 30	---	13 42 26	27.2	175.6	-0.3		-2.7	136	2982	20 27 01
20 29 30	J1401-0916	13 42 26	27.4	174.6	-0.3		-3.3	-14	2982	No stop
20 31 00	=1358-090	13 43 56	27.4	175.0	-0.3		-3.1	76	2994	20 29 31
20 31 00	SJ1357.2	13 43 56	27.2	176.0	-0.2		-2.4	-14	2994	No stop
20 33 30	---	13 46 27	27.2	176.7	-0.2		-2.0	136	3013	20 31 01
20 34 00	J1401-0916	13 46 57	27.5	175.8	-0.3		-2.5	16	3013	20 34 00
20 35 00	=1358-090	13 47 57	27.5	176.1	-0.2		-2.4	60	3021	20 34 01
20 35 00	SJ1357.2	13 47 57	27.2	177.2	-0.2		-1.7	-14	3021	No stop
20 37 30	---	13 50 28	27.3	177.8	-0.1		-1.3	136	3040	20 35 01
20 37 30	J1401-0916	13 50 28	27.5	176.8	-0.2		-2.0	-14	3040	No stop
20 39 00	=1358-090	13 51 58	27.5	177.2	-0.2		-1.7	76	3051	20 37 31
20 39 00	J1400-1023	13 51 58	26.4	177.4	-0.2		-1.6	-17	3051	No stop
20 41 30	---	13 54 28	26.4	178.1	-0.1		-1.1	133	3071	20 39 01
20 42 00	J1401-0916	13 54 58	27.5	178.0	-0.1		-1.2	13	3071	20 42 00
20 43 00	=1358-090	13 55 58	27.5	178.3	-0.1		-1.0	60	3078	20 42 01
20 43 00	SJ1357.2	13 55 58	27.3	179.4	-0.0		-0.4	-14	3078	No stop
20 45 30	---	13 58 29	27.3	180.1	0.0		0.0	136	3097	20 43 01
20 45 30	J1401-0916	13 58 29	27.5	179.0	-0.1		-0.6	-14	3097	No stop
20 47 00	=1358-090	13 59 59	27.5	179.4	-0.0		-0.3	76	3109	20 45 31
20 47 00	SJ1357.2	13 59 59	27.3	180.5	0.0		0.3	-14	3109	No stop
20 49 30	---	14 02 29	27.3	181.2	0.1		0.7	136	3128	20 47 01
20 50 00	J1401-0916	14 03 00	27.5	180.3	0.0		0.2	16	3128	20 50 00
20 51 00	=1358-090	14 04 00	27.5	180.5	0.0		0.3	60	3136	20 50 01

Schedule for TORUN (Code Tr )  
 e-EVN: RM010A

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UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 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 21 May 2017 Day 141 ---										
20 51 00	SJ1357.2	14 04 00	27.3	181.6	0.1		1.0	-14	3136	No stop
20 53 30	---	14 06 30	27.3	182.3	0.1		1.4	136	3155	20 51 01
20 53 30	J1401-0916	14 06 30	27.5	181.2	0.1		0.8	-14	3155	No stop
20 55 00	=1358-090	14 08 00	27.5	181.7	0.1		1.0	76	3167	20 53 31
20 55 00	SJ1357.2	14 08 00	27.2	182.7	0.2		1.7	-14	3167	No stop
20 57 30	---	14 10 31	27.2	183.4	0.2		2.1	136	3186	20 55 01
20 58 00	J1401-0916	14 11 01	27.5	182.5	0.1		1.5	16	3186	20 58 00
20 59 00	=1358-090	14 12 01	27.5	182.8	0.2		1.7	60	3194	20 58 01
20 59 00	SJ1357.2	14 12 01	27.2	183.8	0.2		2.3	-14	3194	No stop
21 01 30	---	14 14 31	27.2	184.5	0.3		2.8	136	3213	20 59 01
21 01 30	J1401-0916	14 14 31	27.5	183.5	0.2		2.1	-14	3213	No stop
21 03 00	=1358-090	14 16 02	27.5	183.9	0.2		2.4	76	3224	21 01 31
21 03 00	J1400-1023	14 16 02	26.3	184.0	0.2		2.5	-17	3224	No stop
21 05 30	---	14 18 32	26.3	184.7	0.3		2.9	133	3244	21 03 01
21 06 00	J1401-0916	14 19 02	27.4	184.7	0.3		2.9	13	3244	21 06 00
21 07 00	=1358-090	14 20 02	27.4	185.0	0.3		3.0	60	3251	21 06 01
21 07 00	SJ1357.2	14 20 02	27.1	186.0	0.4		3.7	-14	3251	No stop
21 09 30	---	14 22 33	27.1	186.7	0.4		4.1	136	3271	21 07 01
21 09 30	J1401-0916	14 22 33	27.4	185.7	0.3		3.5	-14	3271	No stop
21 11 00	=1358-090	14 24 03	27.4	186.1	0.4		3.7	76	3282	21 09 31
21 11 00	SJ1357.2	14 24 03	27.0	187.2	0.4		4.3	-14	3282	No stop
21 13 30	---	14 26 33	27.0	187.8	0.5		4.8	136	3301	21 11 01
21 14 00	J1401-0916	14 27 04	27.3	187.0	0.4		4.2	16	3301	21 14 00
21 15 00	=1358-090	14 28 04	27.3	187.2	0.4		4.4	60	3309	21 14 01
21 15 00	SJ1357.2	14 28 04	27.0	188.3	0.5		5.0	-14	3309	No stop
21 17 30	---	14 30 34	26.9	188.9	0.5		5.4	136	3328	21 15 01
21 17 30	J1401-0916	14 30 34	27.2	187.9	0.5		4.8	-14	3328	No stop
21 19 00	=1358-090	14 32 04	27.2	188.3	0.5		5.1	76	3340	21 17 31
21 19 00	SJ1357.2	14 32 04	26.9	189.4	0.6		5.7	-14	3340	No stop
21 21 30	---	14 34 35	26.8	190.1	0.6		6.1	136	3359	21 19 01

Schedule for TORUN (Code Tr )

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e-EVN: RM010A

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
-----										
--- Sun 21 May 2017 Day 141 ---										
21 22 00	J1401-0916	14 35 05	27.1	189.2	0.6		5.6	16	3359	21 22 00
21 23 00	=1358-090	14 36 05	27.1	189.4	0.6		5.7	60	3367	21 22 01
21 23 00	SJ1357.2	14 36 05	26.8	190.5	0.6		6.4	-14	3367	No stop
21 25 30	---	14 38 35	26.7	191.2	0.7		6.8	136	3386	21 23 01
21 25 30	J1401-0916	14 38 35	27.1	190.1	0.6		6.2	-14	3386	No stop
21 27 00	=1358-090	14 40 06	27.0	190.6	0.6		6.4	76	3397	21 25 31
21 27 00	J1400-1023	14 40 06	25.9	190.6	0.6		6.5	-17	3397	No stop
21 29 30	---	14 42 36	25.8	191.3	0.7		6.9	133	3417	21 27 01
21 30 00	J1401-0916	14 43 06	26.9	191.4	0.7		6.9	13	3417	21 30 00
21 31 00	=1358-090	14 44 06	26.9	191.7	0.7		7.1	60	3424	21 30 01
21 31 00	SJ1357.2	14 44 06	26.5	192.7	0.8		7.7	-14	3424	No stop
21 33 30	---	14 46 37	26.4	193.3	0.8		8.1	136	3444	21 31 01
21 33 30	J1401-0916	14 46 37	26.8	192.3	0.7		7.5	-14	3444	No stop
21 35 00	=1358-090	14 48 07	26.8	192.8	0.8		7.7	76	3455	21 33 31
21 35 00	SJ1357.2	14 48 07	26.4	193.8	0.8		8.3	-14	3455	No stop
21 37 30	---	14 50 37	26.3	194.4	0.9		8.7	136	3474	21 35 01
21 38 00	J1401-0916	14 51 07	26.7	193.6	0.8		8.2	16	3474	21 38 00
21 39 00	=1358-090	14 52 08	26.6	193.9	0.8		8.4	60	3482	21 38 01
21 39 00	SJ1357.2	14 52 08	26.2	194.8	0.9		9.0	-14	3482	No stop
21 41 30	---	14 54 38	26.1	195.5	0.9		9.4	136	3501	21 39 01
21 41 30	J1401-0916	14 54 38	26.5	194.5	0.9		8.8	-14	3501	No stop
21 43 00	=1358-090	14 56 08	26.5	194.9	0.9		9.0	76	3513	21 41 31
21 43 00	SJ1357.2	14 56 08	26.1	195.9	1.0		9.6	-14	3513	No stop
21 45 30	---	14 58 39	26.0	196.6	1.0		10.0	136	3532	21 43 01
21 46 00	J1401-0916	14 59 09	26.4	195.8	1.0		9.5	16	3532	21 46 00
21 47 00	=1358-090	15 00 09	26.3	196.0	1.0		9.7	60	3540	21 46 01
21 47 00	SJ1357.2	15 00 09	25.9	197.0	1.0		10.3	-14	3540	No stop
21 49 30	---	15 02 39	25.8	197.7	1.1		10.7	136	3559	21 47 01
21 49 30	J1401-0916	15 02 39	26.2	196.7	1.0		10.1	-14	3559	No stop
21 51 00	=1358-090	15 04 10	26.2	197.1	1.0		10.3	76	3571	21 49 31



Schedule for TORUN (Code Tr )

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e-EVN: RM010A

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
-----										
--- Sun 21 May 2017 Day 141 ---										
21 51 00	J1400-1023	15 04 10	25.0	197.1	1.0		10.3	-17	3571	No stop
21 53 30	---	15 06 40	24.9	197.8	1.1		10.7	133	3590	21 51 01
21 54 00	J1401-0916	15 07 10	26.0	197.9	1.1		10.8	13	3590	21 54 00
21 55 00	=1358-090	15 08 10	26.0	198.2	1.1		11.0	60	3597	21 54 01
21 55 00	SJ1357.2	15 08 10	25.5	199.2	1.2		11.5	-14	3597	No stop
21 57 30	---	15 10 41	25.4	199.8	1.2		11.9	136	3617	21 55 01
21 57 30	J1401-0916	15 10 41	25.9	198.9	1.1		11.4	-14	3617	No stop
21 59 00	=1358-090	15 12 11	25.8	199.3	1.2		11.6	76	3628	21 57 31
21 59 00	SJ1357.2	15 12 11	25.3	200.2	1.2		12.2	-14	3628	No stop
22 01 30	---	15 14 41	25.2	200.9	1.3		12.6	136	3647	21 59 01
22 02 00	J1401-0916	15 15 11	25.6	200.1	1.2		12.1	16	3647	22 02 00
22 03 00	=1358-090	15 16 12	25.6	200.4	1.2		12.2	60	3655	22 02 01
22 03 00	SJ1357.2	15 16 12	25.1	201.3	1.3		12.8	-14	3655	No stop
22 05 30	---	15 18 42	25.0	202.0	1.3		13.2	136	3674	22 03 01
22 05 30	J1401-0916	15 18 42	25.4	201.0	1.3		12.6	-14	3674	No stop
22 07 00	=1358-090	15 20 12	25.4	201.4	1.3		12.8	76	3686	22 05 31
22 07 00	SJ1357.2	15 20 12	24.9	202.4	1.4		13.4	-14	3686	No stop
22 09 30	---	15 22 43	24.7	203.0	1.4		13.8	136	3705	22 07 01
22 10 00	J1401-0916	15 23 13	25.2	202.2	1.4		13.3	17	3705	22 10 00
22 11 00	=1358-090	15 24 13	25.1	202.5	1.4		13.5	60	3713	22 10 01
22 11 00	SJ1357.2	15 24 13	24.7	203.4	1.4		14.0	-14	3713	No stop
22 13 30	---	15 26 43	24.5	204.1	1.5		14.4	136	3732	22 11 01
22 13 30	J1401-0916	15 26 43	25.0	203.2	1.4		13.8	-13	3732	No stop
22 15 00	=1358-090	15 28 14	24.9	203.6	1.4		14.1	77	3744	22 13 31
22 15 00	J1400-1023	15 28 14	23.8	203.4	1.4		14.1	-17	3744	No stop
22 17 30	---	15 30 44	23.6	204.1	1.5		14.4	133	3763	22 15 01
22 18 00	J1401-0916	15 31 14	24.7	204.3	1.5		14.5	13	3763	22 18 00
22 19 00	=1358-090	15 32 14	24.7	204.6	1.5		14.7	60	3771	22 18 01
22 19 00	SJ1357.2	15 32 14	24.2	205.5	1.6		15.2	-14	3771	No stop
22 21 30	---	15 34 45	24.0	206.2	1.6		15.6	136	3790	22 19 01

Schedule for TORUN (Code Tr )

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e-EVN: RM010A

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
-----										
--- Sun 21 May 2017 Day 141 ---										
22 21 30	J1401-0916	15 34 45	24.5	205.3	1.5		15.1	-13	3790	No stop
22 23 00	=1358-090	15 36 15	24.4	205.7	1.6		15.3	77	3801	22 21 31
22 23 00	SJ1357.2	15 36 15	23.9	206.6	1.6		15.8	-14	3801	No stop
22 25 30	---	15 38 45	23.7	207.2	1.7		16.2	136	3821	22 23 01
22 26 00	J1401-0916	15 39 15	24.2	206.4	1.6		15.7	17	3821	22 26 00
22 27 00	=1358-090	15 40 16	24.1	206.7	1.6		15.9	60	3828	22 26 01
22 27 00	SJ1357.2	15 40 16	23.6	207.6	1.7		16.4	-14	3828	No stop
22 29 30	---	15 42 46	23.4	208.3	1.7		16.8	136	3847	22 27 01
22 29 30	J1401-0916	15 42 46	24.0	207.4	1.7		16.2	-13	3847	No stop
22 31 00	=1358-090	15 44 16	23.9	207.7	1.7		16.5	77	3859	22 29 31
22 31 00	SJ1357.2	15 44 16	23.3	208.6	1.8		17.0	-14	3859	No stop
22 33 30	---	15 46 47	23.1	209.3	1.8		17.3	136	3878	22 31 01
22 34 00	J1401-0916	15 47 17	23.6	208.5	1.8		16.9	17	3878	22 34 00
22 35 00	=1358-090	15 48 17	23.6	208.8	1.8		17.0	60	3886	22 34 01
22 35 00	SJ1357.2	15 48 17	23.0	209.7	1.8		17.5	-14	3886	No stop
22 37 30	---	15 50 47	22.8	210.3	1.9		17.9	136	3905	22 35 01
22 37 30	J1401-0916	15 50 47	23.4	209.4	1.8		17.4	-13	3905	No stop
22 39 00	=1358-090	15 52 17	23.3	209.8	1.8		17.6	77	3917	22 37 31
22 39 00	J1400-1023	15 52 17	22.2	209.6	1.9		17.6	-17	3917	No stop
22 41 30	---	15 54 48	22.0	210.3	1.9		17.9	133	3936	22 39 01
22 42 00	J1401-0916	15 55 18	23.1	210.6	1.9		18.0	13	3936	22 42 00
22 43 00	=1358-090	15 56 18	23.0	210.8	1.9		18.2	60	3944	22 42 01
22 43 00	SJ1357.2	15 56 18	22.4	211.7	2.0		18.7	-14	3944	No stop
22 45 30	---	15 58 49	22.2	212.3	2.0		19.0	136	3963	22 43 01
22 45 30	J1401-0916	15 58 49	22.8	211.5	1.9		18.5	-14	3963	No stop
22 47 00	=1358-090	16 00 19	22.7	211.9	2.0		18.7	76	3974	22 45 31
22 47 00	SJ1357.2	16 00 19	22.1	212.7	2.0		19.2	-14	3974	No stop
22 49 30	---	16 02 49	21.9	213.3	2.1		19.6	136	3994	22 47 01
22 50 00	J1401-0916	16 03 19	22.4	212.6	2.0		19.1	16	3994	22 50 00
22 51 00	=1358-090	16 04 19	22.3	212.9	2.0		19.3	60	4001	22 50 01

Schedule for TORUN (Code Tr )

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e-EVN: RM010A

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
-----										
--- Sun 21 May 2017 Day 141 ---										
22 51 00	SJ1357.2	16 04 19	21.8	213.7	2.1		19.8	-14	4001	No stop
22 53 30	---	16 06 50	21.6	214.3	2.1		20.1	136	4021	22 51 01
22 53 30	J1401-0916	16 06 50	22.1	213.5	2.1		19.6	-14	4021	No stop
22 55 00	=1358-090	16 08 20	22.0	213.9	2.1		19.8	76	4032	22 53 31
22 55 00	SJ1357.2	16 08 20	21.4	214.7	2.2		20.3	-14	4032	No stop
22 57 30	---	16 10 51	21.2	215.3	2.2		20.6	136	4051	22 55 01
22 58 00	J1401-0916	16 11 21	21.8	214.6	2.2		20.2	16	4051	22 58 00
22 59 00	=1358-090	16 12 21	21.7	214.9	2.2		20.4	60	4059	22 58 01
22 59 00	SJ1357.2	16 12 21	21.1	215.7	2.2		20.8	-14	4059	No stop
23 01 30	---	16 14 51	20.9	216.3	2.3		21.2	136	4078	22 59 01
23 01 30	J1401-0916	16 14 51	21.5	215.5	2.2		20.7	-14	4078	No stop
23 03 00	=1358-090	16 16 21	21.3	215.9	2.2		20.9	76	4090	23 01 31
23 03 00	J1400-1023	16 16 21	20.2	215.6	2.3		20.8	-17	4090	No stop
23 05 30	---	16 18 52	20.0	216.2	2.3		21.2	133	4109	23 03 01
23 06 00	J1401-0916	16 19 22	21.1	216.6	2.3		21.3	13	4109	23 06 00
23 07 00	=1358-090	16 20 22	21.0	216.9	2.3		21.4	60	4117	23 06 01
23 07 00	SJ1357.2	16 20 22	20.4	217.7	2.4		21.9	-14	4117	No stop
23 09 30	---	16 22 52	20.1	218.3	2.4		22.2	136	4136	23 07 01
23 09 30	J1401-0916	16 22 52	20.7	217.5	2.3		21.7	-14	4136	No stop
23 11 00	=1358-090	16 24 23	20.6	217.8	2.4		21.9	76	4147	23 09 31
23 11 00	SJ1357.2	16 24 23	20.0	218.7	2.4		22.4	-14	4147	No stop
23 13 30	---	16 26 53	19.8	219.3	2.5		22.7	136	4167	23 11 01
23 14 00	J1401-0916	16 27 23	20.3	218.6	2.4		22.3	16	4167	23 14 00
23 15 00	=1358-090	16 28 23	20.2	218.8	2.4		22.4	60	4174	23 14 01
23 15 00	SJ1357.2	16 28 23	19.6	219.6	2.5		22.9	-14	4174	No stop
23 17 30	---	16 30 54	19.4	220.2	2.5		23.2	136	4194	23 15 01
23 17 30	J1401-0916	16 30 54	20.0	219.4	2.5		22.7	-14	4194	No stop
23 19 00	=1358-090	16 32 24	19.8	219.8	2.5		22.9	76	4205	23 17 31
23 19 00	SJ1357.2	16 32 24	19.2	220.6	2.6		23.3	-14	4205	No stop
23 21 30	---	16 34 54	19.0	221.2	2.6		23.6	136	4224	23 19 01

Schedule for TORUN (Code Tr ) Page 15  
 e-EVN: RM010A

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 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 21 May 2017 Day 141 ---										
23 22 00	J1401-0916	16 35 25	19.6	220.5	2.6		23.3	16	4224	23 22 00
23 23 00	=1358-090	16 36 25	19.5	220.8	2.6		23.4	60	4232	23 22 01
23 23 00	SJ1357.2	16 36 25	18.8	221.6	2.6		23.8	-14	4232	No stop
23 25 30	---	16 38 55	18.6	222.1	2.7		24.1	136	4251	23 23 01
23 25 30	J1401-0916	16 38 55	19.2	221.4	2.6		23.7	-14	4251	No stop
23 27 00	=1358-090	16 40 25	19.1	221.7	2.6		23.9	76	4263	23 25 31
23 27 40	J1408-0752	16 41 05	21.1	220.6	2.5		23.2	19	4263	23 27 40
23 30 00	=1406-076	16 43 26	20.8	221.1	2.6		23.5	140	4281	23 27 41

```
-----
```

SETUP FILE INFORMATION:

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

==== Setup file: sess117.C2048e

Setup group: 9	Station: TORUN	Total bit rate: 1024
Format: MARK5B	Bits per sample: 2	Sample rate: 64.000
Number of channels: 8	DBE type: DBBC_DDC	Speedup factor: 1.00

Disk used to record data.

```

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

The following frequency sets based on these setups were used.

```

Frequency Set: 7 Setup file default. Used with PCAL = off
LO sum= 4958.49 4958.49 4958.49 4958.49 5022.49 5022.49 5022.49 5022.49
BBC fr= 758.49 758.49 758.49 758.49 822.49 822.49 822.49 822.49
Bandwd= 32.00 32.00 32.00 32.00 32.00 32.00 32.00 32.00
Matching frequency sets: 7
    
```

Track assignments are:

```

track1= 10, 14, 2, 6, 12, 16, 4, 8
barrel=roll_off
    
```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* SJ1357.2	13 54 37.689616 -09 18 01.94491	* 13 57 16.834900 *-09 32 38.55000	13 58 12.784216 -09 37 40.18961	0.00 0.00
* J1400-1023	13 57 40.677413 -10 09 10.94931	* 14 00 20.459434 *-10 23 41.00719	14 01 16.649539 -10 28 40.36932	0.00 0.00
0923+392	09 23 55.319219	* 09 27 03.013940	09 28 06.675954	0.13
* J0927+3902	39 15 23.56641	* 39 02 20.85181	38 57 54.02245	0.10
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc rfc_2015a Petrov, 2015, unpublished. 252917 observations			
0953+254	09 53 59.738485	* 09 56 49.875379	09 57 47.935126	0.11
* J0956+2515	25 29 33.58573	* 25 15 16.04983	25 10 20.51307	0.10
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc rfc_2015a Petrov, 2015, unpublished. 29120 observations			
1358-090	13 58 26.185613	* 14 01 05.331831	14 02 01.288872	0.21
* J1401-0916	-09 02 03.15960	*-09 16 31.57207	-09 21 30.14945	0.45
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc rfc_2015a Petrov, 2015, unpublished. 73 observations			
1406-076	14 06 17.898819	* 14 08 56.481197	14 09 52.246818	0.10
* J1408-0752	-07 38 15.91689	*-07 52 26.66662	-07 57 18.54840	0.10
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc rfc_2015a Petrov, 2015, unpublished. 4070 observations			

EFFECT OF SOLAR CORONA

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

```

Source      Sun distance (deg)
    
```

SJ1357.2	149.9
J1400-1023	150.9
J0927+3902	72.3
J0956+2515	82.1
J1401-0916	150.6
J1408-0752	151.7

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

## NETWORK MONITORING EXPERIMENT

PI: *Ross Burns*

Address: JIVE

Observing mode:

Schedule for TORUN (Code Tr )

Page 2

## Network Monitoring Experiment

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 25 May 2017 Day 145 ---										
Next scan frequencies: 1642.49 1642.49 1642.49 1642.49 1674.49 1674.49 1674.49 1674.49										
Next BBC frequencies: 657.51 657.51 657.51 657.51 625.51 625.51 625.51 625.51										
Next scan bandwidths: 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00										
12 00 00	J0854+2006	05 27 19	38.3	109.0	-3.5		-37.2	0	0	12 00 00
12 14 00	=OJ287	05 41 21	40.3	112.4	-3.2		-36.2	840	54	12 00 01
12 15 00	J0854+2006	05 42 21	40.5	112.7	-3.2		-36.1	54	54	12 15 00
12 29 00	=OJ287	05 56 23	42.4	116.3	-3.0		-35.0	840	108	12 15 01
12 31 00	J0854+2006	05 58 24	42.6	116.8	-3.0		-34.8	113	108	12 31 00
12 44 00	=OJ287	06 11 26	44.4	120.3	-2.7		-33.5	780	158	12 31 01
12 45 00	J0854+2006	06 12 26	44.5	120.5	-2.7		-33.4	54	158	12 45 00
12 59 00	=OJ287	06 26 28	46.3	124.5	-2.5		-31.8	840	212	12 45 01
13 00 00	J0854+2006	06 27 29	46.4	124.8	-2.5		-31.7	54	212	13 00 00
13 14 00	=OJ287	06 41 31	48.1	129.0	-2.2		-29.8	840	265	13 00 01
13 15 00	J0854+2006	06 42 31	48.2	129.3	-2.2		-29.7	54	265	13 15 00
13 29 00	=OJ287	06 56 33	49.8	133.7	-2.0		-27.5	840	319	13 15 01
13 30 00	J0956+2515	06 57 34	46.4	111.8	-3.0		-38.0	1	319	13 30 00
13 44 00	=OK290	07 11 36	48.3	115.5	-2.8		-36.8	840	373	13 30 01
13 45 00	J0956+2515	07 12 36	48.5	115.8	-2.8		-36.7	54	373	13 45 00
13 59 00	=OK290	07 26 38	50.3	119.7	-2.5		-35.2	840	427	13 45 01
14 01 00	J0956+2515	07 28 39	50.6	120.3	-2.5		-35.0	113	427	14 01 00
14 14 00	=OK290	07 41 41	52.2	124.2	-2.3		-33.3	780	477	14 01 01
14 15 00	J0956+2515	07 42 41	52.4	124.5	-2.3		-33.1	54	477	14 15 00
14 29 00	=OK290	07 56 43	54.0	129.0	-2.0		-31.0	840	531	14 15 01
14 30 00	J0956+2515	07 57 43	54.2	129.3	-2.0		-30.9	53	531	14 30 00
14 44 00	=OK290	08 11 46	55.7	134.2	-1.8		-28.4	840	585	14 30 01
14 45 00	J0956+2515	08 12 46	55.8	134.5	-1.8		-28.2	53	585	14 45 00
14 59 00	=OK290	08 26 48	57.3	139.7	-1.5		-25.4	840	638	14 45 01

## SETUP FILE INFORMATION:

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

==== Setup file: sess217.L512nme

```

Setup group:  18          Station: TORUN          Total bit rate:  512
Format: MARK5B          Bits per sample:  2          Sample rate: 32.000
Number of channels:  8   DBE type: DBBC_DDC        Speedup factor:  1.00

```

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00  2300.00  2300.00  2300.00  2300.00
Net SB=           L          L          U          U          L          L          U          U
IF SB =           L          L          L          L          L          L          L          L
Pol.  =           RCP         LCP         RCP         LCP         RCP         LCP         RCP         LCP
BBC   =            1          5          1          5          3          7          3          7
BBC SB=           U          U          L          L          U          U          L          L
IF    =           A1         B1         A1         B1         A1         B1         A1         B1

```

The following frequency sets based on these setups were used.

```

Frequency Set:  8 Setup file default. Used with PCAL = off
LO sum=  1642.49  1642.49  1642.49  1642.49  1674.49  1674.49  1674.49  1674.49
BBC fr=   657.51  657.51  657.51  657.51  625.51  625.51  625.51  625.51
Bandwd=   16.00  16.00  16.00  16.00  16.00  16.00  16.00  16.00
Matching frequency sets:  8

```

Track assignments are:

```

track1=  2,  6, 10, 14,  4,  8, 12, 16
barrel=roll_off

```

## POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
OJ287	08 51 57.250615	* 08 54 48.874926	08 55 47.125452	0.00
* J0854+2006	20 17 58.41743	* 20 06 30.64088	20 02 29.08809	0.00
0851+202	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc			
J0854+20	GSFC 2015a astro solution, unpublished 216540 observations.			
OK290	09 53 59.738481	* 09 56 49.875375	09 57 47.866497	0.41
* J0956+2515	25 29 33.58582	* 25 15 16.04992	25 10 20.70518	0.38
0953+254	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc			
J0956+25	GSFC 2015a astro solution, unpublished 26571 observations.			



em128btr

EM12B

PI: J. Moldon

Address: Jodrell Bank Centre for Astrophysics

Observing mode: 2nd epoch disk-based

Schedule for TORUN (Code Tr )

Page 2

EM12B

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

Table with columns: Start UT, Stop UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, TPStart, SYNC. Includes summary rows for frequencies and bandwidths, and a detailed observation log for May 25, 2017.

Schedule for TORUN (Code Tr )  
EM12B

Page 3

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start. Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are 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 25 May 2017	Day 145					---				
22 10 33	J2015+3710	15 39 32	40.8	79.6	-4.6		-47.9	-29	267	No stop	
22 11 58	=2013+370	15 40 57	41.1	79.8	-4.6		-47.9	56	278	22 10 34	
22 11 58	J2032+4127	15 40 57	41.4	72.7	-4.9		-50.0	-29	278	No stop	
22 15 58	---	15 44 58	42.0	73.4	-4.8		-50.2	211	309	22 11 59	
22 16 48	J2015+3710	15 45 48	41.8	80.7	-4.5		-48.1	20	309	22 16 48	
22 18 13	=2013+370	15 47 13	42.0	80.9	-4.5		-48.1	85	320	22 16 49	
22 18 13	J2032+4057	15 47 13	42.0	74.2	-4.8		-50.0	-28	320	No stop	
22 20 13	---	15 49 13	42.3	74.5	-4.7		-50.1	92	335	22 18 14	
22 20 13	J2015+3710	15 49 13	42.3	81.3	-4.4		-48.2	-29	335	No stop	
22 21 38	=2013+370	15 50 39	42.5	81.6	-4.4		-48.3	56	346	22 20 14	
22 21 38	J2032+4127	15 50 39	42.8	74.3	-4.7		-50.5	-29	346	No stop	
22 25 38	---	15 54 39	43.4	74.9	-4.6		-50.7	211	377	22 21 39	
22 26 28	J2015+3710	15 55 29	43.2	82.4	-4.3		-48.4	20	377	22 26 28	
22 27 53	=2013+370	15 56 55	43.4	82.7	-4.3		-48.4	85	388	22 26 29	
22 27 53	J2032+4127	15 56 55	43.7	75.3	-4.6		-50.9	-30	388	No stop	
22 31 53	---	16 00 55	44.3	76.0	-4.5		-51.1	210	419	22 27 54	
22 31 53	J2015+3710	16 00 55	44.0	83.4	-4.3		-48.5	-30	419	No stop	
22 33 18	=2013+370	16 02 20	44.2	83.7	-4.2		-48.6	55	429	22 31 54	
22 33 18	J2032+4127	16 02 20	44.5	76.2	-4.5		-51.1	-30	429	No stop	
22 37 18	---	16 06 21	45.1	76.9	-4.4		-51.3	210	460	22 33 19	
22 38 08	J2015+3710	16 07 11	45.0	84.6	-4.1		-48.7	20	460	22 38 08	
22 39 33	=2013+370	16 08 36	45.2	84.8	-4.1		-48.7	85	471	22 38 09	
22 39 33	J2032+4057	16 08 36	45.1	77.8	-4.4		-51.1	-29	471	No stop	
22 41 33	---	16 10 37	45.4	78.1	-4.4		-51.1	91	487	22 39 34	
22 41 33	J2015+3710	16 10 37	45.5	85.2	-4.1		-48.7	-29	487	No stop	
22 42 58	=2013+370	16 12 02	45.7	85.5	-4.1		-48.8	56	497	22 41 34	
22 42 58	J2032+4127	16 12 02	45.9	77.8	-4.3		-51.6	-30	497	No stop	
22 46 58	---	16 16 03	46.5	78.5	-4.3		-51.8	210	528	22 42 59	
22 47 48	J2015+3710	16 16 53	46.4	86.4	-4.0		-48.8	19	528	22 47 48	
22 49 13	=2013+370	16 18 18	46.6	86.7	-4.0		-48.8	85	539	22 47 49	
22 49 13	J2032+4127	16 18 18	46.9	78.9	-4.2		-51.9	-30	539	No stop	
22 53 13	---	16 22 19	47.4	79.5	-4.2		-52.1	210	570	22 49 14	

Schedule for TORUN (Code Tr )

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EM12B

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 25 May 2017 Day 145 ---										
22 53 13	J2015+3710	16 22 19	47.2	87.4	-3.9		-48.9	-31	570	No stop
22 54 38	=2013+370	16 23 44	47.4	87.7	-3.9		-48.9	54	581	22 53 14
22 54 38	J2032+4127	16 23 44	47.7	79.8	-4.2		-52.1	-31	581	No stop
22 58 38	---	16 27 45	48.3	80.5	-4.1		-52.3	209	612	22 54 39
22 59 28	J2015+3710	16 28 35	48.2	88.7	-3.8		-48.9	19	612	22 59 28
23 00 53	=2013+370	16 30 00	48.4	88.9	-3.8		-48.9	85	622	22 59 29
23 00 53	J2032+4057	16 30 00	48.2	81.4	-4.1		-51.9	-30	622	No stop
23 02 53	---	16 32 00	48.5	81.8	-4.0		-52.0	90	638	23 00 54
23 02 53	J2015+3710	16 32 00	48.7	89.3	-3.7		-49.0	-30	638	No stop
23 04 18	=2013+370	16 33 26	48.9	89.6	-3.7		-49.0	55	649	23 02 54
23 04 18	J2032+4127	16 33 26	49.1	81.5	-4.0		-52.5	-31	649	No stop
23 08 18	---	16 37 26	49.7	82.2	-3.9		-52.6	209	679	23 04 19
23 09 08	J2015+3710	16 38 16	49.6	90.6	-3.6		-49.0	18	679	23 09 08
23 10 33	=2013+370	16 39 42	49.8	90.9	-3.6		-48.9	85	690	23 09 09
23 10 33	J2032+4127	16 39 42	50.0	82.6	-3.9		-52.7	-31	690	No stop
23 14 33	---	16 43 42	50.6	83.3	-3.8		-52.8	209	721	23 10 34
23 14 33	J2015+3710	16 43 42	50.4	91.7	-3.5		-48.9	-32	721	No stop
23 15 58	=2013+370	16 45 07	50.6	92.0	-3.5		-48.9	53	732	23 14 34
23 15 58	J2032+4127	16 45 07	50.8	83.5	-3.8		-52.8	-32	732	No stop
23 19 58	---	16 49 08	51.4	84.2	-3.7		-52.9	208	763	23 15 59
23 20 48	J2015+3710	16 49 58	51.4	93.0	-3.4		-48.9	18	763	23 20 48
23 22 13	=2013+370	16 51 24	51.6	93.3	-3.4		-48.8	85	774	23 20 49
23 22 13	J2032+4057	16 51 24	51.4	85.2	-3.7		-52.5	-31	774	No stop
23 24 13	---	16 53 24	51.7	85.6	-3.7		-52.5	89	789	23 22 14
23 24 13	J2015+3710	16 53 24	51.9	93.7	-3.4		-48.8	-31	789	No stop
23 25 38	=2013+370	16 54 49	52.1	94.0	-3.4		-48.8	54	800	23 24 14
23 25 38	J2032+4127	16 54 49	52.3	85.3	-3.6		-53.1	-32	800	No stop
23 29 38	---	16 58 50	52.9	86.0	-3.6		-53.1	208	831	23 25 39
23 30 28	J2015+3710	16 59 40	52.8	95.1	-3.3		-48.7	17	831	23 30 28
23 31 53	=2013+370	17 01 05	53.0	95.4	-3.3		-48.7	85	842	23 30 29

Schedule for TORUN (Code Tr )

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EM12B

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 25 May 2017 Day 145 ---										
23 31 53	J2032+4127	17 01 05	53.2	86.4	-3.5		-53.2	-33	842	No stop
23 35 53	---	17 05 06	53.8	87.2	-3.5		-53.2	207	872	23 31 54
23 35 53	J2015+3710	17 05 06	53.6	96.3	-3.2		-48.6	-33	872	No stop
23 37 18	=2013+370	17 06 31	53.8	96.6	-3.2		-48.5	52	883	23 35 54
23 37 18	J2032+4127	17 06 31	54.0	87.5	-3.4		-53.2	-33	883	No stop
23 41 18	---	17 10 32	54.6	88.2	-3.4		-53.3	207	914	23 37 19
23 42 08	J2015+3710	17 11 22	54.6	97.7	-3.1		-48.4	16	914	23 42 08
23 43 33	=2013+370	17 12 47	54.8	98.0	-3.1		-48.3	85	925	23 42 09
23 43 33	J2032+4057	17 12 47	54.6	89.3	-3.3		-52.7	-32	925	No stop
23 45 33	---	17 14 47	54.9	89.7	-3.3		-52.7	88	940	23 43 34
23 45 33	J2015+3710	17 14 47	55.1	98.5	-3.0		-48.2	-33	940	No stop
23 46 58	=2013+370	17 16 13	55.3	98.8	-3.0		-48.2	52	951	23 45 34
23 46 58	J2032+4127	17 16 13	55.5	89.3	-3.3		-53.3	-34	951	No stop
23 50 58	---	17 20 13	56.1	90.1	-3.2		-53.3	206	982	23 46 59
23 51 58	J2015+3710	17 21 13	56.0	100.0	-2.9		-48.0	26	982	23 51 58
23 53 13	=2013+370	17 22 29	56.2	100.3	-2.9		-47.9	75	992	23 51 59
23 53 13	J2032+4127	17 22 29	56.4	90.6	-3.2		-53.3	-34	992	No stop
23 57 13	---	17 26 29	57.0	91.4	-3.1		-53.3	206	1022	23 53 14
23 57 13	J2015+3710	17 26 29	56.8	101.2	-2.8		-47.7	-35	1022	No stop
23 58 38	=2013+370	17 27 54	57.0	101.6	-2.8		-47.6	50	1033	23 57 14
--- Start: Thu 25 May 2017 Day 145 -- Stop: Fri 26 May 2017 Day 146 ---										
23 58 38	J2032+4127	17 27 54	57.2	91.7	-3.1		-53.3	-35	1033	No stop
00 02 38	---	17 31 55	57.8	92.5	-3.0		-53.2	205	1064	23 58 39
00 03 38	J2015+3710	17 32 55	57.8	102.8	-2.7		-47.3	25	1064	00 03 38
00 04 53	=2013+370	17 34 11	57.9	103.2	-2.7		-47.3	75	1074	00 03 39
00 04 53	J2032+4057	17 34 11	57.9	93.7	-3.0		-52.6	-34	1074	No stop
00 06 53	---	17 36 11	58.2	94.2	-2.9		-52.5	86	1089	00 04 54
00 06 53	J2015+3710	17 36 11	58.2	103.7	-2.7		-47.1	-34	1089	No stop
00 08 18	=2013+370	17 37 36	58.4	104.0	-2.6		-47.0	51	1100	00 06 54

Schedule for TORUN (Code Tr )

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EM12B

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 26 May 2017 Day 146 ---										
00 08 18	J2032+4127	17 37 36	58.7	93.8	-2.9		-53.1	-35	1100	No stop
00 12 18	---	17 41 37	59.3	94.6	-2.9		-53.1	205	1131	00 08 19
00 13 18	J2015+3710	17 42 37	59.2	105.4	-2.6		-46.7	24	1131	00 13 18
00 14 33	=2013+370	17 43 52	59.3	105.7	-2.5		-46.6	75	1140	00 13 19
00 14 33	J2032+4127	17 43 52	59.6	95.1	-2.8		-53.0	-36	1140	No stop
00 18 33	---	17 47 53	60.2	96.0	-2.7		-52.9	204	1171	00 14 34
00 18 33	J2015+3710	17 47 53	59.9	106.8	-2.5		-46.2	-37	1171	No stop
00 19 58	=2013+370	17 49 18	60.1	107.2	-2.4		-46.1	48	1182	00 18 34
00 19 58	J2032+4127	17 49 18	60.4	96.4	-2.7		-52.8	-36	1182	No stop
00 23 58	---	17 53 19	61.0	97.3	-2.7		-52.7	204	1213	00 19 59
00 24 58	J2015+3710	17 54 19	60.8	108.6	-2.4		-45.6	23	1213	00 24 58
00 26 13	=2013+370	17 55 34	61.0	108.9	-2.3		-45.5	75	1222	00 24 59
00 26 13	J2032+4057	17 55 34	61.0	98.6	-2.6		-51.9	-35	1222	No stop
00 28 13	---	17 57 34	61.3	99.1	-2.6		-51.8	85	1238	00 26 14
00 28 13	J2015+3710	17 57 34	61.3	109.5	-2.3		-45.3	-36	1238	No stop
00 29 38	=2013+370	17 59 00	61.5	109.9	-2.3		-45.2	49	1249	00 28 14
00 29 38	J2032+4127	17 59 00	61.9	98.6	-2.6		-52.4	-37	1249	No stop
00 33 38	---	18 03 00	62.5	99.6	-2.5		-52.2	203	1279	00 29 39
00 34 38	J2015+3710	18 04 00	62.2	111.4	-2.2		-44.6	22	1279	00 34 38
00 35 53	=2013+370	18 05 16	62.4	111.8	-2.2		-44.4	75	1289	00 34 39
00 35 53	J2032+4127	18 05 16	62.8	100.2	-2.5		-52.1	-38	1289	No stop
00 39 53	---	18 09 16	63.4	101.2	-2.4		-51.9	202	1320	00 35 54
00 39 53	J2015+3710	18 09 16	62.9	113.1	-2.1		-43.9	-39	1320	No stop
00 41 18	=2013+370	18 10 41	63.1	113.5	-2.1		-43.8	46	1331	00 39 54
00 41 18	J2032+4127	18 10 41	63.6	101.6	-2.4		-51.8	-39	1331	No stop
00 45 18	---	18 14 42	64.2	102.6	-2.3		-51.5	201	1362	00 41 19
00 46 18	J2015+3710	18 15 42	63.8	115.1	-2.0		-43.1	20	1362	00 46 18
00 47 33	=2013+370	18 16 58	64.0	115.6	-2.0		-42.9	75	1371	00 46 19
00 47 33	J2032+4057	18 16 58	64.2	104.1	-2.3		-50.5	-38	1371	No stop
00 49 33	---	18 18 58	64.5	104.6	-2.2		-50.4	82	1387	00 47 34

Schedule for TORUN (Code Tr )

Page 7

EM12B

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 26 May 2017 Day 146 ---										
00 49 33	J2015+3710	18 18 58	64.3	116.2	-2.0		-42.6	-39	1387	No stop
00 50 58	=2013+370	18 20 23	64.5	116.7	-1.9		-42.4	46	1397	00 49 34
00 50 58	J2032+4127	18 20 23	65.0	104.2	-2.2		-51.0	-40	1397	No stop
00 54 58	---	18 24 24	65.6	105.3	-2.1		-50.7	200	1428	00 50 59
00 55 58	J2015+3710	18 25 24	65.1	118.4	-1.8		-41.5	19	1428	00 55 58
00 57 13	=2013+370	18 26 39	65.3	118.9	-1.8		-41.3	75	1438	00 55 59
00 57 13	J2032+4127	18 26 39	65.9	106.0	-2.1		-50.4	-40	1438	No stop
01 01 13	---	18 30 40	66.5	107.2	-2.0		-50.0	200	1469	00 57 14
01 01 13	J2015+3710	18 30 40	65.8	120.4	-1.8		-40.6	-42	1469	No stop
01 02 38	=2013+370	18 32 05	66.0	120.9	-1.7		-40.3	43	1479	01 01 14
01 02 38	J2032+4127	18 32 05	66.7	107.6	-2.0		-49.8	-41	1479	No stop
01 06 38	---	18 36 06	67.3	108.9	-1.9		-49.4	199	1510	01 02 39
01 07 38	J2015+3710	18 37 06	66.6	122.8	-1.7		-39.4	17	1510	01 07 38
01 08 53	=2013+370	18 38 21	66.8	123.3	-1.6		-39.1	75	1520	01 07 39
01 08 53	J2032+4057	18 38 21	67.3	110.5	-1.9		-48.2	-40	1520	No stop
01 10 53	---	18 40 21	67.5	111.1	-1.9		-47.9	80	1535	01 08 54
01 10 53	J2015+3710	18 40 21	67.0	124.1	-1.6		-38.7	-41	1535	No stop
01 12 18	=2013+370	18 41 47	67.2	124.6	-1.6		-38.4	44	1546	01 10 54
01 12 18	J2032+4127	18 41 47	68.1	110.7	-1.9		-48.6	-42	1546	No stop
01 16 18	---	18 45 47	68.7	112.1	-1.8		-48.0	198	1577	01 12 19
01 17 18	J2015+3710	18 46 47	67.8	126.7	-1.5		-37.2	16	1577	01 17 18
01 18 43	=2013+370	18 48 13	68.0	127.3	-1.5		-36.9	85	1588	01 17 19
01 18 43	J2032+4127	18 48 13	69.0	112.9	-1.7		-47.6	-43	1588	No stop
01 22 43	---	18 52 13	69.6	114.3	-1.7		-46.9	197	1619	01 18 44
01 22 43	J2015+3710	18 52 13	68.5	129.0	-1.4		-35.9	-45	1619	No stop
01 24 18	=2013+370	18 53 49	68.7	129.7	-1.4		-35.5	50	1631	01 22 44
01 24 18	J2032+4127	18 53 49	69.8	114.9	-1.7		-46.7	-44	1631	No stop
01 28 18	---	18 57 49	70.3	116.4	-1.6		-45.9	196	1662	01 24 19
01 29 18	J2015+3710	18 58 49	69.2	132.0	-1.3		-34.1	14	1662	01 29 18
01 30 43	=2013+370	19 00 15	69.4	132.7	-1.3		-33.7	85	1672	01 29 19

Schedule for TORUN (Code Tr )

Page 8

EM12B

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 26 May 2017 Day 146 ---										
01 30 43	J2032+4057	19 00 15	70.3	118.4	-1.5		-44.5	-43	1672	No stop
01 33 43	---	19 03 15	70.6	119.6	-1.5		-43.8	137	1696	01 30 44
01 33 43	J2015+3710	19 03 15	69.7	134.1	-1.2		-32.8	-45	1696	No stop
01 35 18	=2013+370	19 04 50	69.9	134.9	-1.2		-32.3	50	1708	01 33 44
01 35 18	J2032+4127	19 04 50	71.2	119.3	-1.5		-44.4	-46	1708	No stop
01 39 18	---	19 08 51	71.8	121.0	-1.4		-43.4	194	1738	01 35 19
01 40 28	J2015+3710	19 10 01	70.4	137.5	-1.1		-30.6	22	1738	01 40 28
01 41 43	=2013+370	19 11 16	70.5	138.1	-1.1		-30.2	75	1748	01 40 29
01 41 43	J2032+4127	19 11 16	72.1	122.0	-1.4		-42.8	-47	1748	No stop
01 45 43	---	19 15 17	72.6	123.9	-1.3		-41.8	193	1779	01 41 44
01 45 43	J2015+3710	19 15 17	70.9	140.2	-1.0		-28.9	-49	1779	No stop
01 47 18	=2013+370	19 16 52	71.1	141.1	-1.0		-28.3	46	1791	01 45 44
01 47 18	J2032+4127	19 16 52	72.8	124.6	-1.3		-41.3	-47	1791	No stop
01 51 18	---	19 20 53	73.3	126.6	-1.2		-40.1	193	1822	01 47 19
01 52 28	J2015+3710	19 22 03	71.6	143.9	-0.9		-26.4	21	1822	01 52 28
01 53 43	=2013+370	19 23 18	71.7	144.7	-0.9		-25.9	75	1831	01 52 29
01 53 43	J2032+4057	19 23 18	73.1	128.8	-1.2		-38.4	-46	1831	No stop
01 56 43	---	19 26 19	73.5	130.3	-1.1		-37.4	134	1854	01 53 44
01 56 43	J2015+3710	19 26 19	71.9	146.4	-0.8		-24.7	-48	1854	No stop
01 58 18	=2013+370	19 27 54	72.1	147.3	-0.8		-24.0	47	1867	01 56 44
01 58 18	J2032+4127	19 27 54	74.1	130.2	-1.1		-37.8	-48	1867	No stop
02 02 18	---	19 31 55	74.5	132.4	-1.0		-36.3	192	1897	01 58 19
02 03 28	J2015+3710	19 33 05	72.5	150.4	-0.7		-21.8	19	1897	02 03 28
02 04 43	=2013+370	19 34 20	72.6	151.2	-0.7		-21.3	75	1907	02 03 29
02 04 43	J2032+4127	19 34 20	74.8	133.8	-1.0		-35.4	-49	1907	No stop
02 08 43	---	19 38 21	75.2	136.2	-0.9		-33.7	191	1938	02 04 44
02 08 43	J2015+3710	19 38 21	72.8	153.7	-0.6		-19.5	-51	1938	No stop
02 10 18	=2013+370	19 39 56	72.9	154.7	-0.6		-18.8	44	1950	02 08 44
02 10 18	J2032+4127	19 39 56	75.4	137.2	-0.9		-33.0	-49	1950	No stop
02 14 18	---	19 43 57	75.8	139.7	-0.8		-31.2	191	1981	02 10 19

Schedule for TORUN (Code Tr )

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EM12B

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 26 May 2017 Day 146 ---										
02 15 28	J2015+3710	19 45 07	73.2	158.1	-0.5		-16.3	19	1981	02 15 28
02 16 43	=2013+370	19 46 22	73.3	158.9	-0.5		-15.7	75	1990	02 15 29
02 16 43	J2032+4057	19 46 22	75.6	142.2	-0.8		-29.2	-48	1990	No stop
02 19 43	---	19 49 23	75.8	144.2	-0.7		-27.7	132	2013	02 16 44
02 19 43	J2015+3710	19 49 23	73.5	161.0	-0.4		-14.2	-50	2013	No stop
02 21 18	=2013+370	19 50 58	73.5	162.1	-0.4		-13.4	45	2026	02 19 44
02 21 18	J2032+4127	19 50 58	76.4	144.5	-0.7		-27.8	-49	2026	No stop
02 25 18	---	19 54 59	76.8	147.4	-0.6		-25.6	191	2056	02 21 19
02 26 28	J2015+3710	19 56 09	73.8	165.6	-0.3		-10.8	19	2056	02 26 28
02 27 43	=2013+370	19 57 24	73.8	166.5	-0.3		-10.1	75	2066	02 26 29
02 27 43	J2032+4127	19 57 24	77.0	149.2	-0.6		-24.2	-48	2066	No stop
02 31 43	---	20 01 25	77.3	152.3	-0.5		-21.9	192	2097	02 27 44
02 31 43	J2015+3710	20 01 25	73.9	169.4	-0.2		-8.0	-50	2097	No stop
02 33 18	=2013+370	20 03 00	74.0	170.5	-0.2		-7.2	45	2109	02 31 44
02 33 18	J2032+4127	20 03 00	77.4	153.6	-0.5		-20.9	-48	2109	No stop
02 37 18	---	20 07 01	77.6	156.8	-0.4		-18.4	192	2140	02 33 19
02 38 28	J2015+3710	20 08 11	74.1	174.2	-0.1		-4.4	21	2140	02 38 28
02 39 43	=2013+370	20 09 26	74.1	175.1	-0.1		-3.7	75	2149	02 38 29
02 39 43	J2032+4057	20 09 26	77.3	159.3	-0.4		-16.3	-45	2149	No stop
02 42 43	---	20 12 26	77.4	161.8	-0.3		-14.4	135	2172	02 39 44
02 42 43	J2015+3710	20 12 26	74.1	177.3	-0.1		-2.0	-47	2172	No stop
02 44 18	=2013+370	20 14 02	74.1	178.5	-0.0		-1.2	48	2185	02 42 44
02 55 18	3C454.3	20 25 04	43.0	127.1	-2.5		-29.9	526	2185	02 55 18
02 59 08	---	20 29 05	43.4	128.3	-2.4		-29.4	230	2214	02 55 19
03 02 14	J2015+3710	20 32 01	73.9	191.5	0.3		8.6	45	2214	03 02 14
03 04 14	=2013+370	20 34 11	73.8	193.0	0.3		9.8	120	2229	03 02 15
03 04 14	J2032+4127	20 34 01	78.4	181.1	0.0		0.9	-38	2229	No stop
03 08 14	---	20 38 02	78.4	184.8	0.1		3.9	202	2260	03 04 15
03 09 34	J2015+3710	20 39 22	73.6	196.6	0.4		12.5	42	2260	03 09 34
03 10 54	=2013+370	20 40 42	73.6	197.5	0.4		13.1	80	2271	03 09 35



Schedule for TORUN (Code Tr )

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EM12B

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 26 May 2017 Day 146 ---										
03 10 54	J2032+4127	20 40 42	78.3	187.3	0.1		5.8	-35	2271	No stop
03 14 54	---	20 44 43	78.2	191.0	0.2		8.8	205	2301	03 10 55
03 14 54	J2015+3710	20 44 43	73.4	200.3	0.5		15.1	-34	2301	No stop
03 16 44	=2013+370	20 46 33	73.3	201.5	0.5		16.0	76	2315	03 14 55
03 16 44	J2032+4127	20 46 33	78.2	192.6	0.2		10.1	-32	2315	No stop
03 20 44	---	20 50 34	78.0	196.2	0.3		12.9	208	2346	03 16 45
03 22 04	J2015+3710	20 51 54	73.0	205.0	0.6		18.6	47	2346	03 22 04
03 23 24	=2013+370	20 53 14	72.9	205.8	0.6		19.2	80	2356	03 22 05
03 23 24	J2032+4057	20 53 14	77.4	197.8	0.3		14.1	-31	2356	No stop
03 26 24	---	20 56 15	77.3	200.3	0.4		16.0	149	2379	03 23 25
03 26 24	J2015+3710	20 56 15	72.7	207.7	0.7		20.6	-31	2379	No stop
03 28 14	=2013+370	20 58 05	72.5	208.9	0.7		21.4	79	2394	03 26 25
03 28 14	J2032+4127	20 58 05	77.7	202.7	0.4		18.0	-33	2394	No stop
03 32 14	---	21 02 06	77.4	205.9	0.5		20.5	207	2424	03 28 15
03 33 34	J2015+3710	21 03 26	72.1	212.1	0.8		23.6	47	2424	03 33 34
03 34 54	=2013+370	21 04 46	72.0	212.9	0.8		24.2	80	2435	03 33 35
03 34 54	J2032+4127	21 04 46	77.2	208.1	0.5		22.2	-33	2435	No stop
03 38 54	---	21 08 47	76.9	211.1	0.6		24.5	207	2465	03 34 55
03 38 54	J2015+3710	21 08 47	71.7	215.2	0.9		25.8	-34	2465	No stop
03 40 44	=2013+370	21 10 37	71.5	216.3	0.9		26.5	76	2479	03 38 55
03 40 44	J2032+4127	21 10 37	76.8	212.5	0.6		25.5	-33	2479	No stop
03 44 44	---	21 14 38	76.5	215.4	0.7		27.7	207	2510	03 40 45
03 46 04	J2015+3710	21 15 58	71.0	219.2	1.0		28.5	46	2510	03 46 04
03 47 24	=2013+370	21 17 18	70.9	219.9	1.0		29.0	80	2521	03 46 05
03 47 24	J2032+4057	21 17 18	75.8	216.2	0.7		28.0	-32	2521	No stop
03 50 24	---	21 20 19	75.5	218.2	0.8		29.5	148	2544	03 47 25
03 50 24	J2015+3710	21 20 19	70.6	221.5	1.1		30.0	-32	2544	No stop
03 52 14	=2013+370	21 22 09	70.4	222.5	1.1		30.6	78	2558	03 50 25
03 52 14	J2032+4127	21 22 09	75.8	220.5	0.8		31.4	-34	2558	No stop
03 56 14	---	21 26 10	75.4	223.1	0.9		33.2	206	2588	03 52 15

Schedule for TORUN (Code Tr )

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EM12B

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

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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 26 May 2017 Day 146 ---										
03 57 34	J2015+3710	21 27 30	69.9	225.1	1.2		32.3	46	2588	03 57 34
03 58 54	=2013+370	21 28 50	69.7	225.8	1.2		32.7	80	2599	03 57 35
03 58 54	J2032+4127	21 28 50	75.1	224.7	0.9		34.3	-34	2599	No stop
04 02 54	---	21 32 51	74.6	227.1	1.0		35.9	206	2629	03 58 55
04 02 54	J2015+3710	21 32 51	69.3	227.7	1.3		33.9	-34	2629	No stop
04 04 44	=2013+370	21 34 41	69.1	228.6	1.3		34.4	76	2644	04 02 55
04 04 44	J2032+4127	21 34 41	74.4	228.1	1.0		36.6	-34	2644	No stop
04 08 44	---	21 38 42	74.0	230.3	1.1		38.1	206	2674	04 04 45
04 10 04	J2015+3710	21 40 02	68.5	231.0	1.4		35.9	46	2674	04 10 04
04 11 24	=2013+370	21 41 22	68.3	231.5	1.4		36.2	80	2685	04 10 05
04 11 24	J2032+4057	21 41 22	73.3	230.5	1.1		37.9	-32	2685	No stop
04 14 24	---	21 44 22	73.0	232.0	1.2		38.9	148	2708	04 11 25
04 14 24	J2015+3710	21 44 22	68.0	232.8	1.5		36.9	-33	2708	No stop
04 16 14	=2013+370	21 46 13	67.7	233.6	1.5		37.4	77	2722	04 14 25
04 16 14	J2032+4127	21 46 13	73.1	234.1	1.2		40.5	-34	2722	No stop
04 20 14	---	21 50 13	72.6	236.1	1.3		41.7	206	2753	04 16 15
04 21 34	J2015+3710	21 51 34	67.1	235.8	1.6		38.6	46	2753	04 21 34
04 22 54	=2013+370	21 52 54	66.9	236.3	1.6		38.9	80	2763	04 21 35
04 22 54	J2032+4127	21 52 54	72.3	237.3	1.3		42.4	-34	2763	No stop
04 26 54	---	21 56 55	71.8	239.1	1.4		43.5	206	2794	04 22 55
04 26 54	J2015+3710	21 56 55	66.4	237.9	1.7		39.7	-34	2794	No stop
04 28 44	=2013+370	21 58 45	66.2	238.6	1.7		40.1	76	2808	04 26 55
04 28 44	J2032+4127	21 58 45	71.5	239.9	1.4		43.9	-34	2808	No stop
04 32 44	---	22 02 45	71.0	241.5	1.5		44.8	206	2838	04 28 45
04 34 04	J2015+3710	22 04 06	65.5	240.6	1.8		41.1	46	2838	04 34 04
04 35 24	=2013+370	22 05 26	65.3	241.0	1.8		41.3	80	2849	04 34 05
04 35 24	J2032+4057	22 05 26	70.3	241.5	1.5		44.4	-32	2849	No stop
04 38 24	---	22 08 26	69.9	242.6	1.6		45.0	148	2872	04 35 25
04 38 24	J2015+3710	22 08 26	64.9	242.1	1.9		41.8	-33	2872	No stop
04 40 14	=2013+370	22 10 17	64.7	242.7	1.9		42.1	77	2886	04 38 25

Schedule for TORUN (Code Tr )

Page 12

EM12B

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 26 May 2017 Day 146 ---										
04 40 14	J2032+4127	22 10 17	70.0	244.5	1.6		46.4	-34	2886	No stop
04 44 14	---	22 14 17	69.4	246.0	1.7		47.1	206	2917	04 40 15
04 45 34	J2015+3710	22 15 38	63.9	244.6	2.0		42.9	46	2917	04 45 34
04 46 54	=2013+370	22 16 58	63.8	245.0	2.0		43.1	80	2927	04 45 35
04 46 54	J2032+4127	22 16 58	69.1	246.9	1.7		47.5	-34	2927	No stop
04 50 54	---	22 20 58	68.5	248.3	1.8		48.2	206	2958	04 46 55
04 50 54	J2015+3710	22 20 58	63.2	246.3	2.1		43.7	-34	2958	No stop
04 52 44	=2013+370	22 22 49	63.0	246.9	2.1		43.9	76	2972	04 50 55
04 52 44	J2032+4127	22 22 49	68.3	248.9	1.8		48.4	-33	2972	No stop
04 56 44	---	22 26 49	67.7	250.3	1.9		49.0	207	3003	04 52 45
04 58 04	J2015+3710	22 28 10	62.2	248.5	2.2		44.6	46	3003	04 58 04
04 59 24	=2013+370	22 29 30	62.0	248.9	2.2		44.7	80	3013	04 58 05
04 59 24	J2032+4057	22 29 30	67.0	250.1	1.9		48.4	-32	3013	No stop
05 02 24	---	22 32 30	66.6	251.0	2.0		48.8	148	3036	04 59 25
05 02 24	J2015+3710	22 32 30	61.6	249.8	2.3		45.1	-33	3036	No stop
05 04 14	=2013+370	22 34 21	61.4	250.4	2.3		45.3	77	3050	05 02 25
05 04 14	J2032+4127	22 34 21	66.6	252.6	2.0		49.9	-33	3050	No stop
05 08 14	---	22 38 21	66.0	253.8	2.1		50.4	207	3081	05 04 15
05 09 04	J2015+3710	22 39 11	60.7	251.8	2.4		45.8	16	3081	05 09 04
05 10 34	=2013+370	22 40 42	60.5	252.2	2.4		45.9	90	3092	05 09 05
05 10 34	J2032+4127	22 40 42	65.7	254.5	2.1		50.6	-33	3092	No stop
05 14 34	---	22 44 42	65.1	255.6	2.2		51.0	207	3123	05 10 35
05 15 24	J2015+3710	22 45 33	59.8	253.5	2.5		46.3	16	3123	05 15 24
05 16 54	=2013+370	22 47 03	59.5	253.9	2.5		46.5	90	3135	05 15 25
05 16 54	J2032+4057	22 47 03	64.5	255.3	2.2		50.3	-32	3135	No stop
05 19 54	---	22 50 03	64.1	256.2	2.3		50.6	148	3158	05 16 55
05 19 54	J2015+3710	22 50 03	59.1	254.8	2.6		46.7	-33	3158	No stop
05 21 24	=2013+370	22 51 33	58.9	255.2	2.6		46.8	57	3169	05 19 55
05 21 24	J2032+4127	22 51 33	64.1	257.5	2.3		51.5	-33	3169	No stop
05 24 24	---	22 54 34	63.7	258.3	2.4		51.7	147	3192	05 21 25

Schedule for TORUN (Code Tr )  
EM12B

Page 13

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
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 26 May 2017 Day 146 ---

```
05 25 09  J2015+3710  22 55 19  58.3 256.1  2.7      47.1   11   3192  05 25 09
05 26 39  =2013+370     22 56 49  58.1 256.5  2.7      47.2   90   3204  05 25 10

05 26 39  J2032+4127  22 56 49  63.4 258.9  2.4      51.9  -33   3204  No stop
05 29 39  ---          22 59 50  62.9 259.7  2.4      52.1  147   3227  05 26 40

05 30 24  J2015+3710  23 00 35  57.6 257.5  2.7      47.4   11   3227  05 30 24
05 31 54  =2013+370     23 02 05  57.3 257.8  2.8      47.5   90   3238  05 30 25
```

SETUP FILE INFORMATION:

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

==== Setup file: sess217.L1024

```
Setup group:   13          Station: TORUN          Total bit rate: 1024
Format: MARK5B          Bits per sample: 2      Sample rate: 64.000
Number of channels:  8    DBE type: DBBC_DDC      Speedup factor:  1.00
```

Disk used to record data.

1st LO=	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
Net SB=	L	L	U	U	L	L	U	U
IF SB =	L	L	L	L	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
BBC =	1	5	1	5	3	7	3	7
BBC SB=	U	U	L	L	U	U	L	L
IF =	A1	B1	A1	B1	A1	B1	A1	B1

The following frequency sets based on these setups were used.

Frequency Set: 8 Setup file default. Used with PCAL = off  
 LO sum= 1626.49 1626.49 1626.49 1626.49 1690.49 1690.49 1690.49 1690.49  
 BBC fr= 673.51 673.51 673.51 673.51 609.51 609.51 609.51 609.51  
 Bandwd= 32.00 32.00 32.00 32.00 32.00 32.00 32.00 32.00  
 Matching frequency sets: 8

Track assignments are:

track1= 2, 6, 10, 14, 4, 8, 12, 16  
 barrel=roll\_off

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* J2032+4127	20 30 25.750981	* 20 32 13.070000	20 32 51.092134	0.00
	41 17 08.83719	* 41 27 23.40000	41 30 48.41517	0.00
	This is our VLBI target pulsar			
2013+370	20 13 37.014511	* 20 15 28.729797	20 16 08.249437	0.13
* J2015+3710	37 01 44.45895	* 37 10 59.51482	37 14 05.84872	0.18
	GSFC 2015a astro solution, unpublished 131 observations.			
* J2032+4057	20 30 37.610625	* 20 32 25.770700	20 33 04.069759	2.50
	40 47 12.64463	* 40 57 27.91500	41 00 53.26774	2.50
	From rfc_2016c. 0.5 deg from PSR J2032+4127			
* 3C345	16 41 17.606228	* 16 42 58.809966	16 43 35.174197	0.76
J1642+3948	39 54 10.81496	* 39 48 36.99402	39 46 47.90432	0.52
1641+399	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc			
J1642+39	GSFC 2015a astro solution, unpublished 53430 observations.			
* 3C454.3	22 51 29.519738	* 22 53 57.747938	22 54 48.702510	0.67
J2253+1608	15 52 54.34810	* 16 08 53.56093	16 14 17.55966	0.70
2251+158	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc			
J2253+16	GSFC 2015a astro solution, unpublished 40748 observations.			

PROPER MOTION OF THE NEWLY DISCOVERED HELICAL FILAMENTS IN THE M87

PI: *Tuomas Savolainen*

Address: Aalto University Metsahovi Radio Observatory

Observing mode: EVN+LBA+VLBA L-band continuum, dual-pol

Schedule for TORUN (Code Tr )

Page 2

Proper motion of the newly discovered helical filaments in the M87 pc-sc

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

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 26 May 2017 Day 146 ---

```
Next scan frequencies: 1626.00 1626.00 1626.00 1626.00 1690.00 1690.00 1690.00 1690.00
Next BBC frequencies:  674.00  674.00  674.00  674.00  610.00  610.00  610.00  610.00
Next scan bandwidths:  32.00   32.00   32.00   32.00   32.00   32.00   32.00   32.00

12 13 50 1228+126    05 45 08   3.0 73.4 -6.8 D -36.1   0     0 12 13 50
12 23 00 ---         05 54 19   4.3 75.2 -6.6  -36.5   0    71 12 13 51

12 23 20 1228+126    05 54 39   4.4 75.3 -6.6  -36.5  14    71 12 23 20
12 33 00 ---         06 04 21   5.8 77.2 -6.5  -36.8 580   145 12 23 21

12 40 30 1228+126    06 11 52   6.9 78.6 -6.3  -37.1 443   145 12 40 30
12 50 00 ---         06 21 24   8.3 80.5 -6.2  -37.3 570   218 12 40 31

12 50 20 1228+126    06 21 44   8.3 80.6 -6.2  -37.3  14   218 12 50 20
13 00 00 ---         06 31 25   9.8 82.5 -6.0  -37.5 580   292 12 50 21
----- HartRAO and Onsala join -----
13 00 50 1219+044    06 32 15   4.6 89.3 -5.9  -37.0  17   292 13 00 50
13 03 00 ---         06 34 26   5.0 89.7 -5.8  -37.0 130   309 13 00 51

13 03 50 1228+126    06 35 16  10.3 83.2 -5.9  -37.6  16   309 13 03 50
13 13 00 ---         06 44 27  11.7 85.1 -5.8  -37.8 550   379 13 03 51

13 13 30 1228+126    06 44 57  11.8 85.2 -5.8  -37.8  24   379 13 13 30
13 23 00 ---         06 54 29  13.2 87.0 -5.6  -37.9 570   453 13 13 31

13 23 50 1219+044    06 55 19   8.1 93.9 -5.5  -36.9  17   453 13 23 50
13 26 00 ---         06 57 29   8.4 94.4 -5.4  -36.9 130   469 13 23 51
----- Medicina joins -----
13 30 30 1228+126    07 02 00  14.3 88.5 -5.5  -37.9 236   469 13 30 30
13 40 00 ---         07 11 32  15.8 90.4 -5.3  -37.9 570   542 13 30 31

13 40 30 1228+126    07 12 02  15.8 90.5 -5.3  -37.9  24   542 13 40 30
13 50 00 ---         07 21 33  17.3 92.4 -5.2  -37.9 570   615 13 40 31

----- Effelsberg, Jodrell Bank and Westerbork join -----
13 51 00 1219+044    07 22 34  12.2 99.5 -5.0  -36.4  27   615 13 51 00
13 53 00 ---         07 24 34  12.5 99.9 -5.0  -36.4 120   631 13 51 01
```

Schedule for TORUN (Code Tr )

Page 3

Proper motion of the newly discovered helical filaments in the M87 pc-sc

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 26 May 2017	Day 146					---				
13 54 00	1228+126	07 25 34	17.9	93.3	-5.1		-37.8	26	631	13 54 00	
14 03 00	---	07 34 35	19.2	95.1	-5.0		-37.7	540	700	13 54 01	
14 03 30	1228+126	07 35 06	19.3	95.2	-4.9		-37.7	24	700	14 03 30	
14 13 00	---	07 44 37	20.7	97.2	-4.8		-37.6	570	773	14 03 31	
14 14 00	1219+044	07 45 37	15.6	104.3	-4.6		-35.7	26	773	14 14 00	
14 16 00	---	07 47 38	15.8	104.7	-4.6		-35.6	120	788	14 14 01	
14 16 50	1226+023	07 48 28	13.2	104.7	-4.7		-35.5	26	788	14 16 50	
14 24 00	---	07 55 39	14.3	106.3	-4.6		-35.2	430	844	14 16 51	
14 25 10	1253-055	07 56 49	4.1	105.5	-5.0		-35.6	18	844	14 25 10	
14 27 10	---	07 58 49	4.4	105.9	-5.0		-35.5	120	859	14 25 11	
14 28 30	1219+044	08 00 10	17.7	107.3	-4.4		-35.1	17	859	14 28 30	
14 30 40	---	08 02 20	18.0	107.8	-4.3		-35.0	130	876	14 28 31	
14 31 40	1228+126	08 03 20	23.5	101.1	-4.5		-37.1	26	876	14 31 40	
14 40 40	---	08 12 22	24.8	103.0	-4.3		-36.8	540	945	14 31 41	
14 41 10	1228+126	08 12 52	24.9	103.1	-4.3		-36.8	24	945	14 41 10	
14 50 40	---	08 22 23	26.3	105.2	-4.2		-36.4	570	1018	14 41 11	
14 51 40	1219+044	08 23 23	20.9	112.4	-4.0		-33.8	26	1018	14 51 40	
14 53 50	---	08 25 34	21.2	112.9	-4.0		-33.7	130	1035	14 51 41	
14 55 00	1228+126	08 26 44	26.9	106.1	-4.1		-36.2	35	1035	14 55 00	
15 00 00	---	08 31 45	27.6	107.3	-4.0		-35.9	300	1073	14 55 01	
----- LBA finishes -----											
15 00 30	1228+126	08 32 15	27.7	107.4	-4.0		-35.9	24	1073	15 00 30	
15 10 00	---	08 41 47	29.1	109.5	-3.8		-35.4	570	1146	15 00 31	
15 11 00	1219+044	08 42 47	23.6	116.8	-3.7		-32.5	25	1146	15 11 00	
15 13 10	---	08 44 57	23.9	117.3	-3.6		-32.4	130	1163	15 11 01	
15 14 10	1228+126	08 45 57	29.6	110.5	-3.8		-35.2	25	1163	15 14 10	
15 23 10	---	08 54 59	30.9	112.6	-3.6		-34.6	540	1232	15 14 11	
15 23 40	1228+126	08 55 29	31.0	112.7	-3.6		-34.5	24	1232	15 23 40	
15 33 10	---	09 05 00	32.3	115.0	-3.4		-33.9	570	1305	15 23 41	
15 34 10	1219+044	09 06 00	26.6	122.2	-3.3		-30.6	25	1305	15 34 10	
15 36 10	---	09 08 01	26.9	122.7	-3.3		-30.4	120	1321	15 34 11	

Schedule for TORUN (Code Tr )

Page 4

Proper motion of the newly discovered helical filaments in the M87 pc-sc

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 26 May 2017 Day 146 ---										
15 37 20	1253-055	09 09 11	14.1	120.7	-3.8		-31.3	8	1321	15 37 20
15 39 20	---	09 11 11	14.4	121.1	-3.8		-31.1	120	1336	15 37 21
15 40 50	1228+126	09 12 42	33.3	116.8	-3.3		-33.3	5	1336	15 40 50
15 50 20	---	09 22 13	34.6	119.2	-3.2		-32.5	570	1409	15 40 51
15 50 50	1228+126	09 22 43	34.7	119.3	-3.1		-32.4	24	1409	15 50 50
16 00 20	---	09 32 15	35.9	121.7	-3.0		-31.5	570	1482	15 50 51
16 01 20	1219+044	09 33 15	29.9	129.0	-2.8		-27.9	24	1482	16 01 20
16 03 30	---	09 35 25	30.2	129.5	-2.8		-27.7	130	1499	16 01 21
16 04 30	1228+126	09 36 25	36.4	122.8	-2.9		-31.1	23	1499	16 04 30
16 13 30	---	09 45 27	37.5	125.2	-2.8		-30.2	540	1568	16 04 31
16 14 00	1228+126	09 45 57	37.6	125.3	-2.8		-30.1	24	1568	16 14 00
16 23 30	---	09 55 29	38.7	127.9	-2.6		-29.0	570	1641	16 14 01
16 24 30	1219+044	09 56 29	32.5	135.0	-2.4		-25.2	23	1641	16 24 30
16 26 30	---	09 58 29	32.7	135.6	-2.4		-24.9	120	1656	16 24 31
16 27 40	1253-055	09 59 39	20.2	132.2	-3.0		-26.6	9	1656	16 27 40
16 29 40	---	10 01 40	20.4	132.7	-2.9		-26.4	120	1672	16 27 41
16 31 10	1228+126	10 03 10	39.6	130.0	-2.5		-28.1	4	1672	16 31 10
16 40 40	---	10 12 41	40.7	132.7	-2.3		-26.8	570	1745	16 31 11
16 41 10	1228+126	10 13 11	40.8	132.8	-2.3		-26.8	24	1745	16 41 10
16 50 40	---	10 22 43	41.8	135.6	-2.1		-25.5	570	1818	16 41 11
16 51 40	1219+044	10 23 43	35.2	142.5	-2.0		-21.5	21	1818	16 51 40
16 53 40	---	10 25 44	35.4	143.1	-2.0		-21.2	120	1833	16 51 41
16 54 30	1226+023	10 26 34	32.9	142.4	-2.1		-21.5	26	1833	16 54 30
17 01 40	---	10 33 45	33.5	144.4	-1.9		-20.5	430	1888	16 54 31
17 02 40	1219+044	10 34 45	36.2	145.7	-1.8		-19.8	36	1888	17 02 40
17 04 50	---	10 36 55	36.4	146.3	-1.8		-19.5	130	1905	17 02 41
17 05 50	1228+126	10 37 56	43.3	140.2	-1.9		-23.2	20	1905	17 05 50
17 14 50	---	10 46 57	44.2	143.0	-1.7		-21.7	540	1974	17 05 51
17 15 20	1228+126	10 47 27	44.2	143.2	-1.7		-21.6	24	1974	17 15 20
17 24 50	---	10 56 59	45.0	146.3	-1.6		-20.0	570	2047	17 15 21



Schedule for TORUN (Code Tr )

Page 5

Proper motion of the newly discovered helical filaments in the M87 pc-sc

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 26 May 2017 Day 146 ---										
17 25 50	1219+044	10 57 59	38.0	152.6	-1.4		-16.1	20	2047	17 25 50
17 27 50	---	10 59 59	38.1	153.2	-1.4		-15.7	120	2063	17 25 51
17 29 20	1253-055	11 01 29	26.2	147.6	-1.9		-18.9	31	2063	17 29 20
17 31 20	---	11 03 30	26.3	148.1	-1.9		-18.6	120	2078	17 29 21
17 33 10	1228+126	11 05 20	45.7	149.0	-1.4		-18.4	24	2078	17 33 10
17 42 20	---	11 14 32	46.4	152.1	-1.3		-16.7	550	2149	17 33 11
17 42 50	1228+126	11 15 02	46.4	152.3	-1.3		-16.6	24	2149	17 42 50
17 52 20	---	11 24 33	47.1	155.5	-1.1		-14.7	570	2222	17 42 51
17 53 20	1219+044	11 25 33	39.6	161.2	-1.0		-11.2	18	2222	17 53 20
17 55 30	---	11 27 44	39.7	161.9	-0.9		-10.8	130	2238	17 53 21
17 56 30	1228+126	11 28 44	47.3	157.0	-1.0		-13.9	18	2238	17 56 30
18 05 30	---	11 37 45	47.8	160.2	-0.9		-12.0	540	2308	17 56 31
18 06 00	1228+126	11 38 15	47.8	160.3	-0.9		-11.9	24	2308	18 06 00
18 15 30	---	11 47 47	48.3	163.8	-0.7		-9.9	570	2381	18 06 01
18 16 30	1219+044	11 48 47	40.5	168.7	-0.6		-6.8	17	2381	18 16 30
18 18 30	---	11 50 47	40.6	169.3	-0.5		-6.4	120	2396	18 16 31
18 20 00	1253-055	11 52 18	29.4	161.4	-1.1		-11.1	34	2396	18 20 00
18 22 00	---	11 54 18	29.5	162.0	-1.0		-10.8	120	2412	18 20 01
18 23 50	1228+126	11 56 08	48.6	166.8	-0.6		-8.1	25	2412	18 23 50
18 33 00	---	12 05 20	48.9	170.2	-0.4		-6.0	550	2482	18 23 51
18 33 30	1228+126	12 05 50	48.9	170.4	-0.4		-5.9	24	2482	18 33 30
18 43 00	---	12 15 21	49.1	173.9	-0.3		-3.7	570	2555	18 33 31
----- Tianma finishes -----										
18 44 10	1219+044	12 16 32	41.0	177.8	-0.1		-1.3	26	2555	18 44 10
18 46 10	---	12 18 32	41.0	178.4	-0.1		-0.9	120	2571	18 44 11
18 47 20	1228+126	12 19 42	49.1	175.5	-0.2		-2.8	26	2571	18 47 20
18 56 20	---	12 28 44	49.2	178.9	-0.0		-0.7	540	2640	18 47 21
18 56 50	1228+126	12 29 14	49.2	179.1	-0.0		-0.6	24	2640	18 56 50
19 06 20	---	12 38 45	49.2	182.6	0.1		1.6	570	2713	18 56 51

Schedule for TORUN (Code Tr )

Page 6

Proper motion of the newly discovered helical filaments in the M87 pc-sc

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 26 May 2017 Day 146 ---										
19 07 30	1219+044	12 39 56	40.9	185.5	0.3		3.3	25	2713	19 07 30
19 09 30	---	12 41 56	40.9	186.2	0.3		3.7	120	2728	19 07 31
19 10 50	1253-055	12 43 16	30.9	176.0	-0.2		-2.4	29	2728	19 10 50
19 12 50	---	12 45 16	31.0	176.6	-0.2		-2.1	120	2744	19 10 51
19 14 40	1228+126	12 47 07	49.1	185.8	0.3		3.5	28	2744	19 14 40
19 24 10	---	12 56 38	48.9	189.3	0.4		5.7	570	2817	19 14 41
----- Badary finishes -----										
19 24 40	1228+126	12 57 08	48.9	189.5	0.4		5.8	24	2817	19 24 40
19 34 10	---	13 06 40	48.6	193.0	0.6		7.9	570	2890	19 24 41
19 35 20	1219+044	13 07 50	40.2	194.6	0.7		8.7	25	2890	19 35 20
19 37 20	---	13 09 50	40.1	195.3	0.8		9.1	120	2905	19 35 21
19 38 10	1226+023	13 10 41	38.2	193.0	0.7		7.7	29	2905	19 38 10
19 45 20	---	13 17 52	37.9	195.2	0.8		9.1	430	2960	19 38 11
19 46 10	1219+044	13 18 42	39.7	198.1	0.9		10.8	29	2960	19 46 10
19 48 20	---	13 20 52	39.6	198.8	1.0		11.2	130	2977	19 46 11
19 49 30	1228+126	13 22 02	48.0	198.5	0.8		11.3	25	2977	19 49 30
19 58 50	---	13 31 24	47.5	201.9	1.0		13.2	560	3049	19 49 31
----- SC, HN, NL join -----										
20 00 00	1219+044	13 32 34	39.0	202.5	1.2		13.3	24	3049	20 00 00
20 02 00	---	13 34 34	38.9	203.1	1.2		13.7	120	3064	20 00 01
20 03 20	1228+126	13 35 55	47.2	203.4	1.1		14.2	35	3064	20 03 20
20 13 00	---	13 45 36	46.6	206.8	1.2		16.1	580	3138	20 03 21
20 13 30	1228+126	13 46 06	46.6	207.0	1.2		16.2	24	3138	20 13 30
20 23 00	---	13 55 38	45.9	210.2	1.4		18.0	570	3212	20 13 31
20 24 10	1219+044	13 56 48	37.4	209.9	1.6		17.5	24	3212	20 24 10
20 26 10	---	13 58 48	37.2	210.5	1.6		17.8	120	3227	20 24 11
20 27 20	1253-055	13 59 59	29.5	198.0	1.0		10.8	27	3227	20 27 20
20 29 20	---	14 01 59	29.4	198.6	1.1		11.1	120	3242	20 27 21
20 31 10	1228+126	14 03 49	45.3	212.9	1.5		19.5	37	3242	20 31 10
20 40 40	---	14 13 21	44.4	216.0	1.7		21.2	570	3315	20 31 11

Schedule for TORUN (Code Tr )

Page 7

Proper motion of the newly discovered helical filaments in the M87 pc-sc  
 UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 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 26 May 2017 Day 146 ---										
20 41 10	1228+126	14 13 51	44.4	216.1	1.7		21.2	24	3315	20 41 10
20 50 40	---	14 23 22	43.5	219.1	1.9		22.8	570	3388	20 41 11
20 51 40	1219+044	14 24 23	35.1	217.9	2.0		21.7	15	3388	20 51 40
20 53 50	---	14 26 33	34.9	218.5	2.1		22.0	130	3405	20 51 41
----- Urumqi leaves; FD, LA, PT join -----										
20 54 50	1228+126	14 27 33	43.1	220.4	1.9		23.5	15	3405	20 54 50
21 03 50	---	14 36 35	42.2	223.1	2.1		24.9	540	3474	20 54 51
21 04 20	1228+126	14 37 05	42.2	223.3	2.1		24.9	24	3474	21 04 20
21 13 50	---	14 46 36	41.2	226.1	2.2		26.3	570	3547	21 04 21
21 14 50	1219+044	14 47 36	32.8	224.3	2.4		24.9	15	3547	21 14 50
21 16 50	---	14 49 37	32.6	224.9	2.4		25.1	120	3563	21 14 51
21 18 00	1253-055	14 50 47	26.3	211.9	1.9		18.6	29	3563	21 18 00
21 20 00	---	14 52 47	26.2	212.4	1.9		18.9	120	3578	21 18 01
21 21 30	1228+126	14 54 18	40.3	228.3	2.4		27.3	23	3578	21 21 30
21 31 00	---	15 03 49	39.2	231.0	2.5		28.5	570	3651	21 21 31
21 31 30	1228+126	15 04 19	39.2	231.1	2.5		28.6	24	3651	21 31 30
21 41 00	---	15 13 51	38.0	233.7	2.7		29.7	570	3724	21 31 31
21 42 00	1219+044	15 14 51	29.8	231.4	2.9		28.1	15	3724	21 42 00
21 44 10	---	15 17 01	29.5	232.0	2.9		28.3	130	3741	21 42 01
----- KP, OV, BR join -----										
21 45 10	1228+126	15 18 01	37.5	234.9	2.8		30.2	16	3741	21 45 10
21 54 10	---	15 27 03	36.4	237.2	2.9		31.1	540	3810	21 45 11
21 54 40	1228+126	15 27 33	36.3	237.4	2.9		31.2	24	3810	21 54 40
22 04 10	---	15 37 05	35.1	239.8	3.1		32.1	570	3883	21 54 41
22 05 10	1219+044	15 38 05	26.9	237.2	3.2		30.4	16	3883	22 05 10
22 07 10	---	15 40 05	26.7	237.7	3.3		30.6	120	3899	22 05 11
22 08 00	1226+023	15 40 55	25.5	235.0	3.2		29.5	30	3899	22 08 00
22 15 10	---	15 48 06	24.6	236.8	3.3		30.2	430	3954	22 08 01
22 16 20	1253-055	15 49 17	20.8	226.6	2.9		26.0	34	3954	22 16 20
22 18 20	---	15 51 17	20.5	227.0	2.9		26.2	120	3969	22 16 21

Schedule for TORUN (Code Tr )

Page 8

Proper motion of the newly discovered helical filaments in the M87 pc-sc

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 26 May 2017 Day 146 ---										
22 19 20	1219+044	15 52 17	25.1	240.6	3.5		31.6	18	3969	22 19 20
22 21 20	---	15 54 17	24.8	241.0	3.5		31.8	120	3985	22 19 21
22 22 20	1228+126	15 55 18	32.7	244.3	3.4		33.6	16	3985	22 22 20
22 31 50	---	16 04 49	31.4	246.6	3.6		34.3	570	4058	22 22 21
22 32 20	1228+126	16 05 19	31.3	246.7	3.6		34.4	24	4058	22 32 20
22 41 50	---	16 14 51	30.0	248.9	3.7		35.0	570	4131	22 32 21
22 42 50	1219+044	16 15 51	21.9	246.0	3.9		33.4	16	4131	22 42 50
22 45 00	---	16 18 01	21.6	246.5	3.9		33.5	130	4147	22 42 51
22 46 10	1253-055	16 19 11	17.3	233.5	3.4		29.0	29	4147	22 46 10
22 48 10	---	16 21 12	17.1	234.0	3.4		29.2	120	4163	22 46 11
22 49 40	1228+126	16 22 42	28.9	250.7	3.8		35.5	31	4163	22 49 40
22 59 10	---	16 32 14	27.5	252.9	4.0		36.0	570	4236	22 49 41
22 59 40	1228+126	16 32 44	27.5	253.0	4.0		36.0	24	4236	22 59 40
23 09 10	---	16 42 15	26.1	255.1	4.2		36.4	570	4309	22 59 41
23 10 10	1219+044	16 43 15	18.1	252.0	4.3		34.9	16	4309	23 10 10
23 12 10	---	16 45 16	17.8	252.4	4.4		35.0	120	4324	23 10 11
23 13 10	1228+126	16 46 16	25.5	256.0	4.2		36.6	17	4324	23 13 10
23 22 40	---	16 55 47	24.1	258.0	4.4		37.0	570	4397	23 13 11
23 23 10	1228+126	16 56 18	24.1	258.1	4.4		37.0	24	4397	23 23 10
23 32 40	---	17 05 49	22.6	260.1	4.6		37.3	570	4470	23 23 11
23 33 40	1219+044	17 06 49	14.7	257.0	4.7		35.9	16	4470	23 33 40
23 35 50	---	17 09 00	14.4	257.4	4.8		36.0	130	4487	23 33 41
23 37 00	1253-055	17 10 10	10.8	244.7	4.2		33.1	29	4487	23 37 00
23 39 00	---	17 12 10	10.5	245.2	4.3		33.2	120	4503	23 37 01
23 40 30	1228+126	17 13 40	21.5	261.8	4.7		37.5	35	4503	23 40 30
23 50 00	---	17 23 12	20.1	263.8	4.9		37.7	570	4576	23 40 31
23 50 30	1228+126	17 23 42	20.0	263.9	4.9		37.7	24	4576	23 50 30
23 59 59	---	17 33 14	18.6	265.8	5.0		37.8	569	4649	23 50 31

Schedule for TORUN (Code Tr )

Page 9

Proper motion of the newly discovered helical filaments in the M87 pc-sc  
 UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 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 27 May 2017 Day 147 ---

----- Zelenchuskaya, HartRAO finish; MK joins -----

```
00 01 00 1219+044    17 34 14  10.6 262.6  5.2    36.7   17   4649  00 01 00
00 03 00 ---          17 36 14  10.3 263.0  5.2    36.7  120   4664  00 01 01

00 04 00 1228+126    17 37 14  18.0 266.6  5.1    37.8   17   4664  00 04 00
00 13 30 ---          17 46 46  16.5 268.5  5.3    37.9  570   4737  00 04 01

00 14 00 1228+126    17 47 16  16.5 268.6  5.3    37.9   24   4737  00 14 00
00 23 30 ---          17 56 47  15.0 270.6  5.4    37.9  570   4810  00 14 01
```

----- Svetloe finishes -----

```
00 24 30 1219+044    17 57 48   7.1 267.4  5.6    37.0   17   4810  00 24 30
00 26 40 ---          17 59 58   6.8 267.8  5.6    37.0  130   4827  00 24 31

00 27 50 1253-055    18 01 08   3.6 255.3  5.1    35.7   30   4827  00 27 50
00 29 50 ---          18 03 08   3.3 255.7  5.1    35.8  120   4842  00 27 51

00 31 20 1228+126    18 04 39  13.9 272.1  5.5    37.9   36   4842  00 31 20
00 40 50 ---          18 14 10  12.4 274.0  5.7    37.8  570   4915  00 31 21

00 41 20 1228+126    18 14 40  12.3 274.1  5.7    37.8   24   4915  00 41 20
00 50 50 ---          18 24 12  10.9 276.0  5.9    37.7  570   4988  00 41 21
```

----- Irbene finishes -----

```
00 51 50 1219+044    18 25 12   3.0 272.9  6.0    37.0   17   4988  00 51 50
00 53 50 ---          18 27 12   2.7 273.3  6.1  D   36.9   0   5004  00 51 51

00 54 50 1228+126    18 28 13  10.3 276.8  5.9    37.6   18   5004  00 54 50
01 00 00 ---          18 33 23   9.6 277.8  6.0    37.5  310   5044  00 54 51
```

## SETUP FILE INFORMATION:

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

===== Setup file: sess217.L1024glob

```
Setup group: 28      Station: TORUN      Total bit rate: 1024
Format: MARK5B     Bits per sample: 2    Sample rate: 64.000
Number of channels: 8  DBE type: DBBC_DDC  Speedup factor: 1.00
```

Disk used to record data.

1st LO=	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
Net SB=	L	L	U	U	L	L	U	U
IF SB =	L	L	L	L	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
BBC =	1	5	1	5	3	7	3	7
BBC SB=	U	U	L	L	U	U	L	L
IF =	A1	B1	A1	B1	A1	B1	A1	B1

The following frequency sets based on these setups were used.

Frequency Set: 12 Setup file default. Used with PCAL = off  
 LO sum= 1626.00 1626.00 1626.00 1626.00 1690.00 1690.00 1690.00 1690.00  
 BBC fr= 674.00 674.00 674.00 674.00 610.00 610.00 610.00 610.00  
 Bandwd= 32.00 32.00 32.00 32.00 32.00 32.00 32.00 32.00  
 Matching frequency sets: 12

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)
* 1219+044	12 19 49.255033	* 12 22 22.549623	12 23 15.866640	0.10
J1222+0413	04 29 53.60828	* 04 13 15.77607	04 07 31.54120	0.10
/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc rfc_2015a Petrov, 2015, unpublished. 35127 observations				
* 1226+023	12 26 33.245835	* 12 29 06.699731	12 30 00.133541	0.10
J1229+0203	02 19 43.30558	* 02 03 08.59808	01 57 25.08738	0.10
/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc rfc_2015a Petrov, 2015, unpublished. 32035 observations				
* 1228+126	12 28 17.569279	* 12 30 49.423381	12 31 42.199993	0.10
J1230+1223	12 40 01.74887	* 12 23 28.04369	12 17 48.05249	0.10
/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc rfc_2015a Petrov, 2015, unpublished. 58965 observations				
* 1253-055	12 53 35.831290	* 12 56 11.166558	12 57 05.486122	0.10
J1256-0547	-05 31 07.99622	*-05 47 21.52508	-05 52 58.64530	0.11
/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc rfc_2015a Petrov, 2015, unpublished. 8135 observations				

em127ctr

EVN: EM127C
PI: Maan

Address: JIVE

Observing mode: vlbi

Schedule for TORUN (Code Tr ) Page 2
EVN: EM127C

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
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 27 May 2017 Day 147 ---

Next scan frequencies: 1353.49 1353.49 1353.49 1353.49 1417.49 1417.49 1417.49 1417.49
Next BBC frequencies: 746.51 746.51 746.51 746.51 682.51 682.51 682.51 682.51
Next scan bandwidths: 32.00 32.00 32.00 32.00 32.00 32.00 32.00 32.00

Table with columns: Start UT, Stop UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, TPStart, SYNC. Contains multiple rows of observation data.

Schedule for TORUN (Code Tr )

Page 3

EVN: EM127C

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 27 May 2017 Day 147 ---										
08 15 30	J0521+2112	01 50 05	38.7	107.1	-3.5		-38.0	-19	304	No stop
08 18 00	=0518+211	01 52 35	39.0	107.7	-3.5		-37.9	131	323	08 15 31
08 18 00	B0525+21	01 52 35	38.6	105.4	-3.6		-38.6	-18	323	No stop
08 21 30	---	01 56 06	39.1	106.2	-3.6		-38.5	192	350	08 18 01
08 22 10	J0521+2112	01 56 46	39.6	108.7	-3.4		-37.6	21	350	08 22 10
08 24 00	=0518+211	01 58 36	39.9	109.1	-3.4		-37.5	110	364	08 22 11
08 24 00	B0525+21	01 58 36	39.5	106.8	-3.5		-38.3	-18	364	No stop
08 27 30	---	02 02 07	40.0	107.6	-3.5		-38.1	192	391	08 24 01
08 27 30	J0521+2112	02 02 07	40.4	110.0	-3.3		-37.3	-19	391	No stop
08 30 00	=0518+211	02 04 37	40.8	110.6	-3.3		-37.1	131	410	08 27 31
08 30 00	B0525+21	02 04 37	40.4	108.2	-3.4		-38.0	-19	410	No stop
08 33 30	---	02 08 08	40.9	109.1	-3.4		-37.7	191	437	08 30 01
08 34 10	J0521+2112	02 08 48	41.3	111.6	-3.2		-36.8	21	437	08 34 10
08 36 00	=0518+211	02 10 38	41.6	112.1	-3.2		-36.7	110	451	08 34 11
08 36 00	B0525+21	02 10 38	41.2	109.7	-3.3		-37.6	-19	451	No stop
08 39 30	---	02 14 09	41.7	110.5	-3.3		-37.3	191	478	08 36 01
08 39 30	J0521+2112	02 14 09	42.1	113.0	-3.1		-36.4	-19	478	No stop
08 42 00	=0518+211	02 16 39	42.4	113.6	-3.1		-36.2	131	497	08 39 31
08 42 00	B0525+21	02 16 39	42.1	111.2	-3.2		-37.2	-19	497	No stop
08 45 30	---	02 20 10	42.6	112.0	-3.2		-36.9	191	524	08 42 01
08 46 10	J0521+2112	02 20 50	43.0	114.7	-3.0		-35.8	21	524	08 46 10
08 48 00	=0518+211	02 22 40	43.2	115.1	-3.0		-35.7	110	538	08 46 11
08 48 00	B0525+21	02 22 40	42.9	112.7	-3.1		-36.7	-19	538	No stop
08 51 30	---	02 26 11	43.4	113.6	-3.1		-36.4	191	565	08 48 01
08 51 30	J0521+2112	02 26 11	43.7	116.1	-2.9		-35.4	-19	565	No stop
08 54 00	=0518+211	02 28 41	44.1	116.7	-2.9		-35.1	131	585	08 51 31
08 54 00	B0525+21	02 28 41	43.7	114.2	-3.0		-36.2	-19	585	No stop
08 57 30	---	02 32 12	44.2	115.1	-3.0		-35.9	191	612	08 54 01
08 58 10	J0521+2112	02 32 52	44.6	117.8	-2.8		-34.7	21	612	08 58 10
09 00 00	=0518+211	02 34 42	44.9	118.3	-2.8		-34.5	110	626	08 58 11
09 00 00	B0525+21	02 34 42	44.6	115.8	-2.9		-35.7	-19	626	No stop
09 03 30	---	02 38 13	45.0	116.7	-2.9		-35.3	191	653	09 00 01



Schedule for TORUN (Code Tr )

Page 4

EVN: EM127C

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 27 May 2017 Day 147 ---										
09 03 30	J0521+2112	02 38 13	45.3	119.3	-2.7		-34.2	-19	653	No stop
09 06 00	=0518+211	02 40 43	45.6	120.0	-2.7		-33.9	131	672	09 03 31
09 06 00	B0525+21	02 40 43	45.4	117.4	-2.8		-35.1	-19	672	No stop
09 09 30	---	02 44 14	45.8	118.4	-2.8		-34.8	191	699	09 06 01
09 10 10	J0521+2112	02 44 54	46.2	121.1	-2.6		-33.5	20	699	09 10 10
09 12 00	=0518+211	02 46 44	46.4	121.7	-2.6		-33.3	110	713	09 10 11
09 12 00	B0525+21	02 46 44	46.2	119.0	-2.7		-34.5	-19	713	No stop
09 15 30	---	02 50 15	46.6	120.0	-2.7		-34.1	191	740	09 12 01
09 15 30	J0521+2112	02 50 15	46.9	122.7	-2.5		-32.8	-20	740	No stop
09 18 00	=0518+211	02 52 45	47.2	123.4	-2.5		-32.5	130	759	09 15 31
09 18 00	B0525+21	02 52 45	46.9	120.7	-2.6		-33.8	-19	759	No stop
09 21 30	---	02 56 16	47.4	121.7	-2.6		-33.4	191	786	09 18 01
09 22 10	J0521+2112	02 56 56	47.7	124.6	-2.4		-32.0	20	786	09 22 10
09 24 00	=0518+211	02 58 46	47.9	125.1	-2.4		-31.8	110	800	09 22 11
09 24 00	B0525+21	02 58 46	47.7	122.4	-2.5		-33.1	-20	800	No stop
09 27 30	---	03 02 17	48.1	123.5	-2.5		-32.7	190	827	09 24 01
09 27 30	J0521+2112	03 02 17	48.4	126.2	-2.3		-31.3	-20	827	No stop
09 30 00	=0518+211	03 04 47	48.7	126.9	-2.3		-31.0	130	846	09 27 31
09 30 00	B0525+21	03 04 47	48.5	124.2	-2.4		-32.4	-20	846	No stop
09 33 30	---	03 08 18	48.9	125.2	-2.4		-31.9	190	873	09 30 01
09 34 10	J0521+2112	03 08 58	49.2	128.2	-2.2		-30.4	20	873	09 34 10
09 36 00	=0518+211	03 10 48	49.4	128.8	-2.2		-30.1	110	887	09 34 11
09 36 00	B0525+21	03 10 48	49.2	126.0	-2.3		-31.6	-20	887	No stop
09 39 30	---	03 14 19	49.6	127.1	-2.3		-31.1	190	914	09 36 01
09 39 30	J0521+2112	03 14 19	49.8	129.9	-2.1		-29.6	-20	914	No stop
09 42 00	=0518+211	03 16 49	50.1	130.7	-2.1		-29.3	130	933	09 39 31
09 44 30	3C84	03 19 20	78.5	178.5	-0.0		-1.2	30	933	09 44 30
09 47 30	---	03 22 20	78.5	181.3	0.0		1.1	180	956	09 44 31
09 50 30	J0521+2112	03 25 21	51.0	133.4	-2.0		-27.9	63	956	09 50 30
09 52 30	=0518+211	03 27 21	51.2	134.1	-1.9		-27.6	120	972	09 50 31

Schedule for TORUN (Code Tr )

Page 5

EVN: EM127C

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 27 May 2017 Day 147 ---										
09 52 30	B0525+21	03 27 21	51.1	131.2	-2.0		-29.2	-20	972	No stop
09 56 00	---	03 30 51	51.5	132.3	-2.0		-28.6	190	999	09 52 31
09 56 40	J0521+2112	03 31 32	51.7	135.5	-1.9		-26.9	19	999	09 56 40
09 58 30	=0518+211	03 33 22	51.9	136.1	-1.8		-26.5	110	1013	09 56 41
09 58 30	B0525+21	03 33 22	51.8	133.1	-1.9		-28.2	-20	1013	No stop
10 02 00	---	03 36 52	52.2	134.3	-1.9		-27.6	190	1040	09 58 31
10 02 00	J0521+2112	03 36 52	52.2	137.3	-1.8		-25.9	-21	1040	No stop
10 04 30	=0518+211	03 39 23	52.5	138.1	-1.7		-25.5	129	1059	10 02 01
10 04 30	B0525+21	03 39 23	52.5	135.1	-1.8		-27.2	-20	1059	No stop
10 08 00	---	03 42 53	52.8	136.3	-1.8		-26.6	190	1086	10 04 31
10 08 40	J0521+2112	03 43 34	52.9	139.6	-1.7		-24.7	19	1086	10 08 40
10 10 30	=0518+211	03 45 24	53.1	140.2	-1.6		-24.3	110	1100	10 08 41
10 10 30	B0525+21	03 45 24	53.1	137.2	-1.7		-26.1	-20	1100	No stop
10 14 00	---	03 48 54	53.4	138.4	-1.7		-25.5	190	1127	10 10 31
10 14 00	J0521+2112	03 48 54	53.4	141.5	-1.6		-23.7	-21	1127	No stop
10 16 30	=0518+211	03 51 25	53.6	142.4	-1.5		-23.2	129	1146	10 14 01
10 16 30	B0525+21	03 51 25	53.7	139.3	-1.6		-25.0	-20	1146	No stop
10 20 00	---	03 54 55	54.0	140.5	-1.6		-24.3	190	1173	10 16 31
10 20 40	J0521+2112	03 55 36	54.0	143.9	-1.5		-22.3	19	1173	10 20 40
10 22 30	=0518+211	03 57 26	54.2	144.6	-1.4		-21.9	110	1187	10 20 41
10 22 30	B0525+21	03 57 26	54.3	141.5	-1.5		-23.8	-21	1187	No stop
10 26 00	---	04 00 56	54.6	142.7	-1.5		-23.1	189	1214	10 22 31
10 26 00	J0521+2112	04 00 56	54.5	145.9	-1.4		-21.2	-21	1214	No stop
10 28 30	=0518+211	04 03 27	54.7	146.8	-1.3		-20.6	129	1233	10 26 01
10 28 30	B0525+21	04 03 27	54.8	143.7	-1.4		-22.6	-21	1233	No stop
10 32 00	---	04 06 57	55.1	145.0	-1.4		-21.8	189	1260	10 28 31
10 32 40	J0521+2112	04 07 37	55.0	148.4	-1.3		-19.7	19	1260	10 32 40
10 34 30	=0518+211	04 09 28	55.2	149.1	-1.2		-19.3	110	1274	10 32 41
10 34 30	B0525+21	04 09 28	55.3	145.9	-1.3		-21.3	-21	1274	No stop
10 38 00	---	04 12 58	55.6	147.3	-1.3		-20.5	189	1301	10 34 31

Schedule for TORUN (Code Tr )

Page 6

EVN: EM127C

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 27 May 2017 Day 147 ---										
10 38 00	J0521+2112	04 12 58	55.4	150.5	-1.2		-18.5	-21	1301	No stop
10 40 30	=0518+211	04 15 29	55.6	151.5	-1.1		-17.9	129	1321	10 38 01
10 40 30	B0525+21	04 15 29	55.8	148.2	-1.2		-19.9	-21	1321	No stop
10 44 00	---	04 18 59	56.1	149.6	-1.2		-19.1	189	1347	10 40 31
10 44 40	J0521+2112	04 19 39	55.9	153.1	-1.1		-16.9	19	1347	10 44 40
10 46 30	=0518+211	04 21 30	56.0	153.8	-1.0		-16.5	110	1362	10 44 41
10 46 30	B0525+21	04 21 30	56.3	150.6	-1.1		-18.5	-21	1362	No stop
10 50 00	---	04 25 00	56.5	152.0	-1.1		-17.7	189	1388	10 46 31
10 50 00	J0521+2112	04 25 00	56.3	155.3	-1.0		-15.6	-21	1388	No stop
10 52 30	=0518+211	04 27 31	56.4	156.3	-0.9		-15.0	129	1408	10 50 01
10 52 30	B0525+21	04 27 31	56.7	153.0	-1.0		-17.1	-21	1408	No stop
10 56 00	---	04 31 01	56.9	154.4	-1.0		-16.2	189	1435	10 52 31
10 56 40	J0521+2112	04 31 41	56.7	158.0	-0.9		-14.0	19	1435	10 56 40
10 58 30	=0518+211	04 33 32	56.8	158.7	-0.8		-13.5	110	1449	10 56 41
10 58 30	B0525+21	04 33 32	57.1	155.4	-0.9		-15.6	-21	1449	No stop
11 02 00	---	04 37 02	57.3	156.9	-0.9		-14.7	189	1476	10 58 31
11 02 00	J0521+2112	04 37 02	56.9	160.2	-0.8		-12.6	-22	1476	No stop
11 04 30	=0518+211	04 39 33	57.1	161.2	-0.7		-12.0	128	1495	11 02 01
11 04 30	B0525+21	04 39 33	57.5	157.9	-0.8		-14.1	-21	1495	No stop
11 08 00	---	04 43 03	57.7	159.4	-0.8		-13.2	189	1522	11 04 31
11 08 40	J0521+2112	04 43 43	57.3	163.0	-0.7		-10.9	18	1522	11 08 40
11 10 30	=0518+211	04 45 34	57.3	163.8	-0.6		-10.4	110	1536	11 08 41
11 10 30	B0525+21	04 45 34	57.8	160.5	-0.7		-12.5	-21	1536	No stop
11 14 00	---	04 49 04	58.0	162.0	-0.7		-11.6	189	1563	11 10 31
11 14 00	J0521+2112	04 49 04	57.5	165.3	-0.6		-9.4	-22	1563	No stop
11 16 30	=0518+211	04 51 35	57.6	166.4	-0.5		-8.7	128	1582	11 14 01
11 16 30	B0525+21	04 51 35	58.1	163.0	-0.6		-10.9	-21	1582	No stop
11 20 00	---	04 55 05	58.2	164.6	-0.6		-9.9	189	1609	11 16 31
11 20 40	J0521+2112	04 55 45	57.7	168.2	-0.5		-7.6	18	1609	11 20 40
11 22 40	=0518+211	04 57 46	57.8	169.0	-0.4		-7.0	120	1624	11 20 41

Schedule for TORUN (Code Tr )

Page 7

EVN: EM127C

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 27 May 2017 Day 147 ---										
11 22 40	B0525+21	04 57 46	58.3	165.7	-0.5		-9.2	-21	1624	No stop
11 26 10	---	05 01 16	58.4	167.3	-0.5		-8.2	189	1651	11 22 41
11 26 10	J0521+2112	05 01 16	57.9	170.6	-0.4		-6.1	-22	1651	No stop
11 28 40	=0518+211	05 03 47	57.9	171.6	-0.3		-5.4	128	1671	11 26 11
11 28 40	B0525+21	05 03 47	58.5	168.4	-0.4		-7.5	-21	1671	No stop
11 32 10	---	05 07 17	58.6	169.9	-0.4		-6.5	189	1697	11 28 41
11 32 50	J0521+2112	05 07 57	58.0	173.5	-0.2		-4.2	19	1697	11 32 50
11 34 50	=0518+211	05 09 58	58.0	174.4	-0.2		-3.6	120	1713	11 32 51
11 34 50	B0525+21	05 09 58	58.7	171.1	-0.3		-5.8	-21	1713	No stop
11 38 20	---	05 13 28	58.8	172.7	-0.3		-4.8	189	1740	11 34 51
11 38 20	J0521+2112	05 13 28	58.1	175.9	-0.2		-2.6	-21	1740	No stop
11 40 50	=0518+211	05 15 59	58.1	177.0	-0.1		-1.9	129	1759	11 38 21
11 44 50	3C84	05 19 59	67.0	252.0	2.0		49.7	76	1759	11 44 50
11 47 50	---	05 23 00	66.6	252.9	2.0		50.1	180	1782	11 44 51
11 50 50	J0521+2112	05 26 00	58.1	181.4	0.1		0.9	22	1782	11 50 50
11 52 50	=0518+211	05 28 01	58.1	182.3	0.1		1.5	120	1797	11 50 51
11 52 50	B0525+21	05 28 01	58.9	179.2	-0.0		-0.5	-21	1797	No stop
11 56 20	---	05 31 31	58.9	180.7	0.0		0.5	189	1824	11 52 51
11 57 00	J0521+2112	05 32 11	58.1	184.2	0.2		2.7	19	1824	11 57 00
11 59 00	=0518+211	05 34 12	58.1	185.0	0.2		3.2	120	1840	11 57 01
11 59 00	B0525+21	05 34 12	58.9	181.9	0.1		1.3	-20	1840	No stop
12 02 30	---	05 37 42	58.9	183.5	0.1		2.3	190	1867	11 59 01
12 02 30	J0521+2112	05 37 42	58.0	186.6	0.2		4.2	-21	1867	No stop
12 05 00	=0518+211	05 40 13	58.0	187.7	0.3		4.9	129	1886	12 02 31
12 05 00	B0525+21	05 40 13	58.9	184.6	0.2		3.0	-20	1886	No stop
12 08 30	---	05 43 43	58.8	186.2	0.2		4.0	190	1913	12 05 01
12 09 10	J0521+2112	05 44 23	57.9	189.5	0.4		6.1	19	1913	12 09 10
12 11 10	=0518+211	05 46 24	57.8	190.4	0.4		6.7	120	1928	12 09 11
12 11 10	B0525+21	05 46 24	58.8	187.4	0.3		4.8	-20	1928	No stop
12 14 40	---	05 49 54	58.7	189.0	0.3		5.8	190	1955	12 11 11

Schedule for TORUN (Code Tr )

Page 8

EVN: EM127C

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 27 May 2017 Day 147 ---										
12 14 40	J0521+2112	05 49 54	57.7	191.9	0.5		7.6	-21	1955	No stop
12 17 10	=0518+211	05 52 25	57.6	193.0	0.5		8.3	129	1974	12 14 41
12 17 10	B0525+21	05 52 25	58.6	190.1	0.4		6.5	-20	1974	No stop
12 20 40	---	05 55 55	58.5	191.6	0.4		7.5	190	2001	12 17 11
12 21 20	J0521+2112	05 56 35	57.5	194.8	0.6		9.5	20	2001	12 21 20
12 23 20	=0518+211	05 58 36	57.4	195.6	0.6		10.0	120	2017	12 21 21
12 23 20	B0525+21	05 58 36	58.4	192.8	0.5		8.2	-20	2017	No stop
12 26 50	---	06 02 06	58.3	194.3	0.5		9.2	190	2044	12 23 21
12 26 50	J0521+2112	06 02 06	57.3	197.1	0.7		10.9	-20	2044	No stop
12 29 20	=0518+211	06 04 37	57.1	198.2	0.7		11.6	130	2063	12 26 51
12 29 20	B0525+21	06 04 37	58.2	195.4	0.6		9.9	-20	2063	No stop
12 32 50	---	06 08 07	58.1	196.9	0.6		10.9	190	2090	12 29 21
12 33 30	J0521+2112	06 08 47	56.9	199.9	0.8		12.7	20	2090	12 33 30
12 35 30	=0518+211	06 10 48	56.8	200.8	0.8		13.2	120	2105	12 33 31
12 35 30	B0525+21	06 10 48	57.9	198.1	0.7		11.6	-19	2105	No stop
12 39 00	---	06 14 18	57.8	199.6	0.7		12.5	191	2132	12 35 31
12 39 00	J0521+2112	06 14 18	56.6	202.2	0.9		14.1	-20	2132	No stop
12 41 30	=0518+211	06 16 49	56.5	203.2	0.9		14.7	130	2151	12 39 01
12 41 30	B0525+21	06 16 49	57.6	200.6	0.8		13.2	-19	2151	No stop
12 45 00	---	06 20 19	57.5	202.1	0.8		14.1	191	2178	12 41 31
12 45 40	J0521+2112	06 20 59	56.2	204.9	1.0		15.8	20	2178	12 45 40
12 47 40	=0518+211	06 23 00	56.1	205.7	1.0		16.2	120	2194	12 45 41
12 47 40	B0525+21	06 23 00	57.3	203.2	0.9		14.8	-19	2194	No stop
12 51 10	---	06 26 30	57.1	204.7	0.9		15.7	191	2221	12 47 41
12 51 10	J0521+2112	06 26 30	55.9	207.1	1.1		17.1	-19	2221	No stop
12 53 40	=0518+211	06 29 01	55.7	208.1	1.1		17.7	131	2240	12 51 11
12 53 40	B0525+21	06 29 01	56.9	205.7	1.0		16.3	-19	2240	No stop
12 57 10	---	06 32 31	56.7	207.1	1.0		17.2	191	2267	12 53 41
12 57 50	J0521+2112	06 33 11	55.4	209.8	1.2		18.6	21	2267	12 57 50
12 59 50	=0518+211	06 35 12	55.2	210.5	1.2		19.1	120	2282	12 57 51

Schedule for TORUN (Code Tr )

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EVN: EM127C

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

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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 27 May 2017 Day 147 ---										
12 59 50	B0525+21	06 35 12	56.5	208.2	1.1		17.8	-18	2282	No stop
13 03 20	---	06 38 42	56.3	209.6	1.1		18.6	192	2309	12 59 51
13 03 20	J0521+2112	06 38 42	55.0	211.9	1.3		19.9	-19	2309	No stop
13 05 50	=0518+211	06 41 13	54.8	212.8	1.3		20.4	131	2328	13 03 21
13 05 50	B0525+21	06 41 13	56.1	210.6	1.2		19.2	-18	2328	No stop
13 09 20	---	06 44 43	55.8	211.9	1.2		20.0	192	2355	13 05 51
13 10 00	J0521+2112	06 45 23	54.4	214.4	1.4		21.3	21	2355	13 10 00
13 12 00	=0518+211	06 47 24	54.2	215.2	1.4		21.8	120	2371	13 10 01
13 12 00	B0525+21	06 47 24	55.6	213.0	1.3		20.6	-18	2371	No stop
13 15 30	---	06 50 54	55.3	214.3	1.4		21.4	192	2397	13 12 01
13 15 30	J0521+2112	06 50 54	53.9	216.4	1.5		22.5	-18	2397	No stop
13 18 00	=0518+211	06 53 25	53.7	217.4	1.5		23.0	132	2417	13 15 31
13 18 00	B0525+21	06 53 25	55.1	215.2	1.4		22.0	-18	2417	No stop
13 21 30	---	06 56 55	54.8	216.6	1.5		22.7	192	2444	13 18 01
13 22 10	J0521+2112	06 57 35	53.3	218.9	1.6		23.8	21	2444	13 22 10
13 24 10	=0518+211	06 59 36	53.1	219.6	1.6		24.2	120	2459	13 22 11
13 24 10	B0525+21	06 59 36	54.5	217.5	1.5		23.2	-18	2459	No stop
13 27 40	---	07 03 06	54.2	218.8	1.6		24.0	192	2486	13 24 11
13 27 40	J0521+2112	07 03 06	52.8	220.8	1.7		24.9	-19	2486	No stop
13 30 10	=0518+211	07 05 37	52.5	221.7	1.7		25.4	131	2505	13 27 41
13 30 10	B0525+21	07 05 37	54.0	219.7	1.6		24.5	-19	2505	No stop
13 33 40	---	07 09 07	53.6	221.0	1.7		25.1	191	2532	13 30 11
13 34 20	J0521+2112	07 09 47	52.1	223.1	1.8		26.1	21	2532	13 34 20
13 36 20	=0518+211	07 11 48	51.9	223.8	1.8		26.5	120	2547	13 34 21
13 36 20	B0525+21	07 11 48	53.3	221.9	1.7		25.6	-19	2547	No stop
13 39 50	---	07 15 18	53.0	223.1	1.8		26.3	191	2574	13 36 21
13 39 50	J0521+2112	07 15 18	51.5	225.0	1.9		27.1	-19	2574	No stop
13 42 20	=0518+211	07 17 49	51.3	225.8	1.9		27.5	131	2594	13 39 51
13 42 20	B0525+21	07 17 49	52.7	224.0	1.8		26.7	-19	2594	No stop
13 45 50	---	07 21 19	52.4	225.2	1.9		27.4	191	2621	13 42 21

Schedule for TORUN (Code Tr )

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EVN: EM127C

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.

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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 27 May 2017 Day 147 ---										
13 46 30	J0521+2112	07 21 59	50.8	227.2	2.0		28.2	21	2621	13 46 30
13 48 30	=0518+211	07 24 00	50.6	227.8	2.0		28.5	120	2636	13 46 31
13 48 30	B0525+21	07 24 00	52.1	226.1	1.9		27.8	-19	2636	No stop
13 52 00	---	07 27 30	51.7	227.2	2.0		28.4	191	2663	13 48 31
13 52 00	J0521+2112	07 27 30	50.2	229.0	2.1		29.1	-19	2663	No stop
13 54 30	=0518+211	07 30 01	49.9	229.7	2.1		29.4	131	2682	13 52 01
13 54 30	B0525+21	07 30 01	51.4	228.1	2.0		28.8	-19	2682	No stop
13 58 00	---	07 33 31	51.0	229.2	2.1		29.4	191	2709	13 54 31
13 58 40	J0521+2112	07 34 11	49.4	231.1	2.2		30.1	21	2709	13 58 40
14 00 40	=0518+211	07 36 12	49.2	231.7	2.2		30.4	120	2724	13 58 41
14 00 40	B0525+21	07 36 12	50.7	230.1	2.1		29.8	-19	2724	No stop
14 04 10	---	07 39 42	50.3	231.2	2.2		30.3	191	2751	14 00 41
14 04 10	J0521+2112	07 39 42	48.8	232.7	2.3		30.8	-19	2751	No stop
14 06 40	=0518+211	07 42 13	48.5	233.5	2.3		31.2	131	2771	14 04 11
14 06 40	B0525+21	07 42 13	50.0	231.9	2.2		30.7	-19	2771	No stop
14 10 10	---	07 45 43	49.6	233.0	2.3		31.2	191	2797	14 06 41
14 10 50	J0521+2112	07 46 23	48.0	234.7	2.4		31.7	21	2797	14 10 50
14 12 50	=0518+211	07 48 24	47.7	235.3	2.4		32.0	120	2813	14 10 51
14 12 50	B0525+21	07 48 24	49.3	233.8	2.3		31.5	-19	2813	No stop
14 16 20	---	07 51 54	48.8	234.9	2.4		32.0	191	2840	14 12 51
14 16 20	J0521+2112	07 51 54	47.3	236.4	2.5		32.4	-19	2840	No stop
14 18 50	=0518+211	07 54 25	47.0	237.1	2.5		32.7	131	2859	14 16 21
14 18 50	B0525+21	07 54 25	48.5	235.6	2.4		32.3	-19	2859	No stop
14 22 20	---	07 57 55	48.1	236.7	2.5		32.8	191	2886	14 18 51
14 23 00	J0521+2112	07 58 35	46.5	238.3	2.6		33.2	20	2886	14 23 00
14 25 00	=0518+211	08 00 36	46.2	238.8	2.6		33.5	120	2901	14 23 01
14 25 00	B0525+21	08 00 36	47.8	237.5	2.5		33.1	-19	2901	No stop
14 28 30	---	08 04 06	47.3	238.5	2.6		33.5	191	2928	14 25 01
14 28 30	J0521+2112	08 04 06	45.7	239.8	2.7		33.8	-20	2928	No stop
14 31 00	=0518+211	08 06 37	45.4	240.5	2.7		34.1	130	2947	14 28 31

Schedule for TORUN (Code Tr )

Page 11

EVN: EM127C

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.

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-----
Start UT  Source          Start / Stop          Early  Disk  TPStart
Stop UT          LST      EL  AZ  HA  UP  ParA  Dwell  GBytes  SYNC
-----
--- Sat 27 May 2017  Day 147 ---

14 31 00  B0525+21    08 06 37  47.0 239.2  2.6    33.8  -19    2947  No stop
14 34 30  ---          08 10 07  46.5 240.2  2.7    34.2  191    2974  14 31 01

14 35 10  J0521+2112  08 10 47  44.9 241.7  2.8    34.5   20    2974  14 35 10
14 37 10  =0518+211  08 12 48  44.6 242.2  2.8    34.7  120    2990  14 35 11

14 37 10  B0525+21    08 12 48  46.2 240.9  2.7    34.5  -19    2990  No stop
14 40 40  ---          08 16 18  45.7 241.9  2.8    34.8  191    3017  14 37 11

14 40 40  J0521+2112  08 16 18  44.1 243.1  2.9    35.1  -20    3017  No stop
14 43 10  =0518+211  08 18 49  43.8 243.8  2.9    35.3  130    3036  14 40 41

14 43 10  B0525+21    08 18 49  45.4 242.5  2.8    35.1  -19    3036  No stop
14 46 40  ---          08 22 19  44.9 243.5  2.9    35.4  191    3063  14 43 11

14 46 40  J0521+2112  08 22 19  43.3 244.7  3.0    35.6  -20    3063  No stop
14 49 10  =0518+211  08 24 50  43.0 245.4  3.0    35.8  130    3082  14 46 41

14 49 10  B0525+21    08 24 50  44.6 244.1  2.9    35.7  -19    3082  No stop
14 52 40  ---          08 28 20  44.1 245.1  3.0    36.0  191    3109  14 49 11

14 52 40  J0521+2112  08 28 20  42.5 246.3  3.1    36.1  -20    3109  No stop
14 55 10  =0518+211  08 30 51  42.2 246.9  3.1    36.3  130    3128  14 52 41

14 57 10  3C84        08 32 51  38.6 290.5  5.2    48.7   18    3128  14 57 10
15 00 00  ---          08 35 41  38.2 291.0  5.2    48.5  170    3150  14 57 11

```

## SETUP FILE INFORMATION:

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

==== Setup file: sess217.H1024

```

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=	2100.00	2100.00	2100.00	2100.00	2100.00	2100.00	2100.00	2100.00
Net SB=	L	L	U	U	L	L	U	U
IF SB =	L	L	L	L	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
BBC =	1	5	1	5	3	7	3	7
BBC SB=	U	U	L	L	U	U	L	L
IF =	A1	B1	A1	B1	A1	B1	A1	B1

The following frequency sets based on these setups were used.

Frequency Set: 5 Setup file default. Used with PCAL = off  
 LO sum= 1353.49 1353.49 1353.49 1353.49 1417.49 1417.49 1417.49 1417.49  
 BBC fr= 746.51 746.51 746.51 746.51 682.51 682.51 682.51 682.51  
 Bandwd= 32.00 32.00 32.00 32.00 32.00 32.00 32.00 32.00  
 Matching frequency sets: 5

Track assignments are:

track1= 2, 6, 10, 14, 4, 8, 12, 16  
 barrel=roll\_off

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* B0525+21	05 25 51.827467	* 05 28 52.264000	05 29 53.004074	0.00
	21 57 41.80619	* 22 00 04.00000	22 00 40.46390	0.00
* 3C84	03 16 29.567282	* 03 19 48.160113	03 20 55.286014	0.00
	41 19 51.91853	* 41 30 42.10565	41 34 10.42969	0.00
0518+211	05 18 46.711054	* 05 21 45.965889	05 22 46.306022	0.12
* J0521+2112	21 09 58.62252	* 21 12 51.45170	21 13 38.22516	0.14
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc			
	rfc_2015a Petrov, 2015, unpublished. 388 observations			

A SECOND ACTIVE NUCLEUS IN CYGNUS A?

PI: Uwe Bach

Address: Max-Planck-Institut fuer Radioastronomie

Observing mode:

Schedule for TORUN (Code Tr )

Page 2

A second active nucleus in Cygnus A?

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

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

Disk: GBytes 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 27 May 2017 Day 147 ---										
Next scan frequencies: 1626.49 1626.49 1626.49 1626.49 1690.49 1690.49 1690.49 1690.49										
Next BBC frequencies: 673.51 673.51 673.51 673.51 609.51 609.51 609.51 609.51										
Next scan bandwidths: 32.00 32.00 32.00 32.00 32.00 32.00 32.00 32.00										
22 30 00	CYG-A	16 06 55	49.6	83.5	-3.9		-52.0	0	0	22 30 00
22 40 00	---	16 16 57	51.1	85.3	-3.7		-52.2	600	77	22 30 01
22 40 30	CYG-A	16 17 27	51.1	85.4	-3.7		-52.2	24	77	22 40 30
22 50 30	---	16 27 29	52.7	87.3	-3.5		-52.4	600	154	22 40 31
22 51 30	2013+370	16 28 29	48.1	88.6	-3.8		-48.9	29	154	22 51 30
22 56 30	---	16 33 30	48.9	89.6	-3.7		-49.0	300	192	22 51 31
22 57 30	CYG-A	16 34 30	53.7	88.6	-3.4		-52.4	28	192	22 57 30
23 07 30	---	16 44 31	55.2	90.6	-3.3		-52.5	600	269	22 57 31
23 08 00	CYG-A	16 45 02	55.3	90.7	-3.3		-52.5	24	269	23 08 00
23 18 00	---	16 55 03	56.8	92.8	-3.1		-52.4	600	346	23 08 01
23 18 30	CYG-A	16 55 33	56.9	92.9	-3.1		-52.4	24	346	23 18 30
23 28 30	---	17 05 35	58.4	95.0	-2.9		-52.2	600	423	23 18 31
23 29 00	CYG-A	17 06 05	58.4	95.2	-2.9		-52.2	24	423	23 29 00
23 39 00	---	17 16 07	59.9	97.4	-2.7		-51.8	600	500	23 29 01
23 39 30	CYG-A	17 16 37	60.0	97.6	-2.7		-51.8	24	500	23 39 30
23 49 30	---	17 26 38	61.5	100.0	-2.6		-51.4	600	577	23 39 31
23 50 00	CYG-A	17 27 08	61.6	100.1	-2.5		-51.3	24	577	23 50 00
23 59 59	---	17 37 10	63.1	102.7	-2.4		-50.7	599	654	23 50 01
--- Sun 28 May 2017 Day 148 ---										
00 00 30	CYG-A	17 37 40	63.1	102.8	-2.4		-50.7	24	654	00 00 30
00 10 30	---	17 47 42	64.6	105.5	-2.2		-49.8	600	731	00 00 31
00 11 00	CYG-A	17 48 12	64.7	105.7	-2.2		-49.8	24	731	00 11 00
00 21 00	---	17 58 14	66.1	108.7	-2.0		-48.7	600	808	00 11 01
00 21 30	CYG-A	17 58 44	66.2	108.8	-2.0		-48.6	24	808	00 21 30
00 31 30	---	18 08 45	67.6	112.1	-1.9		-47.3	600	885	00 21 31

Schedule for TORUN (Code Tr )

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A second active nucleus in Cygnus A?

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

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 28 May 2017	Day 148					---				
00 32 00	CYG-A	18 09 15	67.6	112.2	-1.8		-47.2	24	885	00 32 00	
00 42 00	---	18 19 17	69.0	115.8	-1.7		-45.6	600	962	00 32 01	
00 44 00	BLLAC	18 21 17	52.2	83.4	-3.7		-53.8	40	962	00 44 00	
00 49 00	---	18 26 18	52.9	84.3	-3.6		-54.0	300	1000	00 44 01	
00 51 00	CYG-A	18 28 18	70.2	119.3	-1.5		-43.8	36	1000	00 51 00	
01 01 00	---	18 38 20	71.5	123.5	-1.4		-41.4	600	1077	00 51 01	
01 01 30	CYG-A	18 38 50	71.6	123.7	-1.4		-41.3	23	1077	01 01 30	
01 11 30	---	18 48 52	72.8	128.5	-1.2		-38.4	600	1154	01 01 31	
01 12 00	CYG-A	18 49 22	72.8	128.8	-1.2		-38.2	23	1154	01 12 00	
01 22 00	---	18 59 24	74.0	134.1	-1.0		-34.7	600	1231	01 12 01	
01 22 30	CYG-A	18 59 54	74.0	134.4	-1.0		-34.5	23	1231	01 22 30	
01 32 30	---	19 09 55	75.0	140.4	-0.8		-30.4	600	1308	01 22 31	
01 33 00	CYG-A	19 10 25	75.1	140.7	-0.8		-30.1	23	1308	01 33 00	
01 43 00	---	19 20 27	76.0	147.5	-0.7		-25.2	600	1385	01 33 01	
01 43 30	CYG-A	19 20 57	76.0	147.8	-0.7		-25.0	23	1385	01 43 30	
01 53 30	---	19 30 59	76.7	155.3	-0.5		-19.4	600	1462	01 43 31	
01 54 00	CYG-A	19 31 29	76.8	155.7	-0.5		-19.1	23	1462	01 54 00	
02 04 00	---	19 41 30	77.3	163.8	-0.3		-12.8	600	1538	01 54 01	
02 04 30	CYG-A	19 42 01	77.3	164.2	-0.3		-12.4	22	1538	02 04 30	
02 14 30	---	19 52 02	77.6	172.9	-0.1		-5.6	600	1615	02 04 31	
02 15 30	2013+370	19 53 02	73.6	163.5	-0.4		-12.4	25	1615	02 15 30	
02 20 30	---	19 58 03	73.8	167.0	-0.3		-9.8	300	1654	02 15 31	
02 21 30	CYG-A	19 59 03	77.7	179.1	-0.0		-0.7	22	1654	02 21 30	
02 31 30	---	20 09 05	77.6	187.9	0.1		6.3	600	1731	02 21 31	
02 32 00	CYG-A	20 09 35	77.6	188.4	0.2		6.6	22	1731	02 32 00	
02 42 00	---	20 19 37	77.2	197.0	0.3		13.4	600	1808	02 32 01	
02 42 30	CYG-A	20 20 07	77.2	197.4	0.3		13.7	22	1808	02 42 30	
02 52 30	---	20 30 08	76.7	205.4	0.5		19.9	600	1885	02 42 31	
02 53 00	CYG-A	20 30 39	76.6	205.8	0.5		20.2	23	1885	02 53 00	
03 03 00	---	20 40 40	75.9	213.2	0.7		25.7	600	1962	02 53 01	
03 03 30	CYG-A	20 41 10	75.9	213.5	0.7		26.0	23	1962	03 03 30	
03 13 30	---	20 51 12	75.0	220.2	0.9		30.8	600	2038	03 03 31	

Schedule for TORUN (Code Tr )

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A second active nucleus in Cygnus A?

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

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 28 May 2017 Day 148 ---										
03 14 00	CYG-A	20 51 42	74.9	220.5	0.9		31.0	23	2038	03 14 00
03 24 00	---	21 01 44	73.9	226.4	1.0		35.1	600	2115	03 14 01
03 24 30	CYG-A	21 02 14	73.8	226.7	1.0		35.2	23	2115	03 24 30
03 34 30	---	21 12 15	72.7	232.0	1.2		38.6	600	2192	03 24 31
03 35 00	CYG-A	21 12 45	72.6	232.2	1.2		38.8	23	2192	03 35 00
03 45 00	---	21 22 47	71.4	236.9	1.4		41.6	600	2269	03 35 01
03 45 30	CYG-A	21 23 17	71.3	237.1	1.4		41.8	23	2269	03 45 30
03 55 30	---	21 33 19	70.0	241.3	1.6		44.1	600	2346	03 45 31
03 57 00	2013+370	21 34 49	69.1	228.6	1.3		34.5	49	2346	03 57 00
04 02 00	---	21 39 50	68.5	230.9	1.4		35.8	300	2385	03 57 01
04 03 30	CYG-A	21 41 20	69.0	244.4	1.7		45.7	49	2385	04 03 30
04 13 30	---	21 51 22	67.6	247.9	1.9		47.3	600	2462	04 03 31
04 14 00	CYG-A	21 51 52	67.5	248.1	1.9		47.4	24	2462	04 14 00
04 24 00	---	22 01 53	66.1	251.3	2.0		48.7	600	2538	04 14 01
04 24 30	CYG-A	22 02 24	66.0	251.5	2.0		48.8	24	2538	04 24 30
04 34 30	---	22 12 25	64.6	254.4	2.2		49.8	600	2615	04 24 31
04 35 00	CYG-A	22 12 55	64.5	254.6	2.2		49.9	24	2615	04 35 00
04 45 00	---	22 22 57	63.1	257.3	2.4		50.7	600	2692	04 35 01
04 45 30	CYG-A	22 23 27	63.0	257.5	2.4		50.7	24	2692	04 45 30
04 55 30	---	22 33 29	61.5	260.0	2.6		51.4	600	2769	04 45 31
04 56 00	CYG-A	22 33 59	61.4	260.1	2.6		51.4	24	2769	04 56 00
05 06 00	---	22 44 00	59.9	262.6	2.7		51.8	600	2846	04 56 01
05 11 00	BLLAC	22 49 01	76.8	219.9	0.8		31.4	195	2846	05 11 00
05 16 00	---	22 54 02	76.3	223.3	0.8		33.8	300	2885	05 11 01
05 21 00	CYG-A	22 59 03	57.7	265.9	3.0		52.3	201	2885	05 21 00
05 30 00	---	23 08 04	56.3	267.9	3.1		52.4	540	2954	05 21 01
05 30 30	CYG-A	23 08 34	56.3	268.0	3.1		52.4	24	2954	05 30 30
05 40 00	---	23 18 06	54.8	269.9	3.3		52.5	570	3027	05 30 31
05 40 30	CYG-A	23 18 36	54.8	270.0	3.3		52.5	24	3027	05 40 30
05 50 00	---	23 28 08	53.3	271.9	3.5		52.4	570	3100	05 40 31

Schedule for TORUN (Code Tr )

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A second active nucleus in Cygnus A?

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

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 28 May 2017 Day 148 ---										
05 50 30	CYG-A	23 28 38	53.3	272.0	3.5		52.4	24	3100	05 50 30
06 00 00	---	23 38 09	51.8	273.8	3.6		52.3	570	3173	05 50 31
06 00 30	CYG-A	23 38 39	51.8	273.9	3.6		52.3	24	3173	06 00 30
06 10 00	---	23 48 11	50.3	275.6	3.8		52.1	570	3246	06 00 31
06 10 30	CYG-A	23 48 41	50.3	275.7	3.8		52.1	24	3246	06 10 30
06 20 00	---	23 58 13	48.8	277.4	4.0		51.8	570	3319	06 10 31
06 20 30	CYG-A	23 58 43	48.8	277.5	4.0		51.8	24	3319	06 20 30
06 30 00	---	00 08 14	47.3	279.2	4.1		51.5	570	3392	06 20 31

```
-----
```

SETUP FILE INFORMATION:

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

==== Setup file: sess217.L1024

```

Setup group: 14          Station: TORUN          Total bit rate: 1024
Format: MARK5B         Bits per sample: 2          Sample rate: 64.000
Number of channels: 8   DBE type: DBBC_DDC       Speedup factor: 1.00
    
```

Disk used to record data.

1st LO=	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
Net SB=	L	L	U	U	L	L	U	U
IF SB =	L	L	L	L	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
BBC =	1	5	1	5	3	7	3	7
BBC SB=	U	U	L	L	U	U	L	L
IF =	A1	B1	A1	B1	A1	B1	A1	B1

The following frequency sets based on these setups were used.

Frequency Set: 8 Setup file default. Used with PCAL = off  
 LO sum= 1626.49 1626.49 1626.49 1626.49 1690.49 1690.49 1690.49 1690.49  
 BBC fr= 673.51 673.51 673.51 673.51 609.51 609.51 609.51 609.51  
 Bandwd= 32.00 32.00 32.00 32.00 32.00 32.00 32.00 32.00  
 Matching frequency sets: 8

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

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
CYGNUS-A	19 57 44.440804	* 19 59 28.356482	20 00 05.412198	0.80
J1959+4044	40 35 46.36249	* 40 44 02.09630	40 46 48.72390	0.53
* CYG-A	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc.2015feb			
J1959+40	GSFC 2015a astro solution, unpublished			27 observations.
1957+405				
1957+404				
* 2013+370	20 13 37.014511	* 20 15 28.729797	20 16 08.323309	0.13
J2015+3710	37 01 44.45895	* 37 10 59.51482	37 14 06.42135	0.18
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc.2015feb			
	GSFC 2015a astro solution, unpublished			131 observations.
VR422201	22 00 39.362505	* 22 02 43.291372	22 03 26.639813	0.00
J2202+4216	42 02 08.59077	* 42 16 39.97990	42 21 29.20552	0.00
* BLLAC	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc.2015feb			
2200+420	GSFC 2015a astro solution, unpublished			51226 observations.
J2202+42				

## LONG OVERDUE - MEASURING THE PARALLAX AND PROPER MOTION OF THE CRAB

PI: *Franz Kirsten*

Address: Curtin Institute of Radio Astronomy

Observing mode: Continuum 18cm (1 Gb/s), pulsar gating

Schedule for TORUN (Code Tr )

Page 2

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

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
-----										
--- Sun 28 May 2017 Day 148 ---										
Next scan frequencies: 1626.49 1626.49 1626.49 1626.49 1690.49 1690.49 1690.49 1690.49										
Next BBC frequencies: 673.51 673.51 673.51 673.51 609.51 609.51 609.51 609.51										
Next scan bandwidths: 32.00 32.00 32.00 32.00 32.00 32.00 32.00 32.00 32.00										
09 30 00	J0530+1331	03 08 44	41.4	130.8	-2.4	-27.9	0	0	09 30 00	
09 34 00	=0528+134	03 12 44	41.8	131.9	-2.3	-27.4	240	31	09 30 01	
09 34 54	J0518+2054	03 13 39	49.9	131.1	-2.1	-29.0	10	31	09 34 54	
09 36 09	=0515+208	03 15 04	50.0	131.5	-2.1	-28.8	75	40	09 34 55	
09 36 45	CRAB	03 15 30	49.1	125.7	-2.3	-31.7	9	40	09 36 45	
09 42 15	---	03 21 01	49.8	127.4	-2.2	-31.0	330	83	09 36 46	
09 43 02	J0518+2054	03 21 48	50.8	133.7	-2.0	-27.7	20	83	09 43 02	
09 44 17	=0515+208	03 23 13	50.9	134.1	-1.9	-27.5	75	92	09 43 03	
09 44 53	CRAB	03 23 40	50.1	128.2	-2.2	-30.6	9	92	09 44 53	
09 50 23	---	03 29 10	50.7	129.9	-2.1	-29.8	330	135	09 44 54	
09 51 11	J0518+2054	03 29 58	51.6	136.4	-1.8	-26.3	20	135	09 51 11	
09 52 26	=0515+208	03 31 23	51.8	136.9	-1.8	-26.1	75	144	09 51 12	
09 53 02	CRAB	03 31 50	51.0	130.8	-2.1	-29.4	9	144	09 53 02	
09 58 32	---	03 37 21	51.6	132.6	-2.0	-28.5	330	187	09 53 03	
09 59 20	J0518+2054	03 38 09	52.5	139.2	-1.7	-24.8	20	187	09 59 20	
10 00 35	=0515+208	03 39 34	52.6	139.7	-1.7	-24.6	75	196	09 59 21	
10 01 12	CRAB	03 40 01	51.9	133.4	-1.9	-28.1	9	196	10 01 12	
10 06 42	---	03 45 32	52.5	135.3	-1.8	-27.1	330	238	10 01 13	
10 07 31	J0518+2054	03 46 20	53.2	142.1	-1.5	-23.3	20	238	10 07 31	
10 08 46	=0515+208	03 47 46	53.4	142.6	-1.5	-23.0	75	248	10 07 32	
10 09 23	CRAB	03 48 13	52.8	136.2	-1.8	-26.6	9	248	10 09 23	
10 14 53	---	03 53 44	53.4	138.1	-1.7	-25.6	330	290	10 09 24	
10 15 42	J0518+2054	03 54 33	54.0	145.1	-1.4	-21.6	20	290	10 15 42	
10 16 57	=0515+208	03 55 58	54.1	145.6	-1.4	-21.3	75	300	10 15 43	
10 17 34	CRAB	03 56 26	53.6	139.1	-1.7	-25.1	10	300	10 17 34	
10 23 04	---	04 01 57	54.2	141.0	-1.6	-24.0	330	342	10 17 35	

Schedule for TORUN (Code Tr )

Page 3

Long overdue - Measuring the Parallax and proper motion of the Crab. Ste

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	
-----											
---	Sun 28 May 2017	Day 148					---				
10 23 53	J0518+2054	04 02 46	54.7	148.2	-1.3		-19.8	20	342	10 23 53	
10 25 08	=0515+208	04 04 11	54.8	148.7	-1.2		-19.5	75	352	10 23 54	
10 25 47	CRAB	04 04 40	54.4	142.0	-1.5		-23.5	10	352	10 25 47	
10 31 17	---	04 10 10	54.9	144.1	-1.4		-22.3	330	394	10 25 48	
10 32 06	J0518+2054	04 11 00	55.3	151.3	-1.1		-18.0	20	394	10 32 06	
10 33 21	=0515+208	04 12 25	55.4	151.9	-1.1		-17.6	75	404	10 32 07	
10 34 00	CRAB	04 12 54	55.2	145.1	-1.4		-21.8	10	404	10 34 00	
10 39 30	---	04 18 25	55.6	147.2	-1.3		-20.6	330	446	10 34 01	
10 40 29	J0530+1331	04 19 24	47.9	153.2	-1.2		-16.2	16	446	10 40 29	
10 43 19	=0528+134	04 22 25	48.1	154.2	-1.2		-15.6	170	468	10 40 30	
10 44 13	J0518+2054	04 23 09	56.1	156.1	-0.9		-15.1	10	468	10 44 13	
10 45 28	=0515+208	04 24 34	56.2	156.7	-0.9		-14.7	75	478	10 44 14	
10 46 07	CRAB	04 25 03	56.1	149.8	-1.2		-19.0	10	478	10 46 07	
10 51 32	---	04 30 29	56.5	151.9	-1.1		-17.8	325	519	10 46 08	
10 52 23	J0518+2054	04 31 20	56.6	159.5	-0.8		-13.0	21	519	10 52 23	
10 53 38	=0515+208	04 32 45	56.6	160.1	-0.8		-12.7	75	529	10 52 24	
10 54 17	CRAB	04 33 15	56.7	153.0	-1.0		-17.1	10	529	10 54 17	
10 59 42	---	04 38 41	57.1	155.2	-0.9		-15.7	325	571	10 54 18	
11 00 34	J0518+2054	04 39 32	56.9	162.9	-0.7		-10.9	21	571	11 00 34	
11 01 49	=0515+208	04 40 57	57.0	163.5	-0.6		-10.5	75	580	11 00 35	
11 02 29	CRAB	04 41 28	57.3	156.4	-0.9		-15.0	11	580	11 02 29	
11 07 54	---	04 46 54	57.6	158.6	-0.8		-13.6	325	622	11 02 30	
11 08 46	J0518+2054	04 47 45	57.3	166.4	-0.5		-8.7	22	622	11 08 46	
11 10 01	=0515+208	04 49 11	57.3	167.0	-0.5		-8.3	75	631	11 08 47	
11 10 41	CRAB	04 49 41	57.7	159.8	-0.8		-12.9	11	631	11 10 41	
11 16 06	---	04 55 07	58.0	162.1	-0.7		-11.5	325	673	11 10 42	
11 16 58	J0518+2054	04 56 00	57.5	169.9	-0.4		-6.5	22	673	11 16 58	
11 18 13	=0515+208	04 57 25	57.6	170.5	-0.4		-6.1	75	683	11 16 59	
11 18 55	CRAB	04 57 56	58.1	163.3	-0.6		-10.7	11	683	11 18 55	
11 24 20	---	05 03 22	58.3	165.7	-0.5		-9.2	325	724	11 18 56	
11 25 12	J0518+2054	05 04 15	57.7	173.5	-0.2		-4.2	22	724	11 25 12	
11 26 27	=0515+208	05 05 40	57.7	174.1	-0.2		-3.8	75	734	11 25 13	



Schedule for TORUN (Code Tr )

Page 4

Long overdue - Measuring the Parallax and proper motion of the Crab. Ste  
 UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start. Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time. Frequencies are 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 28 May 2017 Day 148 ---

```
11 27 09 CRAB          05 06 12  58.4 166.9 -0.5      -8.4   12     734  11 27 09
11 32 34 ---           05 11 38  58.6 169.3 -0.4      -6.9  325     776  11 27 10
```

## SETUP FILE INFORMATION:

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

==== Setup file: sess217.L1024

```
Setup group:   14          Station: TORUN          Total bit rate: 1024
Format: MARK5B          Bits per sample: 2      Sample rate: 64.000
Number of channels: 8    DBE type: DBBC_DDC      Speedup factor: 1.00
```

Disk used to record data.

1st LO=	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
Net SB=	L	L	U	U	L	L	U	U
IF SB =	L	L	L	L	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
BBC =	1	5	1	5	3	7	3	7
BBC SB=	U	U	L	L	U	U	L	L
IF =	A1	B1	A1	B1	A1	B1	A1	B1

The following frequency sets based on these setups were used.

Frequency Set: 11 Setup file default. Used with PCAL = off  
 LO sum= 1626.49 1626.49 1626.49 1626.49 1690.49 1690.49 1690.49 1690.49  
 BBC fr= 673.51 673.51 673.51 673.51 609.51 609.51 609.51 609.51  
 Bandwd= 32.00 32.00 32.00 32.00 32.00 32.00 32.00 32.00  
 Matching frequency sets: 11

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)		(Date)	Error
	(B1950)	(J2000)		(mas)
* CRAB	05 31 31.388685	* 05 34 31.934000	05 35 32.725126	0.00
	21 58 54.53487	* 22 00 52.19100	22 01 20.36697	0.00
0515+208	05 15 05.041798	* 05 18 03.824513	05 19 04.020525	0.02
* J0518+2054	20 51 43.76307	* 20 54 52.49736	20 55 44.66304	0.03
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc			
	GSFC 2015a astro solution, unpublished 1774 observations.			
0528+134	05 28 06.759216	* 05 30 56.416747	05 31 53.508504	0.21
* J0530+1331	13 29 42.28885	* 13 31 55.14952	13 32 27.78037	0.24
J0530+13	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc			
	GSFC 2015a astro solution, unpublished 135789 observations.			

Address: Torun Centre for Astronomy

Observing mode: phase-referencig at L-band

Schedule for TORUN (Code Tr )

Page 2

A-type stars

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 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 28 May 2017 Day 148 ---											
Next scan frequencies:		1626.49	1626.49	1626.49	1626.49	1626.49	1626.49	1690.49	1690.49	1690.49	1690.49
Next BBC frequencies:		673.51	673.51	673.51	673.51	673.51	673.51	609.51	609.51	609.51	609.51
Next scan bandwidths:		32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00
14 30 00	J1309+5557	08 09 33	48.5	54.9	-5.0		-61.1	0	0	14 30 00	
14 32 00	=1307+562	08 11 33	48.7	55.1	-5.0		-61.3	120	15	14 30 01	
14 32 00	EPSUMA	08 11 33	50.6	56.6	-4.7		-63.3	-21	15	No stop	
14 37 00	---	08 16 34	51.2	57.1	-4.6		-64.0	279	54	14 32 01	
14 37 00	J1309+5557	08 16 34	49.3	55.6	-4.9		-62.0	-21	54	No stop	
14 39 00	=1307+562	08 18 35	49.6	55.8	-4.9		-62.2	99	69	14 37 01	
14 39 00	EPSUMA	08 18 35	51.5	57.3	-4.6		-64.2	-21	69	No stop	
14 44 00	---	08 23 35	52.1	57.8	-4.5		-64.9	279	108	14 39 01	
14 44 40	J1309+5557	08 24 15	50.3	56.3	-4.8		-63.0	19	108	14 44 40	
14 46 10	=1307+562	08 25 46	50.5	56.5	-4.7		-63.2	90	119	14 44 41	
14 46 10	EPSUMA	08 25 46	52.4	58.0	-4.5		-65.1	-21	119	No stop	
14 51 10	---	08 30 47	53.0	58.5	-4.4		-65.8	279	158	14 46 11	
14 51 10	J1309+5557	08 30 47	51.1	57.0	-4.7		-63.8	-21	158	No stop	
14 53 10	=1307+562	08 32 47	51.4	57.2	-4.6		-64.1	99	173	14 51 11	
14 53 10	EPSUMA	08 32 47	53.3	58.7	-4.4		-66.1	-21	173	No stop	
14 58 10	---	08 37 48	53.9	59.1	-4.3		-66.7	279	212	14 53 11	
14 58 50	J1309+5557	08 38 28	52.1	57.7	-4.5		-64.8	19	212	14 58 50	
15 00 20	=1307+562	08 39 58	52.3	57.9	-4.5		-65.0	90	223	14 58 51	
15 00 20	J1256+5539	08 39 58	53.8	59.6	-4.3		-66.4	-20	223	No stop	
15 05 20	---	08 44 59	54.5	60.1	-4.2		-67.0	280	262	15 00 21	
15 05 20	J1309+5557	08 44 59	52.9	58.4	-4.4		-65.7	-19	262	No stop	
15 07 20	=1307+562	08 46 59	53.2	58.6	-4.4		-66.0	101	277	15 05 21	
15 12 30	3C274	08 52 10	30.5	111.9	-3.7		-34.8	190	277	15 12 30	
15 18 30	---	08 58 11	31.4	113.3	-3.6		-34.4	360	323	15 12 31	
15 21 50	J1309+5557	09 01 32	55.0	59.9	-4.1		-67.9	78	323	15 21 50	
15 23 50	=1307+562	09 03 32	55.3	60.1	-4.1		-68.1	120	338	15 21 51	

Schedule for TORUN (Code Tr )

Page 3

A-type stars

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	
-----											
---	Sun 28 May 2017	Day 148					---				
15 23 50	EPSUMA	09 03 32	57.3	61.5	-3.9		-70.1	-21	338	No stop	
15 28 50	---	09 08 33	57.9	61.9	-3.8		-70.8	279	377	15 23 51	
15 28 50	J1309+5557	09 08 33	56.0	60.6	-4.0		-68.8	-21	377	No stop	
15 30 50	=1307+562	09 10 33	56.2	60.7	-4.0		-69.0	99	392	15 28 51	
15 30 50	EPSUMA	09 10 33	58.2	62.1	-3.7		-71.0	-21	392	No stop	
15 35 50	---	09 15 34	58.9	62.5	-3.7		-71.7	279	431	15 30 51	
15 36 30	J1309+5557	09 16 14	57.0	61.3	-3.9		-69.8	19	431	15 36 30	
15 38 00	=1307+562	09 17 44	57.2	61.4	-3.9		-70.0	90	442	15 36 31	
15 38 00	EPSUMA	09 17 44	59.2	62.7	-3.6		-72.0	-21	442	No stop	
15 43 00	---	09 22 45	59.8	63.1	-3.5		-72.7	279	481	15 38 01	
15 43 00	J1309+5557	09 22 45	57.8	61.8	-3.8		-70.7	-21	481	No stop	
15 45 00	=1307+562	09 24 45	58.1	62.0	-3.8		-70.9	99	496	15 43 01	
15 45 00	EPSUMA	09 24 45	60.1	63.3	-3.5		-73.0	-22	496	No stop	
15 50 00	---	09 29 46	60.8	63.7	-3.4		-73.6	278	535	15 45 01	
15 50 40	J1309+5557	09 30 26	58.9	62.5	-3.7		-71.7	19	535	15 50 40	
15 52 10	=1307+562	09 31 57	59.1	62.6	-3.6		-71.9	90	546	15 50 41	
15 52 10	EPSUMA	09 31 57	61.1	63.9	-3.4		-73.9	-22	546	No stop	
15 57 10	---	09 36 57	61.8	64.3	-3.3		-74.6	278	585	15 52 11	
15 57 10	J1309+5557	09 36 57	59.7	63.0	-3.5		-72.6	-21	585	No stop	
15 59 10	=1307+562	09 38 58	60.0	63.2	-3.5		-72.8	99	600	15 57 11	
15 59 10	J1256+5539	09 38 58	61.7	64.9	-3.3		-74.1	-20	600	No stop	
16 04 10	---	09 43 59	62.4	65.3	-3.2		-74.7	280	638	15 59 11	
16 04 50	J1309+5557	09 44 39	60.8	63.7	-3.4		-73.6	20	638	16 04 50	
16 06 20	=1307+562	09 46 09	61.0	63.8	-3.4		-73.8	90	650	16 04 51	
16 06 20	EPSUMA	09 46 09	63.0	65.0	-3.1		-75.9	-22	650	No stop	
16 11 20	---	09 51 10	63.7	65.4	-3.1		-76.6	278	688	16 06 21	
16 11 20	J1309+5557	09 51 10	61.6	64.2	-3.3		-74.5	-21	688	No stop	
16 13 20	=1307+562	09 53 10	61.9	64.4	-3.3		-74.8	99	704	16 11 21	
16 13 20	EPSUMA	09 53 10	64.0	65.5	-3.0		-76.9	-22	704	No stop	
16 18 20	---	09 58 11	64.6	65.9	-2.9		-77.6	278	742	16 13 21	
16 19 00	J1309+5557	09 58 51	62.7	64.8	-3.2		-75.6	19	742	16 19 00	
16 20 30	=1307+562	10 00 21	62.9	64.9	-3.2		-75.8	90	754	16 19 01	

Schedule for TORUN (Code Tr )

Page 4

A-type stars

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
-----										
--- Sun 28 May 2017 Day 148 ---										
16 20 30	EPSUMA	10 00 21	64.9	66.0	-2.9		-77.9	-22	754	No stop
16 25 30	---	10 05 22	65.6	66.4	-2.8		-78.6	278	792	16 20 31
16 25 30	J1309+5557	10 05 22	63.6	65.3	-3.1		-76.5	-21	792	No stop
16 27 30	=1307+562	10 07 22	63.8	65.4	-3.0		-76.8	99	808	16 25 31
16 27 30	EPSUMA	10 07 22	65.9	66.5	-2.8		-78.9	-22	808	No stop
16 32 30	---	10 12 23	66.6	66.8	-2.7		-79.7	278	846	16 27 31
16 33 10	J1309+5557	10 13 03	64.6	65.8	-2.9		-77.6	19	846	16 33 10
16 34 40	=1307+562	10 14 34	64.8	65.9	-2.9		-77.8	90	858	16 33 11
16 34 40	EPSUMA	10 14 34	66.9	66.9	-2.7		-80.0	-22	858	No stop
16 39 40	---	10 19 34	67.6	67.3	-2.6		-80.7	278	896	16 34 41
16 39 40	J1309+5557	10 19 34	65.5	66.3	-2.8		-78.5	-22	896	No stop
16 41 40	=1307+562	10 21 35	65.8	66.4	-2.8		-78.8	98	912	16 39 41
16 41 40	J1256+5539	10 21 35	67.5	68.1	-2.6		-80.0	-20	912	No stop
16 46 40	---	10 26 35	68.2	68.4	-2.5		-80.8	280	950	16 41 41
16 47 20	J1309+5557	10 27 16	66.6	66.8	-2.7		-79.6	20	950	16 47 20
16 48 50	=1307+562	10 28 46	66.8	66.9	-2.7		-79.9	90	962	16 47 21
16 48 50	EPSUMA	10 28 46	68.9	67.8	-2.4		-82.2	-22	962	No stop
16 53 50	---	10 33 47	69.6	68.0	-2.4		-83.0	278	1000	16 48 51
16 53 50	J1309+5557	10 33 47	67.5	67.2	-2.6		-80.6	-22	1000	No stop
16 55 50	=1307+562	10 35 47	67.7	67.3	-2.6		-80.9	98	1015	16 53 51
16 55 50	EPSUMA	10 35 47	69.8	68.1	-2.3		-83.3	-22	1015	No stop
17 00 50	---	10 40 48	70.5	68.3	-2.2		-84.1	278	1054	16 55 51
17 01 30	J1309+5557	10 41 28	68.5	67.6	-2.5		-81.8	18	1054	17 01 30
17 03 00	=1307+562	10 42 58	68.7	67.7	-2.4		-82.0	90	1065	17 01 31
17 03 00	EPSUMA	10 42 58	70.8	68.4	-2.2		-84.5	-22	1065	No stop
17 08 00	---	10 47 59	71.5	68.6	-2.1		-85.3	278	1104	17 03 01
17 08 00	J1309+5557	10 47 59	69.4	68.0	-2.4		-82.8	-22	1104	No stop
17 10 00	=1307+562	10 49 59	69.7	68.1	-2.3		-83.2	98	1119	17 08 01
17 10 00	EPSUMA	10 49 59	71.8	68.7	-2.1		-85.7	-22	1119	No stop
17 15 00	---	10 55 00	72.5	68.9	-2.0		-86.6	278	1158	17 10 01

Schedule for TORUN (Code Tr )

Page 5

A-type stars

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

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SYNC: Time correlator 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 28 May 2017 Day 148 ---										
17 15 40	J1309+5557	10 55 40	70.5	68.3	-2.2		-84.1	18	1158	17 15 40
17 17 10	=1307+562	10 57 11	70.7	68.4	-2.2		-84.3	90	1169	17 15 41
17 17 10	EPSUMA	10 57 11	72.8	68.9	-2.0		-87.0	-22	1169	No stop
17 22 10	---	11 02 11	73.5	69.0	-1.9		-87.9	278	1208	17 17 11
17 22 10	J1309+5557	11 02 11	71.4	68.6	-2.1		-85.2	-22	1208	No stop
17 24 10	=1307+562	11 04 12	71.7	68.7	-2.1		-85.5	98	1223	17 22 11
17 24 10	EPSUMA	11 04 12	73.8	69.1	-1.8		-88.3	-22	1223	No stop
17 29 10	---	11 09 12	74.5	69.1	-1.8		-89.3	278	1262	17 24 11
17 29 50	J1309+5557	11 09 53	72.5	68.8	-2.0		-86.5	18	1262	17 29 50
17 31 20	=1307+562	11 11 23	72.7	68.9	-2.0		-86.8	90	1273	17 29 51
17 31 20	EPSUMA	11 11 23	74.8	69.1	-1.7		-89.7	-22	1273	No stop
17 36 20	---	11 16 24	75.5	69.1	-1.6		-90.8	278	1312	17 31 21
17 36 20	J1309+5557	11 16 24	73.4	69.0	-1.9		-87.7	-22	1312	No stop
17 38 20	=1307+562	11 18 24	73.7	69.0	-1.9		-88.1	98	1327	17 36 21
17 38 20	EPSUMA	11 18 24	75.8	69.1	-1.6		-91.2	-22	1327	No stop
17 43 20	---	11 23 25	76.5	69.0	-1.5		-92.3	278	1365	17 38 21
17 44 00	J1309+5557	11 24 05	74.5	69.1	-1.8		-89.2	18	1365	17 44 00
17 46 00	=1307+562	11 26 05	74.8	69.1	-1.7		-89.6	120	1381	17 44 01
17 46 00	J1256+5539	11 26 05	76.6	70.3	-1.5		-91.2	-21	1381	No stop
17 51 00	---	11 31 06	77.3	70.2	-1.4		-92.3	279	1419	17 46 01
17 51 00	J1309+5557	11 31 06	75.5	69.1	-1.6		-90.7	-21	1419	No stop
17 53 00	=1307+562	11 33 06	75.8	69.1	-1.6		-91.1	99	1435	17 51 01
17 56 30	J1642+3948	11 36 37	38.1	72.0	-5.1		-48.0	55	1435	17 56 30
18 03 30	=3C345	11 43 38	39.1	73.1	-5.0		-48.4	420	1488	17 56 31
18 07 00	J1309+5557	11 47 09	77.7	68.7	-1.4		-94.4	52	1488	18 07 00
18 09 00	=1307+562	11 49 09	78.0	68.6	-1.3		-94.9	120	1504	18 07 01
18 09 00	EPSUMA	11 49 09	80.1	67.2	-1.1		-99.4	-22	1504	No stop
18 14 00	---	11 54 10	80.8	66.4	-1.0		-101.2	278	1542	18 09 01
18 14 00	J1309+5557	11 54 10	78.7	68.2	-1.3		-96.3	-22	1542	No stop
18 16 00	=1307+562	11 56 10	79.0	68.1	-1.2		-96.9	98	1558	18 14 01

Schedule for TORUN (Code Tr )

Page 6

A-type stars

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
-----										
--- Sun 28 May 2017 Day 148 ---										
18 16 00	EPSUMA	11 56 10	81.1	66.1	-1.0		-102.0	-22	1558	No stop
18 21 00	---	12 01 11	81.8	65.0	-0.9		-104.1	278	1596	18 16 01
18 21 40	J1309+5557	12 01 51	79.8	67.5	-1.1		-98.6	19	1596	18 21 40
18 23 10	=1307+562	12 03 21	80.0	67.3	-1.1		-99.1	90	1608	18 21 41
18 23 10	EPSUMA	12 03 21	82.0	64.5	-0.9		-105.1	-22	1608	No stop
18 28 10	---	12 08 22	82.7	63.0	-0.8		-107.6	278	1646	18 23 11
18 28 10	J1309+5557	12 08 22	80.7	66.6	-1.0		-100.9	-22	1646	No stop
18 30 10	=1307+562	12 10 22	80.9	66.2	-1.0		-101.7	98	1662	18 28 11
18 30 10	EPSUMA	12 10 22	83.0	62.3	-0.7		-108.7	-23	1662	No stop
18 35 10	---	12 15 23	83.6	60.2	-0.7		-111.8	277	1700	18 30 11
18 35 50	J1309+5557	12 16 03	81.7	65.0	-0.9		-104.0	15	1700	18 35 50
18 37 20	=1307+562	12 17 34	81.9	64.7	-0.9		-104.7	90	1712	18 35 51
18 37 20	EPSUMA	12 17 34	83.9	59.1	-0.6		-113.3	-27	1712	No stop
18 42 20	---	12 22 34	84.6	56.1	-0.5		-117.3	273	1750	18 37 21
18 42 20	J1309+5557	12 22 34	82.6	63.2	-0.8		-107.1	-29	1750	No stop
18 44 20	=1307+562	12 24 35	82.9	62.6	-0.8		-108.2	91	1765	18 42 21
18 44 20	J1256+5539	12 24 35	84.7	59.1	-0.5		-114.4	-22	1765	No stop
18 49 20	---	12 29 36	85.3	55.4	-0.5		-119.1	278	1804	18 44 21
18 50 00	J1309+5557	12 30 16	83.6	60.3	-0.7		-111.7	15	1804	18 50 00
18 52 00	=1307+562	12 32 16	83.9	59.3	-0.6		-113.1	120	1819	18 50 01
18 52 00	EPSUMA	12 32 16	85.7	47.4	-0.4		-128.0	-40	1819	No stop
18 57 00	---	12 37 17	86.2	40.7	-0.3		-135.7	260	1858	18 52 01
18 57 00	J1309+5557	12 37 17	84.5	56.3	-0.5		-117.0	-45	1858	No stop
18 59 00	=1307+562	12 39 17	84.8	54.9	-0.5		-118.8	75	1873	18 57 01
18 59 00	EPSUMA	12 39 17	86.4	37.5	-0.3		-139.4	-52	1873	No stop
19 04 00	---	12 44 18	86.8	27.7	-0.2		-150.2	248	1912	18 59 01
19 04 40	J1309+5557	12 44 58	85.4	50.0	-0.4		-124.9	-19	1912	19 04 40
19 06 40	=1307+562	12 46 58	85.7	47.8	-0.4		-127.5	101	1927	19 04 41
19 06 40	EPSUMA	12 46 58	87.0	21.5	-0.1		-157.0	-73	1927	No stop
19 11 40	---	12 51 59	87.2	8.1	-0.0		-171.4	227	1965	19 06 41

Schedule for TORUN (Code Tr )

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A-type stars

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 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 28 May 2017 Day 148 ---

19 12 30	J1309+5557	12 52 49	86.3	40.0	-0.3	-136.5	-28	1965	19 12 30
19 14 30	=1307+562	12 54 50	86.5	36.7	-0.3	-140.2	92	1981	19 12 31
19 14 30	EPSUMA	12 54 50	87.2	-0.1	0.0	179.9	-97	1981	No stop
19 19 30	---	12 59 51	87.1	-14.3	0.1	164.7	203	2019	19 14 31
19 20 10	J1309+5557	13 00 31	86.9	25.2	-0.2	-152.9	-50	2019	19 20 10
19 22 10	=1307+562	13 02 31	87.0	20.3	-0.1	-158.2	70	2035	19 20 11
19 22 10	EPSUMA	13 02 31	87.0	-21.2	0.1	157.2	-106	2035	No stop
19 27 10	---	13 07 32	86.7	-32.4	0.2	145.0	194	2073	19 22 11
19 28 00	J1309+5557	13 08 22	87.2	4.4	-0.0	-175.3	-35	2073	19 28 00
19 30 00	=1307+562	13 10 22	87.2	-1.4	0.0	178.5	85	2088	19 28 01

## SETUP FILE INFORMATION:

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

==== Setup file: sess217.L1024

Setup group: 11	Station: TORUN	Total bit rate: 1024
Format: MARK5B	Bits per sample: 2	Sample rate: 64.000
Number of channels: 8	DBE type: DBBC_DDC	Speedup factor: 1.00

Disk used to record data.



1st LO=	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
Net SB=	L	L	U	U	L	L	U	U
IF SB =	L	L	L	L	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
BBC =	1	5	1	5	3	7	3	7
BBC SB=	U	U	L	L	U	U	L	L
IF =	A1	B1	A1	B1	A1	B1	A1	B1

The following frequency sets based on these setups were used.

Frequency Set: 4 Setup file default. Used with PCAL = off  
 LO sum= 1626.49 1626.49 1626.49 1626.49 1690.49 1690.49 1690.49 1690.49  
 BBC fr= 673.51 673.51 673.51 673.51 609.51 609.51 609.51 609.51  
 Bandwd= 32.00 32.00 32.00 32.00 32.00 32.00 32.00 32.00  
 Matching frequency sets: 4

Track assignments are:

track1= 2, 6, 10, 14, 4, 8, 12, 16  
 barrel=roll\_off

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* EPSUMA	12 51 50.973655	* 12 54 01.981561	12 54 47.464648	0.00
	56 13 50.43242	* 55 57 35.21927	55 52 13.77930	0.00
	Proper motion used. Reference epoch: 2000.00000			
	At epoch: RA = 12 54 01.749590 Dec = 55 57 35.36270			
	Rates: RA = 111.91 mas/yr Dec = -8.24 mas/yr			
	Parallax: 39.5100 mas.			
	Planetary motion (includes proper motion). Ref. MJD: 57901.6056			
	Rates: RA = 0.36490E-04 s/day Dec = -0.22560E-04 arcsec/day			
* J1256+5539	12 53 48.928866	* 12 55 59.386000	12 56 44.700670	0.00
	55 55 02.30296	* 55 38 49.08800	55 33 28.27585	0.00
J1230+1223	12 28 17.569280	* 12 30 49.423382	12 31 42.195715	0.10
* 3C274	12 40 01.74884	* 12 23 28.04366	12 17 48.17233	0.10
1228+126	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.vlba.2012jul			
J1230+12	rfc_2012b Petrov, 2012, unpublished 47163 observations			
M87				
* J1309+5557	13 07 05.097739	* 13 09 09.754459	13 09 53.218032	0.62
1307+562	56 13 36.08273	* 55 57 38.19613	55 52 22.70595	0.79
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.vlba.2012jul			
	rfc_2012b Petrov, 2012, unpublished 73 observations			
* J1642+3948	16 41 17.606228	* 16 42 58.809965	16 43 35.211292	0.77
3C345	39 54 10.81496	* 39 48 36.99402	39 46 48.67345	0.52
1641+399	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.vlba.2012jul			
J1642+39	GSFC 2011B astro solution 52621 Observations			

eg098atr

G8+1 IN THE SKY

PI: *Gabanyi*

Address: Konkoly Observatory

Observing mode: 18 cm 1 Gb/s

Schedule for TORUN (Code Tr )

Page 2

G8+1 in the sky

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

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

Disk: GBytes 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 29 May 2017 Day 149 ---										
Next scan frequencies:		1626.49	1626.49	1626.49	1626.49	1690.49	1690.49	1690.49	1690.49	1690.49
Next BBC frequencies:		673.51	673.51	673.51	673.51	609.51	609.51	609.51	609.51	609.51
Next scan bandwidths:		32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00
01 00 00	J0230+4032	18 41 17	18.0	45.0	-7.8		-34.0	0	0	01 00 00
01 05 00	=0227+403	18 46 17	18.5	45.8	-7.8		-34.6	300	38	01 00 01
01 06 10	J0304+3348	18 47 28	9.4	43.9	-8.3		-30.1	22	38	01 06 10
01 07 40	=0301+336	18 48 58	9.5	44.1	-8.3		-30.2	90	50	01 06 11
01 07 40	4C35.06	18 48 58	11.6	43.6	-8.2		-30.7	-22	50	No stop
01 11 10	---	18 52 28	11.9	44.2	-8.2		-31.1	188	77	01 07 41
01 11 10	J0304+3348	18 52 28	9.9	44.8	-8.2		-30.6	-21	77	No stop
01 12 40	=0301+336	18 53 59	10.1	45.0	-8.2		-30.8	69	88	01 11 11
01 12 40	4C35.06	18 53 59	12.1	44.5	-8.1		-31.3	-22	88	No stop
01 16 10	---	18 57 29	12.5	45.1	-8.1		-31.7	188	115	01 12 41
01 16 10	J0304+3348	18 57 29	10.4	45.7	-8.1		-31.2	-21	115	No stop
01 17 40	=0301+336	18 58 59	10.6	46.0	-8.1		-31.3	69	127	01 16 11
01 17 40	4C35.06	18 58 59	12.6	45.4	-8.1		-31.8	-22	127	No stop
01 21 10	---	19 02 30	13.0	46.0	-8.0		-32.2	188	154	01 17 41
01 21 40	J0304+3348	19 03 00	11.0	46.7	-8.0		-31.7	9	154	01 21 40
01 23 10	=0301+336	19 04 30	11.2	46.9	-8.0		-31.9	90	165	01 21 41
01 23 10	4C35.06	19 04 30	13.2	46.3	-8.0		-32.4	-22	165	No stop
01 26 40	---	19 08 01	13.6	47.0	-7.9		-32.8	188	192	01 23 11
01 26 40	J0304+3348	19 08 01	11.6	47.6	-8.0		-32.3	-21	192	No stop
01 28 10	=0301+336	19 09 31	11.7	47.8	-7.9		-32.4	69	204	01 26 41
01 28 10	4C35.06	19 09 31	13.8	47.2	-7.9		-33.0	-22	204	No stop
01 31 40	---	19 13 02	14.2	47.8	-7.8		-33.3	188	231	01 28 11
01 31 40	J0304+3348	19 13 02	12.1	48.5	-7.9		-32.8	-21	231	No stop
01 33 10	=0301+336	19 14 32	12.3	48.7	-7.9		-32.9	69	242	01 31 41
01 33 10	4C35.06	19 14 32	14.3	48.1	-7.8		-33.5	-22	242	No stop
01 36 40	---	19 18 03	14.7	48.7	-7.7		-33.8	188	269	01 33 11

Schedule for TORUN (Code Tr )

Page 3

G8+1 in the sky

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 29 May 2017 Day 149 ---										
01 37 10	J0304+3348	19 18 33	12.8	49.5	-7.8		-33.3	9	269	01 37 10
01 38 40	=0301+336	19 20 03	12.9	49.7	-7.8		-33.5	90	281	01 37 11
01 38 40	4C35.06	19 20 03	14.9	49.1	-7.7		-34.1	-21	281	No stop
01 42 10	---	19 23 33	15.3	49.7	-7.7		-34.4	189	308	01 38 41
01 42 10	J0304+3348	19 23 33	13.3	50.3	-7.7		-33.8	-21	308	No stop
01 43 40	=0301+336	19 25 04	13.5	50.6	-7.7		-34.0	69	319	01 42 11
01 43 40	J0319+4130	19 25 04	18.2	43.6	-7.9		-33.6	-32	319	No stop
01 48 40	=0316+413	19 30 05	18.8	44.4	-7.8		-34.2	268	358	01 43 41
01 49 40	J0304+3348	19 31 05	14.2	51.7	-7.6		-34.6	29	358	01 49 40
01 51 10	=0301+336	19 32 35	14.4	51.9	-7.6		-34.7	90	369	01 49 41
01 51 10	4C35.06	19 32 35	16.4	51.2	-7.5		-35.3	-21	369	No stop
01 54 40	---	19 36 06	16.8	51.8	-7.4		-35.6	189	396	01 51 11
01 54 40	J0304+3348	19 36 06	14.8	52.6	-7.5		-35.0	-21	396	No stop
01 56 10	=0301+336	19 37 36	15.0	52.8	-7.5		-35.2	69	408	01 54 41
01 56 10	4C35.06	19 37 36	17.0	52.1	-7.4		-35.8	-21	408	No stop
01 59 40	---	19 41 06	17.4	52.7	-7.4		-36.1	189	435	01 56 11
01 59 40	J0304+3348	19 41 06	15.4	53.4	-7.4		-35.5	-21	435	No stop
02 01 10	=0301+336	19 42 37	15.6	53.7	-7.4		-35.7	69	446	01 59 41
02 01 10	4C35.06	19 42 37	17.6	52.9	-7.3		-36.3	-21	446	No stop
02 04 40	---	19 46 07	18.0	53.5	-7.3		-36.6	189	473	02 01 11
02 05 30	J0304+3348	19 46 57	16.1	54.5	-7.3		-36.1	29	473	02 05 30
02 07 00	=0301+336	19 48 28	16.3	54.7	-7.3		-36.2	90	485	02 05 31
02 07 00	4C35.06	19 48 28	18.3	53.9	-7.2		-36.8	-21	485	No stop
02 10 30	---	19 51 58	18.7	54.5	-7.2		-37.1	189	512	02 07 01
02 10 30	J0304+3348	19 51 58	16.7	55.3	-7.2		-36.5	-21	512	No stop
02 12 00	=0301+336	19 53 28	16.9	55.6	-7.2		-36.6	69	523	02 10 31
02 12 00	4C35.06	19 53 28	18.9	54.8	-7.2		-37.3	-21	523	No stop
02 15 30	---	19 56 59	19.3	55.4	-7.1		-37.6	189	550	02 12 01
02 15 30	J0304+3348	19 56 59	17.4	56.2	-7.1		-36.9	-21	550	No stop
02 17 00	=0301+336	19 58 29	17.5	56.5	-7.1		-37.1	69	562	02 15 31
02 17 00	4C35.06	19 58 29	19.5	55.7	-7.1		-37.7	-21	562	No stop
02 20 30	---	20 02 00	19.9	56.2	-7.0		-38.1	189	588	02 17 01

Schedule for TORUN (Code Tr )

Page 4

G8+1 in the sky

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 29 May 2017 Day 149 ---										
02 21 20	J0304+3348	20 02 50	18.1	57.2	-7.0		-37.5	29	588	02 21 20
02 22 50	=0301+336	20 04 20	18.3	57.5	-7.0		-37.6	90	600	02 21 21
02 22 50	4C35.06	20 04 20	20.2	56.6	-7.0		-38.3	-21	600	No stop
02 26 20	---	20 07 51	20.7	57.2	-6.9		-38.6	189	627	02 22 51
02 26 20	J0304+3348	20 07 51	18.7	58.1	-7.0		-37.9	-21	627	No stop
02 27 50	=0301+336	20 09 21	18.9	58.3	-6.9		-38.0	69	638	02 26 21
02 27 50	4C35.06	20 09 21	20.9	57.5	-6.9		-38.7	-21	638	No stop
02 31 20	---	20 12 52	21.3	58.1	-6.8		-39.0	189	665	02 27 51
02 31 20	J0304+3348	20 12 52	19.4	59.0	-6.9		-38.3	-21	665	No stop
02 32 50	=0301+336	20 14 22	19.6	59.2	-6.9		-38.4	69	677	02 31 21
02 32 50	4C35.06	20 14 22	21.5	58.3	-6.8		-39.1	-21	677	No stop
02 36 20	---	20 17 52	22.0	58.9	-6.8		-39.4	189	704	02 32 51
02 37 10	J0304+3348	20 18 42	20.1	60.0	-6.8		-38.8	29	704	02 37 10
02 38 40	=0301+336	20 20 13	20.3	60.2	-6.8		-38.9	90	715	02 37 11
02 38 40	4C35.06	20 20 13	22.3	59.3	-6.7		-39.6	-21	715	No stop
02 42 10	---	20 23 43	22.7	59.9	-6.7		-39.9	189	742	02 38 41
02 42 10	J0304+3348	20 23 43	20.8	60.8	-6.7		-39.2	-21	742	No stop
02 43 40	=0301+336	20 25 14	21.0	61.1	-6.7		-39.3	69	754	02 42 11
02 43 40	4C35.06	20 25 14	22.9	60.2	-6.6		-40.0	-21	754	No stop
02 47 10	---	20 28 44	23.4	60.8	-6.6		-40.3	189	781	02 43 41
02 47 10	J0304+3348	20 28 44	21.4	61.7	-6.6		-39.5	-21	781	No stop
02 48 40	=0301+336	20 30 14	21.6	61.9	-6.6		-39.7	69	792	02 47 11
02 48 40	4C35.06	20 30 14	23.6	61.0	-6.5		-40.4	-21	792	No stop
02 52 10	---	20 33 45	24.0	61.6	-6.5		-40.7	189	819	02 48 41
02 53 00	J0304+3348	20 34 35	22.2	62.7	-6.5		-40.0	29	819	02 53 00
02 54 30	=0301+336	20 36 05	22.4	63.0	-6.5		-40.1	90	831	02 53 01
02 54 30	4C35.06	20 36 05	24.3	62.0	-6.4		-40.9	-21	831	No stop
02 58 00	---	20 39 36	24.8	62.6	-6.4		-41.2	189	858	02 54 31
02 58 00	J0304+3348	20 39 36	22.9	63.6	-6.4		-40.4	-21	858	No stop
02 59 30	=0301+336	20 41 06	23.1	63.8	-6.4		-40.5	69	869	02 58 01

Schedule for TORUN (Code Tr )

Page 5

G8+1 in the sky

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 29 May 2017 Day 149 ---										
02 59 30	4C35.06	20 41 06	25.0	62.8	-6.4		-41.3	-21	869	No stop
03 03 00	---	20 44 37	25.5	63.4	-6.3		-41.5	189	896	02 59 31
03 03 00	J0304+3348	20 44 37	23.6	64.4	-6.4		-40.7	-21	896	No stop
03 04 30	=0301+336	20 46 07	23.8	64.7	-6.3		-40.8	69	908	03 03 01
03 04 30	4C35.06	20 46 07	25.7	63.7	-6.3		-41.6	-21	908	No stop
03 08 00	---	20 49 38	26.1	64.3	-6.2		-41.9	189	935	03 04 31
03 08 50	J0304+3348	20 50 28	24.4	65.4	-6.3		-41.1	29	935	03 08 50
03 10 20	=0301+336	20 51 58	24.6	65.7	-6.2		-41.2	90	946	03 08 51
03 10 20	4C35.06	20 51 58	26.5	64.7	-6.2		-42.1	-21	946	No stop
03 13 50	---	20 55 29	26.9	65.3	-6.1		-42.3	189	973	03 10 21
03 13 50	J0304+3348	20 55 29	25.0	66.3	-6.2		-41.5	-21	973	No stop
03 15 20	=0301+336	20 56 59	25.3	66.5	-6.1		-41.6	69	985	03 13 51
03 15 20	4C35.06	20 56 59	27.1	65.5	-6.1		-42.4	-21	985	No stop
03 18 50	---	21 00 29	27.6	66.1	-6.0		-42.7	189	1012	03 15 21
03 18 50	J0304+3348	21 00 29	25.7	67.1	-6.1		-41.8	-21	1012	No stop
03 20 20	=0301+336	21 02 00	25.9	67.4	-6.1		-41.9	69	1023	03 18 51
03 20 20	4C35.06	21 02 00	27.8	66.3	-6.0		-42.8	-21	1023	No stop
03 23 50	---	21 05 30	28.3	66.9	-6.0		-43.0	189	1050	03 20 21
03 24 40	J0304+3348	21 06 20	26.6	68.1	-6.0		-42.2	29	1050	03 24 40
03 26 10	=0301+336	21 07 51	26.8	68.4	-6.0		-42.3	90	1062	03 24 41
03 26 10	4C35.06	21 07 51	28.6	67.3	-5.9		-43.2	-21	1062	No stop
03 29 40	---	21 11 21	29.1	67.9	-5.9		-43.4	189	1088	03 26 11
03 29 40	J0304+3348	21 11 21	27.3	69.0	-5.9		-42.5	-21	1088	No stop
03 31 10	=0301+336	21 12 51	27.5	69.3	-5.9		-42.6	69	1100	03 29 41
03 31 10	4C35.06	21 12 51	29.3	68.2	-5.8		-43.5	-21	1100	No stop
03 34 40	---	21 16 22	29.8	68.8	-5.8		-43.7	189	1127	03 31 11
03 34 40	J0304+3348	21 16 22	28.0	69.9	-5.8		-42.8	-21	1127	No stop
03 36 10	=0301+336	21 17 52	28.2	70.1	-5.8		-42.9	69	1138	03 34 41
03 37 10	J0230+4032	21 18 52	37.8	70.2	-5.2		-48.1	10	1138	03 37 10
03 42 10	=0227+403	21 23 53	38.6	71.0	-5.1		-48.4	300	1177	03 37 11

Schedule for TORUN (Code Tr )

Page 6

G8+1 in the sky

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 29 May 2017 Day 149 ---										
03 43 10	J0304+3348	21 24 53	29.2	71.3	-5.7		-43.3	11	1177	03 43 10
03 44 40	=0301+336	21 26 24	29.4	71.6	-5.7		-43.3	90	1188	03 43 11
03 44 40	4C35.06	21 26 24	31.2	70.5	-5.6		-44.3	-21	1188	No stop
03 48 10	---	21 29 54	31.7	71.1	-5.6		-44.5	189	1215	03 44 41
03 48 10	J0304+3348	21 29 54	29.9	72.2	-5.6		-43.5	-21	1215	No stop
03 49 40	=0301+336	21 31 24	30.1	72.5	-5.6		-43.6	69	1227	03 48 11
03 49 40	4C35.06	21 31 24	32.0	71.3	-5.5		-44.6	-21	1227	No stop
03 53 10	---	21 34 55	32.5	71.9	-5.5		-44.8	189	1254	03 49 41
03 53 40	J0304+3348	21 35 25	30.7	73.2	-5.5		-43.8	9	1254	03 53 40
03 55 10	=0301+336	21 36 55	30.9	73.4	-5.5		-43.9	90	1265	03 53 41
03 55 10	4C35.06	21 36 55	32.7	72.3	-5.4		-44.9	-21	1265	No stop
03 58 40	---	21 40 26	33.2	72.9	-5.4		-45.1	189	1292	03 55 11
03 58 40	J0304+3348	21 40 26	31.4	74.0	-5.4		-44.1	-21	1292	No stop
04 00 10	=0301+336	21 41 56	31.6	74.3	-5.4		-44.1	69	1304	03 58 41
04 00 10	4C35.06	21 41 56	33.5	73.1	-5.3		-45.2	-21	1304	No stop
04 03 40	---	21 45 27	34.0	73.7	-5.3		-45.4	189	1331	04 00 11
04 04 10	J0304+3348	21 45 57	32.2	75.0	-5.3		-44.3	9	1331	04 04 10
04 05 40	=0301+336	21 47 27	32.4	75.3	-5.3		-44.4	90	1342	04 04 11
04 05 40	4C35.06	21 47 27	34.3	74.1	-5.3		-45.5	-21	1342	No stop
04 09 10	---	21 50 58	34.8	74.7	-5.2		-45.6	189	1369	04 05 41
04 09 10	J0304+3348	21 50 58	32.9	75.9	-5.2		-44.5	-21	1369	No stop
04 10 40	=0301+336	21 52 28	33.1	76.2	-5.2		-44.6	69	1381	04 09 11
04 10 40	4C35.06	21 52 28	35.0	74.9	-5.2		-45.7	-21	1381	No stop
04 14 10	---	21 55 58	35.5	75.5	-5.1		-45.9	189	1408	04 10 41
04 14 10	J0304+3348	21 55 58	33.6	76.8	-5.2		-44.8	-20	1408	No stop
04 15 40	=0301+336	21 57 29	33.9	77.0	-5.1		-44.8	70	1419	04 14 11
04 15 40	4C35.06	21 57 29	35.7	75.8	-5.1		-45.9	-21	1419	No stop
04 19 10	---	22 00 59	36.2	76.4	-5.0		-46.1	189	1446	04 15 41
04 19 40	J0304+3348	22 01 29	34.5	77.8	-5.1		-45.0	10	1446	04 19 40
04 21 10	=0301+336	22 03 00	34.7	78.0	-5.0		-45.0	90	1458	04 19 41

Schedule for TORUN (Code Tr )

Page 7

G8+1 in the sky

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 29 May 2017 Day 149 ---										
04 21 10	4C35.06	22 03 00	36.5	76.7	-5.0		-46.2	-21	1458	No stop
04 24 40	---	22 06 30	37.0	77.4	-4.9		-46.3	189	1485	04 21 11
04 24 40	J0304+3348	22 06 30	35.2	78.7	-5.0		-45.2	-20	1485	No stop
04 26 10	=0301+336	22 08 00	35.4	78.9	-5.0		-45.2	70	1496	04 24 41
04 26 10	4C35.06	22 08 00	37.2	77.6	-4.9		-46.4	-21	1496	No stop
04 29 40	---	22 11 31	37.8	78.2	-4.9		-46.5	189	1523	04 26 11
04 29 40	J0304+3348	22 11 31	35.9	79.6	-4.9		-45.3	-20	1523	No stop
04 31 10	=0301+336	22 13 01	36.2	79.8	-4.9		-45.4	70	1535	04 29 41
04 31 10	4C35.06	22 13 01	38.0	78.5	-4.8		-46.6	-21	1535	No stop
04 34 40	---	22 16 32	38.5	79.1	-4.8		-46.7	189	1562	04 31 11
04 35 10	J0304+3348	22 17 02	36.7	80.6	-4.8		-45.5	10	1562	04 35 10
04 36 40	=0301+336	22 18 32	37.0	80.8	-4.8		-45.6	90	1573	04 35 11
04 36 40	4C35.06	22 18 32	38.8	79.5	-4.7		-46.8	-21	1573	No stop
04 40 10	---	22 22 03	39.3	80.1	-4.7		-46.9	189	1600	04 36 41
04 40 10	J0304+3348	22 22 03	37.5	81.5	-4.7		-45.7	-20	1600	No stop
04 41 40	=0301+336	22 23 33	37.7	81.7	-4.7		-45.7	70	1612	04 40 11
04 41 40	4C35.06	22 23 33	39.5	80.4	-4.7		-47.0	-21	1612	No stop
04 45 10	---	22 27 04	40.1	81.0	-4.6		-47.1	189	1638	04 41 41
04 45 10	J0304+3348	22 27 04	38.2	82.4	-4.6		-45.8	-20	1638	No stop
04 46 40	=0301+336	22 28 34	38.5	82.7	-4.6		-45.8	70	1650	04 45 11
04 46 40	4C35.06	22 28 34	40.3	81.3	-4.6		-47.1	-21	1650	No stop
04 50 10	---	22 32 04	40.8	81.9	-4.5		-47.2	189	1677	04 46 41
04 50 40	J0304+3348	22 32 34	39.1	83.4	-4.6		-45.9	10	1677	04 50 40
04 52 10	=0301+336	22 34 05	39.3	83.7	-4.5		-46.0	90	1688	04 50 41
04 53 10	J0230+4032	22 35 05	48.9	83.0	-3.9		-51.7	10	1688	04 53 10
04 58 10	=0227+403	22 40 06	49.7	83.9	-3.9		-51.9	300	1727	04 53 11
04 59 10	J0304+3348	22 41 06	40.3	85.0	-4.4		-46.1	11	1727	04 59 10
05 00 40	=0301+336	22 42 36	40.6	85.3	-4.4		-46.1	90	1738	04 59 11
05 00 40	4C35.06	22 42 36	42.4	83.8	-4.3		-47.5	-21	1738	No stop
05 04 10	---	22 46 07	42.9	84.5	-4.3		-47.6	189	1765	05 00 41

Schedule for TORUN (Code Tr )

Page 8

G8+1 in the sky

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 29 May 2017 Day 149 ---										
05 04 50	J0304+3348	22 46 47	41.2	86.1	-4.3		-46.2	20	1765	05 04 50
05 06 20	=0301+336	22 48 17	41.4	86.4	-4.3		-46.2	90	1777	05 04 51
05 06 20	4C35.06	22 48 17	43.2	84.9	-4.2		-47.6	-21	1777	No stop
05 09 50	---	22 51 48	43.7	85.6	-4.2		-47.7	189	1804	05 06 21
05 09 50	J0304+3348	22 51 48	41.9	87.0	-4.2		-46.2	-20	1804	No stop
05 11 20	=0301+336	22 53 18	42.2	87.3	-4.2		-46.3	70	1815	05 09 51
05 11 20	4C35.06	22 53 18	44.0	85.8	-4.2		-47.7	-21	1815	No stop
05 14 50	---	22 56 48	44.5	86.5	-4.1		-47.7	189	1842	05 11 21
05 14 50	J0304+3348	22 56 48	42.7	88.0	-4.1		-46.3	-20	1842	No stop
05 16 20	=0301+336	22 58 19	42.9	88.3	-4.1		-46.3	70	1854	05 14 51
05 16 20	4C35.06	22 58 19	44.7	86.8	-4.1		-47.7	-21	1854	No stop
05 19 50	---	23 01 49	45.2	87.5	-4.0		-47.8	189	1881	05 16 21
05 20 30	J0304+3348	23 02 29	43.5	89.1	-4.1		-46.3	20	1881	05 20 30
05 22 00	=0301+336	23 04 00	43.8	89.4	-4.0		-46.3	90	1892	05 20 31
05 22 00	4C35.06	23 04 00	45.6	87.9	-4.0		-47.8	-21	1892	No stop
05 25 30	---	23 07 30	46.1	88.6	-3.9		-47.8	189	1919	05 22 01
05 25 30	J0304+3348	23 07 30	44.3	90.1	-4.0		-46.3	-20	1919	No stop
05 27 00	=0301+336	23 09 00	44.5	90.4	-3.9		-46.3	70	1931	05 25 31
05 27 00	4C35.06	23 09 00	46.3	88.9	-3.9		-47.8	-21	1931	No stop
05 30 30	---	23 12 31	46.8	89.6	-3.8		-47.8	189	1958	05 27 01
05 30 30	J0304+3348	23 12 31	45.0	91.1	-3.9		-46.3	-20	1958	No stop
05 32 00	=0301+336	23 14 01	45.3	91.5	-3.9		-46.3	70	1969	05 30 31
05 32 00	4C35.06	23 14 01	47.1	89.9	-3.8		-47.8	-21	1969	No stop
05 35 30	---	23 17 32	47.6	90.6	-3.8		-47.8	189	1996	05 32 01
05 36 10	J0304+3348	23 18 12	45.9	92.3	-3.8		-46.3	20	1996	05 36 10
05 37 40	=0301+336	23 19 42	46.1	92.6	-3.8		-46.3	90	2008	05 36 11
05 37 40	4C35.06	23 19 42	47.9	91.0	-3.7		-47.8	-21	2008	No stop
05 41 10	---	23 23 13	48.5	91.7	-3.7		-47.8	189	2035	05 37 41
05 41 10	J0304+3348	23 23 13	46.6	93.3	-3.7		-46.2	-20	2035	No stop
05 42 40	=0301+336	23 24 43	46.9	93.7	-3.7		-46.2	70	2046	05 41 11



Schedule for TORUN (Code Tr )

Page 9

G8+1 in the sky

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 29 May 2017 Day 149 ---										
05 42 40	4C35.06	23 24 43	48.7	92.0	-3.6		-47.8	-21	2046	No stop
05 46 10	---	23 28 14	49.2	92.8	-3.6		-47.8	189	2073	05 42 41
05 46 10	J0304+3348	23 28 14	47.4	94.4	-3.6		-46.1	-20	2073	No stop
05 47 40	=0301+336	23 29 44	47.6	94.7	-3.6		-46.1	70	2085	05 46 11
05 47 40	4C35.06	23 29 44	49.4	93.1	-3.6		-47.8	-21	2085	No stop
05 51 10	---	23 33 14	50.0	93.8	-3.5		-47.7	189	2112	05 47 41
05 51 50	J0304+3348	23 33 54	48.2	95.6	-3.5		-46.0	20	2112	05 51 50
05 53 20	=0301+336	23 35 25	48.5	95.9	-3.5		-46.0	90	2123	05 51 51
05 53 20	4C35.06	23 35 25	50.3	94.3	-3.5		-47.7	-21	2123	No stop
05 56 50	---	23 38 55	50.8	95.0	-3.4		-47.6	189	2150	05 53 21
05 56 50	J0304+3348	23 38 55	49.0	96.7	-3.4		-45.9	-20	2150	No stop
05 58 20	=0301+336	23 40 26	49.2	97.0	-3.4		-45.9	70	2162	05 56 51
05 58 20	4C35.06	23 40 26	51.0	95.4	-3.4		-47.6	-21	2162	No stop
06 01 50	---	23 43 56	51.6	96.1	-3.3		-47.5	189	2188	05 58 21
06 01 50	J0304+3348	23 43 56	49.7	97.8	-3.4		-45.8	-20	2188	No stop
06 03 20	=0301+336	23 45 26	50.0	98.2	-3.3		-45.7	70	2200	06 01 51
06 03 20	4C35.06	23 45 26	51.8	96.5	-3.3		-47.4	-21	2200	No stop
06 06 50	---	23 48 57	52.3	97.2	-3.2		-47.3	189	2227	06 03 21
06 07 30	J0304+3348	23 49 37	50.6	99.1	-3.3		-45.6	20	2227	06 07 30
06 09 00	=0301+336	23 51 07	50.8	99.5	-3.2		-45.5	90	2238	06 07 31
06 09 00	4C35.06	23 51 07	52.6	97.7	-3.2		-47.3	-21	2238	No stop
06 12 30	---	23 54 38	53.1	98.5	-3.1		-47.1	189	2265	06 09 01
06 12 30	J0304+3348	23 54 38	51.3	100.3	-3.2		-45.4	-20	2265	No stop
06 14 00	=0301+336	23 56 08	51.6	100.6	-3.2		-45.3	70	2277	06 12 31
06 14 00	4C35.06	23 56 08	53.4	98.9	-3.1		-47.1	-21	2277	No stop
06 17 30	---	23 59 39	53.9	99.7	-3.1		-46.9	189	2304	06 14 01
06 17 30	J0304+3348	23 59 39	52.1	101.5	-3.1		-45.1	-20	2304	No stop
06 19 00	=0301+336	00 01 09	52.3	101.8	-3.1		-45.1	70	2315	06 17 31
06 19 00	4C35.06	00 01 09	54.1	100.1	-3.0		-46.9	-21	2315	No stop
06 22 30	---	00 04 40	54.6	100.9	-3.0		-46.7	189	2342	06 19 01

Schedule for TORUN (Code Tr )

Page 10

G8+1 in the sky

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 29 May 2017 Day 149 ---										
06 23 10	J0304+3348	00 05 20	52.9	102.8	-3.0		-44.8	20	2342	06 23 10
06 24 40	=0301+336	00 06 50	53.1	103.2	-3.0		-44.8	90	2354	06 23 11
06 25 40	J0319+4130	00 07 50	56.1	90.0	-3.2		-53.4	18	2354	06 25 40
06 29 40	=0316+413	00 11 51	56.7	90.8	-3.2		-53.4	240	2385	06 25 41
06 30 40	J0304+3348	00 12 51	54.0	104.7	-2.9		-44.4	17	2385	06 30 40
06 32 10	=0301+336	00 14 21	54.2	105.1	-2.9		-44.3	90	2396	06 30 41
06 32 10	4C35.06	00 14 21	56.1	103.3	-2.8		-46.2	-21	2396	No stop
06 35 40	---	00 17 52	56.6	104.2	-2.8		-46.0	189	2423	06 32 11
06 36 20	J0304+3348	00 18 32	54.8	106.1	-2.8		-44.0	19	2423	06 36 20
06 37 50	=0301+336	00 20 02	55.0	106.5	-2.8		-43.9	90	2435	06 36 21
06 37 50	4C35.06	00 20 02	56.9	104.7	-2.7		-45.8	-21	2435	No stop
06 41 20	---	00 23 33	57.4	105.6	-2.7		-45.6	189	2462	06 37 51
06 41 20	J0304+3348	00 23 33	55.5	107.5	-2.7		-43.6	-21	2462	No stop
06 42 50	=0301+336	00 25 03	55.8	107.9	-2.7		-43.5	69	2473	06 41 21
06 42 50	4C35.06	00 25 03	57.6	106.0	-2.6		-45.4	-21	2473	No stop
06 46 20	---	00 28 33	58.1	107.0	-2.6		-45.2	189	2500	06 42 51
06 46 20	J0304+3348	00 28 33	56.3	108.8	-2.6		-43.2	-21	2500	No stop
06 47 50	=0301+336	00 30 04	56.5	109.2	-2.6		-43.1	69	2512	06 46 21
06 47 50	4C35.06	00 30 04	58.3	107.4	-2.5		-45.0	-21	2512	No stop
06 51 20	---	00 33 34	58.8	108.3	-2.5		-44.7	189	2538	06 47 51
06 52 00	J0304+3348	00 34 14	57.1	110.4	-2.5		-42.7	19	2538	06 52 00
06 53 30	=0301+336	00 35 45	57.3	110.8	-2.5		-42.5	90	2550	06 52 01
06 53 30	4C35.06	00 35 45	59.1	108.9	-2.5		-44.5	-21	2550	No stop
06 57 00	---	00 39 15	59.6	109.9	-2.4		-44.2	189	2577	06 53 31
06 57 00	J0304+3348	00 39 15	57.8	111.8	-2.4		-42.2	-21	2577	No stop
06 58 30	=0301+336	00 40 45	58.0	112.2	-2.4		-42.0	69	2588	06 57 01
06 58 30	4C35.06	00 40 45	59.8	110.4	-2.4		-44.0	-21	2588	No stop
07 02 00	---	00 44 16	60.3	111.4	-2.3		-43.6	189	2615	06 58 31
07 02 00	J0304+3348	00 44 16	58.5	113.3	-2.4		-41.6	-21	2615	No stop
07 03 30	=0301+336	00 45 46	58.7	113.7	-2.3		-41.5	69	2627	07 02 01

Schedule for TORUN (Code Tr )

Page 11

G8+1 in the sky

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 29 May 2017 Day 149 ---										
07 03 30	4C35.06	00 45 46	60.5	111.9	-2.3		-43.5	-21	2627	No stop
07 07 00	---	00 49 17	61.0	112.9	-2.2		-43.1	189	2654	07 03 31
07 07 40	J0304+3348	00 49 57	59.2	115.0	-2.3		-41.0	19	2654	07 07 40
07 09 10	=0301+336	00 51 27	59.4	115.4	-2.2		-40.8	90	2665	07 07 41
07 09 10	4C35.06	00 51 27	61.3	113.6	-2.2		-42.8	-21	2665	No stop
07 12 40	---	00 54 58	61.8	114.7	-2.1		-42.3	189	2692	07 09 11
07 12 40	J0304+3348	00 54 58	59.9	116.5	-2.2		-40.3	-21	2692	No stop
07 14 10	=0301+336	00 56 28	60.1	117.0	-2.2		-40.1	69	2704	07 12 41
07 14 10	4C35.06	00 56 28	62.0	115.2	-2.1		-42.1	-21	2704	No stop
07 17 40	---	00 59 59	62.5	116.3	-2.0		-41.7	189	2731	07 14 11
07 17 40	J0304+3348	00 59 59	60.6	118.2	-2.1		-39.6	-21	2731	No stop
07 19 10	=0301+336	01 01 29	60.8	118.6	-2.1		-39.4	69	2742	07 17 41
07 19 10	4C35.06	01 01 29	62.7	116.8	-2.0		-41.4	-21	2742	No stop
07 22 40	---	01 04 59	63.2	118.0	-2.0		-40.9	189	2769	07 19 11
07 23 20	J0304+3348	01 05 40	61.3	120.0	-2.0		-38.8	19	2769	07 23 20
07 24 50	=0301+336	01 07 10	61.5	120.5	-2.0		-38.5	90	2781	07 23 21
07 24 50	4C35.06	01 07 10	63.5	118.7	-1.9		-40.6	-21	2781	No stop
07 28 20	---	01 10 40	63.9	119.9	-1.9		-40.0	189	2808	07 24 51
07 28 20	J0304+3348	01 10 40	62.0	121.8	-1.9		-38.0	-21	2808	No stop
07 29 50	=0301+336	01 12 11	62.2	122.3	-1.9		-37.7	69	2819	07 28 21
07 29 50	4C35.06	01 12 11	64.1	120.5	-1.8		-39.7	-21	2819	No stop
07 33 20	---	01 15 41	64.6	121.7	-1.8		-39.1	189	2846	07 29 51
07 33 20	J0304+3348	01 15 41	62.6	123.5	-1.8		-37.1	-21	2846	No stop
07 34 50	=0301+336	01 17 11	62.8	124.1	-1.8		-36.8	69	2858	07 33 21
07 34 50	4C35.06	01 17 11	64.8	122.3	-1.8		-38.8	-21	2858	No stop
07 38 20	---	01 20 42	65.2	123.6	-1.7		-38.1	189	2885	07 34 51
07 39 00	J0304+3348	01 21 22	63.3	125.6	-1.7		-36.0	19	2885	07 39 00
07 40 30	=0301+336	01 22 52	63.5	126.2	-1.7		-35.7	90	2896	07 39 01
07 40 30	4C35.06	01 22 52	65.5	124.4	-1.7		-37.7	-21	2896	No stop
07 44 00	---	01 26 23	65.9	125.8	-1.6		-37.0	189	2923	07 40 31

Schedule for TORUN (Code Tr )

Page 12

G8+1 in the sky

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 29 May 2017 Day 149 ---										
07 44 00	J0304+3348	01 26 23	63.9	127.5	-1.7		-35.0	-21	2923	No stop
07 45 30	=0301+336	01 27 53	64.1	128.1	-1.6		-34.7	69	2935	07 44 01
07 45 30	4C35.06	01 27 53	66.1	126.4	-1.6		-36.6	-21	2935	No stop
07 49 00	---	01 31 24	66.5	127.8	-1.5		-35.8	189	2962	07 45 31
07 49 00	J0304+3348	01 31 24	64.5	129.5	-1.6		-33.9	-21	2962	No stop
07 50 30	=0301+336	01 32 54	64.7	130.1	-1.5		-33.6	69	2973	07 49 01
07 50 30	4C35.06	01 32 54	66.7	128.5	-1.5		-35.5	-21	2973	No stop
07 54 00	---	01 36 25	67.1	129.9	-1.4		-34.6	189	3000	07 50 31
07 54 40	J0304+3348	01 37 05	65.2	131.8	-1.5		-32.6	19	3000	07 54 40
07 56 10	=0301+336	01 38 35	65.3	132.4	-1.5		-32.3	90	3012	07 54 41
07 56 10	4C35.06	01 38 35	67.3	130.9	-1.4		-34.1	-22	3012	No stop
07 59 40	---	01 42 05	67.7	132.4	-1.3		-33.2	188	3038	07 56 11
07 59 40	J0304+3348	01 42 05	65.7	133.9	-1.4		-31.4	-21	3038	No stop
08 01 10	=0301+336	01 43 36	65.9	134.6	-1.4		-31.0	69	3050	07 59 41
08 01 10	4C35.06	01 43 36	67.9	133.1	-1.3		-32.8	-22	3050	No stop
08 04 40	---	01 47 06	68.3	134.7	-1.3		-31.8	188	3077	08 01 11
08 04 40	J0304+3348	01 47 06	66.2	136.1	-1.3		-30.1	-21	3077	No stop
08 06 10	=0301+336	01 48 37	66.4	136.8	-1.3		-29.7	69	3088	08 04 41
08 06 10	4C35.06	01 48 37	68.4	135.4	-1.2		-31.4	-22	3088	No stop
08 09 40	---	01 52 07	68.8	137.1	-1.2		-30.3	188	3115	08 06 11
08 10 20	J0304+3348	01 52 47	66.8	138.7	-1.2		-28.5	19	3115	08 10 20
08 11 50	=0301+336	01 54 17	67.0	139.4	-1.2		-28.1	90	3127	08 10 21
08 11 50	4C35.06	01 54 17	69.0	138.1	-1.1		-29.6	-22	3127	No stop
08 15 20	---	01 57 48	69.4	139.9	-1.1		-28.5	188	3154	08 11 51
08 15 20	J0304+3348	01 57 48	67.3	141.1	-1.1		-27.0	-21	3154	No stop
08 16 50	=0301+336	01 59 18	67.4	141.8	-1.1		-26.6	69	3165	08 15 21
08 16 50	4C35.06	01 59 18	69.5	140.7	-1.1		-28.0	-22	3165	No stop
08 20 20	---	02 02 49	69.8	142.5	-1.0		-26.8	188	3192	08 16 51
08 20 20	J0304+3348	02 02 49	67.8	143.5	-1.0		-25.5	-22	3192	No stop
08 21 50	=0301+336	02 04 19	67.9	144.3	-1.0		-25.0	68	3204	08 20 21

Schedule for TORUN (Code Tr )

Page 13

G8+1 in the sky

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 29 May 2017 Day 149 ---										
08 21 50	4C35.06	02 04 19	70.0	143.3	-1.0		-26.3	-22	3204	No stop
08 25 20	---	02 07 50	70.3	145.2	-0.9		-25.1	188	3231	08 21 51
08 26 00	J0304+3348	02 08 30	68.2	146.4	-1.0		-23.6	18	3231	08 26 00
08 27 30	=0301+336	02 10 00	68.4	147.2	-0.9		-23.1	90	3242	08 26 01
08 28 30	J0230+4032	02 11 00	77.0	162.1	-0.3		-14.1	14	3242	08 28 30
08 32 00	=0227+403	02 14 31	77.2	165.0	-0.3		-11.8	210	3269	08 28 31
08 33 00	J0304+3348	02 15 31	68.8	150.1	-0.8		-21.2	15	3269	08 33 00
08 34 30	=0301+336	02 17 01	68.9	150.9	-0.8		-20.6	90	3281	08 33 01
08 34 30	4C35.06	02 17 01	71.0	150.3	-0.8		-21.5	-22	3281	No stop
08 38 00	---	02 20 32	71.3	152.4	-0.7		-20.1	188	3308	08 34 31
08 38 00	J0304+3348	02 20 32	69.2	152.8	-0.8		-19.3	-22	3308	No stop
08 39 30	=0301+336	02 22 02	69.3	153.6	-0.7		-18.8	68	3319	08 38 01
08 39 30	4C35.06	02 22 02	71.4	153.3	-0.7		-19.5	-22	3319	No stop
08 43 00	---	02 25 33	71.6	155.4	-0.6		-18.0	188	3346	08 39 31
08 43 40	J0304+3348	02 26 13	69.5	156.0	-0.7		-17.1	18	3346	08 43 40
08 45 10	=0301+336	02 27 43	69.6	156.8	-0.6		-16.5	90	3358	08 43 41
08 45 10	4C35.06	02 27 43	71.7	156.7	-0.6		-17.0	-22	3358	No stop
08 48 40	---	02 31 14	71.9	158.9	-0.5		-15.5	188	3385	08 45 11
08 48 40	J0304+3348	02 31 14	69.8	158.8	-0.6		-15.1	-22	3385	No stop
08 50 10	=0301+336	02 32 44	69.9	159.7	-0.6		-14.5	68	3396	08 48 41
08 50 10	4C35.06	02 32 44	72.0	159.8	-0.5		-14.8	-22	3396	No stop
08 53 40	---	02 36 14	72.2	162.1	-0.4		-13.2	188	3423	08 50 11
08 53 40	J0304+3348	02 36 14	70.1	161.8	-0.5		-13.1	-22	3423	No stop
08 55 10	=0301+336	02 37 45	70.1	162.7	-0.5		-12.4	68	3435	08 53 41
08 55 10	4C35.06	02 37 45	72.2	163.1	-0.4		-12.5	-22	3435	No stop
08 58 40	---	02 41 15	72.4	165.4	-0.4		-10.8	188	3462	08 55 11
08 59 20	J0304+3348	02 41 55	70.3	165.2	-0.4		-10.7	18	3462	08 59 20
09 00 50	=0301+336	02 43 26	70.4	166.1	-0.4		-10.0	90	3473	08 59 21
09 00 50	4C35.06	02 43 26	72.5	166.8	-0.3		-9.8	-22	3473	No stop
09 04 20	---	02 46 56	72.6	169.1	-0.3		-8.0	188	3500	09 00 51

Schedule for TORUN (Code Tr )

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G8+1 in the sky

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 29 May 2017 Day 149 ---										
09 04 20	J0304+3348	02 46 56	70.5	168.2	-0.3		-8.5	-22	3500	No stop
09 05 50	=0301+336	02 48 26	70.5	169.2	-0.3		-7.8	68	3512	09 04 21
09 05 50	4C35.06	02 48 26	72.6	170.1	-0.2		-7.3	-22	3512	No stop
09 09 20	---	02 51 57	72.7	172.5	-0.2		-5.5	188	3538	09 05 51
09 09 20	J0304+3348	02 51 57	70.6	171.3	-0.2		-6.2	-22	3538	No stop
09 10 50	=0301+336	02 53 27	70.7	172.3	-0.2		-5.6	68	3550	09 09 21
09 10 50	4C35.06	02 53 27	72.7	173.5	-0.2		-4.8	-22	3550	No stop
09 14 20	---	02 56 58	72.8	175.9	-0.1		-3.0	188	3577	09 10 51
09 15 00	J0304+3348	02 57 38	70.7	174.9	-0.1		-3.7	18	3577	09 15 00
09 16 30	=0301+336	02 59 08	70.7	175.8	-0.1		-3.0	90	3588	09 15 01
09 16 30	4C35.06	02 59 08	72.8	177.4	-0.1		-1.9	-22	3588	No stop
09 20 00	---	03 02 39	72.8	179.8	-0.0		-0.1	188	3615	09 16 31
09 20 00	J0304+3348	03 02 39	70.8	178.1	-0.1		-1.4	-21	3615	No stop
09 21 30	=0301+336	03 04 09	70.8	179.0	-0.0		-0.7	69	3627	09 20 01
09 21 30	4C35.06	03 04 09	72.8	180.8	0.0		0.6	-21	3627	No stop
09 25 00	---	03 07 39	72.8	183.2	0.1		2.4	189	3654	09 21 31
09 25 00	J0304+3348	03 07 39	70.8	181.2	0.0		0.9	-21	3654	No stop
09 26 30	=0301+336	03 09 10	70.8	182.2	0.1		1.6	69	3665	09 25 01
09 26 30	4C35.06	03 09 10	72.8	184.3	0.1		3.2	-21	3665	No stop
09 30 00	---	03 12 40	72.7	186.7	0.2		4.9	189	3692	09 26 31
09 30 40	J0304+3348	03 13 20	70.7	184.8	0.1		3.5	19	3692	09 30 40
09 32 10	=0301+336	03 14 51	70.7	185.7	0.2		4.1	90	3704	09 30 41
09 32 10	4C35.06	03 14 51	72.7	188.1	0.2		6.0	-21	3704	No stop
09 35 40	---	03 18 21	72.6	190.5	0.3		7.8	189	3731	09 32 11
09 35 40	J0304+3348	03 18 21	70.6	187.9	0.2		5.7	-21	3731	No stop
09 37 10	=0301+336	03 19 51	70.6	188.9	0.2		6.4	69	3742	09 35 41
09 37 10	4C35.06	03 19 51	72.6	191.5	0.3		8.5	-21	3742	No stop
09 40 40	---	03 23 22	72.4	193.8	0.3		10.2	189	3769	09 37 11
09 40 40	J0304+3348	03 23 22	70.5	191.0	0.3		8.0	-21	3769	No stop
09 42 10	=0301+336	03 24 52	70.5	192.0	0.3		8.6	69	3781	09 40 41

Schedule for TORUN (Code Tr )

Page 15

G8+1 in the sky

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 29 May 2017 Day 149 ---										
09 42 10	4C35.06	03 24 52	72.4	194.8	0.4		10.9	-21	3781	No stop
09 45 40	---	03 28 23	72.2	197.1	0.4		12.6	189	3808	09 42 11
09 46 20	J0304+3348	03 29 03	70.3	194.5	0.4		10.4	19	3808	09 46 20
09 47 50	=0301+336	03 30 33	70.3	195.4	0.4		11.1	90	3819	09 46 21
09 47 50	4C35.06	03 30 33	72.1	198.5	0.5		13.6	-21	3819	No stop
09 51 20	---	03 34 04	72.0	200.7	0.5		15.2	189	3846	09 47 51
09 51 20	J0304+3348	03 34 04	70.1	197.5	0.5		12.6	-21	3846	No stop
09 52 50	=0301+336	03 35 34	70.1	198.4	0.5		13.2	69	3858	09 51 21
09 52 50	4C35.06	03 35 34	71.9	201.7	0.5		15.9	-22	3858	No stop
09 56 20	---	03 39 05	71.7	203.9	0.6		17.5	188	3885	09 52 51
09 56 20	J0304+3348	03 39 05	69.9	200.5	0.6		14.7	-21	3885	No stop
09 57 50	=0301+336	03 40 35	69.8	201.4	0.6		15.3	69	3896	09 56 21
09 57 50	4C35.06	03 40 35	71.6	204.8	0.6		18.1	-22	3896	No stop
10 01 20	---	03 44 05	71.3	206.9	0.7		19.6	188	3923	09 57 51
10 02 00	J0304+3348	03 44 46	69.6	203.8	0.7		16.9	19	3923	10 02 00
10 03 30	=0301+336	03 46 16	69.5	204.6	0.7		17.5	90	3935	10 02 01
10 03 30	4C35.06	03 46 16	71.2	208.2	0.7		20.5	-22	3935	No stop
10 07 00	---	03 49 46	70.9	210.2	0.8		21.9	188	3962	10 03 31
10 07 00	J0304+3348	03 49 46	69.2	206.6	0.7		18.9	-22	3962	No stop
10 08 30	=0301+336	03 51 17	69.1	207.4	0.8		19.4	68	3973	10 07 01
10 08 30	4C35.06	03 51 17	70.8	211.1	0.8		22.5	-23	3973	No stop
10 12 00	---	03 54 47	70.5	213.1	0.9		23.9	187	4000	10 08 31
10 12 00	J0304+3348	03 54 47	68.9	209.3	0.8		20.7	-22	4000	No stop
10 13 30	=0301+336	03 56 17	68.8	210.1	0.8		21.3	68	4012	10 12 01
10 13 30	4C35.06	03 56 17	70.4	213.9	0.9		24.4	-23	4012	No stop
10 17 00	---	03 59 48	70.1	215.8	0.9		25.7	187	4038	10 13 31
10 17 40	J0304+3348	04 00 28	68.5	212.3	0.9		22.8	18	4038	10 17 40
10 19 10	=0301+336	04 01 58	68.3	213.1	0.9		23.3	90	4050	10 17 41
10 19 10	4C35.06	04 01 58	69.9	217.0	1.0		26.5	-23	4050	No stop
10 22 40	---	04 05 29	69.6	218.8	1.0		27.7	187	4077	10 19 11

Schedule for TORUN (Code Tr )

Page 16

G8+1 in the sky

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 29 May 2017 Day 149 ---										
10 22 40	J0304+3348	04 05 29	68.0	214.9	1.0		24.4	-22	4077	No stop
10 24 10	=0301+336	04 06 59	67.9	215.7	1.0		24.9	68	4088	10 22 41
10 24 10	4C35.06	04 06 59	69.5	219.6	1.1		28.2	-23	4088	No stop
10 27 40	---	04 10 30	69.1	221.3	1.1		29.3	187	4115	10 24 11
10 27 40	J0304+3348	04 10 30	67.6	217.4	1.1		26.1	-22	4115	No stop
10 29 10	=0301+336	04 12 00	67.5	218.1	1.1		26.5	68	4127	10 27 41
10 29 10	4C35.06	04 12 00	69.0	222.1	1.2		29.8	-23	4127	No stop
10 32 40	---	04 15 31	68.6	223.8	1.2		30.9	187	4154	10 29 11
10 33 20	J0304+3348	04 16 11	67.1	220.1	1.2		27.8	17	4154	10 33 20
10 34 50	=0301+336	04 17 41	66.9	220.8	1.2		28.2	90	4165	10 33 21
10 34 50	4C35.06	04 17 41	68.4	224.8	1.2		31.5	-23	4165	No stop
10 38 20	---	04 21 12	68.0	226.4	1.3		32.5	187	4192	10 34 51
10 38 20	J0304+3348	04 21 12	66.6	222.4	1.3		29.2	-23	4192	No stop
10 39 50	=0301+336	04 22 42	66.4	223.1	1.3		29.6	67	4204	10 38 21
10 39 50	4C35.06	04 22 42	67.8	227.1	1.3		32.9	-23	4204	No stop
10 43 20	---	04 26 12	67.5	228.7	1.4		33.8	187	4231	10 39 51
10 43 20	J0304+3348	04 26 12	66.0	224.7	1.3		30.6	-23	4231	No stop
10 44 50	=0301+336	04 27 43	65.9	225.3	1.4		31.0	67	4242	10 43 21
10 44 50	4C35.06	04 27 43	67.3	229.3	1.4		34.2	-23	4242	No stop
10 48 20	---	04 31 13	66.9	230.8	1.5		35.1	187	4269	10 44 51
10 49 00	J0304+3348	04 31 53	65.4	227.1	1.4		32.0	17	4269	10 49 00
10 50 30	=0301+336	04 33 24	65.3	227.8	1.5		32.4	90	4281	10 49 01
10 50 30	4C35.06	04 33 24	66.6	231.7	1.5		35.6	-23	4281	No stop
10 54 00	---	04 36 54	66.2	233.2	1.6		36.4	187	4308	10 50 31
10 54 00	J0304+3348	04 36 54	64.9	229.2	1.5		33.2	-22	4308	No stop
10 55 30	=0301+336	04 38 24	64.7	229.8	1.5		33.6	68	4319	10 54 01
10 55 30	4C35.06	04 38 24	66.0	233.8	1.6		36.7	-23	4319	No stop
10 58 30	---	04 41 25	65.7	235.0	1.6		37.4	157	4342	10 55 31
10 58 30	J0304+3348	04 41 25	64.3	231.0	1.6		34.2	-22	4342	No stop
11 00 00	=0301+336	04 42 55	64.2	231.6	1.6		34.5	68	4354	10 58 31

SETUP FILE INFORMATION:



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

=====  
Setup file: sess217.L1024

Setup group: 13	Station: TORUN	Total bit rate: 1024
Format: MARK5B	Bits per sample: 2	Sample rate: 64.000
Number of channels: 8	DBE type: DBBC_DDC	Speedup factor: 1.00

Disk used to record data.

1st LO=	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
Net SB=	L	L	U	U	L	L	U	U
IF SB =	L	L	L	L	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
BBC =	1	5	1	5	3	7	3	7
BBC SB=	U	U	L	L	U	U	L	L
IF =	A1	B1	A1	B1	A1	B1	A1	B1

The following frequency sets based on these setups were used.

Frequency Set: 4 Setup file default. Used with PCAL = off  
 LO sum= 1626.49 1626.49 1626.49 1626.49 1690.49 1690.49 1690.49 1690.49  
 BBC fr= 673.51 673.51 673.51 673.51 609.51 609.51 609.51 609.51  
 Bandwd= 32.00 32.00 32.00 32.00 32.00 32.00 32.00 32.00  
 Matching frequency sets: 4

Track assignments are:

track1= 2, 6, 10, 14, 4, 8, 12, 16  
 barrel=roll\_off

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 4C35.06	02 58 44.022195	* 03 01 51.813000	03 02 55.381155	0.00
	35 38 32.03771	* 35 50 19.58700	35 54 07.76812	0.00
0227+403	02 27 37.458579	* 02 30 45.710805	02 31 49.581929	0.20
* J0230+4032	40 19 36.05621	* 40 32 53.06793	40 37 11.28867	0.23
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc			
	rfc_2015a Petrov, 2015, unpublished. 115 observations			
0301+336	03 01 35.659653	* 03 04 41.362459	03 05 44.204254	0.19
* J0304+3348	33 37 04.82789	* 33 48 43.53062	33 52 28.88287	0.27
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc			
	rfc_2015a Petrov, 2015, unpublished. 81 observations			
0316+413	03 16 29.567282	* 03 19 48.160113	03 20 55.336151	0.14
* J0319+4130	41 19 51.91849	* 41 30 42.10561	41 34 10.35957	0.11
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc			
	rfc_2015a Petrov, 2015, unpublished. 15475 observations			

Address: Torun Centre for Astronomy

Observing mode: phase-referencig L-band

Schedule for TORUN (Code Tr )

Page 2

A-type stars

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

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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 29 May 2017 Day 149 ---										
Next scan frequencies:		1626.49	1626.49	1626.49	1626.49	1690.49	1690.49	1690.49	1690.49	1690.49
Next BBC frequencies:		673.51	673.51	673.51	673.51	609.51	609.51	609.51	609.51	609.51
Next scan bandwidths:		32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00
13 30 00	J1157+1638	07 13 20	24.4	94.7	-4.8		-38.6	0	0	13 30 00
13 32 00	=1155+169	07 15 20	24.7	95.1	-4.7		-38.6	120	15	13 30 01
13 32 00	J1152+1636	07 15 20	25.5	96.4	-4.6		-38.5	-16	15	No stop
13 37 00	---	07 20 21	26.3	97.4	-4.5		-38.4	284	54	13 32 01
13 37 40	J1157+1638	07 21 01	25.5	96.3	-4.6		-38.5	24	54	13 37 40
13 39 00	=1155+169	07 22 21	25.7	96.6	-4.6		-38.5	80	64	13 37 41
13 39 00	BETLEO	07 22 21	25.3	99.8	-4.5		-37.7	-21	64	No stop
13 44 00	---	07 27 22	26.1	100.9	-4.4		-37.5	279	103	13 39 01
13 44 00	J1157+1638	07 27 22	26.5	97.6	-4.5		-38.4	-21	103	No stop
13 46 00	=1155+169	07 29 22	26.8	98.0	-4.5		-38.3	99	118	13 44 01
13 46 00	BETLEO	07 29 22	26.4	101.3	-4.3		-37.5	-21	118	No stop
13 51 00	---	07 34 23	27.1	102.4	-4.3		-37.3	279	156	13 46 01
13 51 40	J1157+1638	07 35 03	27.6	99.3	-4.4		-38.2	19	156	13 51 40
13 53 00	=1155+169	07 36 24	27.8	99.5	-4.4		-38.2	80	167	13 51 41
13 53 00	BETLEO	07 36 24	27.4	102.8	-4.2		-37.2	-21	167	No stop
13 58 00	---	07 41 24	28.1	103.9	-4.1		-37.0	279	205	13 53 01
13 58 00	J1157+1638	07 41 24	28.5	100.6	-4.3		-38.0	-21	205	No stop
14 00 00	=1155+169	07 43 25	28.8	101.0	-4.3		-37.9	99	221	13 58 01
14 00 00	BETLEO	07 43 25	28.4	104.3	-4.1		-36.9	-21	221	No stop
14 05 00	---	07 48 25	29.2	105.4	-4.0		-36.7	279	259	14 00 01
14 05 40	J1157+1638	07 49 06	29.7	102.3	-4.2		-37.7	19	259	14 05 40
14 07 00	=1155+169	07 50 26	29.9	102.6	-4.1		-37.7	80	269	14 05 41
14 07 00	BETLEO	07 50 26	29.5	105.9	-4.0		-36.6	-21	269	No stop
14 12 00	---	07 55 27	30.2	107.0	-3.9		-36.4	279	308	14 07 01
14 12 00	J1157+1638	07 55 27	30.6	103.7	-4.1		-37.5	-21	308	No stop
14 14 00	=1155+169	07 57 27	30.9	104.1	-4.0		-37.4	99	323	14 12 01

Schedule for TORUN (Code Tr )

Page 3

A-type stars

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 29 May 2017	Day 149					---				
14 14 00	J1152+1636	07 57 27	31.7	105.5	-3.9		-37.1	-16	323	No stop	
14 19 00	---	08 02 28	32.4	106.6	-3.8		-36.9	284	362	14 14 01	
14 19 40	J1157+1638	08 03 08	31.7	105.4	-3.9		-37.2	25	362	14 19 40	
14 21 10	=1155+169	08 04 38	31.9	105.7	-3.9		-37.1	90	373	14 19 41	
14 21 10	BETLEO	08 04 38	31.5	109.1	-3.8		-35.9	-22	373	No stop	
14 26 10	---	08 09 39	32.2	110.3	-3.7		-35.6	278	412	14 21 11	
14 26 10	J1157+1638	08 09 39	32.7	106.9	-3.8		-36.8	-21	412	No stop	
14 28 10	=1155+169	08 11 39	32.9	107.3	-3.8		-36.7	99	427	14 26 11	
14 28 10	BETLEO	08 11 39	32.5	110.7	-3.6		-35.5	-22	427	No stop	
14 33 10	---	08 16 40	33.2	111.9	-3.6		-35.1	278	465	14 28 11	
14 33 50	J1157+1638	08 17 20	33.8	108.6	-3.7		-36.4	19	465	14 33 50	
14 35 10	=1155+169	08 18 40	33.9	108.9	-3.7		-36.3	80	476	14 33 51	
14 35 10	BETLEO	08 18 40	33.5	112.4	-3.5		-35.0	-22	476	No stop	
14 40 10	---	08 23 41	34.1	113.6	-3.4		-34.6	278	514	14 35 11	
14 40 10	J1157+1638	08 23 41	34.7	110.1	-3.6		-36.0	-22	514	No stop	
14 42 10	=1155+169	08 25 42	34.9	110.6	-3.5		-35.9	98	529	14 40 11	
14 42 10	BETLEO	08 25 42	34.4	114.1	-3.4		-34.5	-22	529	No stop	
14 47 10	---	08 30 42	35.1	115.3	-3.3		-34.1	278	568	14 42 11	
14 47 50	J1157+1638	08 31 23	35.7	111.9	-3.5		-35.5	18	568	14 47 50	
14 49 10	=1155+169	08 32 43	35.9	112.3	-3.4		-35.4	80	578	14 47 51	
14 49 10	BETLEO	08 32 43	35.4	115.8	-3.3		-33.9	-22	578	No stop	
14 54 10	---	08 37 44	36.1	117.0	-3.2		-33.5	278	617	14 49 11	
14 54 10	J1157+1638	08 37 44	36.6	113.5	-3.3		-35.1	-22	617	No stop	
14 56 10	=1155+169	08 39 44	36.9	114.0	-3.3		-34.9	98	632	14 54 11	
14 56 10	J1152+1636	08 39 44	37.7	115.5	-3.2		-34.4	-16	632	No stop	
15 01 10	---	08 44 45	38.3	116.7	-3.1		-34.0	284	671	14 56 11	
15 01 50	J1157+1638	08 45 25	37.7	115.4	-3.2		-34.5	24	671	15 01 50	
15 03 20	=1155+169	08 46 55	37.9	115.7	-3.2		-34.4	90	682	15 01 51	
15 03 20	BETLEO	08 46 55	37.3	119.4	-3.1		-32.7	-22	682	No stop	
15 08 20	---	08 51 56	37.9	120.6	-3.0		-32.2	278	721	15 03 21	
15 08 20	J1157+1638	08 51 56	38.5	117.0	-3.1		-33.9	-22	721	No stop	
15 10 20	=1155+169	08 53 56	38.8	117.5	-3.1		-33.7	98	736	15 08 21	

Schedule for TORUN (Code Tr )

Page 4

A-type stars

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 29 May 2017 Day 149 ---										
15 10 20	BETLEO	08 53 56	38.2	121.2	-2.9		-32.0	-22	736	No stop
15 15 20	---	08 58 57	38.8	122.5	-2.8		-31.5	278	774	15 10 21
15 16 00	J1157+1638	08 59 37	39.6	119.0	-3.0		-33.2	18	774	15 16 00
15 17 20	=1155+169	09 00 57	39.7	119.3	-3.0		-33.1	80	785	15 16 01
15 17 20	BETLEO	09 00 57	39.1	123.0	-2.8		-31.3	-22	785	No stop
15 22 20	---	09 05 58	39.7	124.4	-2.7		-30.8	278	823	15 17 21
15 22 20	J1157+1638	09 05 58	40.4	120.7	-2.9		-32.6	-22	823	No stop
15 24 20	=1155+169	09 07 59	40.6	121.2	-2.8		-32.4	98	838	15 22 21
15 24 20	BETLEO	09 07 59	39.9	124.9	-2.7		-30.6	-22	838	No stop
15 29 20	---	09 12 59	40.6	126.3	-2.6		-30.0	278	877	15 24 21
15 30 00	J1157+1638	09 13 39	41.4	122.7	-2.7		-31.8	18	877	15 30 00
15 31 20	=1155+169	09 15 00	41.5	123.1	-2.7		-31.7	80	887	15 30 01
15 31 20	BETLEO	09 15 00	40.8	126.8	-2.6		-29.8	-23	887	No stop
15 36 20	---	09 20 00	41.4	128.2	-2.5		-29.2	277	926	15 31 21
15 36 20	J1157+1638	09 20 00	42.2	124.5	-2.6		-31.1	-22	926	No stop
15 38 20	=1155+169	09 22 01	42.4	125.0	-2.6		-30.9	98	941	15 36 21
15 38 20	J1152+1636	09 22 01	43.1	126.7	-2.5		-30.1	-17	941	No stop
15 43 20	---	09 27 02	43.7	128.2	-2.4		-29.5	283	979	15 38 21
15 44 00	J1157+1638	09 27 42	43.1	126.6	-2.5		-30.2	23	979	15 44 00
15 45 30	=1155+169	09 29 12	43.3	127.0	-2.5		-30.0	90	991	15 44 01
15 46 50	3C274	09 30 32	35.7	121.3	-3.0		-31.7	37	991	15 46 50
15 53 50	---	09 37 33	36.6	123.1	-2.9		-31.0	420	1045	15 46 51
15 55 20	J1157+1638	09 39 04	44.4	129.9	-2.3		-28.7	47	1045	15 55 20
15 57 20	=1155+169	09 41 04	44.7	130.5	-2.3		-28.5	120	1060	15 55 21
15 57 20	BETLEO	09 41 04	43.8	134.4	-2.1		-26.3	-23	1060	No stop
16 02 20	---	09 46 05	44.3	135.9	-2.1		-25.6	277	1099	15 57 21
16 02 20	J1157+1638	09 46 05	45.2	132.0	-2.2		-27.8	-22	1099	No stop
16 04 20	=1155+169	09 48 05	45.5	132.6	-2.2		-27.5	98	1114	16 02 21
16 04 20	BETLEO	09 48 05	44.5	136.5	-2.0		-25.3	-23	1114	No stop
16 09 20	---	09 53 06	45.0	138.0	-1.9		-24.5	277	1153	16 04 21

Schedule for TORUN (Code Tr )

Page 5

A-type stars

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

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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 29 May 2017 Day 149 ---										
16 10 00	J1157+1638	09 53 46	46.1	134.3	-2.1		-26.6	17	1153	16 10 00
16 11 20	=1155+169	09 55 06	46.2	134.7	-2.1		-26.4	80	1163	16 10 01
16 11 20	BETLEO	09 55 06	45.2	138.7	-1.9		-24.2	-23	1163	No stop
16 16 20	---	10 00 07	45.7	140.3	-1.8		-23.4	277	1201	16 11 21
16 16 20	J1157+1638	10 00 07	46.8	136.3	-2.0		-25.6	-23	1201	No stop
16 18 20	=1155+169	10 02 07	47.0	136.9	-1.9		-25.3	97	1217	16 16 21
16 18 20	BETLEO	10 02 07	45.9	140.9	-1.8		-23.0	-23	1217	No stop
16 23 20	---	10 07 08	46.4	142.5	-1.7		-22.2	277	1255	16 18 21
16 24 00	J1157+1638	10 07 48	47.5	138.8	-1.8		-24.4	17	1255	16 24 00
16 25 20	=1155+169	10 09 09	47.7	139.2	-1.8		-24.2	80	1265	16 24 01
16 25 20	BETLEO	10 09 09	46.6	143.2	-1.7		-21.8	-23	1265	No stop
16 30 20	---	10 14 09	47.0	144.8	-1.6		-20.9	277	1304	16 25 21
16 30 20	J1157+1638	10 14 09	48.1	140.8	-1.7		-23.3	-23	1304	No stop
16 32 20	=1155+169	10 16 10	48.3	141.5	-1.7		-23.0	97	1319	16 30 21
16 32 20	J1152+1636	10 16 10	48.8	143.5	-1.6		-21.9	-18	1319	No stop
16 37 20	---	10 21 11	49.3	145.2	-1.5		-20.9	282	1358	16 32 21
16 38 00	J1157+1638	10 21 51	48.9	143.4	-1.6		-21.9	22	1358	16 38 00
16 39 20	=1155+169	10 23 11	49.0	143.9	-1.6		-21.7	80	1368	16 38 01
16 39 20	BETLEO	10 23 11	47.7	147.8	-1.4		-19.3	-23	1368	No stop
16 44 20	---	10 28 12	48.1	149.6	-1.4		-18.3	277	1406	16 39 21
16 44 20	J1157+1638	10 28 12	49.4	145.6	-1.5		-20.7	-23	1406	No stop
16 46 20	=1155+169	10 30 12	49.6	146.3	-1.5		-20.4	97	1422	16 44 21
16 46 20	BETLEO	10 30 12	48.3	150.3	-1.3		-17.9	-23	1422	No stop
16 51 20	---	10 35 13	48.6	152.0	-1.2		-16.9	277	1460	16 46 21
16 52 00	J1157+1638	10 35 53	50.0	148.2	-1.4		-19.2	17	1460	16 52 00
16 53 20	=1155+169	10 37 13	50.1	148.7	-1.4		-19.0	80	1471	16 52 01
16 53 20	BETLEO	10 37 13	48.8	152.7	-1.2		-16.5	-23	1471	No stop
16 58 20	---	10 42 14	49.1	154.5	-1.1		-15.5	277	1509	16 53 21
16 58 20	J1157+1638	10 42 14	50.5	150.5	-1.3		-18.0	-23	1509	No stop
17 00 20	=1155+169	10 44 14	50.7	151.2	-1.2		-17.5	97	1524	16 58 21

Schedule for TORUN (Code Tr )

Page 6

A-type stars

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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 29 May 2017 Day 149 ---										
17 00 20	BETLEO	10 44 14	49.3	155.2	-1.1		-15.1	-23	1524	No stop
17 05 20	---	10 49 15	49.6	157.0	-1.0		-14.0	277	1563	17 00 21
17 06 00	J1157+1638	10 49 55	51.1	153.3	-1.1		-16.4	17	1563	17 06 00
17 07 20	=1155+169	10 51 15	51.2	153.8	-1.1		-16.1	80	1573	17 06 01
17 07 20	BETLEO	10 51 15	49.7	157.7	-1.0		-13.6	-23	1573	No stop
17 12 20	---	10 56 16	49.9	159.6	-0.9		-12.5	277	1612	17 07 21
17 12 20	J1157+1638	10 56 16	51.5	155.6	-1.0		-15.0	-22	1612	No stop
17 14 20	=1155+169	10 58 17	51.6	156.4	-1.0		-14.5	98	1627	17 12 21
17 14 20	J1152+1636	10 58 17	51.9	158.6	-0.9		-13.2	-19	1627	No stop
17 19 20	---	11 03 17	52.2	160.5	-0.8		-12.0	281	1665	17 14 21
17 20 00	J1157+1638	11 03 58	51.9	158.5	-0.9		-13.3	22	1665	17 20 00
17 21 20	=1155+169	11 05 18	52.0	159.0	-0.9		-13.0	80	1676	17 20 01
17 21 20	BETLEO	11 05 18	50.4	162.9	-0.7		-10.5	-23	1676	No stop
17 26 20	---	11 10 19	50.6	164.8	-0.7		-9.4	277	1714	17 21 21
17 26 20	J1157+1638	11 10 19	52.3	160.9	-0.8		-11.8	-22	1714	No stop
17 28 20	=1155+169	11 12 19	52.4	161.7	-0.8		-11.3	98	1729	17 26 21
17 28 20	BETLEO	11 12 19	50.7	165.5	-0.6		-8.9	-23	1729	No stop
17 33 20	---	11 17 20	50.8	167.4	-0.5		-7.8	277	1768	17 28 21
17 34 00	J1157+1638	11 18 00	52.6	163.9	-0.7		-10.0	18	1768	17 34 00
17 35 20	=1155+169	11 19 20	52.7	164.4	-0.7		-9.7	80	1778	17 34 01
17 35 20	BETLEO	11 19 20	50.9	168.2	-0.5		-7.3	-23	1778	No stop
17 40 20	---	11 24 21	51.0	170.1	-0.4		-6.1	277	1817	17 35 21
17 40 20	J1157+1638	11 24 21	52.9	166.4	-0.6		-8.5	-22	1817	No stop
17 42 20	=1155+169	11 26 21	52.9	167.2	-0.5		-8.0	98	1832	17 40 21
17 42 20	BETLEO	11 26 21	51.1	170.9	-0.4		-5.6	-22	1832	No stop
17 47 20	---	11 31 22	51.2	172.8	-0.3		-4.5	278	1871	17 42 21
17 48 00	J1157+1638	11 32 02	53.1	169.4	-0.4		-6.6	18	1871	17 48 00
17 49 20	=1155+169	11 33 22	53.1	169.9	-0.4		-6.3	80	1881	17 48 01
17 49 20	BETLEO	11 33 22	51.2	173.6	-0.3		-4.0	-22	1881	No stop
17 54 20	---	11 38 23	51.3	175.5	-0.2		-2.8	278	1919	17 49 21

Schedule for TORUN (Code Tr )

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A-type stars

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

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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 29 May 2017 Day 149 ---										
17 54 20	J1157+1638	11 38 23	53.2	171.9	-0.3		-5.0	-22	1919	No stop
17 56 20	=1155+169	11 40 23	53.3	172.7	-0.3		-4.5	98	1935	17 54 21
17 56 20	BETLEO	11 40 23	51.3	176.3	-0.2		-2.3	-22	1935	No stop
18 01 20	---	11 45 24	51.4	178.2	-0.1		-1.1	278	1973	17 56 21
18 02 00	J1157+1638	11 46 04	53.4	175.0	-0.2		-3.1	19	1973	18 02 00
18 03 20	=1155+169	11 47 25	53.4	175.6	-0.2		-2.8	80	1983	18 02 01
18 03 20	BETLEO	11 47 25	51.4	179.0	-0.0		-0.6	-22	1983	No stop
18 08 20	---	11 52 25	51.4	181.0	0.0		0.6	278	2022	18 03 21
18 08 20	J1157+1638	11 52 25	53.4	177.6	-0.1		-1.5	-22	2022	No stop
18 10 20	=1155+169	11 54 26	53.5	178.4	-0.1		-1.0	98	2037	18 08 21
18 10 20	BETLEO	11 54 26	51.4	181.7	0.1		1.1	-22	2037	No stop
18 15 20	---	11 59 27	51.3	183.7	0.2		2.3	278	2076	18 10 21
18 16 00	J1157+1638	12 00 07	53.5	180.7	0.0		0.4	18	2076	18 16 00
18 17 20	=1155+169	12 01 27	53.5	181.2	0.0		0.8	80	2086	18 16 01
18 17 20	BETLEO	12 01 27	51.3	184.5	0.2		2.8	-22	2086	No stop
18 22 20	---	12 06 28	51.2	186.4	0.3		4.0	278	2124	18 17 21
18 22 20	J1157+1638	12 06 28	53.4	183.2	0.1		2.0	-22	2124	No stop
18 24 20	=1155+169	12 08 28	53.4	184.0	0.2		2.5	98	2140	18 22 21
18 24 20	BETLEO	12 08 28	51.2	187.2	0.3		4.4	-22	2140	No stop
18 29 20	---	12 13 29	51.1	189.1	0.4		5.6	278	2178	18 24 21
18 30 00	J1157+1638	12 14 09	53.3	186.3	0.3		3.9	18	2178	18 30 00
18 32 00	=1155+169	12 16 09	53.3	187.1	0.3		4.4	120	2194	18 30 01
18 35 40	J1550+0527	12 19 50	25.8	118.1	-3.5		-32.2	66	2194	18 35 40
18 42 40	=1548+056	12 26 51	26.8	119.7	-3.4		-31.6	420	2247	18 35 41
18 45 50	J1829+3957	12 30 02	30.8	63.2	-6.0		-44.4	62	2247	18 45 50
18 47 50	=1828+399	12 32 02	31.1	63.5	-6.0		-44.5	120	2263	18 45 51
18 47 50	J1837+3952	12 32 02	30.1	62.5	-6.1		-44.0	-16	2263	No stop
18 52 50	---	12 37 03	30.8	63.3	-6.0		-44.4	284	2301	18 47 51
18 53 20	J1829+3957	12 37 33	31.9	64.4	-5.9		-45.0	13	2301	18 53 20
18 54 50	=1828+399	12 39 03	32.1	64.6	-5.9		-45.1	90	2313	18 53 21



Schedule for TORUN (Code Tr )

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A-type stars

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

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SYNC: Time correlator 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 29 May 2017 Day 149 ---										
18 54 50	ALPLYR	12 39 03	30.3	64.5	-6.0		-44.1	-20	2313	No stop
18 59 50	---	12 44 04	31.0	65.3	-5.9		-44.4	280	2351	18 54 51
18 59 50	J1829+3957	12 44 04	32.7	65.4	-5.8		-45.5	-21	2351	No stop
19 01 50	=1828+399	12 46 04	33.0	65.8	-5.7		-45.6	99	2367	18 59 51
19 01 50	ALPLYR	12 46 04	31.2	65.6	-5.9		-44.6	-20	2367	No stop
19 06 50	---	12 51 05	31.9	66.4	-5.8		-44.9	280	2405	19 01 51
19 07 20	J1829+3957	12 51 35	33.8	66.6	-5.6		-46.0	9	2405	19 07 20
19 08 50	=1828+399	12 53 05	34.0	66.9	-5.6		-46.1	90	2417	19 07 21
19 08 50	ALPLYR	12 53 05	32.2	66.8	-5.7		-45.1	-20	2417	No stop
19 13 50	---	12 58 06	32.9	67.6	-5.7		-45.4	280	2455	19 08 51
19 13 50	J1829+3957	12 58 06	34.7	67.7	-5.5		-46.5	-21	2455	No stop
19 15 50	=1828+399	13 00 07	35.0	68.0	-5.5		-46.6	99	2471	19 13 51
19 15 50	ALPLYR	13 00 07	33.2	67.9	-5.6		-45.6	-20	2471	No stop
19 20 50	---	13 05 07	33.9	68.7	-5.5		-45.9	280	2509	19 15 51
19 21 20	J1829+3957	13 05 37	35.7	68.9	-5.4		-47.0	9	2509	19 21 20
19 22 50	=1828+399	13 07 08	35.9	69.1	-5.4		-47.1	90	2521	19 21 21
19 22 50	ALPLYR	13 07 08	34.1	69.0	-5.5		-46.0	-20	2521	No stop
19 27 50	---	13 12 09	34.9	69.9	-5.4		-46.3	280	2559	19 22 51
19 27 50	J1829+3957	13 12 09	36.6	69.9	-5.3		-47.4	-21	2559	No stop
19 29 50	=1828+399	13 14 09	36.9	70.3	-5.3		-47.5	99	2574	19 27 51
19 29 50	J1837+3952	13 14 09	35.9	69.2	-5.4		-47.0	-17	2574	No stop
19 34 50	---	13 19 10	36.6	70.0	-5.3		-47.4	283	2613	19 29 51
19 35 20	J1829+3957	13 19 40	37.7	71.2	-5.2		-47.9	13	2613	19 35 20
19 36 50	=1828+399	13 21 10	37.9	71.4	-5.2		-48.0	90	2624	19 35 21
19 36 50	ALPLYR	13 21 10	36.1	71.3	-5.3		-46.9	-20	2624	No stop
19 41 50	---	13 26 11	36.8	72.2	-5.2		-47.2	280	2663	19 36 51
19 41 50	J1829+3957	13 26 11	38.6	72.2	-5.1		-48.3	-21	2663	No stop
19 43 50	=1828+399	13 28 11	38.9	72.6	-5.0		-48.4	99	2678	19 41 51
19 43 50	ALPLYR	13 28 11	37.1	72.5	-5.2		-47.3	-20	2678	No stop
19 48 50	---	13 33 12	37.8	73.3	-5.1		-47.6	280	2717	19 43 51

Schedule for TORUN (Code Tr )

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A-type stars

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

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Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
-----										
--- Mon 29 May 2017 Day 149 ---										
19 49 20	J1829+3957	13 33 42	39.7	73.5	-4.9		-48.7	9	2717	19 49 20
19 50 50	=1828+399	13 35 12	39.9	73.7	-4.9		-48.8	90	2728	19 49 21
19 50 50	ALPLYR	13 35 12	38.1	73.7	-5.0		-47.7	-20	2728	No stop
19 55 50	---	13 40 13	38.9	74.5	-5.0		-47.9	280	2767	19 50 51
19 55 50	J1829+3957	13 40 13	40.7	74.5	-4.8		-49.0	-21	2767	No stop
19 57 50	=1828+399	13 42 13	40.9	74.9	-4.8		-49.1	99	2782	19 55 51
19 57 50	ALPLYR	13 42 13	39.2	74.8	-4.9		-48.0	-20	2782	No stop
20 02 50	---	13 47 14	39.9	75.7	-4.8		-48.3	280	2821	19 57 51
20 03 20	J1829+3957	13 47 44	41.7	75.8	-4.7		-49.4	9	2821	20 03 20
20 04 50	=1828+399	13 49 15	42.0	76.0	-4.7		-49.5	90	2832	20 03 21
20 04 50	ALPLYR	13 49 15	40.2	76.0	-4.8		-48.4	-20	2832	No stop
20 09 50	---	13 54 15	40.9	76.9	-4.7		-48.6	280	2871	20 04 51
20 09 50	J1829+3957	13 54 15	42.7	76.9	-4.6		-49.7	-21	2871	No stop
20 11 50	=1828+399	13 56 16	43.0	77.2	-4.6		-49.8	99	2886	20 09 51
20 11 50	J1837+3952	13 56 16	41.9	76.1	-4.7		-49.4	-17	2886	No stop
20 16 50	---	14 01 17	42.7	77.0	-4.6		-49.7	283	2924	20 11 51
20 17 20	J1829+3957	14 01 47	43.8	78.2	-4.5		-50.1	13	2924	20 17 20
20 18 50	=1828+399	14 03 17	44.0	78.4	-4.5		-50.1	90	2936	20 17 21
20 18 50	ALPLYR	14 03 17	42.2	78.4	-4.6		-49.0	-20	2936	No stop
20 23 50	---	14 08 18	43.0	79.3	-4.5		-49.2	280	2974	20 18 51
20 23 50	J1829+3957	14 08 18	44.8	79.3	-4.4		-50.3	-21	2974	No stop
20 25 50	=1828+399	14 10 18	45.1	79.6	-4.3		-50.4	99	2990	20 23 51
20 25 50	ALPLYR	14 10 18	43.3	79.6	-4.5		-49.3	-20	2990	No stop
20 30 50	---	14 15 19	44.0	80.5	-4.4		-49.5	280	3028	20 25 51
20 31 30	J1829+3957	14 15 59	45.9	80.6	-4.2		-50.6	19	3028	20 31 30
20 32 50	=1828+399	14 17 19	46.1	80.8	-4.2		-50.7	80	3038	20 31 31
20 32 50	ALPLYR	14 17 19	44.3	80.9	-4.3		-49.5	-20	3038	No stop
20 37 50	---	14 22 20	45.0	81.8	-4.3		-49.7	280	3077	20 32 51
20 37 50	J1829+3957	14 22 20	46.8	81.7	-4.1		-50.8	-21	3077	No stop
20 39 50	=1828+399	14 24 20	47.1	82.1	-4.1		-50.9	99	3092	20 37 51

Schedule for TORUN (Code Tr )

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A-type stars

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Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
-----										
--- Mon 29 May 2017 Day 149 ---										
20 39 50	ALPLYR	14 24 20	45.3	82.1	-4.2		-49.8	-20	3092	No stop
20 44 50	---	14 29 21	46.1	83.0	-4.1		-49.9	280	3131	20 39 51
20 45 30	J1829+3957	14 30 01	48.0	83.1	-4.0		-51.1	19	3131	20 45 30
20 46 50	=1828+399	14 31 21	48.2	83.3	-4.0		-51.1	80	3141	20 45 31
20 46 50	ALPLYR	14 31 21	46.4	83.4	-4.1		-49.9	-20	3141	No stop
20 51 50	---	14 36 22	47.1	84.3	-4.0		-50.1	280	3179	20 46 51
20 51 50	J1829+3957	14 36 22	48.9	84.2	-3.9		-51.2	-21	3179	No stop
20 53 50	=1828+399	14 38 23	49.2	84.6	-3.9		-51.3	99	3195	20 51 51
20 53 50	J1837+3952	14 38 23	48.1	83.5	-4.0		-51.0	-17	3195	No stop
20 58 50	---	14 43 23	48.9	84.4	-3.9		-51.2	283	3233	20 53 51
20 59 30	J1829+3957	14 44 04	50.1	85.7	-3.8		-51.4	23	3233	20 59 30
21 00 50	=1828+399	14 45 24	50.3	85.9	-3.8		-51.4	80	3244	20 59 31
21 00 50	ALPLYR	14 45 24	48.5	86.0	-3.9		-50.2	-20	3244	No stop
21 05 50	---	14 50 25	49.2	86.9	-3.8		-50.3	280	3282	21 00 51
21 05 50	J1829+3957	14 50 25	51.0	86.9	-3.7		-51.5	-21	3282	No stop
21 07 50	=1828+399	14 52 25	51.3	87.2	-3.6		-51.5	99	3297	21 05 51
21 07 50	ALPLYR	14 52 25	49.5	87.3	-3.8		-50.3	-20	3297	No stop
21 12 50	---	14 57 26	50.3	88.3	-3.7		-50.4	280	3336	21 07 51
21 13 30	J1829+3957	14 58 06	52.2	88.3	-3.5		-51.6	19	3336	21 13 30
21 14 50	=1828+399	14 59 26	52.4	88.6	-3.5		-51.6	80	3346	21 13 31
21 14 50	ALPLYR	14 59 26	50.6	88.7	-3.6		-50.4	-20	3346	No stop
21 19 50	---	15 04 27	51.3	89.7	-3.6		-50.4	280	3385	21 14 51
21 19 50	J1829+3957	15 04 27	53.1	89.6	-3.4		-51.6	-21	3385	No stop
21 21 50	=1828+399	15 06 27	53.4	90.0	-3.4		-51.6	99	3400	21 19 51
21 21 50	ALPLYR	15 06 27	51.6	90.1	-3.5		-50.4	-20	3400	No stop
21 26 50	---	15 11 28	52.4	91.1	-3.4		-50.4	280	3438	21 21 51
21 27 30	J1829+3957	15 12 08	54.3	91.1	-3.3		-51.6	19	3438	21 27 30
21 28 50	=1828+399	15 13 28	54.5	91.4	-3.3		-51.6	80	3449	21 27 31
21 28 50	ALPLYR	15 13 28	52.7	91.5	-3.4		-50.4	-20	3449	No stop
21 33 50	---	15 18 29	53.4	92.5	-3.3		-50.3	280	3487	21 28 51

Schedule for TORUN (Code Tr )

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A-type stars

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Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
-----										
--- Mon 29 May 2017 Day 149 ---										
21 33 50	J1829+3957	15 18 29	55.2	92.4	-3.2		-51.5	-21	3487	No stop
21 35 50	=1828+399	15 20 30	55.5	92.9	-3.2		-51.5	99	3503	21 33 51
21 35 50	J1837+3952	15 20 30	54.5	91.5	-3.3		-51.5	-17	3503	No stop
21 40 50	---	15 25 30	55.2	92.6	-3.2		-51.4	283	3541	21 35 51
21 41 30	J1829+3957	15 26 10	56.4	94.1	-3.1		-51.4	23	3541	21 41 30
21 42 50	=1828+399	15 27 31	56.6	94.4	-3.1		-51.4	80	3551	21 41 31
21 42 50	ALPLYR	15 27 31	54.8	94.4	-3.2		-50.2	-20	3551	No stop
21 47 50	---	15 32 32	55.6	95.5	-3.1		-50.1	280	3590	21 42 51
21 47 50	J1829+3957	15 32 32	57.3	95.5	-3.0		-51.3	-21	3590	No stop
21 49 50	=1828+399	15 34 32	57.6	95.9	-2.9		-51.2	99	3605	21 47 51
21 49 50	ALPLYR	15 34 32	55.9	96.0	-3.1		-50.0	-20	3605	No stop
21 54 50	---	15 39 33	56.6	97.1	-3.0		-49.9	280	3644	21 49 51
21 55 30	J1829+3957	15 40 13	58.5	97.2	-2.8		-51.0	19	3644	21 55 30
21 56 50	=1828+399	15 41 33	58.7	97.5	-2.8		-51.0	80	3654	21 55 31
21 56 50	ALPLYR	15 41 33	56.9	97.6	-2.9		-49.8	-20	3654	No stop
22 01 50	---	15 46 34	57.6	98.7	-2.8		-49.6	280	3692	21 56 51
22 01 50	J1829+3957	15 46 34	59.4	98.7	-2.7		-50.8	-21	3692	No stop
22 03 50	=1828+399	15 48 34	59.7	99.2	-2.7		-50.7	99	3708	22 01 51
22 03 50	ALPLYR	15 48 34	57.9	99.2	-2.8		-49.5	-20	3708	No stop
22 08 50	---	15 53 35	58.7	100.4	-2.7		-49.3	280	3746	22 03 51
22 09 30	J1829+3957	15 54 15	60.6	100.6	-2.6		-50.4	19	3746	22 09 30
22 10 50	=1828+399	15 55 35	60.8	100.9	-2.6		-50.3	80	3756	22 09 31
22 10 50	ALPLYR	15 55 35	59.0	100.9	-2.7		-49.2	-20	3756	No stop
22 15 50	---	16 00 36	59.7	102.2	-2.6		-48.9	280	3795	22 10 51
22 15 50	J1829+3957	16 00 36	61.5	102.2	-2.5		-50.0	-21	3795	No stop
22 17 50	=1828+399	16 02 36	61.8	102.7	-2.5		-49.9	99	3810	22 15 51
22 17 50	J1837+3952	16 02 36	60.7	101.1	-2.6		-50.2	-17	3810	No stop
22 22 50	---	16 07 37	61.5	102.3	-2.5		-49.9	283	3849	22 17 51
22 23 30	J1829+3957	16 08 17	62.6	104.2	-2.4		-49.4	23	3849	22 23 30
22 24 50	=1828+399	16 09 38	62.8	104.6	-2.3		-49.3	80	3859	22 23 31

Schedule for TORUN (Code Tr )

Page 12

A-type stars

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 29 May 2017 Day 149 ---										
22 27 10	J1642+3948	16 11 58	75.6	154.8	-0.5		-19.4	25	3859	22 27 10
22 34 10	=3C345	16 18 59	76.0	160.0	-0.4		-15.5	420	3913	22 27 11
22 36 30	J1829+3957	16 21 20	64.5	107.9	-2.2		-48.2	20	3913	22 36 30
22 38 30	=1828+399	16 23 20	64.8	108.5	-2.1		-48.0	120	3928	22 36 31
22 38 30	ALPLYR	16 23 20	63.0	108.4	-2.2		-47.0	-20	3928	No stop
22 43 30	---	16 28 21	63.7	109.9	-2.2		-46.4	280	3967	22 38 31
22 43 30	J1829+3957	16 28 21	65.5	110.0	-2.0		-47.4	-21	3967	No stop
22 45 30	=1828+399	16 30 21	65.8	110.7	-2.0		-47.2	99	3982	22 43 31
22 45 30	ALPLYR	16 30 21	64.0	110.5	-2.1		-46.2	-20	3982	No stop
22 50 30	---	16 35 22	64.7	112.0	-2.0		-45.6	280	4020	22 45 31
22 51 15	J1829+3957	16 36 07	66.6	112.5	-1.9		-46.4	24	4020	22 51 15
22 53 05	=1828+399	16 37 57	66.8	113.2	-1.9		-46.1	110	4035	22 51 16
22 53 05	ALPLYR	16 37 57	65.1	112.9	-2.0		-45.2	-20	4035	No stop
22 58 05	---	16 42 58	65.7	114.5	-1.9		-44.5	280	4073	22 53 06
22 58 05	J1829+3957	16 42 58	67.5	114.9	-1.8		-45.3	-21	4073	No stop
23 00 05	=1828+399	16 44 58	67.8	115.6	-1.8		-45.0	99	4088	22 58 06
23 00 05	ALPLYR	16 44 58	66.0	115.2	-1.9		-44.2	-20	4088	No stop
23 05 05	---	16 49 59	66.7	117.0	-1.8		-43.4	280	4127	23 00 06
23 05 50	J1829+3957	16 50 44	68.6	117.7	-1.7		-43.9	24	4127	23 05 50
23 07 50	=1828+399	16 52 45	68.8	118.5	-1.6		-43.5	120	4142	23 05 51
23 07 50	ALPLYR	16 52 45	67.1	118.0	-1.7		-42.9	-20	4142	No stop
23 12 50	---	16 57 45	67.7	119.9	-1.7		-41.9	280	4181	23 07 51
23 12 50	J1829+3957	16 57 45	69.5	120.5	-1.5		-42.5	-21	4181	No stop
23 14 50	=1828+399	16 59 46	69.8	121.3	-1.5		-42.0	99	4196	23 12 51
23 14 50	ALPLYR	16 59 46	68.0	120.6	-1.6		-41.5	-20	4196	No stop
23 19 50	---	17 04 47	68.6	122.6	-1.5		-40.5	280	4235	23 14 51
23 20 35	J1829+3957	17 05 32	70.5	123.7	-1.4		-40.7	24	4235	23 20 35
23 22 25	=1828+399	17 07 22	70.7	124.5	-1.4		-40.2	110	4249	23 20 36
23 22 25	ALPLYR	17 07 22	69.0	123.7	-1.5		-39.9	-20	4249	No stop
23 27 25	---	17 12 23	69.6	125.8	-1.4		-38.7	280	4287	23 22 26

Schedule for TORUN (Code Tr )

Page 13

A-type stars

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 29 May 2017 Day 149 ---

```
23 28 10  J1829+3957  17 13 08  71.4 127.2 -1.3    -38.6   25    4287   23 28 10
23 30 00  =1828+399     17 14 58  71.6 128.0 -1.3    -38.1  110    4301   23 28 11
```

## SETUP FILE INFORMATION:

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

==== Setup file: sess217.L1024

```
Setup group:   12          Station: TORUN          Total bit rate: 1024
Format: MARK5B          Bits per sample: 2      Sample rate: 64.000
Number of channels: 8    DBE type: DBBC_DDC    Speedup factor: 1.00
```

Disk used to record data.

1st LO=	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
Net SB=	L	L	U	U	L	L	U	U
IF SB =	L	L	L	L	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
BBC =	1	5	1	5	3	7	3	7
BBC SB=	U	U	L	L	U	U	L	L
IF =	A1	B1	A1	B1	A1	B1	A1	B1

The following frequency sets based on these setups were used.

Frequency Set: 4 Setup file default. Used with PCAL = off  
 LO sum= 1626.49 1626.49 1626.49 1626.49 1690.49 1690.49 1690.49 1690.49  
 BBC fr= 673.51 673.51 673.51 673.51 609.51 609.51 609.51 609.51  
 Bandwd= 32.00 32.00 32.00 32.00 32.00 32.00 32.00 32.00  
 Matching frequency sets: 4

Track assignments are:

track1= 2, 6, 10, 14, 4, 8, 12, 16  
 barrel=roll\_off

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* BETLEO	11 46 28.285931	* 11 49 02.981590	11 49 56.460257	0.00
	14 50 58.00244	* 14 34 17.41284	14 28 34.27296	0.00
	Proper motion used. Reference epoch: 2000.00000			
	At epoch: RA = 11 49 03.578340 Dec = 14 34 19.40900			
	Rates: RA = -497.68 mas/yr Dec = -114.67 mas/yr			
	Parallax: 90.9100 mas.			
	Planetary motion (includes proper motion). Ref. MJD: 57902.5639			
	Rates: RA = -0.93857E-04 s/day Dec = -0.31395E-03 arcsec/day			
* ALPLYR	18 35 15.821975	* 18 36 56.635503	18 37 32.874223	0.00
	38 44 29.01451	* 38 47 06.26270	38 48 01.70602	0.00
	Proper motion used. Reference epoch: 2000.00000			
	At epoch: RA = 18 36 56.336350 Dec = 38 47 01.28020			
	Rates: RA = 200.94 mas/yr Dec = 286.23 mas/yr			
	Parallax: 130.2300 mas.			
	Planetary motion (includes proper motion). Ref. MJD: 57902.5639			
	Rates: RA = 0.47051E-04 s/day Dec = 0.78366E-03 arcsec/day			
* J1152+1636	11 49 02.593047	* 11 51 37.200400	11 52 30.640413	0.00
	16 53 05.16344	* 16 36 24.04800	16 30 41.50566	0.00
* J1837+3952	18 35 10.603355	* 18 36 49.323100	18 37 24.866954	0.00
	39 49 41.10380	* 39 52 17.90100	39 53 13.05211	0.00
* J1157+1638	11 55 00.750369	* 11 57 34.836263	11 58 28.132341	0.14
1155+169	16 55 41.52528	* 16 38 59.64987	16 33 17.09613	0.16
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.vlba.2012jul			
	rfc_2012b Petrov, 2012, unpublished 265 observations			
J1230+1223	12 28 17.569280	* 12 30 49.423382	12 31 42.192412	0.10
* 3C274	12 40 01.74884	* 12 23 28.04366	12 17 48.22959	0.10
1228+126	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.vlba.2012jul			
J1230+12	rfc_2012b Petrov, 2012, unpublished 47163 observations			
M87				

* J1550+0527	15 48 06.931010	* 15 50 35.269243	15 51 27.628859	0.10
1548+056	05 36 11.23067	* 05 27 10.44821	05 24 10.83533	0.10
J1550+05	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.vlba.2012jul			
	rfc_2012b Petrov, 2012, unpublished 8145 observations			
* J1642+3948	16 41 17.606228	* 16 42 58.809965	16 43 35.223255	0.77
3C345	39 54 10.81496	* 39 48 36.99402	39 46 48.91332	0.52
1641+399	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.vlba.2012jul			
J1642+39	GSFC 2011B astro solution 52621 Observations			
* J1829+3957	18 28 18.218426	* 18 29 56.520216	18 30 31.934586	0.28
1828+399	39 55 27.66387	* 39 57 34.70298	39 58 19.97473	0.30
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.vlba.2012jul			
	rfc_2012b Petrov, 2012, unpublished 134 observations			



em127dtr

EVN: EM127D

PI: Maan

Address: JIVE

Observing mode: vlbi

Schedule for TORUN (Code Tr )

Page 2

EVN: EM127D

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

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

Disk: GBytes 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 30 May 2017 Day 150 ---										
Next scan frequencies:		1353.49	1353.49	1353.49	1353.49	1417.49	1417.49	1417.49	1417.49	1417.49
Next BBC frequencies:		746.51	746.51	746.51	746.51	682.51	682.51	682.51	682.51	682.51
Next scan bandwidths:		32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00
-----										
01 00 00	J2148+0657	18 45 13	30.8	123.9	-3.1		-30.2	0	0	01 00 00
01 04 00	=2145+067	18 49 14	31.3	124.9	-3.0		-29.8	240	31	01 00 01
01 06 00	J2047-1639	18 51 14	15.9	150.8	-2.0		-17.8	48	31	01 06 00
01 09 00	=2044-168	18 54 15	16.1	151.6	-1.9		-17.4	180	54	01 06 01
01 09 00	B2045-16	18 54 15	16.4	151.1	-1.9		-17.6	-11	54	No stop
01 12 30	---	18 57 45	16.6	152.0	-1.9		-17.1	199	81	01 09 01
01 13 00	J2047-1639	18 58 15	16.4	152.5	-1.8		-16.8	19	81	01 13 00
01 15 00	=2044-168	19 00 16	16.5	153.0	-1.8		-16.5	120	96	01 13 01
01 15 00	B2045-16	19 00 16	16.8	152.6	-1.8		-16.7	-11	96	No stop
01 18 30	---	19 03 46	17.0	153.4	-1.8		-16.2	199	123	01 15 01
01 18 30	J2047-1639	19 03 46	16.8	153.8	-1.7		-16.0	-11	123	No stop
01 21 00	=2044-168	19 06 17	16.9	154.4	-1.7		-15.7	139	142	01 18 31
01 21 00	B2045-16	19 06 17	17.2	154.0	-1.7		-15.9	-11	142	No stop
01 24 30	---	19 09 47	17.4	154.9	-1.7		-15.4	199	169	01 21 01
01 25 00	J2047-1639	19 10 17	17.2	155.4	-1.6		-15.1	19	169	01 25 00
01 27 00	=2044-168	19 12 18	17.3	155.9	-1.6		-14.8	120	185	01 25 01
01 27 00	B2045-16	19 12 18	17.6	155.5	-1.6		-15.0	-11	185	No stop
01 30 30	---	19 15 48	17.8	156.3	-1.6		-14.5	199	212	01 27 01
01 30 30	J2047-1639	19 15 48	17.5	156.8	-1.5		-14.3	-11	212	No stop
01 33 00	=2044-168	19 18 19	17.7	157.4	-1.5		-14.0	139	231	01 30 31
01 33 00	B2045-16	19 18 19	18.0	157.0	-1.5		-14.2	-11	231	No stop
01 36 30	---	19 21 49	18.2	157.8	-1.5		-13.7	199	258	01 33 01
01 37 00	J2047-1639	19 22 19	17.9	158.3	-1.4		-13.4	19	258	01 37 00
01 39 00	=2044-168	19 24 19	18.0	158.8	-1.4		-13.1	120	273	01 37 01
01 39 00	B2045-16	19 24 19	18.3	158.4	-1.4		-13.3	-11	273	No stop
01 42 30	---	19 27 50	18.5	159.3	-1.4		-12.8	199	300	01 39 01

Schedule for TORUN (Code Tr )

Page 3

EVN: EM127D

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 30 May 2017	Day 150					---				
01 42 30	J2047-1639	19 27 50	18.2	159.7	-1.3		-12.6	-11	300	No stop	
01 45 00	=2044-168	19 30 20	18.3	160.3	-1.3		-12.2	139	319	01 42 31	
01 45 00	B2045-16	19 30 20	18.6	159.9	-1.3		-12.4	-11	319	No stop	
01 48 30	---	19 33 51	18.8	160.8	-1.3		-11.9	199	346	01 45 01	
01 49 00	J2047-1639	19 34 21	18.5	161.3	-1.2		-11.6	19	346	01 49 00	
01 51 00	=2044-168	19 36 21	18.6	161.8	-1.2		-11.3	120	362	01 49 01	
01 51 00	B2045-16	19 36 21	18.9	161.4	-1.2		-11.5	-11	362	No stop	
01 54 30	---	19 39 52	19.1	162.3	-1.2		-11.0	199	388	01 51 01	
01 54 30	J2047-1639	19 39 52	18.8	162.7	-1.1		-10.8	-11	388	No stop	
01 57 00	=2044-168	19 42 22	18.9	163.3	-1.1		-10.4	139	408	01 54 31	
01 57 00	B2045-16	19 42 22	19.2	162.9	-1.1		-10.6	-11	408	No stop	
02 00 30	---	19 45 53	19.3	163.8	-1.1		-10.1	199	435	01 57 01	
02 01 00	J2047-1639	19 46 23	19.0	164.3	-1.0		-9.8	19	435	02 01 00	
02 03 00	=2044-168	19 48 23	19.1	164.8	-1.0		-9.5	120	450	02 01 01	
02 03 00	B2045-16	19 48 23	19.4	164.4	-1.0		-9.7	-12	450	No stop	
02 06 30	---	19 51 54	19.6	165.3	-1.0		-9.1	198	477	02 03 01	
02 06 30	J2047-1639	19 51 54	19.3	165.7	-0.9		-8.9	-12	477	No stop	
02 09 00	=2044-168	19 54 24	19.4	166.3	-0.9		-8.5	138	496	02 06 31	
02 09 00	B2045-16	19 54 24	19.7	165.9	-0.9		-8.7	-12	496	No stop	
02 12 30	---	19 57 55	19.8	166.8	-0.9		-8.2	198	523	02 09 01	
02 13 00	J2047-1639	19 58 25	19.5	167.3	-0.8		-7.9	18	523	02 13 00	
02 15 00	=2044-168	20 00 25	19.6	167.8	-0.8		-7.6	120	538	02 13 01	
02 15 00	B2045-16	20 00 25	19.9	167.5	-0.8		-7.8	-12	538	No stop	
02 18 30	---	20 03 56	20.0	168.3	-0.8		-7.3	198	565	02 15 01	
02 18 30	J2047-1639	20 03 56	19.7	168.7	-0.7		-7.0	-12	565	No stop	
02 21 00	=2044-168	20 06 26	19.7	169.3	-0.7		-6.7	138	585	02 18 31	
02 21 00	B2045-16	20 06 26	20.1	169.0	-0.7		-6.9	-12	585	No stop	
02 24 30	---	20 09 57	20.2	169.9	-0.7		-6.3	198	612	02 21 01	
02 25 00	J2047-1639	20 10 27	19.8	170.4	-0.6		-6.0	18	612	02 25 00	
02 27 00	=2044-168	20 12 27	19.9	170.9	-0.6		-5.7	120	627	02 25 01	
02 27 00	B2045-16	20 12 27	20.2	170.5	-0.6		-5.9	-12	627	No stop	
02 30 30	---	20 15 58	20.3	171.4	-0.6		-5.4	198	654	02 27 01	

Schedule for TORUN (Code Tr )

Page 4

EVN: EM127D

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 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 30 May 2017 Day 150 ---										
02 30 30	J2047-1639	20 15 58	20.0	171.8	-0.5		-5.2	-12	654	No stop
02 33 00	=2044-168	20 18 28	20.0	172.4	-0.5		-4.8	138	673	02 30 31
02 33 00	B2045-16	20 18 28	20.4	172.0	-0.5		-5.0	-12	673	No stop
02 36 30	---	20 21 59	20.4	172.9	-0.5		-4.4	198	700	02 33 01
02 37 00	J2047-1639	20 22 29	20.1	173.4	-0.4		-4.1	18	700	02 37 00
02 39 00	=2044-168	20 24 29	20.1	173.9	-0.4		-3.8	120	715	02 37 01
02 39 00	B2045-16	20 24 29	20.5	173.6	-0.4		-4.0	-12	715	No stop
02 42 30	---	20 28 00	20.5	174.5	-0.4		-3.5	198	742	02 39 01
02 42 30	J2047-1639	20 28 00	20.2	174.8	-0.3		-3.2	-12	742	No stop
02 45 00	=2044-168	20 30 30	20.2	175.5	-0.3		-2.8	138	762	02 42 31
02 45 00	B2045-16	20 30 30	20.6	175.1	-0.3		-3.1	-12	762	No stop
02 48 30	---	20 34 01	20.6	176.0	-0.3		-2.5	198	788	02 45 01
02 49 00	J2047-1639	20 34 31	20.3	176.5	-0.2		-2.2	18	788	02 49 00
02 51 00	=2044-168	20 36 31	20.3	177.0	-0.2		-1.9	120	804	02 49 01
02 51 00	B2045-16	20 36 31	20.6	176.7	-0.2		-2.1	-12	804	No stop
02 54 30	---	20 40 02	20.7	177.6	-0.2		-1.5	198	831	02 51 01
02 54 30	J2047-1639	20 40 02	20.3	177.9	-0.1		-1.3	-12	831	No stop
02 57 00	=2044-168	20 42 32	20.3	178.5	-0.1		-0.9	138	850	02 54 31
02 57 00	B2045-16	20 42 32	20.7	178.2	-0.1		-1.1	-12	850	No stop
03 00 30	---	20 46 03	20.7	179.1	-0.1		-0.6	198	877	02 57 01
03 01 00	J2047-1639	20 46 33	20.3	179.6	-0.0		-0.3	18	877	03 01 00
03 03 00	=2044-168	20 48 33	20.3	180.1	0.0		0.0	120	892	03 01 01
03 03 00	B2045-16	20 48 33	20.7	179.7	-0.0		-0.2	-12	892	No stop
03 06 30	---	20 52 04	20.7	180.6	0.0		0.4	198	919	03 03 01
03 06 30	J2047-1639	20 52 04	20.3	181.0	0.1		0.6	-12	919	No stop
03 09 00	=2044-168	20 54 34	20.3	181.6	0.1		1.0	138	938	03 06 31
03 11 00	J2148+0657	20 56 35	42.7	162.2	-0.9		-10.7	22	938	03 11 00
03 15 00	=2145+067	21 00 35	42.9	163.5	-0.8		-9.9	240	969	03 11 01
03 18 00	J2047-1639	21 03 36	20.2	183.9	0.3		2.4	81	969	03 18 00
03 20 00	=2044-168	21 05 36	20.2	184.4	0.3		2.8	120	985	03 18 01

Schedule for TORUN (Code Tr )

Page 5

EVN: EM127D

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 30 May 2017 Day 150 ---										
03 20 00	B2045-16	21 05 36	20.6	184.1	0.3		2.6	-12	985	No stop
03 23 30	---	21 09 07	20.6	185.0	0.3		3.1	198	1012	03 20 01
03 24 00	J2047-1639	21 09 37	20.2	185.4	0.4		3.4	18	1012	03 24 00
03 26 00	=2044-168	21 11 37	20.1	186.0	0.4		3.7	120	1027	03 24 01
03 26 00	B2045-16	21 11 37	20.5	185.7	0.4		3.5	-12	1027	No stop
03 29 30	---	21 15 08	20.5	186.6	0.4		4.1	198	1054	03 26 01
03 29 30	J2047-1639	21 15 08	20.1	186.8	0.4		4.3	-12	1054	No stop
03 32 00	=2044-168	21 17 38	20.0	187.5	0.5		4.7	138	1073	03 29 31
03 32 00	B2045-16	21 17 38	20.4	187.2	0.5		4.5	-12	1073	No stop
03 35 30	---	21 21 09	20.4	188.1	0.5		5.0	198	1100	03 32 01
03 36 00	J2047-1639	21 21 39	19.9	188.5	0.6		5.3	18	1100	03 36 00
03 38 00	=2044-168	21 23 39	19.9	189.0	0.6		5.6	120	1115	03 36 01
03 38 00	B2045-16	21 23 39	20.3	188.7	0.6		5.4	-12	1115	No stop
03 41 30	---	21 27 10	20.2	189.6	0.6		6.0	198	1142	03 38 01
03 41 30	J2047-1639	21 27 10	19.8	189.9	0.6		6.2	-12	1142	No stop
03 44 00	=2044-168	21 29 40	19.7	190.5	0.7		6.6	138	1162	03 41 31
03 44 00	B2045-16	21 29 40	20.2	190.3	0.7		6.4	-12	1162	No stop
03 47 30	---	21 33 11	20.1	191.1	0.7		6.9	198	1188	03 44 01
03 48 00	J2047-1639	21 33 41	19.6	191.5	0.8		7.2	18	1188	03 48 00
03 50 00	=2044-168	21 35 41	19.6	192.1	0.8		7.5	120	1204	03 48 01
03 50 00	B2045-16	21 35 41	20.0	191.8	0.8		7.3	-12	1204	No stop
03 53 30	---	21 39 12	19.9	192.7	0.8		7.9	198	1231	03 50 01
03 53 30	J2047-1639	21 39 12	19.5	192.9	0.8		8.1	-12	1231	No stop
03 56 00	=2044-168	21 41 42	19.4	193.6	0.9		8.5	138	1250	03 53 31
03 56 00	B2045-16	21 41 42	19.8	193.3	0.9		8.3	-12	1250	No stop
03 59 30	---	21 45 13	19.7	194.2	0.9		8.8	198	1277	03 56 01
04 00 00	J2047-1639	21 45 43	19.2	194.6	1.0		9.1	18	1277	04 00 00
04 02 00	=2044-168	21 47 43	19.1	195.1	1.0		9.4	120	1292	04 00 01
04 02 00	B2045-16	21 47 43	19.6	194.8	1.0		9.2	-12	1292	No stop
04 05 30	---	21 51 14	19.4	195.7	1.0		9.7	198	1319	04 02 01

Schedule for TORUN (Code Tr )

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EVN: EM127D

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 30 May 2017 Day 150 ---										
04 05 30	J2047-1639	21 51 14	19.0	196.0	1.0		9.9	-13	1319	No stop
04 08 00	=2044-168	21 53 44	18.9	196.6	1.1		10.3	137	1338	04 05 31
04 08 00	B2045-16	21 53 44	19.3	196.3	1.1		10.1	-12	1338	No stop
04 11 30	---	21 57 15	19.2	197.2	1.1		10.7	198	1365	04 08 01
04 12 00	J2047-1639	21 57 45	18.7	197.6	1.2		10.9	17	1365	04 12 00
04 14 00	=2044-168	21 59 45	18.6	198.1	1.2		11.2	120	1381	04 12 01
04 14 00	B2045-16	21 59 45	19.1	197.8	1.2		11.0	-12	1381	No stop
04 17 30	---	22 03 16	18.9	198.7	1.2		11.6	198	1408	04 14 01
04 17 30	J2047-1639	22 03 16	18.5	198.9	1.2		11.7	-13	1408	No stop
04 20 00	=2044-168	22 05 46	18.3	199.6	1.3		12.1	137	1427	04 17 31
04 20 00	B2045-16	22 05 46	18.8	199.3	1.3		11.9	-12	1427	No stop
04 23 30	---	22 09 17	18.6	200.2	1.3		12.5	198	1454	04 20 01
04 24 00	J2047-1639	22 09 47	18.1	200.5	1.4		12.7	17	1454	04 24 00
04 26 00	=2044-168	22 11 47	18.0	201.0	1.4		13.0	120	1469	04 24 01
04 26 00	B2045-16	22 11 47	18.5	200.8	1.4		12.8	-13	1469	No stop
04 29 30	---	22 15 18	18.3	201.7	1.4		13.4	197	1496	04 26 01
04 29 30	J2047-1639	22 15 18	17.8	201.9	1.4		13.5	-13	1496	No stop
04 32 00	=2044-168	22 17 48	17.7	202.5	1.5		13.9	137	1515	04 29 31
04 32 00	B2045-16	22 17 48	18.1	202.3	1.5		13.7	-13	1515	No stop
04 35 30	---	22 21 18	17.9	203.2	1.5		14.2	197	1542	04 32 01
04 36 00	J2047-1639	22 21 49	17.5	203.5	1.6		14.5	17	1542	04 36 00
04 38 00	=2044-168	22 23 49	17.3	204.0	1.6		14.8	120	1558	04 36 01
04 38 00	B2045-16	22 23 49	17.8	203.8	1.6		14.6	-13	1558	No stop
04 41 30	---	22 27 19	17.6	204.6	1.6		15.1	197	1585	04 38 01
04 41 30	J2047-1639	22 27 19	17.1	204.8	1.7		15.3	-13	1585	No stop
04 44 00	=2044-168	22 29 50	17.0	205.4	1.7		15.6	137	1604	04 41 31
04 44 00	B2045-16	22 29 50	17.4	205.2	1.7		15.5	-13	1604	No stop
04 47 30	---	22 33 20	17.2	206.1	1.7		16.0	197	1631	04 44 01
04 48 00	J2047-1639	22 33 51	16.7	206.4	1.8		16.2	17	1631	04 48 00
04 50 00	=2044-168	22 35 51	16.6	206.9	1.8		16.5	120	1646	04 48 01

Schedule for TORUN (Code Tr )

Page 7

EVN: EM127D

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 30 May 2017 Day 150 ---										
04 50 00	B2045-16	22 35 51	17.0	206.7	1.8		16.3	-13	1646	No stop
04 53 30	---	22 39 21	16.8	207.5	1.8		16.8	197	1673	04 50 01
04 53 30	J2047-1639	22 39 21	16.3	207.7	1.9		16.9	-13	1673	No stop
04 56 00	=2044-168	22 41 52	16.1	208.3	1.9		17.3	137	1692	04 53 31
04 56 00	B2045-16	22 41 52	16.6	208.1	1.9		17.1	-13	1692	No stop
04 59 30	---	22 45 22	16.3	209.0	1.9		17.6	197	1719	04 56 01
05 00 00	J2047-1639	22 45 53	15.9	209.3	2.0		17.8	17	1719	05 00 00
05 02 00	=2044-168	22 47 53	15.7	209.7	2.0		18.1	120	1735	05 00 01
05 02 00	B2045-16	22 47 53	16.2	209.6	2.0		18.0	-13	1735	No stop
05 05 30	---	22 51 23	15.9	210.4	2.0		18.4	197	1762	05 02 01
05 05 30	J2047-1639	22 51 23	15.4	210.6	2.1		18.6	-13	1762	No stop
05 08 00	=2044-168	22 53 54	15.2	211.2	2.1		18.9	137	1781	05 05 31
05 08 00	B2045-16	22 53 54	15.7	211.0	2.1		18.8	-13	1781	No stop
05 11 30	---	22 57 24	15.4	211.8	2.1		19.3	197	1808	05 08 01
05 11 50	J2047-1639	22 57 44	14.9	212.1	2.2		19.4	7	1808	05 11 50
05 13 50	=2044-168	22 59 45	14.8	212.5	2.2		19.7	120	1823	05 11 51
05 13 50	B2045-16	22 59 45	15.2	212.4	2.2		19.6	-13	1823	No stop
05 17 20	---	23 03 15	15.0	213.2	2.2		20.0	197	1850	05 13 51
05 17 20	J2047-1639	23 03 15	14.5	213.4	2.2		20.1	-13	1850	No stop
05 19 50	=2044-168	23 05 46	14.3	213.9	2.3		20.5	137	1869	05 17 21
05 19 50	B2045-16	23 05 46	14.7	213.8	2.3		20.3	-13	1869	No stop
05 23 20	---	23 09 16	14.4	214.6	2.3		20.8	197	1896	05 19 51
05 23 50	J2047-1639	23 09 46	13.9	214.9	2.4		21.0	17	1896	05 23 50
05 25 50	=2044-168	23 11 47	13.8	215.3	2.4		21.2	120	1912	05 23 51
05 25 50	B2045-16	23 11 47	14.2	215.2	2.4		21.1	-13	1912	No stop
05 29 20	---	23 15 17	13.9	216.0	2.4		21.6	197	1938	05 25 51
05 29 20	J2047-1639	23 15 17	13.5	216.1	2.4		21.7	-13	1938	No stop
05 31 50	=2044-168	23 17 48	13.2	216.7	2.5		22.0	137	1958	05 29 21
05 31 50	B2045-16	23 17 48	13.7	216.6	2.5		21.9	-13	1958	No stop
05 35 20	---	23 21 18	13.4	217.4	2.5		22.3	197	1985	05 31 51

Schedule for TORUN (Code Tr )

Page 8

EVN: EM127D

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

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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 30 May 2017 Day 150 ---										
05 35 50	J2047-1639	23 21 48	12.9	217.6	2.6		22.5	17	1985	05 35 50
05 37 50	=2044-168	23 23 49	12.7	218.1	2.6		22.7	120	2000	05 35 51
05 37 50	B2045-16	23 23 49	13.2	217.9	2.6		22.6	-13	2000	No stop
05 41 20	---	23 27 19	12.8	218.7	2.6		23.0	197	2027	05 37 51
05 41 20	J2047-1639	23 27 19	12.4	218.9	2.7		23.1	-13	2027	No stop
05 43 50	=2044-168	23 29 50	12.1	219.4	2.7		23.4	137	2046	05 41 21
05 43 50	B2045-16	23 29 50	12.6	219.3	2.7		23.3	-13	2046	No stop
05 47 20	---	23 33 20	12.3	220.1	2.7		23.7	197	2073	05 43 51
05 47 50	J2047-1639	23 33 50	11.7	220.3	2.8		23.9	17	2073	05 47 50
05 49 50	=2044-168	23 35 51	11.5	220.8	2.8		24.2	120	2088	05 47 51
05 49 50	B2045-16	23 35 51	12.0	220.6	2.8		24.0	-13	2088	No stop
05 53 20	---	23 39 21	11.7	221.4	2.8		24.4	197	2115	05 49 51
05 53 20	J2047-1639	23 39 21	11.2	221.6	2.9		24.6	-13	2115	No stop
05 55 50	=2044-168	23 41 52	11.0	222.1	2.9		24.8	137	2135	05 53 21
05 55 50	B2045-16	23 41 52	11.4	222.0	2.9		24.7	-13	2135	No stop
05 59 20	---	23 45 22	11.1	222.8	2.9		25.1	197	2162	05 55 51
05 59 50	J2047-1639	23 45 52	10.5	223.0	3.0		25.3	17	2162	05 59 50
06 01 50	=2044-168	23 47 53	10.3	223.4	3.0		25.5	120	2177	05 59 51
06 01 50	B2045-16	23 47 53	10.8	223.3	3.0		25.4	-13	2177	No stop
06 05 20	---	23 51 23	10.4	224.1	3.0		25.8	197	2204	06 01 51
06 05 20	J2047-1639	23 51 23	10.0	224.2	3.1		25.9	-13	2204	No stop
06 07 50	=2044-168	23 53 54	9.7	224.8	3.1		26.2	137	2223	06 05 21
06 07 50	B2045-16	23 53 54	10.2	224.6	3.1		26.1	-13	2223	No stop
06 11 20	---	23 57 24	9.8	225.4	3.1		26.4	197	2250	06 07 51
06 11 50	J2047-1639	23 57 54	9.3	225.6	3.2		26.6	17	2250	06 11 50
06 13 50	=2044-168	23 59 55	9.1	226.1	3.2		26.8	120	2265	06 11 51
06 13 50	B2045-16	23 59 55	9.5	226.0	3.2		26.7	-13	2265	No stop
06 17 20	---	00 03 25	9.2	226.7	3.2		27.1	197	2292	06 13 51
06 17 20	J2047-1639	00 03 25	8.7	226.8	3.3		27.2	-13	2292	No stop
06 19 50	=2044-168	00 05 56	8.4	227.4	3.3		27.4	137	2312	06 17 21

Schedule for TORUN (Code Tr )

Page 9

EVN: EM127D

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

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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 30 May 2017 Day 150 ---

```
06 19 50  B2045-16      00 05 56   8.9 227.3  3.3      27.3  -13    2312  No stop
06 23 20  ---                00 09 26   8.5 228.0  3.3      27.7  197    2338  06 19 51

06 23 20  J2047-1639      00 09 26   8.0 228.1  3.4      27.8  -13    2338  No stop
06 25 50  =2044-168        00 11 57   7.7 228.7  3.4      28.1  137    2358  06 23 21

06 28 00  J2148+0657      00 14 07  35.3 226.1  2.4      25.8   12    2358  06 28 00
06 30 00  =2145+067       00 16 07  35.1 226.6  2.5      26.1  120    2373  06 28 01
```

## SETUP FILE INFORMATION:

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

==== Setup file: sess217.H1024

```
Setup group:      8          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=	2100.00	2100.00	2100.00	2100.00	2100.00	2100.00	2100.00	2100.00
Net SB=	L	L	U	U	L	L	U	U
IF SB =	L	L	L	L	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
BBC =	1	5	1	5	3	7	3	7
BBC SB=	U	U	L	L	U	U	L	L
IF =	A1	B1	A1	B1	A1	B1	A1	B1

The following frequency sets based on these setups were used.

Frequency Set: 5 Setup file default. Used with PCAL = off  
 LO sum= 1353.49 1353.49 1353.49 1353.49 1417.49 1417.49 1417.49 1417.49  
 BBC fr= 746.51 746.51 746.51 746.51 682.51 682.51 682.51 682.51  
 Bandwd= 32.00 32.00 32.00 32.00 32.00 32.00 32.00 32.00  
 Matching frequency sets: 5

Track assignments are:

track1= 2, 6, 10, 14, 4, 8, 12, 16  
 barrel=roll\_off

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* B2045-16	20 45 47.182159	* 20 48 35.600000	20 49 34.024021	0.00
	-16 27 51.99670	*-16 16 44.00000	-16 12 43.69458	0.00
2044-168	20 44 30.823017	* 20 47 19.667024	20 48 18.242895	0.21
* J2047-1639	-16 50 09.69276	*-16 39 05.84276	-16 35 06.81677	0.42
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc rfc_2015a Petrov, 2015, unpublished. 86 observations			
2145+067	21 45 36.078474	* 21 48 05.458672	21 48 57.210295	0.10
* J2148+0657	06 43 40.90462	* 06 57 38.60422	07 02 27.54108	0.10
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.rfc rfc_2015a Petrov, 2015, unpublished. 108940 observations			

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