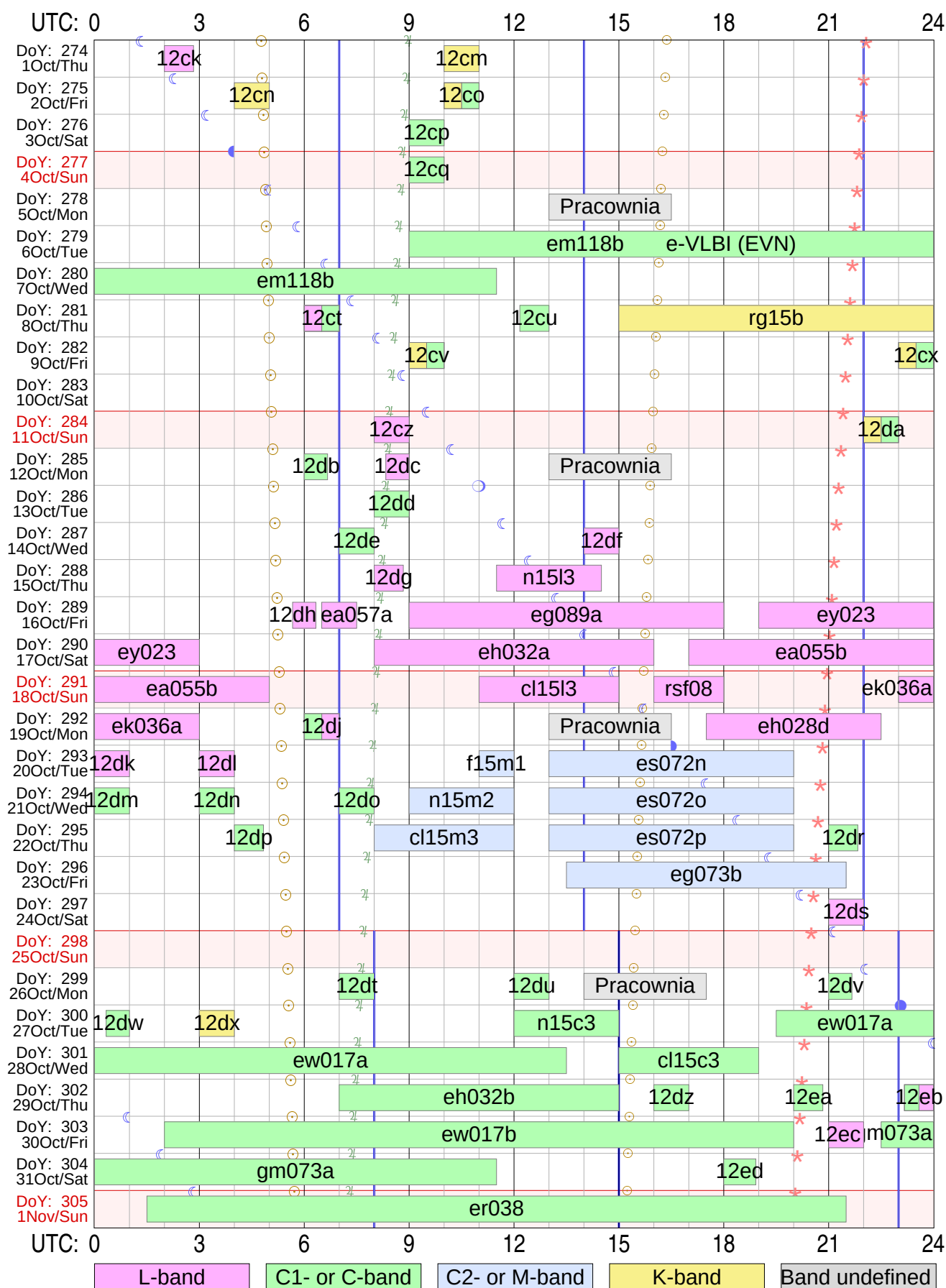


Tr VLBI plan for Oct/Nov 2015



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: 247.6 hours in 64 experiments scheduled

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

Strona zostawiona celowo pusta

RadioAstron & EVN Experiments

Oct 2015

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

Year	Date	UTstart	UTstop	Exper.	xxComment
2015	D M DoW	hh mm	hh mm	name	
274	1 10 Czw	2 00	2 50	rk12ck	"L"
274	1 10 Czw	10 00	11 00	rk12cm	"K"
275	2 10 Pia	4 00	5 00	rk12cn	"C"
275	2 10 Pia	10 00	11 00	rk12co	"K>C"
276	3 10 Sob	9 00	10 00	rk12cp	"C"
277	4 10 Nie	9 00	10 00	rk12cq	"C"
%279	6 10 Wto	10 00	11 00	rk12cr	"K"
%280	7 10 Sro	11 00	12 00	rk12cs	"L"
281	8 10 Czw	6 00	7 00	rk12ct	"L>C"
281	8 10 Czw	12 10	13 00	rk12cu	"C"
281	8 10 Czw	15 00	24 00	rg15b	"K"
282	9 10 Pia	9 00	10 00	rk12cv	"K>C"
282	9 10 Pia	23 00	24 00	rk12cx	"K>C"
284	11 10 Nie	8 00	9 00	rk12cz	"L"
284	11 10 Nie	22 00	23 00	rk12da	"K>C"
285	12 10 Pon	6 00	6 40	rk12db	"C"
285	12 10 Pon	8 20	9 00	rk12dc	"L"
286	13 10 Wto	8 00	9 00	rk12dd	"C"
287	14 10 Sro	7 00	8 00	rk12de	"C"
287	14 10 Sro	14 00	15 00	rk12df	"L"
288	15 10 Czw	8 00	8 50	rk12dg	"L"
289	16 10 Pia	5 40	6 20	rk12dh	"L"
289	16 10 Pia	9 00	18 00	rg14a	"L"
292	19 10 Pon	6 00	7 00	rk12dj	"C>L"
293	20 10 Wto	0 00	1 00	rk12dk	"L"
293	20 10 Wto	3 00	4 00	rk12dl	"L"
294	21 10 Sro	0 00	1 00	rk12dm	"C"
294	21 10 Sro	3 00	4 00	rk12dn	"C"
294	21 10 Sro	7 00	8 00	rk12do	"C"
295	22 10 Czw	4 00	4 50	rk12dp	"C"
295	22 10 Czw	21 00	21 50	rk12dr	"C"
297	24 10 Sob	21 00	22 00	rk12ds	"L"
299	26 10 Pon	7 00	8 00	rk12dt	"C"
299	26 10 Pon	12 00	13 00	rk12du	"C"
299	26 10 Pon	21 00	21 40	rk12dv	"C"
300	27 10 Wto	0 20	1 00	rk12dw	"C"
300	27 10 Wto	3 00	4 00	rk12dx	"K"
302	29 10 Czw	16 00	17 00	rk12dz	"C"
302	29 10 Czw	20 00	20 50	rk12ea	"C"

302	29	10	Czw	23	10	24	00	rk12eb	"C>L	"		
303	30	10	Pia	21	00	22	00	rk12ec	"L	"		
304	31	10	Sob	18	00	18	55	rk12ed	"C	"		
279	06	10	Wto	9	00	113	00	eVLBI	"	"		
288	15	10	Czw	11	30	14	30	n15l3	"L"	1-	EVN6	0.69
289	16	10	Pia	6	30	7	30	ea057a	"L"	2-	EVN4	0.46
289	16	10	Pia	9	00	18	00	eg089a	"L"	3-	EVN1	1.04
289	16	10	Pia	19	00	24	00	ey023	"L"			
290	17	10	Sob	0	00	3	00	ey023	"L"	4-	EVN5	3.69
290	17	10	Sob	8	00	16	00	eh032a	"L"	5R	EVN6	1.84
290	17	10	Sob	17	00	24	00	ea055b	"L"			
291	18	10	Nie	0	00	5	00	ea055b	"L"	6-	EVN1	5.53
291	18	10	Nie	11	00	15	00	cl15l3	"L"	7-	---0	0.00
291	18	10	Nie	16	00	18	00	rsf08	"L"	8-	EVN4	0.92
291	18	10	Nie	23	00	24	00	ek036a	"L"			
292	19	10	Pon	0	00	3	00	ek036a	"L"	9-	EVN9	1.84
292	19	10	Pon	17	30	22	30	eh028d	"L"	10-	EVN9	0.29
293	20	10	Wto	11	00	12	00	f15m1	"M"	11	EVN	0.23
293	20	10	Wto	13	00	20	00	es072n	"M"	12	EVNs	0.10
294	21	10	Sro	9	00	12	00	n15m2	"M"	13	EVN	0.17
294	21	10	Sro	13	00	20	00	es072o	"M"	14	EVNs	0.10
295	22	10	Czw	8	00	12	00	cl15m3	"M"	15	---	0.00
295	22	10	Czw	13	00	20	00	es072p	"M"	16	EVNs	0.10
296	23	10	Pia	13	30	21	30	eg073b	"M"	17	EVN	0.46
300	27	10	Wto	12	00	15	00	n15c3	"C"	18	EVN	0.69
300	27	10	Wto	19	30	24	00	ew017a	"C"			
301	28	10	Sro	0	00	13	30	ew017a	"C"	19	EVN	8.29
301	28	10	Sro	15	00	19	00	cl15c3	"C"	20	---	0.00
302	29	10	Czw	7	00	15	00	eh032b	"C"	21	EVN	3.67
303	30	10	Pia	2	00	20	00	ew017b	"C"	22	EVN	8.29
303	30	10	Pia	22	30	24	00	gm073a	"C"			
304	31	10	Sob	0	00	11	30	gm073a	"C"	23	EVN	11.98
305	1	11	Nie	1	30	21	30	er038	"C"	24	EVN	9.22

Total observing time: 258.1 hours in 65 experiments

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

<http://paulo.astro.uni.torun.pl/~pw/VLBI/schedules/oct15.pdf>

rk12cktr

RADIOASTRON AGN SURVEY
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: L-band, dual-pol

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN Survey

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

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 1 Oct 2015 Day 274 ---

----- 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

02 00 00	0356+322	03 52 14	69.2	174.9	-0.1	-3.6	0	0	02 00 00
02 12 00	---	04 04 16	69.3	182.1	0.1	1.5	720	23	02 00 01
02 12 30	0356+322	04 04 46	69.3	182.4	0.1	1.7	23	23	02 12 30
02 24 30	---	04 16 48	69.1	189.5	0.3	6.8	720	46	02 12 31
02 25 00	0356+322	04 17 18	69.1	189.8	0.3	7.0	23	46	02 25 00
02 37 00	---	04 29 20	68.7	196.8	0.5	11.8	720	69	02 25 01
02 37 30	0356+322	04 29 50	68.6	197.1	0.5	12.0	23	69	02 37 30
02 50 00	---	04 42 22	68.0	204.0	0.7	16.8	750	93	02 37 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: 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=    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:  2  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:  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 27.450174	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 42.40321	0.00
	fake circumpolar target for a TS to look at			
* 0356+322	03 56 34.795463	* 03 59 44.912919	04 00 45.968211	0.00
J0359+3220	32 12 19.24958	* 32 20 47.15555	32 23 15.92181	0.00
	./rk12ck_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 88 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)
0356+322	122.2

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 $60 \deg F^{-0.6}$ 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

rk12cmtr

RADIOASTRON AGN SURVEY PI: Yuri Kovalev

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

Observing mode: K-band, dual-pol

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN Survey

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

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 1 Oct 2015 Day 274 ---

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

Next scan frequencies:	22236.00	22236.00	22236.00	22236.00				
Next BBC frequencies:	736.00	736.00	736.00	736.00				
Next scan bandwidths:	16.00	16.00	16.00	16.00				
10 00 00	0415+379	11 53 33	17.7 -49.3	7.6	35.3	0	0	10 00 00
10 14 30	---	12 08 05	16.1 -46.8	7.8	33.8	870	28	10 00 01
10 15 00	0415+379	12 08 35	16.0 -46.7	7.8	33.7	24	28	10 15 00
10 29 30	---	12 23 08	14.5 -44.2	8.1	32.1	870	56	10 15 01
10 30 00	0415+379	12 23 38	14.4 -44.1	8.1	32.1	24	56	10 30 00
10 44 30	---	12 38 10	12.9 -41.6	8.3	30.4	870	84	10 30 01
10 45 00	0415+379	12 38 40	12.9 -41.5	8.3	30.4	24	84	10 45 00
11 00 00	---	12 53 43	11.4 -38.9	8.6	28.6	900	112	10 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 ./rk12cm_freq.dat:

tr1cm

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=  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:  2  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:  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 27.451464	0.00
	85 16 41.77889	* 85 00 00.00000	84 54 42.27158	0.00
	fake circumpolar target for a TS to look at			
* 0415+379	04 15 00.610264	* 04 18 21.277237	04 19 25.647716	0.00
J0418+3801	37 54 19.28073	* 38 01 35.80020	38 03 39.34312	0.00
	./rk12cm_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 200 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)
0415+379	117.1

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 $60 \deg F^{-0.6}$ 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

rk12cntr

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

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

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

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN Survey

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

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 2 Oct 2015 Day 275 ---

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

Next scan frequencies:	22236.00	22236.00	22236.00	22236.00						
Next BBC frequencies:	736.00	736.00	736.00	736.00						
Next scan bandwidths:	16.00	16.00	16.00	16.00						
04 00 00	0415+379	05 56 30	67.5	237.8	1.6		40.2	0	0	04 00 00
04 14 30	---	06 11 02	65.6	243.2	1.9		42.9	870	28	04 00 01
04 15 00	0415+379	06 11 33	65.5	243.4	1.9		43.0	24	28	04 15 00
04 29 30	---	06 26 05	63.6	248.2	2.1		45.1	870	56	04 15 01
04 30 00	0415+379	06 26 35	63.5	248.3	2.1		45.1	24	56	04 30 00
04 44 30	---	06 41 07	61.4	252.6	2.4		46.7	870	84	04 30 01
04 45 00	0415+379	06 41 37	61.4	252.8	2.4		46.8	24	84	04 45 00
05 00 00	---	06 56 40	59.2	256.8	2.6		47.9	900	112	04 45 01

SETUP FILE INFORMATION:

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

===== Setup file: ra1cm2.set

Matching groups in ./rk12cn_freq.dat:

tr1cm

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

Disk used to record data.

```

1st LO= 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: 3 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: 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 27.459727	0.00
	85 16 41.77889	* 85 00 00.00000	84 54 41.97050	0.00
	fake circumpolar target for a TS to look at			
* 0415+379	04 15 00.610264	* 04 18 21.277237	04 19 25.675269	0.00
J0418+3801	37 54 19.28073	* 38 01 35.80020	38 03 39.40822	0.00
	./rk12cn_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 200 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)
0415+379	117.8

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 $60 \deg F^{-0.6}$ 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

rk12cotr

RADIOASTRON AGN SURVEY PI: Yuri Kovalev

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

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

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN Survey

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

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 2 Oct 2015 Day 275 ---

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

Next scan frequencies: 22236.00 22236.00 22236.00 22236.00

Next BBC frequencies: 736.00 736.00 736.00 736.00

Next scan bandwidths: 16.00 16.00 16.00 16.00

10 00 00	0415+379	11 57 29	17.3	-48.6	7.6		34.9	0	0	10 00 00
10 14 30	---	12 12 02	15.7	-46.1	7.9		33.4	870	28	10 00 01
10 15 00	0415+379	12 12 32	15.6	-46.1	7.9		33.3	24	28	10 15 00
10 25 00	---	12 22 33	14.5	-44.3	8.1		32.2	600	47	10 15 01

----- 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

10 30 00	0415+379	12 27 34	14.0	-43.5	8.1		31.6	294	47	10 30 00
10 44 30	---	12 42 07	12.5	-40.9	8.4		30.0	870	75	10 30 01
10 45 00	0415+379	12 42 37	12.5	-40.9	8.4		29.9	24	75	10 45 00
11 00 00	---	12 57 39	11.1	-38.2	8.6		28.1	900	104	10 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 ./rk12co_freq.dat:

tr1cm

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=  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:   3  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:   3

```

```

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

```

===== Setup file: ra6cm2.set

```

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

```

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

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

```

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)			Error
	(B1950)	(J2000)	(Date)	(mas)
* 0415+379	04 15 00.610264	* 04 18 21.277237	04 19 25.684329	0.00
J0418+3801	37 54 19.28073	* 38 01 35.80020	38 03 39.43115	0.00

rk12cptr

RADIOASTRON AGN SURVEY

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 Survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
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 3 Oct 2015 Day 276 ---

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

Next scan frequencies:	4836.00	4836.00	4836.00	4836.00					
Next BBC frequencies:	736.00	736.00	736.00	736.00					
Next scan bandwidths:	16.00	16.00	16.00	16.00					
09 00 00	0507+179	11 01 16	15.8	279.2	5.8	38.6	0	0	09 00 00
09 14 30	---	11 15 48	13.6	282.0	6.1	38.1	870	28	09 00 01
09 15 00	0507+179	11 16 18	13.5	282.1	6.1	38.1	24	28	09 15 00
09 29 30	---	11 30 51	11.4	284.9	6.3	37.6	870	56	09 15 01
09 30 00	0507+179	11 31 21	11.3	285.0	6.3	37.6	24	56	09 30 00
09 44 30	---	11 45 53	9.3	287.8	6.6	37.0	870	84	09 30 01
09 45 00	0507+179	11 46 23	9.2	287.9	6.6	36.9	24	84	09 45 00
10 00 00	---	12 01 26	7.1	290.8	6.8	36.2	900	112	09 45 01

SETUP FILE INFORMATION:

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

===== Setup file: ra6cm2.set

Setup group: 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 27.491657	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 41.47766	0.00
	fake circumpolar target for a TS to look at			
* 0507+179	05 07 07.486545	* 05 10 02.369131	05 10 58.037256	0.00
J0510+1800	17 56 58.64618	* 18 00 41.58163	18 01 42.84459	0.00
	./rk12cp_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 1679 observations, RA-A03-04, RA			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0507+179	111.5

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 $60 \deg F^{-0.6}$ 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

rk12cqtr

RADIOASTRON AGN SURVEY

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 Survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
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 4 Oct 2015 Day 277 ---

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

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

09 00 00	0507+179	11 05 12	15.2	279.9	5.9	38.5	0	0	09 00 00
09 14 30	---	11 19 45	13.0	282.7	6.1	38.0	870	28	09 00 01
09 15 00	0507+179	11 20 15	13.0	282.8	6.2	38.0	24	28	09 15 00
09 29 30	---	11 34 47	10.8	285.6	6.4	37.5	870	56	09 15 01
09 30 00	0507+179	11 35 17	10.8	285.7	6.4	37.4	24	56	09 30 00
09 44 30	---	11 49 50	8.7	288.5	6.6	36.8	870	84	09 30 01
09 45 00	0507+179	11 50 20	8.6	288.6	6.7	36.8	24	84	09 45 00
10 00 00	---	12 05 22	6.5	291.5	6.9	36.0	900	112	09 45 01

SETUP FILE INFORMATION:

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

===== Setup file: ra6cm2.set

Setup group: 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 27.536646	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 41.06406	0.00
	fake circumpolar target for a TS to look at			
* 0507+179	05 07 07.486545	* 05 10 02.369131	05 10 58.071780	0.00
J0510+1800	17 56 58.64618	* 18 00 41.58163	18 01 42.86642	0.00
	./rk12cq_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 1679 observations, RA-A03-04, RA			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0507+179	112.4

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of $60 \deg F^{-0.6}$ 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

em118btr

E-EVN: EM118B, EC054B, EG082F

PI: *Mao, Cao, Gawronski*

Address: JIVE Phone:+31 521 596 536 EMAIL: zparagi@jive.eu Phone during obs: +31 521 596 530
Observing mode: realtime e-vlbi

Schedule for TORUN (Code Tr)

Page 2

e-EVN: em118b, ec054b, eg082f

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

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 6 Oct 2015 Day 279 ---										
Next scan frequencies:		4942.49	4942.49	4942.49	4942.49	4974.49	4974.49	4974.49	4974.49	4974.49
		5006.49	5006.49	5006.49	5006.49	5038.49	5038.49	5038.49	5038.49	5038.49
Next BBC frequencies:		742.49	742.49	742.49	742.49	774.49	774.49	774.49	774.49	774.49
		806.49	806.49	806.49	806.49	838.49	838.49	838.49	838.49	838.49
Next scan bandwidths:		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00

09 00 00	0Q208	11 13 06	49.7	110.2	-2.9		-39.8	0	0	09 00 00
09 14 20	---	11 27 28	51.7	114.1	-2.7		-38.5	860	110	09 00 01
09 15 00	0Q208	11 28 08	51.8	114.3	-2.7		-38.5	34	110	09 15 00
09 29 20	---	11 42 30	53.7	118.4	-2.4		-36.9	860	221	09 15 01
09 30 00	0Q208	11 43 11	53.8	118.6	-2.4		-36.8	34	221	09 30 00
09 44 20	---	11 57 33	55.6	123.0	-2.2		-34.9	860	331	09 30 01
09 45 00	0Q208	11 58 13	55.7	123.2	-2.2		-34.8	34	331	09 45 00
09 59 20	---	12 12 35	57.5	128.0	-1.9		-32.5	860	441	09 45 01
10 00 00	0Q208	12 13 15	57.6	128.3	-1.9		-32.4	34	441	10 00 00
10 14 20	---	12 27 38	59.2	133.4	-1.7		-29.7	860	551	10 00 01
10 15 00	0Q208	12 28 18	59.3	133.7	-1.7		-29.6	34	551	10 15 00
10 29 20	---	12 42 40	60.7	139.3	-1.4		-26.5	860	662	10 15 01
10 30 00	0Q208	12 43 20	60.8	139.5	-1.4		-26.3	33	662	10 30 00
10 44 20	---	12 57 43	62.1	145.6	-1.2		-22.7	860	772	10 30 01
10 45 00	0Q208	12 58 23	62.2	145.8	-1.2		-22.5	33	772	10 45 00
10 59 20	---	13 12 45	63.3	152.3	-0.9		-18.5	860	882	10 45 01
11 02 20	3C345	13 15 46	52.8	89.5	-3.5		-51.4	39	882	11 02 20
11 14 20	---	13 27 48	54.6	91.9	-3.3		-51.4	720	974	11 02 21
11 15 00	3C345	13 28 28	54.7	92.1	-3.3		-51.3	34	974	11 15 00
11 29 20	---	13 42 50	56.8	95.1	-3.0		-51.1	860	1085	11 15 01
11 30 00	3C345	13 43 30	56.9	95.3	-3.0		-51.1	34	1085	11 30 00
11 44 20	---	13 57 53	59.1	98.6	-2.8		-50.6	860	1195	11 30 01
11 45 00	3C345	13 58 33	59.2	98.7	-2.7		-50.6	34	1195	11 45 00
11 59 20	---	14 12 55	61.3	102.3	-2.5		-49.8	860	1305	11 45 01
12 00 00	3C345	14 13 35	61.4	102.5	-2.5		-49.7	34	1305	12 00 00
12 14 20	---	14 27 58	63.5	106.4	-2.3		-48.6	860	1415	12 00 01

Schedule for TORUN (Code Tr)

Page 3

e-EVN: em118b, ec054b, eg082f

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

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	6 Oct 2015	Day 279	---							
12 15 00	3C345	14 28 38	63.6	106.6	-2.2		-48.5	34	1415	12 15 00
12 29 20	---	14 43 00	65.6	110.9	-2.0		-46.9	860	1526	12 15 01
12 30 00	3C345	14 43 40	65.7	111.1	-2.0		-46.8	34	1526	12 30 00
12 44 20	---	14 58 02	67.7	116.0	-1.8		-44.6	860	1636	12 30 01
12 45 00	3C345	14 58 43	67.8	116.2	-1.7		-44.5	34	1636	12 45 00
12 59 20	---	15 13 05	69.7	121.8	-1.5		-41.6	860	1746	12 45 01
13 01 20	J1642+2523	15 15 05	57.7	140.6	-1.5		-25.0	61	1746	13 01 20
13 04 20	=1640+254	15 18 06	58.0	141.7	-1.4		-24.3	180	1769	13 01 21
13 04 20	J1649+2635	15 18 06	58.4	138.2	-1.5		-26.6	-22	1769	No stop
13 07 50	---	15 21 36	58.8	139.5	-1.5		-25.8	188	1796	13 04 21
13 07 50	J1642+2523	15 21 36	58.3	143.1	-1.4		-23.5	-22	1796	No stop
13 09 20	=1640+254	15 23 07	58.5	143.7	-1.3		-23.2	68	1808	13 07 51
13 09 20	J1649+2635	15 23 07	58.9	140.1	-1.4		-25.5	-22	1808	No stop
13 12 50	---	15 26 37	59.3	141.5	-1.4		-24.7	188	1835	13 09 21
13 13 30	J1642+2523	15 27 17	58.8	145.4	-1.3		-22.2	18	1835	13 13 30
13 14 20	=1640+254	15 28 07	58.9	145.7	-1.3		-22.0	50	1841	13 13 31
13 14 20	J1649+2635	15 28 07	59.4	142.1	-1.4		-24.4	-22	1841	No stop
13 17 50	---	15 31 38	59.7	143.5	-1.3		-23.5	188	1868	13 14 21
13 17 50	J1642+2523	15 31 38	59.2	147.1	-1.2		-21.1	-22	1868	No stop
13 19 20	=1640+254	15 33 08	59.3	147.8	-1.2		-20.8	68	1879	13 17 51
13 19 20	J1649+2635	15 33 08	59.9	144.1	-1.3		-23.2	-22	1879	No stop
13 22 50	---	15 36 39	60.2	145.5	-1.2		-22.3	188	1906	13 19 21
13 23 30	J1642+2523	15 37 19	59.6	149.5	-1.1		-19.7	18	1906	13 23 30
13 24 20	=1640+254	15 38 09	59.7	149.8	-1.1		-19.5	50	1913	13 23 31
13 24 20	J1649+2635	15 38 09	60.3	146.2	-1.2		-21.9	-22	1913	No stop
13 27 50	---	15 41 40	60.6	147.7	-1.1		-21.1	188	1940	13 24 21
13 27 50	J1642+2523	15 41 40	60.0	151.3	-1.0		-18.6	-22	1940	No stop
13 29 20	=1640+254	15 43 10	60.1	152.0	-1.0		-18.2	68	1951	13 27 51
13 29 20	J1649+2635	15 43 10	60.7	148.3	-1.1		-20.7	-22	1951	No stop
13 32 50	---	15 46 40	61.0	149.8	-1.1		-19.7	188	1978	13 29 21

Schedule for TORUN (Code Tr)

Page 4

e-EVN: em118b, ec054b, eg082f

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

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	6 Oct 2015	Day 279 ---								
13 33 30	J1642+2523	15 47 21	60.3	153.8	-0.9		-17.1	18	1978	13 33 30
13 34 20	=1640+254	15 48 11	60.4	154.2	-0.9		-16.8	50	1985	13 33 31
13 34 20	J1649+2635	15 48 11	61.1	150.5	-1.0		-19.3	-22	1985	No stop
13 37 50	---	15 51 41	61.3	152.0	-1.0		-18.4	188	2012	13 34 21
13 37 50	J1642+2523	15 51 41	60.6	155.7	-0.9		-15.9	-23	2012	No stop
13 39 20	=1640+254	15 53 11	60.7	156.4	-0.8		-15.4	67	2023	13 37 51
13 39 20	J1649+2635	15 53 11	61.4	152.7	-0.9		-18.0	-22	2023	No stop
13 42 50	---	15 56 42	61.7	154.2	-0.9		-17.0	188	2050	13 39 21
13 43 30	J1642+2523	15 57 22	61.0	158.2	-0.8		-14.3	17	2050	13 43 30
13 44 20	=1640+254	15 58 12	61.0	158.6	-0.8		-14.0	50	2056	13 43 31
13 44 20	J1649+2635	15 58 12	61.8	154.9	-0.9		-16.5	-22	2056	No stop
13 47 50	---	16 01 43	62.0	156.5	-0.8		-15.5	188	2083	13 44 21
13 47 50	J1642+2523	16 01 43	61.2	160.2	-0.7		-13.0	-23	2083	No stop
13 49 20	=1640+254	16 03 13	61.3	160.9	-0.7		-12.6	67	2095	13 47 51
13 49 20	J1649+2635	16 03 13	62.1	157.2	-0.8		-15.1	-22	2095	No stop
13 52 50	---	16 06 44	62.3	158.8	-0.7		-14.0	188	2122	13 49 21
13 53 30	J1642+2523	16 07 24	61.5	162.8	-0.6		-11.3	18	2122	13 53 30
13 54 20	=1640+254	16 08 14	61.5	163.2	-0.6		-11.1	50	2128	13 53 31
13 56 20	NRA0512	16 10 14	75.7	155.4	-0.5		-18.9	53	2128	13 56 20
14 02 20	---	16 16 15	76.0	160.0	-0.4		-15.5	360	2174	13 56 21
14 04 20	J1642+2523	16 18 16	61.9	167.9	-0.4		-8.0	53	2174	14 04 20
14 07 20	=1640+254	16 21 16	62.0	169.4	-0.4		-7.0	180	2197	14 04 21
14 07 20	J1649+2635	16 21 16	62.9	165.8	-0.5		-9.5	-22	2197	No stop
14 10 50	---	16 24 47	63.1	167.5	-0.4		-8.4	188	2224	14 07 21
14 10 50	J1642+2523	16 24 47	62.0	171.0	-0.3		-5.9	-22	2224	No stop
14 12 20	=1640+254	16 26 17	62.1	171.8	-0.3		-5.5	68	2236	14 10 51
14 12 20	J1649+2635	16 26 17	63.1	168.2	-0.4		-7.9	-22	2236	No stop
14 15 50	---	16 29 47	63.2	169.9	-0.3		-6.7	188	2263	14 12 21
14 16 40	J1642+2523	16 30 38	62.2	173.9	-0.2		-4.1	28	2263	14 16 40
14 17 30	=1640+254	16 31 28	62.2	174.3	-0.2		-3.8	50	2269	14 16 41

Schedule for TORUN (Code Tr)

Page 5

e-EVN: em118b, ec054b, eg082f

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

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	6 Oct 2015	Day 279	---							
14 17 30	J1649+2635	16 31 28	63.2	170.7	-0.3		-6.2	-21	2269	No stop
14 21 00	---	16 34 58	63.3	172.5	-0.3		-5.0	189	2296	14 17 31
14 21 00	J1642+2523	16 34 58	62.2	176.0	-0.1		-2.7	-22	2296	No stop
14 22 30	=1640+254	16 36 29	62.2	176.7	-0.1		-2.2	68	2308	14 21 01
14 22 30	J1649+2635	16 36 29	63.3	173.2	-0.2		-4.5	-21	2308	No stop
14 26 00	---	16 39 59	63.4	175.0	-0.2		-3.4	189	2335	14 22 31
14 26 50	J1642+2523	16 40 49	62.3	178.8	-0.0		-0.8	28	2335	14 26 50
14 27 40	=1640+254	16 41 39	62.3	179.2	-0.0		-0.5	50	2341	14 26 51
14 27 40	J1649+2635	16 41 39	63.4	175.8	-0.1		-2.8	-21	2341	No stop
14 31 10	---	16 45 10	63.5	177.6	-0.1		-1.6	189	2368	14 27 41
14 31 10	J1642+2523	16 45 10	62.3	180.9	0.0		0.6	-22	2368	No stop
14 32 40	=1640+254	16 46 40	62.3	181.6	0.1		1.1	68	2379	14 31 11
14 32 40	J1649+2635	16 46 40	63.5	178.3	-0.1		-1.1	-21	2379	No stop
14 36 10	---	16 50 11	63.5	180.1	0.0		0.1	189	2406	14 32 41
14 37 00	J1642+2523	16 51 01	62.2	183.7	0.1		2.5	29	2406	14 37 00
14 37 50	=1640+254	16 51 51	62.2	184.1	0.1		2.8	50	2413	14 37 01
14 37 50	J1649+2635	16 51 51	63.5	180.9	0.0		0.6	-21	2413	No stop
14 41 20	---	16 55 22	63.4	182.7	0.1		1.8	189	2440	14 37 51
14 41 20	J1642+2523	16 55 22	62.2	185.8	0.2		3.9	-21	2440	No stop
14 42 50	=1640+254	16 56 52	62.2	186.6	0.2		4.4	69	2451	14 41 21
14 42 50	J1649+2635	16 56 52	63.4	183.4	0.1		2.3	-21	2451	No stop
14 46 20	---	17 00 23	63.4	185.2	0.2		3.5	189	2478	14 42 51
14 47 10	J1642+2523	17 01 13	62.1	188.7	0.3		5.7	29	2478	14 47 10
14 48 00	=1640+254	17 02 03	62.0	189.1	0.3		6.0	50	2485	14 47 11
14 48 00	J1649+2635	17 02 03	63.4	186.0	0.2		4.0	-20	2485	No stop
14 51 30	---	17 05 33	63.3	187.7	0.3		5.2	190	2512	14 48 01
14 51 30	J1642+2523	17 05 33	62.0	190.7	0.4		7.1	-21	2512	No stop
14 53 00	=1640+254	17 07 04	61.9	191.5	0.4		7.6	69	2523	14 51 31
14 53 00	J1649+2635	17 07 04	63.3	188.5	0.3		5.7	-20	2523	No stop
14 56 30	---	17 10 34	63.2	190.2	0.3		6.8	190	2550	14 53 01

Schedule for TORUN (Code Tr)

Page 6

e-EVN: em118b, ec054b, eg082f

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

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	TPStart SYNC

--- Tue	6 Oct 2015	Day 279 ---								
14 57 20	J1642+2523	17 11 24	61.8	193.5	0.5		8.9	29	2550	14 57 20
14 58 10	=1640+254	17 12 14	61.7	193.9	0.5		9.2	50	2556	14 57 21
14 58 10	J1649+2635	17 12 14	63.1	191.0	0.4		7.4	-20	2556	No stop
15 01 40	---	17 15 45	63.0	192.8	0.4		8.5	190	2583	14 58 11
15 01 40	J1642+2523	17 15 45	61.6	195.6	0.5		10.3	-20	2583	No stop
15 03 10	=1640+254	17 17 15	61.5	196.3	0.6		10.7	70	2595	15 01 41
15 03 10	J1649+2635	17 17 15	63.0	193.5	0.5		9.0	-20	2595	No stop
15 06 40	---	17 20 46	62.9	195.2	0.5		10.1	190	2622	15 03 11
15 07 30	J1642+2523	17 21 36	61.4	198.3	0.6		12.0	30	2622	15 07 30
15 08 20	=1640+254	17 22 26	61.3	198.7	0.7		12.3	50	2628	15 07 31
15 08 20	J1649+2635	17 22 26	62.8	196.0	0.5		10.7	-19	2628	No stop
15 11 50	---	17 25 57	62.6	197.7	0.6		11.8	191	2655	15 08 21
15 11 50	J1642+2523	17 25 57	61.1	200.3	0.7		13.3	-20	2655	No stop
15 13 20	=1640+254	17 27 27	61.1	200.9	0.7		13.7	70	2667	15 11 51
15 13 20	J1649+2635	17 27 27	62.6	198.4	0.6		12.2	-19	2667	No stop
15 16 50	---	17 30 58	62.4	200.1	0.7		13.3	191	2694	15 13 21
15 17 40	J1642+2523	17 31 48	60.8	202.9	0.8		15.0	31	2694	15 17 40
15 18 30	=1640+254	17 32 38	60.8	203.3	0.8		15.2	50	2700	15 17 41
15 18 30	J1649+2635	17 32 38	62.3	200.8	0.7		13.8	-19	2700	No stop
15 22 00	---	17 36 08	62.1	202.5	0.8		14.9	191	2727	15 18 31
15 22 00	J1642+2523	17 36 08	60.5	204.8	0.9		16.2	-20	2727	No stop
15 23 30	=1640+254	17 37 39	60.5	205.5	0.9		16.6	70	2738	15 22 01
15 23 30	J1649+2635	17 37 39	62.0	203.2	0.8		15.3	-19	2738	No stop
15 27 00	---	17 41 09	61.8	204.8	0.9		16.3	191	2765	15 23 31
15 27 50	J1642+2523	17 41 59	60.2	207.4	1.0		17.8	30	2765	15 27 50
15 28 40	=1640+254	17 42 49	60.1	207.7	1.0		18.0	50	2772	15 27 51
15 28 40	J1649+2635	17 42 49	61.7	205.5	0.9		16.8	-20	2772	No stop
15 32 10	---	17 46 20	61.5	207.1	0.9		17.8	190	2799	15 28 41
15 32 10	J1642+2523	17 46 20	59.9	209.2	1.1		18.9	-20	2799	No stop
15 33 40	=1640+254	17 47 50	59.7	209.9	1.1		19.3	70	2810	15 32 11

Schedule for TORUN (Code Tr)

Page 7

e-EVN: em118b, ec054b, eg082f

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

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	6 Oct 2015	Day 279	---							
15 33 40	J1649+2635	17 47 50	61.4	207.8	1.0		18.2	-20	2810	No stop
15 37 10	---	17 51 21	61.1	209.3	1.0		19.2	190	2837	15 33 41
15 38 00	J1642+2523	17 52 11	59.4	211.7	1.1		20.4	30	2837	15 38 00
15 38 50	=1640+254	17 53 01	59.3	212.1	1.2		20.7	50	2844	15 38 01
15 38 50	J1649+2635	17 53 01	61.0	210.0	1.0		19.6	-20	2844	No stop
15 42 20	---	17 56 32	60.7	211.6	1.1		20.6	190	2871	15 38 51
15 42 20	J1642+2523	17 56 32	59.1	213.5	1.2		21.5	-20	2871	No stop
15 43 50	=1640+254	17 58 02	58.9	214.1	1.2		21.9	70	2882	15 42 21
15 43 50	J1649+2635	17 58 02	60.6	212.2	1.1		21.0	-20	2882	No stop
15 47 20	---	18 01 33	60.3	213.7	1.2		21.9	190	2909	15 43 51
15 48 10	J1642+2523	18 02 23	58.6	215.9	1.3		22.9	30	2909	15 48 10
15 49 00	=1640+254	18 03 13	58.5	216.2	1.3		23.1	50	2915	15 48 11
15 49 00	J1649+2635	18 03 13	60.2	214.4	1.2		22.3	-20	2915	No stop
15 52 30	---	18 06 43	59.9	215.8	1.3		23.1	190	2942	15 49 01
15 52 30	J1642+2523	18 06 43	58.2	217.6	1.4		23.9	-20	2942	No stop
15 54 00	=1640+254	18 08 14	58.0	218.2	1.4		24.2	70	2954	15 52 31
15 54 00	J1649+2635	18 08 14	59.7	216.4	1.3		23.5	-20	2954	No stop
15 57 30	---	18 11 44	59.4	217.9	1.4		24.3	190	2981	15 54 01
15 58 20	J1642+2523	18 12 34	57.6	219.8	1.5		25.2	30	2981	15 58 20
15 59 10	=1640+254	18 13 24	57.5	220.2	1.5		25.4	50	2987	15 58 21
15 59 10	J1649+2635	18 13 24	59.3	218.5	1.4		24.7	-20	2987	No stop
16 02 40	---	18 16 55	58.9	219.9	1.4		25.5	190	3014	15 59 11
16 02 40	J1642+2523	18 16 55	57.2	221.5	1.6		26.1	-20	3014	No stop
16 04 10	=1640+254	18 18 25	57.0	222.0	1.6		26.4	70	3026	16 02 41
16 04 10	J1649+2635	18 18 25	58.8	220.5	1.5		25.8	-20	3026	No stop
16 07 40	---	18 21 56	58.4	221.8	1.5		26.6	190	3053	16 04 11
16 08 30	J1642+2523	18 22 46	56.6	223.6	1.7		27.3	30	3053	16 08 30
16 09 20	=1640+254	18 23 36	56.5	223.9	1.7		27.5	50	3059	16 08 31
16 09 20	J1649+2635	18 23 36	58.3	222.5	1.6		27.0	-20	3059	No stop
16 12 50	---	18 27 07	57.9	223.8	1.6		27.7	190	3086	16 09 21

Schedule for TORUN (Code Tr)

Page 8

e-EVN: em118b, ec054b, eg082f

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

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	6 Oct 2015	Day 279	---							
16 12 50	J1642+2523	18 27 07	56.1	225.2	1.7		28.1	-20	3086	No stop
16 14 20	=1640+254	18 28 37	56.0	225.7	1.8		28.4	70	3097	16 12 51
16 14 20	J1649+2635	18 28 37	57.8	224.4	1.6		28.0	-20	3097	No stop
16 17 50	---	18 32 08	57.4	225.6	1.7		28.7	190	3124	16 14 21
16 18 40	J1642+2523	18 32 58	55.5	227.3	1.8		29.2	29	3124	16 18 40
16 19 30	=1640+254	18 33 48	55.4	227.6	1.8		29.4	50	3131	16 18 41
16 19 30	J1649+2635	18 33 48	57.2	226.2	1.7		29.0	-20	3131	No stop
16 23 00	---	18 37 18	56.8	227.5	1.8		29.7	190	3158	16 19 31
16 23 00	J1642+2523	18 37 18	55.0	228.8	1.9		30.0	-21	3158	No stop
16 24 30	=1640+254	18 38 49	54.9	229.3	1.9		30.2	69	3169	16 23 01
16 24 30	J1649+2635	18 38 49	56.6	228.0	1.8		29.9	-20	3169	No stop
16 28 00	---	18 42 19	56.3	229.3	1.9		30.6	190	3196	16 24 31
16 28 50	J1642+2523	18 43 09	54.4	230.7	2.0		31.0	29	3196	16 28 50
16 29 40	=1640+254	18 43 59	54.3	231.0	2.0		31.1	50	3203	16 28 51
16 34 20	J2142-0437	18 48 40	21.7	132.2	-2.9		-26.5	67	3203	16 34 20
16 37 20	=2140-048	18 51 41	22.0	132.9	-2.9		-26.2	180	3226	16 34 21
16 37 20	J2134-0419	18 51 41	23.2	134.8	-2.7		-25.3	-18	3226	No stop
16 40 50	---	18 55 11	23.6	135.7	-2.7		-24.9	192	3253	16 37 21
16 40 50	J2142-0437	18 55 11	22.4	133.8	-2.8		-25.8	-17	3253	No stop
16 42 20	=2140-048	18 56 42	22.6	134.1	-2.8		-25.6	73	3264	16 40 51
16 42 20	J2134-0419	18 56 42	23.7	136.0	-2.6		-24.7	-18	3264	No stop
16 45 50	---	19 00 12	24.1	136.9	-2.6		-24.3	192	3291	16 42 21
16 46 30	J2142-0437	19 00 52	23.0	135.1	-2.7		-25.1	23	3291	16 46 30
16 47 20	=2140-048	19 01 42	23.1	135.3	-2.7		-25.0	50	3297	16 46 31
16 47 20	J2134-0419	19 01 42	24.2	137.3	-2.6		-24.1	-18	3297	No stop
16 50 50	---	19 05 13	24.6	138.2	-2.5		-23.7	192	3324	16 47 21
16 50 50	J2142-0437	19 05 13	23.5	136.2	-2.6		-24.6	-17	3324	No stop
16 52 20	=2140-048	19 06 43	23.6	136.6	-2.6		-24.5	73	3336	16 50 51
16 52 20	J2134-0419	19 06 43	24.7	138.5	-2.5		-23.5	-18	3336	No stop
16 55 50	---	19 10 14	25.1	139.4	-2.4		-23.1	192	3363	16 52 21

Schedule for TORUN (Code Tr)

Page 9

e-EVN: em118b, ec054b, eg082f

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

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	6 Oct 2015	Day 279	---							
16 56 30	J2142-0437	19 10 54	24.0	137.6	-2.5		-24.0	23	3363	16 56 30
16 57 20	=2140-048	19 11 44	24.1	137.8	-2.5		-23.9	50	3369	16 56 31
16 58 10	J2134-0419	19 12 34	25.3	140.0	-2.4		-22.8	32	3369	16 58 10
17 12 20	---	19 26 46	26.6	143.7	-2.1		-20.9	850	3478	16 58 11
17 13 10	J2134-0419	19 27 37	26.7	143.9	-2.1		-20.8	44	3478	17 13 10
17 27 20	---	19 41 49	27.9	147.6	-1.9		-18.8	850	3587	17 13 11
17 28 10	J2142-0437	19 42 39	27.0	145.8	-2.0		-19.8	32	3587	17 28 10
17 31 10	=2140-048	19 45 40	27.2	146.5	-2.0		-19.4	180	3610	17 28 11
17 31 10	J2134-0419	19 45 40	28.2	148.7	-1.8		-18.2	-18	3610	No stop
17 34 40	---	19 49 10	28.5	149.6	-1.8		-17.7	192	3637	17 31 11
17 34 40	J2142-0437	19 49 10	27.5	147.5	-1.9		-18.9	-18	3637	No stop
17 36 10	=2140-048	19 50 40	27.7	147.9	-1.9		-18.7	72	3649	17 34 41
17 36 10	J2134-0419	19 50 40	28.6	150.0	-1.7		-17.5	-18	3649	No stop
17 39 40	---	19 54 11	28.9	151.0	-1.7		-17.0	192	3676	17 36 11
17 40 20	J2142-0437	19 54 51	28.0	149.0	-1.8		-18.1	22	3676	17 40 20
17 41 10	=2140-048	19 55 41	28.0	149.2	-1.8		-18.0	50	3682	17 40 21
17 41 10	J2134-0419	19 55 41	29.0	151.4	-1.7		-16.8	-18	3682	No stop
17 44 40	---	19 59 12	29.2	152.4	-1.6		-16.2	192	3709	17 41 11
17 44 40	J2142-0437	19 59 12	28.3	150.2	-1.7		-17.4	-18	3709	No stop
17 46 10	=2140-048	20 00 42	28.4	150.6	-1.7		-17.2	72	3721	17 44 41
17 46 10	J2134-0419	20 00 42	29.3	152.8	-1.6		-16.0	-18	3721	No stop
17 49 40	---	20 04 13	29.6	153.7	-1.5		-15.5	192	3747	17 46 11
17 50 20	J2142-0437	20 04 53	28.7	151.7	-1.6		-16.6	22	3747	17 50 20
17 51 10	=2140-048	20 05 43	28.8	151.9	-1.6		-16.5	50	3754	17 50 21
17 52 00	J2134-0419	20 06 33	29.7	154.4	-1.5		-15.1	31	3754	17 52 00
18 06 10	---	20 20 45	30.6	158.4	-1.2		-12.8	850	3863	17 52 01
18 07 00	J2134-0419	20 21 35	30.6	158.6	-1.2		-12.7	44	3863	18 07 00
18 21 10	---	20 35 48	31.3	162.6	-1.0		-10.4	850	3972	18 07 01
18 22 00	J2134-0419	20 36 38	31.4	162.9	-1.0		-10.2	44	3972	18 22 00
18 36 10	---	20 50 50	31.9	167.0	-0.7		-7.8	850	4081	18 22 01

Schedule for TORUN (Code Tr)

Page 10

e-EVN: em118b, ec054b, eg082f

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

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	6 Oct 2015	Day 279	---							
18 37 00	J2142-0437	20 51 40	31.3	164.8	-0.9		-9.1	31	4081	18 37 00
18 40 00	=2140-048	20 54 41	31.4	165.7	-0.8		-8.5	180	4104	18 37 01
18 40 00	J2134-0419	20 54 41	32.0	168.1	-0.7		-7.1	-19	4104	No stop
18 43 30	---	20 58 11	32.1	169.1	-0.6		-6.5	191	4131	18 40 01
18 43 30	J2142-0437	20 58 11	31.6	166.7	-0.8		-7.9	-19	4131	No stop
18 45 00	=2140-048	20 59 42	31.6	167.2	-0.7		-7.7	71	4142	18 43 31
18 45 00	J2134-0419	20 59 42	32.2	169.6	-0.6		-6.3	-19	4142	No stop
18 48 30	---	21 03 12	32.3	170.6	-0.5		-5.6	191	4169	18 45 01
18 49 10	J2142-0437	21 03 52	31.7	168.4	-0.7		-7.0	21	4169	18 49 10
18 50 00	=2140-048	21 04 43	31.8	168.6	-0.6		-6.8	50	4176	18 49 11
18 50 00	J2134-0419	21 04 43	32.3	171.0	-0.5		-5.4	-19	4176	No stop
18 53 30	---	21 08 13	32.4	172.1	-0.4		-4.8	191	4203	18 50 01
18 53 30	J2142-0437	21 08 13	31.9	169.6	-0.6		-6.2	-19	4203	No stop
18 55 00	=2140-048	21 09 43	31.9	170.1	-0.6		-6.0	71	4214	18 53 31
18 55 00	J2134-0419	21 09 43	32.4	172.5	-0.4		-4.5	-19	4214	No stop
18 58 30	---	21 13 14	32.5	173.6	-0.4		-3.9	191	4241	18 55 01
18 59 10	J2142-0437	21 13 54	32.0	171.3	-0.5		-5.2	21	4241	18 59 10
19 00 00	=2140-048	21 14 44	32.0	171.6	-0.5		-5.1	50	4247	18 59 11
19 00 40	J2134-0419	21 15 24	32.5	174.2	-0.3		-3.5	21	4247	19 00 40
19 09 40	---	21 24 26	32.6	176.9	-0.2		-1.9	540	4317	19 00 41
19 10 20	J2134-0419	21 25 06	32.6	177.1	-0.2		-1.8	34	4317	19 10 20
19 19 20	---	21 34 07	32.7	179.7	-0.0		-0.2	540	4386	19 10 21
19 20 00	J2134-0419	21 34 47	32.7	179.9	-0.0		-0.0	34	4386	19 20 00
19 29 00	---	21 43 49	32.6	182.6	0.1		1.6	540	4455	19 20 01
19 35 20	J0147+5840	21 50 10	57.2	55.8	-4.0		-73.3	111	4455	19 35 20
19 38 20	=0144+584	21 53 10	57.6	56.0	-3.9		-73.8	180	4478	19 35 21
19 39 10	J0151+5454	21 54 01	56.0	62.3	-4.0		-67.9	23	4478	19 39 10
19 42 40	---	21 57 31	56.5	62.6	-3.9		-68.3	210	4505	19 39 11
19 43 20	J0147+5840	21 58 11	58.2	56.4	-3.8		-74.5	12	4505	19 43 20
19 44 20	=0144+584	21 59 11	58.4	56.4	-3.8		-74.7	60	4513	19 43 21

Schedule for TORUN (Code Tr)

Page 11

e-EVN: em118b, ec054b, eg082f

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

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	6 Oct 2015	Day 279	---							
19 44 20	V596CAS	21 59 11	56.9	55.9	-4.0		-72.6	-19	4513	No stop
19 47 50	---	22 02 42	57.3	56.2	-4.0		-73.2	191	4540	19 44 21
19 47 50	J0147+5840	22 02 42	58.8	56.7	-3.8		-75.3	-19	4540	No stop
19 49 20	=0144+584	22 04 12	59.0	56.7	-3.7		-75.5	71	4551	19 47 51
19 49 20	V596CAS	22 04 12	57.5	56.3	-3.9		-73.4	-19	4551	No stop
19 52 50	---	22 07 43	57.9	56.5	-3.9		-74.0	191	4578	19 49 21
19 53 30	J0147+5840	22 08 23	59.5	57.0	-3.7		-76.2	21	4578	19 53 30
19 54 30	=0144+584	22 09 23	59.6	57.1	-3.7		-76.3	60	4586	19 53 31
19 54 30	V596CAS	22 09 23	58.1	56.6	-3.9		-74.2	-19	4586	No stop
19 58 00	---	22 12 54	58.6	56.9	-3.8		-74.8	191	4613	19 54 31
19 58 00	J0147+5840	22 12 54	60.1	57.3	-3.6		-76.9	-19	4613	No stop
19 59 30	=0144+584	22 14 24	60.3	57.4	-3.6		-77.2	71	4624	19 58 01
19 59 30	V596CAS	22 14 24	58.8	57.0	-3.8		-75.0	-19	4624	No stop
20 03 00	---	22 17 55	59.2	57.2	-3.7		-75.6	191	4651	19 59 31
20 03 40	J0147+5840	22 18 35	60.8	57.6	-3.5		-77.8	21	4651	20 03 40
20 04 40	=0144+584	22 19 35	60.9	57.7	-3.5		-78.0	60	4659	20 03 41
20 04 40	V596CAS	22 19 35	59.4	57.3	-3.7		-75.8	-19	4659	No stop
20 08 10	---	22 23 05	59.9	57.5	-3.6		-76.4	191	4686	20 04 41
20 08 10	J0147+5840	22 23 05	61.4	57.9	-3.4		-78.6	-19	4686	No stop
20 09 40	=0144+584	22 24 36	61.6	57.9	-3.4		-78.8	71	4697	20 08 11
20 09 40	J0151+5454	22 24 36	60.1	65.1	-3.5		-71.7	-30	4697	No stop
20 13 10	---	22 28 06	60.6	65.5	-3.4		-72.2	180	4724	20 09 41
20 13 50	J0147+5840	22 28 46	62.1	58.1	-3.3		-79.5	10	4724	20 13 50
20 14 50	=0144+584	22 29 46	62.2	58.2	-3.3		-79.7	60	4732	20 13 51
20 14 50	V596CAS	22 29 46	60.7	57.9	-3.5		-77.5	-19	4732	No stop
20 18 20	---	22 33 17	61.2	58.1	-3.5		-78.1	191	4759	20 14 51
20 18 20	J0147+5840	22 33 17	62.7	58.4	-3.3		-80.3	-19	4759	No stop
20 19 50	=0144+584	22 34 47	62.9	58.4	-3.2		-80.6	71	4770	20 18 21
20 19 50	V596CAS	22 34 47	61.3	58.2	-3.4		-78.3	-19	4770	No stop
20 23 20	---	22 38 18	61.8	58.4	-3.4		-78.9	191	4797	20 19 51

Schedule for TORUN (Code Tr)

Page 12

e-EVN: em118b, ec054b, eg082f

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

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	6 Oct 2015	Day 279	---							
20 24 00	J0147+5840	22 38 58	63.4	58.6	-3.2		-81.3	21	4797	20 24 00
20 25 00	=0144+584	22 39 58	63.5	58.7	-3.1		-81.5	60	4805	20 24 01
20 25 00	V596CAS	22 39 58	62.0	58.5	-3.3		-79.2	-19	4805	No stop
20 28 30	---	22 43 29	62.5	58.6	-3.3		-79.8	191	4832	20 25 01
20 28 30	J0147+5840	22 43 29	64.0	58.8	-3.1		-82.1	-19	4832	No stop
20 30 00	=0144+584	22 44 59	64.2	58.9	-3.1		-82.4	71	4844	20 28 31
20 30 00	V596CAS	22 44 59	62.7	58.7	-3.3		-80.0	-19	4844	No stop
20 33 30	---	22 48 30	63.1	58.9	-3.2		-80.6	191	4870	20 30 01
20 34 10	J0147+5840	22 49 10	64.7	59.0	-3.0		-83.1	21	4870	20 34 10
20 35 10	=0144+584	22 50 10	64.8	59.1	-3.0		-83.3	60	4878	20 34 11
20 35 10	V596CAS	22 50 10	63.3	59.0	-3.2		-80.9	-19	4878	No stop
20 38 40	---	22 53 40	63.8	59.1	-3.1		-81.5	191	4905	20 35 11
20 38 40	J0147+5840	22 53 40	65.3	59.2	-2.9		-83.9	-19	4905	No stop
20 40 10	=0144+584	22 55 11	65.5	59.2	-2.9		-84.2	71	4917	20 38 41
20 40 10	J0151+5454	22 55 11	64.3	67.8	-3.0		-75.7	-32	4917	No stop
20 43 40	---	22 58 41	64.8	68.1	-2.9		-76.1	178	4944	20 40 11
20 44 20	J0147+5840	22 59 21	66.0	59.4	-2.8		-85.0	8	4944	20 44 20
20 45 20	=0144+584	23 00 21	66.2	59.4	-2.8		-85.2	60	4951	20 44 21
20 45 20	V596CAS	23 00 21	64.6	59.4	-3.0		-82.7	-19	4951	No stop
20 48 50	---	23 03 52	65.1	59.5	-2.9		-83.3	191	4978	20 45 21
20 48 50	J0147+5840	23 03 52	66.6	59.5	-2.8		-85.8	-19	4978	No stop
20 50 20	=0144+584	23 05 22	66.8	59.5	-2.7		-86.1	71	4990	20 48 51
20 50 20	V596CAS	23 05 22	65.3	59.6	-2.9		-83.6	-19	4990	No stop
20 53 50	---	23 08 53	65.7	59.7	-2.9		-84.2	191	5017	20 50 21
20 54 30	J0147+5840	23 09 33	67.3	59.6	-2.7		-86.9	21	5017	20 54 30
20 55 30	=0144+584	23 10 33	67.5	59.6	-2.6		-87.1	60	5024	20 54 31
20 55 30	V596CAS	23 10 33	66.0	59.7	-2.8		-84.5	-19	5024	No stop
20 59 00	---	23 14 04	66.4	59.9	-2.8		-85.2	191	5051	20 55 31
20 59 00	J0147+5840	23 14 04	67.9	59.7	-2.6		-87.8	-19	5051	No stop
21 00 30	=0144+584	23 15 34	68.1	59.7	-2.6		-88.1	71	5063	20 59 01

Schedule for TORUN (Code Tr)

Page 13

e-EVN: em118b, ec054b, eg082f

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

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	6 Oct 2015	Day 279	---							
21 00 30	V596CAS	23 15 34	66.6	59.9	-2.7		-85.5	-19	5063	No stop
21 04 00	---	23 19 05	67.1	60.0	-2.7		-86.1	191	5090	21 00 31
21 04 40	J0147+5840	23 19 45	68.7	59.7	-2.5		-89.0	21	5090	21 04 40
21 05 40	=0144+584	23 20 45	68.8	59.7	-2.5		-89.2	60	5097	21 04 41
21 05 40	V596CAS	23 20 45	67.3	60.0	-2.7		-86.5	-19	5097	No stop
21 09 10	---	23 24 15	67.7	60.1	-2.6		-87.2	191	5124	21 05 41
21 09 10	J0147+5840	23 24 15	69.2	59.7	-2.4		-90.0	-19	5124	No stop
21 10 40	=0144+584	23 25 46	69.4	59.7	-2.4		-90.3	71	5136	21 09 11
21 10 40	J0151+5454	23 25 46	68.6	70.1	-2.4		-79.8	-36	5136	No stop
21 14 10	---	23 29 16	69.1	70.4	-2.4		-80.3	174	5163	21 10 41
21 14 50	J0147+5840	23 29 56	70.0	59.7	-2.3		-91.2	4	5163	21 14 50
21 15 50	=0144+584	23 30 56	70.1	59.7	-2.3		-91.4	60	5170	21 14 51
21 15 50	V596CAS	23 30 56	68.6	60.2	-2.5		-88.5	-19	5170	No stop
21 19 20	---	23 34 27	69.1	60.2	-2.4		-89.2	191	5197	21 15 51
21 19 20	J0147+5840	23 34 27	70.6	59.7	-2.2		-92.2	-19	5197	No stop
21 20 50	=0144+584	23 35 57	70.8	59.6	-2.2		-92.6	71	5209	21 19 21
21 20 50	V596CAS	23 35 57	69.3	60.2	-2.4		-89.5	-19	5209	No stop
21 24 20	---	23 39 28	69.7	60.2	-2.4		-90.3	191	5236	21 20 51
21 25 00	J0147+5840	23 40 08	71.3	59.6	-2.1		-93.5	21	5236	21 25 00
21 26 00	=0144+584	23 41 08	71.4	59.5	-2.1		-93.8	60	5244	21 25 01
21 26 00	V596CAS	23 41 08	69.9	60.2	-2.3		-90.7	-19	5244	No stop
21 29 30	---	23 44 39	70.4	60.2	-2.3		-91.4	191	5270	21 26 01
21 29 30	J0147+5840	23 44 39	71.9	59.4	-2.1		-94.6	-19	5270	No stop
21 31 00	=0144+584	23 46 09	72.1	59.4	-2.0		-95.0	71	5282	21 29 31
21 31 00	V596CAS	23 46 09	70.6	60.2	-2.2		-91.8	-19	5282	No stop
21 34 30	---	23 49 40	71.0	60.1	-2.2		-92.6	191	5309	21 31 01
21 35 10	J0147+5840	23 50 20	72.6	59.2	-2.0		-96.0	21	5309	21 35 10
21 36 10	=0144+584	23 51 20	72.8	59.2	-2.0		-96.3	60	5317	21 35 11
21 36 10	V596CAS	23 51 20	71.3	60.1	-2.2		-92.9	-19	5317	No stop
21 39 40	---	23 54 50	71.7	60.0	-2.1		-93.8	191	5344	21 36 11

Schedule for TORUN (Code Tr)

Page 14

e-EVN: em118b, ec054b, eg082f

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

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	6 Oct 2015	Day 279 ---								
21 39 40	J0147+5840	23 54 50	73.2	59.0	-1.9		-97.2	-19	5344	No stop
21 41 10	=0144+584	23 56 21	73.4	58.9	-1.9		-97.6	71	5355	21 39 41
21 41 10	J0151+5454	23 56 21	72.9	72.0	-1.9		-84.3	-41	5355	No stop
21 44 40	---	23 59 51	73.4	72.1	-1.9		-84.9	169	5382	21 41 11
21 45 20	J0147+5840	00 00 31	73.9	58.6	-1.8		-98.8	-2	5382	21 45 20
21 46 20	=0144+584	00 01 31	74.1	58.5	-1.8		-99.1	58	5390	21 45 21
21 46 20	V596CAS	00 01 31	72.6	59.8	-2.0		-95.4	-19	5390	No stop
21 49 50	---	00 05 02	73.0	59.6	-1.9		-96.3	191	5417	21 46 21
21 49 50	J0147+5840	00 05 02	74.5	58.3	-1.7		-100.1	-19	5417	No stop
21 51 20	=0144+584	00 06 32	74.7	58.1	-1.7		-100.5	71	5428	21 49 51
21 51 20	V596CAS	00 06 32	73.2	59.5	-1.9		-96.7	-19	5428	No stop
21 54 50	---	00 10 03	73.7	59.3	-1.8		-97.7	191	5455	21 51 21
21 55 30	J0147+5840	00 10 43	75.2	57.7	-1.6		-101.8	21	5455	21 55 30
21 56 30	=0144+584	00 11 43	75.4	57.6	-1.6		-102.1	60	5463	21 55 31
21 56 30	V596CAS	00 11 43	73.9	59.2	-1.8		-98.1	-19	5463	No stop
22 00 00	---	00 15 14	74.4	59.0	-1.8		-99.1	191	5490	21 56 31
22 00 00	J0147+5840	00 15 14	75.8	57.2	-1.6		-103.3	-19	5490	No stop
22 01 30	=0144+584	00 16 44	76.0	57.0	-1.5		-103.8	71	5501	22 00 01
22 01 30	V596CAS	00 16 44	74.5	58.8	-1.7		-99.5	-19	5501	No stop
22 05 00	---	00 20 15	75.0	58.5	-1.7		-100.6	191	5528	22 01 31
22 05 40	J0147+5840	00 20 55	76.5	56.5	-1.5		-105.2	21	5528	22 05 40
22 06 40	=0144+584	00 21 55	76.6	56.3	-1.4		-105.6	60	5536	22 05 41
22 06 40	V596CAS	00 21 55	75.2	58.4	-1.6		-101.1	-19	5536	No stop
22 10 10	---	00 25 25	75.7	58.0	-1.6		-102.2	191	5563	22 06 41
22 10 10	J0147+5840	00 25 25	77.1	55.7	-1.4		-106.9	-19	5563	No stop
22 11 40	=0144+584	00 26 56	77.3	55.5	-1.4		-107.5	71	5574	22 10 11
22 11 40	J0151+5454	00 26 56	77.3	72.8	-1.4		-89.7	-50	5574	No stop
22 15 10	---	00 30 26	77.8	72.8	-1.4		-90.5	160	5601	22 11 41
22 15 10	J0147+5840	00 30 26	77.7	54.8	-1.3		-108.9	-51	5601	No stop
22 16 40	=0144+584	00 31 56	77.9	54.5	-1.3		-109.5	39	5613	22 15 11

Schedule for TORUN (Code Tr)

Page 15

e-EVN: em118b, ec054b, eg082f

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

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	6 Oct 2015	Day 279 ---								
22 16 40	V596CAS	00 31 56	76.5	57.2	-1.5		-104.4	-20	5613	No stop
22 20 10	---	00 35 27	76.9	56.7	-1.4		-105.6	190	5640	22 16 41
22 20 50	J0147+5840	00 36 07	78.4	53.6	-1.2		-111.3	20	5640	22 20 50
22 21 50	=0144+584	00 37 07	78.5	53.4	-1.2		-111.7	60	5647	22 20 51
----- fringe finder -----										
22 23 10	J0102+5824	00 38 28	83.5	30.8	-0.4		-143.9	21	5647	22 23 10
22 28 10	=0059+581	00 43 28	83.9	25.8	-0.3		-150.0	300	5686	22 23 11
22 38 30	J2113+4012	00 53 50	51.3	273.5	3.7		51.8	110	5686	22 38 30
22 40 30	=2111+400	00 55 50	51.0	273.8	3.7		51.8	120	5701	22 38 31
22 40 40	J2115+3742	00 56 00	49.6	270.6	3.7		49.4	-11	5701	22 40 40
22 44 10	---	00 59 31	49.0	271.3	3.7		49.4	199	5728	22 40 41
22 44 50	J2113+4012	01 00 11	50.3	274.6	3.8		51.7	19	5728	22 44 50
22 45 50	=2111+400	01 01 11	50.2	274.8	3.8		51.7	60	5736	22 44 51
22 45 50	V1396CYG	01 01 11	48.1	277.1	4.0		51.2	-22	5736	No stop
22 49 20	---	01 04 42	47.6	277.7	4.1		51.1	188	5763	22 45 51
22 49 20	J2113+4012	01 04 42	49.7	275.5	3.8		51.6	-22	5763	No stop
22 50 50	=2111+400	01 06 12	49.4	275.8	3.9		51.6	68	5774	22 49 21
22 50 50	V1396CYG	01 06 12	47.3	278.0	4.1		51.1	-22	5774	No stop
22 54 20	---	01 09 43	46.8	278.6	4.1		51.0	188	5801	22 50 51
22 55 00	J2113+4012	01 10 23	48.8	276.5	3.9		51.5	18	5801	22 55 00
22 56 00	=2111+400	01 11 23	48.7	276.7	4.0		51.4	60	5809	22 55 01
22 56 00	V1396CYG	01 11 23	46.6	278.9	4.2		50.9	-22	5809	No stop
22 59 30	---	01 14 54	46.1	279.5	4.2		50.8	188	5836	22 56 01
22 59 30	J2113+4012	01 14 54	48.1	277.3	4.0		51.3	-21	5836	No stop
23 01 00	=2111+400	01 16 24	47.9	277.6	4.0		51.3	69	5847	22 59 31
23 01 00	V1396CYG	01 16 24	45.8	279.8	4.3		50.7	-22	5847	No stop
23 04 30	---	01 19 54	45.3	280.4	4.3		50.6	188	5874	23 01 01
23 05 10	J2113+4012	01 20 34	47.3	278.3	4.1		51.2	19	5874	23 05 10
23 06 10	=2111+400	01 21 35	47.1	278.5	4.1		51.1	60	5882	23 05 11

Schedule for TORUN (Code Tr)

Page 16

e-EVN: em118b, ec054b, eg082f

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

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	6 Oct 2015	Day 279	---							
23 06 10	V1396CYG	01 21 35	45.1	280.7	4.3		50.5	-22	5882	No stop
23 09 40	---	01 25 05	44.5	281.3	4.4		50.4	188	5909	23 06 11
23 09 40	J2113+4012	01 25 05	46.6	279.1	4.2		51.0	-21	5909	No stop
23 11 10	=2111+400	01 26 35	46.4	279.4	4.2		51.0	69	5920	23 09 41
23 11 10	J2115+3742	01 26 35	45.0	276.4	4.2		49.0	-20	5920	No stop
23 14 40	---	01 30 06	44.5	277.1	4.2		48.9	190	5947	23 11 11
23 15 20	J2113+4012	01 30 46	45.8	280.1	4.3		50.8	20	5947	23 15 20
23 16 20	=2111+400	01 31 46	45.6	280.3	4.3		50.8	60	5955	23 15 21
23 16 20	V1396CYG	01 31 46	43.6	282.4	4.5		50.1	-22	5955	No stop
23 19 50	---	01 35 17	43.1	283.0	4.6		49.9	188	5982	23 16 21
23 19 50	J2113+4012	01 35 17	45.1	280.9	4.4		50.6	-21	5982	No stop
23 21 20	=2111+400	01 36 47	44.9	281.1	4.4		50.6	69	5994	23 19 51
23 21 20	V1396CYG	01 36 47	42.8	283.3	4.6		49.9	-22	5994	No stop
23 24 50	---	01 40 18	42.3	283.8	4.7		49.7	188	6020	23 21 21
23 25 30	J2113+4012	01 40 58	44.3	281.9	4.4		50.4	19	6020	23 25 30
23 26 30	=2111+400	01 41 58	44.1	282.0	4.5		50.3	60	6028	23 25 31
23 26 30	V1396CYG	01 41 58	42.1	284.1	4.7		49.6	-22	6028	No stop
23 30 00	---	01 45 29	41.6	284.7	4.7		49.4	188	6055	23 26 31
23 30 00	J2113+4012	01 45 29	43.6	282.6	4.5		50.2	-21	6055	No stop
23 31 30	=2111+400	01 46 59	43.4	282.9	4.5		50.1	69	6067	23 30 01
23 31 30	V1396CYG	01 46 59	41.3	285.0	4.8		49.4	-22	6067	No stop
23 35 00	---	01 50 29	40.8	285.5	4.8		49.2	188	6094	23 31 31
23 35 40	J2113+4012	01 51 09	42.8	283.6	4.6		49.9	19	6094	23 35 40
23 36 40	=2111+400	01 52 10	42.6	283.7	4.6		49.9	60	6101	23 35 41
23 36 40	V1396CYG	01 52 10	40.6	285.8	4.9		49.1	-22	6101	No stop
23 40 10	---	01 55 40	40.1	286.4	4.9		48.9	188	6128	23 36 41
23 40 10	J2113+4012	01 55 40	42.1	284.3	4.7		49.7	-21	6128	No stop
23 41 40	=2111+400	01 57 10	41.9	284.6	4.7		49.6	69	6140	23 40 11
23 41 40	J2115+3742	01 57 10	40.4	281.9	4.7		48.0	-20	6140	No stop
23 45 10	---	02 00 41	39.9	282.5	4.8		47.9	190	6167	23 41 41

Schedule for TORUN (Code Tr)

Page 17

e-EVN: em118b, ec054b, eg082f

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
 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	6 Oct 2015	Day 279 ---								
23 45 50	J2113+4012	02 01 21	41.3	285.3	4.8		49.4	20	6167	23 45 50
23 46 50	=2111+400	02 02 21	41.2	285.4	4.8		49.4	60	6174	23 45 51
23 46 50	V1396CYG	02 02 21	39.1	287.5	5.0		48.5	-22	6174	No stop
23 50 20	---	02 05 52	38.6	288.1	5.1		48.3	188	6201	23 46 51
23 50 20	J2113+4012	02 05 52	40.7	286.0	4.9		49.2	-21	6201	No stop
23 51 50	=2111+400	02 07 22	40.4	286.3	4.9		49.1	69	6213	23 50 21
23 51 50	V1396CYG	02 07 22	38.4	288.3	5.1		48.2	-22	6213	No stop
23 55 20	---	02 10 53	37.9	288.9	5.2		48.0	188	6240	23 51 51
23 56 00	J2113+4012	02 11 33	39.8	286.9	5.0		48.9	19	6240	23 56 00
23 57 00	=2111+400	02 12 33	39.7	287.1	5.0		48.8	60	6247	23 56 01
--- Start: Tue	6 Oct 2015	Day 279 -- Stop: Wed				7 Oct 2015	Day 280 ---			
23 57 00	V1396CYG	02 12 33	37.7	289.1	5.2		47.9	-22	6247	No stop
00 00 30	---	02 16 04	37.2	289.7	5.3		47.7	188	6274	23 57 01
00 00 30	J2113+4012	02 16 04	39.2	287.7	5.0		48.6	-21	6274	No stop
00 02 00	=2111+400	02 17 34	39.0	287.9	5.1		48.5	69	6286	00 00 31
00 02 00	V1396CYG	02 17 34	37.0	290.0	5.3		47.6	-21	6286	No stop
00 05 30	---	02 21 04	36.5	290.5	5.3		47.4	189	6313	00 02 01
00 06 10	J2113+4012	02 21 44	38.4	288.6	5.1		48.3	19	6313	00 06 10
00 07 10	=2111+400	02 22 45	38.2	288.8	5.1		48.2	60	6320	00 06 11
00 07 10	V1396CYG	02 22 45	36.2	290.8	5.4		47.3	-21	6320	No stop
00 10 40	---	02 26 15	35.7	291.4	5.4		47.0	189	6347	00 07 11
00 10 40	J2113+4012	02 26 15	37.7	289.3	5.2		48.0	-21	6347	No stop
00 12 10	=2111+400	02 27 45	37.5	289.6	5.2		47.9	69	6359	00 10 41
00 12 10	J2115+3742	02 27 45	36.0	287.1	5.2		46.6	-19	6359	No stop
00 15 40	---	02 31 16	35.5	287.7	5.3		46.4	191	6386	00 12 11
00 16 20	J2113+4012	02 31 56	36.9	290.2	5.3		47.6	21	6386	00 16 20
00 17 20	=2111+400	02 32 56	36.8	290.4	5.3		47.5	60	6394	00 16 21
00 17 20	V1396CYG	02 32 56	34.8	292.4	5.5		46.6	-21	6394	No stop
00 20 50	---	02 36 27	34.3	293.0	5.6		46.3	189	6420	00 17 21

Schedule for TORUN (Code Tr)

Page 18

e-EVN: em118b, ec054b, eg082f

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

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	7 Oct 2015	Day 280	---							
00 20 50	J2113+4012	02 36 27	36.3	291.0	5.4		47.3	-21	6420	No stop
00 22 20	=2111+400	02 37 57	36.1	291.2	5.4		47.2	69	6432	00 20 51
00 22 20	V1396CYG	02 37 57	34.1	293.2	5.6		46.2	-21	6432	No stop
00 25 50	---	02 41 28	33.6	293.8	5.7		46.0	189	6459	00 22 21
00 26 30	J2113+4012	02 42 08	35.5	291.9	5.5		46.9	19	6459	00 26 30
00 27 30	=2111+400	02 43 08	35.4	292.0	5.5		46.9	60	6467	00 26 31
00 27 30	V1396CYG	02 43 08	33.4	294.1	5.7		45.8	-21	6467	No stop
00 31 00	---	02 46 39	32.9	294.6	5.8		45.6	189	6494	00 27 31
00 31 00	J2113+4012	02 46 39	34.9	292.6	5.5		46.6	-21	6494	No stop
00 32 30	=2111+400	02 48 09	34.7	292.8	5.6		46.5	69	6505	00 31 01
00 32 30	V1396CYG	02 48 09	32.7	294.9	5.8		45.5	-21	6505	No stop
00 36 00	---	02 51 39	32.3	295.4	5.8		45.2	189	6532	00 32 31
00 36 40	J2113+4012	02 52 19	34.1	293.5	5.6		46.2	19	6532	00 36 40
00 37 40	=2111+400	02 53 20	34.0	293.7	5.7		46.1	60	6540	00 36 41
00 37 40	V1396CYG	02 53 20	32.0	295.7	5.9		45.1	-21	6540	No stop
00 41 10	---	02 56 50	31.6	296.2	5.9		44.8	189	6567	00 37 41
00 41 10	J2113+4012	02 56 50	33.5	294.2	5.7		45.9	-21	6567	No stop
00 42 40	=2111+400	02 58 20	33.3	294.5	5.7		45.8	69	6578	00 41 11
00 42 40	J2115+3742	02 58 20	31.7	292.2	5.7		44.7	-20	6578	No stop
00 46 10	---	03 01 51	31.2	292.7	5.8		44.5	190	6605	00 42 41
00 46 50	J2113+4012	03 02 31	32.7	295.1	5.8		45.5	21	6605	00 46 50
00 47 50	=2111+400	03 03 31	32.6	295.3	5.8		45.4	60	6613	00 46 51
00 47 50	V1396CYG	03 03 31	30.7	297.3	6.0		44.3	-21	6613	No stop
00 51 20	---	03 07 02	30.2	297.9	6.1		44.0	189	6640	00 47 51
00 51 20	J2113+4012	03 07 02	32.1	295.8	5.9		45.1	-21	6640	No stop
00 52 50	=2111+400	03 08 32	31.9	296.1	5.9		45.0	69	6651	00 51 21
00 52 50	V1396CYG	03 08 32	30.0	298.1	6.1		43.9	-21	6651	No stop
00 56 20	---	03 12 03	29.5	298.7	6.2		43.6	189	6678	00 52 51
00 57 00	J2113+4012	03 12 43	31.3	296.8	6.0		44.7	19	6678	00 57 00
00 58 00	=2111+400	03 13 43	31.2	296.9	6.0		44.6	60	6686	00 57 01

Schedule for TORUN (Code Tr)

Page 19

e-EVN: em118b, ec054b, eg082f

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

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	7 Oct 2015	Day 280	---							
00 58 00	V1396CYG	03 13 43	29.3	298.9	6.2		43.4	-21	6686	No stop
01 01 30	---	03 17 14	28.8	299.5	6.3		43.1	189	6713	00 58 01
01 01 30	J2113+4012	03 17 14	30.7	297.5	6.1		44.3	-21	6713	No stop
01 03 00	=2111+400	03 18 44	30.5	297.7	6.1		44.2	69	6724	01 01 31
01 03 00	V1396CYG	03 18 44	28.6	299.7	6.3		43.0	-21	6724	No stop
01 06 30	---	03 22 14	28.2	300.3	6.4		42.7	189	6751	01 03 01
01 07 10	J2113+4012	03 22 54	30.0	298.4	6.1		43.8	19	6751	01 07 10
01 08 10	=2111+400	03 23 55	29.8	298.5	6.2		43.8	60	6759	01 07 11
01 08 10	V1396CYG	03 23 55	28.0	300.5	6.4		42.6	-21	6759	No stop
01 11 40	---	03 27 25	27.5	301.1	6.4		42.3	189	6786	01 08 11
01 11 40	J2113+4012	03 27 25	29.4	299.1	6.2		43.5	-21	6786	No stop
01 13 10	=2111+400	03 28 55	29.2	299.3	6.2		43.3	69	6797	01 11 41
01 13 10	J2115+3742	03 28 55	27.5	297.2	6.2		42.5	-20	6797	No stop
01 16 40	---	03 32 26	27.0	297.8	6.3		42.2	190	6824	01 13 11
01 17 20	J2113+4012	03 33 06	28.6	300.0	6.3		43.0	20	6824	01 17 20
01 18 20	=2111+400	03 34 06	28.5	300.1	6.3		42.9	60	6832	01 17 21
01 18 20	V1396CYG	03 34 06	26.7	302.2	6.6		41.7	-21	6832	No stop
01 21 50	---	03 37 37	26.2	302.7	6.6		41.4	189	6859	01 18 21
01 21 50	J2113+4012	03 37 37	28.0	300.7	6.4		42.6	-20	6859	No stop
01 23 20	=2111+400	03 39 07	27.9	300.9	6.4		42.5	70	6870	01 21 51
01 23 20	V1396CYG	03 39 07	26.0	303.0	6.6		41.2	-21	6870	No stop
01 26 50	---	03 42 38	25.6	303.5	6.7		40.9	189	6897	01 23 21
01 27 30	J2113+4012	03 43 18	27.3	301.6	6.5		42.1	20	6897	01 27 30
01 29 30	=2111+400	03 45 18	27.1	301.9	6.5		41.9	120	6913	01 27 31
01 40 00	DA193	03 55 50	65.6	110.8	-2.0		-47.0	230	6913	01 40 00
01 43 00	---	03 58 50	66.0	111.7	-2.0		-46.6	180	6936	01 40 01
01 46 00	J0849+5108	04 01 51	47.5	62.3	-4.8		-57.8	66	6936	01 46 00
01 49 00	=0846+513	04 04 51	47.9	62.7	-4.8		-58.1	180	6959	01 46 01
01 49 00	J0839+5112	04 04 51	49.3	63.8	-4.6		-59.2	-19	6959	No stop
01 52 30	---	04 08 22	49.7	64.3	-4.5		-59.6	191	6986	01 49 01

Schedule for TORUN (Code Tr)

Page 20

e-EVN: em118b, ec054b, eg082f

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

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	7 Oct 2015	Day 280	---							
01 52 30	J0849+5108	04 08 22	48.3	63.1	-4.7		-58.5	-19	6986	No stop
01 54 00	=0846+513	04 09 52	48.5	63.3	-4.7		-58.6	71	6997	01 52 31
01 54 00	J0839+5112	04 09 52	49.9	64.4	-4.5		-59.7	-19	6997	No stop
01 57 30	---	04 13 23	50.4	64.9	-4.5		-60.1	191	7024	01 54 01
01 58 10	J0849+5108	04 14 03	49.1	63.8	-4.6		-59.0	21	7024	01 58 10
01 59 00	=0846+513	04 14 53	49.2	63.9	-4.6		-59.1	50	7031	01 58 11
01 59 00	J0839+5112	04 14 53	50.6	65.1	-4.4		-60.2	-19	7031	No stop
02 02 30	---	04 18 24	51.1	65.5	-4.4		-60.6	191	7058	01 59 01
02 02 30	J0849+5108	04 18 24	49.7	64.3	-4.5		-59.5	-19	7058	No stop
02 04 00	=0846+513	04 19 54	49.9	64.5	-4.5		-59.6	71	7069	02 02 31
02 04 00	J0839+5112	04 19 54	51.3	65.7	-4.3		-60.7	-19	7069	No stop
02 07 30	---	04 23 24	51.8	66.1	-4.3		-61.1	191	7096	02 04 01
02 08 10	J0849+5108	04 24 05	50.4	65.0	-4.4		-60.0	21	7096	02 08 10
02 09 00	=0846+513	04 24 55	50.6	65.1	-4.4		-60.1	50	7103	02 08 11
02 09 00	J0839+5112	04 24 55	52.0	66.3	-4.3		-61.2	-19	7103	No stop
02 12 30	---	04 28 25	52.5	66.7	-4.2		-61.5	191	7129	02 09 01
02 12 30	J0849+5108	04 28 25	51.0	65.6	-4.4		-60.5	-19	7129	No stop
02 14 00	=0846+513	04 29 55	51.2	65.7	-4.4		-60.6	71	7141	02 12 31
02 14 00	J0839+5112	04 29 55	52.7	66.9	-4.2		-61.7	-19	7141	No stop
02 17 30	---	04 33 26	53.2	67.3	-4.1		-62.0	191	7168	02 14 01
02 18 10	J0849+5108	04 34 06	51.8	66.3	-4.3		-61.0	21	7168	02 18 10
02 19 00	=0846+513	04 34 56	51.9	66.4	-4.3		-61.1	50	7174	02 18 11
02 19 00	J0839+5112	04 34 56	53.4	67.5	-4.1		-62.2	-19	7174	No stop
02 22 30	---	04 38 27	53.9	68.0	-4.0		-62.5	191	7201	02 19 01
02 22 30	J0849+5108	04 38 27	52.4	66.8	-4.2		-61.5	-19	7201	No stop
02 24 00	=0846+513	04 39 57	52.6	67.0	-4.2		-61.6	71	7213	02 22 31
02 24 00	J0839+5112	04 39 57	54.1	68.1	-4.0		-62.7	-19	7213	No stop
02 27 30	---	04 43 28	54.6	68.6	-4.0		-63.0	191	7240	02 24 01
02 28 10	J0849+5108	04 44 08	53.2	67.5	-4.1		-62.0	21	7240	02 28 10
02 29 00	=0846+513	04 44 58	53.3	67.6	-4.1		-62.1	50	7246	02 28 11

Schedule for TORUN (Code Tr)

Page 21

e-EVN: em118b, ec054b, eg082f

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

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	7 Oct 2015	Day 280	---							
02 29 00	J0839+5112	04 44 58	54.8	68.8	-3.9		-63.1	-19	7246	No stop
02 32 30	---	04 48 29	55.3	69.2	-3.9		-63.5	191	7273	02 29 01
02 32 30	J0849+5108	04 48 29	53.8	68.0	-4.0		-62.4	-19	7273	No stop
02 34 00	=0846+513	04 49 59	54.0	68.2	-4.0		-62.6	71	7285	02 32 31
02 34 00	J0839+5112	04 49 59	55.5	69.4	-3.8		-63.6	-19	7285	No stop
02 37 30	---	04 53 29	56.0	69.8	-3.8		-63.9	191	7312	02 34 01
02 38 10	J0849+5108	04 54 09	54.6	68.7	-3.9		-63.0	21	7312	02 38 10
02 39 00	=0846+513	04 55 00	54.7	68.8	-3.9		-63.0	50	7318	02 38 11
02 39 00	J0839+5112	04 55 00	56.2	70.0	-3.8		-64.1	-19	7318	No stop
02 42 30	---	04 58 30	56.7	70.4	-3.7		-64.4	191	7345	02 39 01
02 42 30	J0849+5108	04 58 30	55.2	69.3	-3.9		-63.4	-19	7345	No stop
02 44 00	=0846+513	05 00 00	55.4	69.5	-3.9		-63.5	71	7356	02 42 31
02 44 00	J0839+5112	05 00 00	56.9	70.6	-3.7		-64.5	-19	7356	No stop
02 47 30	---	05 03 31	57.4	71.0	-3.6		-64.8	191	7383	02 44 01
02 48 10	J0849+5108	05 04 11	56.0	70.0	-3.8		-63.9	21	7383	02 48 10
02 49 00	=0846+513	05 05 01	56.1	70.1	-3.8		-64.0	50	7390	02 48 11
02 49 00	J0839+5112	05 05 01	57.6	71.2	-3.6		-65.0	-19	7390	No stop
02 52 30	---	05 08 32	58.1	71.7	-3.5		-65.3	191	7417	02 49 01
02 52 30	J0849+5108	05 08 32	56.6	70.5	-3.7		-64.3	-19	7417	No stop
02 54 00	=0846+513	05 10 02	56.8	70.7	-3.7		-64.4	71	7428	02 52 31
02 54 00	J0839+5112	05 10 02	58.3	71.8	-3.5		-65.4	-19	7428	No stop
02 57 30	---	05 13 33	58.8	72.3	-3.5		-65.7	191	7455	02 54 01
02 58 10	J0849+5108	05 14 13	57.4	71.2	-3.6		-64.8	21	7455	02 58 10
02 59 00	=0846+513	05 15 03	57.5	71.3	-3.6		-64.9	50	7462	02 58 11
02 59 00	J0839+5112	05 15 03	59.0	72.5	-3.4		-65.9	-19	7462	No stop
03 02 30	---	05 18 33	59.5	72.9	-3.4		-66.2	191	7488	02 59 01
03 02 30	J0849+5108	05 18 33	58.0	71.7	-3.5		-65.2	-19	7488	No stop
03 04 00	=0846+513	05 20 04	58.3	71.9	-3.5		-65.3	71	7500	03 02 31
03 04 00	J0839+5112	05 20 04	59.7	73.1	-3.3		-66.3	-19	7500	No stop
03 07 30	---	05 23 34	60.2	73.5	-3.3		-66.6	191	7527	03 04 01

Schedule for TORUN (Code Tr)

Page 22

e-EVN: em118b, ec054b, eg082f

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

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	7 Oct 2015	Day 280	---							
03 08 10	J0849+5108	05 24 14	58.9	72.5	-3.4		-65.7	21	7527	03 08 10
03 09 00	=0846+513	05 25 05	59.0	72.6	-3.4		-65.8	50	7533	03 08 11
03 09 00	J0839+5112	05 25 05	60.5	73.7	-3.3		-66.7	-19	7533	No stop
03 12 30	---	05 28 35	61.0	74.2	-3.2		-67.0	191	7560	03 09 01
03 12 30	J0849+5108	05 28 35	59.5	73.0	-3.4		-66.1	-19	7560	No stop
03 14 00	=0846+513	05 30 05	59.7	73.2	-3.3		-66.2	71	7572	03 12 31
03 14 00	J0839+5112	05 30 05	61.2	74.4	-3.2		-67.2	-19	7572	No stop
03 17 30	---	05 33 36	61.7	74.8	-3.1		-67.5	191	7599	03 14 01
03 18 10	J0849+5108	05 34 16	60.3	73.7	-3.3		-66.6	21	7599	03 18 10
03 19 00	=0846+513	05 35 06	60.4	73.8	-3.3		-66.6	50	7605	03 18 11
03 19 00	J0839+5112	05 35 06	61.9	75.0	-3.1		-67.6	-19	7605	No stop
03 22 30	---	05 38 37	62.4	75.4	-3.0		-67.9	191	7632	03 19 01
03 22 30	J0849+5108	05 38 37	60.9	74.3	-3.2		-66.9	-19	7632	No stop
03 24 00	=0846+513	05 40 07	61.1	74.5	-3.2		-67.0	71	7644	03 22 31
03 24 00	J0839+5112	05 40 07	62.6	75.6	-3.0		-68.0	-19	7644	No stop
03 27 30	---	05 43 38	63.2	76.1	-3.0		-68.3	191	7670	03 24 01
03 28 10	J0849+5108	05 44 18	61.7	75.0	-3.1		-67.4	21	7670	03 28 10
03 29 00	=0846+513	05 45 08	61.9	75.1	-3.1		-67.5	50	7677	03 28 11
03 29 00	J0839+5112	05 45 08	63.4	76.3	-2.9		-68.4	-19	7677	No stop
03 32 30	---	05 48 38	63.9	76.7	-2.9		-68.7	191	7704	03 29 01
03 32 30	J0849+5108	05 48 38	62.4	75.5	-3.0		-67.7	-19	7704	No stop
03 34 00	=0846+513	05 50 09	62.6	75.7	-3.0		-67.9	71	7715	03 32 31
03 34 00	J0839+5112	05 50 09	64.1	76.9	-2.8		-68.8	-19	7715	No stop
03 37 30	---	05 53 39	64.6	77.4	-2.8		-69.1	191	7742	03 34 01
03 38 10	J0849+5108	05 54 19	63.2	76.3	-2.9		-68.2	21	7742	03 38 10
03 39 00	=0846+513	05 55 09	63.3	76.4	-2.9		-68.3	50	7749	03 38 11
03 39 00	J0839+5112	05 55 09	64.8	77.6	-2.8		-69.2	-19	7749	No stop
03 42 30	---	05 58 40	65.4	78.0	-2.7		-69.4	191	7776	03 39 01
03 42 30	J0849+5108	05 58 40	63.8	76.8	-2.9		-68.5	-19	7776	No stop
03 44 00	=0846+513	06 00 10	64.1	77.0	-2.8		-68.7	71	7787	03 42 31

Schedule for TORUN (Code Tr)

Page 23

e-EVN: em118b, ec054b, eg082f

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

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	7 Oct 2015	Day 280	---							
03 44 00	J0839+5112	06 00 10	65.6	78.2	-2.7		-69.6	-19	7787	No stop
03 47 30	---	06 03 41	66.1	78.7	-2.6		-69.8	191	7814	03 44 01
03 48 10	J0849+5108	06 04 21	64.7	77.6	-2.8		-69.0	21	7814	03 48 10
03 49 00	=0846+513	06 05 11	64.8	77.7	-2.8		-69.0	50	7820	03 48 11
03 49 00	J0839+5112	06 05 11	66.3	78.9	-2.6		-69.9	-19	7820	No stop
03 52 30	---	06 08 42	66.8	79.4	-2.5		-70.2	191	7847	03 49 01
03 52 30	J0849+5108	06 08 42	65.3	78.2	-2.7		-69.3	-19	7847	No stop
03 54 00	=0846+513	06 10 12	65.5	78.4	-2.7		-69.4	71	7859	03 52 31
03 54 00	J0839+5112	06 10 12	67.1	79.6	-2.5		-70.3	-19	7859	No stop
03 57 30	---	06 13 42	67.6	80.1	-2.5		-70.5	191	7886	03 54 01
03 58 10	J0849+5108	06 14 23	66.1	78.9	-2.6		-69.7	21	7886	03 58 10
03 59 00	=0846+513	06 15 13	66.3	79.0	-2.6		-69.8	50	7892	03 58 11
03 59 00	J0839+5112	06 15 13	67.8	80.3	-2.4		-70.6	-19	7892	No stop
04 02 30	---	06 18 43	68.3	80.8	-2.4		-70.8	191	7919	03 59 01
04 02 30	J0849+5108	06 18 43	66.8	79.5	-2.5		-70.0	-19	7919	No stop
04 04 00	=0846+513	06 20 14	67.0	79.7	-2.5		-70.1	71	7931	04 02 31
04 04 00	J0839+5112	06 20 14	68.5	81.0	-2.3		-70.9	-19	7931	No stop
04 07 30	---	06 23 44	69.1	81.5	-2.3		-71.2	191	7958	04 04 01
04 08 10	J0849+5108	06 24 24	67.6	80.3	-2.4		-70.4	21	7958	04 08 10
04 09 00	=0846+513	06 25 14	67.8	80.4	-2.4		-70.5	50	7964	04 08 11
04 09 00	J0839+5112	06 25 14	69.3	81.7	-2.3		-71.3	-19	7964	No stop
04 12 30	---	06 28 45	69.8	82.2	-2.2		-71.5	191	7991	04 09 01
04 12 30	J0849+5108	06 28 45	68.3	80.9	-2.4		-70.7	-19	7991	No stop
04 14 00	=0846+513	06 30 15	68.5	81.1	-2.3		-70.8	71	8003	04 12 31
04 14 00	J0839+5112	06 30 15	70.0	82.4	-2.2		-71.6	-19	8003	No stop
04 17 30	---	06 33 46	70.5	82.9	-2.1		-71.8	191	8029	04 14 01
04 18 10	J0849+5108	06 34 26	69.1	81.7	-2.3		-71.0	21	8029	04 18 10
04 19 00	=0846+513	06 35 16	69.2	81.8	-2.3		-71.1	50	8036	04 18 11
04 19 00	J0839+5112	06 35 16	70.8	83.1	-2.1		-71.8	-19	8036	No stop
04 22 30	---	06 38 47	71.3	83.7	-2.0		-72.0	191	8063	04 19 01

Schedule for TORUN (Code Tr)

Page 24

e-EVN: em118b, ec054b, eg082f

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

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	7 Oct 2015	Day 280	---							
04 22 30	J0849+5108	06 38 47	69.8	82.3	-2.2		-71.3	-19	8063	No stop
04 24 00	=0846+513	06 40 17	70.0	82.5	-2.2		-71.4	71	8074	04 22 31
04 24 00	J0839+5112	06 40 17	71.5	83.9	-2.0		-72.1	-19	8074	No stop
04 27 30	---	06 43 47	72.0	84.4	-2.0		-72.3	191	8101	04 24 01
04 28 10	J0849+5108	06 44 28	70.6	83.2	-2.1		-71.6	21	8101	04 28 10
04 29 00	=0846+513	06 45 18	70.7	83.3	-2.1		-71.7	50	8108	04 28 11
04 32 00	OJ287	06 48 18	48.9	131.1	-2.1		-28.8	70	8108	04 32 00
04 44 00	---	07 00 20	50.2	134.9	-1.9		-26.9	720	8200	04 32 01
04 44 40	OJ287	07 01 00	50.3	135.2	-1.9		-26.8	34	8200	04 44 40
04 59 00	---	07 15 23	51.7	140.0	-1.7		-24.3	860	8310	04 44 41
04 59 40	OJ287	07 16 03	51.8	140.2	-1.7		-24.1	34	8310	04 59 40
05 14 00	---	07 30 25	53.1	145.3	-1.4		-21.3	860	8420	04 59 41
05 14 40	OJ287	07 31 05	53.1	145.6	-1.4		-21.2	34	8420	05 14 40
05 29 00	---	07 45 28	54.3	151.0	-1.2		-18.1	860	8531	05 14 41
05 31 30	J1038+0512	07 47 58	30.6	128.0	-2.9		-28.4	47	8531	05 31 30
05 37 30	=1036+054	07 53 59	31.3	129.5	-2.8		-27.7	360	8577	05 31 31
05 38 10	J1035+0522	07 54 39	32.0	130.6	-2.7		-27.2	26	8577	05 38 10
05 41 40	---	07 58 10	32.4	131.5	-2.6		-26.8	210	8604	05 38 11
05 42 20	J1038+0512	07 58 50	31.9	130.8	-2.7		-27.2	26	8604	05 42 20
05 43 20	=1036+054	07 59 50	32.0	131.1	-2.7		-27.0	60	8612	05 42 21
05 43 20	RYSEX	07 59 50	32.2	131.8	-2.6		-26.7	-13	8612	No stop
05 46 50	---	08 03 20	32.6	132.8	-2.6		-26.3	197	8638	05 43 21
05 46 50	J1038+0512	08 03 20	32.4	132.0	-2.6		-26.6	-13	8638	No stop
05 48 20	=1036+054	08 04 51	32.6	132.4	-2.6		-26.4	77	8650	05 46 51
05 48 20	RYSEX	08 04 51	32.8	133.2	-2.5		-26.1	-13	8650	No stop
05 51 50	---	08 08 21	33.2	134.1	-2.5		-25.7	197	8677	05 48 21
05 52 30	J1038+0512	08 09 01	33.0	133.5	-2.5		-25.9	27	8677	05 52 30
05 53 30	=1036+054	08 10 02	33.1	133.8	-2.5		-25.8	60	8685	05 52 31
05 53 30	RYSEX	08 10 02	33.4	134.5	-2.4		-25.4	-13	8685	No stop
05 57 00	---	08 13 32	33.7	135.5	-2.4		-25.0	197	8712	05 53 31

Schedule for TORUN (Code Tr)

Page 25

e-EVN: em118b, ec054b, eg082f

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

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	7 Oct 2015	Day 280	---							
05 57 00	J1038+0512	08 13 32	33.5	134.7	-2.4		-25.4	-13	8712	No stop
05 58 30	=1036+054	08 15 02	33.7	135.1	-2.4		-25.2	77	8723	05 57 01
05 58 30	RYSEX	08 15 02	33.9	135.9	-2.4		-24.8	-13	8723	No stop
06 02 00	---	08 18 33	34.3	136.9	-2.3		-24.3	197	8750	05 58 31
06 02 40	J1038+0512	08 19 13	34.1	136.2	-2.3		-24.6	27	8750	06 02 40
06 03 40	=1036+054	08 20 13	34.2	136.5	-2.3		-24.5	60	8758	06 02 41
06 03 40	RYSEX	08 20 13	34.4	137.3	-2.3		-24.1	-13	8758	No stop
06 07 10	---	08 23 44	34.8	138.3	-2.2		-23.6	197	8785	06 03 41
06 07 10	J1038+0512	08 23 44	34.6	137.5	-2.3		-24.0	-13	8785	No stop
06 08 40	=1036+054	08 25 14	34.7	137.9	-2.2		-23.8	77	8796	06 07 11
06 08 40	J1035+0522	08 25 14	35.3	138.9	-2.2		-23.4	-14	8796	No stop
06 12 10	---	08 28 45	35.6	139.9	-2.1		-22.9	196	8823	06 08 41
06 12 50	J1038+0512	08 29 25	35.1	139.1	-2.2		-23.3	26	8823	06 12 50
06 13 50	=1036+054	08 30 25	35.2	139.3	-2.2		-23.1	60	8831	06 12 51
06 13 50	RYSEX	08 30 25	35.4	140.2	-2.1		-22.7	-13	8831	No stop
06 17 20	---	08 33 55	35.8	141.2	-2.0		-22.2	197	8858	06 13 51
06 17 20	J1038+0512	08 33 55	35.6	140.3	-2.1		-22.6	-13	8858	No stop
06 18 50	=1036+054	08 35 26	35.7	140.8	-2.1		-22.4	77	8869	06 17 21
06 18 50	RYSEX	08 35 26	35.9	141.6	-2.0		-22.0	-13	8869	No stop
06 22 20	---	08 38 56	36.2	142.6	-2.0		-21.5	197	8896	06 18 51
06 23 00	J1038+0512	08 39 36	36.1	141.9	-2.0		-21.8	27	8896	06 23 00
06 24 00	=1036+054	08 40 37	36.2	142.2	-2.0		-21.7	60	8904	06 23 01
06 24 00	RYSEX	08 40 37	36.4	143.1	-1.9		-21.2	-13	8904	No stop
06 27 30	---	08 44 07	36.7	144.1	-1.9		-20.7	197	8931	06 24 01
06 27 30	J1038+0512	08 44 07	36.5	143.2	-1.9		-21.1	-13	8931	No stop
06 29 00	=1036+054	08 45 37	36.7	143.7	-1.9		-20.9	77	8942	06 27 31
06 29 00	RYSEX	08 45 37	36.8	144.5	-1.9		-20.5	-13	8942	No stop
06 32 30	---	08 49 08	37.1	145.6	-1.8		-19.9	197	8969	06 29 01
06 33 10	J1038+0512	08 49 48	37.0	144.9	-1.8		-20.3	27	8969	06 33 10
06 34 10	=1036+054	08 50 48	37.1	145.2	-1.8		-20.1	60	8977	06 33 11

Schedule for TORUN (Code Tr)

Page 26

e-EVN: em118b, ec054b, eg082f

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

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	7 Oct 2015	Day 280	---							
06 34 10	RYSEX	08 50 48	37.3	146.0	-1.8		-19.7	-13	8977	No stop
06 37 40	---	08 54 19	37.6	147.1	-1.7		-19.1	197	9004	06 34 11
06 37 40	J1038+0512	08 54 19	37.4	146.2	-1.8		-19.6	-13	9004	No stop
06 39 10	=1036+054	08 55 49	37.5	146.7	-1.7		-19.3	77	9015	06 37 41
06 39 10	J1035+0522	08 55 49	38.0	147.7	-1.7		-18.8	-14	9015	No stop
06 42 40	---	08 59 20	38.3	148.8	-1.6		-18.2	196	9042	06 39 11
06 43 20	J1038+0512	09 00 00	37.9	147.9	-1.7		-18.7	26	9042	06 43 20
06 44 20	=1036+054	09 01 00	38.0	148.2	-1.6		-18.5	60	9050	06 43 21
06 44 20	RYSEX	09 01 00	38.1	149.1	-1.6		-18.0	-14	9050	No stop
06 47 50	---	09 04 30	38.4	150.1	-1.5		-17.5	196	9077	06 44 21
06 47 50	J1038+0512	09 04 30	38.2	149.3	-1.6		-17.9	-13	9077	No stop
06 49 20	=1036+054	09 06 01	38.3	149.7	-1.6		-17.7	77	9088	06 47 51
06 49 20	RYSEX	09 06 01	38.5	150.6	-1.5		-17.2	-14	9088	No stop
06 52 50	---	09 09 31	38.7	151.7	-1.5		-16.6	196	9115	06 49 21
06 53 30	J1038+0512	09 10 11	38.7	151.0	-1.5		-17.0	27	9115	06 53 30
06 54 30	=1036+054	09 11 12	38.7	151.3	-1.5		-16.8	60	9123	06 53 31
06 54 30	RYSEX	09 11 12	38.8	152.2	-1.4		-16.3	-14	9123	No stop
06 58 00	---	09 14 42	39.1	153.3	-1.4		-15.7	196	9150	06 54 31
06 58 00	J1038+0512	09 14 42	39.0	152.4	-1.4		-16.2	-13	9150	No stop
06 59 30	=1036+054	09 16 12	39.1	152.8	-1.4		-16.0	77	9162	06 58 01
06 59 30	RYSEX	09 16 12	39.2	153.7	-1.3		-15.5	-14	9162	No stop
07 03 00	---	09 19 43	39.4	154.8	-1.3		-14.9	196	9188	06 59 31
07 03 40	J1038+0512	09 20 23	39.4	154.1	-1.3		-15.3	27	9188	07 03 40
07 04 40	=1036+054	09 21 23	39.4	154.4	-1.3		-15.1	60	9196	07 03 41
07 04 40	RYSEX	09 21 23	39.5	155.3	-1.3		-14.6	-14	9196	No stop
07 08 10	---	09 24 54	39.7	156.4	-1.2		-13.9	196	9223	07 04 41
07 08 10	J1038+0512	09 24 54	39.6	155.5	-1.2		-14.5	-13	9223	No stop
07 09 40	=1036+054	09 26 24	39.7	156.0	-1.2		-14.2	77	9235	07 08 11
07 09 40	J1035+0522	09 26 24	40.1	157.2	-1.2		-13.5	-15	9235	No stop
07 13 10	---	09 29 55	40.3	158.3	-1.1		-12.9	195	9262	07 09 41

Schedule for TORUN (Code Tr)

Page 27

e-EVN: em118b, ec054b, eg082f

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

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	7 Oct 2015	Day 280	---							
07 13 50	J1038+0512	09 30 35	40.0	157.3	-1.2		-13.4	26	9262	07 13 50
07 14 50	=1036+054	09 31 35	40.0	157.6	-1.1		-13.3	60	9269	07 13 51
07 14 50	RYSEX	09 31 35	40.1	158.5	-1.1		-12.7	-14	9269	No stop
07 18 20	---	09 35 05	40.3	159.7	-1.0		-12.1	196	9296	07 14 51
07 18 20	J1038+0512	09 35 05	40.2	158.8	-1.1		-12.6	-13	9296	No stop
07 19 50	=1036+054	09 36 36	40.3	159.2	-1.0		-12.3	77	9308	07 18 21
07 19 50	RYSEX	09 36 36	40.4	160.1	-1.0		-11.8	-14	9308	No stop
07 23 20	---	09 40 06	40.6	161.3	-0.9		-11.2	196	9335	07 19 51
07 24 00	J1038+0512	09 40 46	40.5	160.6	-1.0		-11.6	27	9335	07 24 00
07 25 00	=1036+054	09 41 47	40.6	160.9	-1.0		-11.4	60	9342	07 24 01
07 25 00	RYSEX	09 41 47	40.6	161.8	-0.9		-10.8	-14	9342	No stop
07 28 30	---	09 45 17	40.8	162.9	-0.9		-10.2	196	9369	07 25 01
07 28 30	J1038+0512	09 45 17	40.8	162.0	-0.9		-10.7	-13	9369	No stop
07 30 00	=1036+054	09 46 47	40.8	162.5	-0.9		-10.4	77	9381	07 28 31
07 30 00	RYSEX	09 46 47	40.9	163.4	-0.8		-9.9	-14	9381	No stop
07 33 30	---	09 50 18	41.0	164.6	-0.8		-9.2	196	9408	07 30 01
07 34 10	J1038+0512	09 50 58	41.0	163.9	-0.8		-9.6	27	9408	07 34 10
07 35 10	=1036+054	09 51 58	41.0	164.2	-0.8		-9.5	60	9415	07 34 11
07 35 10	RYSEX	09 51 58	41.1	165.1	-0.7		-8.9	-14	9415	No stop
07 38 40	---	09 55 29	41.2	166.3	-0.7		-8.2	196	9442	07 35 11
07 38 40	J1038+0512	09 55 29	41.2	165.3	-0.7		-8.8	-13	9442	No stop
07 40 10	=1036+054	09 56 59	41.2	165.8	-0.7		-8.5	77	9454	07 38 41
07 40 10	J1035+0522	09 56 59	41.5	167.1	-0.6		-7.8	-15	9454	No stop
07 43 40	---	10 00 30	41.7	168.2	-0.6		-7.1	195	9481	07 40 11
07 44 20	J1038+0512	10 01 10	41.4	167.2	-0.6		-7.7	25	9481	07 44 20
07 45 20	=1036+054	10 02 10	41.4	167.5	-0.6		-7.5	60	9488	07 44 21
07 45 20	RYSEX	10 02 10	41.4	168.5	-0.6		-6.9	-14	9488	No stop
07 48 50	---	10 05 40	41.5	169.6	-0.5		-6.2	196	9515	07 45 21
07 48 50	J1038+0512	10 05 40	41.5	168.7	-0.6		-6.8	-13	9515	No stop
07 50 20	=1036+054	10 07 11	41.6	169.2	-0.5		-6.5	77	9527	07 48 51

Schedule for TORUN (Code Tr)

Page 28

e-EVN: em118b, ec054b, eg082f

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

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	7 Oct 2015	Day 280	---							
07 50 20	RYSEX	10 07 11	41.6	170.1	-0.5		-5.9	-14	9527	No stop
07 53 50	---	10 10 41	41.6	171.3	-0.4		-5.2	196	9554	07 50 21
07 54 30	J1038+0512	10 11 21	41.7	170.6	-0.5		-5.7	27	9554	07 54 30
07 55 30	=1036+054	10 12 22	41.7	170.9	-0.5		-5.5	60	9561	07 54 31
07 55 30	RYSEX	10 12 22	41.7	171.8	-0.4		-4.9	-14	9561	No stop
07 59 00	---	10 15 52	41.8	173.0	-0.3		-4.2	196	9588	07 55 31
07 59 00	J1038+0512	10 15 52	41.8	172.1	-0.4		-4.8	-13	9588	No stop
08 00 30	=1036+054	10 17 22	41.8	172.6	-0.4		-4.5	77	9600	07 59 01
08 00 30	RYSEX	10 17 22	41.8	173.5	-0.3		-3.9	-14	9600	No stop
08 04 00	---	10 20 53	41.8	174.7	-0.3		-3.2	196	9627	08 00 31
08 04 40	J1038+0512	10 21 33	41.9	174.0	-0.3		-3.6	27	9627	08 04 40
08 05 40	=1036+054	10 22 33	41.9	174.3	-0.3		-3.4	60	9635	08 04 41
08 05 40	RYSEX	10 22 33	41.9	175.2	-0.2		-2.9	-14	9635	No stop
08 09 10	---	10 26 04	41.9	176.4	-0.2		-2.2	196	9661	08 05 41
08 09 10	J1038+0512	10 26 04	42.0	175.5	-0.2		-2.7	-13	9661	No stop
08 10 40	=1036+054	10 27 34	42.0	176.0	-0.2		-2.4	77	9673	08 09 11
08 10 40	J1035+0522	10 27 34	42.2	177.2	-0.1		-1.7	-15	9673	No stop
08 14 10	---	10 31 05	42.2	178.4	-0.1		-0.9	195	9700	08 10 41
08 14 50	J1038+0512	10 31 45	42.0	177.4	-0.1		-1.6	25	9700	08 14 50
08 15 50	=1036+054	10 32 45	42.0	177.7	-0.1		-1.4	60	9708	08 14 51
08 15 50	RYSEX	10 32 45	41.9	178.6	-0.1		-0.8	-14	9708	No stop
08 19 20	---	10 36 15	41.9	179.8	-0.0		-0.1	196	9735	08 15 51
08 19 20	J1038+0512	10 36 15	42.0	178.9	-0.1		-0.7	-13	9735	No stop
08 20 50	=1036+054	10 37 46	42.0	179.4	-0.0		-0.4	77	9746	08 19 21
08 20 50	RYSEX	10 37 46	41.9	180.3	0.0		0.2	-14	9746	No stop
08 24 20	---	10 41 16	41.9	181.5	0.1		0.9	196	9773	08 20 51
08 24 20	J1038+0512	10 41 16	42.0	180.6	0.0		0.3	-13	9773	No stop
08 27 20	=1036+054	10 44 17	42.0	181.6	0.1		0.9	167	9796	08 24 21
08 30 20	1156+295	10 47 17	62.6	143.6	-1.2		-24.1	88	9796	08 30 20
08 34 00	---	10 50 58	62.9	145.2	-1.2		-23.1	220	9824	08 30 21

Schedule for TORUN (Code Tr)

Page 29

e-EVN: em118b, ec054b, eg082f

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

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	7 Oct 2015	Day 280	---							
08 37 00	J1415+1320	10 53 58	33.6	115.3	-3.4		-33.9	56	9824	08 37 00
08 40 00	=1413+135	10 56 59	34.0	116.0	-3.3		-33.7	180	9847	08 37 01
08 40 00	J1420+1205	10 56 59	32.4	115.6	-3.4		-33.6	-20	9847	No stop
08 43 30	---	11 00 29	32.8	116.5	-3.4		-33.3	190	9874	08 40 01
08 43 30	J1415+1320	11 00 29	34.5	116.8	-3.3		-33.4	-20	9874	No stop
08 45 00	=1413+135	11 02 00	34.7	117.2	-3.2		-33.3	70	9886	08 43 31
08 45 00	J1420+1205	11 02 00	33.0	116.9	-3.3		-33.2	-20	9886	No stop
08 48 30	---	11 05 30	33.5	117.7	-3.3		-32.9	190	9913	08 45 01
08 49 10	J1415+1320	11 06 10	35.3	118.3	-3.2		-32.9	20	9913	08 49 10
08 50 00	=1413+135	11 07 01	35.4	118.5	-3.2		-32.8	50	9919	08 49 11
08 50 00	J1420+1205	11 07 01	33.7	118.1	-3.2		-32.8	-20	9919	No stop
08 53 30	---	11 10 31	34.2	119.0	-3.2		-32.5	190	9946	08 50 01
08 53 30	J1415+1320	11 10 31	35.8	119.4	-3.1		-32.5	-20	9946	No stop
08 55 00	=1413+135	11 12 01	36.0	119.7	-3.1		-32.4	70	9958	08 53 31
08 55 00	J1420+1205	11 12 01	34.4	119.3	-3.2		-32.4	-20	9958	No stop
08 58 30	---	11 15 32	34.8	120.2	-3.1		-32.0	190	9985	08 55 01
08 59 10	J1415+1320	11 16 12	36.6	120.8	-3.0		-32.0	20	9985	08 59 10
09 00 00	=1413+135	11 17 02	36.7	121.0	-3.0		-31.9	50	9991	08 59 11
09 00 00	J1420+1205	11 17 02	35.0	120.6	-3.1		-31.9	-20	9991	No stop
09 03 30	---	11 20 33	35.5	121.5	-3.0		-31.6	190	10018	09 00 01
09 03 30	J1415+1320	11 20 33	37.1	121.9	-2.9		-31.6	-20	10018	No stop
09 05 00	=1413+135	11 22 03	37.3	122.3	-2.9		-31.4	70	10029	09 03 31
09 05 00	J1420+1205	11 22 03	35.7	121.9	-3.0		-31.4	-20	10029	No stop
09 08 30	---	11 25 34	36.1	122.8	-2.9		-31.1	190	10056	09 05 01
09 09 10	J1415+1320	11 26 14	37.9	123.4	-2.8		-31.0	20	10056	09 09 10
09 10 00	=1413+135	11 27 04	38.0	123.6	-2.8		-30.9	50	10063	09 09 11
09 10 00	J1420+1205	11 27 04	36.3	123.2	-2.9		-30.9	-20	10063	No stop
09 13 30	---	11 30 34	36.7	124.1	-2.8		-30.6	190	10090	09 10 01
09 13 30	J1415+1320	11 30 34	38.4	124.6	-2.8		-30.5	-20	10090	No stop
09 15 00	=1413+135	11 32 05	38.6	125.0	-2.7		-30.4	70	10101	09 13 31

Schedule for TORUN (Code Tr)

Page 30

e-EVN: em118b, ec054b, eg082f

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

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	7 Oct 2015	Day 280	---							
09 15 00	J1420+1205	11 32 05	36.9	124.5	-2.8		-30.4	-20	10101	No stop
09 18 30	---	11 35 35	37.3	125.4	-2.8		-30.0	190	10128	09 15 01
09 19 10	J1415+1320	11 36 15	39.1	126.1	-2.7		-29.9	20	10128	09 19 10
09 20 00	=1413+135	11 37 05	39.2	126.3	-2.7		-29.8	50	10135	09 19 11
09 20 00	J1420+1205	11 37 05	37.5	125.8	-2.7		-29.9	-20	10135	No stop
09 23 30	---	11 40 36	38.0	126.8	-2.7		-29.5	190	10161	09 20 01
09 23 30	J1415+1320	11 40 36	39.6	127.3	-2.6		-29.4	-20	10161	No stop
09 25 00	=1413+135	11 42 06	39.8	127.7	-2.6		-29.2	70	10173	09 23 31
09 25 00	J1420+1205	11 42 06	38.1	127.2	-2.7		-29.3	-20	10173	No stop
09 28 30	---	11 45 37	38.5	128.1	-2.6		-28.9	190	10200	09 25 01
09 29 10	J1415+1320	11 46 17	40.3	128.9	-2.5		-28.7	20	10200	09 29 10
09 30 00	=1413+135	11 47 07	40.4	129.1	-2.5		-28.6	50	10206	09 29 11
09 30 00	J1420+1205	11 47 07	38.7	128.5	-2.6		-28.7	-20	10206	No stop
09 33 30	---	11 50 38	39.1	129.5	-2.5		-28.3	190	10233	09 30 01
09 33 30	J1415+1320	11 50 38	40.8	130.1	-2.4		-28.2	-20	10233	No stop
09 35 00	=1413+135	11 52 08	41.0	130.5	-2.4		-28.0	70	10245	09 33 31
09 35 00	J1420+1205	11 52 08	39.3	129.9	-2.5		-28.1	-20	10245	No stop
09 38 30	---	11 55 38	39.7	130.9	-2.4		-27.6	190	10272	09 35 01
09 39 10	J1415+1320	11 56 19	41.4	131.7	-2.3		-27.4	20	10272	09 39 10
09 40 00	=1413+135	11 57 09	41.5	132.0	-2.3		-27.3	50	10278	09 39 11
09 40 00	J1420+1205	11 57 09	39.9	131.3	-2.4		-27.5	-20	10278	No stop
09 43 30	---	12 00 39	40.3	132.3	-2.3		-27.0	190	10305	09 40 01
09 43 30	J1415+1320	12 00 39	41.9	133.0	-2.3		-26.8	-20	10305	No stop
09 45 00	=1413+135	12 02 10	42.1	133.4	-2.2		-26.6	70	10317	09 43 31
09 45 00	J1420+1205	12 02 10	40.4	132.8	-2.3		-26.8	-20	10317	No stop
09 48 30	---	12 05 40	40.8	133.8	-2.3		-26.3	190	10344	09 45 01
09 49 10	J1415+1320	12 06 20	42.5	134.6	-2.2		-26.0	20	10344	09 49 10
09 50 00	=1413+135	12 07 10	42.6	134.9	-2.2		-25.9	50	10350	09 49 11
09 50 00	J1420+1205	12 07 10	41.0	134.2	-2.2		-26.1	-20	10350	No stop
09 53 30	---	12 10 41	41.4	135.2	-2.2		-25.6	190	10377	09 50 01

Schedule for TORUN (Code Tr)

Page 31

e-EVN: em118b, ec054b, eg082f

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

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	7 Oct 2015	Day 280	---							
09 53 30	J1415+1320	12 10 41	43.0	135.9	-2.1		-25.4	-20	10377	No stop
09 55 00	=1413+135	12 12 11	43.1	136.4	-2.1		-25.2	70	10388	09 53 31
09 55 00	J1420+1205	12 12 11	41.5	135.7	-2.2		-25.4	-20	10388	No stop
09 58 30	---	12 15 42	41.9	136.7	-2.1		-24.9	190	10415	09 55 01
09 59 10	J1415+1320	12 16 22	43.6	137.7	-2.0		-24.6	20	10415	09 59 10
10 00 00	=1413+135	12 17 12	43.7	137.9	-2.0		-24.4	50	10422	09 59 11
10 00 00	J1420+1205	12 17 12	42.0	137.2	-2.1		-24.7	-20	10422	No stop
10 03 30	---	12 20 43	42.4	138.2	-2.0		-24.1	190	10449	10 00 01
10 03 30	J1415+1320	12 20 43	44.0	139.0	-1.9		-23.9	-20	10449	No stop
10 05 00	=1413+135	12 22 13	44.2	139.5	-1.9		-23.6	70	10460	10 03 31
10 05 00	J1420+1205	12 22 13	42.5	138.7	-2.0		-23.9	-20	10460	No stop
10 08 30	---	12 25 43	42.9	139.7	-1.9		-23.4	190	10487	10 05 01
10 09 10	J1415+1320	12 26 24	44.6	140.8	-1.8		-23.0	20	10487	10 09 10
10 10 00	=1413+135	12 27 14	44.6	141.0	-1.8		-22.8	50	10494	10 09 11
10 10 00	J1420+1205	12 27 14	43.0	140.2	-1.9		-23.1	-20	10494	No stop
10 13 30	---	12 30 44	43.4	141.3	-1.8		-22.6	190	10520	10 10 01
10 13 30	J1415+1320	12 30 44	45.0	142.1	-1.8		-22.2	-20	10520	No stop
10 15 00	=1413+135	12 32 14	45.1	142.6	-1.7		-22.0	70	10532	10 13 31
10 15 00	J1420+1205	12 32 14	43.5	141.8	-1.8		-22.3	-19	10532	No stop
10 18 30	---	12 35 45	43.8	142.9	-1.8		-21.8	191	10559	10 15 01
10 19 10	J1415+1320	12 36 25	45.5	144.0	-1.7		-21.3	20	10559	10 19 10
10 20 00	=1413+135	12 37 15	45.5	144.2	-1.7		-21.1	50	10565	10 19 11
10 20 00	J1420+1205	12 37 15	44.0	143.3	-1.7		-21.5	-19	10565	No stop
10 23 30	---	12 40 46	44.3	144.4	-1.7		-20.9	191	10592	10 20 01
10 23 30	J1415+1320	12 40 46	45.9	145.4	-1.6		-20.5	-20	10592	No stop
10 25 00	=1413+135	12 42 16	46.0	145.9	-1.6		-20.2	70	10604	10 23 31
10 25 00	J1420+1205	12 42 16	44.4	144.9	-1.7		-20.7	-19	10604	No stop
10 28 30	---	12 45 47	44.7	146.1	-1.6		-20.0	191	10631	10 25 01
10 29 10	J1415+1320	12 46 27	46.3	147.3	-1.5		-19.5	20	10631	10 29 10
10 30 00	=1413+135	12 47 17	46.4	147.5	-1.5		-19.3	50	10637	10 29 11

Schedule for TORUN (Code Tr)

Page 32

e-EVN: em118b, ec054b, eg082f

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

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	7 Oct 2015	Day 280	---							
10 30 00	J1420+1205	12 47 17	44.8	146.5	-1.6		-19.8	-19	10637	No stop
10 33 30	---	12 50 48	45.1	147.7	-1.5		-19.2	191	10664	10 30 01
10 33 30	J1415+1320	12 50 48	46.7	148.7	-1.4		-18.7	-19	10664	No stop
10 35 00	=1413+135	12 52 18	46.8	149.2	-1.4		-18.4	71	10676	10 33 31
10 35 00	J1420+1205	12 52 18	45.2	148.2	-1.5		-18.9	-19	10676	No stop
10 38 30	---	12 55 48	45.5	149.3	-1.4		-18.2	191	10703	10 35 01
10 39 10	J1415+1320	12 56 28	47.1	150.6	-1.3		-17.6	21	10703	10 39 10
10 40 00	=1413+135	12 57 19	47.2	150.9	-1.3		-17.5	50	10709	10 39 11
10 40 00	J1420+1205	12 57 19	45.6	149.8	-1.4		-18.0	-19	10709	No stop
10 43 30	---	13 00 49	45.9	151.0	-1.3		-17.3	191	10736	10 40 01
10 43 30	J1415+1320	13 00 49	47.4	152.1	-1.3		-16.8	-19	10736	No stop
10 45 00	=1413+135	13 02 19	47.5	152.6	-1.2		-16.5	71	10747	10 43 31
10 45 00	J1420+1205	13 02 19	46.0	151.5	-1.3		-17.0	-19	10747	No stop
10 48 30	---	13 05 50	46.2	152.7	-1.3		-16.4	191	10774	10 45 01
10 49 10	J1415+1320	13 06 30	47.8	154.1	-1.2		-15.6	21	10774	10 49 10
10 50 00	=1413+135	13 07 20	47.9	154.4	-1.2		-15.5	50	10781	10 49 11
10 50 00	J1420+1205	13 07 20	46.3	153.2	-1.2		-16.1	-19	10781	No stop
10 53 30	---	13 10 51	46.6	154.4	-1.2		-15.4	191	10808	10 50 01
10 53 30	J1415+1320	13 10 51	48.1	155.6	-1.1		-14.8	-19	10808	No stop
10 55 00	=1413+135	13 12 21	48.2	156.1	-1.1		-14.5	71	10819	10 53 31
10 55 00	J1420+1205	13 12 21	46.7	154.9	-1.2		-15.1	-19	10819	No stop
10 58 30	---	13 15 52	46.9	156.1	-1.1		-14.4	191	10846	10 55 01
10 59 10	J1415+1320	13 16 32	48.4	157.6	-1.0		-13.6	21	10846	10 59 10
11 00 00	=1413+135	13 17 22	48.5	157.9	-1.0		-13.4	50	10853	10 59 11
11 00 00	J1420+1205	13 17 22	47.0	156.7	-1.1		-14.1	-19	10853	No stop
11 03 30	---	13 20 52	47.2	157.9	-1.0		-13.4	191	10879	11 00 01
11 03 30	J1415+1320	13 20 52	48.7	159.2	-0.9		-12.7	-19	10879	No stop
11 05 00	=1413+135	13 22 23	48.7	159.7	-0.9		-12.3	71	10891	11 03 31
11 05 00	J1420+1205	13 22 23	47.3	158.4	-1.0		-13.1	-19	10891	No stop
11 08 30	---	13 25 53	47.5	159.6	-0.9		-12.3	191	10918	11 05 01

Schedule for TORUN (Code Tr)

Page 33

e-EVN: em118b, ec054b, eg082f

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

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	7 Oct 2015	Day 280 ---								
11 09 10	J1415+1320	13 26 33	48.9	161.2	-0.8		-11.5	21	10918	11 09 10
11 10 00	=1413+135	13 27 24	49.0	161.5	-0.8		-11.3	50	10924	11 09 11
11 10 00	J1420+1205	13 27 24	47.5	160.2	-0.9		-12.0	-19	10924	No stop
11 13 30	---	13 30 54	47.7	161.4	-0.8		-11.3	191	10951	11 10 01
11 13 30	J1415+1320	13 30 54	49.1	162.8	-0.8		-10.5	-19	10951	No stop
11 15 00	=1413+135	13 32 24	49.2	163.4	-0.7		-10.2	71	10963	11 13 31
11 15 00	J1420+1205	13 32 24	47.8	162.0	-0.8		-11.0	-19	10963	No stop
11 18 30	---	13 35 55	47.9	163.2	-0.8		-10.2	191	10990	11 15 01
11 19 10	J1415+1320	13 36 35	49.4	164.9	-0.7		-9.2	21	10990	11 19 10
11 20 00	=1413+135	13 37 25	49.4	165.2	-0.7		-9.1	50	10996	11 19 11
11 20 00	J1420+1205	13 37 25	48.0	163.8	-0.7		-9.9	-19	10996	No stop
11 23 30	---	13 40 56	48.1	165.0	-0.7		-9.1	191	11023	11 20 01
11 23 30	J1415+1320	13 40 56	49.5	166.5	-0.6		-8.3	-19	11023	No stop
11 25 00	=1413+135	13 42 26	49.6	167.1	-0.6		-7.9	71	11035	11 23 31
11 25 00	J1420+1205	13 42 26	48.2	165.6	-0.7		-8.8	-19	11035	No stop
11 28 30	---	13 45 57	48.3	166.8	-0.6		-8.0	191	11061	11 25 01
11 29 10	J1415+1320	13 46 37	49.7	168.6	-0.5		-7.0	21	11061	11 29 10
11 30 00	=1413+135	13 47 27	49.8	168.9	-0.5		-6.8	50	11068	11 29 11

SETUP FILE INFORMATION:

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

===== Setup file: sess315.C1024

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

The following frequency sets based on these setups were used.

Frequency Set: 7 Setup file default. Used with PCAL = off

LO sum=	4942.49	4942.49	4942.49	4942.49	4974.49	4974.49	4974.49	4974.49
	5006.49	5006.49	5006.49	5006.49	5038.49	5038.49	5038.49	5038.49
BBC fr=	742.49	742.49	742.49	742.49	774.49	774.49	774.49	774.49
	806.49	806.49	806.49	806.49	838.49	838.49	838.49	838.49
Bandwd=	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00

Matching frequency sets: 7

Track assignments are:

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

barrel=roll_off

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
* J0839+5112	08 36 08.137866	* 08 39 46.204000	08 40 53.313956	0.00
	51 22 40.01289	* 51 12 02.88000	51 08 24.53212	0.00
* J1420+1205	14 18 22.507470	* 14 20 48.011000	14 21 32.538333	0.00
	12 19 28.23629	* 12 05 46.40000	12 01 42.99159	0.00
* J2134-0419	21 31 35.130293	* 21 34 12.012000	21 35 02.138600	0.00
	-04 32 32.39780	* -04 19 09.67000	-04 14 43.38634	0.00
* J1649+2635	16 47 22.095023	* 16 49 24.010000	16 50 01.566758	0.00
	26 40 10.57727	* 26 35 02.60000	26 33 49.94511	0.00
* V1396CYG	20 58 12.147872	* 21 00 06.192380	21 00 43.300442	0.00
	39 52 23.38441	* 40 04 09.27690	40 08 15.68877	0.00
* J2115+3742	21 12 44.469033	* 21 14 44.117900	21 15 23.048359	0.00
	37 29 56.03237	* 37 42 25.72400	37 46 44.78599	0.00
* V596CAS	01 55 57.070656	* 01 59 24.162680	02 00 32.968772	0.00
	58 16 40.34036	* 58 31 12.98670	58 35 41.86889	0.00
* J0151+5454	01 48 18.839204	* 01 51 36.288800	01 52 41.700199	0.00
	54 39 48.95530	* 54 54 37.68900	54 59 13.16396	0.00

* RYSEX	10 33 24.524288	* 10 36 00.509610	10 36 48.534096	0.00
	05 22 48.30313	* 05 07 14.82760	05 02 23.70545	0.00
* J1035+0522	10 32 21.484250	* 10 34 57.605900	10 35 45.673074	0.00
	05 38 04.61084	* 05 22 32.81500	05 17 42.11457	0.00
* J0102+5824	00 59 43.470972	* 01 02 45.762380	01 03 46.867877	0.19
0059+581	58 08 04.84744	* 58 24 11.13659	58 29 16.29998	0.10
J0102+58	/aps3/opt/share/sched_11.3U1/catalogs/sources.vlba rfc_2012b Petrov, 2012, unpublished 288749 observations			
* J0147+5840	01 44 24.000042	* 01 47 46.541223	01 48 53.979610	2.66
0144+584	58 25 48.56646	* 58 40 44.97262	58 45 22.67689	1.74
	/aps3/opt/share/sched_11.3U1/catalogs/sources.vlba GSFC 2011B astro solution 22 Observations			
J0555+3948	05 52 01.407174	* 05 55 30.805616	05 56 37.233347	0.13
0552+398	39 48 21.94578	* 39 48 49.16493	39 48 40.19966	0.10
* DA193	/aps3/opt/share/sched_11.3U1/catalogs/sources.vlba			
J0555+39	rfc_2012b Petrov, 2012, unpublished 376994 observations			
* J0849+5108	08 46 22.457290	* 08 49 57.976852	08 51 04.175115	0.18
0846+513	51 19 39.98161	* 51 08 29.02397	51 04 40.71315	0.14
	/aps3/opt/share/sched_11.3U1/catalogs/sources.vlba rfc_2012b Petrov, 2012, unpublished 324 observations			
J0854+2006	08 51 57.250618	* 08 54 48.874930	08 55 42.059559	0.11
0851+202	20 17 58.41733	* 20 06 30.64078	20 02 47.50493	0.10
J0854+20	/aps3/opt/share/sched_11.3U1/catalogs/sources.vlba			
* 0J287	rfc_2012b Petrov, 2012, unpublished 191510 observations			
* J1038+0512	10 36 10.827228	* 10 38 46.779881	10 39 34.784250	0.12
1036+054	05 28 06.89952	* 05 12 29.08645	05 07 36.72354	0.17
	/aps3/opt/share/sched_11.3U1/catalogs/sources.vlba rfc_2012b Petrov, 2012, unpublished 315 observations			
J1159+2914	11 56 57.786211	* 11 59 31.833912	12 00 18.547562	0.11
* 1156+295	29 31 25.73868	* 29 14 43.82678	29 09 32.73181	0.10
J1159+29	/aps3/opt/share/sched_11.3U1/catalogs/sources.vlba rfc_2012b Petrov, 2012, unpublished 64535 observations			
J1407+2827	14 04 45.615156	* 14 07 00.394414	14 07 41.181959	0.24
1404+286	28 41 29.23519	* 28 27 14.69022	28 23 00.78699	0.34
J1407+28	/aps3/opt/share/sched_11.3U1/catalogs/sources.vlba			
* 0Q208	GSFC 2011B astro solution 66461 Observations			
* J1415+1320	14 13 33.910858	* 14 15 58.817510	14 16 43.125939	0.11
1413+135	13 34 17.40450	* 13 20 23.71274	13 16 16.38925	0.11
J1415+13	/aps3/opt/share/sched_11.3U1/catalogs/sources.vlba rfc_2012b Petrov, 2012, unpublished 1870 observations			
J1640+3946	16 38 48.169686	* 16 40 29.632770	16 41 00.493816	0.13
1638+398	39 52 30.08655	* 39 46 46.02836	39 45 23.38616	0.10
J1640+39	/aps3/opt/share/sched_11.3U1/catalogs/sources.vlba			
* NRA0512	rfc_2012b Petrov, 2012, unpublished 107387 observations			
* J1642+2523	16 40 36.555193	* 16 42 40.411835	16 43 18.551200	0.21
1640+254	25 28 43.57706	* 25 23 07.68202	25 21 45.80343	0.30
	/aps3/opt/share/sched_11.3U1/catalogs/sources.vlba rfc_2012b Petrov, 2012, unpublished 90 observations			
J1642+3948	16 41 17.606228	* 16 42 58.809965	16 43 29.608322	0.77
* 3C345	39 54 10.81496	* 39 48 36.99402	39 47 17.68875	0.52
1641+399	/aps3/opt/share/sched_11.3U1/catalogs/sources.vlba			

J1642+39	GSFC 2011B astro solution	52621 Observations	
* J2113+4012	21 11 33.260021	* 21 13 29.486338	21 14 07.393316 0.79
2111+400	40 00 25.23968	* 40 12 51.38819	40 17 09.69799 0.69
	/aps3/opt/share/sched_11.3U1/catalogs/sources.vlba		
	GSFC 2011B astro solution	35 Observations	
* J2142-0437	21 39 59.966268	* 21 42 36.901677	21 43 27.077578 0.25
2140-048	-04 51 27.72445	*-04 37 43.51269	-04 33 10.84370 0.47
J2142-04	/aps3/opt/share/sched_11.3U1/catalogs/sources.vlba		
	rfc_2012b Petrov, 2012, unpublished 79 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)
J0839+5112	77.2
J1420+1205	28.8
J2134-0419	130.6
J1649+2635	66.3
V1396CYG	118.2
J2115+3742	121.7
V596CAS	124.9
J0151+5454	128.7
RYSEX	34.6
J1035+0522	34.9
J0102+5824	126.7
J0147+5840	125.3
DA193	103.4
J0849+5108	75.8
OJ287	62.7
J1038+0512	34.0
1156+295	36.4
OQ208	38.6
J1415+1320	28.6
NRA0512	69.7
J1642+2523	64.5
3C345	70.1
J2113+4012	120.6
J2142-0437	132.6

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of $60 \deg F^{-0.6}$ 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

rk12cttr

RADIOASTRON AGN SURVEY
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 Survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
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 8 Oct 2015 Day 281 ---

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

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

06 00 00	0014+813	08 20 29	48.3	-10.8	8.0	51.1	0	0	06 00 00
06 14 30	---	08 35 02	47.9	-10.3	8.3	47.9	870	28	06 00 01
06 15 00	0014+813	08 35 32	47.9	-10.3	8.3	47.8	25	28	06 15 00
06 25 00	---	08 45 33	47.7	-9.9	8.5	45.5	600	47	06 15 01

----- 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

06 30 00	0014+813	08 50 34	47.5	-9.7	8.5	44.4	295	47	06 30 00
06 44 30	---	09 05 06	47.2	-9.2	8.8	41.3	870	75	06 30 01
06 45 00	0014+813	09 05 37	47.2	-9.1	8.8	41.2	25	75	06 45 00
07 00 00	---	09 20 39	46.8	-8.5	9.0	37.9	900	104	06 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: 6	Station: TORUN	Total bit rate: 256
Format: MKIV1:4	Bits per sample: 2	Sample rate: 32.000
Number of channels: 4	DBE type:	Speedup factor: 1.00

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

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

```

```

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

```

===== 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: 6 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: 6

```

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)			Error
	(B1950)	(J2000)	(Date)	(mas)
* 0014+813	00 14 04.461856	* 00 17 08.474899	00 18 20.426225	0.00
J0017+8135	81 18 28.65820	* 81 35 08.13656	81 40 27.38497	0.00

rk12cutr

RADIOASTRON AGN SURVEY PI: Yuri Kovalev

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

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

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN Survey

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

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 8 Oct 2015 Day 281 ---

----- 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 10 00	1842+681	14 31 30	57.6	38.1	-4.2	-85.5	0	0	12 10 00
12 22 00	---	14 43 32	58.7	38.2	-4.0	-88.2	720	23	12 10 01
12 22 30	1842+681	14 44 02	58.8	38.2	-4.0	-88.3	24	23	12 22 30
12 34 30	---	14 56 04	59.9	38.2	-3.8	-91.1	720	46	12 22 31
12 35 00	1842+681	14 56 34	59.9	38.2	-3.8	-91.2	24	46	12 35 00
12 47 00	---	15 08 36	61.1	38.1	-3.6	-94.1	720	69	12 35 01
12 47 30	1842+681	15 09 06	61.1	38.1	-3.6	-94.2	24	69	12 47 30
13 00 00	---	15 21 38	62.3	37.9	-3.3	-97.3	750	93	12 47 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: 2	Station: TORUN	Total bit rate: 256
Format: MKIV1:4	Bits per sample: 2	Sample rate: 32.000
Number of channels: 4	DBE type:	Speedup factor: 1.00

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

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

```

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 27.831787	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 39.45391	0.00
	fake circumpolar target for a TS to look at			
* 1842+681	18 42 43.397968	* 18 42 33.641683	18 42 30.335288	0.00
J1842+6809	68 06 19.82590	* 68 09 25.22773	68 10 52.51812	0.00
	./rk12cu_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 3737 observations, RA-A03-04, RA			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
1842+681	94.3

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

ga037btr

MASER IMAGING

PI: *Alexei Alakoz*

Address: ASC Lebedev Phone: +7-495-3332512 EMAIL: kirx@scan.sai.msu.ru

Observing mode: K-band, dual-pol

Schedule for TORUN (Code Tr)

Page 2

Maser imaging

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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 8 Oct 2015	Day 281 ---								
----- Space-ground K-band fringe finder scan -----										
Next scan frequencies:		22236.00	22236.00	22236.00	22236.00					
Next BBC frequencies:		736.00	736.00	736.00	736.00					
Next scan bandwidths:		16.00	16.00	16.00	16.00					
15 00 00	1923+210	17 21 58	50.1	131.1	-2.1		-29.0	0	0	15 00 00
15 10 00	---	17 32 00	51.2	134.4	-1.9		-27.4	600	19	15 00 01
----- Ground-only K-band VLBI scans -----										
15 11 00	W51_E8_H20	17 33 00	45.6	139.7	-1.9		-23.7	25	19	15 11 00
15 12 00	---	17 34 00	45.7	140.0	-1.8		-23.5	60	21	15 11 01
15 12 00	1922+155	17 34 00	46.7	139.0	-1.9		-24.1	-17	21	No stop
15 13 00	---	17 35 00	46.8	139.4	-1.8		-24.0	43	23	15 12 01
15 13 00	W51_E8_H20	17 35 00	45.8	140.3	-1.8		-23.3	-16	23	No stop
15 14 00	---	17 36 00	45.9	140.7	-1.8		-23.2	44	25	15 13 01
15 14 00	1922+155	17 36 00	46.9	139.7	-1.8		-23.8	-17	25	No stop
15 15 00	---	17 37 00	47.0	140.0	-1.8		-23.6	43	27	15 14 01
15 15 00	W51_E8_H20	17 37 00	46.0	141.0	-1.8		-23.0	-16	27	No stop
15 16 00	---	17 38 00	46.1	141.3	-1.8		-22.8	44	29	15 15 01
15 16 00	1922+155	17 38 00	47.1	140.3	-1.8		-23.5	-17	29	No stop
15 17 00	---	17 39 01	47.2	140.7	-1.8		-23.3	43	31	15 16 01
15 17 00	W51_E8_H20	17 39 01	46.2	141.6	-1.8		-22.7	-16	31	No stop
15 18 00	---	17 40 01	46.3	141.9	-1.7		-22.5	44	33	15 17 01
15 18 00	1922+155	17 40 01	47.3	141.0	-1.8		-23.1	-17	33	No stop
15 19 00	---	17 41 01	47.4	141.3	-1.7		-22.9	43	35	15 18 01
----- Space-ground water maser scans (K-band) -----										
15 20 00	W51_E8_H20	17 42 01	46.5	142.6	-1.7		-22.1	44	35	15 20 00
15 30 00	---	17 52 03	47.3	145.9	-1.5		-20.3	600	54	15 20 01
15 31 00	W51_E8_H20	17 53 03	47.4	146.2	-1.5		-20.2	53	54	15 31 00
15 40 00	---	18 02 04	48.2	149.3	-1.4		-18.5	540	71	15 31 01
15 41 00	W51_E8_H20	18 03 05	48.2	149.7	-1.4		-18.3	53	71	15 41 00
15 50 00	---	18 12 06	48.9	152.8	-1.2		-16.5	540	88	15 41 01

Schedule for TORUN (Code Tr)

Page 3

Maser imaging

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	8 Oct 2015	Day 281	---							
----- Ground-only K-band VLBI scans -----										
15 52 00	W51_E8_H20	18 14 06	49.0	153.5	-1.2		-16.1	113	88	15 52 00
15 53 00	---	18 15 07	49.1	153.9	-1.2		-15.9	60	90	15 52 01
15 53 00	1922+155	18 15 07	50.1	153.0	-1.2		-16.4	-17	90	No stop
15 54 00	---	18 16 07	50.2	153.4	-1.2		-16.2	43	92	15 53 01
15 54 45	W51_E8_H20	18 16 52	49.2	154.5	-1.1		-15.5	28	92	15 54 45
15 55 45	---	18 17 52	49.3	154.9	-1.1		-15.3	60	94	15 54 46
15 55 45	1922+155	18 17 52	50.3	154.0	-1.1		-15.8	-17	94	No stop
15 56 45	---	18 18 52	50.4	154.4	-1.1		-15.6	43	96	15 55 46
15 56 45	W51_E8_H20	18 18 52	49.3	155.2	-1.1		-15.1	-17	96	No stop
15 57 45	---	18 19 52	49.4	155.6	-1.1		-14.9	43	98	15 56 46
15 57 45	1922+155	18 19 52	50.5	154.8	-1.1		-15.4	-17	98	No stop
15 58 45	---	18 20 53	50.5	155.1	-1.1		-15.2	43	100	15 57 46
15 58 45	W51_E8_H20	18 20 53	49.4	155.9	-1.1		-14.7	-17	100	No stop
15 59 45	---	18 21 53	49.5	156.3	-1.0		-14.4	43	102	15 58 46
15 59 45	1922+155	18 21 53	50.6	155.5	-1.1		-15.0	-17	102	No stop
16 00 45	---	18 22 53	50.6	155.9	-1.0		-14.8	43	104	15 59 46
16 00 45	W51_E8_H20	18 22 53	49.6	156.7	-1.0		-14.2	-17	104	No stop
16 01 45	---	18 23 53	49.6	157.0	-1.0		-14.0	43	106	16 00 46
16 01 45	1922+155	18 23 53	50.7	156.2	-1.0		-14.6	-17	106	No stop
16 02 45	---	18 24 53	50.8	156.6	-1.0		-14.3	43	108	16 01 46
16 02 45	W51_E8_H20	18 24 53	49.7	157.4	-1.0		-13.8	-17	108	No stop
16 03 45	---	18 25 53	49.7	157.7	-1.0		-13.6	43	110	16 02 46
16 03 45	1922+155	18 25 53	50.8	157.0	-1.0		-14.1	-17	110	No stop
16 04 45	---	18 26 53	50.9	157.3	-1.0		-13.9	43	112	16 03 46
16 05 30	W51_E8_H20	18 27 39	49.8	158.4	-0.9		-13.2	28	112	16 05 30
16 06 30	---	18 28 39	49.9	158.8	-0.9		-13.0	60	113	16 05 31
16 06 30	1922+155	18 28 39	51.0	158.0	-0.9		-13.5	-17	113	No stop
16 07 30	---	18 29 39	51.0	158.4	-0.9		-13.3	43	115	16 06 31

Schedule for TORUN (Code Tr)

Page 4

Maser imaging

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	8 Oct 2015	Day 281 ---								
16 07 30	W51_E8_H20	18 29 39	50.0	159.1	-0.9		-12.8	-17	115	No stop
16 08 30	---	18 30 39	50.0	159.5	-0.9		-12.6	43	117	16 07 31
16 08 30	1922+155	18 30 39	51.1	158.7	-0.9		-13.1	-17	117	No stop
16 09 30	---	18 31 39	51.2	159.1	-0.9		-12.8	43	119	16 08 31
16 09 30	W51_E8_H20	18 31 39	50.1	159.9	-0.9		-12.3	-17	119	No stop
16 10 30	---	18 32 39	50.1	160.2	-0.9		-12.1	43	121	16 09 31
16 10 30	1922+155	18 32 39	51.2	159.5	-0.9		-12.6	-17	121	No stop
16 11 30	---	18 33 40	51.3	159.9	-0.9		-12.4	43	123	16 10 31
16 11 30	W51_E8_H20	18 33 40	50.2	160.6	-0.8		-11.9	-17	123	No stop
16 12 30	---	18 34 40	50.2	161.0	-0.8		-11.7	43	125	16 11 31
16 12 30	1922+155	18 34 40	51.3	160.2	-0.8		-12.2	-17	125	No stop
16 13 30	---	18 35 40	51.4	160.6	-0.8		-11.9	43	127	16 12 31
16 13 30	W51_E8_H20	18 35 40	50.3	161.3	-0.8		-11.4	-17	127	No stop
16 14 30	---	18 36 40	50.3	161.7	-0.8		-11.2	43	129	16 13 31
16 14 30	1922+155	18 36 40	51.4	161.0	-0.8		-11.7	-17	129	No stop
16 15 30	---	18 37 40	51.5	161.4	-0.8		-11.5	43	131	16 14 31
16 16 15	W51_E8_H20	18 38 25	50.4	162.4	-0.8		-10.8	28	131	16 16 15
16 17 15	---	18 39 26	50.4	162.7	-0.8		-10.6	60	133	16 16 16
16 17 15	1922+155	18 39 26	51.5	162.0	-0.8		-11.1	-17	133	No stop
16 18 15	---	18 40 26	51.6	162.4	-0.7		-10.9	43	135	16 17 16
16 18 15	W51_E8_H20	18 40 26	50.5	163.1	-0.7		-10.4	-17	135	No stop
16 19 15	---	18 41 26	50.5	163.5	-0.7		-10.2	43	137	16 18 16
16 19 15	1922+155	18 41 26	51.6	162.8	-0.7		-10.6	-17	137	No stop
16 20 15	---	18 42 26	51.7	163.2	-0.7		-10.4	43	138	16 19 16
16 20 15	W51_E8_H20	18 42 26	50.6	163.9	-0.7		-9.9	-17	138	No stop
16 21 15	---	18 43 26	50.6	164.2	-0.7		-9.7	43	140	16 20 16
16 21 15	1922+155	18 43 26	51.7	163.6	-0.7		-10.2	-17	140	No stop
16 22 15	---	18 44 26	51.8	164.0	-0.7		-9.9	43	142	16 21 16
16 22 15	W51_E8_H20	18 44 26	50.6	164.6	-0.7		-9.5	-17	142	No stop
16 23 15	---	18 45 27	50.7	165.0	-0.7		-9.2	43	144	16 22 16

Schedule for TORUN (Code Tr)

Page 5

Maser imaging

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	8 Oct 2015	Day 281 ---								
16 23 15	1922+155	18 45 27	51.8	164.3	-0.7		-9.7	-17	144	No stop
16 24 15	---	18 46 27	51.8	164.7	-0.6		-9.5	43	146	16 23 16
16 24 15	W51_E8_H20	18 46 27	50.7	165.4	-0.6		-9.0	-17	146	No stop
16 25 15	---	18 47 27	50.8	165.8	-0.6		-8.8	43	148	16 24 16
16 25 15	1922+155	18 47 27	51.9	165.1	-0.6		-9.2	-17	148	No stop
16 26 15	---	18 48 27	51.9	165.5	-0.6		-9.0	43	150	16 25 16
16 29 45	2200+420	18 51 58	56.8	89.1	-3.2		-54.3	42	150	16 29 45
16 39 45	---	19 01 59	58.3	91.2	-3.0		-54.3	600	169	16 29 46
16 43 45	W51_E8_H20	19 06 00	51.3	172.8	-0.3		-4.4	62	169	16 43 45
16 44 45	---	19 07 00	51.3	173.2	-0.3		-4.2	60	171	16 43 46
16 44 45	1922+155	19 07 00	52.4	172.7	-0.3		-4.5	-17	171	No stop
16 45 45	---	19 08 00	52.5	173.1	-0.3		-4.3	43	173	16 44 46
16 46 30	W51_E8_H20	19 08 45	51.3	173.9	-0.3		-3.8	28	173	16 46 30
16 47 30	---	19 09 46	51.3	174.3	-0.2		-3.5	60	175	16 46 31
16 47 30	1922+155	19 09 46	52.5	173.8	-0.3		-3.9	-17	175	No stop
16 48 30	---	19 10 46	52.5	174.2	-0.2		-3.6	43	177	16 47 31
16 48 30	W51_E8_H20	19 10 46	51.4	174.7	-0.2		-3.3	-17	177	No stop
16 49 30	---	19 11 46	51.4	175.1	-0.2		-3.1	43	179	16 48 31
16 49 30	1922+155	19 11 46	52.5	174.6	-0.2		-3.4	-17	179	No stop
16 50 30	---	19 12 46	52.5	175.0	-0.2		-3.1	43	181	16 49 31
16 50 30	W51_E8_H20	19 12 46	51.4	175.5	-0.2		-2.8	-17	181	No stop
16 51 30	---	19 13 46	51.4	175.9	-0.2		-2.6	43	183	16 50 31
16 51 30	1922+155	19 13 46	52.6	175.4	-0.2		-2.9	-17	183	No stop
16 52 30	---	19 14 46	52.6	175.8	-0.2		-2.6	43	185	16 51 31
16 52 30	W51_E8_H20	19 14 46	51.4	176.2	-0.2		-2.3	-17	185	No stop
16 53 30	---	19 15 47	51.4	176.6	-0.1		-2.1	43	187	16 52 31
16 53 30	1922+155	19 15 47	52.6	176.2	-0.2		-2.4	-17	187	No stop
16 54 30	---	19 16 47	52.6	176.6	-0.1		-2.1	43	188	16 53 31
16 54 30	W51_E8_H20	19 16 47	51.4	177.0	-0.1		-1.8	-17	188	No stop
16 55 30	---	19 17 47	51.4	177.4	-0.1		-1.6	43	190	16 54 31

Schedule for TORUN (Code Tr)

Page 6

Maser imaging

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	8 Oct 2015	Day 281 ---								
16 55 30	1922+155	19 17 47	52.6	177.0	-0.1		-1.9	-17	190	No stop
16 56 30	---	19 18 47	52.6	177.4	-0.1		-1.6	43	192	16 55 31
16 57 15	W51_E8_H20	19 19 32	51.4	178.1	-0.1		-1.2	28	192	16 57 15
16 58 15	---	19 20 32	51.4	178.5	-0.1		-0.9	60	194	16 57 16
16 58 15	1922+155	19 20 32	52.6	178.1	-0.1		-1.2	-17	194	No stop
16 59 15	---	19 21 32	52.6	178.5	-0.1		-0.9	43	196	16 58 16
16 59 15	W51_E8_H20	19 21 32	51.4	178.9	-0.0		-0.7	-17	196	No stop
17 00 15	---	19 22 33	51.4	179.3	-0.0		-0.5	43	198	16 59 16
17 00 15	1922+155	19 22 33	52.6	178.9	-0.0		-0.7	-17	198	No stop
17 01 15	---	19 23 33	52.6	179.3	-0.0		-0.5	43	200	17 00 16
17 01 15	W51_E8_H20	19 23 33	51.4	179.6	-0.0		-0.2	-17	200	No stop
17 02 15	---	19 24 33	51.4	180.0	0.0		0.0	43	202	17 01 16
17 02 15	1922+155	19 24 33	52.6	179.7	-0.0		-0.2	-17	202	No stop
17 03 15	---	19 25 33	52.6	180.1	0.0		0.0	43	204	17 02 16
17 03 15	W51_E8_H20	19 25 33	51.4	180.4	0.0		0.3	-18	204	No stop
17 04 15	---	19 26 33	51.4	180.8	0.0		0.5	42	206	17 03 16
17 04 15	1922+155	19 26 33	52.6	180.5	0.0		0.3	-18	206	No stop
17 05 15	---	19 27 33	52.6	180.9	0.0		0.5	42	208	17 04 16
17 05 15	W51_E8_H20	19 27 33	51.4	181.2	0.1		0.7	-18	208	No stop
17 06 15	---	19 28 34	51.4	181.6	0.1		1.0	42	210	17 05 16
17 06 15	1922+155	19 28 34	52.6	181.3	0.1		0.8	-18	210	No stop
17 07 15	---	19 29 34	52.6	181.7	0.1		1.0	42	212	17 06 16
17 08 00	W51_E8_H20	19 30 19	51.4	182.3	0.1		1.4	27	212	17 08 00
17 09 00	---	19 31 19	51.4	182.7	0.1		1.7	60	213	17 08 01
17 09 00	1922+155	19 31 19	52.6	182.4	0.1		1.5	-18	213	No stop
17 10 00	---	19 32 19	52.6	182.8	0.1		1.7	42	215	17 09 01
17 10 00	W51_E8_H20	19 32 19	51.4	183.1	0.1		1.9	-18	215	No stop
17 11 00	---	19 33 19	51.4	183.4	0.1		2.1	42	217	17 10 01
17 11 00	1922+155	19 33 19	52.6	183.1	0.1		2.0	-18	217	No stop
17 12 00	---	19 34 20	52.6	183.5	0.1		2.2	42	219	17 11 01

Schedule for TORUN (Code Tr)

Page 7

Maser imaging

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	8 Oct 2015	Day 281 ---							
17 12 00	W51_E8_H20	19 34 20	51.4	183.8	0.2	2.4	-18	219	No stop
17 13 00	---	19 35 20	51.4	184.2	0.2	2.6	42	221	17 12 01
17 13 00	1922+155	19 35 20	52.6	183.9	0.2	2.5	-18	221	No stop
17 14 00	---	19 36 20	52.6	184.3	0.2	2.7	42	223	17 13 01
17 14 00	W51_E8_H20	19 36 20	51.4	184.6	0.2	2.9	-18	223	No stop
17 15 00	---	19 37 20	51.4	185.0	0.2	3.1	42	225	17 14 01
17 15 00	1922+155	19 37 20	52.5	184.7	0.2	3.0	-18	225	No stop
17 16 00	---	19 38 20	52.5	185.1	0.2	3.2	42	227	17 15 01
17 16 00	W51_E8_H20	19 38 20	51.4	185.4	0.2	3.3	-18	227	No stop
17 17 00	---	19 39 20	51.3	185.8	0.2	3.6	42	229	17 16 01
17 17 00	1922+155	19 39 20	52.5	185.5	0.2	3.4	-18	229	No stop
17 18 00	---	19 40 21	52.5	185.9	0.2	3.7	42	231	17 17 01
17 21 30	2200+420	19 43 51	64.5	100.7	-2.3	-53.0	24	231	17 21 30
17 31 30	---	19 53 53	66.0	103.4	-2.2	-52.2	600	250	17 21 31
17 35 30	W51_E8_H20	19 57 53	50.9	192.9	0.6	8.0	47	250	17 35 30
17 36 30	---	19 58 54	50.9	193.3	0.6	8.2	60	252	17 35 31
17 36 30	1922+155	19 58 54	52.0	193.2	0.6	8.2	-18	252	No stop
17 37 30	---	19 59 54	52.0	193.6	0.6	8.4	42	254	17 36 31
17 38 15	W51_E8_H20	20 00 39	50.8	193.9	0.6	8.6	27	254	17 38 15
17 39 15	---	20 01 39	50.8	194.3	0.6	8.8	60	256	17 38 16
17 39 15	1922+155	20 01 39	51.9	194.2	0.6	8.8	-18	256	No stop
17 40 15	---	20 02 39	51.9	194.6	0.6	9.1	42	258	17 39 16
17 40 15	W51_E8_H20	20 02 39	50.7	194.7	0.6	9.1	-18	258	No stop
17 41 15	---	20 03 39	50.7	195.1	0.7	9.3	42	260	17 40 16
17 41 15	1922+155	20 03 39	51.9	195.0	0.6	9.3	-18	260	No stop
17 42 15	---	20 04 40	51.8	195.4	0.7	9.5	42	262	17 41 16
17 42 15	W51_E8_H20	20 04 40	50.6	195.4	0.7	9.5	-18	262	No stop
17 43 15	---	20 05 40	50.6	195.8	0.7	9.7	42	263	17 42 16
17 43 15	1922+155	20 05 40	51.8	195.8	0.7	9.8	-18	263	No stop
17 44 15	---	20 06 40	51.7	196.2	0.7	10.0	42	265	17 43 16

Schedule for TORUN (Code Tr)

Page 8

Maser imaging

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	8 Oct 2015	Day 281 ---								
17 44 15	W51_E8_H20	20 06 40	50.6	196.2	0.7		10.0	-18	265	No stop
17 45 15	---	20 07 40	50.5	196.6	0.7		10.2	42	267	17 44 16
17 45 15	1922+155	20 07 40	51.7	196.6	0.7		10.2	-18	267	No stop
17 46 15	---	20 08 40	51.7	196.9	0.7		10.5	42	269	17 45 16
17 46 15	W51_E8_H20	20 08 40	50.5	197.0	0.7		10.4	-18	269	No stop
17 47 15	---	20 09 40	50.4	197.3	0.8		10.6	42	271	17 46 16
17 47 15	1922+155	20 09 40	51.6	197.3	0.7		10.7	-18	271	No stop
17 48 15	---	20 10 40	51.6	197.7	0.8		10.9	42	273	17 47 16
17 49 00	W51_E8_H20	20 11 26	50.3	198.0	0.8		11.0	27	273	17 49 00
17 50 00	---	20 12 26	50.3	198.4	0.8		11.3	60	275	17 49 01
17 50 00	1922+155	20 12 26	51.5	198.4	0.8		11.3	-18	275	No stop
17 51 00	---	20 13 26	51.4	198.8	0.8		11.6	42	277	17 50 01
17 51 00	W51_E8_H20	20 13 26	50.2	198.7	0.8		11.5	-18	277	No stop
17 52 00	---	20 14 26	50.2	199.1	0.8		11.7	42	279	17 51 01
17 52 00	1922+155	20 14 26	51.4	199.1	0.8		11.8	-18	279	No stop
17 53 00	---	20 15 26	51.3	199.5	0.8		12.0	42	281	17 52 01
17 53 00	W51_E8_H20	20 15 26	50.2	199.5	0.8		11.9	-18	281	No stop
17 54 00	---	20 16 26	50.1	199.8	0.9		12.2	42	283	17 53 01
17 54 00	1922+155	20 16 26	51.3	199.9	0.9		12.3	-18	283	No stop
17 55 00	---	20 17 27	51.2	200.3	0.9		12.5	42	285	17 54 01
17 55 00	W51_E8_H20	20 17 27	50.0	200.2	0.9		12.4	-18	285	No stop
17 56 00	---	20 18 27	50.0	200.6	0.9		12.6	42	287	17 55 01
17 56 00	1922+155	20 18 27	51.2	200.6	0.9		12.7	-18	287	No stop
17 57 00	---	20 19 27	51.1	201.0	0.9		12.9	42	288	17 56 01
17 57 00	W51_E8_H20	20 19 27	49.9	200.9	0.9		12.8	-18	288	No stop
17 58 00	---	20 20 27	49.9	201.3	0.9		13.0	42	290	17 57 01
17 58 00	1922+155	20 20 27	51.1	201.4	0.9		13.1	-18	290	No stop
17 59 00	---	20 21 27	51.0	201.8	0.9		13.4	42	292	17 58 01
17 59 45	W51_E8_H20	20 22 12	49.8	202.0	1.0		13.4	27	292	17 59 45
18 00 45	---	20 23 13	49.7	202.3	1.0		13.6	60	294	17 59 46

Schedule for TORUN (Code Tr)

Page 9

Maser imaging

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	8 Oct 2015	Day 281 ---								
18 00 45	1922+155	20 23 13	50.9	202.4	1.0		13.8	-18	294	No stop
18 01 45	---	20 24 13	50.9	202.8	1.0		14.0	42	296	18 00 46
18 01 45	W51_E8_H20	20 24 13	49.7	202.7	1.0		13.8	-18	296	No stop
18 02 45	---	20 25 13	49.6	203.0	1.0		14.1	42	298	18 01 46
18 02 45	1922+155	20 25 13	50.8	203.2	1.0		14.2	-18	298	No stop
18 03 45	---	20 26 13	50.7	203.5	1.0		14.4	42	300	18 02 46
18 03 45	W51_E8_H20	20 26 13	49.6	203.4	1.0		14.3	-18	300	No stop
18 04 45	---	20 27 13	49.5	203.8	1.0		14.5	42	302	18 03 46
18 04 45	1922+155	20 27 13	50.7	203.9	1.0		14.6	-18	302	No stop
18 05 45	---	20 28 13	50.6	204.3	1.0		14.9	42	304	18 04 46
18 05 45	W51_E8_H20	20 28 13	49.4	204.1	1.1		14.7	-18	304	No stop
18 06 45	---	20 29 14	49.4	204.5	1.1		14.9	42	306	18 05 46
18 06 45	1922+155	20 29 14	50.6	204.6	1.1		15.1	-18	306	No stop
18 07 45	---	20 30 14	50.5	205.0	1.1		15.3	42	308	18 06 46
18 07 45	W51_E8_H20	20 30 14	49.3	204.9	1.1		15.1	-18	308	No stop
18 08 45	---	20 31 14	49.2	205.2	1.1		15.3	42	310	18 07 46
18 08 45	1922+155	20 31 14	50.4	205.4	1.1		15.5	-18	310	No stop
18 09 45	---	20 32 14	50.4	205.7	1.1		15.7	42	312	18 08 46
18 10 30	W51_E8_H20	20 32 59	49.1	205.8	1.1		15.7	27	312	18 10 30
18 11 30	---	20 33 59	49.1	206.2	1.2		15.9	60	313	18 10 31
18 11 30	1922+155	20 33 59	50.3	206.4	1.1		16.1	-18	313	No stop
18 12 30	---	20 34 59	50.2	206.7	1.2		16.3	42	315	18 11 31
18 12 30	W51_E8_H20	20 34 59	49.0	206.5	1.2		16.1	-18	315	No stop
18 13 30	---	20 36 00	48.9	206.9	1.2		16.3	42	317	18 12 31
18 13 30	1922+155	20 36 00	50.1	207.1	1.2		16.5	-18	317	No stop
18 14 30	---	20 37 00	50.1	207.4	1.2		16.7	42	319	18 13 31
18 14 30	W51_E8_H20	20 37 00	48.9	207.3	1.2		16.5	-18	319	No stop
18 15 30	---	20 38 00	48.8	207.6	1.2		16.7	42	321	18 14 31
18 15 30	1922+155	20 38 00	50.0	207.8	1.2		16.9	-17	321	No stop
18 16 30	---	20 39 00	49.9	208.2	1.2		17.1	43	323	18 15 31

Schedule for TORUN (Code Tr)

Page 10

Maser imaging

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	8 Oct 2015	Day 281	---							
18 16 30	W51_E8_H20	20 39 00	48.7	208.0	1.2		16.9	-18	323	No stop
18 17 30	---	20 40 00	48.7	208.3	1.3		17.1	42	325	18 16 31
18 17 30	1922+155	20 40 00	49.8	208.5	1.2		17.3	-17	325	No stop
18 18 30	---	20 41 00	49.8	208.9	1.3		17.5	43	327	18 17 31
18 18 30	W51_E8_H20	20 41 00	48.6	208.7	1.3		17.3	-18	327	No stop
18 19 30	---	20 42 01	48.5	209.0	1.3		17.5	42	329	18 18 31
18 19 30	1922+155	20 42 01	49.7	209.2	1.3		17.7	-17	329	No stop
18 20 30	---	20 43 01	49.6	209.6	1.3		17.9	43	331	18 19 31
18 21 30	W51_E8_H20	20 44 01	48.4	209.7	1.3		17.9	42	331	18 21 30
18 22 30	---	20 45 01	48.3	210.1	1.3		18.1	60	333	18 21 31
18 22 30	1922+155	20 45 01	49.5	210.3	1.3		18.3	-17	333	No stop
18 23 30	---	20 46 01	49.4	210.6	1.3		18.5	43	335	18 22 31
18 23 30	W51_E8_H20	20 46 01	48.2	210.4	1.4		18.3	-18	335	No stop
18 24 30	---	20 47 01	48.1	210.8	1.4		18.5	42	337	18 23 31
18 24 30	1922+155	20 47 01	49.3	211.0	1.4		18.7	-17	337	No stop
18 25 30	---	20 48 02	49.2	211.4	1.4		18.9	43	338	18 24 31
18 25 30	W51_E8_H20	20 48 02	48.1	211.1	1.4		18.7	-18	338	No stop
18 26 30	---	20 49 02	48.0	211.4	1.4		18.9	42	340	18 25 31
18 26 30	1922+155	20 49 02	49.2	211.7	1.4		19.1	-17	340	No stop
18 27 30	---	20 50 02	49.1	212.0	1.4		19.3	43	342	18 26 31
18 27 30	W51_E8_H20	20 50 02	47.9	211.8	1.4		19.1	-18	342	No stop
18 28 30	---	20 51 02	47.8	212.1	1.4		19.3	42	344	18 27 31
18 28 30	1922+155	20 51 02	49.0	212.4	1.4		19.5	-17	344	No stop
18 29 30	---	20 52 02	48.9	212.7	1.4		19.7	43	346	18 28 31
18 29 30	W51_E8_H20	20 52 02	47.7	212.5	1.5		19.5	-18	346	No stop
18 30 30	---	20 53 02	47.7	212.8	1.5		19.6	42	348	18 29 31
18 34 00	2200+420	20 56 33	74.5	127.2	-1.1		-40.3	23	348	18 34 00
18 44 00	---	21 06 35	75.7	132.8	-0.9		-36.6	600	367	18 34 01
18 48 00	W51_E8_H20	21 10 35	46.1	218.6	1.8		22.8	54	367	18 48 00
18 49 00	---	21 11 35	46.0	218.9	1.8		22.9	60	369	18 48 01

Schedule for TORUN (Code Tr)

Page 11

Maser imaging

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	8 Oct 2015	Day 281 ---								
18 49 00	1922+155	21 11 35	47.2	219.3	1.8		23.3	-17	369	No stop
18 50 00	---	21 12 36	47.1	219.6	1.8		23.4	43	371	18 49 01
18 50 00	W51_E8_H20	21 12 36	45.9	219.2	1.8		23.1	-18	371	No stop
18 51 00	---	21 13 36	45.8	219.6	1.8		23.3	42	373	18 50 01
18 51 00	1922+155	21 13 36	47.0	219.9	1.8		23.6	-17	373	No stop
18 52 00	---	21 14 36	46.9	220.3	1.8		23.8	43	375	18 51 01
18 52 00	W51_E8_H20	21 14 36	45.7	219.9	1.8		23.4	-18	375	No stop
18 53 00	---	21 15 36	45.6	220.2	1.9		23.6	42	377	18 52 01
18 53 00	1922+155	21 15 36	46.8	220.6	1.8		23.9	-17	377	No stop
18 54 00	---	21 16 36	46.7	220.9	1.9		24.1	43	379	18 53 01
18 54 00	W51_E8_H20	21 16 36	45.5	220.5	1.9		23.8	-18	379	No stop
18 55 00	---	21 17 36	45.5	220.8	1.9		23.9	42	381	18 54 01
18 55 00	1922+155	21 17 36	46.6	221.2	1.9		24.3	-17	381	No stop
18 56 00	---	21 18 37	46.5	221.6	1.9		24.4	43	383	18 55 01
18 56 00	W51_E8_H20	21 18 37	45.4	221.2	1.9		24.1	-18	383	No stop
18 57 00	---	21 19 37	45.3	221.5	1.9		24.3	42	385	18 56 01
18 57 00	1922+155	21 19 37	46.4	221.9	1.9		24.6	-17	385	No stop
18 58 00	---	21 20 37	46.3	222.2	1.9		24.8	43	387	18 57 01
----- Space-ground water maser scans (K-band) -----										
19 00 00	W51_E8_H20	21 22 37	45.0	222.4	2.0		24.7	102	387	19 00 00
19 10 00	---	21 32 39	43.9	225.5	2.1		26.2	600	406	19 00 01
19 11 00	W51_E8_H20	21 33 39	43.8	225.8	2.2		26.4	54	406	19 11 00
19 20 00	---	21 42 41	42.8	228.4	2.3		27.7	540	423	19 11 01
19 21 00	W51_E8_H20	21 43 41	42.7	228.7	2.3		27.8	54	423	19 21 00
19 30 00	---	21 52 42	41.7	231.3	2.5		29.0	540	440	19 21 01
19 31 00	W51_E8_H20	21 53 42	41.5	231.6	2.5		29.1	54	440	19 31 00
19 40 00	---	22 02 44	40.5	234.1	2.6		30.2	540	458	19 31 01
----- Ground-only K-band VLBI scans -----										
19 42 00	W51_E8_H20	22 04 44	40.2	234.7	2.7		30.4	113	458	19 42 00
19 43 00	---	22 05 44	40.1	235.0	2.7		30.5	60	460	19 42 01

Schedule for TORUN (Code Tr)

Page 12

Maser imaging

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	8 Oct 2015	Day 281		---					
19 43 00	1922+155	22 05 44	41.2	235.5	2.7		30.9	-17	460	No stop
19 44 00	---	22 06 45	41.1	235.8	2.7		31.0	43	462	19 43 01
19 44 00	W51_E8_H20	22 06 45	40.0	235.2	2.7		30.6	-17	462	No stop
19 45 00	---	22 07 45	39.8	235.5	2.7		30.7	43	463	19 44 01
19 45 00	1922+155	22 07 45	41.0	236.0	2.7		31.2	-17	463	No stop
19 46 00	---	22 08 45	40.8	236.3	2.7		31.3	43	465	19 45 01
19 46 00	W51_E8_H20	22 08 45	39.7	235.8	2.7		30.9	-17	465	No stop
19 47 00	---	22 09 45	39.6	236.0	2.8		31.0	43	467	19 46 01
19 47 00	1922+155	22 09 45	40.7	236.6	2.7		31.4	-17	467	No stop
19 48 00	---	22 10 45	40.6	236.9	2.8		31.5	43	469	19 47 01
19 48 00	W51_E8_H20	22 10 45	39.5	236.3	2.8		31.1	-17	469	No stop
19 49 00	---	22 11 45	39.3	236.6	2.8		31.2	43	471	19 48 01
----- Space-ground K-band fringe finder scan -----										
19 50 00	1928+154	22 12 45	41.0	235.6	2.7		31.0	40	471	19 50 00
20 00 00	---	22 22 47	39.7	238.3	2.9		32.0	600	490	19 50 01
----- Ground-only K-band VLBI scans -----										
20 01 00	W51_E8_H20	22 23 47	37.8	239.7	3.0		32.4	39	490	20 01 00
20 02 00	---	22 24 47	37.7	240.0	3.0		32.5	60	492	20 01 01
20 02 00	1922+155	22 24 47	38.8	240.6	3.0		32.9	-17	492	No stop
20 03 00	---	22 25 48	38.7	240.8	3.0		33.0	43	494	20 02 01
20 03 00	W51_E8_H20	22 25 48	37.5	240.3	3.0		32.6	-17	494	No stop
20 04 00	---	22 26 48	37.4	240.5	3.0		32.7	43	496	20 03 01
20 04 00	1922+155	22 26 48	38.5	241.1	3.0		33.1	-17	496	No stop
20 05 00	---	22 27 48	38.4	241.3	3.0		33.2	43	498	20 04 01
20 05 00	W51_E8_H20	22 27 48	37.3	240.8	3.1		32.8	-17	498	No stop
20 06 00	---	22 28 48	37.2	241.0	3.1		32.9	43	500	20 05 01
20 06 00	1922+155	22 28 48	38.3	241.6	3.1		33.3	-17	500	No stop
20 07 00	---	22 29 48	38.1	241.9	3.1		33.4	43	502	20 06 01
20 07 00	W51_E8_H20	22 29 48	37.0	241.3	3.1		33.0	-17	502	No stop
20 08 00	---	22 30 48	36.9	241.5	3.1		33.1	43	504	20 07 01

Schedule for TORUN (Code Tr)

Page 13

Maser imaging

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	8 Oct 2015	Day 281	---							
20 11 30	2200+420	22 34 19	78.1	208.8	0.5		23.0	41	504	20 11 30
20 21 30	---	22 44 21	77.3	216.6	0.7		29.0	600	523	20 11 31
20 25 30	W51_E8_H20	22 48 21	34.5	245.9	3.4		34.5	66	523	20 25 30
20 26 30	---	22 49 21	34.4	246.1	3.4		34.6	60	525	20 25 31
20 26 30	1922+155	22 49 21	35.5	246.7	3.4		35.0	-17	525	No stop
20 27 30	---	22 50 22	35.3	247.0	3.4		35.0	43	527	20 26 31
20 28 15	W51_E8_H20	22 51 07	34.1	246.6	3.4		34.7	28	527	20 28 15
20 29 15	---	22 52 07	34.0	246.8	3.5		34.8	60	529	20 28 16
20 29 15	1922+155	22 52 07	35.1	247.4	3.4		35.2	-17	529	No stop
20 30 15	---	22 53 07	35.0	247.6	3.5		35.2	43	531	20 29 16
20 30 15	W51_E8_H20	22 53 07	33.9	247.0	3.5		34.8	-17	531	No stop
20 31 15	---	22 54 07	33.7	247.3	3.5		34.9	43	533	20 30 16
20 31 15	1922+155	22 54 07	34.8	247.9	3.5		35.3	-17	533	No stop
20 32 15	---	22 55 07	34.7	248.1	3.5		35.4	43	535	20 31 16
20 32 15	W51_E8_H20	22 55 07	33.6	247.5	3.5		35.0	-17	535	No stop
20 33 15	---	22 56 08	33.5	247.8	3.5		35.0	43	537	20 32 16
20 33 15	1922+155	22 56 08	34.5	248.3	3.5		35.4	-17	537	No stop
20 34 15	---	22 57 08	34.4	248.6	3.5		35.5	43	538	20 33 16
20 34 15	W51_E8_H20	22 57 08	33.3	248.0	3.5		35.1	-17	538	No stop
20 35 15	---	22 58 08	33.2	248.2	3.6		35.2	43	540	20 34 16
20 35 15	1922+155	22 58 08	34.3	248.8	3.5		35.6	-17	540	No stop
20 36 15	---	22 59 08	34.1	249.1	3.6		35.6	43	542	20 35 16
20 36 15	W51_E8_H20	22 59 08	33.0	248.5	3.6		35.2	-17	542	No stop
20 37 15	---	23 00 08	32.9	248.7	3.6		35.3	43	544	20 36 16
20 37 15	1922+155	23 00 08	34.0	249.3	3.6		35.7	-17	544	No stop
20 38 15	---	23 01 08	33.8	249.5	3.6		35.8	43	546	20 37 16
20 39 00	W51_E8_H20	23 01 54	32.7	249.1	3.6		35.4	28	546	20 39 00
20 40 00	---	23 02 54	32.5	249.3	3.6		35.5	60	548	20 39 01
20 40 00	1922+155	23 02 54	33.6	249.9	3.6		35.9	-17	548	No stop
20 41 00	---	23 03 54	33.4	250.2	3.6		35.9	43	550	20 40 01

Schedule for TORUN (Code Tr)

Page 14

Maser imaging

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	8 Oct 2015	Day 281 ---								
20 41 00	W51_E8_H20	23 03 54	32.4	249.6	3.7		35.5	-17	550	No stop
20 42 00	---	23 04 54	32.2	249.8	3.7		35.6	43	552	20 41 01
20 42 00	1922+155	23 04 54	33.3	250.4	3.7		36.0	-17	552	No stop
20 43 00	---	23 05 54	33.2	250.6	3.7		36.1	43	554	20 42 01
20 43 00	W51_E8_H20	23 05 54	32.1	250.0	3.7		35.7	-17	554	No stop
20 44 00	---	23 06 54	31.9	250.3	3.7		35.7	43	556	20 43 01
20 44 00	1922+155	23 06 54	33.0	250.9	3.7		36.1	-17	556	No stop
20 45 00	---	23 07 55	32.9	251.1	3.7		36.2	43	558	20 44 01
20 45 00	W51_E8_H20	23 07 55	31.8	250.5	3.7		35.8	-17	558	No stop
20 46 00	---	23 08 55	31.7	250.7	3.7		35.8	43	560	20 45 01
20 46 00	1922+155	23 08 55	32.7	251.3	3.7		36.2	-17	560	No stop
20 47 00	---	23 09 55	32.6	251.6	3.7		36.3	43	562	20 46 01
20 47 00	W51_E8_H20	23 09 55	31.5	251.0	3.8		35.9	-17	562	No stop
20 48 00	---	23 10 55	31.4	251.2	3.8		36.0	43	563	20 47 01
20 48 00	1922+155	23 10 55	32.5	251.8	3.8		36.3	-17	563	No stop
20 49 00	---	23 11 55	32.3	252.0	3.8		36.4	43	565	20 48 01
20 49 45	W51_E8_H20	23 12 40	31.1	251.6	3.8		36.1	28	565	20 49 45
20 50 45	---	23 13 40	31.0	251.8	3.8		36.1	60	567	20 49 46
20 50 45	1922+155	23 13 40	32.1	252.4	3.8		36.5	-17	567	No stop
20 51 45	---	23 14 41	31.9	252.7	3.8		36.5	43	569	20 50 46
20 51 45	W51_E8_H20	23 14 41	30.8	252.1	3.8		36.2	-17	569	No stop
20 52 45	---	23 15 41	30.7	252.3	3.9		36.2	43	571	20 51 46
20 52 45	1922+155	23 15 41	31.8	252.9	3.8		36.6	-17	571	No stop
20 53 45	---	23 16 41	31.6	253.1	3.9		36.7	43	573	20 52 46
20 53 45	W51_E8_H20	23 16 41	30.6	252.5	3.9		36.3	-17	573	No stop
20 54 45	---	23 17 41	30.4	252.7	3.9		36.3	43	575	20 53 46
20 54 45	1922+155	23 17 41	31.5	253.3	3.9		36.7	-17	575	No stop
20 55 45	---	23 18 41	31.3	253.6	3.9		36.8	43	577	20 54 46
20 55 45	W51_E8_H20	23 18 41	30.3	253.0	3.9		36.4	-17	577	No stop
20 56 45	---	23 19 41	30.1	253.2	3.9		36.4	43	579	20 55 46

Schedule for TORUN (Code Tr)

Page 15

Maser imaging

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	8 Oct 2015	Day 281	---							
20 56 45	1922+155	23 19 41	31.2	253.8	3.9		36.8	-17	579	No stop
20 57 45	---	23 20 42	31.0	254.0	3.9		36.8	43	581	20 56 46
20 57 45	W51_E8_H20	23 20 42	30.0	253.4	3.9		36.5	-17	581	No stop
20 58 45	---	23 21 42	29.8	253.6	4.0		36.5	43	583	20 57 46
20 58 45	1922+155	23 21 42	30.9	254.3	3.9		36.9	-17	583	No stop
20 59 45	---	23 22 42	30.8	254.5	4.0		36.9	43	585	20 58 46
21 00 30	W51_E8_H20	23 23 27	29.6	254.0	4.0		36.6	28	585	21 00 30
21 01 30	---	23 24 27	29.4	254.3	4.0		36.7	60	587	21 00 31
21 01 30	1922+155	23 24 27	30.5	254.9	4.0		37.0	-17	587	No stop
21 02 30	---	23 25 27	30.4	255.1	4.0		37.1	43	588	21 01 31
21 02 30	W51_E8_H20	23 25 27	29.3	254.5	4.0		36.7	-17	588	No stop
21 03 30	---	23 26 28	29.1	254.7	4.0		36.8	43	590	21 02 31
21 03 30	1922+155	23 26 28	30.2	255.3	4.0		37.1	-17	590	No stop
21 04 30	---	23 27 28	30.1	255.5	4.0		37.2	43	592	21 03 31
21 04 30	W51_E8_H20	23 27 28	29.0	254.9	4.1		36.8	-17	592	No stop
21 05 30	---	23 28 28	28.9	255.2	4.1		36.8	43	594	21 04 31
21 05 30	1922+155	23 28 28	29.9	255.8	4.1		37.2	-17	594	No stop
21 06 30	---	23 29 28	29.8	256.0	4.1		37.2	43	596	21 05 31
21 07 30	W51_E8_H20	23 30 28	28.6	255.6	4.1		36.9	43	596	21 07 30
21 08 30	---	23 31 28	28.4	255.8	4.1		37.0	60	598	21 07 31
21 08 30	1922+155	23 31 28	29.5	256.4	4.1		37.3	-17	598	No stop
21 09 30	---	23 32 29	29.3	256.6	4.1		37.4	43	600	21 08 31
21 09 30	W51_E8_H20	23 32 29	28.3	256.0	4.1		37.0	-17	600	No stop
21 10 30	---	23 33 29	28.1	256.3	4.2		37.1	43	602	21 09 31
21 10 30	1922+155	23 33 29	29.2	256.9	4.1		37.4	-17	602	No stop
21 11 30	---	23 34 29	29.0	257.1	4.2		37.4	43	604	21 10 31
21 11 30	W51_E8_H20	23 34 29	28.0	256.5	4.2		37.1	-17	604	No stop
21 12 30	---	23 35 29	27.8	256.7	4.2		37.1	43	606	21 11 31
21 12 30	1922+155	23 35 29	28.9	257.3	4.2		37.5	-17	606	No stop
21 13 30	---	23 36 29	28.8	257.5	4.2		37.5	43	608	21 12 31

Schedule for TORUN (Code Tr)

Page 16

Maser imaging

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	TPStart SYNC

--- Thu	8 Oct 2015	Day 281	---							
21 13 30	W51_E8_H20	23 36 29	27.7	256.9	4.2		37.2	-17	608	No stop
21 14 30	---	23 37 29	27.5	257.1	4.2		37.2	43	610	21 13 31
21 14 30	1922+155	23 37 29	28.6	257.7	4.2		37.6	-17	610	No stop
21 15 30	---	23 38 30	28.5	258.0	4.2		37.6	43	612	21 14 31
21 15 30	W51_E8_H20	23 38 30	27.4	257.3	4.2		37.3	-17	612	No stop
21 16 30	---	23 39 30	27.2	257.6	4.3		37.3	43	613	21 15 31
21 21 30	0316+413	23 44 31	52.6	85.5	-3.6		-53.1	-59	613	21 21 30
21 31 30	---	23 54 32	54.1	87.4	-3.4		-53.3	541	633	21 21 31
21 41 30	W51_E8_H20	00 04 34	23.5	262.9	4.7		38.0	236	633	21 41 30
21 42 30	---	00 05 34	23.4	263.1	4.7		38.0	60	635	21 41 31
21 42 30	1922+155	00 05 34	24.4	263.7	4.7		38.3	-17	635	No stop
21 43 30	---	00 06 34	24.3	263.9	4.7		38.3	43	637	21 42 31
21 44 15	W51_E8_H20	00 07 19	23.1	263.5	4.7		38.0	28	637	21 44 15
21 45 15	---	00 08 19	23.0	263.7	4.7		38.1	60	638	21 44 16
21 45 15	1922+155	00 08 19	24.0	264.3	4.7		38.4	-17	638	No stop
21 46 15	---	00 09 20	23.9	264.5	4.7		38.4	43	640	21 45 16
21 46 15	W51_E8_H20	00 09 20	22.8	263.9	4.7		38.1	-17	640	No stop
21 47 15	---	00 10 20	22.7	264.1	4.8		38.1	43	642	21 46 16
21 47 15	1922+155	00 10 20	23.7	264.7	4.7		38.4	-17	642	No stop
21 48 15	---	00 11 20	23.6	264.9	4.8		38.4	43	644	21 47 16
21 48 15	W51_E8_H20	00 11 20	22.5	264.3	4.8		38.1	-17	644	No stop
21 49 15	---	00 12 20	22.4	264.5	4.8		38.1	43	646	21 48 16
21 49 15	1922+155	00 12 20	23.4	265.1	4.8		38.4	-17	646	No stop
21 50 15	---	00 13 20	23.3	265.3	4.8		38.4	43	648	21 49 16
21 50 15	W51_E8_H20	00 13 20	22.2	264.7	4.8		38.1	-17	648	No stop
21 51 15	---	00 14 20	22.1	264.9	4.8		38.2	43	650	21 50 16
21 51 15	1922+155	00 14 20	23.1	265.5	4.8		38.5	-17	650	No stop
21 52 15	---	00 15 21	23.0	265.7	4.8		38.5	43	652	21 51 16
21 52 15	W51_E8_H20	00 15 21	21.9	265.1	4.8		38.2	-17	652	No stop
21 53 15	---	00 16 21	21.8	265.3	4.9		38.2	43	654	21 52 16

Schedule for TORUN (Code Tr)

Page 17

Maser imaging

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	8 Oct 2015	Day 281 ---								
21 53 15	1922+155	00 16 21	22.8	265.9	4.8		38.5	-17	654	No stop
21 54 15	---	00 17 21	22.7	266.1	4.9		38.5	43	656	21 53 16
21 55 00	W51_E8_H20	00 18 06	21.5	265.7	4.9		38.2	28	656	21 55 00
21 56 00	---	00 19 06	21.4	265.9	4.9		38.2	60	658	21 55 01
21 56 00	1922+155	00 19 06	22.4	266.5	4.9		38.5	-17	658	No stop
21 57 00	---	00 20 06	22.3	266.7	4.9		38.5	43	660	21 56 01
21 57 00	W51_E8_H20	00 20 06	21.2	266.1	4.9		38.2	-17	660	No stop
21 58 00	---	00 21 07	21.1	266.3	4.9		38.2	43	662	21 57 01
21 58 00	1922+155	00 21 07	22.1	266.9	4.9		38.5	-17	662	No stop
21 59 00	---	00 22 07	22.0	267.1	4.9		38.5	43	663	21 58 01
21 59 00	W51_E8_H20	00 22 07	20.9	266.5	5.0		38.3	-17	663	No stop
22 00 00	---	00 23 07	20.8	266.7	5.0		38.3	43	665	21 59 01
22 00 00	1922+155	00 23 07	21.8	267.3	5.0		38.5	-17	665	No stop
22 01 00	---	00 24 07	21.7	267.5	5.0		38.6	43	667	22 00 01
22 01 00	W51_E8_H20	00 24 07	20.6	266.9	5.0		38.3	-17	667	No stop
22 02 00	---	00 25 07	20.5	267.1	5.0		38.3	43	669	22 01 01
22 02 00	1922+155	00 25 07	21.5	267.7	5.0		38.6	-17	669	No stop
22 03 00	---	00 26 07	21.4	267.9	5.0		38.6	43	671	22 02 01
22 03 00	W51_E8_H20	00 26 07	20.3	267.3	5.0		38.3	-17	671	No stop
22 04 00	---	00 27 08	20.2	267.5	5.0		38.3	43	673	22 03 01
22 04 00	1922+155	00 27 08	21.2	268.1	5.0		38.6	-17	673	No stop
22 05 00	---	00 28 08	21.1	268.3	5.0		38.6	43	675	22 04 01
22 05 45	W51_E8_H20	00 28 53	19.9	267.9	5.1		38.3	28	675	22 05 45
22 06 45	---	00 29 53	19.8	268.1	5.1		38.3	60	677	22 05 46
22 06 45	1922+155	00 29 53	20.8	268.7	5.1		38.6	-17	677	No stop
22 07 45	---	00 30 53	20.7	268.9	5.1		38.6	43	679	22 06 46
22 07 45	W51_E8_H20	00 30 53	19.6	268.3	5.1		38.3	-17	679	No stop
22 08 45	---	00 31 53	19.4	268.5	5.1		38.3	43	681	22 07 46
22 08 45	1922+155	00 31 53	20.5	269.1	5.1		38.6	-17	681	No stop
22 09 45	---	00 32 53	20.4	269.3	5.1		38.6	43	683	22 08 46

Schedule for TORUN (Code Tr)

Page 18

Maser imaging

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	8 Oct 2015	Day 281 ---								
22 09 45	W51_E8_H20	00 32 53	19.3	268.7	5.1		38.3	-17	683	No stop
22 10 45	---	00 33 54	19.1	268.9	5.2		38.3	43	685	22 09 46
22 10 45	1922+155	00 33 54	20.2	269.5	5.1		38.6	-17	685	No stop
22 11 45	---	00 34 54	20.1	269.7	5.2		38.6	43	687	22 10 46
22 11 45	W51_E8_H20	00 34 54	19.0	269.1	5.2		38.3	-17	687	No stop
22 12 45	---	00 35 54	18.8	269.3	5.2		38.3	43	688	22 11 46
22 12 45	1922+155	00 35 54	19.9	269.9	5.2		38.6	-17	688	No stop
22 13 45	---	00 36 54	19.8	270.1	5.2		38.6	43	690	22 12 46
22 13 45	W51_E8_H20	00 36 54	18.7	269.5	5.2		38.3	-17	690	No stop
22 14 45	---	00 37 54	18.5	269.7	5.2		38.3	43	692	22 13 46
22 14 45	1922+155	00 37 54	19.6	270.3	5.2		38.6	-17	692	No stop
22 15 45	---	00 38 54	19.5	270.5	5.2		38.6	43	694	22 14 46
22 16 30	W51_E8_H20	00 39 40	18.3	270.0	5.3		38.3	28	694	22 16 30
22 17 30	---	00 40 40	18.1	270.2	5.3		38.3	60	696	22 16 31
22 17 30	1922+155	00 40 40	19.2	270.8	5.3		38.6	-17	696	No stop
22 18 30	---	00 41 40	19.0	271.0	5.3		38.6	43	698	22 17 31
22 18 30	W51_E8_H20	00 41 40	18.0	270.4	5.3		38.3	-17	698	No stop
22 19 30	---	00 42 40	17.8	270.6	5.3		38.3	43	700	22 18 31
22 19 30	1922+155	00 42 40	18.9	271.2	5.3		38.6	-17	700	No stop
22 20 30	---	00 43 40	18.7	271.4	5.3		38.6	43	702	22 19 31
22 20 30	W51_E8_H20	00 43 40	17.7	270.8	5.3		38.3	-17	702	No stop
22 21 30	---	00 44 40	17.5	271.0	5.3		38.3	43	704	22 20 31
22 21 30	1922+155	00 44 40	18.6	271.6	5.3		38.6	-17	704	No stop
22 22 30	---	00 45 41	18.4	271.8	5.3		38.6	43	706	22 21 31
22 22 30	W51_E8_H20	00 45 41	17.4	271.2	5.4		38.3	-17	706	No stop
22 23 30	---	00 46 41	17.2	271.4	5.4		38.3	43	708	22 22 31
22 23 30	1922+155	00 46 41	18.3	272.0	5.4		38.6	-17	708	No stop
22 24 30	---	00 47 41	18.1	272.2	5.4		38.6	43	710	22 23 31
22 24 30	W51_E8_H20	00 47 41	17.1	271.6	5.4		38.3	-17	710	No stop
22 25 30	---	00 48 41	16.9	271.8	5.4		38.3	43	712	22 24 31

Schedule for TORUN (Code Tr)

Page 19

Maser imaging

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	8 Oct 2015	Day 281 ---								
22 25 30	1922+155	00 48 41	18.0	272.4	5.4		38.6	-17	712	No stop
22 26 30	---	00 49 41	17.8	272.6	5.4		38.5	43	713	22 25 31
22 27 15	W51_E8_H20	00 50 26	16.7	272.2	5.4		38.3	28	713	22 27 15
22 28 15	---	00 51 26	16.5	272.4	5.4		38.3	60	715	22 27 16
22 28 15	1922+155	00 51 26	17.6	273.0	5.4		38.5	-17	715	No stop
22 29 15	---	00 52 27	17.4	273.2	5.5		38.5	43	717	22 28 16
22 29 15	W51_E8_H20	00 52 27	16.4	272.6	5.5		38.3	-17	717	No stop
22 30 15	---	00 53 27	16.2	272.8	5.5		38.3	43	719	22 29 16
22 30 15	1922+155	00 53 27	17.3	273.3	5.5		38.5	-17	719	No stop
22 31 15	---	00 54 27	17.1	273.5	5.5		38.5	43	721	22 30 16
22 31 15	W51_E8_H20	00 54 27	16.1	273.0	5.5		38.3	-17	721	No stop
22 32 15	---	00 55 27	15.9	273.2	5.5		38.3	43	723	22 31 16
22 32 15	1922+155	00 55 27	17.0	273.7	5.5		38.5	-17	723	No stop
22 33 15	---	00 56 27	16.8	273.9	5.5		38.5	43	725	22 32 16
22 33 15	W51_E8_H20	00 56 27	15.8	273.4	5.5		38.3	-17	725	No stop
22 34 15	---	00 57 27	15.6	273.6	5.6		38.3	43	727	22 33 16
----- Space-ground water maser scans (K-band) -----										
22 35 00	W51_E8_H20	00 58 13	15.5	273.7	5.6		38.2	39	727	22 35 00
22 45 00	---	01 08 14	14.0	275.7	5.7		38.1	600	746	22 35 01
22 46 00	W51_E8_H20	01 09 14	13.9	275.9	5.7		38.1	54	746	22 46 00
22 55 00	---	01 18 16	12.5	277.6	5.9		37.9	540	763	22 46 01
22 56 00	W51_E8_H20	01 19 16	12.4	277.8	5.9		37.9	54	763	22 56 00
23 05 00	---	01 28 18	11.0	279.6	6.1		37.7	540	781	22 56 01
23 06 00	W51_E8_H20	01 29 18	10.9	279.8	6.1		37.7	54	781	23 06 00
23 15 00	---	01 38 19	9.5	281.6	6.2		37.4	540	798	23 06 01
23 16 00	W51_E8_H20	01 39 19	9.4	281.8	6.2		37.4	54	798	23 16 00
23 25 00	---	01 48 21	8.1	283.5	6.4		37.1	540	815	23 16 01
----- Ground-only K-band VLBI scans -----										
23 26 00	W51_E8_H20	01 49 21	7.9	283.7	6.4		37.1	54	815	23 26 00
23 27 00	---	01 50 21	7.8	283.9	6.4		37.0	60	817	23 26 01

Schedule for TORUN (Code Tr)

Page 20

Maser imaging

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	8 Oct 2015	Day 281 ---								
23 27 00	1922+155	01 50 21	8.8	284.4	6.4		37.2	-17	817	No stop
23 28 00	---	01 51 21	8.7	284.6	6.4		37.1	43	819	23 27 01
23 28 00	W51_E8_H20	01 51 21	7.6	284.1	6.4		37.0	-17	819	No stop
23 29 00	---	01 52 21	7.5	284.3	6.5		37.0	43	821	23 28 01
23 29 00	1922+155	01 52 21	8.6	284.8	6.4		37.1	-17	821	No stop
23 30 00	---	01 53 22	8.4	285.0	6.5		37.0	43	823	23 29 01
23 30 00	W51_E8_H20	01 53 22	7.3	284.5	6.5		36.9	-17	823	No stop
23 31 00	---	01 54 22	7.2	284.7	6.5		36.9	43	825	23 30 01
23 31 00	1922+155	01 54 22	8.3	285.2	6.5		37.0	-17	825	No stop
23 32 00	---	01 55 22	8.1	285.4	6.5		37.0	43	827	23 31 01
23 32 00	W51_E8_H20	01 55 22	7.0	284.9	6.5		36.8	-17	827	No stop
23 33 00	---	01 56 22	6.9	285.1	6.5		36.8	43	829	23 32 01
23 36 30	2200+420	01 59 53	50.0	279.1	3.9		53.4	34	829	23 36 30
23 41 30	---	02 04 54	49.3	279.9	4.0		53.2	300	838	23 36 31
23 46 30	0316+413	02 09 54	73.4	126.9	-1.2		-39.9	-21	838	23 46 30
23 59 59	---	02 23 27	75.0	134.3	-1.0		-35.0	788	864	23 46 31

SETUP FILE INFORMATION:

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

===== Setup file: ra1cm2.set

Setup group: 4	Station: TORUN	Total bit rate: 256
Format: MARK5B	Bits per sample: 2	Sample rate: 32.000
Number of channels: 4	DBE type: DBBC_DDC	Speedup factor: 1.00

Disk used to record data.

```

1st LO= 21500.00 21500.00 21500.00 21500.00
Net SB=      U      U      L      L
IF SB =      U      U      U      U
Pol.  =      RCP      LCP      RCP      LCP
BBC   =      1      5      1      5
BBC SB=      U      U      L      L
IF    =      A1      B1      A1      B1

```

The following frequency sets based on these setups were used.

```

Frequency Set: 5 Setup file default. Used with PCAL = off
LO sum= 22236.00 22236.00 22236.00 22236.00
BBC fr= 736.00 736.00 736.00 736.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 5

```

Track assignments are:

```

track1= 2, 4, 6, 8
barrel=roll_off

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 27.840860	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 39.41181	0.00
	fake circumpolar target for a TS to look at			
* W51_E8_H2O	19 21 26.266096	* 19 23 43.934270	19 24 27.430383	0.00
	14 24 34.98638	* 14 30 28.34980	14 32 42.15158	0.00
	./ga037b_sources.radioastron			
	H2O maser; position of the reference maser feature from 2010ApJ720...1055Sato, R			
* 1928+154	19 28 36.092068	* 19 30 52.766993	19 31 36.000232	0.00
J1930+1532	15 26 11.96581	* 15 32 34.42720	15 34 57.53879	0.00
	./ga037b_sources.radioastron			
	clock offset calibrator for W51_E8, rfc_2013d Petrov, 2013, unpublished 139 obse			
* 1922+155	19 22 23.129975	* 19 24 39.455869	19 25 22.540606	0.00
J1924+1540	15 34 46.75053	* 15 40 43.94156	15 42 59.24528	0.00
	./ga037b_sources.radioastron			
	phase reference source for W51, rfc_2015c Petrov			
* 1923+210	19 23 49.792392	* 19 25 59.605355	19 26 40.674741	0.00
J1925+2106	21 00 23.30483	* 21 06 26.16191	21 08 44.60060	0.00
	./ga037b_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 35453 observations, RA-A03-04			
* 0316+413	03 16 29.567283	* 03 19 48.160114	03 20 52.657952	0.00
J0319+4130	41 19 51.91847	* 41 30 42.10559	41 33 57.01230	0.00
3C84	./ga037b_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 15448 observations, RA-A03-04, RA-A02-1			
* 2200+420	22 00 39.362504	* 22 02 43.291371	22 03 24.019410	0.00
J2202+4216	42 02 08.59073	* 42 16 39.97987	42 21 34.82854	0.00
BLLAC	./ga037b_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 59417 observations, RA-A03-04, RA-A02-1			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
W51_E8_H20	98.4
1928+154	100.2
1922+155	98.7
1923+210	99.3
0316+413	132.0
2200+420	127.3

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

rk12cvtr

RADIOASTRON AGN SURVEY
PI: *Yuri Kovalev*

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

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

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN Survey

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

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 9 Oct 2015 Day 282 ---

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

Next scan frequencies: 22236.00 22236.00 22236.00 22236.00

Next BBC frequencies: 736.00 736.00 736.00 736.00

Next scan bandwidths: 16.00 16.00 16.00 16.00

09 00 00	0415+379	11 24 55	21.1	-54.1	7.1	38.1	0	0	09 00 00
09 14 30	---	11 39 28	19.3	-51.6	7.3	36.7	870	28	09 00 01
09 15 00	0415+379	11 39 58	19.3	-51.6	7.3	36.7	24	28	09 15 00
09 24 30	---	11 49 29	18.2	-50.0	7.5	35.7	570	46	09 15 01

----- 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

09 30 00	0415+379	11 55 00	17.5	-49.0	7.6	35.2	323	46	09 30 00
09 44 30	---	12 09 33	15.9	-46.6	7.8	33.6	870	74	09 30 01
09 45 00	0415+379	12 10 03	15.9	-46.5	7.8	33.6	24	74	09 45 00
10 00 00	---	12 25 05	14.3	-43.9	8.1	31.9	900	103	09 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 ./rk12cv_freq.dat:

tr1cm

Setup group: 4

Station: TORUN

Total bit rate: 256

Format: MKIV1:4

Bits per sample: 2

Sample rate: 32.000

Number of channels: 4

DBE type:

Speedup factor: 1.00

Disk used to record data.

1st LO=	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:	2	Setup file default.	Used with PCAL = 1MHz
LO sum=	22236.00	22236.00	22236.00
BBC fr=	736.00	736.00	736.00
Bandwd=	16.00	16.00	16.00
Matching frequency sets:	2		

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

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

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 27.898485	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 39.14374	0.00
	fake circumpolar target for a TS to look at			
* 0415+379	04 15 00.610264	* 04 18 21.277237	04 19 25.913897	0.00
J0418+3801	37 54 19.28073	* 38 01 35.80020	38 03 40.34018	0.00
	./rk12cv_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 200 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)
0415+379	124.5

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 $60 \deg F^{-0.6}$ 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

rk12cxtr

RADIOASTRON AGN SURVEY PI: Yuri Kovalev

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

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

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN Survey

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

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 9 Oct 2015 Day 282 ---

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

Next scan frequencies: 22236.00 22236.00 22236.00 22236.00

Next BBC frequencies: 736.00 736.00 736.00 736.00

Next scan bandwidths: 16.00 16.00 16.00 16.00

23 00 00	2251+158	01 27 13	42.6	233.6	2.5		30.2	0	0	23 00 00
23 14 30	---	01 41 46	40.8	237.7	2.8		31.9	870	28	23 00 01
23 15 00	2251+158	01 42 16	40.8	237.8	2.8		31.9	24	28	23 15 00
23 24 30	---	01 51 47	39.5	240.3	3.0		32.9	570	46	23 15 01

----- 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

23 30 00	2251+158	01 57 18	38.8	241.7	3.0		33.4	323	46	23 30 00
23 44 30	---	02 11 51	36.9	245.4	3.3		34.7	870	74	23 30 01
23 45 00	2251+158	02 12 21	36.8	245.5	3.3		34.7	24	74	23 45 00
23 59 59	---	02 27 23	34.7	249.2	3.5		35.8	899	103	23 45 01

SETUP FILE INFORMATION:

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

===== Setup file: ra1cm2.set

Matching groups in ./rk12cx_freq.dat:

tr1cm

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=	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:	2	Setup file default.	Used with PCAL = 1MHz
LO sum=	22236.00	22236.00	22236.00
BBC fr=	736.00	736.00	736.00
Bandwd=	16.00	16.00	16.00
Matching frequency sets:	2		

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

===== 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:   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 27.941577	0.00
	85 16 41.77889	* 85 00 00.00000	84 54 38.93992	0.00
	fake circumpolar target for a TS to look at			
* 2251+158	22 51 29.519741	* 22 53 57.747940	22 54 45.710445	0.00
J2253+1608	15 52 54.34791	* 16 08 53.56074	16 14 09.44444	0.00
3C454.3	./rk12cx_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 40570 observations, RA-A03-04, RA-A02-1			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
2251+158	147.8

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 $60 \deg F^{-0.6}$ 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

rk12cztr

RADIOASTRON AGN SURVEY
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 Survey

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

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 11 Oct 2015 Day 284 ---

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

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00

Next BBC frequencies: 732.00 732.00 732.00 732.00

Next scan bandwidths: 16.00 16.00 16.00 16.00

08 00 00	0529+075	10 32 39	15.2	262.3	5.0	36.9	0	0	08 00 00
08 14 30	---	10 47 11	13.0	265.3	5.2	37.1	870	28	08 00 01
08 15 00	0529+075	10 47 41	12.9	265.4	5.2	37.1	24	28	08 15 00
08 29 30	---	11 02 13	10.7	268.3	5.5	37.3	870	56	08 15 01
08 30 00	0529+075	11 02 43	10.7	268.4	5.5	37.3	24	56	08 30 00
08 44 30	---	11 17 16	8.5	271.3	5.7	37.3	870	84	08 30 01
08 45 00	0529+075	11 17 46	8.4	271.4	5.7	37.3	24	84	08 45 00
09 00 00	---	11 32 48	6.1	274.4	6.0	37.2	900	112	08 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:   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 28.035529	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 38.47129	0.00
	fake circumpolar target for a TS to look at			
* 0529+075	05 29 56.495315	* 05 32 38.998458	05 33 30.801572	0.00
J0532+0732	07 30 38.14404	* 07 32 43.34492	07 33 17.09431	0.00
	./rk12cz_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 107 observations, RA-A03-04			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0529+075	113.6

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

rk12datr

RADIOASTRON AGN SURVEY PI: Yuri Kovalev

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

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

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN Survey

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

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 11 Oct 2015 Day 284 ---

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

Next scan frequencies: 22236.00 22236.00 22236.00 22236.00

Next BBC frequencies: 736.00 736.00 736.00 736.00

Next scan bandwidths: 16.00 16.00 16.00 16.00

22 00 00	2200+420	00 34 57	62.7	262.3	2.5		53.6	0	0	22 00 00
22 14 30	---	00 49 29	60.6	265.6	2.8		54.1	870	28	22 00 01
22 15 00	2200+420	00 49 59	60.5	265.7	2.8		54.1	24	28	22 15 00
22 24 30	---	00 59 31	59.1	267.7	2.9		54.3	570	46	22 15 01

----- 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

22 30 00	2200+420	01 05 01	58.2	268.9	3.0		54.3	323	46	22 30 00
22 44 30	---	01 19 34	56.1	271.8	3.3		54.3	870	74	22 30 01
22 45 00	2200+420	01 20 04	56.0	271.9	3.3		54.3	24	74	22 45 00
23 00 00	---	01 35 06	53.7	274.7	3.5		54.1	900	103	22 45 01

SETUP FILE INFORMATION:

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

===== Setup file: ra1cm2.set

Matching groups in ./rk12da_freq.dat:

tr1cm

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

Disk used to record data.

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

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

===== 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 28.073243	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 38.26896	0.00
	fake circumpolar target for a TS to look at			
* 2200+420	22 00 39.362504	* 22 02 43.291371	22 03 23.947558	0.00
J2202+4216	42 02 08.59073	* 42 16 39.97987	42 21 35.30046	0.00
BLLAC	./rk12da_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 59417 observations, RA-A03-04, RA-A02-1			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
2200+420	126.4

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of $60 \deg F^{-0.6}$ 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

rk12dbtr

RADIOASTRON AGN SURVEY
PI: Yuri Kovalev

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

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

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

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
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 12 Oct 2015 Day 285 ---

----- 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

06 00 00	0716+714	08 36 15	70.1 -17.1	1.2		146.6	0	0	06 00 00
06 19 30	---	08 55 49	69.2 -20.6	1.5		138.7	1170	37	06 00 01
06 20 00	0716+714	08 56 19	69.1 -20.7	1.5		138.5	24	37	06 20 00
06 40 00	---	09 16 22	68.0 -23.8	1.9		130.8	1200	76	06 20 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 28.093071	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 38.15856	0.00
	fake circumpolar target for a TS to look at			
* 0716+714	07 16 13.029739	* 07 21 53.448474	07 23 39.564703	0.00
J0721+7120	71 26 15.17406	* 71 20 36.36340	71 18 21.00532	0.00
	./rk12db_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 42370 observations, RA-A03-04, RA-A02-1			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0716+714	95.7

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

rk12ctr

RADIOASTRON AGN SURVEY

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 Survey

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

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 12 Oct 2015 Day 285 ---

----- 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

08 20 00	0529+075	10 56 38	11.6	267.2	5.4	37.2	0	0	08 20 00
08 39 30	---	11 16 12	8.6	271.1	5.7	37.3	1170	37	08 20 01
08 40 00	0529+075	11 16 42	8.6	271.2	5.7	37.3	24	37	08 40 00
09 00 00	---	11 36 45	5.6	275.2	6.1	37.1	1200	76	08 40 01

SETUP FILE INFORMATION:

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

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

```

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

```

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

Frequency Set:   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 28.098947	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 38.12531	0.00
	fake circumpolar target for a TS to look at			
* 0529+075	05 29 56.495315	* 05 32 38.998458	05 33 30.823766	0.00
J0532+0732	07 30 38.14404	* 07 32 43.34492	07 33 17.05100	0.00
	./rk12dc_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 107 observations, RA-A03-04			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0529+075	114.5

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 $60 \deg F^{-0.6}$ 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

rk12ddtr

RADIOASTRON AGN SURVEY
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 Survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
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 13 Oct 2015 Day 286 ---

----- 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

08 00 00	0529+075	10 40 32	14.0	263.9	5.1	37.0	0	0	08 00 00
08 14 30	---	10 55 04	11.8	266.9	5.4	37.2	870	28	08 00 01
08 15 00	0529+075	10 55 34	11.7	267.0	5.4	37.2	24	28	08 15 00
08 29 30	---	11 10 06	9.5	269.9	5.6	37.3	870	56	08 15 01
08 30 00	0529+075	11 10 37	9.5	270.0	5.6	37.3	24	56	08 30 00
08 44 30	---	11 25 09	7.3	272.9	5.9	37.2	870	84	08 30 01
08 45 00	0529+075	11 25 39	7.2	273.0	5.9	37.2	24	84	08 45 00
09 00 00	---	11 40 41	5.0	276.0	6.1	37.0	900	112	08 45 01

SETUP FILE INFORMATION:

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

===== Setup file: ra6cm2.set

Setup group: 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 28.157384	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 37.78195	0.00
	fake circumpolar target for a TS to look at			
* 0529+075	05 29 56.495315	* 05 32 38.998458	05 33 30.846236	0.00
J0532+0732	07 30 38.14404	* 07 32 43.34492	07 33 16.99548	0.00
	./rk12dd_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 107 observations, RA-A03-04			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0529+075	115.4

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

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

rk12detr

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

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

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

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN Survey

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

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

Disk: GBytes recorded to this point.

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

SYNC: Time correlator 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 14 Oct 2015 Day 287 ---

----- 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

07 00 00	0730+504	09 44 18	70.0	275.2	2.2	69.5	0	0	07 00 00
07 14 30	---	09 58 51	67.8	277.4	2.4	68.9	870	28	07 00 01
07 15 00	0730+504	09 59 21	67.7	277.5	2.4	68.8	24	28	07 15 00
07 29 30	---	10 13 53	65.6	279.7	2.6	68.0	870	56	07 15 01
07 30 00	0730+504	10 14 23	65.5	279.7	2.7	68.0	24	56	07 30 00
07 44 30	---	10 28 56	63.3	281.8	2.9	67.0	870	84	07 30 01
07 45 00	0730+504	10 29 26	63.3	281.9	2.9	67.0	24	84	07 45 00
08 00 00	---	10 44 28	61.1	283.9	3.2	65.9	900	112	07 45 01

SETUP FILE INFORMATION:

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

===== Setup file: ra6cm2.set

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

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 28.212415	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 37.44476	0.00
	fake circumpolar target for a TS to look at			
* 0730+504	07 30 04.386239	* 07 33 52.520582	07 35 03.943199	0.00
J0733+5022	50 28 40.45211	* 50 22 09.06206	50 19 44.60771	0.00
	./rk12de_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 574 observations, RA-A03-04			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0730+504	93.2

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

rk12dftr

RADIOASTRON AGN SURVEY

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 Survey

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

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 14 Oct 2015 Day 287 ---

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

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

14 00 00	0014+813	16 45 27	49.2	11.7	-7.5	-57.6	0	0	14 00 00
14 14 30	---	17 00 00	49.6	12.2	-7.3	-60.9	870	28	14 00 01
14 15 00	0014+813	17 00 30	49.7	12.2	-7.3	-61.0	25	28	14 15 00
14 29 30	---	17 15 02	50.1	12.6	-7.1	-64.3	870	56	14 15 01
14 30 00	0014+813	17 15 32	50.1	12.6	-7.0	-64.4	25	56	14 30 00
14 44 30	---	17 30 05	50.6	12.9	-6.8	-67.8	870	84	14 30 01
14 45 00	0014+813	17 30 35	50.6	12.9	-6.8	-67.9	25	84	14 45 00
15 00 00	---	17 45 37	51.2	13.2	-6.5	-71.4	900	112	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: 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 28.229399	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 37.34038	0.00
	fake circumpolar target for a TS to look at			
* 0014+813	00 14 04.461856	* 00 17 08.474899	00 18 20.260657	0.00
J0017+8135	81 18 28.65820	* 81 35 08.13656	81 40 29.55254	0.00
	./rk12df_sources.radioastron			
	HIGHz, rfc_2013d Petrov, 2013, unpublished 73794 observations, RA-A03-03, RA-A02			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0014+813	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 $60 \deg F^{-0.6}$ 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

rk12dgtr

RADIOASTRON AGN SURVEY

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 Survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
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 15 Oct 2015 Day 288 ---

----- 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

08 00 00	0014+813	10 48 25	45.3	-4.5	10.5	19.1	0	0	08 00 00
08 12 00	---	11 00 27	45.2	-3.9	10.7	16.5	720	23	08 00 01
08 12 30	0014+813	11 00 57	45.2	-3.9	10.7	16.4	25	23	08 12 30
08 24 30	---	11 12 59	45.1	-3.3	10.9	13.8	720	46	08 12 31
08 25 00	0014+813	11 13 29	45.1	-3.3	10.9	13.7	25	46	08 25 00
08 37 00	---	11 25 31	45.0	-2.7	11.1	11.2	720	69	08 25 01
08 37 30	0014+813	11 26 01	45.0	-2.7	11.1	11.1	25	69	08 37 30
08 50 00	---	11 38 33	44.9	-2.0	11.3	8.4	750	93	08 37 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: 4	Station: TORUN	Total bit rate: 256
Format: MKIV1:4	Bits per sample: 2	Sample rate: 32.000
Number of channels: 4	DBE type:	Speedup factor: 1.00

Disk used to record data.

1st LO=	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 28.274476	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 37.06837	0.00
	fake circumpolar target for a TS to look at			
* 0014+813	00 14 04.461856	* 00 17 08.474899	00 18 20.247948	0.00
J0017+8135	81 18 28.65820	* 81 35 08.13656	81 40 29.81734	0.00
	./rk12dg_sources.radioastron			
	HIGHz, rfc_2013d Petrov, 2013, unpublished 73794 observations, RA-A03-03, RA-A02			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0014+813	106.5

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

NETWORK MONITORING EXPERIMENT
PI: Minnie Mao

Address: JIVE Phone: +31-521-596508 EMAIL: mao@jive.eu Phone during obs: +31-521-596508

Schedule for TORUN (Code Tr)

Page 2

Network Monitoring Experiment

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are 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	15 Oct 2015	Day 288 ---								
Next scan frequencies:		1634.49	1634.49	1634.49	1634.49	1634.49	1650.49	1650.49	1650.49	1650.49
		1666.49	1666.49	1666.49	1666.49	1666.49	1682.49	1682.49	1682.49	1682.49
Next BBC frequencies:		665.51	665.51	665.51	665.51	665.51	649.51	649.51	649.51	649.51
		633.51	633.51	633.51	633.51	633.51	617.51	617.51	617.51	617.51
Next scan bandwidths:		8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
		8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00

11 30 00	J1642+3948	14 18 59	62.2	103.9	-2.4		-49.3	0	0	11 30 00
11 34 00	=3C345	14 23 00	62.8	105.0	-2.3		-49.0	240	15	11 30 01

11 36 00	J1642+3948	14 25 00	63.1	105.5	-2.3		-48.8	113	15	11 36 00
11 40 00	=3C345	14 29 01	63.6	106.7	-2.2		-48.5	240	31	11 36 01

11 42 00	J1642+3948	14 31 01	63.9	107.3	-2.2		-48.3	113	31	11 42 00
11 45 00	=3C345	14 34 02	64.4	108.1	-2.2		-48.0	180	42	11 42 01

11 47 00	J1642+3948	14 36 02	64.6	108.7	-2.1		-47.7	113	42	11 47 00
12 00 00	=3C345	14 49 04	66.5	112.9	-1.9		-46.1	780	92	11 47 01

12 02 00	J1642+3948	14 51 05	66.7	113.5	-1.9		-45.8	113	92	12 02 00
12 15 00	=3C345	15 04 07	68.5	118.2	-1.7		-43.5	780	142	12 02 01

12 17 00	J1642+3948	15 06 07	68.8	119.0	-1.6		-43.1	113	142	12 17 00
12 30 00	=3C345	15 19 09	70.4	124.4	-1.4		-40.2	780	192	12 17 01

12 32 00	J1642+3948	15 21 09	70.7	125.3	-1.4		-39.7	113	192	12 32 00
12 34 00	=3C345	15 23 10	70.9	126.2	-1.3		-39.1	120	200	12 32 01

12 36 00	J1642+3948	15 25 10	71.2	127.1	-1.3		-38.6	113	200	12 36 00
12 40 00	=3C345	15 29 11	71.6	129.0	-1.2		-37.4	240	215	12 36 01

12 42 00	J1642+3948	15 31 11	71.9	130.0	-1.2		-36.8	113	215	12 42 00
12 45 00	=3C345	15 34 12	72.2	131.5	-1.2		-35.8	180	227	12 42 01

12 55 00	J1751+0939	15 44 13	39.5	137.4	-2.1		-24.4	460	227	12 55 00
13 00 00	=1749+096	15 49 14	40.0	138.8	-2.1		-23.6	300	246	12 55 01

13 02 00	J1751+0939	15 51 14	40.2	139.4	-2.0		-23.3	113	246	13 02 00
13 05 00	=1749+096	15 54 15	40.5	140.3	-2.0		-22.9	180	258	13 02 01

13 07 00	J1751+0939	15 56 15	40.7	140.9	-1.9		-22.6	113	258	13 07 00
13 15 00	=1749+096	16 04 16	41.4	143.4	-1.8		-21.3	480	288	13 07 01

13 17 00	J1751+0939	16 06 17	41.6	144.0	-1.8		-21.0	113	288	13 17 00
13 30 00	=1749+096	16 19 19	42.7	148.0	-1.5		-18.8	780	338	13 17 01

Schedule for TORUN (Code Tr)

Page 3

Network Monitoring Experiment

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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 15 Oct 2015   Day 288 ---

13 32 00  J1751+0939  16 21 19  42.8 148.7 -1.5    -18.5  113    338  13 32 00
13 45 00  =1749+096   16 34 21  43.8 152.9 -1.3    -16.1  780    388  13 32 01

13 47 00  J1751+0939  16 36 22  43.9 153.6 -1.3    -15.7  113    388  13 47 00
14 00 00  =1749+096   16 49 24  44.7 157.9 -1.0    -13.2  780    438  13 47 01

14 02 00  J1751+0939  16 51 24  44.9 158.6 -1.0    -12.8  113    438  14 02 00
14 04 00  =1749+096   16 53 25  45.0 159.3 -1.0    -12.5  120    446  14 02 01

14 06 00  J1751+0939  16 55 25  45.1 160.0 -0.9    -12.1  113    446  14 06 00
14 10 00  =1749+096   16 59 26  45.3 161.3 -0.9    -11.2  240    462  14 06 01

14 12 00  J1751+0939  17 01 26  45.4 162.0 -0.8    -10.8  113    462  14 12 00
14 15 00  =1749+096   17 04 26  45.5 163.1 -0.8    -10.2  180    473  14 12 01

14 17 00  J1751+0939  17 06 27  45.6 163.7 -0.8     -9.8  113    473  14 17 00
14 30 00  =1749+096   17 19 29  46.1 168.3 -0.5     -7.1  780    523  14 17 01

```

SETUP FILE INFORMATION:

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

===== Setup file: sess315.L512

```

Setup group:   11          Station: TORUN          Total bit rate:   512
Format: MARK5B          Bits per sample: 2          Sample rate: 16.000
Number of channels: 16    DBE type: DBBC_DDC         Speedup factor:   1.00

```

Disk used to record data.

1st LO=	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
Net SB=	L	L	U	U	L	L	U	U
	L	L	U	U	L	L	U	U
IF SB =	L	L	L	L	L	L	L	L
	L	L	L	L	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
BBC =	1	5	1	5	2	6	2	6
	3	7	3	7	4	8	4	8
BBC SB=	U	U	L	L	U	U	L	L
	U	U	L	L	U	U	L	L
IF =	A1	B1	A1	B1	A1	B1	A1	B1
	A1	B1	A1	B1	A1	B1	A1	B1

The following frequency sets based on these setups were used.

Frequency Set: 6 Setup file default. Used with PCAL = off

LO sum=	1634.49	1634.49	1634.49	1634.49	1650.49	1650.49	1650.49	1650.49
	1666.49	1666.49	1666.49	1666.49	1682.49	1682.49	1682.49	1682.49
BBC fr=	665.51	665.51	665.51	665.51	649.51	649.51	649.51	649.51
	633.51	633.51	633.51	633.51	617.51	617.51	617.51	617.51
Bandwd=	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00

Matching frequency sets: 6

Track assignments are:

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

barrel=roll_off

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)			Error
	(B1950)	(J2000)	(Date)	(mas)
3C345	16 41 17.606228	* 16 42 58.809966	16 43 29.392560	0.76
* J1642+3948	39 54 10.81496	* 39 48 36.99402	39 47 16.25032	0.52
1641+399	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc			
J1642+39	GSFC 2015a astro solution, unpublished 53430 observations.			
1749+096	17 49 10.387931	* 17 51 32.818574	17 52 17.116205	0.00
* J1751+0939	09 39 42.82591	* 09 39 00.72847	09 39 08.79451	0.00
J1751+09	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc			
	GSFC 2015a astro solution, unpublished 144578 observations.			

rk12dhtr

PI: *Yuri Kovalev*

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

Page 2

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

--- Fri 16 Oct 2015 Day 289 ---

----- 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

05 40 00	0836+710	08 31 58	72.2	3.0	-0.2	-174.6	0	0	05 40 00
05 59 30	---	08 51 32	72.2	-2.3	0.1	175.8	1170	37	05 40 01
06 00 00	0836+710	08 52 02	72.2	-2.4	0.2	175.5	24	37	06 00 00
06 20 00	---	09 12 05	72.0	-7.7	0.5	165.8	1200	76	06 00 01

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

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

```

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

```

Disk used to record data.

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

The following frequency sets based on these setups were used.

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

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

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 28.334029	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 36.72986	0.00
	fake circumpolar target for a TS to look at			
* 0836+710	08 36 21.556646	* 08 41 24.365284	08 42 56.791833	0.00
J0841+7053	71 04 22.42740	* 70 53 42.17302	70 49 55.10424	0.00
	./rk12dh_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 4321 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)
0836+710	91.9

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

GPS SATELLITE OBSERVATIONS: FREQUENCY SETUP TESTS

PI: *James M. Anderson*

Address: Deutsches GeoForschungsZentrum GFZ Phone during obs: +49 1737838125
 Observing mode: Fringe-finder scans on strong sources.

Schedule for TORUN (Code Tr) Page 2

GPS Satellite Observations: Frequency Setup Tests

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
 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 16 Oct 2015	Day 289 ---								
Next scan frequencies:		1591.60	1591.60	1591.60	1591.60		1655.60	1655.60	1655.60	1655.60
Next BBC frequencies:		708.40	708.40	708.40	708.40		644.40	644.40	644.40	644.40
Next scan bandwidths:		32.00	32.00	32.00	32.00		32.00	32.00	32.00	32.00
06 30 00	J0555+3948	09 22 07	53.1	270.1	3.4		51.4	0	0	06 30 00
06 39 50	=0552+398	09 31 58	51.6	272.0	3.6		51.4	590	76	06 30 01
06 40 00	J0555+3948	09 32 08	51.6	272.1	3.6		51.4	4	76	06 40 00
06 44 00	=0552+398	09 36 09	51.0	272.8	3.7		51.3	240	106	06 40 01
Next scan frequencies:		1403.60	1403.60	1403.60	1403.60					
Next BBC frequencies:		696.40	696.40	696.40	696.40					
Next scan bandwidths:		32.00	32.00	32.00	32.00					
06 44 50	J0555+3948	09 36 59	50.9	273.0	3.7		51.3	44	106	06 44 50
06 47 50	=0552+398	09 39 59	50.4	273.6	3.7		51.3	180	118	06 45 15
Next scan frequencies:		1243.60	1243.60	1243.60	1243.60					
Next BBC frequencies:		856.40	856.40	856.40	856.40					
06 48 40	J0555+3948	09 40 50	50.3	273.7	3.7		51.3	44	118	06 48 40
06 50 40	=0552+398	09 42 50	50.0	274.1	3.8		51.2	120	126	06 48 41
Next scan frequencies:		1243.60	1243.60	1243.60	1243.60	1307.60	1307.60	1307.60	1307.60	1307.60
Next BBC frequencies:		856.40	856.40	856.40	856.40	792.40	792.40	792.40	792.40	792.40
Next scan bandwidths:		32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00
06 51 30	J0555+3948	09 43 40	49.9	274.3	3.8		51.2	44	126	06 51 30
06 55 30	=0552+398	09 47 41	49.3	275.0	3.9		51.1	240	156	06 51 55
06 56 20	J0555+3948	09 48 31	49.2	275.2	3.9		51.1	44	156	06 56 20
06 58 20	=0552+398	09 50 31	48.9	275.5	3.9		51.1	120	172	06 56 21
Next scan frequencies:		1591.60	1591.60	1591.60	1591.60	1655.60	1655.60	1655.60	1655.60	1655.60
Next BBC frequencies:		708.40	708.40	708.40	708.40	644.40	644.40	644.40	644.40	644.40
07 04 20	J0854+2006	09 56 32	54.9	205.4	1.0		15.9	202	172	07 04 20
07 08 20	=0J287	10 00 33	54.7	207.0	1.1		16.8	240	203	07 04 21

Schedule for TORUN (Code Tr)

Page 3

GPS Satellite Observations: Frequency Setup Tests

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

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 16 Oct 2015 Day 289 ---

```
Next scan frequencies: 1403.60 1403.60 1403.60 1403.60
Next BBC frequencies:   696.40  696.40  696.40  696.40
Next scan bandwidths:   32.00   32.00   32.00   32.00

07 09 10 J0854+2006 10 01 23 54.6 207.3 1.1      17.0   43      203  07 09 10
07 12 10 =OJ287     10 04 23 54.4 208.4 1.1      17.7  180      214  07 09 35
Next scan frequencies: 1243.60 1243.60 1243.60 1243.60
Next BBC frequencies:   856.40  856.40  856.40  856.40

07 13 00 J0854+2006 10 05 14 54.3 208.8 1.2      17.9   43      214  07 13 00
07 15 00 =OJ287     10 07 14 54.2 209.5 1.2      18.4  120      222  07 13 01

Next scan frequencies: 1243.60 1243.60 1243.60 1243.60 1307.60 1307.60 1307.60 1307.60
Next BBC frequencies:   856.40  856.40  856.40  856.40  792.40  792.40  792.40  792.40
Next scan bandwidths:   32.00   32.00   32.00   32.00   32.00   32.00   32.00   32.00

07 15 50 J0854+2006 10 08 04 54.1 209.9 1.2      18.6   43      222  07 15 50
07 19 50 =OJ287     10 12 05 53.8 211.4 1.3      19.4  240      253  07 16 15

07 20 40 J0854+2006 10 12 55 53.8 211.7 1.3      19.6   43      253  07 20 40
07 22 40 =OJ287     10 14 55 53.6 212.4 1.3      20.0  120      268  07 20 41
```

SETUP FILE INFORMATION:

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

==== Setup file: sess315.L1_1024

```
Setup group:    5          Station: TORUN          Total bit rate: 1024
Format: MARK5B  Bits per sample: 2          Sample rate: 64.000
Number of channels: 8    DBE type: DBBC_DDC    Speedup factor: 1.00
```

Disk used to record data.

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

The following frequency sets based on these setups were used.

Frequency Set: 6 Setup file default. Used with PCAL = off

LO sum=	1591.60	1591.60	1591.60	1591.60	1655.60	1655.60	1655.60	1655.60
BBC fr=	708.40	708.40	708.40	708.40	644.40	644.40	644.40	644.40
Bandwd=	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00

Matching frequency sets: 6

Track assignments are:

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

===== Setup file: sess315.L3_512

Setup group: 14	Station: TORUN	Total bit rate: 512
Format: MARK5B	Bits per sample: 2	Sample rate: 64.000
Number of channels: 4	DBE type: DBBC_DDC	Speedup factor: 1.00

Disk used to record data.

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

The following frequency sets based on these setups were used.

Frequency Set: 15 Setup file default. Used with PCAL = off
 LO sum= 1403.60 1403.60 1403.60 1403.60
 BBC fr= 696.40 696.40 696.40 696.40
 Bandwd= 32.00 32.00 32.00 32.00
 Matching frequency sets: 15

Track assignments are:
 track1= 2, 4, 6, 8
 barrel=roll_off

==== Setup file: sess315.L2_512

Setup group: 27	Station: TORUN	Total bit rate: 512
Format: MARK5B	Bits per sample: 2	Sample rate: 64.000
Number of channels: 4	DBE type: DBBC_DDC	Speedup factor: 1.00

Disk used to record data.

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

The following frequency sets based on these setups were used.

Frequency Set: 24 Setup file default. Used with PCAL = off
 LO sum= 1243.60 1243.60 1243.60 1243.60
 BBC fr= 856.40 856.40 856.40 856.40
 Bandwd= 32.00 32.00 32.00 32.00
 Matching frequency sets: 24

Track assignments are:
 track1= 2, 4, 6, 8
 barrel=roll_off

===== Setup file: sess315.L2_1024

Setup group: 21	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: 30 Setup file default. Used with PCAL = off

LO sum=	1243.60	1243.60	1243.60	1243.60	1307.60	1307.60	1307.60	1307.60
BBC fr=	856.40	856.40	856.40	856.40	792.40	792.40	792.40	792.40
Bandwd=	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00

Matching frequency sets: 30

Track assignments are:

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

==== Setup file: sess315.L1L2_1024

Setup group: 37	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: 36 Setup file default. Used with PCAL = off
 LO sum= 1243.60 1243.60 1243.60 1243.60 1307.60 1307.60 1307.60 1307.60
 BBC fr= 856.40 856.40 856.40 856.40 792.40 792.40 792.40 792.40
 Bandwd= 32.00 32.00 32.00 32.00 32.00 32.00 32.00 32.00
 Matching frequency sets: 36

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 (mas)	
	(B1950)	(J2000)		
0552+398	05 52 01.407169	* 05 55 30.805611	05 56 37.556849	0.00
* J0555+3948	39 48 21.94581	* 39 48 49.16496	39 48 40.42246	0.00
DA193	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc			
J0555+39	GSFC 2015a astro solution, unpublished 394383 observations.			
OJ287	08 51 57.250615	* 08 54 48.874926	08 55 42.304807	0.00
* J0854+2006	20 17 58.41743	* 20 06 30.64088	20 02 46.35895	0.00
0851+202	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc			
J0854+20	GSFC 2015a astro solution, unpublished 216540 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)
J0555+3948	112.3
J0854+2006	71.9

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

RADIOASTRON IMAGING OF HIGH-REDSHIFT QUASARS

PI: Leonid Gurvits

Address: JIVE Phone: +31 521 596 514 EMAIL: lgurvits@jive.eu Phone during obs: +31 521 596 514
 Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr)

Page 2

RadioAstron Imaging of high-redshift quasars

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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 16 Oct 2015 Day 289 ---								
----- L-band VLBI scans. Ground-only segment 01 -----								
Next scan frequencies: 1668.00 1668.00 1668.00 1668.00								
Next BBC frequencies: 632.00 632.00 632.00 632.00								
Next scan bandwidths: 16.00 16.00 16.00 16.00								
09 00 00	0014+813	11 52 31	44.8	-1.3	11.6	5.5	0	0 09 00 00
09 04 30	---	11 57 02	44.8	-1.1	11.6	4.5	270	9 09 00 01
----- L-band VLBI scans. Space segment 01 -----								
09 05 00	0014+813	11 57 32	44.8	-1.1	11.7	4.4	25	9 09 05 00
09 22 40	---	12 15 15	44.8	-0.2	11.9	0.7	1060	43 09 05 01
09 23 40	0014+813	12 16 15	44.8	-0.1	12.0	0.4	55	43 09 23 40
09 41 20	---	12 33 58	44.8	0.8	-11.7	-3.3	1060	77 09 23 41
09 42 20	0014+813	12 34 58	44.8	0.8	-11.7	-3.5	55	77 09 42 20
10 00 00	---	12 52 41	44.8	1.7	-11.4	-7.3	1060	111 09 42 21
----- L-band VLBI scans. Ground-only segment 02 -----								
10 04 00	2021+614	12 56 42	36.9	33.5	-7.4	-44.3	162	111 10 04 00
10 14 00	---	13 06 43	37.7	34.6	-7.3	-45.9	600	130 10 04 01
10 16 00	1849+670	13 08 44	49.2	36.3	-5.7	-66.2	64	130 10 16 00
10 26 00	---	13 18 45	50.1	36.9	-5.5	-68.1	600	149 10 16 01
10 28 30	0014+813	13 21 16	45.0	3.2	-11.0	-13.3	67	149 10 28 30
10 38 00	---	13 30 47	45.1	3.7	-10.8	-15.3	570	167 10 28 31
10 38 30	0014+813	13 31 17	45.1	3.7	-10.8	-15.4	25	167 10 38 30
10 48 00	---	13 40 49	45.2	4.2	-10.6	-17.5	570	186 10 38 31
10 48 30	0014+813	13 41 19	45.2	4.2	-10.6	-17.6	25	186 10 48 30
10 58 00	---	13 50 51	45.3	4.6	-10.5	-19.6	570	204 10 48 31
10 58 30	0014+813	13 51 21	45.3	4.7	-10.4	-19.7	25	204 10 58 30
11 08 00	---	14 00 52	45.5	5.1	-10.3	-21.7	570	222 10 58 31
11 08 30	0014+813	14 01 22	45.5	5.1	-10.3	-21.8	25	222 11 08 30
11 18 00	---	14 10 54	45.6	5.6	-10.1	-23.9	570	240 11 08 31
11 18 30	0014+813	14 11 24	45.6	5.6	-10.1	-24.0	25	240 11 18 30
11 28 00	---	14 20 55	45.8	6.1	-10.0	-26.0	570	259 11 18 31

Schedule for TORUN (Code Tr)

Page 3

RadioAstron Imaging of high-redshift quasars

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	16 Oct 2015	Day 289 ---								
11 28 30	0014+813	14 21 26	45.8	6.1	-9.9		-26.1	25	259	11 28 30
11 38 00	---	14 30 57	45.9	6.5	-9.8		-28.2	570	277	11 28 31
11 38 30	0014+813	14 31 27	45.9	6.6	-9.8		-28.3	25	277	11 38 30
11 48 00	---	14 40 59	46.1	7.0	-9.6		-30.3	570	295	11 38 31
11 48 30	0014+813	14 41 29	46.1	7.0	-9.6		-30.4	25	295	11 48 30
11 58 00	---	14 51 00	46.3	7.4	-9.5		-32.5	570	313	11 48 31
11 58 30	0014+813	14 51 30	46.3	7.5	-9.4		-32.6	25	313	11 58 30
12 08 00	---	15 01 02	46.5	7.9	-9.3		-34.6	570	332	11 58 31
12 08 30	0014+813	15 01 32	46.5	7.9	-9.3		-34.8	25	332	12 08 30
12 18 00	---	15 11 04	46.7	8.3	-9.1		-36.8	570	350	12 08 31
12 18 30	0014+813	15 11 34	46.7	8.3	-9.1		-36.9	25	350	12 18 30
12 25 00	---	15 18 05	46.9	8.6	-9.0		-38.3	390	362	12 18 31
12 29 00	2021+614	15 22 05	51.0	46.8	-5.0		-67.3	149	362	12 29 00
12 39 00	---	15 32 07	52.1	47.5	-4.8		-68.9	600	382	12 29 01
12 41 00	1849+670	15 34 07	62.9	40.0	-3.3		-96.8	66	382	12 41 00
12 51 00	---	15 44 09	63.9	39.7	-3.1		-99.4	600	401	12 41 01
12 56 00	2200+420	15 49 10	30.7	59.1	-6.2		-44.2	160	401	12 56 00
13 06 00	---	15 59 12	32.0	60.7	-6.1		-45.1	600	420	12 56 01
----- L-band VLBI scans. Space segment 02 -----										
13 10 00	0014+813	16 03 12	48.0	10.4	-8.3		-48.2	124	420	13 10 00
13 27 40	---	16 20 55	48.5	11.0	-8.0		-52.1	1060	454	13 10 01
13 28 40	0014+813	16 21 55	48.5	11.0	-7.9		-52.4	55	454	13 28 40
13 46 20	---	16 39 38	49.0	11.6	-7.6		-56.3	1060	488	13 28 41
13 47 20	0014+813	16 40 38	49.0	11.6	-7.6		-56.5	55	488	13 47 20
14 05 00	---	16 58 21	49.6	12.1	-7.3		-60.5	1060	522	13 47 21
----- L-band VLBI scans. Ground-only segment 03 -----										
14 08 00	0014+813	17 01 22	49.7	12.2	-7.3		-61.2	175	522	14 08 00
14 17 30	---	17 10 53	50.0	12.4	-7.1		-63.4	570	540	14 08 01
14 21 00	2021+614	17 14 24	63.9	52.1	-3.1		-87.5	116	540	14 21 00
14 31 00	---	17 24 26	65.1	52.2	-3.0		-89.7	600	560	14 21 01

Schedule for TORUN (Code Tr)

Page 4

RadioAstron Imaging of high-redshift quasars

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	16 Oct 2015	Day 289 ---								
14 32 30	1849+670	17 25 56	72.7	27.8	-1.4		-134.0	26	560	14 32 30
14 42 30	---	17 35 57	73.4	25.3	-1.2		-138.6	600	579	14 32 31
14 47 30	2200+420	17 40 58	46.2	76.6	-4.4		-52.2	182	579	14 47 30
14 57 30	---	17 51 00	47.7	78.2	-4.2		-52.7	600	598	14 47 31
15 01 30	0014+813	17 55 01	51.5	13.4	-6.4		-73.6	95	598	15 01 30
15 11 00	---	18 04 32	51.8	13.5	-6.2		-75.8	570	616	15 01 31
15 11 30	0014+813	18 05 02	51.8	13.5	-6.2		-75.9	25	616	15 11 30
15 21 00	---	18 14 34	52.2	13.7	-6.1		-78.2	570	635	15 11 31
15 21 30	0014+813	18 15 04	52.2	13.7	-6.1		-78.3	25	635	15 21 30
15 31 00	---	18 24 35	52.5	13.8	-5.9		-80.6	570	653	15 21 31
15 31 30	0014+813	18 25 05	52.5	13.8	-5.9		-80.7	25	653	15 31 30
15 41 00	---	18 34 37	52.9	13.8	-5.7		-83.0	570	671	15 31 31
15 41 30	0014+813	18 35 07	52.9	13.8	-5.7		-83.1	25	671	15 41 30
15 51 00	---	18 44 39	53.2	13.9	-5.6		-85.4	570	689	15 41 31
15 51 30	0014+813	18 45 09	53.3	13.9	-5.6		-85.5	25	689	15 51 30
16 01 00	---	18 54 40	53.6	13.9	-5.4		-87.9	570	708	15 51 31
16 01 30	0014+813	18 55 10	53.6	13.9	-5.4		-88.0	25	708	16 01 30
16 11 00	---	19 04 42	54.0	14.0	-5.2		-90.4	570	726	16 01 31
16 11 30	0014+813	19 05 12	54.0	14.0	-5.2		-90.5	25	726	16 11 30
16 23 30	---	19 17 14	54.4	13.9	-5.0		-93.5	720	749	16 11 31
16 27 00	2021+614	19 20 45	78.1	37.8	-1.0		-129.2	108	749	16 27 00
16 37 00	---	19 30 46	79.0	33.7	-0.9		-135.4	600	768	16 27 01
16 39 40	1849+670	19 33 27	75.0	-16.7	0.7		153.6	45	768	16 39 40
16 49 40	---	19 43 28	74.5	-19.9	0.9		148.2	600	787	16 39 41
16 54 50	2200+420	19 48 39	65.2	102.0	-2.2		-52.6	52	787	16 54 50
17 04 50	---	19 58 41	66.7	104.8	-2.1		-51.8	600	807	16 54 51
----- L-band VLBI scans. Space segment 03 -----										
17 10 00	0014+813	20 03 52	56.1	13.4	-4.2		-105.4	112	807	17 10 00
17 27 40	---	20 21 35	56.7	13.1	-3.9		-110.1	1060	841	17 10 01

Schedule for TORUN (Code Tr)

Page 5

RadioAstron Imaging of high-redshift quasars

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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 16 Oct 2015 Day 289 ---

```
17 28 40 0014+813      20 22 35 56.7 13.1 -3.9    -110.3   55      841  17 28 40
17 46 20 ---          20 40 18 57.3 12.6 -3.6    -115.1 1060      875  17 28 41

17 47 20 0014+813      20 41 18 57.4 12.6 -3.6    -115.4   55      875  17 47 20
18 05 00 ---          20 59 01 57.9 12.0 -3.3    -120.2 1060      909  17 47 21
```

SETUP FILE INFORMATION:

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

===== Setup file: ra18cm2.set

```
Setup group:      9          Station: TORUN          Total bit rate:   256
Format: MARK5B    Bits per sample: 2          Sample rate: 32.000
Number of channels: 4    DBE type: DBBC_DDC      Speedup factor:   1.00
```

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

Frequency Set:   7  Setup file default.  Used with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00   632.00   632.00   632.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:   7

```

```

Track assignments are:
track1=   6,  8,  2,  4
barrel=roll_off

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error
	(B1950)	(J2000)		(mas)
* 0014+813	00 14 04.461856	* 00 17 08.474899	00 18 20.230014	0.00
J0017+8135	81 18 28.65820	* 81 35 08.13656	81 40 30.19439	0.00
* 1849+670	18 49 16.505869	* 18 49 16.072282	18 49 15.374758	0.00
J1849+6705	67 02 07.88049	* 67 05 41.68023	67 07 17.87875	0.00
* 2021+614	20 21 13.300234	* 20 22 06.681752	20 22 24.522826	0.00
J2022+6136	61 27 18.15575	* 61 36 58.80476	61 40 29.91825	0.00
* 2200+420	22 00 39.362504	* 22 02 43.291371	22 03 23.862147	0.00
J2202+4216	42 02 08.59073	* 42 16 39.97987	42 21 36.00268	0.00

EVN 1.6GHz OBSERVATIONS OF CHANGING-LOOK AGN MRK 590

PI: Jun Yang

Address: Onsala Space Observatory EMAIL: jun.yang@chalmers.se Phone during obs: +46 31 7725531
Observing mode: 1024-16-2

Schedule for TORUN (Code Tr) Page 2

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	16 Oct 2015	Day 289 ---								
Next scan frequencies:		1610.49	1610.49	1610.49	1610.49	1642.49	1642.49	1642.49	1642.49	
		1674.49	1674.49	1674.49	1674.49	1706.49	1706.49	1706.49	1706.49	
Next BBC frequencies:		689.51	689.51	689.51	689.51	657.51	657.51	657.51	657.51	
		625.51	625.51	625.51	625.51	593.51	593.51	593.51	593.51	
Next scan bandwidths:		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	
		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	

19 00 00	3C84	21 54 10	36.6	67.2	-5.4		-47.7	0	0	19 00 00
19 04 00	---	21 58 10	37.1	67.8	-5.4		-48.0	240	31	19 00 01
19 06 00	J0217-0121	22 00 11	13.8	111.5	-4.3		-34.0	18	31	19 06 00
19 07 00	=0215-015	22 01 11	14.0	111.7	-4.3		-33.9	60	38	19 06 01
19 07 15	J0217-0121	22 01 26	14.0	111.8	-4.3		-33.9	9	38	19 07 15
19 08 00	=0215-015	22 02 11	14.1	111.9	-4.3		-33.9	45	44	19 07 16
19 08 00	J0216-0105	22 02 11	14.6	112.1	-4.2		-33.8	-13	44	No stop
19 09 30	=0213-013	22 03 41	14.8	112.5	-4.2		-33.7	77	56	19 08 01
19 09 45	J0217-0121	22 03 56	14.4	112.3	-4.2		-33.8	2	56	19 09 45
19 10 30	=0215-015	22 04 41	14.5	112.5	-4.2		-33.7	45	62	19 09 46
19 10 30	J0216-0105	22 04 41	14.9	112.7	-4.2		-33.7	-13	62	No stop
19 12 00	=0213-013	22 06 12	15.1	113.0	-4.2		-33.6	77	73	19 10 31
19 12 15	J0217-0121	22 06 27	14.7	112.8	-4.2		-33.6	2	73	19 12 15
19 13 00	=0215-015	22 07 12	14.8	113.0	-4.2		-33.6	45	79	19 12 16
19 13 00	J0216-0105	22 07 12	15.3	113.2	-4.2		-33.5	-13	79	No stop
19 14 30	=0213-013	22 08 42	15.5	113.5	-4.1		-33.4	77	90	19 13 01
19 14 45	J0217-0121	22 08 57	15.1	113.4	-4.2		-33.5	2	90	19 14 45
19 15 30	=0215-015	22 09 42	15.2	113.5	-4.2		-33.4	45	96	19 14 46
19 15 30	J0216-0105	22 09 42	15.6	113.8	-4.1		-33.3	-13	96	No stop
19 17 00	=0213-013	22 11 13	15.8	114.1	-4.1		-33.2	77	108	19 15 31
19 17 15	J0216-0118	22 11 28	15.7	114.3	-4.1		-33.2	5	108	19 17 15
19 18 00	=0213-015	22 12 13	15.8	114.5	-4.1		-33.1	45	113	19 17 16
19 18 00	MRK590	22 12 13	16.5	114.5	-4.1		-33.1	-15	113	No stop
19 19 30	---	22 13 43	16.7	114.8	-4.0		-33.0	75	125	19 18 01

Schedule for TORUN (Code Tr)

Page 3

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	16 Oct 2015	Day 289	---							
19 19 45	J0216-0118	22 13 58	16.0	114.8	-4.0		-33.0	1	125	19 19 45
19 20 30	=0213-015	22 14 43	16.1	115.0	-4.0		-33.0	45	131	19 19 46
19 20 30	MRK590	22 14 43	16.8	115.0	-4.0		-33.0	-15	131	No stop
19 22 00	---	22 16 13	17.0	115.4	-4.0		-32.9	75	142	19 20 31
19 22 15	J0216-0118	22 16 28	16.4	115.4	-4.0		-32.9	1	142	19 22 15
19 23 00	=0213-015	22 17 14	16.5	115.5	-4.0		-32.8	45	148	19 22 16
19 23 00	MRK590	22 17 14	17.1	115.6	-4.0		-32.8	-15	148	No stop
19 24 30	---	22 18 44	17.3	115.9	-3.9		-32.7	75	160	19 23 01
19 24 45	J0216-0118	22 18 59	16.7	115.9	-4.0		-32.7	1	160	19 24 45
19 25 30	=0213-015	22 19 44	16.8	116.1	-4.0		-32.6	45	165	19 24 46
19 25 30	MRK590	22 19 44	17.5	116.1	-3.9		-32.6	-15	165	No stop
19 27 00	---	22 21 14	17.7	116.5	-3.9		-32.5	75	177	19 25 31
19 27 25	J0216-0118	22 21 39	17.1	116.5	-3.9		-32.5	11	177	19 27 25
19 28 10	=0213-015	22 22 24	17.2	116.7	-3.9		-32.5	45	183	19 27 26
19 28 10	J0216-0105	22 22 24	17.3	116.5	-3.9		-32.5	-10	183	No stop
19 29 35	=0213-013	22 23 50	17.5	116.9	-3.9		-32.4	75	194	19 28 11
19 29 50	J0216-0118	22 24 05	17.4	117.1	-3.9		-32.3	5	194	19 29 50
19 30 35	=0213-015	22 24 50	17.5	117.2	-3.9		-32.3	45	199	19 29 51
19 30 35	MRK590	22 24 50	18.2	117.3	-3.8		-32.3	-15	199	No stop
19 32 05	---	22 26 20	18.4	117.6	-3.8		-32.2	75	211	19 30 36
19 32 20	J0216-0118	22 26 35	17.7	117.6	-3.8		-32.2	1	211	19 32 20
19 33 05	=0213-015	22 27 20	17.8	117.8	-3.8		-32.1	45	217	19 32 21
19 33 05	MRK590	22 27 20	18.5	117.8	-3.8		-32.1	-15	217	No stop
19 34 35	---	22 28 50	18.7	118.2	-3.8		-32.0	75	228	19 33 06
19 34 50	J0216-0118	22 29 05	18.1	118.2	-3.8		-32.0	1	228	19 34 50
19 35 35	=0213-015	22 29 51	18.2	118.3	-3.8		-31.9	45	234	19 34 51
19 35 35	MRK590	22 29 51	18.8	118.4	-3.8		-31.9	-15	234	No stop
19 37 05	---	22 31 21	19.0	118.7	-3.7		-31.8	75	246	19 35 36
19 37 20	J0216-0118	22 31 36	18.4	118.7	-3.8		-31.8	1	246	19 37 20
19 38 05	=0213-015	22 32 21	18.5	118.9	-3.7		-31.7	45	251	19 37 21
19 38 05	MRK590	22 32 21	19.2	118.9	-3.7		-31.7	-14	251	No stop
19 39 35	---	22 33 51	19.4	119.3	-3.7		-31.6	76	263	19 38 06

Schedule for TORUN (Code Tr)

Page 4

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	16 Oct 2015	Day 289 ---								
19 40 00	J0216-0118	22 34 16	18.8	119.3	-3.7		-31.6	11	263	19 40 00
19 40 45	=0213-015	22 35 01	18.9	119.5	-3.7		-31.5	45	269	19 40 01
19 40 45	J0216-0105	22 35 01	19.0	119.4	-3.7		-31.6	-10	269	No stop
19 42 10	=0213-013	22 36 27	19.2	119.7	-3.7		-31.5	75	279	19 40 46
19 42 25	J0216-0118	22 36 42	19.1	119.9	-3.7		-31.4	5	279	19 42 25
19 43 10	=0213-015	22 37 27	19.2	120.0	-3.7		-31.3	45	285	19 42 26
19 43 10	MRK590	22 37 27	19.8	120.1	-3.6		-31.3	-14	285	No stop
19 44 40	---	22 38 57	20.0	120.4	-3.6		-31.2	76	297	19 43 11
19 44 55	J0216-0118	22 39 12	19.4	120.4	-3.6		-31.2	1	297	19 44 55
19 45 40	=0213-015	22 39 57	19.5	120.6	-3.6		-31.1	45	303	19 44 56
19 45 40	MRK590	22 39 57	20.1	120.7	-3.6		-31.1	-14	303	No stop
19 47 10	---	22 41 27	20.3	121.0	-3.6		-31.0	76	314	19 45 41
19 47 25	J0216-0118	22 41 43	19.7	121.0	-3.6		-31.0	1	314	19 47 25
19 48 10	=0213-015	22 42 28	19.8	121.2	-3.6		-30.9	45	320	19 47 26
19 48 10	MRK590	22 42 28	20.5	121.2	-3.5		-30.9	-14	320	No stop
19 49 40	---	22 43 58	20.7	121.6	-3.5		-30.8	76	331	19 48 11
19 49 55	J0216-0118	22 44 13	20.0	121.6	-3.5		-30.8	1	331	19 49 55
19 50 40	=0213-015	22 44 58	20.1	121.8	-3.5		-30.7	45	337	19 49 56
19 50 40	MRK590	22 44 58	20.8	121.8	-3.5		-30.7	-14	337	No stop
19 52 10	---	22 46 28	21.0	122.2	-3.5		-30.6	76	349	19 50 41
19 52 35	J0216-0118	22 46 53	20.4	122.2	-3.5		-30.5	11	349	19 52 35
19 53 20	=0213-015	22 47 38	20.5	122.4	-3.5		-30.5	45	354	19 52 36
19 53 20	J0216-0105	22 47 38	20.6	122.2	-3.5		-30.5	-10	354	No stop
19 54 45	=0213-013	22 49 04	20.8	122.6	-3.5		-30.4	75	365	19 53 21
19 55 00	J0216-0118	22 49 19	20.7	122.8	-3.5		-30.3	5	365	19 55 00
19 55 45	=0213-015	22 50 04	20.8	122.9	-3.4		-30.3	45	371	19 55 01
19 55 45	MRK590	22 50 04	21.4	123.0	-3.4		-30.2	-14	371	No stop
19 57 15	---	22 51 34	21.6	123.3	-3.4		-30.1	76	383	19 55 46
19 57 30	J0216-0118	22 51 49	21.0	123.3	-3.4		-30.1	1	383	19 57 30
19 58 15	=0213-015	22 52 34	21.1	123.5	-3.4		-30.1	45	388	19 57 31

Schedule for TORUN (Code Tr)

Page 5

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	16 Oct 2015	Day 289 ---								
19 58 15	MRK590	22 52 34	21.8	123.6	-3.4		-30.0	-14	388	No stop
19 59 45	---	22 54 05	21.9	123.9	-3.4		-29.9	76	400	19 58 16
20 00 00	J0216-0118	22 54 20	21.3	123.9	-3.4		-29.9	1	400	20 00 00
20 00 45	=0213-015	22 55 05	21.4	124.1	-3.4		-29.8	45	406	20 00 01
20 00 45	MRK590	22 55 05	22.1	124.2	-3.3		-29.8	-14	406	No stop
20 02 15	---	22 56 35	22.3	124.5	-3.3		-29.7	76	417	20 00 46
20 02 30	J0216-0118	22 56 50	21.6	124.5	-3.3		-29.7	1	417	20 02 30
20 03 15	=0213-015	22 57 35	21.7	124.7	-3.3		-29.6	45	423	20 02 31
20 03 15	MRK590	22 57 35	22.4	124.7	-3.3		-29.6	-14	423	No stop
20 04 45	---	22 59 05	22.6	125.1	-3.3		-29.4	76	435	20 03 16
20 05 10	J0216-0118	22 59 30	22.0	125.1	-3.3		-29.4	11	435	20 05 10
20 05 55	=0213-015	23 00 16	22.1	125.3	-3.3		-29.4	45	440	20 05 11
20 05 55	J0216-0105	23 00 16	22.2	125.2	-3.3		-29.4	-10	440	No stop
20 07 20	=0213-013	23 01 41	22.4	125.5	-3.3		-29.3	75	451	20 05 56
20 07 35	J0216-0118	23 01 56	22.3	125.7	-3.2		-29.2	5	451	20 07 35
20 08 20	=0213-015	23 02 41	22.3	125.9	-3.2		-29.1	45	457	20 07 36
20 08 20	MRK590	23 02 41	23.0	126.0	-3.2		-29.1	-14	457	No stop
20 09 50	---	23 04 11	23.2	126.3	-3.2		-28.9	76	469	20 08 21
20 10 05	J0216-0118	23 04 26	22.6	126.3	-3.2		-29.0	1	469	20 10 05
20 10 50	=0213-015	23 05 11	22.7	126.5	-3.2		-28.9	45	474	20 10 06
20 10 50	MRK590	23 05 11	23.3	126.6	-3.2		-28.8	-14	474	No stop
20 12 20	---	23 06 42	23.5	126.9	-3.1		-28.7	76	486	20 10 51
20 12 35	J0216-0118	23 06 57	22.9	126.9	-3.2		-28.7	1	486	20 12 35
20 13 20	=0213-015	23 07 42	23.0	127.1	-3.2		-28.6	45	492	20 12 36
20 13 20	MRK590	23 07 42	23.6	127.1	-3.1		-28.6	-14	492	No stop
20 14 50	---	23 09 12	23.8	127.5	-3.1		-28.4	76	503	20 13 21
20 15 05	J0216-0118	23 09 27	23.2	127.5	-3.1		-28.5	1	503	20 15 05
20 15 50	=0213-015	23 10 12	23.3	127.7	-3.1		-28.4	45	509	20 15 06
20 15 50	MRK590	23 10 12	23.9	127.8	-3.1		-28.3	-14	509	No stop
20 17 20	---	23 11 42	24.1	128.1	-3.1		-28.2	76	521	20 15 51

Schedule for TORUN (Code Tr)

Page 6

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	16 Oct 2015	Day 289 ---								
20 17 45	J0216-0118	23 12 07	23.5	128.1	-3.1		-28.2	11	521	20 17 45
20 18 30	=0213-015	23 12 53	23.6	128.3	-3.1		-28.1	45	526	20 17 46
20 18 30	J0216-0105	23 12 53	23.7	128.2	-3.1		-28.2	-10	526	No stop
20 19 55	=0213-013	23 14 18	23.9	128.5	-3.0		-28.0	75	537	20 18 31
20 20 10	J0216-0118	23 14 33	23.8	128.7	-3.0		-28.0	5	537	20 20 10
20 20 55	=0213-015	23 15 18	23.9	128.9	-3.0		-27.9	45	543	20 20 11
20 20 55	MRK590	23 15 18	24.5	129.0	-3.0		-27.8	-14	543	No stop
20 22 25	---	23 16 48	24.7	129.3	-3.0		-27.7	76	554	20 20 56
20 22 40	J0216-0118	23 17 03	24.1	129.3	-3.0		-27.7	1	554	20 22 40
20 23 25	=0213-015	23 17 48	24.1	129.5	-3.0		-27.6	45	560	20 22 41
20 23 25	MRK590	23 17 48	24.8	129.6	-3.0		-27.6	-14	560	No stop
20 24 55	---	23 19 19	25.0	130.0	-2.9		-27.4	76	572	20 23 26
20 25 10	J0216-0118	23 19 34	24.3	129.9	-3.0		-27.4	1	572	20 25 10
20 25 55	=0213-015	23 20 19	24.4	130.1	-2.9		-27.3	45	578	20 25 11
20 25 55	MRK590	23 20 19	25.1	130.2	-2.9		-27.3	-14	578	No stop
20 27 25	---	23 21 49	25.3	130.6	-2.9		-27.1	76	589	20 25 56
20 27 40	J0216-0118	23 22 04	24.6	130.5	-2.9		-27.2	1	589	20 27 40
20 28 25	=0213-015	23 22 49	24.7	130.7	-2.9		-27.1	45	595	20 27 41
20 28 25	MRK590	23 22 49	25.4	130.8	-2.9		-27.0	-14	595	No stop
20 29 55	---	23 24 19	25.5	131.2	-2.9		-26.9	76	606	20 28 26
20 30 20	J0216-0118	23 24 45	24.9	131.2	-2.9		-26.9	11	606	20 30 20
20 31 05	=0213-015	23 25 30	25.0	131.4	-2.9		-26.8	45	612	20 30 21
20 31 05	J0216-0105	23 25 30	25.2	131.2	-2.9		-26.8	-10	612	No stop
20 32 30	=0213-013	23 26 55	25.4	131.6	-2.8		-26.7	75	623	20 31 06
20 32 45	J0216-0118	23 27 10	25.2	131.8	-2.8		-26.6	5	623	20 32 45
20 33 30	=0213-015	23 27 55	25.3	132.0	-2.8		-26.5	45	629	20 32 46
20 33 30	MRK590	23 27 55	25.9	132.1	-2.8		-26.5	-14	629	No stop
20 35 00	---	23 29 25	26.1	132.5	-2.8		-26.3	76	640	20 33 31
20 35 15	J0216-0118	23 29 40	25.5	132.4	-2.8		-26.3	1	640	20 35 15
20 36 00	=0213-015	23 30 25	25.6	132.6	-2.8		-26.2	45	646	20 35 16

Schedule for TORUN (Code Tr)

Page 7

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	16 Oct 2015	Day 289	---							
20 36 00	MRK590	23 30 25	26.2	132.7	-2.7		-26.2	-14	646	No stop
20 37 30	---	23 31 56	26.4	133.1	-2.7		-26.0	76	658	20 36 01
20 37 45	J0216-0118	23 32 11	25.8	133.0	-2.7		-26.0	1	658	20 37 45
20 38 30	=0213-015	23 32 56	25.8	133.2	-2.7		-26.0	45	663	20 37 46
20 38 30	MRK590	23 32 56	26.5	133.3	-2.7		-25.9	-14	663	No stop
20 40 00	---	23 34 26	26.7	133.7	-2.7		-25.7	76	675	20 38 31
20 40 15	J0216-0118	23 34 41	26.0	133.7	-2.7		-25.8	1	675	20 40 15
20 41 00	=0213-015	23 35 26	26.1	133.8	-2.7		-25.7	45	681	20 40 16
20 41 00	MRK590	23 35 26	26.8	134.0	-2.7		-25.6	-14	681	No stop
20 42 30	---	23 36 57	26.9	134.4	-2.6		-25.4	76	692	20 41 01
20 42 55	J0216-0118	23 37 22	26.3	134.3	-2.7		-25.4	11	692	20 42 55
20 43 40	=0213-015	23 38 07	26.4	134.5	-2.6		-25.4	45	698	20 42 56
20 43 40	J0216-0105	23 38 07	26.6	134.4	-2.6		-25.4	-10	698	No stop
20 45 05	=0213-013	23 39 32	26.7	134.7	-2.6		-25.2	75	709	20 43 41
20 45 20	J0216-0118	23 39 47	26.6	134.9	-2.6		-25.2	5	709	20 45 20
20 46 05	=0213-015	23 40 32	26.7	135.1	-2.6		-25.1	45	715	20 45 21
20 46 05	MRK590	23 40 32	27.3	135.3	-2.6		-25.0	-14	715	No stop
20 47 35	---	23 42 02	27.5	135.6	-2.6		-24.8	76	726	20 46 06
20 47 50	J0216-0118	23 42 17	26.9	135.6	-2.6		-24.9	1	726	20 47 50
20 48 35	=0213-015	23 43 03	26.9	135.8	-2.6		-24.8	45	732	20 47 51
20 48 35	MRK590	23 43 03	27.6	135.9	-2.5		-24.7	-14	732	No stop
20 50 05	---	23 44 33	27.7	136.3	-2.5		-24.5	76	744	20 48 36
20 50 20	J0216-0118	23 44 48	27.1	136.2	-2.5		-24.6	1	744	20 50 20
20 51 05	=0213-015	23 45 33	27.2	136.4	-2.5		-24.5	45	749	20 50 21
20 51 05	MRK590	23 45 33	27.8	136.5	-2.5		-24.4	-14	749	No stop
20 52 35	---	23 47 03	28.0	136.9	-2.5		-24.2	76	761	20 51 06
20 52 50	J0216-0118	23 47 18	27.4	136.9	-2.5		-24.3	1	761	20 52 50
20 53 35	=0213-015	23 48 03	27.4	137.0	-2.5		-24.2	45	767	20 52 51
20 53 35	MRK590	23 48 03	28.1	137.2	-2.5		-24.1	-14	767	No stop
20 55 05	---	23 49 34	28.2	137.6	-2.4		-23.9	76	778	20 53 36

Schedule for TORUN (Code Tr)

Page 8

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	16 Oct 2015	Day 289 ---								
20 55 30	J0216-0118	23 49 59	27.6	137.5	-2.4		-23.9	11	778	20 55 30
20 56 15	=0213-015	23 50 44	27.7	137.7	-2.4		-23.8	45	784	20 55 31
20 56 15	J0216-0105	23 50 44	27.9	137.6	-2.4		-23.9	-10	784	No stop
20 57 40	=0213-013	23 52 09	28.0	138.0	-2.4		-23.7	75	795	20 56 16
21 00 40	3C84	23 55 10	54.2	87.5	-3.4		-53.3	64	795	21 00 40
21 04 40	---	23 59 10	54.8	88.3	-3.4		-53.3	240	826	21 00 41
21 07 00	J0217-0121	00 01 31	28.5	140.1	-2.3		-22.7	22	826	21 07 00
21 07 45	=0215-015	00 02 16	28.6	140.3	-2.3		-22.6	45	831	21 07 01
21 08 00	J0217-0121	00 02 31	28.6	140.4	-2.3		-22.5	9	831	21 08 00
21 08 45	=0215-015	00 03 16	28.7	140.6	-2.3		-22.4	45	837	21 08 01
21 08 45	J0216-0105	00 03 16	29.1	140.9	-2.2		-22.3	-13	837	No stop
21 10 15	=0213-013	00 04 46	29.3	141.3	-2.2		-22.1	77	849	21 08 46
21 10 30	J0217-0121	00 05 01	28.9	141.0	-2.2		-22.2	3	849	21 10 30
21 11 15	=0215-015	00 05 46	29.0	141.2	-2.2		-22.1	45	854	21 10 31
21 11 15	J0216-0105	00 05 46	29.4	141.6	-2.2		-21.9	-13	854	No stop
21 12 45	=0213-013	00 07 17	29.5	142.0	-2.2		-21.7	77	866	21 11 16
21 13 00	J0217-0121	00 07 32	29.1	141.7	-2.2		-21.9	3	866	21 13 00
21 13 45	=0215-015	00 08 17	29.2	141.9	-2.2		-21.8	45	872	21 13 01
21 13 45	J0216-0105	00 08 17	29.6	142.2	-2.1		-21.6	-13	872	No stop
21 15 15	=0213-013	00 09 47	29.7	142.6	-2.1		-21.4	77	883	21 13 46
21 15 30	J0217-0121	00 10 02	29.3	142.4	-2.1		-21.5	3	883	21 15 30
21 16 15	=0215-015	00 10 47	29.4	142.6	-2.1		-21.4	45	889	21 15 31
21 16 15	J0216-0105	00 10 47	29.8	142.9	-2.1		-21.2	-13	889	No stop
21 17 45	=0213-013	00 12 17	30.0	143.3	-2.1		-21.0	77	901	21 16 16
21 18 00	J0216-0118	00 12 32	29.8	143.5	-2.1		-20.9	5	901	21 18 00
21 18 45	=0213-015	00 13 18	29.9	143.7	-2.1		-20.8	45	906	21 18 01
21 18 45	MRK590	00 13 18	30.5	143.9	-2.0		-20.7	-14	906	No stop
21 20 15	---	00 14 48	30.6	144.3	-2.0		-20.5	76	918	21 18 46
21 20 30	J0216-0118	00 15 03	30.0	144.2	-2.0		-20.6	1	918	21 20 30
21 21 15	=0213-015	00 15 48	30.1	144.4	-2.0		-20.5	45	924	21 20 31

Schedule for TORUN (Code Tr)

Page 9

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	16 Oct 2015	Day 289 ---								
21 21 15	MRK590	00 15 48	30.7	144.6	-2.0		-20.4	-14	924	No stop
21 22 45	---	00 17 18	30.9	145.0	-2.0		-20.2	76	935	21 21 16
21 23 00	J0216-0118	00 17 33	30.2	144.8	-2.0		-20.2	1	935	21 23 00
21 23 45	=0213-015	00 18 18	30.3	145.0	-2.0		-20.1	45	941	21 23 01
21 23 45	MRK590	00 18 18	30.9	145.3	-2.0		-20.0	-14	941	No stop
21 25 15	---	00 19 49	31.1	145.7	-1.9		-19.8	76	953	21 23 46
21 25 30	J0216-0118	00 20 04	30.5	145.5	-1.9		-19.9	1	953	21 25 30
21 26 15	=0213-015	00 20 49	30.5	145.7	-1.9		-19.8	45	958	21 25 31
21 26 15	MRK590	00 20 49	31.2	145.9	-1.9		-19.7	-14	958	No stop
21 27 45	---	00 22 19	31.3	146.4	-1.9		-19.4	76	970	21 26 16
21 28 10	J0216-0118	00 22 44	30.7	146.3	-1.9		-19.5	11	970	21 28 10
21 28 55	=0213-015	00 23 29	30.7	146.5	-1.9		-19.4	45	976	21 28 11
21 28 55	J0216-0105	00 23 29	30.9	146.3	-1.9		-19.4	-10	976	No stop
21 30 20	=0213-013	00 24 54	31.1	146.7	-1.9		-19.2	75	987	21 28 56
21 30 35	J0216-0118	00 25 09	30.9	146.9	-1.9		-19.1	5	987	21 30 35
21 31 20	=0213-015	00 25 55	30.9	147.1	-1.9		-19.0	45	992	21 30 36
21 31 20	MRK590	00 25 55	31.6	147.3	-1.8		-18.9	-14	992	No stop
21 32 50	---	00 27 25	31.7	147.8	-1.8		-18.7	76	1004	21 31 21
21 33 05	J0216-0118	00 27 40	31.1	147.6	-1.8		-18.8	1	1004	21 33 05
21 33 50	=0213-015	00 28 25	31.1	147.8	-1.8		-18.7	45	1010	21 33 06
21 33 50	MRK590	00 28 25	31.8	148.0	-1.8		-18.5	-14	1010	No stop
21 35 20	---	00 29 55	31.9	148.5	-1.8		-18.3	76	1021	21 33 51
21 35 35	J0216-0118	00 30 10	31.3	148.3	-1.8		-18.4	1	1021	21 35 35
21 36 20	=0213-015	00 30 55	31.3	148.5	-1.8		-18.3	45	1027	21 35 36
21 36 20	MRK590	00 30 55	32.0	148.7	-1.7		-18.2	-14	1027	No stop
21 37 50	---	00 32 26	32.1	149.2	-1.7		-17.9	76	1038	21 36 21
21 38 05	J0216-0118	00 32 41	31.5	149.0	-1.7		-18.0	1	1038	21 38 05
21 38 50	=0213-015	00 33 26	31.5	149.2	-1.7		-17.9	45	1044	21 38 06
21 38 50	MRK590	00 33 26	32.2	149.4	-1.7		-17.8	-14	1044	No stop
21 40 20	---	00 34 56	32.3	149.9	-1.7		-17.5	76	1056	21 38 51

Schedule for TORUN (Code Tr)

Page 10

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	16 Oct 2015	Day 289 ---								
21 40 45	J0216-0118	00 35 21	31.7	149.7	-1.7		-17.6	11	1056	21 40 45
21 41 30	=0213-015	00 36 06	31.7	150.0	-1.7		-17.5	45	1062	21 40 46
21 41 30	J0216-0105	00 36 06	31.9	149.9	-1.7		-17.6	-10	1062	No stop
21 42 55	=0213-013	00 37 31	32.0	150.3	-1.7		-17.3	75	1072	21 41 31
21 43 10	J0216-0118	00 37 47	31.9	150.4	-1.7		-17.2	5	1072	21 43 10
21 43 55	=0213-015	00 38 32	31.9	150.6	-1.6		-17.1	45	1078	21 43 11
21 43 55	MRK590	00 38 32	32.5	150.9	-1.6		-17.0	-14	1078	No stop
21 45 25	---	00 40 02	32.7	151.3	-1.6		-16.8	76	1090	21 43 56
21 45 40	J0216-0118	00 40 17	32.0	151.1	-1.6		-16.9	1	1090	21 45 40
21 46 25	=0213-015	00 41 02	32.1	151.3	-1.6		-16.7	45	1096	21 45 41
21 46 25	MRK590	00 41 02	32.7	151.6	-1.6		-16.6	-14	1096	No stop
21 47 55	---	00 42 32	32.8	152.0	-1.5		-16.4	76	1107	21 46 26
21 48 10	J0216-0118	00 42 47	32.2	151.8	-1.6		-16.5	1	1107	21 48 10
21 48 55	=0213-015	00 43 32	32.3	152.1	-1.6		-16.3	45	1113	21 48 11
21 48 55	MRK590	00 43 32	32.9	152.3	-1.5		-16.2	-14	1113	No stop
21 50 25	---	00 45 03	33.0	152.7	-1.5		-16.0	76	1124	21 48 56
21 50 40	J0216-0118	00 45 18	32.4	152.6	-1.5		-16.1	1	1124	21 50 40
21 51 25	=0213-015	00 46 03	32.5	152.8	-1.5		-16.0	45	1130	21 50 41
21 51 25	MRK590	00 46 03	33.1	153.0	-1.5		-15.8	-14	1130	No stop
21 52 55	---	00 47 33	33.2	153.5	-1.5		-15.6	76	1142	21 51 26
21 53 20	J0216-0118	00 47 58	32.6	153.3	-1.5		-15.6	11	1142	21 53 20
21 54 05	=0213-015	00 48 43	32.6	153.5	-1.5		-15.5	45	1147	21 53 21
21 54 05	J0216-0105	00 48 43	32.8	153.4	-1.5		-15.6	-10	1147	No stop
21 55 30	=0213-013	00 50 09	32.9	153.8	-1.4		-15.4	75	1158	21 54 06
21 55 45	J0216-0118	00 50 24	32.7	154.0	-1.4		-15.3	5	1158	21 55 45
21 56 30	=0213-015	00 51 09	32.8	154.2	-1.4		-15.1	45	1164	21 55 46
21 56 30	MRK590	00 51 09	33.4	154.5	-1.4		-15.0	-14	1164	No stop
21 58 00	---	00 52 39	33.5	154.9	-1.4		-14.7	76	1176	21 56 31
21 58 15	J0216-0118	00 52 54	32.9	154.7	-1.4		-14.9	1	1176	21 58 15
21 59 00	=0213-015	00 53 39	33.0	154.9	-1.4		-14.7	45	1181	21 58 16

Schedule for TORUN (Code Tr)

Page 11

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	TPStart SYNC

--- Fri	16 Oct 2015	Day 289 ---								
21 59 00	MRK590	00 53 39	33.6	155.2	-1.4		-14.6	-14	1181	No stop
22 00 30	---	00 55 09	33.7	155.7	-1.3		-14.3	76	1193	21 59 01
22 00 45	J0216-0118	00 55 24	33.1	155.5	-1.4		-14.4	1	1193	22 00 45
22 01 30	=0213-015	00 56 10	33.1	155.7	-1.3		-14.3	45	1199	22 00 46
22 01 30	MRK590	00 56 10	33.7	156.0	-1.3		-14.2	-14	1199	No stop
22 03 00	---	00 57 40	33.8	156.4	-1.3		-13.9	76	1210	22 01 31
22 03 15	J0216-0118	00 57 55	33.2	156.2	-1.3		-14.0	1	1210	22 03 15
22 04 00	=0213-015	00 58 40	33.3	156.4	-1.3		-13.9	45	1216	22 03 16
22 04 00	MRK590	00 58 40	33.9	156.7	-1.3		-13.7	-14	1216	No stop
22 05 30	---	01 00 10	34.0	157.1	-1.3		-13.5	76	1228	22 04 01
22 05 55	J0216-0118	01 00 35	33.4	157.0	-1.3		-13.6	11	1228	22 05 55
22 06 40	=0213-015	01 01 20	33.4	157.2	-1.3		-13.5	45	1233	22 05 56
22 06 40	J0216-0105	01 01 20	33.6	157.1	-1.3		-13.5	-10	1233	No stop
22 08 05	=0213-013	01 02 46	33.7	157.5	-1.2		-13.3	75	1244	22 06 41
22 08 20	J0216-0118	01 03 01	33.5	157.7	-1.2		-13.2	5	1244	22 08 20
22 09 05	=0213-015	01 03 46	33.6	157.9	-1.2		-13.1	45	1250	22 08 21
22 09 05	MRK590	01 03 46	34.2	158.2	-1.2		-12.9	-14	1250	No stop
22 10 35	---	01 05 16	34.3	158.6	-1.2		-12.6	76	1262	22 09 06
22 10 50	J0216-0118	01 05 31	33.7	158.4	-1.2		-12.8	1	1262	22 10 50
22 11 35	=0213-015	01 06 16	33.7	158.6	-1.2		-12.7	45	1267	22 10 51
22 11 35	MRK590	01 06 16	34.3	158.9	-1.2		-12.5	-14	1267	No stop
22 13 05	---	01 07 46	34.4	159.4	-1.1		-12.2	76	1279	22 11 36
22 13 20	J0216-0118	01 08 01	33.8	159.1	-1.1		-12.4	1	1279	22 13 20
22 14 05	=0213-015	01 08 47	33.8	159.4	-1.1		-12.2	45	1285	22 13 21
22 14 05	MRK590	01 08 47	34.4	159.7	-1.1		-12.0	-14	1285	No stop
22 15 35	---	01 10 17	34.5	160.1	-1.1		-11.8	76	1296	22 14 06
22 15 50	J0216-0118	01 10 32	33.9	159.9	-1.1		-11.9	1	1296	22 15 50
22 16 35	=0213-015	01 11 17	34.0	160.1	-1.1		-11.8	45	1302	22 15 51
22 16 35	MRK590	01 11 17	34.6	160.4	-1.1		-11.6	-14	1302	No stop
22 18 05	---	01 12 47	34.6	160.9	-1.0		-11.4	76	1313	22 16 36

Schedule for TORUN (Code Tr)

Page 12

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	16 Oct 2015	Day 289	---							
22 18 30	J0216-0118	01 13 12	34.1	160.7	-1.1		-11.5	11	1313	22 18 30
22 19 15	=0213-015	01 13 57	34.1	160.9	-1.0		-11.3	45	1319	22 18 31
22 19 15	J0216-0105	01 13 57	34.3	160.8	-1.1		-11.4	-10	1319	No stop
22 20 40	=0213-013	01 15 23	34.4	161.2	-1.0		-11.1	75	1330	22 19 16
22 20 55	J0216-0118	01 15 38	34.2	161.4	-1.0		-11.1	5	1330	22 20 55
22 21 40	=0213-015	01 16 23	34.2	161.6	-1.0		-10.9	45	1336	22 20 56
22 21 40	MRK590	01 16 23	34.8	161.9	-1.0		-10.7	-14	1336	No stop
22 23 10	---	01 17 53	34.9	162.4	-1.0		-10.5	76	1347	22 21 41
22 23 25	J0216-0118	01 18 08	34.3	162.1	-1.0		-10.6	1	1347	22 23 25
22 24 10	=0213-015	01 18 53	34.3	162.3	-1.0		-10.5	45	1353	22 23 26
22 24 10	MRK590	01 18 53	34.9	162.7	-0.9		-10.3	-14	1353	No stop
22 25 40	---	01 20 24	35.0	163.1	-0.9		-10.0	76	1365	22 24 11
22 25 55	J0216-0118	01 20 39	34.4	162.9	-0.9		-10.2	1	1365	22 25 55
22 26 40	=0213-015	01 21 24	34.4	163.1	-0.9		-10.1	45	1371	22 25 56
22 26 40	MRK590	01 21 24	35.0	163.4	-0.9		-9.9	-14	1371	No stop
22 28 10	---	01 22 54	35.1	163.9	-0.9		-9.6	76	1382	22 26 41
22 28 25	J0216-0118	01 23 09	34.5	163.6	-0.9		-9.8	1	1382	22 28 25
22 29 10	=0213-015	01 23 54	34.6	163.8	-0.9		-9.6	45	1388	22 28 26
22 29 10	MRK590	01 23 54	35.1	164.2	-0.9		-9.4	-14	1388	No stop
22 30 40	---	01 25 24	35.2	164.6	-0.8		-9.1	76	1399	22 29 11
22 31 05	J0216-0118	01 25 49	34.6	164.4	-0.9		-9.3	11	1399	22 31 05
22 31 50	=0213-015	01 26 35	34.7	164.6	-0.8		-9.2	45	1405	22 31 06
22 31 50	J0216-0105	01 26 35	34.9	164.6	-0.8		-9.2	-10	1405	No stop
22 33 15	=0213-013	01 28 00	34.9	165.0	-0.8		-8.9	75	1416	22 31 51
22 33 30	J0216-0118	01 28 15	34.7	165.1	-0.8		-8.9	5	1416	22 33 30
22 34 15	=0213-015	01 29 00	34.8	165.4	-0.8		-8.7	45	1422	22 33 31
22 34 15	MRK590	01 29 00	35.3	165.7	-0.8		-8.5	-14	1422	No stop
22 35 45	---	01 30 30	35.4	166.2	-0.7		-8.2	76	1433	22 34 16
22 36 00	J0216-0118	01 30 45	34.8	165.9	-0.8		-8.4	1	1433	22 36 00
22 36 45	=0213-015	01 31 30	34.9	166.1	-0.8		-8.3	45	1439	22 36 01

Schedule for TORUN (Code Tr)

Page 13

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	16 Oct 2015	Day 289 ---								
22 36 45	MRK590	01 31 30	35.4	166.5	-0.7		-8.1	-14	1439	No stop
22 38 15	---	01 33 01	35.5	167.0	-0.7		-7.8	76	1451	22 36 46
22 38 30	J0216-0118	01 33 16	34.9	166.7	-0.7		-8.0	1	1451	22 38 30
22 39 15	=0213-015	01 34 01	34.9	166.9	-0.7		-7.8	45	1456	22 38 31
22 39 15	MRK590	01 34 01	35.5	167.3	-0.7		-7.6	-14	1456	No stop
22 40 45	---	01 35 31	35.6	167.7	-0.7		-7.3	76	1468	22 39 16
22 41 00	J0216-0118	01 35 46	35.0	167.4	-0.7		-7.5	1	1468	22 41 00
22 41 45	=0213-015	01 36 31	35.0	167.6	-0.7		-7.4	45	1474	22 41 01
22 41 45	MRK590	01 36 31	35.6	168.0	-0.6		-7.2	-14	1474	No stop
22 43 15	---	01 38 01	35.6	168.5	-0.6		-6.9	76	1485	22 41 46
22 43 40	J0216-0118	01 38 26	35.1	168.2	-0.6		-7.0	11	1485	22 43 40
22 44 25	=0213-015	01 39 12	35.1	168.4	-0.6		-6.9	45	1491	22 43 41
22 44 25	J0216-0105	01 39 12	35.3	168.4	-0.6		-6.9	-10	1491	No stop
22 45 50	=0213-013	01 40 37	35.4	168.8	-0.6		-6.7	75	1502	22 44 26
22 46 05	J0216-0118	01 40 52	35.2	169.0	-0.6		-6.6	5	1502	22 46 05
22 46 50	=0213-015	01 41 37	35.2	169.2	-0.6		-6.5	45	1508	22 46 06
22 46 50	MRK590	01 41 37	35.8	169.6	-0.6		-6.2	-14	1508	No stop
22 48 20	---	01 43 07	35.8	170.0	-0.5		-6.0	76	1519	22 46 51
22 48 35	J0216-0118	01 43 22	35.2	169.7	-0.6		-6.2	1	1519	22 48 35
22 49 20	=0213-015	01 44 07	35.2	169.9	-0.5		-6.0	45	1525	22 48 36
22 49 20	MRK590	01 44 07	35.8	170.3	-0.5		-5.8	-14	1525	No stop
22 50 50	---	01 45 38	35.9	170.8	-0.5		-5.5	76	1537	22 49 21
22 51 05	J0216-0118	01 45 53	35.3	170.5	-0.5		-5.7	1	1537	22 51 05
22 51 50	=0213-015	01 46 38	35.3	170.7	-0.5		-5.6	45	1542	22 51 06
22 51 50	MRK590	01 46 38	35.9	171.1	-0.5		-5.3	-14	1542	No stop
22 53 20	---	01 48 08	35.9	171.6	-0.5		-5.0	76	1554	22 51 51
22 53 35	J0216-0118	01 48 23	35.3	171.2	-0.5		-5.2	1	1554	22 53 35
22 54 20	=0213-015	01 49 08	35.4	171.5	-0.5		-5.1	45	1560	22 53 36
22 54 20	MRK590	01 49 08	35.9	171.9	-0.4		-4.9	-14	1560	No stop
22 55 50	---	01 50 38	36.0	172.3	-0.4		-4.6	76	1571	22 54 21

Schedule for TORUN (Code Tr)

Page 14

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	16 Oct 2015	Day 289 ---								
22 56 15	J0216-0118	01 51 04	35.4	172.1	-0.4		-4.8	11	1571	22 56 15
22 57 00	=0213-015	01 51 49	35.4	172.3	-0.4		-4.6	45	1577	22 56 16
22 57 00	J0216-0105	01 51 49	35.6	172.2	-0.4		-4.7	-10	1577	No stop
22 58 25	=0213-013	01 53 14	35.7	172.7	-0.4		-4.4	75	1588	22 57 01
23 01 25	3C84	01 56 14	71.7	120.6	-1.4		-43.7	31	1588	23 01 25
23 05 25	---	02 00 15	72.2	122.3	-1.3		-42.7	240	1619	23 01 26
23 07 55	J0217-0121	02 02 45	35.5	175.1	-0.3		-2.9	-2	1619	23 07 55
23 08 40	=0215-015	02 03 31	35.5	175.3	-0.3		-2.8	43	1624	23 07 56
23 08 55	J0217-0121	02 03 46	35.5	175.4	-0.2		-2.8	9	1624	23 08 55
23 09 40	=0215-015	02 04 31	35.5	175.6	-0.2		-2.6	45	1630	23 08 56
23 09 40	J0216-0105	02 04 31	35.8	176.1	-0.2		-2.3	-12	1630	No stop
23 11 10	=0213-013	02 06 01	35.8	176.6	-0.2		-2.0	78	1642	23 09 41
23 11 25	J0217-0121	02 06 16	35.6	176.2	-0.2		-2.3	4	1642	23 11 25
23 12 10	=0215-015	02 07 01	35.6	176.4	-0.2		-2.2	45	1647	23 11 26
23 12 10	J0216-0105	02 07 01	35.8	176.9	-0.2		-1.9	-12	1647	No stop
23 13 40	=0213-013	02 08 31	35.9	177.4	-0.1		-1.6	78	1659	23 12 11
23 13 55	J0217-0121	02 08 46	35.6	176.9	-0.2		-1.8	4	1659	23 13 55
23 14 40	=0215-015	02 09 32	35.6	177.2	-0.2		-1.7	45	1665	23 13 56
23 14 40	J0216-0105	02 09 32	35.9	177.7	-0.1		-1.4	-12	1665	No stop
23 16 10	=0213-013	02 11 02	35.9	178.1	-0.1		-1.1	78	1676	23 14 41
23 16 25	J0217-0121	02 11 17	35.6	177.7	-0.1		-1.4	4	1676	23 16 25
23 17 10	=0215-015	02 12 02	35.6	177.9	-0.1		-1.2	45	1682	23 16 26
23 17 10	J0216-0105	02 12 02	35.9	178.5	-0.1		-0.9	-12	1682	No stop
23 18 40	=0213-013	02 13 32	35.9	178.9	-0.1		-0.6	78	1694	23 17 11
23 18 55	J0216-0118	02 13 47	35.7	179.0	-0.1		-0.6	5	1694	23 18 55
23 19 40	=0213-015	02 14 32	35.7	179.3	-0.0		-0.4	45	1699	23 18 56
23 19 40	MRK590	02 14 32	36.2	179.7	-0.0		-0.2	-13	1699	No stop
23 21 10	---	02 16 03	36.2	180.2	0.0		0.1	77	1711	23 19 41
23 21 25	J0216-0118	02 16 18	35.7	179.8	-0.0		-0.1	2	1711	23 21 25
23 22 10	=0213-015	02 17 03	35.7	180.0	0.0		0.0	45	1717	23 21 26

Schedule for TORUN (Code Tr)

Page 15

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	16 Oct 2015	Day 289 ---								
23 22 10	MRK590	02 17 03	36.2	180.5	0.0		0.3	-13	1717	No stop
23 23 40	---	02 18 33	36.2	181.0	0.1		0.6	77	1728	23 22 11
23 23 55	J0216-0118	02 18 48	35.7	180.6	0.0		0.3	2	1728	23 23 55
23 24 40	=0213-015	02 19 33	35.7	180.8	0.0		0.5	45	1734	23 23 56
23 24 40	MRK590	02 19 33	36.2	181.3	0.1		0.8	-13	1734	No stop
23 26 10	---	02 21 03	36.2	181.8	0.1		1.1	77	1746	23 24 41
23 26 25	J0216-0118	02 21 18	35.7	181.4	0.1		0.8	2	1746	23 26 25
23 27 10	=0213-015	02 22 04	35.7	181.6	0.1		1.0	45	1751	23 26 26
23 27 10	MRK590	02 22 04	36.2	182.1	0.1		1.2	-13	1751	No stop
23 28 40	---	02 23 34	36.2	182.5	0.1		1.5	77	1763	23 27 11
23 29 05	J0216-0118	02 23 59	35.7	182.2	0.1		1.3	12	1763	23 29 05
23 29 50	=0213-015	02 24 44	35.7	182.4	0.1		1.4	45	1769	23 29 06
23 29 50	J0216-0105	02 24 44	35.9	182.4	0.1		1.4	-10	1769	No stop
23 31 15	=0213-013	02 26 09	35.9	182.8	0.2		1.7	75	1779	23 29 51
23 31 30	J0216-0118	02 26 24	35.6	182.9	0.2		1.8	5	1779	23 31 30
23 32 15	=0213-015	02 27 09	35.6	183.1	0.2		1.9	45	1785	23 31 31
23 32 15	MRK590	02 27 09	36.2	183.6	0.2		2.2	-13	1785	No stop
23 33 45	---	02 28 40	36.1	184.1	0.2		2.5	77	1797	23 32 16
23 34 00	J0216-0118	02 28 55	35.6	183.7	0.2		2.2	2	1797	23 34 00
23 34 45	=0213-015	02 29 40	35.6	183.9	0.2		2.4	45	1803	23 34 01
23 34 45	MRK590	02 29 40	36.1	184.4	0.2		2.7	-13	1803	No stop
23 36 15	---	02 31 10	36.1	184.9	0.3		2.9	77	1814	23 34 46
23 36 30	J0216-0118	02 31 25	35.6	184.5	0.2		2.7	2	1814	23 36 30
23 37 15	=0213-015	02 32 10	35.6	184.7	0.3		2.8	45	1820	23 36 31
23 37 15	MRK590	02 32 10	36.1	185.2	0.3		3.1	-13	1820	No stop
23 38 45	---	02 33 41	36.1	185.7	0.3		3.4	77	1831	23 37 16
23 39 00	J0216-0118	02 33 56	35.6	185.2	0.3		3.1	2	1831	23 39 00
23 39 45	=0213-015	02 34 41	35.5	185.5	0.3		3.3	45	1837	23 39 01
23 39 45	MRK590	02 34 41	36.1	186.0	0.3		3.6	-13	1837	No stop
23 41 15	---	02 36 11	36.0	186.4	0.3		3.9	77	1849	23 39 46

Schedule for TORUN (Code Tr)

Page 16

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	16 Oct 2015	Day 289 ---								
23 41 40	J0216-0118	02 36 36	35.5	186.0	0.3		3.6	12	1849	23 41 40
23 42 25	=0213-015	02 37 21	35.5	186.3	0.3		3.8	45	1854	23 41 41
23 42 25	J0216-0105	02 37 21	35.7	186.3	0.3		3.8	-10	1854	No stop
23 43 50	=0213-013	02 38 46	35.7	186.7	0.4		4.0	75	1865	23 42 26
23 44 05	J0216-0118	02 39 01	35.5	186.8	0.4		4.1	5	1865	23 44 05
23 44 50	=0213-015	02 39 47	35.5	187.0	0.4		4.2	45	1871	23 44 06
23 44 50	MRK590	02 39 47	36.0	187.5	0.4		4.5	-13	1871	No stop
23 46 20	---	02 41 17	35.9	188.0	0.4		4.8	77	1883	23 44 51
23 46 35	J0216-0118	02 41 32	35.4	187.6	0.4		4.5	2	1883	23 46 35
23 47 20	=0213-015	02 42 17	35.4	187.8	0.4		4.7	45	1888	23 46 36
23 47 20	MRK590	02 42 17	35.9	188.3	0.4		5.0	-13	1888	No stop
23 48 50	---	02 43 47	35.9	188.8	0.5		5.3	77	1900	23 47 21
23 49 05	J0216-0118	02 44 02	35.4	188.3	0.5		5.0	2	1900	23 49 05
23 49 50	=0213-015	02 44 47	35.4	188.6	0.5		5.1	45	1906	23 49 06
23 49 50	MRK590	02 44 47	35.9	189.1	0.5		5.4	-13	1906	No stop
23 51 20	---	02 46 18	35.8	189.5	0.5		5.7	77	1917	23 49 51
23 51 35	J0216-0118	02 46 33	35.3	189.1	0.5		5.4	2	1917	23 51 35
23 52 20	=0213-015	02 47 18	35.3	189.3	0.5		5.6	45	1923	23 51 36
23 52 20	MRK590	02 47 18	35.8	189.9	0.5		5.9	-13	1923	No stop
23 53 50	---	02 48 48	35.8	190.3	0.6		6.2	77	1935	23 52 21
23 54 15	J0216-0118	02 49 13	35.3	189.9	0.5		5.9	12	1935	23 54 15
23 55 00	=0213-015	02 49 58	35.2	190.1	0.6		6.1	45	1940	23 54 16
23 55 00	J0216-0105	02 49 58	35.5	190.1	0.5		6.1	-10	1940	No stop
23 56 25	=0213-013	02 51 23	35.4	190.6	0.6		6.3	75	1951	23 55 01
23 56 40	J0216-0118	02 51 38	35.2	190.6	0.6		6.4	5	1951	23 56 40
23 57 25	=0213-015	02 52 24	35.2	190.9	0.6		6.5	45	1957	23 56 41
23 57 25	MRK590	02 52 24	35.7	191.4	0.6		6.8	-13	1957	No stop
23 58 55	---	02 53 54	35.6	191.9	0.6		7.1	77	1969	23 57 26
23 59 10	J0216-0118	02 54 09	35.1	191.4	0.6		6.8	2	1969	23 59 10
23 59 55	=0213-015	02 54 54	35.1	191.6	0.6		7.0	45	1974	23 59 11

Schedule for TORUN (Code Tr)

Page 17

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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

--- Start: Fri 16 Oct 2015		Day 289 -- Stop: Sat 17 Oct 2015					Day 290		---	
23 59 55	MRK590	02 54 54	35.6	192.2	0.7		7.3	-13	1974	No stop
00 01 25	---	02 56 24	35.5	192.6	0.7		7.5	77	1986	23 59 56
00 01 40	J0216-0118	02 56 39	35.0	192.2	0.7		7.3	2	1986	00 01 40
00 02 25	=0213-015	02 57 24	35.0	192.4	0.7		7.4	45	1992	00 01 41
00 02 25	MRK590	02 57 24	35.5	192.9	0.7		7.7	-13	1992	No stop
00 03 55	---	02 58 55	35.4	193.4	0.7		8.0	77	2003	00 02 26
00 04 10	J0216-0118	02 59 10	35.0	192.9	0.7		7.7	2	2003	00 04 10
00 04 55	=0213-015	02 59 55	34.9	193.1	0.7		7.9	45	2009	00 04 11
00 04 55	MRK590	02 59 55	35.4	193.7	0.7		8.2	-13	2009	No stop
00 06 25	---	03 01 25	35.4	194.2	0.8		8.4	77	2021	00 04 56
00 06 50	J0216-0118	03 01 50	34.9	193.7	0.7		8.2	12	2021	00 06 50
00 07 35	=0213-015	03 02 35	34.8	194.0	0.8		8.3	45	2026	00 06 51
00 07 35	J0216-0105	03 02 35	35.1	194.0	0.8		8.3	-10	2026	No stop
00 09 00	=0213-013	03 04 00	35.0	194.4	0.8		8.6	75	2037	00 07 36
00 09 15	J0216-0118	03 04 16	34.8	194.5	0.8		8.6	5	2037	00 09 15
00 10 00	=0213-015	03 05 01	34.8	194.7	0.8		8.8	45	2043	00 09 16
00 10 00	MRK590	03 05 01	35.2	195.2	0.8		9.1	-13	2043	No stop
00 11 30	---	03 06 31	35.2	195.7	0.9		9.4	77	2054	00 10 01
00 11 45	J0216-0118	03 06 46	34.7	195.2	0.8		9.1	2	2054	00 11 45
00 12 30	=0213-015	03 07 31	34.7	195.4	0.8		9.2	45	2060	00 11 46
00 12 30	MRK590	03 07 31	35.1	196.0	0.9		9.5	-13	2060	No stop
00 14 00	---	03 09 01	35.1	196.5	0.9		9.8	77	2072	00 12 31
00 14 15	J0216-0118	03 09 16	34.6	196.0	0.9		9.5	2	2072	00 14 15
00 15 00	=0213-015	03 10 01	34.6	196.2	0.9		9.6	45	2078	00 14 16
00 15 00	MRK590	03 10 01	35.0	196.8	0.9		10.0	-13	2078	No stop
00 16 30	---	03 11 32	34.9	197.2	0.9		10.2	77	2089	00 15 01
00 16 45	J0216-0118	03 11 47	34.5	196.7	0.9		9.9	2	2089	00 16 45
00 17 30	=0213-015	03 12 32	34.4	196.9	0.9		10.1	45	2095	00 16 46
00 17 30	MRK590	03 12 32	34.9	197.5	1.0		10.4	-13	2095	No stop
00 19 00	---	03 14 02	34.8	198.0	1.0		10.7	77	2106	00 17 31

Schedule for TORUN (Code Tr)

Page 18

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	17 Oct 2015	Day 290 ---								
00 19 25	J0216-0118	03 14 27	34.4	197.5	1.0		10.4	12	2106	00 19 25
00 20 10	=0213-015	03 15 12	34.3	197.7	1.0		10.5	45	2112	00 19 26
00 20 10	J0216-0105	03 15 12	34.5	197.7	1.0		10.5	-10	2112	No stop
00 21 35	=0213-013	03 16 38	34.5	198.2	1.0		10.8	75	2123	00 20 11
00 21 50	J0216-0118	03 16 53	34.2	198.2	1.0		10.8	5	2123	00 21 50
00 22 35	=0213-015	03 17 38	34.2	198.5	1.0		11.0	45	2129	00 21 51
00 22 35	MRK590	03 17 38	34.7	199.0	1.0		11.3	-13	2129	No stop
00 24 05	---	03 19 08	34.6	199.5	1.1		11.6	77	2140	00 22 36
00 24 20	J0216-0118	03 19 23	34.1	199.0	1.0		11.3	2	2140	00 24 20
00 25 05	=0213-015	03 20 08	34.1	199.2	1.1		11.4	45	2146	00 24 21
00 25 05	MRK590	03 20 08	34.5	199.8	1.1		11.7	-13	2146	No stop
00 26 35	---	03 21 38	34.5	200.2	1.1		12.0	77	2158	00 25 06
00 26 50	J0216-0118	03 21 53	34.0	199.7	1.1		11.7	2	2158	00 26 50
00 27 35	=0213-015	03 22 39	34.0	199.9	1.1		11.8	45	2163	00 26 51
00 27 35	MRK590	03 22 39	34.4	200.5	1.1		12.2	-13	2163	No stop
00 29 05	---	03 24 09	34.3	201.0	1.1		12.4	77	2175	00 27 36
00 29 20	J0216-0118	03 24 24	33.9	200.5	1.1		12.1	2	2175	00 29 20
00 30 05	=0213-015	03 25 09	33.8	200.7	1.1		12.2	45	2181	00 29 21
00 30 05	MRK590	03 25 09	34.3	201.3	1.2		12.6	-13	2181	No stop
00 31 35	---	03 26 39	34.2	201.7	1.2		12.8	77	2192	00 30 06
00 32 00	J0216-0118	03 27 04	33.7	201.2	1.2		12.6	12	2192	00 32 00
00 32 45	=0213-015	03 27 49	33.7	201.5	1.2		12.7	45	2198	00 32 01
00 32 45	J0216-0105	03 27 49	33.9	201.5	1.2		12.7	-10	2198	No stop
00 34 10	=0213-013	03 29 15	33.8	201.9	1.2		12.9	75	2209	00 32 46
00 34 25	J0216-0118	03 29 30	33.6	201.9	1.2		13.0	5	2209	00 34 25
00 35 10	=0213-015	03 30 15	33.6	202.2	1.2		13.1	45	2215	00 34 26
00 35 10	MRK590	03 30 15	34.0	202.8	1.2		13.4	-13	2215	No stop
00 36 40	---	03 31 45	33.9	203.2	1.3		13.7	77	2226	00 35 11
00 36 55	J0216-0118	03 32 00	33.5	202.7	1.3		13.4	2	2226	00 36 55
00 37 40	=0213-015	03 32 45	33.4	202.9	1.3		13.5	45	2232	00 36 56

Schedule for TORUN (Code Tr)

Page 19

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	17 Oct 2015	Day 290 ---								
00 37 40	MRK590	03 32 45	33.8	203.5	1.3		13.9	-12	2232	No stop
00 39 10	---	03 34 15	33.7	203.9	1.3		14.1	78	2244	00 37 41
00 39 25	J0216-0118	03 34 30	33.3	203.4	1.3		13.8	2	2244	00 39 25
00 40 10	=0213-015	03 35 16	33.3	203.6	1.3		13.9	45	2249	00 39 26
00 40 10	MRK590	03 35 16	33.7	204.2	1.3		14.3	-12	2249	No stop
00 41 40	---	03 36 46	33.6	204.7	1.4		14.5	78	2261	00 40 11
00 41 55	J0216-0118	03 37 01	33.2	204.1	1.3		14.2	2	2261	00 41 55
00 42 40	=0213-015	03 37 46	33.1	204.4	1.3		14.3	45	2267	00 41 56
00 42 40	MRK590	03 37 46	33.5	205.0	1.4		14.7	-12	2267	No stop
00 44 10	---	03 39 16	33.4	205.4	1.4		14.9	78	2278	00 42 41
00 44 35	J0216-0118	03 39 41	33.0	204.9	1.4		14.7	12	2278	00 44 35
00 45 20	=0213-015	03 40 26	32.9	205.1	1.4		14.8	45	2284	00 44 36
00 45 20	J0216-0105	03 40 26	33.2	205.2	1.4		14.8	-10	2284	No stop
00 46 45	=0213-013	03 41 52	33.1	205.6	1.4		15.0	75	2295	00 45 21
00 47 00	J0216-0118	03 42 07	32.8	205.6	1.4		15.0	5	2295	00 47 00
00 47 45	=0213-015	03 42 52	32.8	205.8	1.4		15.2	45	2301	00 47 01
00 47 45	MRK590	03 42 52	33.2	206.4	1.5		15.5	-12	2301	No stop
00 49 15	---	03 44 22	33.1	206.9	1.5		15.7	78	2312	00 47 46
00 49 30	J0216-0118	03 44 37	32.7	206.3	1.5		15.4	3	2312	00 49 30
00 50 15	=0213-015	03 45 22	32.6	206.5	1.5		15.6	45	2318	00 49 31
00 50 15	MRK590	03 45 22	33.0	207.2	1.5		15.9	-12	2318	No stop
00 51 45	---	03 46 53	32.9	207.6	1.5		16.1	78	2329	00 50 16
00 52 00	J0216-0118	03 47 08	32.5	207.0	1.5		15.8	3	2329	00 52 00
00 52 45	=0213-015	03 47 53	32.4	207.3	1.5		16.0	45	2335	00 52 01
00 52 45	MRK590	03 47 53	32.9	207.9	1.5		16.3	-12	2335	No stop
00 54 15	---	03 49 23	32.7	208.3	1.6		16.5	78	2347	00 52 46
00 54 30	J0216-0118	03 49 38	32.3	207.8	1.5		16.2	3	2347	00 54 30
00 55 15	=0213-015	03 50 23	32.3	208.0	1.6		16.4	45	2353	00 54 31
00 55 15	MRK590	03 50 23	32.7	208.6	1.6		16.7	-12	2353	No stop
00 56 45	---	03 51 53	32.6	209.0	1.6		16.9	78	2364	00 55 16

Schedule for TORUN (Code Tr)

Page 20

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	17 Oct 2015	Day 290 ---								
00 57 10	J0216-0118	03 52 18	32.1	208.5	1.6		16.7	13	2364	00 57 10
00 57 55	=0213-015	03 53 04	32.1	208.7	1.6		16.8	45	2370	00 57 11
00 57 55	J0216-0105	03 53 04	32.3	208.8	1.6		16.8	-10	2370	No stop
00 59 20	=0213-013	03 54 29	32.2	209.2	1.6		17.0	75	2381	00 57 56
00 59 35	J0217-0121	03 54 44	32.0	208.7	1.6		16.7	3	2381	00 59 35
01 00 20	=0215-015	03 55 29	32.0	208.9	1.6		16.9	45	2387	00 59 36
01 00 20	J0216-0105	03 55 29	32.1	209.5	1.6		17.2	-12	2387	No stop
01 01 50	=0213-013	03 56 59	32.0	209.9	1.7		17.4	78	2398	01 00 21
01 02 05	J0217-0121	03 57 14	31.9	209.4	1.6		17.1	3	2398	01 02 05
01 02 50	=0215-015	03 57 59	31.8	209.6	1.7		17.2	45	2404	01 02 06
01 02 50	J0216-0105	03 57 59	31.9	210.2	1.7		17.6	-12	2404	No stop
01 04 20	=0213-013	03 59 30	31.8	210.6	1.7		17.8	78	2415	01 02 51
01 04 35	J0217-0121	03 59 45	31.7	210.1	1.7		17.5	3	2415	01 04 35
01 05 20	=0215-015	04 00 30	31.6	210.3	1.7		17.6	45	2421	01 04 36
01 05 20	J0216-0105	04 00 30	31.7	210.9	1.7		17.9	-12	2421	No stop
01 06 50	=0213-013	04 02 00	31.6	211.3	1.7		18.2	78	2433	01 05 21
01 07 05	J0217-0121	04 02 15	31.5	210.8	1.7		17.9	3	2433	01 07 05
01 07 50	=0215-015	04 03 00	31.4	211.0	1.7		18.0	45	2438	01 07 06
01 07 50	J0216-0105	04 03 00	31.5	211.6	1.8		18.3	-12	2438	No stop
01 09 20	=0213-013	04 04 30	31.4	212.0	1.8		18.5	78	2450	01 07 51
01 09 35	J0216-0118	04 04 45	31.2	212.0	1.8		18.6	5	2450	01 09 35
01 10 20	=0213-015	04 05 31	31.1	212.2	1.8		18.7	45	2456	01 09 36
01 10 20	MRK590	04 05 31	31.5	212.8	1.8		19.0	-12	2456	No stop
01 11 50	---	04 07 01	31.4	213.2	1.9		19.2	78	2467	01 10 21
01 12 05	J0216-0118	04 07 16	31.0	212.7	1.8		18.9	3	2467	01 12 05
01 12 50	=0213-015	04 08 01	30.9	212.9	1.9		19.0	45	2473	01 12 06
01 12 50	MRK590	04 08 01	31.3	213.5	1.9		19.4	-12	2473	No stop
01 14 20	---	04 09 31	31.2	213.9	1.9		19.6	78	2485	01 12 51
01 14 35	J0216-0118	04 09 46	30.8	213.4	1.9		19.3	3	2485	01 14 35
01 15 20	=0213-015	04 10 31	30.7	213.6	1.9		19.4	45	2490	01 14 36

Schedule for TORUN (Code Tr)

Page 21

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	17 Oct 2015	Day 290 ---								
01 15 20	MRK590	04 10 31	31.1	214.2	1.9		19.7	-12	2490	No stop
01 16 50	---	04 12 02	31.0	214.6	1.9		20.0	78	2502	01 15 21
01 17 05	J0216-0118	04 12 17	30.6	214.1	1.9		19.7	3	2502	01 17 05
01 17 50	=0213-015	04 13 02	30.5	214.3	1.9		19.8	45	2508	01 17 06
01 17 50	MRK590	04 13 02	30.9	214.9	2.0		20.1	-12	2508	No stop
01 19 20	---	04 14 32	30.8	215.3	2.0		20.3	78	2519	01 17 51
01 19 45	J0216-0118	04 14 57	30.4	214.8	2.0		20.0	13	2519	01 19 45
01 20 30	=0213-015	04 15 42	30.3	215.0	2.0		20.2	45	2525	01 19 46
01 20 30	J0216-0105	04 15 42	30.5	215.1	2.0		20.2	-10	2525	No stop
01 21 55	=0213-013	04 17 07	30.4	215.4	2.0		20.4	75	2536	01 20 31
01 22 10	J0216-0118	04 17 23	30.1	215.5	2.0		20.4	5	2536	01 22 10
01 22 55	=0213-015	04 18 08	30.1	215.7	2.0		20.5	45	2542	01 22 11
01 22 55	MRK590	04 18 08	30.4	216.3	2.0		20.8	-12	2542	No stop
01 24 25	---	04 19 38	30.3	216.7	2.1		21.0	78	2553	01 22 56
01 24 40	J0216-0118	04 19 53	29.9	216.1	2.0		20.7	3	2553	01 24 40
01 25 25	=0213-015	04 20 38	29.9	216.3	2.1		20.8	45	2559	01 24 41
01 25 25	MRK590	04 20 38	30.2	217.0	2.1		21.2	-12	2559	No stop
01 26 55	---	04 22 08	30.1	217.4	2.1		21.4	78	2571	01 25 26
01 27 10	J0216-0118	04 22 23	29.7	216.8	2.1		21.1	3	2571	01 27 10
01 27 55	=0213-015	04 23 08	29.6	217.0	2.1		21.2	45	2576	01 27 11
01 27 55	MRK590	04 23 08	30.0	217.6	2.1		21.5	-12	2576	No stop
01 29 25	---	04 24 39	29.9	218.0	2.2		21.7	78	2588	01 27 56
01 29 40	J0216-0118	04 24 54	29.5	217.5	2.1		21.4	3	2588	01 29 40
01 30 25	=0213-015	04 25 39	29.4	217.7	2.1		21.5	45	2594	01 29 41
01 30 25	MRK590	04 25 39	29.8	218.3	2.2		21.9	-12	2594	No stop
01 31 55	---	04 27 09	29.6	218.7	2.2		22.1	78	2605	01 30 26
01 32 20	J0216-0118	04 27 34	29.2	218.2	2.2		21.8	13	2605	01 32 20
01 33 05	=0213-015	04 28 19	29.2	218.4	2.2		21.9	45	2611	01 32 21
01 33 05	J0216-0105	04 28 19	29.4	218.5	2.2		21.9	-10	2611	No stop
01 34 30	=0213-013	04 29 45	29.2	218.8	2.2		22.1	75	2622	01 33 06

Schedule for TORUN (Code Tr)

Page 22

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	17 Oct 2015	Day 290	---							
01 34 45	J0216-0118	04 30 00	29.0	218.8	2.2		22.1	5	2622	01 34 45
01 35 30	=0213-015	04 30 45	28.9	219.0	2.2		22.2	45	2628	01 34 46
01 35 30	MRK590	04 30 45	29.3	219.7	2.3		22.5	-12	2628	No stop
01 37 00	---	04 32 15	29.1	220.1	2.3		22.7	78	2639	01 35 31
01 37 15	J0216-0118	04 32 30	28.8	219.5	2.3		22.5	3	2639	01 37 15
01 38 00	=0213-015	04 33 15	28.7	219.7	2.3		22.6	45	2645	01 37 16
01 38 00	MRK590	04 33 15	29.0	220.3	2.3		22.9	-12	2645	No stop
01 39 30	---	04 34 45	28.9	220.7	2.3		23.1	78	2656	01 38 01
01 39 45	J0216-0118	04 35 00	28.5	220.2	2.3		22.8	3	2656	01 39 45
01 40 30	=0213-015	04 35 46	28.4	220.4	2.3		22.9	45	2662	01 39 46
01 40 30	MRK590	04 35 46	28.8	221.0	2.3		23.2	-12	2662	No stop
01 42 00	---	04 37 16	28.6	221.4	2.4		23.4	78	2674	01 40 31
01 42 15	J0216-0118	04 37 31	28.3	220.8	2.3		23.1	3	2674	01 42 15
01 43 00	=0213-015	04 38 16	28.2	221.0	2.4		23.2	45	2679	01 42 16
01 43 00	MRK590	04 38 16	28.5	221.6	2.4		23.5	-12	2679	No stop
01 44 30	---	04 39 46	28.4	222.0	2.4		23.7	78	2691	01 43 01
01 44 55	J0216-0118	04 40 11	28.0	221.5	2.4		23.5	13	2691	01 44 55
01 45 40	=0213-015	04 40 56	27.9	221.7	2.4		23.6	45	2697	01 44 56
01 45 40	J0216-0105	04 40 56	28.1	221.8	2.4		23.6	-10	2697	No stop
01 47 05	=0213-013	04 42 22	28.0	222.1	2.4		23.8	75	2708	01 45 41
01 47 20	J0216-0118	04 42 37	27.8	222.1	2.4		23.8	5	2708	01 47 20
01 48 05	=0213-015	04 43 22	27.7	222.3	2.4		23.9	45	2713	01 47 21
01 48 05	MRK590	04 43 22	28.0	223.0	2.5		24.2	-12	2713	No stop
01 49 35	---	04 44 52	27.9	223.4	2.5		24.3	78	2725	01 48 06
01 49 50	J0216-0118	04 45 07	27.5	222.8	2.5		24.1	3	2725	01 49 50
01 50 35	=0213-015	04 45 52	27.4	223.0	2.5		24.2	45	2731	01 49 51
01 50 35	MRK590	04 45 52	27.8	223.6	2.5		24.5	-12	2731	No stop
01 52 05	---	04 47 22	27.6	224.0	2.5		24.7	78	2742	01 50 36
01 52 20	J0216-0118	04 47 37	27.3	223.4	2.5		24.4	3	2742	01 52 20
01 53 05	=0213-015	04 48 23	27.2	223.6	2.5		24.5	45	2748	01 52 21

Schedule for TORUN (Code Tr)

Page 23

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	TPStart SYNC

--- Sat	17 Oct 2015	Day 290	---							
01 53 05	MRK590	04 48 23	27.5	224.3	2.5		24.8	-12	2748	No stop
01 54 35	---	04 49 53	27.4	224.6	2.6		25.0	78	2760	01 53 06
01 54 50	J0216-0118	04 50 08	27.0	224.1	2.6		24.7	3	2760	01 54 50
01 55 35	=0213-015	04 50 53	26.9	224.3	2.6		24.8	45	2765	01 54 51
01 55 35	MRK590	04 50 53	27.2	224.9	2.6		25.1	-12	2765	No stop
01 57 05	---	04 52 23	27.1	225.3	2.6		25.3	78	2777	01 55 36
01 57 30	J0216-0118	04 52 48	26.7	224.7	2.6		25.0	13	2777	01 57 30
01 58 15	=0213-015	04 53 33	26.6	224.9	2.6		25.1	45	2783	01 57 31
01 58 15	J0216-0105	04 53 33	26.8	225.0	2.6		25.1	-10	2783	No stop
01 59 40	=0213-013	04 54 59	26.7	225.4	2.6		25.3	75	2794	01 58 16
01 59 55	J0216-0118	04 55 14	26.5	225.4	2.6		25.3	5	2794	01 59 55
02 00 40	=0213-015	04 55 59	26.4	225.5	2.7		25.4	45	2799	01 59 56
02 00 40	MRK590	04 55 59	26.7	226.2	2.7		25.7	-12	2799	No stop
02 02 10	---	04 57 29	26.5	226.6	2.7		25.9	78	2811	02 00 41
02 02 25	J0216-0118	04 57 44	26.2	226.0	2.7		25.6	3	2811	02 02 25
02 03 10	=0213-015	04 58 29	26.1	226.2	2.7		25.7	45	2817	02 02 26
02 03 10	MRK590	04 58 29	26.4	226.8	2.7		26.0	-12	2817	No stop
02 04 40	---	04 59 59	26.3	227.2	2.7		26.1	78	2828	02 03 11
02 04 55	J0216-0118	05 00 15	25.9	226.6	2.7		25.9	3	2828	02 04 55
02 05 40	=0213-015	05 01 00	25.8	226.8	2.7		26.0	45	2834	02 04 56
02 05 40	MRK590	05 01 00	26.1	227.5	2.8		26.3	-12	2834	No stop
02 07 10	---	05 02 30	26.0	227.8	2.8		26.4	78	2846	02 05 41
02 07 25	J0216-0118	05 02 45	25.6	227.2	2.8		26.2	3	2846	02 07 25
02 08 10	=0213-015	05 03 30	25.6	227.4	2.8		26.3	45	2851	02 07 26
02 08 10	MRK590	05 03 30	25.9	228.1	2.8		26.5	-12	2851	No stop
02 09 40	---	05 05 00	25.7	228.4	2.8		26.7	78	2863	02 08 11
02 10 05	J0216-0118	05 05 25	25.3	227.9	2.8		26.5	13	2863	02 10 05
02 10 50	=0213-015	05 06 11	25.3	228.1	2.8		26.6	45	2869	02 10 06
02 10 50	J0216-0105	05 06 11	25.5	228.2	2.8		26.6	-10	2869	No stop
02 12 15	=0213-013	05 07 36	25.3	228.5	2.8		26.7	75	2879	02 10 51

Schedule for TORUN (Code Tr)

Page 24

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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 17 Oct 2015 Day 290 ---								
02 12 30	J0216-0118	05 07 51	25.1	228.5	2.8	26.7 5	2879	02 12 30
02 13 15	=0213-015	05 08 36	25.0	228.7	2.9	26.8 45	2885	02 12 31
02 13 15	MRK590	05 08 36	25.3	229.3	2.9	27.1 -12	2885	No stop
02 14 45	---	05 10 06	25.1	229.7	2.9	27.3 78	2897	02 13 16
02 15 00	J0216-0118	05 10 21	24.8	229.1	2.9	27.0 3	2897	02 15 00
02 15 45	=0213-015	05 11 06	24.7	229.3	2.9	27.1 45	2903	02 15 01
02 15 45	MRK590	05 11 06	25.0	230.0	2.9	27.4 -12	2903	No stop
02 17 15	---	05 12 37	24.8	230.3	3.0	27.5 78	2914	02 15 46
02 17 30	J0216-0118	05 12 52	24.5	229.7	2.9	27.3 3	2914	02 17 30
02 18 15	=0213-015	05 13 37	24.4	229.9	2.9	27.4 45	2920	02 17 31
02 18 15	MRK590	05 13 37	24.7	230.6	3.0	27.6 -12	2920	No stop
02 19 45	---	05 15 07	24.5	230.9	3.0	27.8 78	2931	02 18 16
02 20 00	J0216-0118	05 15 22	24.2	230.3	3.0	27.5 3	2931	02 20 00
02 20 45	=0213-015	05 16 07	24.1	230.5	3.0	27.6 45	2937	02 20 01
02 20 45	MRK590	05 16 07	24.4	231.2	3.0	27.9 -12	2937	No stop
02 22 15	---	05 17 37	24.3	231.5	3.0	28.0 78	2949	02 20 46
02 22 40	J0216-0118	05 18 02	23.9	231.0	3.0	27.8 13	2949	02 22 40
02 23 25	=0213-015	05 18 48	23.8	231.2	3.0	27.9 45	2954	02 22 41
02 23 25	J0216-0105	05 18 48	24.0	231.3	3.0	27.9 -10	2954	No stop
02 24 50	=0213-013	05 20 13	23.9	231.6	3.1	28.1 75	2965	02 23 26
02 25 05	J0217-0121	05 20 28	23.8	231.1	3.0	27.9 3	2965	02 25 05
02 25 50	=0215-015	05 21 13	23.7	231.3	3.0	27.9 45	2971	02 25 06
02 25 50	J0216-0105	05 21 13	23.7	231.8	3.1	28.2 -12	2971	No stop
02 27 20	=0213-013	05 22 43	23.6	232.2	3.1	28.3 78	2983	02 25 51
02 27 35	J0217-0121	05 22 58	23.5	231.7	3.1	28.1 3	2983	02 27 35
02 28 20	=0215-015	05 23 43	23.4	231.9	3.1	28.2 45	2988	02 27 36
02 28 20	J0216-0105	05 23 43	23.4	232.4	3.1	28.4 -12	2988	No stop
02 29 50	=0213-013	05 25 14	23.3	232.8	3.1	28.6 78	3000	02 28 21
02 30 05	J0216-0118	05 25 29	23.0	232.8	3.1	28.6 5	3000	02 30 05
02 30 50	=0213-015	05 26 14	22.9	233.0	3.2	28.6 45	3006	02 30 06

Schedule for TORUN (Code Tr)

Page 25

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	17 Oct 2015	Day 290 ---								
02 30 50	MRK590	05 26 14	23.2	233.6	3.2		28.9	-12	3006	No stop
02 32 20	---	05 27 44	23.0	234.0	3.2		29.1	78	3017	02 30 51
02 32 35	J0216-0118	05 27 59	22.7	233.4	3.2		28.8	3	3017	02 32 35
02 33 20	=0213-015	05 28 44	22.6	233.6	3.2		28.9	45	3023	02 32 36
02 33 20	MRK590	05 28 44	22.9	234.2	3.2		29.1	-12	3023	No stop
02 34 50	---	05 30 14	22.7	234.6	3.2		29.3	78	3035	02 33 21
02 35 05	J0216-0118	05 30 29	22.4	234.0	3.2		29.1	3	3035	02 35 05
02 35 50	=0213-015	05 31 15	22.3	234.1	3.2		29.1	45	3040	02 35 06
02 35 50	MRK590	05 31 15	22.6	234.8	3.3		29.4	-12	3040	No stop
02 37 20	---	05 32 45	22.4	235.1	3.3		29.5	78	3052	02 35 51
02 37 35	J0216-0118	05 33 00	22.1	234.6	3.3		29.3	3	3052	02 37 35
02 38 20	=0213-015	05 33 45	22.0	234.7	3.3		29.4	45	3058	02 37 36
02 38 20	MRK590	05 33 45	22.3	235.4	3.3		29.6	-12	3058	No stop
02 39 50	---	05 35 15	22.1	235.7	3.3		29.8	78	3069	02 38 21
02 40 15	J0216-0118	05 35 40	21.8	235.2	3.3		29.5	13	3069	02 40 15
02 41 00	=0213-015	05 36 25	21.7	235.4	3.3		29.6	45	3075	02 40 16
02 41 00	J0216-0105	05 36 25	21.9	235.5	3.3		29.6	-10	3075	No stop
02 42 25	=0213-013	05 37 51	21.7	235.8	3.3		29.8	75	3086	02 41 01
02 42 40	J0216-0118	05 38 06	21.5	235.8	3.4		29.8	5	3086	02 42 40
02 43 25	=0213-015	05 38 51	21.4	235.9	3.4		29.8	45	3092	02 42 41
02 43 25	MRK590	05 38 51	21.7	236.6	3.4		30.1	-12	3092	No stop
02 44 55	---	05 40 21	21.5	236.9	3.4		30.2	78	3103	02 43 26
02 45 10	J0216-0118	05 40 36	21.2	236.3	3.4		30.0	3	3103	02 45 10
02 45 55	=0213-015	05 41 21	21.1	236.5	3.4		30.1	45	3109	02 45 11
02 45 55	MRK590	05 41 21	21.4	237.2	3.4		30.3	-12	3109	No stop
02 47 25	---	05 42 52	21.2	237.5	3.5		30.4	78	3121	02 45 56
02 47 40	J0216-0118	05 43 07	20.9	236.9	3.4		30.2	3	3121	02 47 40
02 48 25	=0213-015	05 43 52	20.8	237.1	3.4		30.3	45	3126	02 47 41
02 48 25	MRK590	05 43 52	21.0	237.7	3.5		30.5	-12	3126	No stop
02 49 55	---	05 45 22	20.8	238.1	3.5		30.6	78	3138	02 48 26

Schedule for TORUN (Code Tr)

Page 26

EVN 1.6GHz Observations of Changing-look AGN Mrk 590

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

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	17 Oct 2015	Day 290 ---								
02 50 10	J0216-0118	05 45 37	20.6	237.5	3.5		30.4	3	3138	02 50 10
02 50 55	=0213-015	05 46 22	20.5	237.7	3.5		30.5	45	3144	02 50 11
02 50 55	MRK590	05 46 22	20.7	238.3	3.5		30.7	-12	3144	No stop
02 52 25	---	05 47 52	20.5	238.7	3.5		30.9	78	3155	02 50 56
02 52 50	J0216-0118	05 48 17	20.2	238.1	3.5		30.7	13	3155	02 52 50
02 53 35	=0213-015	05 49 03	20.1	238.3	3.5		30.7	45	3161	02 52 51
02 53 35	J0216-0105	05 49 03	20.3	238.4	3.5		30.8	-10	3161	No stop
02 55 00	=0213-013	05 50 28	20.1	238.7	3.6		30.9	75	3172	02 53 36
02 55 15	J0217-0121	05 50 43	20.1	238.2	3.5		30.7	4	3172	02 55 15
02 56 00	=0215-015	05 51 28	20.0	238.4	3.5		30.8	45	3178	02 55 16
02 56 00	J0216-0105	05 51 28	20.0	238.9	3.6		31.0	-12	3178	No stop
02 57 30	=0213-013	05 52 58	19.8	239.3	3.6		31.1	78	3189	02 56 01
02 57 45	J0217-0121	05 53 13	19.8	238.8	3.6		30.9	4	3189	02 57 45
02 58 30	=0215-015	05 53 58	19.7	239.0	3.6		31.0	45	3195	02 57 46
02 58 30	J0216-0105	05 53 58	19.7	239.5	3.6		31.2	-12	3195	No stop
03 00 00	=0213-013	05 55 29	19.5	239.8	3.6		31.3	78	3206	02 58 31
03 00 15	J0217-0121	05 55 44	19.4	239.4	3.6		31.1	4	3206	03 00 15
03 01 00	=0215-015	05 56 29	19.3	239.5	3.6		31.2	45	3212	03 00 16
03 01 00	J0216-0105	05 56 29	19.4	240.1	3.7		31.4	-12	3212	No stop
03 02 30	=0213-013	05 57 59	19.2	240.4	3.7		31.5	78	3224	03 01 01

SETUP FILE INFORMATION:

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

===== Setup file: sess315.L1024

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

Disk used to record data.

1st LO=	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
Net SB=	L	L	U	U	L	L	U	U
	L	L	U	U	L	L	U	U
IF SB =	L	L	L	L	L	L	L	L
	L	L	L	L	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
BBC =	1	5	1	5	2	6	2	6
	3	7	3	7	4	8	4	8
BBC SB=	U	U	L	L	U	U	L	L
	U	U	L	L	U	U	L	L
IF =	A1	B1	A1	B1	A1	B1	A1	B1
	A1	B1	A1	B1	A1	B1	A1	B1

The following frequency sets based on these setups were used.

```

Frequency Set: 6 Setup file default. Used with PCAL = off
LO sum= 1610.49 1610.49 1610.49 1610.49 1642.49 1642.49 1642.49 1642.49
        1674.49 1674.49 1674.49 1674.49 1706.49 1706.49 1706.49 1706.49
BBC fr= 689.51 689.51 689.51 689.51 657.51 657.51 657.51 657.51
        625.51 625.51 625.51 625.51 593.51 593.51 593.51 593.51
Bandwd= 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00
        16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00
Matching frequency sets: 6

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
* MRK590	02 12 00.370793	* 02 14 33.562000	02 15 23.136029	0.00
	-00 59 57.51500	*-00 46 00.09000	-00 41 34.90725	0.00
0213-015	02 13 32.824031	* 02 16 05.663835	02 16 55.120568	0.14
* J0216-0118	-01 31 57.11187	*-01 18 03.39692	-01 13 39.41786	0.28
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc			
	GSFC 2015a astro solution, unpublished 110 observations.			
0213-013	02 13 39.235138	* 02 16 12.211900	02 17 01.713936	0.14
* J0216-0105	-01 19 12.27480	*-01 05 18.82315	-01 00 54.94188	0.37
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc			
	GSFC 2015a astro solution, unpublished 96 observations.			
0215-015	02 15 22.211613	* 02 17 54.999381	02 18 44.437880	0.13
* J0217-0121	-01 35 39.98490	*-01 21 50.71861	-01 17 28.20901	0.32
	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc			
	GSFC 2015a astro solution, unpublished 211 observations.			
* 3C84	03 16 29.567263	* 03 19 48.160094	03 20 52.827554	1.30
J0319+4130	41 19 51.91701	* 41 30 42.10413	41 33 58.27758	2.69
0316+413	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc			
J0319+41	GSFC 2015a astro solution, unpublished 10208 observations.			

eh032atr

OBSERVATIONS OF THE CORE OF THE GIANT RADIO GALAXY J145049+100649

PI: *G.H. Heald*

Address: ASTRON EMAIL: heald@astron.nl Phone during obse +31 521 595 774

Observing mode: Phase-referencing of a source at 18cm (512 Mb/s)

Schedule for TORUN (Code Tr)

Page 2

Observations of the core of the giant radio galaxy J145049+100649

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

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	17 Oct 2015	Day 290 ---								
Next scan frequencies:		1634.49	1634.49	1634.49	1634.49	1650.49	1650.49	1650.49	1650.49	1650.49
		1666.49	1666.49	1666.49	1666.49	1682.49	1682.49	1682.49	1682.49	1682.49
Next BBC frequencies:		665.51	665.51	665.51	665.51	649.51	649.51	649.51	649.51	649.51
		633.51	633.51	633.51	633.51	617.51	617.51	617.51	617.51	617.51
Next scan bandwidths:		8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
		8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00

08 00 00	4C39.25	10 56 18	69.3	235.8	1.5		39.7	0	0	08 00 00
08 05 00	---	11 01 19	68.7	237.9	1.6		40.8	300	19	08 00 01

08 12 53	J1450+0910	11 09 13	27.5	113.4	-3.7		-33.9	208	19	08 12 53
08 14 43	=1448+093	11 11 14	27.8	113.9	-3.7		-33.8	110	26	08 12 54

08 14 43	UGC09555	11 11 04	28.5	113.1	-3.7		-34.1	-15	26	No stop
08 23 43	---	11 20 05	29.8	115.3	-3.5		-33.5	525	61	08 14 44

08 24 18	J1450+0910	11 20 40	29.1	116.1	-3.5		-33.1	20	61	08 24 18
08 26 18	=1448+093	11 22 41	29.4	116.5	-3.5		-33.0	120	69	08 24 19

08 26 18	UGC09555	11 22 41	30.1	115.9	-3.5		-33.3	-15	69	No stop
08 35 18	---	11 31 42	31.3	118.0	-3.3		-32.6	525	103	08 26 19

08 38 19	OQ208	11 34 43	52.7	116.1	-2.5		-37.8	87	103	08 38 19
08 43 09	---	11 39 44	53.3	117.6	-2.5		-37.2	290	122	08 38 20

08 46 08	J1450+0910	11 42 34	32.0	121.4	-3.1		-31.3	85	122	08 46 08
08 47 58	=1448+093	11 44 34	32.2	121.9	-3.1		-31.1	110	129	08 46 09

08 47 58	UGC09555	11 44 24	33.0	121.2	-3.1		-31.5	-15	129	No stop
08 56 58	---	11 53 25	34.1	123.5	-3.0		-30.6	525	163	08 47 59

08 57 33	J1450+0910	11 54 01	33.4	124.3	-3.0		-30.2	20	163	08 57 33
08 59 33	=1448+093	11 56 01	33.7	124.8	-2.9		-30.0	120	171	08 57 34

08 59 33	UGC09555	11 56 01	34.5	124.1	-2.9		-30.3	-15	171	No stop
09 08 33	---	12 05 02	35.6	126.5	-2.8		-29.4	525	206	08 59 34

09 09 08	J1450+0910	12 05 37	34.8	127.3	-2.8		-28.9	20	206	09 09 08
09 11 08	=1448+093	12 07 38	35.1	127.8	-2.7		-28.7	120	213	09 09 09

09 11 08	UGC09555	12 07 38	35.9	127.2	-2.7		-29.1	-15	213	No stop
09 20 08	---	12 16 39	36.9	129.6	-2.6		-28.0	525	248	09 11 09

09 20 43	J1450+0910	12 17 14	36.2	130.4	-2.6		-27.6	20	248	09 20 43
09 22 43	=1448+093	12 19 15	36.4	130.9	-2.5		-27.4	120	256	09 20 44

Schedule for TORUN (Code Tr)

Page 3

Observations of the core of the giant radio galaxy J145049+100649

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

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	17 Oct 2015	Day 290 ---								
09 22 43	UGC09555	12 19 15	37.2	130.3	-2.5		-27.7	-15	256	No stop
09 31 43	---	12 28 16	38.2	132.8	-2.4		-26.6	525	290	09 22 44
09 35 34	3C286	12 32 08	64.9	148.5	-1.0		-21.4	118	290	09 35 34
09 40 24	---	12 37 08	65.2	150.9	-0.9		-19.8	290	309	09 35 35
09 44 13	J1450+0910	12 40 48	38.8	137.0	-2.2		-24.5	115	309	09 44 13
09 46 03	=1448+093	12 42 48	39.0	137.5	-2.1		-24.2	110	316	09 44 14
09 46 03	UGC09555	12 42 38	39.8	136.9	-2.1		-24.6	-15	316	No stop
09 55 03	---	12 51 40	40.7	139.6	-2.0		-23.3	525	351	09 46 04
09 55 38	J1450+0910	12 52 15	39.9	140.3	-2.0		-22.9	20	351	09 55 38
09 57 38	=1448+093	12 54 15	40.1	140.9	-2.0		-22.6	120	358	09 55 39
09 57 38	UGC09555	12 54 15	40.9	140.3	-2.0		-22.9	-16	358	No stop
10 06 38	---	13 03 17	41.8	143.1	-1.8		-21.5	524	393	09 57 39
10 07 15	J1450+0910	13 03 54	41.0	143.8	-1.8		-21.0	22	393	10 07 15
10 09 05	=1448+093	13 05 54	41.1	144.4	-1.8		-20.7	110	400	10 07 16
10 09 05	UGC09555	13 05 44	42.0	143.8	-1.8		-21.1	-16	400	No stop
10 18 05	---	13 14 46	42.8	146.7	-1.6		-19.6	524	435	10 09 06
10 18 40	J1450+0910	13 15 21	41.9	147.4	-1.6		-19.2	19	435	10 18 40
10 20 40	=1448+093	13 17 21	42.1	148.0	-1.6		-18.8	120	442	10 18 41
10 20 40	UGC09555	13 17 21	43.0	147.5	-1.6		-19.1	-16	442	No stop
10 29 40	---	13 26 23	43.7	150.4	-1.4		-17.5	524	477	10 20 41
10 32 42	OQ208	13 29 25	64.3	160.3	-0.6		-13.3	91	477	10 32 42
10 37 32	---	13 34 26	64.5	162.8	-0.6		-11.7	290	496	10 32 43
10 40 35	J1450+0910	13 37 20	43.5	154.4	-1.2		-15.2	90	496	10 40 35
10 42 25	=1448+093	13 39 20	43.7	155.1	-1.2		-14.9	110	503	10 40 36
10 42 25	UGC09555	13 39 10	44.6	154.6	-1.2		-15.2	-16	503	No stop
10 51 25	---	13 48 11	45.1	157.6	-1.1		-13.4	524	537	10 42 26
10 52 00	J1450+0910	13 48 46	44.2	158.2	-1.0		-13.0	19	537	10 52 00
10 54 00	=1448+093	13 50 47	44.3	158.9	-1.0		-12.7	120	545	10 52 01
10 54 00	UGC09555	13 50 47	45.2	158.5	-1.0		-12.9	-16	545	No stop
11 03 00	---	13 59 48	45.7	161.6	-0.9		-11.1	524	579	10 54 01

Schedule for TORUN (Code Tr)

Page 4

Observations of the core of the giant radio galaxy J145049+100649

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

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	17 Oct 2015	Day 290 ---								
11 03 35	J1450+0910	14 00 23	44.8	162.1	-0.8		-10.7	19	579	11 03 35
11 05 35	=1448+093	14 02 24	44.9	162.8	-0.8		-10.3	120	587	11 03 36
11 05 35	UGC09555	14 02 24	45.8	162.5	-0.8		-10.6	-16	587	No stop
11 14 35	---	14 11 25	46.2	165.6	-0.7		-8.7	524	622	11 05 36
11 15 10	J1450+0910	14 12 00	45.3	166.2	-0.7		-8.4	19	622	11 15 10
11 17 10	=1448+093	14 14 01	45.4	166.8	-0.6		-8.0	120	629	11 15 11
11 17 10	UGC09555	14 14 01	46.3	166.6	-0.6		-8.2	-16	629	No stop
11 26 10	---	14 23 02	46.6	169.8	-0.5		-6.2	524	664	11 17 11
11 29 42	3C286	14 26 34	65.2	209.1	0.9		19.8	120	664	11 29 42
11 34 32	---	14 31 35	64.9	211.5	1.0		21.4	290	683	11 29 43
11 38 03	J1450+0910	14 34 57	45.9	174.2	-0.3		-3.5	120	683	11 38 03
11 39 53	=1448+093	14 36 57	45.9	174.9	-0.2		-3.1	110	690	11 38 04
11 39 53	UGC09555	14 36 47	46.9	174.7	-0.2		-3.2	-16	690	No stop
11 48 53	---	14 45 49	46.9	177.9	-0.1		-1.3	524	724	11 39 54
11 49 28	J1450+0910	14 46 24	46.0	178.3	-0.1		-1.1	19	724	11 49 28
11 51 28	=1448+093	14 48 24	46.0	179.0	-0.0		-0.6	120	732	11 49 29
11 51 28	UGC09555	14 48 24	47.0	178.9	-0.1		-0.7	-16	732	No stop
12 00 28	---	14 57 26	46.9	182.1	0.1		1.3	524	767	11 51 29
12 01 05	J1450+0910	14 58 03	46.0	182.4	0.1		1.5	21	767	12 01 05
12 02 55	=1448+093	15 00 03	46.0	183.1	0.1		1.9	110	774	12 01 06
12 02 55	UGC09555	14 59 53	46.9	183.0	0.1		1.8	-16	774	No stop
12 11 55	---	15 08 55	46.8	186.2	0.3		3.8	524	808	12 02 56
12 12 30	J1450+0910	15 09 30	45.9	186.5	0.3		3.9	19	808	12 12 30
12 14 30	=1448+093	15 11 30	45.8	187.2	0.3		4.4	120	816	12 12 31
12 14 30	UGC09555	15 11 30	46.8	187.2	0.3		4.4	-16	816	No stop
12 23 30	---	15 20 32	46.6	190.4	0.5		6.3	524	851	12 14 31
12 26 20	OQ208	15 23 21	61.6	216.9	1.3		24.2	98	851	12 26 20
12 31 10	---	15 28 22	61.2	219.0	1.3		25.4	290	869	12 26 21
12 34 03	J1450+0910	15 31 05	45.3	194.0	0.7		8.5	100	869	12 34 03
12 35 53	=1448+093	15 33 06	45.2	194.7	0.7		8.9	110	876	12 34 04

Schedule for TORUN (Code Tr)

Page 5

Observations of the core of the giant radio galaxy J145049+100649

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

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	17 Oct 2015	Day 290 ---								
12 35 53	UGC09555	15 32 56	46.2	194.8	0.7		9.0	-16	876	No stop
12 44 53	---	15 41 57	45.8	197.9	0.8		10.8	524	911	12 35 54
12 45 28	J1450+0910	15 42 32	44.8	198.0	0.9		10.8	19	911	12 45 28
12 47 28	=1448+093	15 44 33	44.7	198.7	0.9		11.2	120	919	12 45 29
12 47 28	UGC09555	15 44 33	45.7	198.8	0.9		11.4	-16	919	No stop
12 56 28	---	15 53 34	45.2	201.9	1.0		13.2	524	953	12 47 29
12 57 03	J1450+0910	15 54 09	44.2	201.9	1.0		13.1	19	953	12 57 03
12 59 03	=1448+093	15 56 10	44.1	202.6	1.1		13.5	120	961	12 57 04
12 59 03	UGC09555	15 56 10	45.0	202.8	1.1		13.7	-16	961	No stop
13 08 03	---	16 05 11	44.5	205.8	1.2		15.4	524	996	12 59 04
13 08 38	J1450+0910	16 05 46	43.5	205.8	1.2		15.3	19	996	13 08 38
13 10 38	=1448+093	16 07 47	43.4	206.4	1.3		15.7	120	1003	13 08 39
13 10 38	UGC09555	16 07 47	44.3	206.7	1.3		15.9	-16	1003	No stop
13 19 38	---	16 16 48	43.7	209.6	1.4		17.6	524	1038	13 10 39
13 22 50	3C286	16 20 01	52.1	250.2	2.8		40.9	97	1038	13 22 50
13 27 40	---	16 25 01	51.4	251.5	2.9		41.3	290	1056	13 22 51
13 30 45	J1450+0910	16 27 57	41.9	212.9	1.6		19.3	92	1056	13 30 45
13 32 35	=1448+093	16 29 57	41.7	213.5	1.6		19.6	110	1063	13 30 46
13 32 35	UGC09555	16 29 47	42.6	213.8	1.6		19.8	-16	1063	No stop
13 41 35	---	16 38 49	41.9	216.6	1.8		21.3	524	1098	13 32 36
13 42 10	J1450+0910	16 39 24	40.9	216.4	1.8		21.2	19	1098	13 42 10
13 44 10	=1448+093	16 41 24	40.7	217.0	1.8		21.5	120	1106	13 42 11
13 44 10	UGC09555	16 41 24	41.6	217.4	1.8		21.7	-16	1106	No stop
13 53 10	---	16 50 26	40.8	220.1	2.0		23.1	524	1140	13 44 11
13 57 44	3C345	16 55 01	76.5	189.6	0.2		7.5	126	1140	13 57 44
14 02 34	---	17 00 02	76.4	193.6	0.3		10.6	290	1159	13 57 45
14 07 17	J1450+0910	17 04 35	38.5	223.9	2.2		24.9	128	1159	14 07 17
14 09 07	=1448+093	17 06 36	38.3	224.4	2.3		25.2	110	1166	14 07 18
14 09 07	UGC09555	17 06 26	39.2	224.8	2.2		25.5	-16	1166	No stop
14 18 07	---	17 15 27	38.2	227.4	2.4		26.7	524	1201	14 09 08

Schedule for TORUN (Code Tr)

Page 6

Observations of the core of the giant radio galaxy J145049+100649

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

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	17 Oct 2015	Day 290	---							
14 18 42	J1450+0910	17 16 02	37.2	227.1	2.4		26.4	19	1201	14 18 42
14 20 42	=1448+093	17 18 03	37.0	227.6	2.4		26.7	120	1208	14 18 43
14 20 42	UGC09555	17 18 03	37.9	228.1	2.4		27.0	-16	1208	No stop
14 29 42	---	17 27 04	36.9	230.6	2.6		28.1	524	1243	14 20 43
14 31 58	OQ208	17 29 20	45.8	256.5	3.4		41.6	69	1243	14 31 58
14 36 48	---	17 34 21	45.1	257.7	3.4		41.8	290	1262	14 31 59
14 39 00	J1450+0910	17 36 23	34.9	232.6	2.8		28.9	66	1262	14 39 00
14 40 50	=1448+093	17 38 23	34.7	233.1	2.8		29.1	110	1269	14 39 01
14 40 50	UGC09555	17 38 13	35.5	233.6	2.8		29.4	-16	1269	No stop
14 49 50	---	17 47 15	34.4	235.9	2.9		30.3	524	1303	14 40 51
14 50 25	J1450+0910	17 47 50	33.5	235.6	2.9		30.1	19	1303	14 50 25
14 52 25	=1448+093	17 49 50	33.3	236.1	3.0		30.3	120	1311	14 50 26
14 52 25	UGC09555	17 49 50	34.1	236.6	3.0		30.6	-15	1311	No stop
15 01 25	---	17 58 52	33.0	238.9	3.1		31.5	525	1346	14 52 26
15 02 00	J1450+0910	17 59 27	32.1	238.5	3.1		31.2	19	1346	15 02 00
15 04 00	=1448+093	18 01 27	31.8	239.0	3.2		31.4	120	1353	15 02 01
15 04 00	UGC09555	18 01 27	32.6	239.5	3.2		31.7	-15	1353	No stop
15 13 00	---	18 10 29	31.5	241.7	3.3		32.5	525	1388	15 04 01
15 13 35	J1450+0910	18 11 04	30.5	241.4	3.3		32.3	19	1388	15 13 35
15 15 35	=1448+093	18 13 04	30.3	241.8	3.4		32.4	120	1396	15 13 36
15 15 35	UGC09555	18 13 04	31.1	242.4	3.4		32.7	-15	1396	No stop
15 24 35	---	18 22 06	29.9	244.5	3.5		33.4	525	1430	15 15 36
15 27 31	3C286	18 25 02	33.6	277.3	4.9		43.7	96	1430	15 27 31
15 32 21	---	18 30 03	32.9	278.3	5.0		43.6	290	1449	15 27 32
15 35 12	J1450+0910	18 32 44	27.6	246.5	3.7		33.9	91	1449	15 35 12
15 37 02	=1448+093	18 34 45	27.3	246.9	3.7		34.0	110	1456	15 35 13
15 37 02	UGC09555	18 34 35	28.2	247.4	3.7		34.3	-15	1456	No stop
15 46 02	---	18 43 36	26.9	249.5	3.9		34.8	525	1490	15 37 03
15 46 37	J1450+0910	18 44 11	26.0	249.1	3.9		34.6	19	1490	15 46 37
15 48 37	=1448+093	18 46 12	25.7	249.6	3.9		34.7	120	1498	15 46 38

Schedule for TORUN (Code Tr)

Page 7

Observations of the core of the giant radio galaxy J145049+100649

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

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 17 Oct 2015 Day 290 ---

```
15 48 37  UGC09555      18 46 12  26.6 250.1  3.9      35.0   -15    1498  No stop
15 57 37  ---          18 55 13  25.3 252.1  4.1      35.5   525    1533  15 48 38

15 58 12  J1450+0910    18 55 48  24.4 251.7  4.1      35.3    19    1533  15 58 12
16 00 12  =1448+093     18 57 48  24.1 252.1  4.1      35.4   120    1540  15 58 13
```

SETUP FILE INFORMATION:

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

===== Setup file: sess315.L512

```
Setup group:   11          Station: TORUN          Total bit rate:   512
Format: MARK5B          Bits per sample: 2          Sample rate: 16.000
Number of channels: 16    DBE type: DBBC_DDC        Speedup factor:   1.00
```

Disk used to record data.

1st LO=	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
Net SB=	L	L	U	U	L	L	U	U
	L	L	U	U	L	L	U	U
IF SB =	L	L	L	L	L	L	L	L
	L	L	L	L	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
BBC =	1	5	1	5	2	6	2	6
	3	7	3	7	4	8	4	8
BBC SB=	U	U	L	L	U	U	L	L
	U	U	L	L	U	U	L	L
IF =	A1	B1	A1	B1	A1	B1	A1	B1
	A1	B1	A1	B1	A1	B1	A1	B1

The following frequency sets based on these setups were used.

Frequency Set: 6 Setup file default. Used with PCAL = off

LO sum=	1634.49	1634.49	1634.49	1634.49	1650.49	1650.49	1650.49	1650.49
	1666.49	1666.49	1666.49	1666.49	1682.49	1682.49	1682.49	1682.49
BBC fr=	665.51	665.51	665.51	665.51	649.51	649.51	649.51	649.51
	633.51	633.51	633.51	633.51	617.51	617.51	617.51	617.51
Bandwd=	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00

Matching frequency sets: 6

Track assignments are:

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

barrel=roll_off

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
* UGC09555	14 48 23.739225	* 14 50 49.397000	14 51 33.998406	0.00
	10 19 09.23120	* 10 06 49.31000	10 03 11.91829	0.00
* 4C39.25	09 23 55.319215	* 09 27 03.013936	09 28 00.920337	0.30
J0927+3902	39 15 23.56645	* 39 02 20.85186	38 58 01.68818	0.16
* 3C286	13 28 49.657758	* 13 31 08.288051	13 31 50.136426	0.18
J1331+3030	30 45 58.64059	* 30 30 32.95924	30 25 51.23204	0.17
* OQ208	14 04 45.615156	* 14 07 00.394414	14 07 41.130297	0.24
J1407+2827	28 41 29.23518	* 28 27 14.69022	28 22 58.48911	0.34
1448+093	14 48 04.740055	* 14 50 31.168932	14 51 16.025239	0.13
* J1450+0910	09 22 48.79490	* 09 10 27.95504	09 06 50.20130	0.27
* 3C345	16 41 17.606228	* 16 42 58.809966	16 43 29.356876	0.76
J1642+3948	39 54 10.81496	* 39 48 36.99402	39 47 15.94486	0.52

ea055btr

EA055B - NGC660 HI

PI: *argo*

Address: JBCA EMAIL: megan.argo@gmail.com

Schedule for TORUN (Code Tr)

Page 2

EA055b - NGC660 HI

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	17 Oct 2015	Day 290 ---								
Next scan frequencies:		1328.66	1328.66	1328.66	1328.66	1360.57	1360.57	1360.57	1360.57	
		1392.48	1392.48	1392.48	1392.48	1424.39	1424.39	1424.39	1424.39	
Next BBC frequencies:		771.34	771.34	771.34	771.34	739.43	739.43	739.43	739.43	
		707.52	707.52	707.52	707.52	675.61	675.61	675.61	675.61	
Next scan bandwidths:		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	
		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	
17 00 00	3C84	19 57 47	21.8	48.9	-7.4		-37.2	0	0	17 00 00
17 15 00	---	20 12 49	23.5	51.3	-7.1		-38.8	900	115	17 00 01
17 16 30	J0143+1215	20 14 19	14.3	88.4	-5.5		-37.9	1	115	17 16 30
17 19 30	---	20 17 20	14.8	89.0	-5.5		-37.9	180	138	17 16 31
17 19 30	NGC660	20 17 20	15.9	88.2	-5.4		-38.2	-18	138	No stop
17 26 30	---	20 24 21	17.0	89.6	-5.3		-38.2	402	192	17 19 31
17 27 00	J0143+1215	20 24 51	15.9	90.5	-5.3		-37.9	13	192	17 27 00
17 30 00	---	20 27 51	16.4	91.1	-5.3		-37.9	180	215	17 27 01
17 30 00	NGC660	20 27 51	17.5	90.3	-5.3		-38.2	-18	215	No stop
17 37 00	---	20 34 53	18.6	91.7	-5.2		-38.2	402	269	17 30 01
17 37 30	J0143+1215	20 35 23	17.5	92.6	-5.2		-37.9	13	269	17 37 30
17 40 30	---	20 38 23	17.9	93.3	-5.1		-37.9	180	292	17 37 31
17 40 30	NGC660	20 38 23	19.1	92.5	-5.1		-38.1	-18	292	No stop
17 47 30	---	20 45 24	20.1	93.9	-5.0		-38.1	402	346	17 40 31
17 48 00	J0143+1215	20 45 54	19.1	94.8	-5.0		-37.8	13	346	17 48 00
17 51 00	---	20 48 55	19.5	95.4	-4.9		-37.7	180	369	17 48 01
17 51 00	NGC660	20 48 55	20.7	94.6	-4.9		-38.0	-18	369	No stop
17 58 00	---	20 55 56	21.7	96.0	-4.8		-37.9	402	423	17 51 01
17 58 30	J0143+1215	20 56 26	20.6	96.9	-4.8		-37.6	13	423	17 58 30
18 01 30	---	20 59 27	21.1	97.6	-4.7		-37.5	180	446	17 58 31
18 01 30	NGC660	20 59 27	22.2	96.8	-4.7		-37.9	-18	446	No stop
18 08 30	---	21 06 28	23.3	98.2	-4.6		-37.7	402	500	18 01 31
18 09 00	J0143+1215	21 06 58	22.2	99.1	-4.6		-37.4	13	500	18 09 00
18 12 00	---	21 09 58	22.6	99.8	-4.6		-37.3	180	523	18 09 01
18 12 00	NGC660	21 09 58	23.8	99.0	-4.6		-37.6	-18	523	No stop
18 19 00	---	21 17 00	24.8	100.4	-4.4		-37.4	402	577	18 12 01

Schedule for TORUN (Code Tr)

Page 3

EA055b - NGC660 HI

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	17 Oct 2015	Day 290 ---								
18 19 30	J0143+1215	21 17 30	23.7	101.4	-4.4		-37.1	13	577	18 19 30
18 22 30	---	21 20 30	24.2	102.0	-4.4		-37.0	180	600	18 19 31
18 22 30	NGC660	21 20 30	25.4	101.2	-4.4		-37.3	-18	600	No stop
18 29 30	---	21 27 31	26.4	102.7	-4.3		-37.1	402	654	18 22 31
18 30 00	J0143+1215	21 28 01	25.3	103.6	-4.3		-36.7	13	654	18 30 00
18 33 00	---	21 31 02	25.7	104.3	-4.2		-36.6	180	677	18 30 01
18 33 00	NGC660	21 31 02	26.9	103.5	-4.2		-37.0	-18	677	No stop
18 40 00	---	21 38 03	27.9	105.0	-4.1		-36.7	402	731	18 33 01
18 40 30	J0143+1215	21 38 33	26.8	105.9	-4.1		-36.2	13	731	18 40 30
18 43 30	---	21 41 34	27.3	106.6	-4.0		-36.1	180	754	18 40 31
18 43 30	NGC660	21 41 34	28.4	105.8	-4.0		-36.5	-18	754	No stop
18 50 30	---	21 48 35	29.4	107.3	-3.9		-36.2	402	808	18 43 31
18 51 00	J0143+1215	21 49 05	28.3	108.3	-3.9		-35.7	13	808	18 51 00
18 54 00	---	21 52 05	28.8	109.0	-3.9		-35.5	180	831	18 51 01
18 54 00	NGC660	21 52 05	29.9	108.1	-3.9		-36.0	-18	831	No stop
19 01 00	---	21 59 06	30.9	109.7	-3.7		-35.6	402	885	18 54 01
19 01 30	J0143+1215	21 59 37	29.8	110.7	-3.7		-35.1	13	885	19 01 30
19 04 30	---	22 02 37	30.2	111.4	-3.7		-34.9	180	908	19 01 31
19 04 30	NGC660	22 02 37	31.4	110.6	-3.7		-35.4	-18	908	No stop
19 11 30	---	22 09 38	32.4	112.2	-3.6		-34.9	402	962	19 04 31
19 12 00	J0143+1215	22 10 08	31.3	113.1	-3.6		-34.4	12	962	19 12 00
19 15 00	---	22 13 09	31.7	113.8	-3.5		-34.2	180	985	19 12 01
19 15 00	NGC660	22 13 09	32.9	113.0	-3.5		-34.7	-18	985	No stop
19 22 00	---	22 20 10	33.9	114.7	-3.4		-34.2	402	1038	19 15 01
19 22 30	J0143+1215	22 20 40	32.7	115.6	-3.4		-33.7	12	1038	19 22 30
19 25 30	---	22 23 40	33.1	116.4	-3.3		-33.4	180	1062	19 22 31
19 25 30	NGC660	22 23 40	34.3	115.6	-3.3		-33.9	-18	1062	No stop
19 32 30	---	22 30 42	35.3	117.3	-3.2		-33.3	402	1115	19 25 31
19 33 00	J0143+1215	22 31 12	34.1	118.2	-3.2		-32.8	12	1115	19 33 00
19 36 00	---	22 34 12	34.5	119.0	-3.2		-32.5	180	1138	19 33 01

Schedule for TORUN (Code Tr)

Page 4

EA055b - NGC660 HI

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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 17 Oct 2015	Day 290 ---								
19 36 00	NGC660	22 34 12	35.8	118.2	-3.2		-33.0	-18	1138	No stop
19 43 00	---	22 41 13	36.7	119.9	-3.0		-32.4	402	1192	19 36 01
19 43 30	J0143+1215	22 41 43	35.5	120.9	-3.0		-31.8	12	1192	19 43 30
19 46 30	---	22 44 44	35.9	121.6	-3.0		-31.6	180	1215	19 43 31
19 46 30	NGC660	22 44 44	37.1	120.8	-3.0		-32.1	-18	1215	No stop
19 53 30	---	22 51 45	38.0	122.7	-2.9		-31.4	402	1269	19 46 31
19 54 00	J0143+1215	22 52 15	36.8	123.6	-2.9		-30.8	12	1269	19 54 00
19 57 00	---	22 55 16	37.2	124.4	-2.8		-30.5	180	1292	19 54 01
19 57 00	NGC660	22 55 16	38.5	123.6	-2.8		-31.0	-18	1292	No stop
20 04 00	---	23 02 17	39.3	125.5	-2.7		-30.2	402	1346	19 57 01
20 04 30	J0143+1215	23 02 47	38.1	126.4	-2.7		-29.7	12	1346	20 04 30
20 07 30	---	23 05 47	38.5	127.2	-2.6		-29.3	180	1369	20 04 31
20 07 30	NGC660	23 05 47	39.8	126.4	-2.6		-29.8	-18	1369	No stop
20 14 30	---	23 12 49	40.6	128.4	-2.5		-29.0	402	1423	20 07 31
20 15 00	J0143+1215	23 13 19	39.4	129.3	-2.5		-28.4	12	1423	20 15 00
20 18 00	---	23 16 19	39.7	130.1	-2.5		-28.0	180	1446	20 15 01
20 18 00	NGC660	23 16 19	41.0	129.4	-2.5		-28.5	-18	1446	No stop
20 25 00	---	23 23 20	41.8	131.4	-2.3		-27.6	402	1500	20 18 01
20 25 30	J0143+1215	23 23 50	40.6	132.2	-2.3		-27.1	12	1500	20 25 30
20 28 30	---	23 26 51	40.9	133.1	-2.3		-26.7	180	1523	20 25 31
20 28 30	NGC660	23 26 51	42.2	132.4	-2.3		-27.2	-18	1523	No stop
20 35 30	---	23 33 52	43.0	134.5	-2.2		-26.2	402	1577	20 28 31
20 36 00	J0143+1215	23 34 22	41.7	135.3	-2.2		-25.6	12	1577	20 36 00
20 39 00	---	23 37 23	42.0	136.2	-2.1		-25.2	180	1600	20 36 01
20 39 00	NGC660	23 37 23	43.3	135.5	-2.1		-25.7	-18	1600	No stop
20 46 00	---	23 44 24	44.1	137.7	-2.0		-24.6	402	1654	20 39 01
20 46 30	J0143+1215	23 44 54	42.8	138.5	-2.0		-24.1	12	1654	20 46 30
20 49 30	---	23 47 54	43.1	139.4	-1.9		-23.6	180	1677	20 46 31
20 51 30	3C84	23 49 55	53.4	86.5	-3.5		-53.2	-1	1677	20 51 30
21 01 30	---	23 59 56	54.9	88.4	-3.3		-53.3	599	1754	20 51 31

Schedule for TORUN (Code Tr)

Page 5

EA055b - NGC660 HI

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	17 Oct 2015	Day 290 ---								
21 03 30	J0143+1215	00 01 57	44.4	143.8	-1.7		-21.3	-6	1754	21 03 30
21 08 30	---	00 06 57	44.9	145.4	-1.6		-20.4	294	1792	21 03 31
21 08 30	NGC660	00 06 57	46.2	144.8	-1.6		-20.9	-18	1792	No stop
21 15 30	---	00 13 59	46.8	147.1	-1.5		-19.6	402	1846	21 08 31
21 16 00	J0143+1215	00 14 29	45.5	147.8	-1.5		-19.1	12	1846	21 16 00
21 19 00	---	00 17 29	45.7	148.8	-1.4		-18.6	180	1869	21 16 01
21 19 00	NGC660	00 17 29	47.1	148.3	-1.4		-18.9	-18	1869	No stop
21 26 00	---	00 24 30	47.6	150.7	-1.3		-17.6	402	1923	21 19 01
21 26 30	J0143+1215	00 25 00	46.3	151.3	-1.3		-17.2	12	1923	21 26 30
21 29 30	---	00 28 01	46.5	152.3	-1.3		-16.6	180	1946	21 26 31
21 29 30	NGC660	00 28 01	47.8	151.9	-1.3		-16.9	-19	1946	No stop
21 36 30	---	00 35 02	48.3	154.4	-1.1		-15.5	401	2000	21 29 31
21 37 00	J0143+1215	00 35 32	47.0	154.9	-1.1		-15.1	12	2000	21 37 00
21 40 00	---	00 38 33	47.2	156.0	-1.1		-14.5	180	2023	21 37 01
21 40 00	NGC660	00 38 33	48.5	155.6	-1.1		-14.8	-19	2023	No stop
21 47 00	---	00 45 34	49.0	158.1	-1.0		-13.3	401	2077	21 40 01
21 47 30	J0143+1215	00 46 04	47.6	158.6	-1.0		-13.0	12	2077	21 47 30
21 50 30	---	00 49 04	47.8	159.7	-0.9		-12.3	180	2100	21 47 31
21 50 30	NGC660	00 49 04	49.2	159.4	-0.9		-12.6	-19	2100	No stop
21 57 30	---	00 56 05	49.5	162.0	-0.8		-11.0	401	2154	21 50 31
21 58 00	J0143+1215	00 56 36	48.1	162.4	-0.8		-10.7	11	2154	21 58 00
22 01 00	---	00 59 36	48.3	163.4	-0.7		-10.1	180	2177	21 58 01
22 01 00	NGC660	00 59 36	49.7	163.2	-0.7		-10.3	-19	2177	No stop
22 08 00	---	01 06 37	49.9	165.8	-0.6		-8.7	401	2231	22 01 01
22 08 30	J0143+1215	01 07 07	48.6	166.2	-0.6		-8.4	11	2231	22 08 30
22 11 30	---	01 10 08	48.7	167.3	-0.6		-7.8	180	2254	22 08 31
22 11 30	NGC660	01 10 08	50.1	167.2	-0.6		-7.9	-19	2254	No stop
22 18 30	---	01 17 09	50.3	169.8	-0.4		-6.3	401	2308	22 11 31
22 19 00	J0143+1215	01 17 39	48.9	170.0	-0.4		-6.1	11	2308	22 19 00
22 22 00	---	01 20 39	49.0	171.2	-0.4		-5.4	180	2331	22 19 01

Schedule for TORUN (Code Tr)

Page 6

EA055b - NGC660 HI

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	17 Oct 2015	Day 290 ---								
22 22 00	NGC660	01 20 39	50.4	171.1	-0.4		-5.5	-19	2331	No stop
22 29 00	---	01 27 41	50.5	173.8	-0.3		-3.8	401	2385	22 22 01
22 29 30	J0143+1215	01 28 11	49.1	173.9	-0.3		-3.7	11	2385	22 29 30
22 32 30	---	01 31 11	49.2	175.1	-0.2		-3.0	180	2408	22 29 31
22 32 30	NGC660	01 31 11	50.5	175.1	-0.2		-3.0	-19	2408	No stop
22 39 30	---	01 38 12	50.6	177.8	-0.1		-1.3	401	2462	22 32 31
22 40 00	J0143+1215	01 38 42	49.2	177.9	-0.1		-1.3	11	2462	22 40 00
22 43 00	---	01 41 43	49.2	179.0	-0.0		-0.6	180	2485	22 40 01
22 43 00	NGC660	01 41 43	50.6	179.2	-0.0		-0.5	-19	2485	No stop
22 50 00	---	01 48 44	50.6	181.8	0.1		1.1	401	2538	22 43 01
22 50 30	J0143+1215	01 49 14	49.2	181.8	0.1		1.1	11	2538	22 50 30
22 53 30	---	01 52 15	49.2	182.9	0.1		1.8	180	2562	22 50 31
22 53 30	NGC660	01 52 15	50.6	183.2	0.1		2.0	-19	2562	No stop
23 00 30	---	01 59 16	50.5	185.9	0.3		3.6	401	2615	22 53 31
23 01 00	J0143+1215	01 59 46	49.1	185.7	0.3		3.5	11	2615	23 01 00
23 04 00	---	02 02 46	49.1	186.9	0.3		4.2	180	2638	23 01 01
23 04 00	NGC660	02 02 46	50.5	187.2	0.3		4.4	-18	2638	No stop
23 11 00	---	02 09 48	50.3	189.9	0.4		6.1	402	2692	23 04 01
23 11 30	J0143+1215	02 10 18	48.9	189.7	0.4		5.9	11	2692	23 11 30
23 14 30	---	02 13 18	48.8	190.8	0.5		6.6	180	2715	23 11 31
23 14 30	NGC660	02 13 18	50.2	191.2	0.5		6.9	-18	2715	No stop
23 21 30	---	02 20 19	50.0	193.8	0.6		8.5	402	2769	23 14 31
23 22 00	J0143+1215	02 20 49	48.6	193.5	0.6		8.3	12	2769	23 22 00
23 25 00	---	02 23 50	48.5	194.6	0.7		8.9	180	2792	23 22 01
23 25 00	NGC660	02 23 50	49.8	195.1	0.7		9.3	-18	2792	No stop
23 32 00	---	02 30 51	49.5	197.7	0.8		10.8	402	2846	23 25 01
23 32 30	J0143+1215	02 31 21	48.2	197.3	0.8		10.6	12	2846	23 32 30
23 35 30	---	02 34 22	48.0	198.4	0.8		11.2	180	2869	23 32 31
23 35 30	NGC660	02 34 22	49.4	199.0	0.8		11.6	-18	2869	No stop
23 42 30	---	02 41 23	49.0	201.6	1.0		13.1	402	2923	23 35 31

Schedule for TORUN (Code Tr)

Page 7

EA055b - NGC660 HI

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	17 Oct 2015	Day 290 ---								
23 43 00	J0143+1215	02 41 53	47.7	201.1	1.0		12.8	12	2923	23 43 00
23 46 00	---	02 44 53	47.5	202.2	1.0		13.4	180	2946	23 43 01
23 46 00	NGC660	02 44 53	48.8	202.8	1.0		13.9	-18	2946	No stop
23 53 00	---	02 51 54	48.4	205.3	1.1		15.3	402	3000	23 46 01
23 53 30	J0143+1215	02 52 24	47.0	204.8	1.1		14.9	12	3000	23 53 30
23 56 30	---	02 55 25	46.9	205.8	1.2		15.5	180	3023	23 53 31

--- Start: Sat	17 Oct 2015	Day 290 -- Stop: Sun				18 Oct 2015	Day 291 ---			
23 56 30	NGC660	02 55 25	48.2	206.5	1.2		16.0	-18	3023	No stop
00 03 30	---	03 02 26	47.7	209.0	1.3		17.4	402	3077	23 56 31
00 04 00	J0143+1215	03 02 56	46.3	208.4	1.3		17.0	12	3077	00 04 00
00 07 00	---	03 05 57	46.1	209.4	1.4		17.6	180	3100	00 04 01
00 07 00	NGC660	03 05 57	47.4	210.2	1.4		18.1	-18	3100	No stop
00 14 00	---	03 12 58	46.9	212.6	1.5		19.4	402	3154	00 07 01
00 14 30	J0143+1215	03 13 28	45.5	211.9	1.5		19.0	12	3154	00 14 30
00 17 30	---	03 16 28	45.3	212.9	1.5		19.5	180	3177	00 14 31
00 17 30	NGC660	03 16 28	46.6	213.7	1.5		20.1	-18	3177	No stop
00 24 30	---	03 23 30	46.0	216.0	1.7		21.3	402	3231	00 17 31
00 25 00	J0143+1215	03 24 00	44.7	215.3	1.7		20.8	12	3231	00 25 00
00 28 00	---	03 27 00	44.4	216.3	1.7		21.3	180	3254	00 25 01
00 28 00	NGC660	03 27 00	45.6	217.2	1.7		21.9	-18	3254	No stop
00 35 00	---	03 34 01	45.0	219.4	1.8		23.1	402	3308	00 28 01
00 35 30	J0143+1215	03 34 31	43.7	218.7	1.8		22.6	12	3308	00 35 30
00 38 30	---	03 37 32	43.4	219.6	1.9		23.1	180	3331	00 35 31
00 41 10	3C120	03 40 12	41.0	162.1	-0.9		-10.7	30	3331	00 41 10
00 51 10	---	03 50 14	41.5	165.4	-0.7		-8.8	600	3408	00 41 11
00 53 10	J0143+1215	03 52 14	42.0	224.1	2.1		25.3	-12	3408	00 53 10
00 56 10	---	03 55 15	41.6	225.0	2.2		25.7	168	3431	00 53 11
00 56 10	NGC660	03 55 15	42.8	225.9	2.2		26.4	-17	3431	No stop
01 03 10	---	04 02 16	42.1	228.0	2.3		27.3	403	3485	00 56 11

Schedule for TORUN (Code Tr)

Page 8

EA055b - NGC660 HI

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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 18 Oct 2015	Day 291 ---								
01 03 40	J0143+1215	04 02 46	40.8	227.1	2.3		26.8	12	3485	01 03 40
01 06 40	---	04 05 47	40.5	228.0	2.4		27.2	180	3508	01 03 41
01 06 40	NGC660	04 05 47	41.7	229.0	2.4		27.8	-17	3508	No stop
01 13 40	---	04 12 48	40.9	231.0	2.5		28.7	403	3562	01 06 41
01 14 10	J0143+1215	04 13 18	39.6	230.1	2.5		28.1	12	3562	01 14 10
01 17 10	---	04 16 18	39.3	231.0	2.5		28.5	180	3585	01 14 11
01 17 10	NGC660	04 16 18	40.4	232.0	2.5		29.1	-17	3585	No stop
01 24 10	---	04 23 19	39.6	233.9	2.7		30.0	403	3638	01 17 11
01 24 40	J0143+1215	04 23 49	38.4	233.0	2.7		29.4	13	3638	01 24 40
01 27 40	---	04 26 50	38.0	233.8	2.7		29.8	180	3662	01 24 41
01 27 40	NGC660	04 26 50	39.2	234.9	2.7		30.4	-17	3662	No stop
01 34 40	---	04 33 51	38.3	236.7	2.8		31.1	403	3715	01 27 41
01 35 10	J0143+1215	04 34 21	37.1	235.8	2.8		30.6	13	3715	01 35 10
01 38 10	---	04 37 22	36.7	236.6	2.9		30.9	180	3738	01 35 11
01 38 10	NGC660	04 37 22	37.9	237.7	2.9		31.5	-17	3738	No stop
01 45 10	---	04 44 23	37.0	239.5	3.0		32.2	403	3792	01 38 11
01 45 40	J0143+1215	04 44 53	35.8	238.6	3.0		31.6	13	3792	01 45 40
01 48 40	---	04 47 53	35.4	239.4	3.1		31.9	180	3815	01 45 41
01 48 40	NGC660	04 47 53	36.5	240.4	3.1		32.5	-17	3815	No stop
01 55 40	---	04 54 55	35.6	242.2	3.2		33.1	403	3869	01 48 41
01 56 10	J0143+1215	04 55 25	34.4	241.2	3.2		32.6	13	3869	01 56 10
01 59 10	---	04 58 25	34.0	242.0	3.2		32.9	180	3892	01 56 11
01 59 10	NGC660	04 58 25	35.1	243.0	3.2		33.4	-17	3892	No stop
02 06 10	---	05 05 26	34.2	244.8	3.4		34.0	403	3946	01 59 11
02 06 40	J0143+1215	05 05 56	33.0	243.8	3.4		33.5	13	3946	02 06 40
02 09 40	---	05 08 57	32.6	244.6	3.4		33.7	180	3969	02 06 41
02 09 40	NGC660	05 08 57	33.7	245.6	3.4		34.3	-17	3969	No stop
02 16 40	---	05 15 58	32.7	247.3	3.5		34.8	403	4023	02 09 41
02 17 10	J0143+1215	05 16 28	31.6	246.4	3.5		34.3	13	4023	02 17 10
02 20 10	---	05 19 29	31.2	247.1	3.6		34.5	180	4046	02 17 11

Schedule for TORUN (Code Tr)

Page 9

EA055b - NGC660 HI

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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 18 Oct 2015	Day 291 ---								
02 20 10	NGC660	05 19 29	32.2	248.1	3.6		35.0	-17	4046	No stop
02 27 10	---	05 26 30	31.3	249.8	3.7		35.4	403	4100	02 20 11
02 27 40	J0143+1215	05 27 00	30.1	248.8	3.7		35.0	13	4100	02 27 40
02 30 40	---	05 30 00	29.7	249.5	3.8		35.2	180	4123	02 27 41
02 30 40	NGC660	05 30 00	30.8	250.6	3.8		35.7	-17	4123	No stop
02 37 40	---	05 37 01	29.8	252.2	3.9		36.0	403	4177	02 30 41
02 38 10	J0143+1215	05 37 32	28.6	251.2	3.9		35.6	13	4177	02 38 10
02 41 10	---	05 40 32	28.2	251.9	3.9		35.8	180	4200	02 38 11
02 41 10	NGC660	05 40 32	29.3	253.0	3.9		36.2	-17	4200	No stop
02 48 10	---	05 47 33	28.3	254.5	4.1		36.6	403	4254	02 41 11
02 48 40	J0143+1215	05 48 03	27.1	253.6	4.1		36.1	13	4254	02 48 40
02 51 40	---	05 51 04	26.7	254.3	4.1		36.3	180	4277	02 48 41
02 51 40	NGC660	05 51 04	27.7	255.3	4.1		36.7	-17	4277	No stop
02 58 40	---	05 58 05	26.7	256.8	4.2		37.0	403	4331	02 51 41
02 59 10	J0143+1215	05 58 35	25.6	255.9	4.2		36.6	13	4331	02 59 10
03 02 10	---	06 01 35	25.2	256.6	4.3		36.7	180	4354	02 59 11
03 02 10	NGC660	06 01 35	26.2	257.6	4.3		37.1	-17	4354	No stop
03 09 10	---	06 08 37	25.2	259.1	4.4		37.4	403	4408	03 02 11
03 09 40	J0143+1215	06 09 07	24.1	258.2	4.4		37.0	13	4408	03 09 40
03 12 40	---	06 12 07	23.6	258.8	4.5		37.1	180	4431	03 09 41
03 12 40	NGC660	06 12 07	24.7	259.8	4.5		37.5	-17	4431	No stop
03 19 40	---	06 19 08	23.6	261.3	4.6		37.7	403	4485	03 12 41
03 20 10	J0143+1215	06 19 38	22.5	260.4	4.6		37.3	13	4485	03 20 10
03 23 10	---	06 22 39	22.1	261.0	4.6		37.4	180	4508	03 20 11
03 23 10	NGC660	06 22 39	23.1	262.1	4.6		37.7	-17	4508	No stop
03 30 10	---	06 29 40	22.0	263.5	4.8		37.9	403	4562	03 23 11
03 30 40	J0143+1215	06 30 10	21.0	262.6	4.8		37.6	13	4562	03 30 40
03 33 40	---	06 33 11	20.5	263.2	4.8		37.6	180	4585	03 30 41
03 33 40	NGC660	06 33 11	21.5	264.2	4.8		38.0	-17	4585	No stop
03 40 40	---	06 40 12	20.5	265.7	4.9		38.1	403	4638	03 33 41

Schedule for TORUN (Code Tr)

Page 10

EA055b - NGC660 HI

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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 18 Oct 2015	Day 291 ---								
03 41 10	J0143+1215	06 40 42	19.4	264.8	4.9		37.7	13	4638	03 41 10
03 44 10	---	06 43 42	18.9	265.4	5.0		37.8	180	4662	03 41 11
03 44 10	NGC660	06 43 42	20.0	266.4	5.0		38.1	-16	4662	No stop
03 51 10	---	06 50 44	18.9	267.8	5.1		38.1	404	4715	03 44 11
03 51 40	J0143+1215	06 51 14	17.8	266.9	5.1		37.9	13	4715	03 51 40
03 54 40	---	06 54 14	17.4	267.5	5.2		37.9	180	4738	03 51 41
03 54 40	NGC660	06 54 14	18.4	268.5	5.2		38.2	-16	4738	No stop
04 01 40	---	07 01 15	17.3	269.9	5.3		38.2	404	4792	03 54 41
04 02 10	J0143+1215	07 01 45	16.2	269.0	5.3		37.9	13	4792	04 02 10
04 05 10	---	07 04 46	15.8	269.6	5.3		37.9	180	4815	04 02 11
04 05 10	NGC660	07 04 46	16.8	270.6	5.3		38.2	-16	4815	No stop
04 12 10	---	07 11 47	15.7	272.0	5.5		38.2	404	4869	04 05 11
04 12 40	J0143+1215	07 12 17	14.6	271.1	5.5		37.9	13	4869	04 12 40
04 15 40	---	07 15 18	14.2	271.7	5.5		37.9	180	4892	04 12 41
04 15 40	NGC660	07 15 18	15.2	272.7	5.5		38.1	-16	4892	No stop
04 22 40	---	07 22 19	14.2	274.1	5.6		38.1	404	4946	04 15 41
04 23 10	J0143+1215	07 22 49	13.1	273.2	5.6		37.9	13	4946	04 23 10
04 26 10	---	07 25 49	12.6	273.8	5.7		37.8	180	4969	04 23 11
04 28 50	3C120	07 28 30	30.5	232.9	2.9		28.7	62	4969	04 28 50
04 38 50	---	07 38 31	29.3	235.4	3.1		29.8	600	5046	04 28 51
04 39 20	J0143+1215	07 39 01	10.6	276.4	5.9		37.6	-68	5046	04 39 20
04 42 20	---	07 42 02	10.2	277.0	6.0		37.6	112	5069	04 39 21
04 42 20	NGC660	07 42 02	11.2	278.0	6.0		37.7	-17	5069	No stop
04 49 20	---	07 49 03	10.2	279.4	6.1		37.6	403	5123	04 42 21
04 49 50	J0143+1215	07 49 33	9.1	278.5	6.1		37.4	13	5123	04 49 50
04 52 50	---	07 52 34	8.6	279.1	6.1		37.4	180	5146	04 49 51
04 52 50	NGC660	07 52 34	9.7	280.0	6.1		37.5	-17	5146	No stop
04 59 50	---	07 59 35	8.6	281.4	6.3		37.3	403	5200	04 52 51

SETUP FILE INFORMATION:

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

===== Setup file: sess315.H1024

Setup group: 7 Station: TORUN Total bit rate: 1024
 Format: MARK5B Bits per sample: 2 Sample rate: 32.000
 Number of channels: 16 DBE type: DBBC_DDC Speedup factor: 1.00

Disk used to record data.

1st LO=	2100.00	2100.00	2100.00	2100.00	2100.00	2100.00	2100.00	2100.00
	2100.00	2100.00	2100.00	2100.00	2100.00	2100.00	2100.00	2100.00
Net SB=	L	L	U	U	L	L	U	U
	L	L	U	U	L	L	U	U
IF SB =	L	L	L	L	L	L	L	L
	L	L	L	L	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
BBC =	1	5	1	5	2	6	2	6
	3	7	3	7	4	8	4	8
BBC SB=	U	U	L	L	U	U	L	L
	U	U	L	L	U	U	L	L
IF =	A1	B1	A1	B1	A1	B1	A1	B1
	A1	B1	A1	B1	A1	B1	A1	B1

The following frequency sets based on these setups were used.

Frequency Set: 6 Based on FREQ, BW, and/or DOPPLER in schedule. Used with PCAL = off

LO sum=	1328.66	1328.66	1328.66	1328.66	1360.57	1360.57	1360.57	1360.57
	1392.48	1392.48	1392.48	1392.48	1424.39	1424.39	1424.39	1424.39
BBC fr=	771.34	771.34	771.34	771.34	739.43	739.43	739.43	739.43
	707.52	707.52	707.52	707.52	675.61	675.61	675.61	675.61
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)		(Date)	Error
	(B1950)	(J2000)		(mas)
* NGC660	01 40 21.634647	* 01 43 02.291000	01 43 54.448210	0.00
	13 23 39.27430	* 13 38 44.30000	13 43 31.91994	0.00
* J0143+1215	01 40 51.136762	* 01 43 31.092000	01 44 23.002976	0.00
	12 00 38.81443	* 12 15 42.93400	12 20 30.27366	0.00
* 3C84	03 16 29.567263	* 03 19 48.160094	03 20 52.852992	1.30
J0319+4130	41 19 51.91701	* 41 30 42.10413	41 33 58.43738	2.69
* 3C120	04 30 31.602058	* 04 33 11.095527	04 34 02.389476	0.48
J0433+0521	05 14 59.61642	* 05 21 15.61920	05 23 09.74423	0.35

BINARY SMBH CANDIDATE J2216+0124

PI: Sandor Frey

Address: FOMI Satellite Geodetic Observatory EMAIL: frey.sandor@fomi.hu

Observing mode: 18 cm 1 Gb/s

Schedule for TORUN (Code Tr)

Page 2

Binary SMBH candidate J2216+0124

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

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

Disk: GBytes recorded to this point.

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

SYNC: Time correlator 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 18 Oct 2015	Day 291 ---								
Next scan frequencies:		1610.49	1610.49	1610.49	1610.49	1610.49	1642.49	1642.49	1642.49	1642.49
		1674.49	1674.49	1674.49	1674.49	1674.49	1706.49	1706.49	1706.49	1706.49
Next BBC frequencies:		689.51	689.51	689.51	689.51	689.51	657.51	657.51	657.51	657.51
		625.51	625.51	625.51	625.51	625.51	593.51	593.51	593.51	593.51
Next scan bandwidths:		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00

16 00 00	J2148+0657	19 01 33	32.8	128.0	-2.8		-28.5	0	0	16 00 00
16 12 00	=2145+067	19 13 35	34.2	131.2	-2.6		-27.1	720	92	16 00 01

16 13 30	J2217+0220	19 15 05	26.8	126.5	-3.1		-28.9	48	92	16 13 30
16 16 40	=2215+020	19 18 16	27.2	127.3	-3.0		-28.6	190	117	16 13 31

16 16 40	J2216+0124	19 18 16	26.5	128.0	-3.0		-28.2	-15	117	No stop
16 20 10	---	19 21 47	26.9	128.9	-2.9		-27.9	195	144	16 16 41

16 20 50	J2217+0220	19 22 27	27.7	128.3	-2.9		-28.1	25	144	16 20 50
16 22 20	=2215+020	19 23 57	27.9	128.7	-2.9		-28.0	90	155	16 20 51

16 22 20	J2216+0124	19 23 57	27.2	129.4	-2.9		-27.6	-15	155	No stop
16 25 50	---	19 27 28	27.6	130.3	-2.8		-27.3	195	182	16 22 21

16 25 50	J2217+0220	19 27 28	28.3	129.6	-2.9		-27.6	-15	182	No stop
16 27 20	=2215+020	19 28 58	28.5	130.0	-2.8		-27.4	75	194	16 25 51

16 27 20	J2216+0124	19 28 58	27.8	130.7	-2.8		-27.1	-15	194	No stop
16 30 50	---	19 32 28	28.2	131.6	-2.8		-26.7	195	221	16 27 21

16 31 30	J2217+0220	19 33 08	28.9	131.0	-2.8		-27.0	25	221	16 31 30
16 33 00	=2215+020	19 34 39	29.1	131.4	-2.7		-26.8	90	232	16 31 31

16 33 00	J2216+0124	19 34 39	28.4	132.1	-2.7		-26.5	-15	232	No stop
16 36 30	---	19 38 09	28.8	133.0	-2.7		-26.1	195	259	16 33 01

16 36 30	J2217+0220	19 38 09	29.5	132.3	-2.7		-26.4	-15	259	No stop
16 38 00	=2215+020	19 39 40	29.7	132.7	-2.6		-26.2	75	271	16 36 31

16 38 00	J2216+0124	19 39 40	28.9	133.4	-2.6		-25.9	-15	271	No stop
16 41 30	---	19 43 10	29.3	134.3	-2.6		-25.5	195	297	16 38 01

16 42 10	J2217+0220	19 43 50	30.1	133.8	-2.6		-25.7	25	297	16 42 10
16 43 40	=2215+020	19 45 20	30.3	134.2	-2.6		-25.5	90	309	16 42 11

16 43 40	J2216+0124	19 45 20	29.6	134.9	-2.5		-25.2	-15	309	No stop
16 47 10	---	19 48 51	29.9	135.8	-2.5		-24.8	195	336	16 43 41

Schedule for TORUN (Code Tr)

Page 3

Binary SMBH candidate J2216+0124

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

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 18 Oct 2015	Day 291	---							
16 47 10	J2217+0220	19 48 51	30.7	135.1	-2.5		-25.1	-15	336	No stop
16 48 40	=2215+020	19 50 21	30.8	135.5	-2.5		-24.9	75	347	16 47 11
16 48 40	J2216+0124	19 50 21	30.1	136.2	-2.5		-24.6	-15	347	No stop
16 52 10	---	19 53 52	30.5	137.1	-2.4		-24.1	195	374	16 48 41
16 52 50	J2217+0220	19 54 32	31.3	136.6	-2.4		-24.4	25	374	16 52 50
16 54 20	=2215+020	19 56 02	31.4	137.0	-2.4		-24.2	90	386	16 52 51
16 54 20	J2216+0124	19 56 02	30.7	137.7	-2.4		-23.9	-15	386	No stop
16 57 50	---	19 59 33	31.0	138.6	-2.3		-23.4	195	413	16 54 21
16 57 50	J2217+0220	19 59 33	31.8	137.9	-2.3		-23.8	-15	413	No stop
16 59 20	=2215+020	20 01 03	31.9	138.3	-2.3		-23.6	75	424	16 57 51
16 59 20	J2216+0124	20 01 03	31.2	139.0	-2.3		-23.2	-15	424	No stop
17 02 50	---	20 04 34	31.5	140.0	-2.2		-22.7	195	451	16 59 21
17 03 30	J2217+0220	20 05 14	32.3	139.5	-2.2		-23.0	25	451	17 03 30
17 05 00	=2215+020	20 06 44	32.5	139.9	-2.2		-22.8	90	463	17 03 31
17 05 00	J2216+0124	20 06 44	31.7	140.6	-2.2		-22.4	-15	463	No stop
17 08 30	---	20 10 15	32.1	141.5	-2.1		-22.0	195	490	17 05 01
17 08 30	J2217+0220	20 10 15	32.8	140.8	-2.1		-22.3	-15	490	No stop
17 10 00	=2215+020	20 11 45	33.0	141.2	-2.1		-22.1	75	501	17 08 31
17 10 00	J2216+0124	20 11 45	32.2	141.9	-2.1		-21.7	-15	501	No stop
17 13 30	---	20 15 15	32.5	142.9	-2.0		-21.2	195	528	17 10 01
17 14 10	J2217+0220	20 15 55	33.4	142.4	-2.0		-21.5	25	528	17 14 10
17 15 40	=2215+020	20 17 26	33.5	142.8	-2.0		-21.3	90	540	17 14 11
17 15 40	J2216+0124	20 17 26	32.7	143.5	-2.0		-20.9	-15	540	No stop
17 19 10	---	20 20 56	33.0	144.5	-1.9		-20.4	195	567	17 15 41
17 19 10	J2217+0220	20 20 56	33.8	143.8	-2.0		-20.8	-15	567	No stop
17 20 40	=2215+020	20 22 27	33.9	144.2	-1.9		-20.6	75	578	17 19 11
17 20 40	J2216+0124	20 22 27	33.2	144.9	-1.9		-20.2	-15	578	No stop
17 24 10	---	20 25 57	33.4	145.9	-1.9		-19.7	195	605	17 20 41
17 24 50	J2217+0220	20 26 37	34.3	145.4	-1.9		-20.0	25	605	17 24 50
17 26 20	=2215+020	20 28 07	34.4	145.8	-1.8		-19.7	90	617	17 24 51

Schedule for TORUN (Code Tr)

Page 4

Binary SMBH candidate J2216+0124

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

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 18 Oct 2015	Day 291 ---								
17 26 20	J2216+0124	20 28 07	33.6	146.5	-1.8		-19.4	-15	617	No stop
17 29 50	---	20 31 38	33.9	147.5	-1.8		-18.8	195	644	17 26 21
17 29 50	J2217+0220	20 31 38	34.7	146.8	-1.8		-19.2	-15	644	No stop
17 31 20	=2215+020	20 33 08	34.8	147.3	-1.8		-19.0	75	655	17 29 51
17 31 20	J2216+0124	20 33 08	34.0	147.9	-1.7		-18.6	-15	655	No stop
17 34 50	---	20 36 39	34.3	148.9	-1.7		-18.1	195	682	17 31 21
17 35 30	J2217+0220	20 37 19	35.2	148.5	-1.7		-18.3	25	682	17 35 30
17 37 00	=2215+020	20 38 49	35.3	148.9	-1.7		-18.1	90	694	17 35 31
17 37 00	J2216+0124	20 38 49	34.5	149.5	-1.6		-17.7	-15	694	No stop
17 40 30	---	20 42 20	34.7	150.6	-1.6		-17.2	195	721	17 37 01
17 40 30	J2217+0220	20 42 20	35.6	149.9	-1.6		-17.5	-15	721	No stop
17 42 00	=2215+020	20 43 50	35.7	150.4	-1.6		-17.3	75	732	17 40 31
17 42 00	J2216+0124	20 43 50	34.9	151.0	-1.6		-16.9	-15	732	No stop
17 45 30	---	20 47 21	35.1	152.0	-1.5		-16.4	195	759	17 42 01
17 46 10	J2217+0220	20 48 01	36.0	151.6	-1.5		-16.6	24	759	17 46 10
17 47 40	=2215+020	20 49 31	36.1	152.1	-1.5		-16.4	90	771	17 46 11
17 47 40	J2216+0124	20 49 31	35.3	152.7	-1.5		-16.0	-15	771	No stop
17 51 10	---	20 53 02	35.5	153.7	-1.4		-15.4	195	797	17 47 41
17 51 10	J2217+0220	20 53 02	36.3	153.1	-1.4		-15.8	-16	797	No stop
17 52 40	=2215+020	20 54 32	36.4	153.5	-1.4		-15.5	74	809	17 51 11
17 52 40	J2216+0124	20 54 32	35.6	154.1	-1.4		-15.2	-15	809	No stop
17 56 10	---	20 58 02	35.8	155.2	-1.3		-14.6	195	836	17 52 41
17 56 50	J2217+0220	20 58 42	36.7	154.8	-1.3		-14.8	24	836	17 56 50
18 00 00	=2215+020	21 01 53	36.9	155.8	-1.3		-14.3	190	860	17 56 51

SETUP FILE INFORMATION:

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

===== Setup file: sess315.L1024

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

Disk used to record data.

1st LO=	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
Net SB=	L	L	U	U	L	L	U	U
	L	L	U	U	L	L	U	U
IF SB =	L	L	L	L	L	L	L	L
	L	L	L	L	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
BBC =	1	5	1	5	2	6	2	6
	3	7	3	7	4	8	4	8
BBC SB=	U	U	L	L	U	U	L	L
	U	U	L	L	U	U	L	L
IF =	A1	B1	A1	B1	A1	B1	A1	B1
	A1	B1	A1	B1	A1	B1	A1	B1

The following frequency sets based on these setups were used.

Frequency Set: 8 Setup file default. Used with PCAL = off

LO sum=	1610.49	1610.49	1610.49	1610.49	1642.49	1642.49	1642.49	1642.49
	1674.49	1674.49	1674.49	1674.49	1706.49	1706.49	1706.49	1706.49
BBC fr=	689.51	689.51	689.51	689.51	657.51	657.51	657.51	657.51
	625.51	625.51	625.51	625.51	593.51	593.51	593.51	593.51
Bandwd=	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00

Matching frequency sets: 8

Track assignments are:

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

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error
	(B1950)	(J2000)		(mas)
* J2216+0124	22 14 15.505263	* 22 16 48.626000	22 17 37.653057	0.00
	01 09 27.49159	* 01 24 27.33000	01 29 23.71500	0.00
2145+067	21 45 36.078475	* 21 48 05.458673	21 48 53.230814	0.26
* J2148+0657	06 43 40.90460	* 06 57 38.60421	07 02 18.20795	0.25
2215+020	22 15 15.584192	* 22 17 48.237934	22 18 37.133872	0.05
* J2217+0220	02 05 08.96689	* 02 20 10.71220	02 25 07.89669	0.12

LONG OVERDUE - MEASURING THE PARALLAX AND PROPER MOTION OF THE CRAB
 PI: *Franz Kirsten*

Address: Curtin Institute of Radio Astronomy EMAIL: franz.kirsten@curtin.edu.au
 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 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	18 Oct 2015	Day 291 ---									
Next scan frequencies:		1610.49	1610.49	1610.49	1610.49	1610.49	1642.49	1642.49	1642.49	1642.49	
		1674.49	1674.49	1674.49	1674.49	1674.49	1706.49	1706.49	1706.49	1706.49	
Next BBC frequencies:		689.51	689.51	689.51	689.51	689.51	657.51	657.51	657.51	657.51	
		625.51	625.51	625.51	625.51	625.51	593.51	593.51	593.51	593.51	
Next scan bandwidths:		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	
		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	

23 00 00	J0530+1331	02 02 42	33.0	113.5	-3.5		-34.5	0	0	23 00 00	
23 10 00	=0528+134	02 12 44	34.3	116.0	-3.3		-33.7	600	77	23 00 01	

23 11 05	CRAB	02 13 49	40.9	109.1	-3.4		-37.7	27	77	23 11 05	
23 23 25	---	02 26 11	42.6	112.1	-3.2		-36.9	740	172	23 11 06	

23 23 45	CRAB	02 26 31	42.7	112.2	-3.1		-36.8	14	172	23 23 45	
23 36 15	---	02 39 03	44.4	115.5	-2.9		-35.8	750	268	23 23 46	

23 36 55	J0518+2054	02 39 43	45.8	121.0	-2.7		-33.4	14	268	23 36 55	
23 37 55	=0515+208	02 40 43	45.9	121.3	-2.6		-33.3	60	276	23 36 56	

23 38 35	CRAB	02 41 24	44.7	116.1	-2.9		-35.6	14	276	23 38 35	
23 51 05	---	02 53 56	46.4	119.5	-2.7		-34.3	750	372	23 38 36	

--- Start: Sun	18 Oct 2015	Day 291 -- Stop: Mon					19 Oct 2015	Day 292 ---			
23 51 25	CRAB	02 54 16	46.4	119.6	-2.7		-34.3	14	372	23 51 25	
00 03 55	---	03 06 48	48.0	123.1	-2.5		-32.9	750	468	23 51 26	

00 04 35	J0518+2054	03 07 28	49.2	129.1	-2.2		-29.9	13	468	00 04 35	
00 05 35	=0515+208	03 08 28	49.3	129.4	-2.2		-29.8	60	476	00 04 36	

00 06 15	CRAB	03 09 08	48.3	123.8	-2.4		-32.6	14	476	00 06 15	
00 18 45	---	03 21 40	49.8	127.6	-2.2		-30.9	750	572	00 06 16	

00 19 05	CRAB	03 22 00	49.9	127.7	-2.2		-30.8	14	572	00 19 05	
00 31 35	---	03 34 32	51.3	131.7	-2.0		-28.9	750	668	00 19 06	

00 32 15	J0518+2054	03 35 12	52.2	138.2	-1.7		-25.4	12	668	00 32 15	
00 33 15	=0515+208	03 36 13	52.3	138.5	-1.7		-25.2	60	676	00 32 16	

00 33 55	CRAB	03 36 53	51.6	132.4	-2.0		-28.6	13	676	00 33 55	
00 46 25	---	03 49 25	52.9	136.6	-1.8		-26.4	750	772	00 33 56	

00 46 45	CRAB	03 49 45	53.0	136.7	-1.8		-26.4	14	772	00 46 45	
00 59 15	---	04 02 17	54.2	141.2	-1.6		-24.0	750	868	00 46 46	

Schedule for TORUN (Code Tr)

Page 3

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

---	Mon 19 Oct 2015	Day 292	---							
01 00 25	J0530+1331	04 03 27	46.7	147.8	-1.5		-19.2	28	868	01 00 25
01 05 00	=0528+134	04 08 03	47.1	149.3	-1.4		-18.4	275	903	01 00 26
01 06 10	CRAB	04 09 13	54.8	143.7	-1.4		-22.5	27	903	01 06 10
01 18 30	---	04 21 35	55.9	148.4	-1.2		-19.8	740	998	01 06 11
01 18 50	CRAB	04 21 55	55.9	148.5	-1.2		-19.8	14	998	01 18 50
01 31 10	---	04 34 17	56.8	153.5	-1.0		-16.8	740	1093	01 18 51
01 32 00	J0518+2054	04 35 07	56.7	161.1	-0.7		-12.0	20	1093	01 32 00
01 33 00	=0515+208	04 36 07	56.8	161.5	-0.7		-11.8	60	1101	01 32 01
01 33 50	CRAB	04 36 58	57.0	154.5	-1.0		-16.2	21	1101	01 33 50
01 46 10	---	04 49 20	57.7	159.7	-0.8		-13.0	740	1196	01 33 51
01 46 30	CRAB	04 49 40	57.7	159.8	-0.8		-12.9	14	1196	01 46 30
01 58 50	---	05 02 02	58.3	165.1	-0.6		-9.6	740	1290	01 46 31
01 59 40	J0518+2054	05 02 52	57.7	172.9	-0.3		-4.5	20	1290	01 59 40
02 00 40	=0515+208	05 03 52	57.7	173.4	-0.3		-4.3	60	1298	01 59 41
02 01 30	CRAB	05 04 42	58.4	166.3	-0.5		-8.8	20	1298	02 01 30
02 13 50	---	05 17 04	58.7	171.8	-0.3		-5.3	740	1393	02 01 31
02 14 10	CRAB	05 17 24	58.7	171.9	-0.3		-5.2	14	1393	02 14 10
02 20 00	---	05 23 15	58.8	174.5	-0.2		-3.6	350	1438	02 14 11
02 20 20	CRAB	05 23 35	58.8	174.7	-0.2		-3.5	14	1438	02 20 20
02 26 30	---	05 29 46	58.9	177.4	-0.1		-1.7	370	1485	02 20 21
02 27 20	J0518+2054	05 30 36	57.8	185.1	0.2		3.3	20	1485	02 27 20
02 28 20	=0515+208	05 31 36	57.7	185.5	0.2		3.5	60	1493	02 27 21
02 29 10	CRAB	05 32 27	58.9	178.6	-0.1		-0.9	21	1493	02 29 10
02 41 30	---	05 44 49	58.9	184.2	0.2		2.7	740	1588	02 29 11
02 41 50	CRAB	05 45 09	58.9	184.3	0.2		2.8	14	1588	02 41 50
02 54 10	---	05 57 31	58.6	189.8	0.4		6.4	740	1683	02 41 51
02 55 30	J0530+1331	05 58 51	50.1	190.3	0.5		6.3	34	1683	02 55 30
03 00 00	=0528+134	06 03 22	50.0	192.0	0.5		7.4	270	1717	02 55 31

SETUP FILE INFORMATION:

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

===== Setup file: sess315.L1024

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

Disk used to record data.

1st LO=	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
Net SB=	L	L	U	U	L	L	U	U
	L	L	U	U	L	L	U	U
IF SB =	L	L	L	L	L	L	L	L
	L	L	L	L	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
BBC =	1	5	1	5	2	6	2	6
	3	7	3	7	4	8	4	8
BBC SB=	U	U	L	L	U	U	L	L
	U	U	L	L	U	U	L	L
IF =	A1	B1	A1	B1	A1	B1	A1	B1
	A1	B1	A1	B1	A1	B1	A1	B1

The following frequency sets based on these setups were used.

Frequency Set: 6 Setup file default. Used with PCAL = off

LO sum=	1610.49	1610.49	1610.49	1610.49	1642.49	1642.49	1642.49	1642.49
	1674.49	1674.49	1674.49	1674.49	1706.49	1706.49	1706.49	1706.49
BBC fr=	689.51	689.51	689.51	689.51	657.51	657.51	657.51	657.51
	625.51	625.51	625.51	625.51	593.51	593.51	593.51	593.51
Bandwd=	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00

Matching frequency sets: 6

Track assignments are:

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

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
* CRAB	05 31 31.388685	* 05 34 31.934000	05 35 29.692879	0.00
	21 58 54.53487	* 22 00 52.19100	22 01 18.48119	0.00
0515+208	05 15 05.041798	* 05 18 03.824513	05 19 01.125354	0.02
* J0518+2054	20 51 43.76307	* 20 54 52.49736	20 55 41.97620	0.03
0528+134	05 28 06.759216	* 05 30 56.416747	05 31 50.712033	0.21
* J0530+1331	13 29 42.28885	* 13 31 55.14952	13 32 29.02251	0.24

rk12djtr

RADIOASTRON AGN SURVEY

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 Survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
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 19 Oct 2015 Day 292 ---

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

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

06 00 00	2135+508	09 03 51	14.4	-5.5	11.4		5.2	0	0	06 00 00
06 14 30	---	09 18 24	14.3	-3.1	11.7		3.0	870	28	06 00 01
06 15 00	2135+508	09 18 54	14.3	-3.0	11.7		2.9	24	28	06 15 00
06 25 00	---	09 28 55	14.2	-1.4	11.9		1.3	600	47	06 15 01

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

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

06 30 00	2135+508	09 33 56	14.2	-0.6	11.9		0.6	294	47	06 30 00
06 44 30	---	09 48 29	14.2	1.8-11.8			-1.7	870	75	06 30 01
06 45 00	2135+508	09 48 59	14.2	1.8-11.8			-1.8	24	75	06 45 00
07 00 00	---	10 04 01	14.3	4.3-11.6			-4.1	900	104	06 45 01

SETUP FILE INFORMATION:

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

===== Setup file: ra6cm2.set

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

Disk used to record data.

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

The following frequency sets based on these setups were used.

Frequency Set: 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

===== Setup file: ra18cm2.set

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

Disk used to record data.

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

The following frequency sets based on these setups were used.

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

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

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)			Error
	(B1950)	(J2000)	(Date)	(mas)
* 2135+508	21 35 15.499567	* 21 37 00.986207	21 37 35.763516	0.00
J2137+5101	50 48 05.19436	* 51 01 36.12906	51 06 16.15496	0.00

eh028dtr

PARALLAX MEASUREMENT TO 1.6GHZ OH MASERS IN OH/IR STAR OH 138.0+7.4 PI: *Bo HU*

Address: Purple Mountain Observatory

Schedule for TORUN (Code Tr)

Page 2

Parallax Measurement to 1.6GHz OH Masers in OH/IR star OH 138.0+7.4

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

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	19 Oct 2015	Day 292 ---								
Next scan frequencies:		1609.54	1609.54	1609.54	1609.54	1609.54	1613.54	1613.54	1613.54	1613.54
		1617.54	1617.54	1617.54	1617.54	1617.54	1621.54	1621.54	1621.54	1621.54
Next BBC frequencies:		690.46	690.46	690.46	690.46	690.46	686.46	686.46	686.46	686.46
		682.46	682.46	682.46	682.46	682.46	678.46	678.46	678.46	678.46
Next scan bandwidths:		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

17 30 00	3C84	20 35 45	26.3	54.9	-6.8		-41.0	0	0	17 30 00
17 35 00	---	20 40 45	26.9	55.7	-6.7		-41.5	300	5	17 30 01
17 49 10	J0322+6610	20 54 57	44.5	34.1	-6.5		-56.7	774	5	17 49 10
17 50 40	---	20 56 28	44.7	34.2	-6.5		-56.9	90	6	17 49 11
17 50 40	OH138.0+7.2	20 56 28	44.1	34.8	-6.5		-56.0	-14	6	No stop
17 54 10	---	20 59 58	44.4	35.1	-6.4		-56.6	196	10	17 50 41
17 54 40	J0333+6536	21 00 28	43.7	34.3	-6.6		-55.2	15	10	17 54 40
17 56 10	---	21 01 59	43.8	34.4	-6.6		-55.4	90	11	17 54 41
17 56 10	OH138.0+7.2	21 01 59	44.5	35.2	-6.4		-56.9	-15	11	No stop
17 59 40	---	21 05 29	44.9	35.5	-6.4		-57.5	195	14	17 56 11
17 59 40	J0322+6610	21 05 29	45.4	34.9	-6.3		-58.5	-14	14	No stop
18 01 10	---	21 06 59	45.6	35.0	-6.3		-58.8	76	16	17 59 41
18 01 10	OH138.0+7.2	21 06 59	45.0	35.6	-6.3		-57.8	-14	16	No stop
18 04 40	---	21 10 30	45.3	35.9	-6.3		-58.4	196	19	18 01 11
18 05 10	J0333+6536	21 11 00	44.6	35.1	-6.4		-57.0	15	19	18 05 10
18 06 40	---	21 12 30	44.7	35.3	-6.4		-57.3	90	21	18 05 11
18 06 40	OH138.0+7.2	21 12 30	45.5	36.0	-6.2		-58.7	-15	21	No stop
18 10 10	---	21 16 01	45.8	36.3	-6.2		-59.3	195	24	18 06 41
18 10 10	J0322+6610	21 16 01	46.3	35.7	-6.1		-60.4	-14	24	No stop
18 11 40	---	21 17 31	46.5	35.8	-6.1		-60.6	76	25	18 10 11
18 11 40	OH138.0+7.2	21 17 31	45.9	36.4	-6.2		-59.6	-14	25	No stop
18 15 10	---	21 21 02	46.2	36.7	-6.1		-60.2	196	29	18 11 41
18 15 40	J0333+6536	21 21 32	45.5	36.0	-6.2		-58.8	15	29	18 15 40
18 17 10	---	21 23 02	45.7	36.1	-6.2		-59.1	90	30	18 15 41
18 17 10	OH138.0+7.2	21 23 02	46.4	36.8	-6.1		-60.5	-15	30	No stop
18 20 40	---	21 26 33	46.7	37.1	-6.0		-61.2	195	34	18 17 11

Schedule for TORUN (Code Tr)

Page 3

Parallax Measurement to 1.6GHz OH Masers in OH/IR star OH 138.0+7.4

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

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	19 Oct 2015	Day 292 ---								
18 20 40	J0322+6610	21 26 33	47.3	36.4	-6.0		-62.2	-14	34	No stop
18 22 10	---	21 28 03	47.4	36.5	-5.9		-62.5	76	35	18 20 41
18 22 10	OH138.0+7.2	21 28 03	46.9	37.2	-6.0		-61.4	-13	35	No stop
18 25 40	---	21 31 33	47.2	37.4	-5.9		-62.0	197	38	18 22 11
18 26 10	J0333+6536	21 32 04	46.5	36.7	-6.1		-60.7	15	38	18 26 10
18 27 40	---	21 33 34	46.6	36.8	-6.0		-60.9	90	40	18 26 11
18 27 40	OH138.0+7.2	21 33 34	47.4	37.6	-5.9		-62.4	-15	40	No stop
18 31 10	---	21 37 04	47.7	37.8	-5.8		-63.0	195	43	18 27 41
18 31 10	J0322+6610	21 37 04	48.2	37.2	-5.8		-64.1	-14	43	No stop
18 32 40	---	21 38 35	48.4	37.3	-5.8		-64.4	76	45	18 31 11
18 32 40	OH138.0+7.2	21 38 35	47.8	37.9	-5.8		-63.3	-13	45	No stop
18 36 10	---	21 42 05	48.1	38.2	-5.7		-63.9	197	48	18 32 41
18 36 40	J0333+6536	21 42 35	47.4	37.5	-5.9		-62.5	15	48	18 36 40
18 38 10	---	21 44 05	47.6	37.6	-5.9		-62.8	90	50	18 36 41
18 38 10	OH138.0+7.2	21 44 05	48.3	38.3	-5.7		-64.2	-15	50	No stop
18 41 40	---	21 47 36	48.7	38.5	-5.7		-64.9	195	53	18 38 11
18 41 40	J0322+6610	21 47 36	49.2	37.8	-5.6		-66.0	-13	53	No stop
18 43 10	---	21 49 06	49.3	37.9	-5.6		-66.3	77	54	18 41 41
18 43 10	OH138.0+7.2	21 49 06	48.8	38.6	-5.6		-65.1	-13	54	No stop
18 46 40	---	21 52 37	49.1	38.9	-5.6		-65.8	197	58	18 43 11
18 47 10	J0333+6536	21 53 07	48.4	38.2	-5.7		-64.4	15	58	18 47 10
18 48 40	---	21 54 37	48.5	38.3	-5.7		-64.6	90	59	18 47 11
18 48 40	OH138.0+7.2	21 54 37	49.3	39.0	-5.5		-66.1	-15	59	No stop
18 52 10	---	21 58 08	49.7	39.2	-5.5		-66.7	195	62	18 48 41
18 52 10	J0322+6610	21 58 08	50.2	38.5	-5.4		-67.9	-13	62	No stop
18 53 40	---	21 59 38	50.3	38.6	-5.4		-68.2	77	64	18 52 11
18 53 40	OH138.0+7.2	21 59 38	49.8	39.3	-5.4		-67.0	-13	64	No stop
18 57 10	---	22 03 09	50.1	39.5	-5.4		-67.7	197	67	18 53 41
18 57 40	J0333+6536	22 03 39	49.4	38.9	-5.5		-66.2	15	67	18 57 40
18 59 10	---	22 05 09	49.5	39.0	-5.5		-66.5	90	69	18 57 41

Schedule for TORUN (Code Tr)

Page 4

Parallax Measurement to 1.6GHz OH Masers in OH/IR star OH 138.0+7.4

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

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	19 Oct 2015	Day 292	---							
18 59 10	OH138.0+7.2	22 05 09	50.3	39.7	-5.4		-68.0	-15	69	No stop
19 02 40	---	22 08 40	50.7	39.9	-5.3		-68.7	195	72	18 59 11
19 02 40	J0322+6610	22 08 40	51.1	39.1	-5.3		-69.9	-13	72	No stop
19 04 10	---	22 10 10	51.3	39.2	-5.2		-70.2	77	74	19 02 41
19 04 10	OH138.0+7.2	22 10 10	50.8	40.0	-5.3		-68.9	-13	74	No stop
19 07 40	---	22 13 40	51.1	40.2	-5.2		-69.6	197	77	19 04 11
19 08 10	J0333+6536	22 14 10	50.4	39.6	-5.4		-68.1	15	77	19 08 10
19 09 40	---	22 15 41	50.5	39.7	-5.3		-68.4	90	78	19 08 11
19 09 40	OH138.0+7.2	22 15 41	51.3	40.3	-5.2		-69.9	-16	78	No stop
19 13 10	---	22 19 11	51.7	40.5	-5.1		-70.6	194	82	19 09 41
19 13 10	J0322+6610	22 19 11	52.1	39.6	-5.1		-71.8	-13	82	No stop
19 14 40	---	22 20 41	52.3	39.7	-5.1		-72.1	77	83	19 13 11
19 14 40	OH138.0+7.2	22 20 41	51.8	40.6	-5.1		-70.9	-13	83	No stop
19 18 10	---	22 24 12	52.2	40.7	-5.0		-71.5	197	87	19 14 41
19 18 40	J0333+6536	22 24 42	51.4	40.2	-5.2		-70.1	15	87	19 18 40
19 20 10	---	22 26 12	51.5	40.3	-5.2		-70.3	90	88	19 18 41
19 20 10	OH138.0+7.2	22 26 12	52.4	40.9	-5.0		-71.9	-16	88	No stop
19 23 40	---	22 29 43	52.7	41.0	-4.9		-72.5	194	91	19 20 11
19 23 40	J0322+6610	22 29 43	53.2	40.2	-4.9		-73.8	-13	91	No stop
19 25 10	---	22 31 13	53.3	40.2	-4.9		-74.1	77	93	19 23 41
19 25 10	OH138.0+7.2	22 31 13	52.9	41.1	-4.9		-72.8	-13	93	No stop
19 28 40	---	22 34 44	53.2	41.3	-4.9		-73.5	197	96	19 25 11
19 29 10	J0333+6536	22 35 14	52.4	40.7	-5.0		-72.0	14	96	19 29 10
19 30 40	---	22 36 44	52.6	40.8	-5.0		-72.3	90	98	19 29 11
19 30 40	OH138.0+7.2	22 36 44	53.4	41.4	-4.8		-73.8	-16	98	No stop
19 34 10	---	22 40 15	53.8	41.6	-4.8		-74.5	194	101	19 30 41
19 34 10	J0322+6610	22 40 15	54.2	40.6	-4.7		-75.9	-14	101	No stop
19 35 40	---	22 41 45	54.3	40.7	-4.7		-76.2	76	102	19 34 11
19 35 40	OH138.0+7.2	22 41 45	53.9	41.6	-4.7		-74.8	-14	102	No stop
19 39 10	---	22 45 16	54.3	41.8	-4.7		-75.5	196	106	19 35 41

Schedule for TORUN (Code Tr)

Page 5

Parallax Measurement to 1.6GHz OH Masers in OH/IR star OH 138.0+7.4

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

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	19 Oct 2015	Day 292	---							
19 39 40	J0333+6536	22 45 46	53.4	41.3	-4.8		-74.0	14	106	19 39 40
19 41 10	---	22 47 16	53.6	41.3	-4.8		-74.3	90	107	19 39 41
19 41 10	OH138.0+7.2	22 47 16	54.5	41.9	-4.7		-75.9	-16	107	No stop
19 44 40	---	22 50 46	54.8	42.0	-4.6		-76.5	194	111	19 41 11
19 44 40	J0322+6610	22 50 46	55.2	41.0	-4.6		-78.0	-14	111	No stop
19 46 10	---	22 52 17	55.4	41.1	-4.5		-78.2	76	112	19 44 41
19 46 10	OH138.0+7.2	22 52 17	55.0	42.1	-4.6		-76.8	-14	112	No stop
19 49 40	---	22 55 47	55.3	42.2	-4.5		-77.5	196	115	19 46 11
19 50 10	J0333+6536	22 56 17	54.5	41.7	-4.7		-76.0	14	115	19 50 10
19 51 40	---	22 57 48	54.6	41.8	-4.6		-76.3	90	117	19 50 11
19 51 40	OH138.0+7.2	22 57 48	55.5	42.3	-4.5		-77.9	-16	117	No stop
19 55 10	---	23 01 18	55.9	42.4	-4.4		-78.6	194	120	19 51 41
19 58 03	F0217+7349	23 04 12	61.4	25.8	-3.2		-109.4	126	120	19 58 03
20 03 03	---	23 09 13	61.7	25.6	-3.2		-110.8	300	125	19 58 04
20 04 10	J0322+6610	23 10 19	57.2	41.7	-4.2		-81.9	19	125	20 04 10
20 05 40	---	23 11 50	57.3	41.7	-4.2		-82.2	90	126	20 04 11
20 05 40	OH138.0+7.2	23 11 50	56.9	42.8	-4.2		-80.7	-14	126	No stop
20 09 10	---	23 15 20	57.3	42.9	-4.2		-81.4	196	130	20 05 41
20 09 40	J0333+6536	23 15 50	56.5	42.5	-4.3		-79.8	14	130	20 09 40
20 11 10	---	23 17 21	56.6	42.5	-4.3		-80.1	90	131	20 09 41
20 11 10	OH138.0+7.2	23 17 21	57.5	42.9	-4.2		-81.8	-16	131	No stop
20 14 40	---	23 20 51	57.9	43.0	-4.1		-82.5	194	135	20 11 11
20 14 40	J0322+6610	23 20 51	58.2	41.9	-4.1		-84.1	-15	135	No stop
20 16 10	---	23 22 21	58.4	41.9	-4.0		-84.4	75	136	20 14 41
20 16 10	OH138.0+7.2	23 22 21	58.0	43.1	-4.1		-82.8	-15	136	No stop
20 19 40	---	23 25 52	58.4	43.2	-4.0		-83.6	195	139	20 16 11
20 20 10	J0333+6536	23 26 22	57.5	42.8	-4.2		-82.0	14	139	20 20 10
20 21 40	---	23 27 52	57.7	42.8	-4.1		-82.3	90	141	20 20 11
20 21 40	OH138.0+7.2	23 27 52	58.6	43.2	-4.0		-84.0	-16	141	No stop
20 25 10	---	23 31 23	58.9	43.3	-3.9		-84.7	194	144	20 21 41

Schedule for TORUN (Code Tr)

Page 6

Parallax Measurement to 1.6GHz OH Masers in OH/IR star OH 138.0+7.4

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

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	19 Oct 2015	Day 292 ---								
20 25 10	J0322+6610	23 31 23	59.3	42.1	-3.9		-86.4	-15	144	No stop
20 26 40	---	23 32 53	59.4	42.1	-3.9		-86.7	75	146	20 25 11
20 26 40	OH138.0+7.2	23 32 53	59.1	43.3	-3.9		-85.1	-15	146	No stop
20 30 10	---	23 36 24	59.5	43.4	-3.8		-85.8	195	149	20 26 41
20 30 40	J0333+6536	23 36 54	58.6	43.1	-4.0		-84.2	14	149	20 30 40
20 32 10	---	23 38 24	58.8	43.1	-4.0		-84.5	90	150	20 30 41
20 32 10	OH138.0+7.2	23 38 24	59.7	43.4	-3.8		-86.2	-16	150	No stop
20 35 40	---	23 41 55	60.0	43.4	-3.7		-87.0	194	154	20 32 11
20 35 40	J0322+6610	23 41 55	60.3	42.2	-3.7		-88.7	-15	154	No stop
20 37 10	---	23 43 25	60.5	42.2	-3.7		-89.0	75	155	20 35 41
20 37 10	OH138.0+7.2	23 43 25	60.2	43.4	-3.7		-87.3	-15	155	No stop
20 40 40	---	23 46 55	60.5	43.5	-3.7		-88.1	195	159	20 37 11
20 41 10	J0333+6536	23 47 26	59.7	43.2	-3.8		-86.4	14	159	20 41 10
20 42 40	---	23 48 56	59.8	43.2	-3.8		-86.7	90	160	20 41 11
20 42 40	OH138.0+7.2	23 48 56	60.8	43.5	-3.6		-88.5	-16	160	No stop
20 46 10	---	23 52 26	61.1	43.5	-3.6		-89.3	194	163	20 42 41
20 46 10	J0322+6610	23 52 26	61.4	42.2	-3.5		-91.1	-15	163	No stop
20 47 40	---	23 53 57	61.5	42.2	-3.5		-91.5	75	165	20 46 11
20 47 40	OH138.0+7.2	23 53 57	61.3	43.5	-3.5		-89.7	-15	165	No stop
20 51 10	---	23 57 27	61.6	43.5	-3.5		-90.5	195	168	20 47 41
20 51 40	J0333+6536	23 57 57	60.8	43.3	-3.6		-88.7	14	168	20 51 40
20 53 10	---	23 59 28	60.9	43.3	-3.6		-89.1	90	170	20 51 41
20 53 10	OH138.0+7.2	23 59 28	61.8	43.5	-3.5		-90.9	-16	170	No stop
20 56 40	---	00 02 58	62.2	43.5	-3.4		-91.8	194	173	20 53 11
20 56 40	J0322+6610	00 02 58	62.4	42.1	-3.3		-93.6	-16	173	No stop
20 58 10	---	00 04 28	62.6	42.0	-3.3		-94.0	74	175	20 56 41
20 58 10	OH138.0+7.2	00 04 28	62.4	43.5	-3.4		-92.1	-16	175	No stop
21 01 40	---	00 07 59	62.7	43.4	-3.3		-92.9	194	178	20 58 11
21 02 10	J0333+6536	00 08 29	61.9	43.3	-3.4		-91.1	14	178	21 02 10
21 03 40	---	00 09 59	62.0	43.3	-3.4		-91.5	90	179	21 02 11

Schedule for TORUN (Code Tr)

Page 7

Parallax Measurement to 1.6GHz OH Masers in OH/IR star OH 138.0+7.4

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

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	19 Oct 2015	Day 292 ---								
21 03 40	OH138.0+7.2	00 09 59	62.9	43.4	-3.3		-93.4	-16	179	No stop
21 07 10	---	00 13 30	63.3	43.3	-3.2		-94.3	194	183	21 03 41
21 07 10	J0322+6610	00 13 30	63.5	41.9	-3.2		-96.2	-16	183	No stop
21 08 40	---	00 15 00	63.7	41.8	-3.1		-96.6	74	184	21 07 11
21 08 40	OH138.0+7.2	00 15 00	63.4	43.3	-3.2		-94.6	-16	184	No stop
21 12 10	---	00 18 31	63.8	43.2	-3.1		-95.5	194	187	21 08 41
21 12 40	J0333+6536	00 19 01	62.9	43.2	-3.3		-93.6	14	187	21 12 40
21 14 10	---	00 20 31	63.1	43.2	-3.2		-94.0	90	189	21 12 41
21 14 10	OH138.0+7.2	00 20 31	64.0	43.2	-3.1		-96.0	-16	189	No stop
21 17 40	---	00 24 02	64.4	43.1	-3.0		-96.9	194	192	21 14 11
21 17 40	J0322+6610	00 24 02	64.6	41.5	-3.0		-98.9	-16	192	No stop
21 19 10	---	00 25 32	64.7	41.5	-3.0		-99.3	74	194	21 17 41
21 19 10	OH138.0+7.2	00 25 32	64.5	43.1	-3.0		-97.3	-16	194	No stop
21 22 40	---	00 29 02	64.9	42.9	-3.0		-98.2	194	197	21 19 11
21 23 10	J0333+6536	00 29 32	64.0	43.0	-3.1		-96.2	14	197	21 23 10
21 24 40	---	00 31 03	64.2	43.0	-3.1		-96.6	90	199	21 23 11
21 24 40	OH138.0+7.2	00 31 03	65.1	42.9	-2.9		-98.7	-16	199	No stop
21 28 10	---	00 34 33	65.5	42.7	-2.9		-99.6	194	202	21 24 41
21 28 10	J0322+6610	00 34 33	65.6	41.1	-2.8		-101.7	-16	202	No stop
21 29 40	---	00 36 04	65.7	41.0	-2.8		-102.1	74	203	21 28 11
21 29 40	OH138.0+7.2	00 36 04	65.6	42.7	-2.8		-100.0	-16	203	No stop
21 33 10	---	00 39 34	66.0	42.5	-2.8		-100.9	194	207	21 29 41
21 33 40	J0333+6536	00 40 04	65.1	42.7	-2.9		-98.9	14	207	21 33 40
21 35 10	---	00 41 34	65.3	42.6	-2.9		-99.3	90	208	21 33 41
21 35 10	OH138.0+7.2	00 41 34	66.2	42.4	-2.8		-101.5	-16	208	No stop
21 38 40	---	00 45 05	66.5	42.2	-2.7		-102.5	194	212	21 35 11
21 38 40	J0322+6610	00 45 05	66.6	40.5	-2.6		-104.7	-17	212	No stop
21 40 10	---	00 46 35	66.8	40.4	-2.6		-105.1	73	213	21 38 41
21 40 10	OH138.0+7.2	00 46 35	66.7	42.1	-2.7		-102.9	-17	213	No stop
21 43 40	---	00 50 06	67.0	41.9	-2.6		-103.9	193	216	21 40 11

Schedule for TORUN (Code Tr)

Page 8

Parallax Measurement to 1.6GHz OH Masers in OH/IR star OH 138.0+7.4

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

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	19 Oct 2015	Day 292 ---								
21 44 10	J0333+6536	00 50 36	66.2	42.2	-2.7		-101.7	14	216	21 44 10
21 45 40	---	00 52 06	66.3	42.1	-2.7		-102.1	90	218	21 44 11
21 45 40	OH138.0+7.2	00 52 06	67.2	41.8	-2.6		-104.5	-16	218	No stop
21 49 10	---	00 55 37	67.6	41.6	-2.5		-105.5	194	221	21 45 41
21 49 10	J0322+6610	00 55 37	67.7	39.7	-2.5		-107.8	-17	221	No stop
21 50 40	---	00 57 07	67.8	39.6	-2.4		-108.2	73	223	21 49 11
21 50 40	OH138.0+7.2	00 57 07	67.7	41.4	-2.5		-105.9	-17	223	No stop
21 54 10	---	01 00 38	68.1	41.2	-2.4		-107.0	193	226	21 50 41
21 54 40	J0333+6536	01 01 08	67.2	41.6	-2.6		-104.7	14	226	21 54 40
21 56 10	---	01 02 38	67.4	41.5	-2.5		-105.1	90	227	21 54 41
21 56 10	OH138.0+7.2	01 02 38	68.3	41.0	-2.4		-107.6	-16	227	No stop
21 59 40	---	01 06 08	68.6	40.7	-2.3		-108.7	194	231	21 56 11
21 59 40	J0322+6610	01 06 08	68.7	38.8	-2.3		-111.1	-17	231	No stop
22 01 10	---	01 07 39	68.8	38.6	-2.3		-111.5	73	232	21 59 41
22 01 10	OH138.0+7.2	01 07 39	68.8	40.6	-2.3		-109.1	-17	232	No stop
22 04 40	---	01 11 09	69.1	40.2	-2.3		-110.3	193	236	22 01 11
22 05 10	J0333+6536	01 11 39	68.3	40.8	-2.4		-107.8	14	236	22 05 10
22 06 40	---	01 13 10	68.4	40.7	-2.4		-108.3	90	237	22 05 11
22 06 40	OH138.0+7.2	01 13 10	69.3	40.0	-2.2		-110.9	-16	237	No stop
22 10 10	---	01 16 40	69.6	39.6	-2.2		-112.1	194	240	22 06 41
22 12 35	F0102+5824	01 19 06	84.2	-20.2	0.3		156.6	11	240	22 12 35
22 17 35	---	01 24 07	83.9	-25.8	0.3		150.0	300	245	22 12 36

SETUP FILE INFORMATION:

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

===== Setup file: sess315.L128

Setup group: 10	Station: TORUN	Total bit rate: 128
Format: MARK5B	Bits per sample: 2	Sample rate: 4.000
Number of channels: 16	DBE type: DBBC_DDC	Speedup factor: 1.00

Disk used to record data.

1st LO=	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
Net SB=	L	L	U	U	L	L	U	U
	L	L	U	U	L	L	U	U
IF SB =	L	L	L	L	L	L	L	L
	L	L	L	L	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP
BBC =	1	5	1	5	2	6	2	6
	3	7	3	7	4	8	4	8
BBC SB=	U	U	L	L	U	U	L	L
	U	U	L	L	U	U	L	L
IF =	A1	B1	A1	B1	A1	B1	A1	B1
	A1	B1	A1	B1	A1	B1	A1	B1

The following frequency sets based on these setups were used.

Frequency Set: 5 Based on FREQ, BW, and/or DOPPLER in schedule. Used with PCAL = off

LO sum=	1609.54	1609.54	1609.54	1609.54	1613.54	1613.54	1613.54	1613.54
	1617.54	1617.54	1617.54	1617.54	1621.54	1621.54	1621.54	1621.54
BBC fr=	690.46	690.46	690.46	690.46	686.46	686.46	686.46	686.46
	682.46	682.46	682.46	682.46	678.46	678.46	678.46	678.46
Bandwd=	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Matching frequency sets: 5

Track assignments are:

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

barrel=roll_off

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)			Error
	(B1950)	(J2000)	(Date)	(mas)
* 3C84	03 16 29.567270	* 03 19 48.160100	03 20 52.909337	0.00
	41 19 51.91597	* 41 30 42.10310	41 33 58.82501	0.00
* F0217+7349	02 12 49.921919	* 02 17 30.813400	02 19 06.931617	0.00
	73 35 40.08567	* 73 49 32.62200	73 53 47.91098	0.00
* F0102+5824	00 59 43.470991	* 01 02 45.762400	01 03 46.937059	0.00
	58 08 04.84785	* 58 24 11.13700	58 29 20.27975	0.00
* J0322+6610	03 17 57.999024	* 03 22 27.228812	03 23 56.552757	0.00
	65 59 45.07766	* 66 10 28.30547	66 13 37.44240	0.00
* J0333+6536	03 29 25.878099	* 03 33 56.737993	03 35 26.330179	0.00
	65 26 52.21323	* 65 36 56.18412	65 39 51.80224	0.00
* OH138.0+7.2	03 20 41.852264	* 03 25 08.800001	03 26 37.249144	0.00
	65 21 32.90423	* 65 32 07.00001	65 35 13.10435	0.00

rk12dktr

RADIOASTRON AGN SURVEY

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 Survey

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

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 20 Oct 2015 Day 293 ---

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

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00

Next BBC frequencies: 732.00 732.00 732.00 732.00

Next scan bandwidths: 16.00 16.00 16.00 16.00

00 00 00	0003-066	03 06 49	19.6	228.2	3.0	26.8	0	0	00 00 00
00 14 30	---	03 21 21	17.9	231.5	3.2	28.2	870	28	00 00 01
00 15 00	0003-066	03 21 51	17.8	231.7	3.2	28.3	24	28	00 15 00
00 29 30	---	03 36 24	16.1	235.0	3.5	29.6	870	56	00 15 01
00 30 00	0003-066	03 36 54	16.0	235.1	3.5	29.7	24	56	00 30 00
00 44 30	---	03 51 26	14.2	238.3	3.7	30.9	870	84	00 30 01
00 45 00	0003-066	03 51 56	14.1	238.4	3.7	31.0	24	84	00 45 00
01 00 00	---	04 06 59	12.2	241.7	4.0	32.1	900	112	00 45 01

SETUP FILE INFORMATION:

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

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

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

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 28.687921	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 35.26492	0.00
	fake circumpolar target for a TS to look at			
* 0003-066	00 03 40.288767	* 00 06 13.892888	00 07 03.399051	0.00
J0006-0623	-06 40 17.29998	*-06 23 35.33541	-06 18 13.41081	0.00
	./rk12dk_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 33141 observations, RA-A03-04, RA-A02-1			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0003-066	152.1

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

rk12dltr

RADIOASTRON AGN SURVEY
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 Survey

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

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 20 Oct 2015 Day 293 ---

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

Next scan frequencies:	1668.00	1668.00	1668.00	1668.00					
Next BBC frequencies:	732.00	732.00	732.00	732.00					
Next scan bandwidths:	16.00	16.00	16.00	16.00					
03 00 00	0454-234	06 07 18	12.0	196.3	1.2	10.6	0	0	03 00 00
03 14 30	---	06 21 51	11.4	199.6	1.4	12.7	870	28	03 00 01
03 15 00	0454-234	06 22 21	11.3	199.7	1.4	12.8	24	28	03 15 00
03 29 30	---	06 36 53	10.5	203.0	1.7	14.8	870	56	03 15 01
03 30 00	0454-234	06 37 23	10.5	203.2	1.7	14.9	24	56	03 30 00
03 44 30	---	06 51 56	9.6	206.4	1.9	16.9	870	84	03 30 01
03 45 00	0454-234	06 52 26	9.6	206.5	1.9	17.0	24	84	03 45 00
04 00 00	---	07 07 28	8.5	209.8	2.2	19.0	900	112	03 45 01

SETUP FILE INFORMATION:

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

===== Setup file: ra18cm2.set

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

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

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

```

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 28.703216	0.00
	85 16 41.77889	* 85 00 00.00000	84 54 35.21631	0.00
	fake circumpolar target for a TS to look at			
* 0454-234	04 54 57.297216	* 04 57 03.179228	04 57 43.812917	0.00
J0457-2324	-23 29 28.31965	*-23 24 52.02024	-23 23 23.33380	0.00
	./rk12dl_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 69420 observations, RA-A03-04, RA-A02-1			

EFFECT OF SOLAR CORONA

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

```

Source      Sun distance (deg)
0454-234    120.8

```

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

```

f15m1tr

NETWORK MONITORING EXPERIMENT PI: Gabriele Surcis

Address: JIVE
Postbus 2
7990 AA Dwingeloo
The Netherlands

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

Observing mode:

Schedule for TORUN (Code Tr) Page 2
Network Monitoring Experiment

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are 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 20 Oct 2015 Day 293 ---

Next scan frequencies:	6643.49	6643.49	6643.49	6643.49	6659.49	6659.49	6659.49	6659.49	
	6675.49	6675.49	6675.49	6675.49	6691.49	6691.49	6691.49	6691.49	
Next BBC frequencies:	743.49	743.49	743.49	743.49	759.49	759.49	759.49	759.49	
	775.49	775.49	775.49	775.49	791.49	791.49	791.49	791.49	
Next scan bandwidths:	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	
	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	
11 00 00	3C345	14 08 37	60.7	101.2	-2.6	-50.0	0	0	11 00 00
11 05 00	---	14 13 38	61.4	102.5	-2.5	-49.7	300	19	11 00 01
11 06 00	3C345	14 14 38	61.5	102.7	-2.5	-49.7	54	19	11 06 00
11 10 00	---	14 18 39	62.1	103.8	-2.4	-49.4	240	35	11 06 01
11 14 00	3C345	14 22 39	62.7	104.9	-2.3	-49.0	233	35	11 14 00
11 20 00	---	14 28 40	63.6	106.6	-2.2	-48.5	360	58	11 14 01
11 22 00	3C345	14 30 41	63.9	107.2	-2.2	-48.3	113	58	11 22 00
11 30 00	---	14 38 42	65.0	109.5	-2.1	-47.4	480	88	11 22 01
11 32 00	3C345	14 40 42	65.3	110.2	-2.0	-47.2	113	88	11 32 00
11 40 00	---	14 48 44	66.4	112.8	-1.9	-46.1	480	119	11 32 01
11 42 00	3C345	14 50 44	66.7	113.4	-1.9	-45.8	113	119	11 42 00
11 50 00	---	14 58 45	67.8	116.2	-1.7	-44.5	480	150	11 42 01
11 52 00	3C345	15 00 46	68.1	117.0	-1.7	-44.1	113	150	11 52 00
12 00 00	---	15 08 47	69.1	120.0	-1.6	-42.6	480	181	11 52 01

SETUP FILE INFORMATION:

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

===== Setup file: sess315.M512

Setup group: 6 Station: TORUN Total bit rate: 512
 Format: MARK5B Bits per sample: 2 Sample rate: 16.000
 Number of channels: 16 DBE type: DBBC_DDC Speedup factor: 1.00

Disk used to record data.

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

The following frequency sets based on these setups were used.

Frequency Set: 7 Setup file default. Used with PCAL = off

LO sum=	6643.49	6643.49	6643.49	6643.49	6659.49	6659.49	6659.49	6659.49
	6675.49	6675.49	6675.49	6675.49	6691.49	6691.49	6691.49	6691.49
BBC fr=	743.49	743.49	743.49	743.49	759.49	759.49	759.49	759.49
	775.49	775.49	775.49	775.49	791.49	791.49	791.49	791.49
Bandwd=	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00

Matching frequency sets: 7 10

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
	(B1950)	(J2000)		(mas)
* 3C345	16 41 17.606228	* 16 42 58.809966	16 43 29.307049	0.76
J1642+3948	39 54 10.81496	* 39 48 36.99402	39 47 15.29573	0.52

6.7GHz CH₃OH MASER POLARIZATION TOWARDS MASSIVE PROTOSTARS. II.PI: *G. Surcis*

Address: JIV ERIC EMAIL: surcis@jive.nl

Observing mode: Polarization observations of 1 source at 6.7 GHz (32 Mb/s)

Schedule for TORUN (Code Tr)

Page 2

6.7GHz CH₃OH maser polarization towards massive protostars. II.

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

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	TPStart SYNC

--- Tue	20 Oct 2015	Day 293 ---								
Next scan frequencies:		6664.85	6664.85	6664.85	6664.85					
Next BBC frequencies:		764.85	764.85	764.85	764.85					
Next scan bandwidths:		2.00	2.00	2.00	2.00					

13 00 00	J2202+4216	16 08 57	33.3	62.2	-5.9		-45.9	0	0	13 00 00
13 10 00	=VR422201	16 18 58	34.7	63.7	-5.7		-46.8	600	2	13 00 01
13 13 50	G31.28+0.06	16 22 49	27.5	137.8	-2.4		-23.8	67	2	13 13 50
13 23 50	---	16 32 51	28.5	140.4	-2.3		-22.5	600	5	13 13 51
13 24 20	G31.28+0.06	16 33 21	28.6	140.6	-2.3		-22.4	24	5	13 24 20
13 34 20	---	16 43 22	29.5	143.2	-2.1		-21.1	600	7	13 24 21
13 34 50	G31.28+0.06	16 43 53	29.6	143.4	-2.1		-21.0	24	7	13 34 50
13 44 50	---	16 53 54	30.4	146.1	-1.9		-19.6	600	10	13 34 51
13 45 20	G31.28+0.06	16 54 24	30.5	146.2	-1.9		-19.5	24	10	13 45 20
13 55 20	---	17 04 26	31.3	149.0	-1.7		-18.0	600	12	13 45 21
13 59 20	J2202+4216	17 08 27	41.5	71.4	-4.9		-50.4	69	12	13 59 20
14 09 20	=VR422201	17 18 28	43.0	73.0	-4.7		-51.0	600	14	13 59 21
14 19 10	J1331+3030	17 28 20	42.1	266.2	3.9		44.0	190	14	14 19 10
14 29 00	=3C286	17 38 11	40.6	268.2	4.1		44.1	590	17	14 19 11
14 29 30	J1331+3030	17 38 42	40.6	268.3	4.1		44.1	24	17	14 29 30
14 39 30	=3C286	17 48 43	39.1	270.3	4.3		44.1	600	19	14 29 31
14 45 30	G31.28+0.06	17 54 44	34.3	163.5	-0.9		-9.8	130	19	14 45 30
14 55 20	---	18 04 36	34.7	166.5	-0.7		-8.1	590	22	14 45 31
14 55 50	G31.28+0.06	18 05 06	34.7	166.6	-0.7		-8.0	24	22	14 55 50
15 05 50	---	18 15 07	35.0	169.6	-0.6		-6.2	600	24	14 55 51
15 10 10	J2202+4216	18 19 28	51.9	83.1	-3.7		-53.8	71	24	15 10 10
15 20 10	=VR422201	18 29 30	53.4	84.9	-3.6		-54.0	600	26	15 10 11
15 24 40	G31.28+0.06	18 34 01	35.4	175.4	-0.3		-2.8	75	26	15 24 40
15 34 40	---	18 44 02	35.5	178.5	-0.1		-0.9	600	29	15 24 41
15 35 10	G31.28+0.06	18 44 32	35.5	178.6	-0.1		-0.8	24	29	15 35 10
15 45 10	---	18 54 34	35.5	181.7	0.1		1.0	600	31	15 35 11
15 45 40	G31.28+0.06	18 55 04	35.5	181.9	0.1		1.1	24	31	15 45 40
15 55 40	---	19 05 06	35.4	184.9	0.3		3.0	600	34	15 45 41

Schedule for TORUN (Code Tr)

Page 3

6.7GHz CH3OH maser polarization towards massive protostars. II.

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

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	20 Oct 2015	Day 293					---		
15 56 10	G31.28+0.06	19 05 36	35.4	185.1	0.3		3.1	24	34	15 56 10
16 04 10	---	19 13 37	35.2	187.5	0.4		4.5	480	35	15 56 11
16 08 50	J2202+4216	19 18 18	60.7	94.6	-2.8		-54.1	79	35	16 08 50
16 18 50	=VR422201	19 28 19	62.2	96.9	-2.6		-53.8	600	38	16 08 51
16 23 40	G31.28+0.06	19 33 10	34.7	193.5	0.7		8.0	83	38	16 23 40
16 33 40	---	19 43 12	34.3	196.5	0.9		9.8	600	40	16 23 41
16 34 10	G31.28+0.06	19 43 42	34.3	196.6	0.9		9.9	24	40	16 34 10
16 44 10	---	19 53 44	33.8	199.6	1.1		11.6	600	43	16 34 11
16 44 40	G31.28+0.06	19 54 14	33.8	199.7	1.1		11.7	24	43	16 44 40
16 54 40	---	20 04 15	33.3	202.7	1.3		13.4	600	45	16 44 41
16 55 10	G31.28+0.06	20 04 45	33.2	202.8	1.3		13.5	24	45	16 55 10
17 05 10	---	20 14 47	32.6	205.7	1.4		15.1	600	48	16 55 11
17 10 10	J2202+4216	20 19 48	69.7	111.5	-1.7		-49.1	95	48	17 10 10
17 20 10	=VR422201	20 29 50	71.1	115.1	-1.6		-47.4	600	50	17 10 11
17 25 20	G31.28+0.06	20 35 00	31.2	211.4	1.8		18.2	103	50	17 25 20
17 35 20	---	20 45 02	30.3	214.2	1.9		19.7	600	52	17 25 21
17 35 50	G31.28+0.06	20 45 32	30.3	214.3	1.9		19.8	24	52	17 35 50
17 45 50	---	20 55 34	29.4	217.0	2.1		21.2	600	55	17 35 51
17 46 20	G31.28+0.06	20 56 04	29.4	217.2	2.1		21.3	24	55	17 46 20
17 56 20	---	21 06 05	28.4	219.8	2.3		22.6	600	57	17 46 21
17 56 50	G31.28+0.06	21 06 36	28.4	219.9	2.3		22.7	24	57	17 56 50
18 06 50	---	21 16 37	27.4	222.5	2.5		24.0	600	60	17 56 51
18 12 00	J2202+4216	21 21 48	77.2	142.9	-0.7		-29.3	110	60	18 12 00
18 22 00	=VR422201	21 31 50	78.0	150.7	-0.5		-23.4	600	62	18 12 01
18 25 00	J2136+0041	21 34 50	37.7	179.2	-0.0		-0.5	15	62	18 25 00
18 34 50	=2134+00	21 44 42	37.7	182.3	0.1		1.4	590	64	18 25 01
18 37 50	G31.28+0.06	21 47 42	24.0	230.3	3.0		27.5	70	64	18 37 50
18 47 40	---	21 57 34	22.9	232.7	3.1		28.5	590	67	18 37 51
18 48 10	G31.28+0.06	21 58 04	22.8	232.8	3.2		28.6	24	67	18 48 10
18 57 10	---	22 07 05	21.7	234.9	3.3		29.4	540	69	18 48 11

Schedule for TORUN (Code Tr)

Page 4

6.7GHz CH30H maser polarization towards massive protostars. II.

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

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 20 Oct 2015	Day 293 ---								
18 57 40	G31.28+0.06	22 07 36	21.7	235.0	3.3		29.5	24	69	18 57 40
19 06 40	---	22 16 37	20.5	237.1	3.5		30.3	540	71	18 57 41
19 11 30	J2202+4216	22 21 28	78.8	197.5	0.3		14.2	57	71	19 11 30
19 20 10	=VR422201	22 30 09	78.4	205.3	0.4		20.3	520	73	19 11 31
19 25 00	G31.28+0.06	22 35 00	18.2	241.3	3.8		31.8	51	73	19 25 00
19 35 00	---	22 45 02	16.8	243.5	3.9		32.5	600	75	19 25 01
19 35 30	G31.28+0.06	22 45 32	16.8	243.6	3.9		32.6	24	75	19 35 30
19 45 30	---	22 55 33	15.4	245.8	4.1		33.2	600	78	19 35 31
19 50 00	J2202+4216	23 00 04	75.7	227.1	0.9		36.5	30	78	19 50 00
20 00 00	=VR422201	23 10 06	74.5	232.7	1.1		40.3	600	80	19 50 01

SETUP FILE INFORMATION:

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

===== Setup file: sess315.M32

Setup group: 6	Station: TORUN	Total bit rate: 32
Format: MARK5B	Bits per sample: 2	Sample rate: 4.000
Number of channels: 4	DBE type: DBBC_DDC	Speedup factor: 1.00

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

Frequency Set:   6  Based on FREQ, BW, and/or DOPPLER in schedule.  Used with PCAL = off
LO sum=    6664.85  6664.85  6664.85  6664.85
BBC fr=     764.85  764.85  764.85  764.85
Bandwd=      2.00   2.00   2.00   2.00
Matching frequency sets:   6   9

```

Track assignments are:

```

track1=  2,  6,  4,  8
barrel=roll_off

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
* G31.28+0.06	18 45 36.925679	* 18 48 12.390000	18 49 01.013795	0.00
	-01 29 46.32360	*-01 26 22.60000	-01 25 00.45257	0.00
3C286	13 28 49.657758	* 13 31 08.288051	13 31 50.165104	0.18
* J1331+3030	30 45 58.64059	* 30 30 32.95924	30 25 50.31469	0.17
2134+00	21 34 05.207371	* 21 36 38.586306	21 37 27.468963	0.73
* J2136+0041	00 28 25.07998	* 00 41 54.21280	00 46 23.52804	1.22
VR422201	22 00 39.362505	* 22 02 43.291372	22 03 23.794211	0.00
* J2202+4216	42 02 08.59077	* 42 16 39.97990	42 21 36.68770	0.00

rk12dmtr

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

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

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

Schedule for TORUN (Code Tr)

Page 2

RadioAstron AGN Survey

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

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 21 Oct 2015 Day 294 ---

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

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00

Next BBC frequencies: 736.00 736.00 736.00 736.00

Next scan bandwidths: 16.00 16.00 16.00 16.00

00 00 00	0716+714	03 10 45	57.6	32.3	-4.2	-90.0	0	0	00 00 00
00 14 30	---	03 25 18	58.7	32.2	-4.0	-93.5	870	28	00 00 01
00 15 00	0716+714	03 25 48	58.8	32.2	-4.0	-93.6	24	28	00 15 00
00 29 30	---	03 40 20	59.9	32.0	-3.7	-97.2	870	56	00 15 01
00 30 00	0716+714	03 40 50	60.0	32.0	-3.7	-97.4	24	56	00 30 00
00 44 30	---	03 55 23	61.1	31.6	-3.5	-101.1	870	84	00 30 01
00 45 00	0716+714	03 55 53	61.2	31.6	-3.5	-101.3	24	84	00 45 00
01 00 00	---	04 10 55	62.3	31.0	-3.2	-105.4	900	112	00 45 01

SETUP FILE INFORMATION:

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

===== Setup file: ra6cm2.set

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

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 28.815726	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 34.88062	0.00
	fake circumpolar target for a TS to look at			
* 0716+714	07 16 13.029739	* 07 21 53.448474	07 23 40.316366	0.00
J0721+7120	71 26 15.17406	* 71 20 36.36340	71 18 20.52173	0.00
	./rk12dm_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 42370 observations, RA-A03-04, RA-A02-1			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0716+714	101.4

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of $60 \deg F^{-0.6}$ 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

rk12dntr

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

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

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

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN Survey

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

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 21 Oct 2015 Day 294 ---

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

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00

Next BBC frequencies: 736.00 736.00 736.00 736.00

Next scan bandwidths: 16.00 16.00 16.00 16.00

03 00 00	0529+075	06 11 15	43.8	193.0	0.6	7.8	0	0	03 00 00
03 14 30	---	06 25 47	43.2	197.9	0.9	10.7	870	28	03 00 01
03 15 00	0529+075	06 26 17	43.2	198.1	0.9	10.8	24	28	03 15 00
03 29 30	---	06 40 50	42.4	202.9	1.1	13.6	870	56	03 15 01
03 30 00	0529+075	06 41 20	42.4	203.1	1.1	13.7	24	56	03 30 00
03 44 30	---	06 55 52	41.5	207.7	1.4	16.4	870	84	03 30 01
03 45 00	0529+075	06 56 22	41.4	207.9	1.4	16.5	24	84	03 45 00
04 00 00	---	07 11 25	40.3	212.6	1.6	19.0	900	112	03 45 01

SETUP FILE INFORMATION:

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

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

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

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

Frequency Set:   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 28.832478	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 34.83346	0.00
	fake circumpolar target for a TS to look at			
* 0529+075	05 29 56.495315	* 05 32 38.998458	05 33 31.069700	0.00
J0532+0732	07 30 38.14404	* 07 32 43.34492	07 33 16.57609	0.00
	./rk12dn_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 107 observations, RA-A03-04			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0529+075	122.8

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 $60 \deg F^{-0.6}$ 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

rk12dotr

RADIOASTRON AGN SURVEY
PI: Yuri Kovalev

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

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

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

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
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 21 Oct 2015 Day 294 ---

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

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

07 00 00	0730+504	10 11 54	65.9	279.4	2.6	68.1	0	0	07 00 00
07 14 30	---	10 26 27	63.7	281.4	2.9	67.2	870	28	07 00 01
07 15 00	0730+504	10 26 57	63.6	281.5	2.9	67.2	24	28	07 15 00
07 29 30	---	10 41 29	61.5	283.5	3.1	66.1	870	56	07 15 01
07 30 00	0730+504	10 41 59	61.4	283.6	3.1	66.1	24	56	07 30 00
07 44 30	---	10 56 32	59.3	285.5	3.4	65.0	870	84	07 30 01
07 45 00	0730+504	10 57 02	59.2	285.6	3.4	65.0	24	84	07 45 00
08 00 00	---	11 12 04	57.1	287.6	3.6	63.7	900	112	07 45 01

SETUP FILE INFORMATION:

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

===== Setup file: ra6cm2.set

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

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 28.855030	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 34.77095	0.00
	fake circumpolar target for a TS to look at			
* 0730+504	07 30 04.386239	* 07 33 52.520582	07 35 04.279917	0.00
J0733+5022	50 28 40.45211	* 50 22 09.06206	50 19 44.01108	0.00
	./rk12do_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 574 observations, RA-A03-04			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0730+504	99.3

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 $60 \deg F^{-0.6}$ 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

n15m2tr

NETWORK MONITORING EXPERIMENT PI: Gabriele Surcis

Address: JIVE

Schedule for TORUN (Code Tr)

Page 2

Network Monitoring Experiment

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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 21 Oct 2015		Day 294 ---								
Next scan frequencies:		6661.49	6661.49	6661.49	6661.49	6661.49	6665.49	6665.49	6665.49	6665.49
		6669.49	6669.49	6669.49	6669.49	6669.49	6673.49	6673.49	6673.49	6673.49
Next BBC frequencies:		761.49	761.49	761.49	761.49	761.49	765.49	765.49	765.49	765.49
		769.49	769.49	769.49	769.49	769.49	773.49	773.49	773.49	773.49
Next scan bandwidths:		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

09 00 00	DA193	12 12 14	28.7	-60.9	6.3		43.1	0	0	09 00 00
09 05 00	---	12 17 15	28.1	-60.1	6.3		42.7	300	5	09 00 01

09 06 00	DA193	12 18 15	27.9	-60.0	6.4		42.6	54	5	09 06 00
09 11 00	---	12 23 16	27.3	-59.2	6.4		42.2	300	10	09 06 01

09 12 00	DA193	12 24 16	27.2	-59.0	6.5		42.1	54	10	09 12 00
09 17 00	---	12 29 17	26.5	-58.2	6.5		41.6	300	14	09 12 01

09 17 30	DA193	12 29 47	26.5	-58.1	6.6		41.6	24	14	09 17 30
09 18 30	---	12 30 47	26.3	-57.9	6.6		41.5	60	15	09 17 31

09 19 00	0548+378	12 31 17	24.4	-58.7	6.6		40.6	9	15	09 19 00
09 20 00	---	12 32 17	24.3	-58.6	6.6		40.5	60	16	09 19 01

09 20 30	DA193	12 32 47	26.1	-57.6	6.6		41.3	9	16	09 20 30
09 21 30	---	12 33 47	25.9	-57.5	6.6		41.2	60	17	09 20 31

09 22 00	0548+378	12 34 18	24.0	-58.2	6.7		40.3	9	17	09 22 00
09 23 00	---	12 35 18	23.9	-58.1	6.7		40.2	60	18	09 22 01

09 23 30	DA193	12 35 48	25.7	-57.1	6.7		41.0	9	18	09 23 30
09 24 30	---	12 36 48	25.6	-57.0	6.7		41.0	60	19	09 23 31

09 25 00	0548+378	12 37 18	23.6	-57.7	6.7		40.1	9	19	09 25 00
09 26 00	---	12 38 18	23.5	-57.6	6.7		40.0	60	20	09 25 01

09 26 30	DA193	12 38 48	25.3	-56.7	6.7		40.8	9	20	09 26 30
09 27 30	---	12 39 48	25.2	-56.5	6.7		40.7	60	21	09 26 31

09 28 00	0548+378	12 40 19	23.3	-57.2	6.8		39.8	9	21	09 28 00
09 29 00	---	12 41 19	23.1	-57.1	6.8		39.7	60	22	09 28 01

09 29 30	DA193	12 41 49	24.9	-56.2	6.8		40.5	9	22	09 29 30
09 30 30	---	12 42 49	24.8	-56.0	6.8		40.4	60	23	09 29 31

09 31 00	0548+378	12 43 19	22.9	-56.7	6.8		39.5	9	23	09 31 00
09 32 00	---	12 44 19	22.8	-56.6	6.8		39.4	60	24	09 31 01

Schedule for TORUN (Code Tr)

Page 3

Network Monitoring Experiment

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	21 Oct 2015	Day 294 ---								
09 32 30	DA193	12 44 49	24.6	-55.7	6.8		40.2	9	24	09 32 30
09 33 30	---	12 45 49	24.4	-55.5	6.8		40.1	60	25	09 32 31
09 34 00	0548+378	12 46 20	22.5	-56.2	6.9		39.3	9	25	09 34 00
09 35 00	---	12 47 20	22.4	-56.1	6.9		39.2	60	26	09 34 01
09 35 30	DA193	12 47 50	24.2	-55.2	6.9		39.9	9	26	09 35 30
09 36 30	---	12 48 50	24.1	-55.0	6.9		39.8	60	27	09 35 31
09 37 00	0548+378	12 49 20	22.1	-55.7	6.9		39.0	9	27	09 37 00
09 38 00	---	12 50 20	22.0	-55.6	6.9		38.9	60	28	09 37 01
09 38 30	DA193	12 50 50	23.8	-54.7	6.9		39.7	9	28	09 38 30
09 39 30	---	12 51 50	23.7	-54.6	6.9		39.6	60	29	09 38 31
09 40 00	0548+378	12 52 21	21.8	-55.2	7.0		38.7	9	29	09 40 00
09 41 00	---	12 53 21	21.6	-55.1	7.0		38.6	60	30	09 40 01
09 41 30	DA193	12 53 51	23.5	-54.2	7.0		39.4	9	30	09 41 30
09 42 30	---	12 54 51	23.3	-54.1	7.0		39.3	60	31	09 41 31
09 43 00	0548+378	12 55 21	21.4	-54.7	7.0		38.4	9	31	09 43 00
09 44 00	---	12 56 21	21.3	-54.6	7.0		38.3	60	32	09 43 01
09 44 30	DA193	12 56 51	23.1	-53.7	7.0		39.1	9	32	09 44 30
09 45 30	---	12 57 51	23.0	-53.6	7.0		39.0	60	33	09 44 31
09 46 00	0548+378	12 58 21	21.0	-54.2	7.1		38.1	9	33	09 46 00
09 47 00	---	12 59 22	20.9	-54.1	7.1		38.0	60	34	09 46 01
09 47 30	DA193	12 59 52	22.7	-53.3	7.1		38.8	9	34	09 47 30
09 48 30	---	13 00 52	22.6	-53.1	7.1		38.7	60	35	09 47 31
09 49 00	0548+378	13 01 22	20.7	-53.7	7.1		37.9	9	35	09 49 00
09 50 00	---	13 02 22	20.5	-53.6	7.1		37.8	60	36	09 49 01
09 50 30	DA193	13 02 52	22.4	-52.8	7.1		38.5	9	36	09 50 30
09 51 30	---	13 03 52	22.2	-52.6	7.1		38.4	60	37	09 50 31
09 52 00	0548+378	13 04 22	20.3	-53.2	7.2		37.6	9	37	09 52 00
09 53 00	---	13 05 23	20.2	-53.1	7.2		37.5	60	37	09 52 01
09 53 30	DA193	13 05 53	22.0	-52.3	7.2		38.2	9	37	09 53 30
09 54 30	---	13 06 53	21.9	-52.1	7.2		38.1	60	38	09 53 31

Schedule for TORUN (Code Tr)

Page 4

Network Monitoring Experiment

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	21 Oct 2015	Day 294 ---								
09 55 00	0548+378	13 07 23	19.9	-52.7	7.2		37.3	9	38	09 55 00
09 56 00	---	13 08 23	19.8	-52.6	7.2		37.2	60	39	09 55 01
09 56 30	DA193	13 08 53	21.7	-51.8	7.2		37.9	9	39	09 56 30
09 57 30	---	13 09 53	21.5	-51.6	7.2		37.8	60	40	09 56 31
09 58 00	0548+378	13 10 23	19.6	-52.2	7.3		37.0	9	40	09 58 00
09 59 00	---	13 11 24	19.5	-52.1	7.3		36.9	60	41	09 58 01
09 59 30	DA193	13 11 54	21.3	-51.3	7.3		37.6	9	41	09 59 30
10 00 30	---	13 12 54	21.2	-51.1	7.3		37.5	60	42	09 59 31
10 01 00	0548+378	13 13 24	19.2	-51.7	7.3		36.7	9	42	10 01 00
10 02 00	---	13 14 24	19.1	-51.6	7.4		36.6	60	43	10 01 01
10 05 00	J0927+3902	13 17 25	49.0	273.7	3.8	W	50.4	-489	43	10 05 00
10 07 00	=4C39.25	13 19 25	48.7	274.1	3.9	W	50.4	0	45	10 05 01
10 08 00	J0927+3902	13 20 25	48.6	274.3	3.9		50.4	54	45	10 08 00
10 13 00	=4C39.25	13 25 26	47.8	275.2	4.0		50.3	300	50	10 08 01
10 15 00	J0927+3902	13 27 26	47.5	275.6	4.0		50.2	114	50	10 15 00
10 25 00	=4C39.25	13 37 28	46.0	277.4	4.2		50.0	600	60	10 15 01
10 26 00	J0927+3902	13 38 28	45.9	277.6	4.2		50.0	54	60	10 26 00
10 31 00	=4C39.25	13 43 29	45.1	278.5	4.3		49.8	300	64	10 26 01
10 37 40	3C286	13 50 10	67.1	190.2	0.3		7.1	205	64	10 37 40
10 47 40	---	14 00 12	66.8	195.6	0.5		10.8	600	74	10 37 41
10 48 40	3C286	14 01 12	66.7	196.2	0.5		11.2	53	74	10 48 40
10 56 40	---	14 09 13	66.3	200.4	0.6		14.1	480	82	10 48 41
10 59 45	3C345	14 12 19	61.2	102.1	-2.5		-49.8	-26	82	10 59 45
11 02 45	---	14 15 19	61.6	102.9	-2.5		-49.6	154	85	10 59 46
11 03 15	3C345	14 15 49	61.7	103.1	-2.5		-49.6	24	85	11 03 15
11 04 15	---	14 16 49	61.9	103.3	-2.4		-49.5	60	86	11 03 16
11 04 45	J1640+3946	14 17 19	62.3	104.2	-2.4		-49.2	17	86	11 04 45
11 05 45	=NRA0512	14 18 20	62.4	104.4	-2.4		-49.2	60	87	11 04 46
11 06 15	3C345	14 18 50	62.2	103.8	-2.4		-49.4	18	87	11 06 15
11 07 15	---	14 19 50	62.3	104.1	-2.4		-49.3	60	87	11 06 16

Schedule for TORUN (Code Tr)

Page 5

Network Monitoring Experiment

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	TPStart SYNC

--- Wed	21 Oct 2015	Day 294	---							
11 07 45	J1640+3946	14 20 20	62.7	105.0	-2.3		-49.0	17	87	11 07 45
11 08 45	=NRA0512	14 21 20	62.9	105.3	-2.3		-48.9	60	88	11 07 46
11 09 15	3C345	14 21 50	62.6	104.7	-2.4		-49.1	17	88	11 09 15
11 10 15	---	14 22 50	62.7	104.9	-2.3		-49.0	60	89	11 09 16
11 10 45	J1640+3946	14 23 20	63.2	105.8	-2.3		-48.7	17	89	11 10 45
11 11 45	=NRA0512	14 24 21	63.3	106.1	-2.3		-48.6	60	90	11 10 46
11 12 15	3C345	14 24 51	63.0	105.5	-2.3		-48.9	17	90	11 12 15
11 13 15	---	14 25 51	63.2	105.8	-2.3		-48.8	60	91	11 12 16
11 13 45	J1640+3946	14 26 21	63.6	106.7	-2.2		-48.4	17	91	11 13 45
11 14 45	=NRA0512	14 27 21	63.7	107.0	-2.2		-48.3	60	92	11 13 46
11 15 15	3C345	14 27 51	63.5	106.3	-2.3		-48.6	17	92	11 15 15
11 16 15	---	14 28 51	63.6	106.6	-2.2		-48.5	60	93	11 15 16
11 16 45	J1640+3946	14 29 21	64.0	107.5	-2.2		-48.1	17	93	11 16 45
11 17 45	=NRA0512	14 30 22	64.2	107.8	-2.2		-48.0	60	94	11 16 46
11 18 15	3C345	14 30 52	63.9	107.2	-2.2		-48.3	17	94	11 18 15
11 19 15	---	14 31 52	64.0	107.5	-2.2		-48.2	60	95	11 18 16
11 19 45	J1640+3946	14 32 22	64.4	108.4	-2.1		-47.8	17	95	11 19 45
11 20 45	=NRA0512	14 33 22	64.6	108.7	-2.1		-47.7	60	96	11 19 46
11 21 15	3C345	14 33 52	64.3	108.1	-2.2		-48.0	17	96	11 21 15
11 22 15	---	14 34 52	64.5	108.4	-2.1		-47.9	60	97	11 21 16
11 22 45	J1640+3946	14 35 22	64.9	109.3	-2.1		-47.5	17	97	11 22 45
11 23 45	=NRA0512	14 36 23	65.0	109.7	-2.1		-47.4	60	98	11 22 46
11 24 15	3C345	14 36 53	64.8	109.0	-2.1		-47.6	17	98	11 24 15
11 25 15	---	14 37 53	64.9	109.3	-2.1		-47.5	60	99	11 24 16
11 25 45	J1640+3946	14 38 23	65.3	110.3	-2.0		-47.1	17	99	11 25 45
11 26 45	=NRA0512	14 39 23	65.4	110.6	-2.0		-47.0	60	100	11 25 46
11 27 15	3C345	14 39 53	65.2	109.9	-2.1		-47.3	17	100	11 27 15
11 28 15	---	14 40 53	65.3	110.2	-2.0		-47.2	60	101	11 27 16
11 28 45	J1640+3946	14 41 23	65.7	111.2	-2.0		-46.7	17	101	11 28 45
11 29 45	=NRA0512	14 42 24	65.9	111.6	-2.0		-46.6	60	102	11 28 46

Schedule for TORUN (Code Tr)

Page 6

Network Monitoring Experiment

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	21 Oct 2015	Day 294 ---								
11 30 15	3C345	14 42 54	65.6	110.9	-2.0		-46.9	17	102	11 30 15
11 31 15	---	14 43 54	65.7	111.2	-2.0		-46.8	60	103	11 30 16
11 31 45	J1640+3946	14 44 24	66.1	112.2	-1.9		-46.3	16	103	11 31 45
11 32 45	=NRA0512	14 45 24	66.3	112.5	-1.9		-46.2	60	104	11 31 46
11 33 15	3C345	14 45 54	66.0	111.8	-2.0		-46.5	17	104	11 33 15
11 34 15	---	14 46 54	66.2	112.2	-1.9		-46.4	60	105	11 33 16
11 34 45	J1640+3946	14 47 24	66.6	113.2	-1.9		-45.9	16	105	11 34 45
11 35 45	=NRA0512	14 48 25	66.7	113.5	-1.9		-45.7	60	106	11 34 46
11 36 15	3C345	14 48 55	66.4	112.8	-1.9		-46.1	17	106	11 36 15
11 37 15	---	14 49 55	66.6	113.2	-1.9		-45.9	60	107	11 36 16
11 37 45	J1640+3946	14 50 25	67.0	114.2	-1.8		-45.4	16	107	11 37 45
11 38 45	=NRA0512	14 51 25	67.1	114.6	-1.8		-45.3	60	108	11 37 46
11 39 15	3C345	14 51 55	66.9	113.8	-1.9		-45.6	17	108	11 39 15
11 40 15	---	14 52 55	67.0	114.2	-1.8		-45.5	60	109	11 39 16
11 40 45	J1640+3946	14 53 25	67.4	115.3	-1.8		-44.9	16	109	11 40 45
11 41 45	=NRA0512	14 54 26	67.5	115.6	-1.8		-44.8	60	110	11 40 46
11 42 15	3C345	14 54 56	67.3	114.9	-1.8		-45.1	17	110	11 42 15
11 43 15	---	14 55 56	67.4	115.2	-1.8		-45.0	60	111	11 42 16
11 43 45	J1640+3946	14 56 26	67.8	116.4	-1.7		-44.4	16	111	11 43 45
11 44 45	=NRA0512	14 57 26	67.9	116.7	-1.7		-44.2	60	112	11 43 46
11 45 15	3C345	14 57 56	67.7	115.9	-1.8		-44.6	16	112	11 45 15
11 46 15	---	14 58 56	67.8	116.3	-1.7		-44.5	60	112	11 45 16
11 46 45	J1640+3946	14 59 26	68.2	117.5	-1.7		-43.9	16	112	11 46 45
11 47 45	=NRA0512	15 00 26	68.3	117.8	-1.7		-43.7	60	113	11 46 46
11 48 15	3C345	15 00 57	68.1	117.0	-1.7		-44.1	16	113	11 48 15
11 49 15	---	15 01 57	68.2	117.4	-1.7		-43.9	60	114	11 48 16
11 50 15	3C345	15 02 57	68.3	117.8	-1.7		-43.7	53	114	11 50 15
11 55 15	---	15 07 58	69.0	119.7	-1.6		-42.7	300	119	11 50 16
11 57 15	3C345	15 09 58	69.3	120.5	-1.6		-42.3	113	119	11 57 15
12 00 00	---	15 12 44	69.6	121.6	-1.5		-41.7	165	122	11 57 16

SETUP FILE INFORMATION:

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

===== Setup file: sess315.M128

Setup group: 6	Station: TORUN	Total bit rate: 128
Format: MARK5B	Bits per sample: 2	Sample rate: 4.000
Number of channels: 16	DBE type: DBBC_DDC	Speedup factor: 1.00

Disk used to record data.

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

The following frequency sets based on these setups were used.

Frequency Set: 7 Setup file default. Used with PCAL = off

LO sum=	6661.49	6661.49	6661.49	6661.49	6665.49	6665.49	6665.49	6665.49
	6669.49	6669.49	6669.49	6669.49	6673.49	6673.49	6673.49	6673.49
BBC fr=	761.49	761.49	761.49	761.49	765.49	765.49	765.49	765.49
	769.49	769.49	769.49	769.49	773.49	773.49	773.49	773.49
Bandwd=	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Matching frequency sets: 7 10

Track assignments are:

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

barrel=roll_off

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)			Error
	(B1950)	(J2000)	(Date)	(mas)
* 0548+378	05 48 52.231755	* 05 52 17.936921	05 53 23.735759	0.03
J0552+3754	37 53 44.15055	* 37 54 25.28243	37 54 21.82361	0.03
0552+398	05 52 01.407169	* 05 55 30.805611	05 56 37.764139	0.00
J0555+3948	39 48 21.94581	* 39 48 49.16496	39 48 40.59273	0.00
* DA193	../sources.gsfc.2015feb			
4C39.25	09 23 55.319215	* 09 27 03.013936	09 28 01.074849	0.30
* J0927+3902	39 15 23.56645	* 39 02 20.85186	38 58 00.85419	0.16
* 3C286	13 28 49.657758	* 13 31 08.288051	13 31 50.173275	0.18
J1331+3030	30 45 58.64059	* 30 30 32.95924	30 25 50.07163	0.17
NRA0512	16 38 48.169688	* 16 40 29.632773	16 41 00.181725	0.00
* J1640+3946	39 52 30.08667	* 39 46 46.02848	39 45 20.74013	0.00
* 3C345	16 41 17.606228	* 16 42 58.809966	16 43 29.292983	0.76
J1642+3948	39 54 10.81496	* 39 48 36.99402	39 47 15.07571	0.52

6.7GHz CH₃OH MASER POLARIZATION TOWARDS MASSIVE PROTOSTARS. II.PI: *G. Surcis*

Address: JIV ERIC

Observing mode: Polarization observations of 1 source at 6.7 GHz (32 Mb/s)

Schedule for TORUN (Code Tr)

Page 2

6.7GHz CH₃OH maser polarization towards massive protostars. II.

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

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	TPStart SYNC

--- Wed	21 Oct 2015	Day 294 ---								
Next scan frequencies:		6665.14	6665.14	6665.14	6665.14					
Next BBC frequencies:		765.14	765.14	765.14	765.14					
Next scan bandwidths:		2.00	2.00	2.00	2.00					

13 00 00	J2202+4216	16 12 53	33.9	62.8	-5.8		-46.3	0	0	13 00 00
13 10 00	=VR422201	16 22 55	35.2	64.3	-5.7		-47.1	600	2	13 00 01
13 13 50	G32.03+0.06	16 26 46	28.4	138.2	-2.4		-23.6	68	2	13 13 50
13 23 50	---	16 36 47	29.4	140.8	-2.2		-22.3	600	5	13 13 51
13 24 20	G32.03+0.06	16 37 17	29.4	140.9	-2.2		-22.2	24	5	13 24 20
13 34 20	---	16 47 19	30.4	143.6	-2.1		-20.9	600	7	13 24 21
13 34 50	G32.03+0.06	16 47 49	30.4	143.8	-2.0		-20.8	24	7	13 34 50
13 44 50	---	16 57 51	31.3	146.5	-1.9		-19.4	600	10	13 34 51
13 45 20	G32.03+0.06	16 58 21	31.3	146.6	-1.9		-19.3	24	10	13 45 20
13 55 20	---	17 08 22	32.1	149.4	-1.7		-17.8	600	12	13 45 21
13 59 20	J2202+4216	17 12 23	42.1	72.0	-4.9		-50.6	70	12	13 59 20
14 09 20	=VR422201	17 22 25	43.5	73.6	-4.7		-51.2	600	14	13 59 21
14 19 10	J1331+3030	17 32 16	41.5	267.0	4.0		44.1	190	14	14 19 10
14 29 00	=3C286	17 42 08	40.1	269.0	4.2		44.1	590	17	14 19 11
14 29 30	J1331+3030	17 42 38	40.0	269.1	4.2		44.1	24	17	14 29 30
14 39 30	=3C286	17 52 40	38.5	271.1	4.3		44.1	600	19	14 29 31
14 45 30	G32.03+0.06	17 58 41	35.1	164.1	-0.9		-9.5	130	19	14 45 30
14 55 20	---	18 08 32	35.5	167.1	-0.7		-7.7	590	22	14 45 31
14 55 50	G32.03+0.06	18 09 02	35.5	167.3	-0.7		-7.6	24	22	14 55 50
15 05 50	---	18 19 04	35.8	170.3	-0.5		-5.8	600	24	14 55 51
15 10 10	J2202+4216	18 23 25	52.5	83.8	-3.7		-53.9	72	24	15 10 10
15 20 10	=VR422201	18 33 26	54.0	85.6	-3.5		-54.1	600	26	15 10 11
15 24 40	G32.03+0.06	18 37 57	36.1	176.1	-0.2		-2.3	75	26	15 24 40
15 34 40	---	18 47 59	36.2	179.2	-0.0		-0.5	600	29	15 24 41
15 35 10	G32.03+0.06	18 48 29	36.2	179.4	-0.0		-0.4	24	29	15 35 10
15 45 10	---	18 58 30	36.1	182.5	0.1		1.5	600	31	15 35 11
15 45 40	G32.03+0.06	18 59 01	36.1	182.7	0.1		1.6	24	31	15 45 40
15 55 40	---	19 09 02	36.0	185.8	0.3		3.5	600	34	15 45 41

Schedule for TORUN (Code Tr)

Page 3

6.7GHz CH3OH maser polarization towards massive protostars. II.

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

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	TPStart SYNC

--- Wed	21 Oct 2015	Day 294 ---								
15 56 10	G32.03+0.06	19 09 32	36.0	185.9	0.3		3.5	24	34	15 56 10
16 04 10	---	19 17 34	35.9	188.4	0.5		5.0	480	35	15 56 11
16 08 50	J2202+4216	19 22 14	61.3	95.5	-2.7		-54.0	79	35	16 08 50
16 18 50	=VR422201	19 32 16	62.8	97.8	-2.5		-53.6	600	38	16 08 51
16 23 40	G32.03+0.06	19 37 07	35.3	194.4	0.8		8.6	83	38	16 23 40
16 33 40	---	19 47 08	34.9	197.4	0.9		10.3	600	40	16 23 41
16 34 10	G32.03+0.06	19 47 39	34.9	197.5	1.0		10.4	24	40	16 34 10
16 44 10	---	19 57 40	34.4	200.5	1.1		12.1	600	43	16 34 11
16 44 40	G32.03+0.06	19 58 10	34.3	200.7	1.1		12.2	24	43	16 44 40
16 54 40	---	20 08 12	33.8	203.6	1.3		13.9	600	45	16 44 41
16 55 10	G32.03+0.06	20 08 42	33.7	203.8	1.3		14.0	24	45	16 55 10
17 05 10	---	20 18 44	33.1	206.7	1.5		15.6	600	48	16 55 11
17 10 10	J2202+4216	20 23 44	70.3	112.9	-1.7		-48.5	96	48	17 10 10
17 20 10	=VR422201	20 33 46	71.6	116.7	-1.5		-46.6	600	50	17 10 11
17 25 20	G32.03+0.06	20 38 57	31.6	212.4	1.8		18.8	105	50	17 25 20
17 35 20	---	20 48 59	30.8	215.1	2.0		20.2	600	52	17 25 21
17 35 50	G32.03+0.06	20 49 29	30.7	215.3	2.0		20.3	24	52	17 35 50
17 45 50	---	20 59 30	29.8	218.0	2.2		21.7	600	55	17 35 51
17 46 20	G32.03+0.06	21 00 00	29.8	218.1	2.2		21.8	24	55	17 46 20
17 56 20	---	21 10 02	28.8	220.8	2.3		23.1	600	57	17 46 21
17 56 50	G32.03+0.06	21 10 32	28.8	220.9	2.3		23.2	24	57	17 56 50
18 06 50	---	21 20 34	27.8	223.5	2.5		24.4	600	60	17 56 51
18 12 00	J2202+4216	21 25 45	77.6	145.9	-0.6		-27.1	110	60	18 12 00
18 22 00	=VR422201	21 35 46	78.3	154.0	-0.5		-20.9	600	62	18 12 01
18 25 00	J2136+0041	21 38 47	37.7	180.4	0.0		0.3	14	62	18 25 00
18 34 50	=2134+00	21 48 38	37.6	183.5	0.2		2.1	590	64	18 25 01
18 37 50	G32.03+0.06	21 51 39	24.3	231.3	3.0		27.9	70	64	18 37 50
18 47 40	---	22 01 30	23.2	233.6	3.2		28.9	590	67	18 37 51
18 48 10	G32.03+0.06	22 02 01	23.1	233.8	3.2		29.0	24	67	18 48 10
18 57 10	---	22 11 02	22.0	235.9	3.3		29.8	540	69	18 48 11

Schedule for TORUN (Code Tr)

Page 4

6.7GHz CH30H maser polarization towards massive protostars. II.

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

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 21 Oct 2015	Day 294 ---								
18 57 40	G32.03+0.06	22 11 32	21.9	236.0	3.4		29.9	24	69	18 57 40
19 06 40	---	22 20 34	20.8	238.1	3.5		30.7	540	71	18 57 41
19 11 30	J2202+4216	22 25 24	78.7	201.1	0.4		17.0	59	71	19 11 30
19 20 10	=VR422201	22 34 06	78.1	208.6	0.5		22.9	520	73	19 11 31
19 25 00	G32.03+0.06	22 38 57	18.4	242.3	3.8		32.1	53	73	19 25 00
19 35 00	---	22 48 58	17.0	244.5	4.0		32.8	600	75	19 25 01
19 35 30	G32.03+0.06	22 49 28	17.0	244.6	4.0		32.8	24	75	19 35 30
19 45 30	---	22 59 30	15.6	246.8	4.2		33.5	600	78	19 35 31
19 50 00	J2202+4216	23 04 01	75.3	229.4	1.0		38.1	32	78	19 50 00
20 00 00	=VR422201	23 14 02	74.1	234.8	1.2		41.6	600	80	19 50 01

SETUP FILE INFORMATION:

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

===== Setup file: sess315.M32

Setup group: 6	Station: TORUN	Total bit rate: 32
Format: MARK5B	Bits per sample: 2	Sample rate: 4.000
Number of channels: 4	DBE type: DBBC_DDC	Speedup factor: 1.00

Disk used to record data.

1st L0=	5900.00	5900.00	5900.00	5900.00
Net SB=	U	U	U	U
IF SB =	U	U	U	U
Pol. =	RCP	LCP	RCP	LCP
BBC =	1	5	2	6
BBC SB=	U	U	U	U
IF =	A1	B1	A1	B1

The following frequency sets based on these setups were used.

Frequency Set: 6 Based on FREQ, BW, and/or DOPPLER in schedule. Used with PCAL = off

L0 sum=	6665.14	6665.14	6665.14	6665.14
BBC fr=	765.14	765.14	765.14	765.14
Bandwd=	2.00	2.00	2.00	2.00

Matching frequency sets: 6 9

Track assignments are:

track1= 2, 6, 4, 8
barrel=roll_off

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error
	(B1950)	(J2000)		(mas)
* G32.03+0.06	18 47 01.888660	* 18 49 36.580000	18 50 24.955187	0.00
	-00 49 16.65475	*-00 45 46.90000	-00 44 22.72518	0.00
3C286	13 28 49.657758	* 13 31 08.288051	13 31 50.174872	0.18
* J1331+3030	30 45 58.64059	* 30 30 32.95924	30 25 50.02232	0.17
2134+00	21 34 05.207371	* 21 36 38.586306	21 37 27.457310	0.73
* J2136+0041	00 28 25.07998	* 00 41 54.21280	00 46 23.50256	1.22
VR422201	22 00 39.362505	* 22 02 43.291372	22 03 23.774743	0.00
* J2202+4216	42 02 08.59077	* 42 16 39.97990	42 21 36.81763	0.00
BLLAC				

rk12dptr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

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

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

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

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
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 22 Oct 2015 Day 295 ---

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

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

04 00 00	0716+714	07 15 21	71.8	2.1	-0.1	-176.0	0	0	04 00 00
04 12 00	---	07 27 23	71.8	-1.0	0.1	178.2	720	23	04 00 01
04 12 30	0716+714	07 27 53	71.8	-1.1	0.1	178.0	24	23	04 12 30
04 24 30	---	07 39 55	71.7	-4.1	0.3	172.2	720	46	04 12 31
04 25 00	0716+714	07 40 25	71.7	-4.3	0.3	172.0	24	46	04 25 00
04 37 00	---	07 52 27	71.5	-7.3	0.5	166.3	720	69	04 25 01
04 37 30	0716+714	07 52 57	71.5	-7.4	0.5	166.0	24	69	04 37 30
04 50 00	---	08 05 29	71.2	-10.4	0.7	160.2	750	93	04 37 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: 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 28.976158	0.00
	85 16 41.77889	* 85 00 00.00000	84 54 34.45112	0.00
	fake circumpolar target for a TS to look at			
* 0716+714	07 16 13.029739	* 07 21 53.448474	07 23 40.422025	0.00
J0721+7120	71 26 15.17406	* 71 20 36.36340	71 18 20.53280	0.00
	./rk12dp_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 42370 observations, RA-A03-04, RA-A02-1			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0716+714	102.1

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

6.7GHz CH₃OH MASER POLARIZATION TOWARDS MASSIVE PROTOSTARS. II.PI: *G. Surcis*

Address: Joint Institute for VLBI ERIC

Observing mode: Polarization observations of 1 source at 6.7 GHz (32 Mb/s)

Schedule for TORUN (Code Tr)

Page 2

6.7GHz CH₃OH maser polarization towards massive protostars. II.

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

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	TPStart SYNC

---	Thu 22 Oct 2015	Day 295 ---								
Next scan frequencies:		6667.28	6667.28	6667.28	6667.28					
Next BBC frequencies:		767.28	767.28	767.28	767.28					
Next scan bandwidths:		2.00	2.00	2.00	2.00					
13 00 00	J2202+4216	16 16 50	34.4	63.4	-5.8		-46.6	0	0	13 00 00
13 10 00	=VR422201	16 26 52	35.7	64.9	-5.6		-47.4	600	2	13 00 01
13 11 50	G69.52-0.97	16 28 42	45.1	95.8	-3.7		-44.5	34	2	13 11 50
13 21 50	---	16 38 44	46.6	98.0	-3.5		-44.3	600	5	13 11 51
13 22 20	G69.52-0.97	16 39 14	46.7	98.1	-3.5		-44.3	24	5	13 22 20
13 32 20	---	16 49 15	48.2	100.4	-3.4		-43.9	600	7	13 22 21
13 32 50	G69.52-0.97	16 49 45	48.2	100.5	-3.4		-43.9	24	7	13 32 50
13 42 50	---	16 59 47	49.7	102.8	-3.2		-43.4	600	10	13 32 51
13 43 20	G69.52-0.97	17 00 17	49.8	102.9	-3.2		-43.4	24	10	13 43 20
13 53 20	---	17 10 19	51.2	105.4	-3.0		-42.8	600	12	13 43 21
13 55 10	J2202+4216	17 12 09	42.1	72.0	-4.9		-50.6	28	12	13 55 10
14 05 10	=VR422201	17 22 11	43.5	73.5	-4.7		-51.2	600	14	13 55 11
14 14 50	J1331+3030	17 31 52	41.6	266.9	4.0		44.1	180	14	14 14 50
14 24 50	=3C286	17 41 54	40.1	268.9	4.2		44.1	600	17	14 14 51
14 25 20	J1331+3030	17 42 24	40.0	269.0	4.2		44.1	24	17	14 25 20
14 35 20	=3C286	17 52 26	38.5	271.1	4.3		44.1	600	19	14 25 21
14 43 30	G69.52-0.97	18 00 37	58.2	119.6	-2.2		-37.8	170	19	14 43 30
14 53 20	---	18 10 29	59.5	122.8	-2.0		-36.3	590	22	14 43 31
14 53 50	G69.52-0.97	18 10 59	59.5	123.0	-2.0		-36.3	24	22	14 53 50
15 03 50	---	18 21 00	60.8	126.5	-1.8		-34.5	600	24	14 53 51
15 05 50	J2202+4216	18 23 01	52.4	83.7	-3.7		-53.9	19	24	15 05 50
15 15 50	=VR422201	18 33 02	53.9	85.6	-3.5		-54.1	600	26	15 05 51
15 18 00	G69.52-0.97	18 35 13	62.4	131.8	-1.6		-31.7	23	26	15 18 00
15 28 00	---	18 45 14	63.5	135.8	-1.4		-29.4	600	29	15 18 01

Schedule for TORUN (Code Tr)

Page 3

6.7GHz CH3OH maser polarization towards massive protostars. II.

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

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	22 Oct 2015	Day 295 ---								
15 28 30	G69.52-0.97	18 45 44	63.6	136.0	-1.4		-29.3	23	29	15 28 30
15 38 30	---	18 55 46	64.6	140.4	-1.3		-26.7	600	31	15 28 31
15 39 00	G69.52-0.97	18 56 16	64.6	140.6	-1.2		-26.6	23	31	15 39 00
15 49 00	---	19 06 18	65.5	145.2	-1.1		-23.7	600	34	15 39 01
15 49 30	G69.52-0.97	19 06 48	65.6	145.4	-1.1		-23.6	23	34	15 49 30
15 59 30	---	19 16 49	66.4	150.3	-0.9		-20.5	600	36	15 49 31
16 01 50	J2202+4216	19 19 10	60.9	94.8	-2.7		-54.1	14	36	16 01 50
16 11 50	=VR422201	19 29 11	62.3	97.1	-2.6		-53.7	600	38	16 01 51
16 14 20	G69.52-0.97	19 31 42	67.4	157.9	-0.7		-15.3	14	38	16 14 20
16 24 20	---	19 41 43	67.9	163.4	-0.5		-11.6	600	41	16 14 21
16 24 50	G69.52-0.97	19 42 14	67.9	163.7	-0.5		-11.4	23	41	16 24 50
16 34 50	---	19 52 15	68.2	169.3	-0.3		-7.5	600	43	16 24 51
16 35 20	G69.52-0.97	19 52 45	68.2	169.6	-0.3		-7.3	23	43	16 35 20
16 45 20	---	20 02 47	68.4	175.4	-0.1		-3.3	600	46	16 35 21
16 45 50	G69.52-0.97	20 03 17	68.4	175.7	-0.1		-3.1	23	46	16 45 50
16 55 50	---	20 13 19	68.5	181.5	0.0		1.0	600	48	16 45 51
16 58 40	J2202+4216	20 16 09	69.2	110.2	-1.8		-49.7	12	48	16 58 40
17 08 40	=VR422201	20 26 11	70.6	113.8	-1.6		-48.1	600	50	16 58 41
17 11 50	G69.52-0.97	20 29 21	68.2	190.7	0.3		7.5	22	50	17 11 50
17 21 50	---	20 39 23	67.9	196.3	0.5		11.4	600	53	17 11 51
17 22 20	G69.52-0.97	20 39 53	67.9	196.6	0.5		11.6	23	53	17 22 20
17 32 20	---	20 49 55	67.4	202.1	0.7		15.4	600	55	17 22 21
17 32 50	G69.52-0.97	20 50 25	67.3	202.3	0.7		15.5	23	55	17 32 50
17 42 50	---	21 00 26	66.7	207.6	0.8		19.0	600	58	17 32 51
17 43 20	G69.52-0.97	21 00 56	66.7	207.8	0.8		19.2	23	58	17 43 20
17 53 20	---	21 10 58	65.9	212.8	1.0		22.4	600	60	17 43 21
17 57 10	J2202+4216	21 14 49	76.5	138.1	-0.8		-32.9	64	60	17 57 10
18 07 10	=VR422201	21 24 50	77.5	145.2	-0.6		-27.6	600	62	17 57 11
18 10 10	J2136+0041	21 27 51	37.6	177.0	-0.2		-1.8	17	62	18 10 10
18 20 10	=2134+00	21 37 53	37.7	180.1	0.0		0.1	600	65	18 10 11
18 22 40	G69.52-0.97	21 40 23	63.1	225.8	1.5		30.4	41	65	18 22 40
18 32 40	---	21 50 25	62.0	229.8	1.7		32.6	600	67	18 22 41

Schedule for TORUN (Code Tr)

Page 4

6.7GHz CH3OH maser polarization towards massive protostars. II.

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

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	22 Oct 2015	Day 295	---						
18 33 10	G69.52-0.97	21 50 55	61.9	230.0	1.7		32.7	24	67	18 33 10
18 43 10	---	22 00 56	60.7	233.7	1.8		34.6	600	70	18 33 11
18 43 40	G69.52-0.97	22 01 26	60.7	233.9	1.8		34.7	24	70	18 43 40
18 53 40	---	22 11 28	59.4	237.3	2.0		36.4	600	72	18 43 41
18 57 40	J2202+4216	22 15 29	79.1	191.9	0.2		9.6	130	72	18 57 40
19 06 20	=VR422201	22 24 10	78.7	200.0	0.3		16.1	520	74	18 57 41
19 10 10	G69.52-0.97	22 28 01	57.3	242.7	2.3		38.8	131	74	19 10 10
19 20 10	---	22 38 02	55.9	245.7	2.5		40.0	600	77	19 10 11
19 20 40	G69.52-0.97	22 38 32	55.9	245.8	2.5		40.0	24	77	19 20 40
19 30 40	---	22 48 34	54.5	248.6	2.6		41.0	600	79	19 20 41
19 31 10	G69.52-0.97	22 49 04	54.4	248.8	2.6		41.1	24	79	19 31 10
19 41 10	---	22 59 06	53.0	251.5	2.8		41.9	600	81	19 31 11
19 41 40	G69.52-0.97	22 59 36	52.9	251.6	2.8		42.0	24	81	19 41 40
19 46 00	---	23 03 57	52.3	252.8	2.9		42.3	260	82	19 41 41
19 50 00	J2202+4216	23 07 57	74.8	231.6	1.1		39.5	141	82	19 50 00
20 00 00	=VR422201	23 17 59	73.6	236.7	1.2		42.8	600	85	19 50 01

SETUP FILE INFORMATION:

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

===== Setup file: sess315.M32

Setup group: 6	Station: TORUN	Total bit rate: 32
Format: MARK5B	Bits per sample: 2	Sample rate: 4.000
Number of channels: 4	DBE type: DBBC_DDC	Speedup factor: 1.00

Disk used to record data.


```

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

```

The following frequency sets based on these setups were used.

```

Frequency Set:   6  Based on FREQ, BW, and/or DOPPLER in schedule.  Used with PCAL = off
LO sum=    6667.28  6667.28  6667.28  6667.28
BBC fr=     767.28  767.28  767.28  767.28
Bandwd=      2.00   2.00   2.00   2.00
Matching frequency sets:   6   9

```

```

Track assignments are:
track1=   2,  6,  4,  8
barrel=roll_off

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* G69.52-0.97	20 08 09.824095	* 20 10 09.070000	20 10 46.903224	0.00
	31 22 39.10382	* 31 31 34.40000	31 34 48.57086	0.00
3C286	13 28 49.657758	* 13 31 08.288051	13 31 50.183384	0.18
* J1331+3030	30 45 58.64059	* 30 30 32.95924	30 25 49.73892	0.17
1328+307	../sources.gsfc.2015feb			
2134+00	21 34 05.207371	* 21 36 38.586306	21 37 27.443375	0.73
* J2136+0041	00 28 25.07998	* 00 41 54.21280	00 46 23.45979	1.22
2134+004	../sources.gsfc.2015feb			
VR422201	22 00 39.362505	* 22 02 43.291372	22 03 23.752957	0.00
* J2202+4216	42 02 08.59077	* 42 16 39.97990	42 21 36.92723	0.00
BLLAC	../sources.gsfc.2015feb			

rk12drtr

RADIOASTRON AGN SURVEY
PI: Yuri Kovalev

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

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

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN Survey

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

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 22 Oct 2015 Day 295 ---

----- 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	0007+106	00 18 09	47.9	182.5	0.1		1.5	0	0	21 00 00
21 12 00	---	00 30 11	47.8	186.9	0.3		4.2	720	23	21 00 01
21 12 30	0007+106	00 30 41	47.8	187.1	0.3		4.3	24	23	21 12 30
21 24 30	---	00 42 43	47.5	191.4	0.5		7.0	720	46	21 12 31
21 25 00	0007+106	00 43 13	47.5	191.6	0.5		7.1	24	46	21 25 00
21 37 00	---	00 55 15	47.1	195.9	0.7		9.7	720	69	21 25 01
21 37 30	0007+106	00 55 45	47.0	196.1	0.7		9.8	24	69	21 37 30
21 50 00	---	01 08 17	46.4	200.5	0.9		12.4	750	93	21 37 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: 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:   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 29.075805	0.00
	85 16 41.77889	* 85 00 00.00000	84 54 34.20228	0.00
	fake circumpolar target for a TS to look at			
* 0007+106	00 07 56.721989	* 00 10 31.005907	00 11 20.980045	0.00
J0010+1058	10 41 48.22044	* 10 58 29.50423	11 03 53.70378	0.00
	./rk12dr_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 3268 observations, RA-A03-04			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0007+106	156.2

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of $60 \deg F^{-0.6}$ 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

HOW DO O-TYPE FORMING STARS ACCRETE THEIR MASS?

PI: *Ciriaco Goddi*

Address: Radboud Astronomy Department

Observing mode: Polarimetric observations in phase-reference of 1 maser so

Schedule for TORUN (Code Tr)

Page 2

How do O-type forming stars accrete their mass?

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

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	23 Oct 2015	Day 296 ---								
Next scan frequencies:		6664.12	6664.12	6664.12	6664.12	6668.12	6668.12	6668.12	6668.12	6668.12
		6672.12	6672.12	6672.12	6672.12	6676.12	6676.12	6676.12	6676.12	6676.12
Next BBC frequencies:		764.12	764.12	764.12	764.12	768.12	768.12	768.12	768.12	768.12
		772.12	772.12	772.12	772.12	776.12	776.12	776.12	776.12	776.12
Next scan bandwidths:		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

13 30 00	J2202+4216	16 50 51	39.1	68.6	-5.2		-49.2	0	0	13 30 00
13 38 00	=VR422201	16 58 53	40.2	69.9	-5.1		-49.7	480	8	13 30 01
13 47 30	J1331+3030	17 08 24	45.1	261.9	3.6		43.6	172	8	13 47 30
13 58 30	=3C286	17 19 26	43.5	264.3	3.8		43.9	660	18	13 47 31
14 08 00	W51	17 28 58	45.2	138.4	-1.9		-24.3	300	18	14 08 00
14 15 00	---	17 35 59	45.9	140.7	-1.8		-23.2	420	25	14 08 01
14 15 40	J1930+1532	17 36 39	46.2	138.0	-1.9		-24.7	20	25	14 15 40
14 17 40	=1928+154	17 38 39	46.4	138.6	-1.9		-24.3	120	27	14 15 41
14 17 40	W51	17 38 39	46.2	141.5	-1.8		-22.7	-20	27	No stop
14 19 40	---	17 40 40	46.3	142.2	-1.7		-22.4	100	29	14 17 41
14 19 40	J1930+1532	17 40 40	46.6	139.3	-1.8		-24.0	-20	29	No stop
14 21 40	=1928+154	17 42 40	46.8	139.9	-1.8		-23.7	100	31	14 19 41
14 21 40	W51	17 42 40	46.5	142.8	-1.7		-22.0	-20	31	No stop
14 23 40	---	17 44 40	46.7	143.5	-1.7		-21.7	100	33	14 21 41
14 23 40	J1930+1532	17 44 40	47.0	140.6	-1.8		-23.3	-20	33	No stop
14 25 40	=1928+154	17 46 41	47.2	141.2	-1.7		-23.0	100	35	14 23 41
14 26 20	W51	17 47 21	47.0	144.4	-1.6		-21.2	19	35	14 26 20
14 28 20	---	17 49 21	47.1	145.0	-1.6		-20.8	120	37	14 26 21
14 29 00	J1930+1532	17 50 01	47.5	142.3	-1.7		-22.4	20	37	14 29 00
14 31 00	=1928+154	17 52 01	47.7	143.0	-1.7		-22.1	120	38	14 29 01
14 31 00	W51	17 52 01	47.4	145.9	-1.5		-20.3	-21	38	No stop
14 33 00	---	17 54 02	47.5	146.6	-1.5		-20.0	99	40	14 31 01
14 33 00	J1930+1532	17 54 02	47.9	143.6	-1.6		-21.7	-20	40	No stop
14 35 00	=1928+154	17 56 02	48.0	144.3	-1.6		-21.3	100	42	14 33 01

Schedule for TORUN (Code Tr)

Page 3

How do O-type forming stars accrete their mass?

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

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	23 Oct 2015	Day 296	---							
14 35 00	W51	17 56 02	47.7	147.3	-1.5		-19.6	-21	42	No stop
14 37 00	---	17 58 02	47.8	147.9	-1.4		-19.2	99	44	14 35 01
14 37 00	J1930+1532	17 58 02	48.2	145.0	-1.6		-21.0	-20	44	No stop
14 39 00	=1928+154	18 00 03	48.4	145.7	-1.5		-20.6	100	46	14 37 01
14 39 40	W51	18 00 43	48.1	148.9	-1.4		-18.7	19	46	14 39 40
14 41 40	---	18 02 43	48.2	149.5	-1.4		-18.3	120	48	14 39 41
14 42 20	J1930+1532	18 03 23	48.7	146.8	-1.5		-20.0	20	48	14 42 20
14 44 20	=1928+154	18 05 24	48.8	147.5	-1.4		-19.6	120	50	14 42 21
14 44 20	W51	18 05 24	48.4	150.5	-1.3		-17.8	-21	50	No stop
14 46 20	---	18 07 24	48.6	151.2	-1.3		-17.4	99	52	14 44 21
14 46 20	J1930+1532	18 07 24	49.0	148.2	-1.4		-19.2	-20	52	No stop
14 48 20	=1928+154	18 09 24	49.1	148.9	-1.4		-18.8	100	54	14 46 21
14 48 20	W51	18 09 24	48.7	151.9	-1.3		-17.0	-21	54	No stop
14 50 20	---	18 11 25	48.8	152.6	-1.2		-16.6	99	56	14 48 21
14 50 20	J1930+1532	18 11 25	49.3	149.6	-1.3		-18.4	-20	56	No stop
14 52 20	=1928+154	18 13 25	49.5	150.3	-1.3		-18.0	100	58	14 50 21
14 53 00	W51	18 14 05	49.0	153.5	-1.2		-16.1	19	58	14 53 00
14 55 00	---	18 16 05	49.2	154.2	-1.1		-15.6	120	60	14 53 01
14 55 40	J1930+1532	18 16 45	49.7	151.5	-1.2		-17.3	20	60	14 55 40
14 57 40	=1928+154	18 18 46	49.8	152.2	-1.2		-16.9	120	62	14 55 41
15 00 51	J2202+4216	18 21 57	52.3	83.5	-3.7		-53.9	38	62	15 00 51
15 08 51	=VR422201	18 29 58	53.5	85.0	-3.6		-54.1	480	69	15 00 52
15 12 18	W51	18 33 26	50.2	160.5	-0.8		-11.9	42	69	15 12 18
15 16 18	---	18 37 27	50.4	162.0	-0.8		-11.0	240	73	15 12 19
15 16 58	J1930+1532	18 38 07	51.0	159.3	-0.9		-12.8	20	73	15 16 58
15 18 58	=1928+154	18 40 07	51.1	160.0	-0.9		-12.3	120	75	15 16 59
15 18 58	W51	18 40 07	50.5	163.0	-0.7		-10.4	-21	75	No stop
15 20 58	---	18 42 08	50.6	163.8	-0.7		-10.0	99	77	15 18 59
15 20 58	J1930+1532	18 42 08	51.2	160.8	-0.8		-11.9	-20	77	No stop
15 22 58	=1928+154	18 44 08	51.3	161.5	-0.8		-11.4	100	79	15 20 59
15 22 58	W51	18 44 08	50.6	164.5	-0.7		-9.5	-21	79	No stop
15 24 58	---	18 46 08	50.7	165.3	-0.6		-9.1	99	81	15 22 59

Schedule for TORUN (Code Tr)

Page 4

How do O-type forming stars accrete their mass?

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

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	23 Oct 2015	Day 296	---							
15 24 58	J1930+1532	18 46 08	51.4	162.3	-0.8		-10.9	-20	81	No stop
15 26 58	=1928+154	18 48 09	51.5	163.0	-0.7		-10.5	100	83	15 24 59
15 27 38	W51	18 48 49	50.8	166.3	-0.6		-8.5	19	83	15 27 38
15 29 38	---	18 50 49	50.9	167.0	-0.6		-8.0	120	85	15 27 39
15 30 18	J1930+1532	18 51 29	51.7	164.3	-0.7		-9.7	20	85	15 30 18
15 32 18	=1928+154	18 53 30	51.7	165.1	-0.6		-9.2	120	87	15 30 19
15 32 18	W51	18 53 30	51.0	168.1	-0.5		-7.4	-21	87	No stop
15 34 18	---	18 55 30	51.0	168.8	-0.5		-6.9	99	88	15 32 19
15 34 18	J1930+1532	18 55 30	51.8	165.9	-0.6		-8.8	-20	88	No stop
15 36 18	=1928+154	18 57 30	51.9	166.6	-0.6		-8.3	100	90	15 34 19
15 36 18	W51	18 57 30	51.1	169.6	-0.4		-6.4	-21	90	No stop
15 38 18	---	18 59 31	51.1	170.4	-0.4		-6.0	99	92	15 36 19
15 38 18	J1930+1532	18 59 31	52.0	167.4	-0.5		-7.8	-20	92	No stop
15 40 18	=1928+154	19 01 31	52.0	168.2	-0.5		-7.3	100	94	15 38 19
15 40 58	W51	19 02 11	51.2	171.4	-0.4		-5.3	19	94	15 40 58
15 42 58	---	19 04 11	51.2	172.2	-0.3		-4.9	120	96	15 40 59
15 43 38	J1930+1532	19 04 51	52.1	169.5	-0.4		-6.5	20	96	15 43 38
15 45 38	=1928+154	19 06 52	52.2	170.3	-0.4		-6.1	120	98	15 43 39
15 45 38	W51	19 06 52	51.3	173.2	-0.3		-4.2	-21	98	No stop
15 47 38	---	19 08 52	51.3	174.0	-0.3		-3.7	99	100	15 45 39
15 47 38	J1930+1532	19 08 52	52.2	171.0	-0.4		-5.6	-20	100	No stop
15 49 38	=1928+154	19 10 52	52.3	171.8	-0.3		-5.1	100	102	15 47 39
15 49 38	W51	19 10 52	51.4	174.7	-0.2		-3.3	-21	102	No stop
15 51 38	---	19 12 53	51.4	175.5	-0.2		-2.8	99	104	15 49 39
15 51 38	J1930+1532	19 12 53	52.3	172.6	-0.3		-4.6	-20	104	No stop
15 53 38	=1928+154	19 14 53	52.3	173.4	-0.3		-4.1	100	106	15 51 39
15 54 18	W51	19 15 33	51.4	176.6	-0.1		-2.1	20	106	15 54 18
15 56 18	---	19 17 33	51.4	177.3	-0.1		-1.7	120	108	15 54 19
15 56 58	J1930+1532	19 18 14	52.4	174.7	-0.2		-3.3	20	108	15 56 58
15 58 58	=1928+154	19 20 14	52.4	175.5	-0.2		-2.8	120	110	15 56 59

Schedule for TORUN (Code Tr)

Page 5

How do O-type forming stars accrete their mass?

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

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	23 Oct 2015	Day 296 ---								
16 02 35	J2202+4216	19 23 51	61.6	95.9	-2.7		-53.9	42	110	16 02 35
16 10 35	=VR422201	19 31 53	62.7	97.8	-2.5		-53.6	480	117	16 02 36
16 14 33	W51	19 35 51	51.4	184.4	0.2		2.7	50	117	16 14 33
16 18 33	---	19 39 52	51.3	186.0	0.3		3.7	240	121	16 14 34
16 19 13	J1930+1532	19 40 32	52.4	183.5	0.1		2.2	21	121	16 19 13
16 21 13	=1928+154	19 42 32	52.4	184.3	0.2		2.7	120	123	16 19 14
16 21 13	W51	19 42 32	51.3	187.0	0.3		4.3	-20	123	No stop
16 23 13	---	19 44 32	51.3	187.8	0.3		4.8	100	125	16 21 14
16 23 13	J1930+1532	19 44 32	52.4	185.1	0.2		3.2	-19	125	No stop
16 25 13	=1928+154	19 46 33	52.4	185.9	0.2		3.7	101	127	16 23 14
16 25 13	W51	19 46 33	51.2	188.6	0.4		5.3	-20	127	No stop
16 27 13	---	19 48 33	51.2	189.3	0.4		5.8	100	129	16 25 14
16 27 13	J1930+1532	19 48 33	52.3	186.7	0.3		4.2	-19	129	No stop
16 29 13	=1928+154	19 50 33	52.3	187.5	0.3		4.7	101	131	16 27 14
16 29 53	W51	19 51 14	51.1	190.4	0.4		6.4	20	131	16 29 53
16 31 53	---	19 53 14	51.0	191.1	0.5		6.9	120	133	16 29 54
16 32 33	J1930+1532	19 53 54	52.2	188.8	0.4		5.5	21	133	16 32 33
16 34 33	=1928+154	19 55 54	52.2	189.6	0.4		6.0	120	135	16 32 34
16 34 33	W51	19 55 54	51.0	192.1	0.5		7.5	-20	135	No stop
16 36 33	---	19 57 55	50.9	192.9	0.6		8.0	100	137	16 34 34
16 36 33	J1930+1532	19 57 55	52.1	190.4	0.4		6.4	-19	137	No stop
16 38 33	=1928+154	19 59 55	52.1	191.1	0.5		6.9	101	138	16 36 34
16 38 33	W51	19 59 55	50.8	193.7	0.6		8.4	-19	138	No stop
16 40 33	---	20 01 55	50.7	194.4	0.6		8.9	101	140	16 38 34
16 40 33	J1930+1532	20 01 55	52.0	191.9	0.5		7.4	-19	140	No stop
16 42 33	=1928+154	20 03 56	51.9	192.7	0.5		7.9	101	142	16 40 34
16 43 13	W51	20 04 36	50.6	195.4	0.7		9.5	21	142	16 43 13
16 45 13	---	20 06 36	50.6	196.2	0.7		10.0	120	144	16 43 14
16 45 53	J1930+1532	20 07 16	51.8	194.0	0.6		8.7	21	144	16 45 53
16 47 53	=1928+154	20 09 16	51.8	194.8	0.6		9.1	120	146	16 45 54

Schedule for TORUN (Code Tr)

Page 6

How do O-type forming stars accrete their mass?

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

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	23 Oct 2015	Day 296	---							
16 47 53	W51	20 09 16	50.4	197.2	0.7		10.6	-19	146	No stop
16 49 53	---	20 11 17	50.4	197.9	0.8		11.0	101	148	16 47 54
16 49 53	J1930+1532	20 11 17	51.7	195.5	0.7		9.6	-19	148	No stop
16 51 53	=1928+154	20 13 17	51.6	196.3	0.7		10.1	101	150	16 49 54
16 51 53	W51	20 13 17	50.3	198.7	0.8		11.5	-19	150	No stop
16 53 53	---	20 15 17	50.2	199.4	0.8		11.9	101	152	16 51 54
16 53 53	J1930+1532	20 15 17	51.5	197.1	0.7		10.5	-19	152	No stop
16 55 53	=1928+154	20 17 18	51.4	197.8	0.8		11.0	101	154	16 53 54
16 56 33	W51	20 17 58	50.0	200.4	0.9		12.5	21	154	16 56 33
16 58 33	---	20 19 58	49.9	201.2	0.9		12.9	120	156	16 56 34
16 59 13	J1930+1532	20 20 38	51.3	199.1	0.8		11.8	22	156	16 59 13
17 01 13	=1928+154	20 22 39	51.2	199.8	0.9		12.2	120	158	16 59 14
17 05 22	J2202+4216	20 26 49	70.7	114.0	-1.6		-47.9	62	158	17 05 22
17 13 22	=VR422201	20 34 50	71.8	117.1	-1.5		-46.3	480	165	17 05 23
17 17 55	W51	20 39 24	48.7	208.1	1.2		17.0	77	165	17 17 55
17 22 55	---	20 44 25	48.3	209.9	1.3		18.0	300	170	17 17 56
17 23 35	J1930+1532	20 45 05	49.8	208.1	1.2		17.0	21	170	17 23 35
17 25 35	=1928+154	20 47 05	49.7	208.8	1.3		17.5	120	172	17 23 36
17 25 35	W51	20 47 05	48.1	210.8	1.4		18.5	-19	172	No stop
17 27 35	---	20 49 06	48.0	211.5	1.4		18.9	101	174	17 25 36
17 27 35	J1930+1532	20 49 06	49.5	209.5	1.3		17.9	-19	174	No stop
17 29 35	=1928+154	20 51 06	49.4	210.2	1.3		18.3	101	176	17 27 36
17 29 35	W51	20 51 06	47.8	212.2	1.4		19.3	-19	176	No stop
17 31 35	---	20 53 06	47.7	212.8	1.5		19.7	101	178	17 29 36
17 31 35	J1930+1532	20 53 06	49.2	210.9	1.4		18.7	-19	178	No stop
17 33 35	=1928+154	20 55 07	49.0	211.6	1.4		19.1	101	180	17 31 36
17 34 15	W51	20 55 47	47.4	213.7	1.5		20.2	21	180	17 34 15
17 36 15	---	20 57 47	47.3	214.4	1.6		20.5	120	182	17 34 16
17 36 55	J1930+1532	20 58 27	48.8	212.7	1.4		19.7	21	182	17 36 55
17 38 55	=1928+154	21 00 27	48.6	213.4	1.5		20.1	120	184	17 36 56

Schedule for TORUN (Code Tr)

Page 7

How do O-type forming stars accrete their mass?

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

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	TPStart SYNC

--- Fri	23 Oct 2015	Day 296	---							
17 38 55	W51	21 00 27	47.0	215.3	1.6		21.0	-20	184	No stop
17 40 55	---	21 02 28	46.9	216.0	1.6		21.4	100	186	17 38 56
17 40 55	J1930+1532	21 02 28	48.4	214.1	1.5		20.5	-19	186	No stop
17 42 55	=1928+154	21 04 28	48.3	214.8	1.5		20.8	101	187	17 40 56
17 42 55	W51	21 04 28	46.7	216.6	1.7		21.7	-20	187	No stop
17 44 55	---	21 06 28	46.5	217.3	1.7		22.1	100	189	17 42 56
17 44 55	J1930+1532	21 06 28	48.1	215.5	1.6		21.2	-19	189	No stop
17 46 55	=1928+154	21 08 29	47.9	216.1	1.6		21.6	101	191	17 44 56
17 47 35	W51	21 09 09	46.3	218.1	1.7		22.5	20	191	17 47 35
17 49 35	---	21 11 09	46.1	218.8	1.8		22.9	120	193	17 47 36
17 50 15	J1930+1532	21 11 49	47.6	217.3	1.7		22.2	20	193	17 50 15
17 52 15	=1928+154	21 13 50	47.4	217.9	1.7		22.5	120	195	17 50 16
17 52 15	W51	21 13 50	45.8	219.7	1.8		23.3	-20	195	No stop
17 54 15	---	21 15 50	45.6	220.3	1.9		23.7	100	197	17 52 16
17 54 15	J1930+1532	21 15 50	47.3	218.6	1.7		22.9	-20	197	No stop
17 56 15	=1928+154	21 17 50	47.1	219.2	1.8		23.2	100	199	17 54 16
17 56 15	W51	21 17 50	45.4	220.9	1.9		24.0	-20	199	No stop
17 58 15	---	21 19 51	45.2	221.6	1.9		24.3	100	201	17 56 16
17 58 15	J1930+1532	21 19 51	46.9	219.9	1.8		23.6	-20	201	No stop
18 00 15	=1928+154	21 21 51	46.7	220.5	1.8		23.9	100	203	17 58 16
18 00 55	W51	21 22 31	45.0	222.4	2.0		24.7	20	203	18 00 55
18 02 55	---	21 24 31	44.8	223.0	2.0		25.0	120	205	18 00 56
18 03 35	J1930+1532	21 25 11	46.4	221.6	1.9		24.4	20	205	18 03 35
18 05 35	=1928+154	21 27 12	46.2	222.2	1.9		24.8	120	207	18 03 36
18 10 12	J2202+4216	21 31 49	78.0	150.7	-0.5		-23.5	115	207	18 10 12
18 18 12	=VR422201	21 39 50	78.6	157.5	-0.4		-18.1	480	214	18 10 13
18 23 07	W51	21 44 47	42.6	229.1	2.3		28.0	139	214	18 23 07
18 28 07	---	21 49 48	42.0	230.5	2.4		28.6	300	219	18 23 08
18 28 47	J1930+1532	21 50 28	43.6	229.3	2.3		28.2	20	219	18 28 47
18 30 47	=1928+154	21 52 28	43.4	229.9	2.3		28.5	120	221	18 28 48

Schedule for TORUN (Code Tr)

Page 8

How do O-type forming stars accrete their mass?

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

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	23 Oct 2015	Day 296 ---								
18 30 47	W51	21 52 28	41.7	231.3	2.5		28.9	-20	221	No stop
18 32 47	---	21 54 28	41.4	231.8	2.5		29.2	100	223	18 30 48
18 32 47	J1930+1532	21 54 28	43.2	230.5	2.4		28.7	-20	223	No stop
18 34 47	=1928+154	21 56 29	43.0	231.0	2.4		29.0	100	225	18 32 48
18 34 47	W51	21 56 29	41.2	232.4	2.5		29.4	-20	225	No stop
18 36 47	---	21 58 29	41.0	233.0	2.6		29.7	100	227	18 34 48
18 36 47	J1930+1532	21 58 29	42.7	231.6	2.4		29.3	-20	227	No stop
18 38 47	=1928+154	22 00 29	42.5	232.2	2.5		29.5	100	229	18 36 48
18 39 27	W51	22 01 09	40.6	233.7	2.6		30.0	20	229	18 39 27
18 41 27	---	22 03 10	40.4	234.3	2.6		30.2	120	231	18 39 28
18 42 07	J1930+1532	22 03 50	42.1	233.1	2.5		29.9	20	231	18 42 07
18 44 07	=1928+154	22 05 50	41.8	233.7	2.6		30.2	120	233	18 42 08
18 44 07	W51	22 05 50	40.1	235.0	2.7		30.5	-20	233	No stop
18 46 07	---	22 07 50	39.8	235.5	2.7		30.8	100	235	18 44 08
18 46 07	J1930+1532	22 07 50	41.6	234.3	2.6		30.4	-20	235	No stop
18 48 07	=1928+154	22 09 51	41.4	234.8	2.6		30.6	100	237	18 46 08
18 48 07	W51	22 09 51	39.6	236.1	2.8		31.0	-21	237	No stop
18 50 07	---	22 11 51	39.3	236.6	2.8		31.2	99	238	18 48 08
18 50 07	J1930+1532	22 11 51	41.1	235.4	2.7		30.9	-20	238	No stop
18 52 07	=1928+154	22 13 51	40.9	235.9	2.7		31.1	100	240	18 50 08
18 52 47	W51	22 14 32	39.0	237.3	2.8		31.5	19	240	18 52 47
18 54 47	---	22 16 32	38.7	237.9	2.9		31.7	120	242	18 52 48
18 55 27	J1930+1532	22 17 12	40.4	236.8	2.8		31.5	20	242	18 55 27
18 57 27	=1928+154	22 19 12	40.2	237.4	2.8		31.7	120	244	18 55 28
18 57 27	W51	22 19 12	38.4	238.6	2.9		32.0	-21	244	No stop
18 59 27	---	22 21 13	38.1	239.1	2.9		32.2	99	246	18 57 28
18 59 27	J1930+1532	22 21 13	39.9	237.9	2.8		31.9	-20	246	No stop
19 01 27	=1928+154	22 23 13	39.7	238.4	2.9		32.1	100	248	18 59 28
19 01 27	W51	22 23 13	37.9	239.6	3.0		32.4	-21	248	No stop
19 03 27	---	22 25 13	37.6	240.1	3.0		32.5	99	250	19 01 28

Schedule for TORUN (Code Tr)

Page 9

How do O-type forming stars accrete their mass?

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

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	23 Oct 2015	Day 296 ---								
19 03 27	J1930+1532	22 25 13	39.4	239.0	2.9		32.3	-20	250	No stop
19 05 27	=1928+154	22 27 14	39.2	239.5	2.9		32.5	100	252	19 03 28
19 06 07	W51	22 27 54	37.3	240.8	3.1		32.8	19	252	19 06 07
19 08 07	---	22 29 54	37.0	241.3	3.1		33.0	120	254	19 06 08
19 08 47	J1930+1532	22 30 34	38.7	240.4	3.0		32.8	20	254	19 08 47
19 10 47	=1928+154	22 32 35	38.5	240.9	3.0		33.0	120	256	19 08 48
19 15 06	J2202+4216	22 36 54	77.9	210.9	0.6		24.7	97	256	19 15 06
19 23 06	=VR422201	22 44 55	77.2	217.0	0.7		29.3	480	263	19 15 07
19 27 30	W51	22 49 20	34.4	246.1	3.4		34.6	90	263	19 27 30
19 31 00	---	22 52 50	33.9	247.0	3.5		34.8	210	267	19 27 31
19 31 40	J1930+1532	22 53 30	35.7	246.1	3.4		34.8	20	267	19 31 40
19 33 40	=1928+154	22 55 31	35.4	246.6	3.4		34.9	120	269	19 31 41
19 33 40	W51	22 55 31	33.5	247.6	3.5		35.0	-21	269	No stop
19 35 40	---	22 57 31	33.3	248.1	3.6		35.1	99	271	19 33 41
19 35 40	J1930+1532	22 57 31	35.1	247.1	3.4		35.0	-21	271	No stop
19 37 40	=1928+154	22 59 31	34.8	247.6	3.5		35.2	99	273	19 35 41
19 37 40	W51	22 59 31	33.0	248.6	3.6		35.3	-21	273	No stop
19 39 40	---	23 01 32	32.7	249.0	3.6		35.4	99	275	19 37 41
19 39 40	J1930+1532	23 01 32	34.5	248.1	3.5		35.3	-21	275	No stop
19 41 40	=1928+154	23 03 32	34.3	248.5	3.5		35.5	99	276	19 39 41
19 42 20	W51	23 04 12	32.3	249.7	3.7		35.6	19	276	19 42 20
19 44 20	---	23 06 12	32.0	250.1	3.7		35.7	120	278	19 42 21
19 45 00	J1930+1532	23 06 53	33.8	249.3	3.6		35.7	19	278	19 45 00
19 47 00	=1928+154	23 08 53	33.5	249.8	3.6		35.8	120	280	19 45 01
19 47 00	W51	23 08 53	31.7	250.7	3.7		35.9	-21	280	No stop
19 49 00	---	23 10 53	31.4	251.2	3.8		36.0	99	282	19 47 01
19 49 00	J1930+1532	23 10 53	33.2	250.3	3.7		35.9	-21	282	No stop
19 51 00	=1928+154	23 12 54	32.9	250.7	3.7		36.0	99	284	19 49 01
19 51 00	W51	23 12 54	31.1	251.7	3.8		36.1	-21	284	No stop
19 53 00	---	23 14 54	30.8	252.1	3.8		36.2	99	286	19 51 01

Schedule for TORUN (Code Tr)

Page 10

How do O-type forming stars accrete their mass?

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

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	23 Oct 2015	Day 296 ---								
19 53 00	J1930+1532	23 14 54	32.7	251.2	3.7		36.2	-21	286	No stop
19 55 00	=1928+154	23 16 54	32.4	251.7	3.8		36.3	99	288	19 53 01
19 55 40	W51	23 17 34	30.4	252.7	3.9		36.3	19	288	19 55 40
19 57 40	---	23 19 35	30.1	253.2	3.9		36.4	120	290	19 55 41
19 58 20	J1930+1532	23 20 15	31.9	252.4	3.8		36.5	19	290	19 58 20
20 00 20	=1928+154	23 22 15	31.6	252.9	3.8		36.6	120	292	19 58 21
20 00 20	W51	23 22 15	29.8	253.8	4.0		36.6	-21	292	No stop
20 02 20	---	23 24 15	29.5	254.2	4.0		36.7	99	294	20 00 21
20 02 20	J1930+1532	23 24 15	31.3	253.3	3.9		36.7	-21	294	No stop
20 04 20	=1928+154	23 26 16	31.0	253.8	3.9		36.8	99	296	20 02 21
20 04 20	W51	23 26 16	29.2	254.7	4.0		36.8	-21	296	No stop
20 06 20	---	23 28 16	28.9	255.1	4.1		36.8	99	298	20 04 21
20 06 20	J1930+1532	23 28 16	30.7	254.2	3.9		36.9	-21	298	No stop
20 08 20	=1928+154	23 30 16	30.5	254.7	4.0		37.0	99	300	20 06 21
20 09 00	W51	23 30 57	28.5	255.7	4.1		37.0	19	300	20 09 00
20 11 00	---	23 32 57	28.2	256.2	4.1		37.0	120	301	20 09 01
20 11 40	J1930+1532	23 33 37	30.0	255.4	4.0		37.1	19	301	20 11 40
20 13 40	=1928+154	23 35 37	29.7	255.9	4.1		37.2	120	303	20 11 41
20 16 45	J2202+4216	23 38 43	70.9	245.5	1.6		47.7	17	303	20 16 45
20 24 45	=VR422201	23 46 45	69.7	248.4	1.7		49.1	480	311	20 16 46
20 28 03	W51	23 50 03	25.7	259.8	4.4		37.6	19	311	20 28 03
20 31 33	---	23 53 33	25.2	260.6	4.5		37.7	210	314	20 28 04
20 32 13	J1930+1532	23 54 13	27.0	259.9	4.4		37.9	19	314	20 32 13
20 34 13	=1928+154	23 56 14	26.7	260.3	4.4		37.9	120	316	20 32 14
20 34 13	W51	23 56 14	24.8	261.2	4.5		37.8	-21	316	No stop
20 36 43	---	23 58 44	24.4	261.7	4.6		37.9	129	319	20 34 14
20 36 43	J1930+1532	23 58 44	26.3	260.9	4.5		38.0	-21	319	No stop
20 38 43	=1928+154	00 00 44	26.0	261.3	4.5		38.0	99	321	20 36 44
20 38 43	W51	00 00 44	24.1	262.1	4.6		37.9	-21	321	No stop
20 41 13	---	00 03 15	23.7	262.6	4.6		38.0	129	323	20 38 44

Schedule for TORUN (Code Tr)

Page 11

How do O-type forming stars accrete their mass?

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

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	23 Oct 2015	Day 296 ---								
20 41 13	J1930+1532	00 03 15	25.6	261.8	4.5		38.1	-21	323	No stop
20 43 13	=1928+154	00 05 15	25.3	262.2	4.6		38.1	99	325	20 41 14
20 43 53	W51	00 05 55	23.3	263.2	4.7		38.0	19	325	20 43 53
20 46 23	---	00 08 26	23.0	263.7	4.7		38.1	150	327	20 43 54
20 47 03	J1930+1532	00 09 06	24.7	263.0	4.6		38.2	19	327	20 47 03
20 49 03	=1928+154	00 11 06	24.4	263.5	4.7		38.3	120	329	20 47 04
20 49 03	W51	00 11 06	22.6	264.2	4.8		38.1	-21	329	No stop
20 51 33	---	00 13 36	22.2	264.8	4.8		38.2	129	332	20 49 04
20 51 33	J1930+1532	00 13 36	24.1	264.0	4.7		38.3	-21	332	No stop
20 53 33	=1928+154	00 15 37	23.8	264.4	4.7		38.3	99	334	20 51 34
20 53 33	W51	00 15 37	21.9	265.2	4.9		38.2	-21	334	No stop
20 56 03	---	00 18 07	21.5	265.7	4.9		38.2	129	336	20 53 34
20 56 03	J1930+1532	00 18 07	23.4	264.9	4.8		38.4	-21	336	No stop
20 58 03	=1928+154	00 20 08	23.1	265.3	4.8		38.4	99	338	20 56 04
20 58 43	W51	00 20 48	21.1	266.2	4.9		38.2	19	338	20 58 43
21 01 13	---	00 23 18	20.7	266.7	5.0		38.3	150	340	20 58 44
21 01 53	J1930+1532	00 23 58	22.5	266.1	4.9		38.5	19	340	21 01 53
21 03 53	=1928+154	00 25 58	22.2	266.5	4.9		38.5	120	342	21 01 54
21 03 53	W51	00 25 58	20.3	267.3	5.0		38.3	-21	342	No stop
21 06 23	---	00 28 29	20.0	267.8	5.1		38.3	129	345	21 03 54
21 06 23	J1930+1532	00 28 29	21.8	267.0	4.9		38.5	-21	345	No stop
21 08 23	=1928+154	00 30 29	21.5	267.4	5.0		38.5	99	347	21 06 24
21 08 23	W51	00 30 29	19.7	268.2	5.1		38.3	-21	347	No stop
21 10 53	---	00 33 00	19.3	268.7	5.1		38.3	129	349	21 08 24
21 10 53	J1930+1532	00 33 00	21.2	267.9	5.0		38.5	-21	349	No stop
21 12 53	=1928+154	00 35 00	20.9	268.3	5.1		38.5	99	351	21 10 54
21 13 33	W51	00 35 40	18.9	269.2	5.2		38.3	19	351	21 13 33
21 16 03	---	00 38 10	18.5	269.7	5.2		38.3	150	353	21 13 34
21 16 43	J1930+1532	00 38 51	20.3	269.1	5.1		38.6	19	353	21 16 43
21 18 43	=1928+154	00 40 51	20.0	269.5	5.2		38.6	120	355	21 16 44

Schedule for TORUN (Code Tr)

Page 12

How do O-type forming stars accrete their mass?

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

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 23 Oct 2015 Day 296 ---

21 21 50	J2202+4216	00 43 59	61.4	264.4	2.7		54.0	18	355	21 21 50
21 29 50	=VR422201	00 52 00	60.2	266.1	2.8		54.2	480	363	21 21 51

SETUP FILE INFORMATION:

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

===== Setup file: sess315.M128

Setup group: 6	Station: TORUN	Total bit rate: 128
Format: MARK5B	Bits per sample: 2	Sample rate: 4.000
Number of channels: 16	DBE type: DBBC_DDC	Speedup factor: 1.00

Disk used to record data.

1st L0=	5900.00	5900.00	5900.00	5900.00	5900.00	5900.00	5900.00	5900.00	5900.00
	5900.00	5900.00	5900.00	5900.00	5900.00	5900.00	5900.00	5900.00	5900.00
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: 7	Based on FREQ, BW, and/or DOPPLER in schedule. Used with PCAL = off							
L0 sum=	6664.12	6664.12	6664.12	6664.12	6668.12	6668.12	6668.12	6668.12
	6672.12	6672.12	6672.12	6672.12	6676.12	6676.12	6676.12	6676.12
BBC fr=	764.12	764.12	764.12	764.12	768.12	768.12	768.12	768.12
	772.12	772.12	772.12	772.12	776.12	776.12	776.12	776.12
Bandwd=	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Matching frequency sets:	7	10						

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
	(B1950)	(J2000)		(mas)
* W51	19 21 24.339697	* 19 23 42.000000	19 24 25.201954	0.00
	14 24 56.76822	* 14 30 50.00000	14 33 03.33748	0.00
3C286	13 28 49.657758	* 13 31 08.288051	13 31 50.190076	0.18
* J1331+3030	30 45 58.64059	* 30 30 32.95924	30 25 49.46524	0.17
1928+154	19 28 36.092074	* 19 30 52.766999	19 31 35.706903	0.07
* J1930+1532	15 26 11.96602	* 15 32 34.42741	15 34 57.17433	0.11
VR422201	22 00 39.362505	* 22 02 43.291372	22 03 23.728543	0.00
* J2202+4216	42 02 08.59077	* 42 16 39.97990	42 21 37.02033	0.00
BLLAC	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc			

rk12dstr

RADIOASTRON AGN SURVEY

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 Survey

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

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 24 Oct 2015 Day 297 ---

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

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00

Next BBC frequencies: 732.00 732.00 732.00 732.00

Next scan bandwidths: 16.00 16.00 16.00 16.00

21 00 00	0730+504	00 26 02	30.1	44.8	-7.2	-41.5	0	0	21 00 00
21 14 30	---	00 40 34	31.7	46.8	-6.9	-43.3	870	28	21 00 01
21 15 00	0730+504	00 41 04	31.7	46.9	-6.9	-43.4	24	28	21 15 00
21 29 30	---	00 55 37	33.4	48.8	-6.7	-45.1	870	56	21 15 01
21 30 00	0730+504	00 56 07	33.4	48.9	-6.6	-45.2	24	56	21 30 00
21 44 30	---	01 10 39	35.1	50.9	-6.4	-46.9	870	84	21 30 01
21 45 00	0730+504	01 11 09	35.1	50.9	-6.4	-46.9	24	84	21 45 00
22 00 00	---	01 26 12	36.9	52.9	-6.1	-48.6	900	112	21 45 01

SETUP FILE INFORMATION:

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

===== Setup file: ra18cm2.set

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

Disk used to record data.


```

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

```

The following frequency sets based on these setups were used.

```

Frequency Set:   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 29.340642	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 33.54743	0.00
	fake circumpolar target for a TS to look at			
* 0730+504	07 30 04.386239	* 07 33 52.520582	07 35 04.433964	0.00
J0733+5022	50 28 40.45211	* 50 22 09.06206	50 19 43.92263	0.00
	./rk12ds_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 574 observations, RA-A03-04			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0730+504	102.4

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of $60 \deg F^{-0.6}$ 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

rk12dttr

RADIOASTRON AGN SURVEY
PI: Yuri Kovalev

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

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

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN Survey

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

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

Disk: GBytes recorded to this point.

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

SYNC: Time correlator 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 26 Oct 2015 Day 299 ---

----- 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

07 00 00	0224+671	10 31 37	38.5	-25.0	8.0		41.4	0	0	07 00 00
07 14 30	---	10 46 09	37.6	-23.7	8.3		38.9	870	28	07 00 01
07 15 00	0224+671	10 46 39	37.5	-23.6	8.3		38.8	24	28	07 15 00
07 29 30	---	11 01 12	36.7	-22.2	8.5		36.3	870	56	07 15 01
07 30 00	0224+671	11 01 42	36.6	-22.2	8.5		36.2	24	56	07 30 00
07 44 30	---	11 16 14	35.8	-20.8	8.8		33.7	870	84	07 30 01
07 45 00	0224+671	11 16 44	35.8	-20.7	8.8		33.6	24	84	07 45 00
08 00 00	---	11 31 47	35.0	-19.2	9.0		31.0	900	112	07 45 01

SETUP FILE INFORMATION:

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

===== Setup file: ra6cm2.set

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

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 29.497865	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 33.10355	0.00
	fake circumpolar target for a TS to look at			
* 0224+671	02 24 41.169053	* 02 28 50.051490	02 30 13.815634	0.00
J0228+6721	67 07 39.70870	* 67 21 03.02933	67 25 10.94718	0.00
	./rk12dt_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 3946 observations, RA-A03-04			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0224+671	124.7

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

rk12dutr

RADIOASTRON AGN SURVEY
PI: Yuri Kovalev

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

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

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

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
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 26 Oct 2015 Day 299 ---

----- 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	1803+784	15 32 26	61.6	14.6	-2.5	-130.8	0	0	12 00 00
12 14 30	---	15 46 59	62.1	13.5	-2.2	-135.3	870	28	12 00 01
12 15 00	1803+784	15 47 29	62.1	13.5	-2.2	-135.5	25	28	12 15 00
12 29 30	---	16 02 01	62.6	12.3	-2.0	-140.1	870	56	12 15 01
12 30 00	1803+784	16 02 31	62.6	12.3	-2.0	-140.2	25	56	12 30 00
12 44 30	---	16 17 04	63.1	11.0	-1.7	-144.9	870	84	12 30 01
12 45 00	1803+784	16 17 34	63.1	11.0	-1.7	-145.1	25	84	12 45 00
13 00 00	---	16 32 36	63.5	9.6	-1.5	-150.0	900	112	12 45 01

SETUP FILE INFORMATION:

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

===== Setup file: ra6cm2.set

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

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

Frequency Set:   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 29.518936	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 33.03744	0.00
	fake circumpolar target for a TS to look at			
* 1803+784	18 03 39.193524	* 18 00 45.683902	17 59 47.056886	0.00
J1800+7828	78 27 54.29744	* 78 28 04.01838	78 28 30.21283	0.00
	./rk12du_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 217073 observations, RA-A03-04, RA-A02-			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
1803+784	96.4

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of $60 \deg F^{-0.6}$ 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

rk12dvtr

RADIOASTRON AGN SURVEY

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 Survey

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

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 26 Oct 2015 Day 299 ---

----- 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	2328+107	00 33 55	46.2	202.4	1.0	13.5	0	0	21 00 00
21 19 30	---	00 53 28	44.9	209.0	1.4	17.3	1170	37	21 00 01
21 20 00	2328+107	00 53 58	44.9	209.2	1.4	17.4	24	37	21 20 00
21 40 00	---	01 14 02	43.2	215.6	1.7	20.9	1200	76	21 20 01

SETUP FILE INFORMATION:

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

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

```

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

```

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 29.556292	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 32.91600	0.00
	fake circumpolar target for a TS to look at			
* 2328+107	23 28 08.785997	* 23 30 40.852261	23 31 29.935901	0.00
J2330+1100	10 43 45.52196	* 11 00 18.70969	11 05 42.83045	0.00
	./rk12dv_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 754 observations, RA-A03-04, RA-			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
2328+107	142.8

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

rk12dwtr

RADIOASTRON AGN SURVEY
PI: Yuri Kovalev

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

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

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN Survey

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

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 27 Oct 2015 Day 300 ---

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

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00

Next BBC frequencies: 736.00 736.00 736.00 736.00

Next scan bandwidths: 16.00 16.00 16.00 16.00

00 20 00	0007+106	03 54 28	29.0	248.1	3.7	34.6	0	0	00 20 00
00 39 30	---	04 14 01	26.2	252.5	4.0	35.7	1170	37	00 20 01
00 40 00	0007+106	04 14 31	26.2	252.6	4.1	35.7	24	37	00 40 00
01 00 00	---	04 34 34	23.3	257.0	4.4	36.6	1200	76	00 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: 5	Station: TORUN	Total bit rate: 256
Format: MKIV1:4	Bits per sample: 2	Sample rate: 32.000
Number of channels: 4	DBE type:	Speedup factor: 1.00

Disk used to record data.


```

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

```

The following frequency sets based on these setups were used.

```

Frequency Set:   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 29.569773	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 32.87093	0.00
	fake circumpolar target for a TS to look at			
* 0007+106	00 07 56.721989	* 00 10 31.005907	00 11 20.945489	0.00
J0010+1058	10 41 48.22044	* 10 58 29.50423	11 03 53.70287	0.00
	./rk12dw_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 3268 observations, RA-A03-04			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0007+106	152.3

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

rk12dxtr

RADIOASTRON AGN SURVEY
PI: Yuri Kovalev

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

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

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN Survey

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

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

Disk: GBytes recorded to this point.

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

SYNC: Time correlator 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 27 Oct 2015 Day 300 ---

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

Next scan frequencies: 22236.00 22236.00 22236.00 22236.00

Next BBC frequencies: 736.00 736.00 736.00 736.00

Next scan bandwidths: 16.00 16.00 16.00 16.00

03 00 00	0507+179	06 34 54	51.3	213.0	1.4		20.1	0	0	03 00 00
03 14 30	---	06 49 27	50.0	218.1	1.6		22.9	870	28	03 00 01
03 15 00	0507+179	06 49 57	50.0	218.3	1.6		23.0	24	28	03 15 00
03 29 30	---	07 04 29	48.6	223.1	1.9		25.6	870	56	03 15 01
03 30 00	0507+179	07 04 59	48.5	223.2	1.9		25.6	24	56	03 30 00
03 44 30	---	07 19 31	47.0	227.8	2.1		27.9	870	84	03 30 01
03 45 00	0507+179	07 20 02	46.9	228.0	2.2		28.0	24	84	03 45 00
04 00 00	---	07 35 04	45.2	232.5	2.4		30.1	900	112	03 45 01

SETUP FILE INFORMATION:

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

===== Setup file: ra1cm2.set

Matching groups in ./rk12dx_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:  3  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:  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 29.580162	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 32.83579	0.00
	fake circumpolar target for a TS to look at			
* 0507+179	05 07 07.486545	* 05 10 02.369131	05 10 58.664795	0.00
J0510+1800	17 56 58.64618	* 18 00 41.58163	18 01 43.02178	0.00
	./rk12dx_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 1679 observations, RA-A03-04, RA			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0507+179	134.9

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

n15c3tr

NETWORK MONITORING EXPERIMENT

PI: *Gabriele Surcis*

Address: JIVE

Schedule for TORUN (Code Tr)

Page 2

Network Monitoring Experiment

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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 27 Oct 2015	Day 300 ---								
Next scan frequencies:		4966.49	4966.49	4966.49	4966.49	4966.49	4982.49	4982.49	4982.49	4982.49
		4998.49	4998.49	4998.49	4998.49	4998.49	5014.49	5014.49	5014.49	5014.49
Next BBC frequencies:		766.49	766.49	766.49	766.49	766.49	782.49	782.49	782.49	782.49
		798.49	798.49	798.49	798.49	798.49	814.49	814.49	814.49	814.49
Next scan bandwidths:		8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
		8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00

12 00 00	1848+283	15 36 23	46.8	105.1	-3.2		-41.2	0	0	12 00 00
12 05 00	---	15 41 24	47.6	106.3	-3.2		-40.9	300	19	12 00 01

12 06 00	1848+283	15 42 24	47.7	106.6	-3.1		-40.9	54	19	12 06 00
12 11 00	---	15 47 25	48.4	107.8	-3.1		-40.6	300	38	12 06 01

12 13 00	1848+283	15 49 25	48.7	108.3	-3.0		-40.4	114	38	12 13 00
12 16 00	---	15 52 25	49.2	109.1	-3.0		-40.2	180	50	12 13 01

12 22 00	3C286	15 58 26	55.1	244.2	2.4		38.8	76	50	12 22 00
12 24 00	---	16 00 27	54.9	244.8	2.5		39.0	120	58	12 22 01

12 25 00	3C286	16 01 27	54.7	245.1	2.5		39.2	54	58	12 25 00
12 30 00	---	16 06 28	54.0	246.5	2.6		39.7	300	77	12 25 01

12 32 00	3C286	16 08 28	53.8	247.1	2.6		39.9	113	77	12 32 00
12 35 00	---	16 11 29	53.3	247.9	2.7		40.2	180	88	12 32 01

12 42 00	1848+283	16 18 30	52.8	116.2	-2.5		-37.8	140	88	12 42 00
12 52 00	---	16 28 31	54.1	119.1	-2.4		-36.6	600	127	12 42 01

12 54 00	1848+283	16 30 32	54.4	119.7	-2.3		-36.4	113	127	12 54 00
13 04 00	---	16 40 33	55.6	122.8	-2.2		-35.0	600	165	12 54 01

13 06 00	1848+283	16 42 34	55.9	123.5	-2.1		-34.7	113	165	13 06 00
13 16 00	---	16 52 35	57.1	126.8	-2.0		-33.1	600	204	13 06 01

13 17 00	1848+283	16 53 35	57.2	127.1	-2.0		-33.0	53	204	13 17 00
13 27 00	---	17 03 37	58.4	130.7	-1.8		-31.2	600	242	13 17 01

13 28 00	1848+283	17 04 37	58.5	131.0	-1.8		-31.0	53	242	13 28 00
13 30 00	---	17 06 38	58.8	131.7	-1.7		-30.6	120	250	13 28 01

13 35 00	3C286	17 11 38	44.6	262.6	3.7		43.7	24	250	13 35 00
13 38 00	---	17 14 39	44.2	263.2	3.7		43.8	180	262	13 35 01

13 39 00	3C286	17 15 39	44.0	263.5	3.7		43.8	54	262	13 39 00
13 44 00	---	17 20 40	43.3	264.5	3.8		43.9	300	281	13 39 01

Schedule for TORUN (Code Tr)

Page 3

Network Monitoring Experiment

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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 27 Oct 2015	Day 300 ---								
13 46 00	3C286	17 22 40	43.0	265.0	3.8		43.9	114	281	13 46 00
13 56 00	---	17 32 42	41.5	267.1	4.0		44.1	600	319	13 46 01
13 57 00	3C286	17 33 42	41.3	267.3	4.0		44.1	54	319	13 57 00
14 07 00	---	17 43 44	39.8	269.3	4.2		44.1	600	358	13 57 01
14 08 00	3C286	17 44 44	39.7	269.5	4.2		44.1	54	358	14 08 00
14 14 00	---	17 50 45	38.8	270.7	4.3		44.1	360	381	14 08 01
14 21 00	1848+283	17 57 46	63.5	153.0	-0.9		-18.0	167	381	14 21 00
14 26 00	---	18 02 47	63.8	155.4	-0.8		-16.5	300	400	14 21 01
14 27 00	1848+283	18 03 47	63.9	155.9	-0.8		-16.2	53	400	14 27 00
14 32 00	---	18 08 48	64.1	158.3	-0.7		-14.6	300	419	14 27 01
14 38 00	3C286	18 14 49	35.2	275.4	4.7		43.9	112	419	14 38 00
14 42 00	---	18 18 49	34.6	276.1	4.8		43.8	240	435	14 38 01
14 43 00	3C286	18 19 50	34.4	276.3	4.8		43.8	54	435	14 43 00
14 48 00	---	18 24 50	33.7	277.3	4.9		43.7	300	454	14 43 01
14 50 00	3C286	18 26 51	33.4	277.7	4.9		43.6	114	454	14 50 00
15 00 00	---	18 36 52	31.9	279.5	5.1		43.4	600	492	14 50 01

SETUP FILE INFORMATION:

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

===== Setup file: sess315.C512

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

Disk used to record data.

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

The following frequency sets based on these setups were used.

Frequency Set: 9 Setup file default. Used with PCAL = off

LO sum=	4966.49	4966.49	4966.49	4966.49	4982.49	4982.49	4982.49	4982.49
	4998.49	4998.49	4998.49	4998.49	5014.49	5014.49	5014.49	5014.49
BBC fr=	766.49	766.49	766.49	766.49	782.49	782.49	782.49	782.49
	798.49	798.49	798.49	798.49	814.49	814.49	814.49	814.49
Bandwd=	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00

Matching frequency sets: 9 15

Track assignments are:

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

barrel=roll_off

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		Error
	(B1950)	(J2000)	(mas)
* 3C286	13 28 49.657758	* 13 31 08.288051	13 31 50.206072
J1331+3030	30 45 58.64059	* 30 30 32.95924	30 25 48.51537
1328+307	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc		
J1331+30	GSFC 2015a astro solution, unpublished 225 observations.		
* 1848+283	18 48 29.069765	* 18 50 27.589823	18 51 04.448492
J1850+2825	28 21 38.48520	* 28 25 13.15543	28 26 45.87216
J1850+28	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc		
	GSFC 2015a astro solution, unpublished 71 observations.		

VLBI OBSERVATIONS OF UHBLs AT 5 GHz

PI: *Zhongzu WU*

Address: College of Science, Guizhou University

Observing mode: Phase-referencing of UHBLs at 6cm (1 Gb/s)

Schedule for TORUN (Code Tr)

Page 2

VLBI observations of UHBLs at 5 GHz

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

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	Dwell	GBytes	SYNC

--- Tue 27 Oct 2015 Day 300 ---									
Next scan frequencies:		4942.49	4942.49	4942.49	4942.49	4974.49	4974.49	4974.49	4974.49
		5006.49	5006.49	5006.49	5006.49	5038.49	5038.49	5038.49	5038.49
Next BBC frequencies:		742.49	742.49	742.49	742.49	774.49	774.49	774.49	774.49
		806.49	806.49	806.49	806.49	838.49	838.49	838.49	838.49
Next scan bandwidths:		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00

19 30 00	3C48	23 07 37	56.7	111.3	-2.5	-42.0	0	0	19 30 00
19 34 00	---	23 11 37	57.2	112.4	-2.5	-41.6	240	31	19 30 01

19 36 00	J0308+0406	23 13 38	21.6	113.3	-3.9	-33.6	-27	31	19 36 00
19 39 00	=NGC1218	23 16 38	22.0	114.0	-3.9	-33.4	153	54	19 36 01

19 39 30	J0314+062	23 17 08	23.1	111.4	-4.0	-34.2	11	54	19 39 30
19 44 30	---	23 22 09	23.8	112.6	-3.9	-33.9	300	92	19 39 31

19 44 30	J0308+0406	23 22 09	22.7	115.2	-3.8	-33.0	-20	92	No stop
19 47 30	=NGC1218	23 25 10	23.1	115.9	-3.7	-32.8	160	115	19 44 31

19 47 30	J0314+062	23 25 10	24.2	113.2	-3.8	-33.7	-20	115	No stop
19 52 30	---	23 30 10	24.9	114.4	-3.8	-33.4	280	154	19 47 31

19 53 00	J0308+0406	23 30 41	23.9	117.2	-3.6	-32.4	10	154	19 53 00
19 56 00	=NGC1218	23 33 41	24.3	117.9	-3.6	-32.2	180	177	19 53 01

19 56 00	J0314+062	23 33 41	25.3	115.2	-3.7	-33.2	-20	177	No stop
20 01 00	---	23 38 42	26.0	116.3	-3.6	-32.8	280	215	19 56 01

20 02 30	J0323+0145	23 40 12	21.2	117.4	-3.7	-32.2	57	215	20 02 30
20 05 30	=0320+015	23 43 13	21.6	118.0	-3.7	-32.0	180	238	20 02 31

20 05 30	J0323+0214	23 43 13	21.7	117.0	-3.7	-32.4	-14	238	No stop
20 10 30	---	23 48 13	22.4	118.1	-3.6	-32.0	286	277	20 05 31

20 10 30	J0323+0145	23 48 13	22.2	119.2	-3.6	-31.6	-14	277	No stop
20 13 30	=0320+015	23 51 14	22.6	119.9	-3.5	-31.4	166	300	20 10 31

20 13 30	J0323+0214	23 51 14	22.8	118.8	-3.6	-31.8	-14	300	No stop
20 18 30	---	23 56 15	23.5	120.0	-3.5	-31.4	286	338	20 13 31

20 19 00	J0323+0145	23 56 45	23.4	121.2	-3.5	-30.9	16	338	20 19 00
20 22 00	=0320+015	23 59 45	23.7	121.9	-3.4	-30.7	180	362	20 19 01

20 22 00	J0323+0214	23 59 45	23.9	120.8	-3.5	-31.1	-14	362	No stop
20 27 00	---	00 04 46	24.6	122.0	-3.4	-30.7	286	400	20 22 01

Schedule for TORUN (Code Tr)

Page 3

VLBI observations of UHBLs at 5 GHz

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

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	27 Oct 2015	Day 300	---							
20 29 30	DA193	00 07 17	32.2	65.1	-5.8		-45.2	21	400	20 29 30
20 35 30	---	00 13 18	33.1	66.1	-5.7		-45.6	360	446	20 29 31
20 38 00	J0308+0406	00 15 48	29.6	128.0	-2.9		-28.3	11	446	20 38 00
20 41 00	=NGC1218	00 18 48	29.9	128.8	-2.8		-28.0	180	469	20 38 01
20 41 30	J0314+062	00 19 19	31.2	126.2	-2.9		-29.2	10	469	20 41 30
20 46 30	---	00 24 19	31.8	127.5	-2.8		-28.7	300	508	20 41 31
20 46 30	J0308+0406	00 24 19	30.6	130.2	-2.7		-27.4	-20	508	No stop
20 49 30	=NGC1218	00 27 20	30.9	131.0	-2.7		-27.0	160	531	20 46 31
20 49 30	J0314+062	00 27 20	32.2	128.2	-2.8		-28.3	-20	531	No stop
20 54 30	---	00 32 21	32.8	129.5	-2.7		-27.8	280	569	20 49 31
20 55 00	J0308+0406	00 32 51	31.5	132.4	-2.6		-26.4	10	569	20 55 00
20 58 00	=NGC1218	00 35 51	31.9	133.2	-2.6		-26.0	180	592	20 55 01
20 58 00	J0314+062	00 35 51	33.2	130.5	-2.7		-27.4	-20	592	No stop
21 03 00	---	00 40 52	33.7	131.8	-2.6		-26.8	280	631	20 58 01
21 04 30	J0323+0145	00 42 22	28.8	132.3	-2.7		-26.4	57	631	21 04 30
21 07 30	=0320+015	00 45 23	29.2	133.1	-2.6		-26.0	180	654	21 04 31
21 07 30	J0323+0214	00 45 23	29.4	131.9	-2.7		-26.6	-14	654	No stop
21 12 30	---	00 50 24	30.0	133.2	-2.6		-26.0	286	692	21 07 31
21 12 30	J0323+0145	00 50 24	29.7	134.4	-2.6		-25.4	-15	692	No stop
21 15 30	=0320+015	00 53 24	30.0	135.1	-2.5		-25.1	165	715	21 12 31
21 15 30	J0323+0214	00 53 24	30.3	134.0	-2.6		-25.6	-14	715	No stop
21 20 30	---	00 58 25	30.8	135.3	-2.5		-25.0	286	754	21 15 31
21 21 00	J0323+0145	00 58 55	30.6	136.6	-2.4		-24.4	15	754	21 21 00
21 24 00	=0320+015	01 01 55	30.9	137.4	-2.4		-24.0	180	777	21 21 01
21 24 00	J0323+0214	01 01 55	31.2	136.3	-2.4		-24.6	-14	777	No stop
21 29 00	---	01 06 56	31.7	137.6	-2.3		-23.9	286	815	21 24 01
21 30 30	J0308+0406	01 08 27	35.1	142.1	-2.0		-21.7	64	815	21 30 30
21 33 30	=NGC1218	01 11 27	35.4	143.0	-2.0		-21.2	180	838	21 30 31
21 34 00	J0314+062	01 11 57	37.0	140.4	-2.1		-22.7	10	838	21 34 00
21 39 00	---	01 16 58	37.4	141.8	-2.0		-21.9	300	877	21 34 01

Schedule for TORUN (Code Tr)

Page 4

VLBI observations of UHBLs at 5 GHz

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

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 27 Oct 2015	Day 300 ---								
21 39 00	J0308+0406	01 16 58	35.9	144.6	-1.9		-20.4	-20	877	No stop
21 42 00	=NGC1218	01 19 58	36.2	145.4	-1.8		-20.0	160	900	21 39 01
21 42 00	J0314+062	01 19 58	37.7	142.7	-1.9		-21.5	-20	900	No stop
21 47 00	---	01 24 59	38.2	144.2	-1.8		-20.7	280	938	21 42 01
21 47 30	J0308+0406	01 25 29	36.6	147.1	-1.7		-19.1	10	938	21 47 30
21 50 30	=NGC1218	01 28 30	36.9	147.9	-1.7		-18.6	180	962	21 47 31
21 50 30	J0314+062	01 28 30	38.5	145.2	-1.8		-20.2	-20	962	No stop
21 55 30	---	01 33 31	38.9	146.7	-1.7		-19.4	280	1000	21 50 31
21 57 00	J0323+0145	01 35 01	34.0	146.5	-1.8		-19.4	57	1000	21 57 00
22 00 00	=0320+015	01 38 01	34.2	147.4	-1.8		-18.9	180	1023	21 57 01
22 00 30	J0323+0214	01 38 31	34.6	146.4	-1.8		-19.4	16	1023	22 00 30
22 05 30	---	01 43 32	35.0	147.8	-1.7		-18.7	300	1062	22 00 31
22 05 30	J0323+0145	01 43 32	34.7	148.9	-1.7		-18.1	-15	1062	No stop
22 08 30	=0320+015	01 46 33	34.9	149.8	-1.6		-17.6	165	1085	22 05 31
22 08 30	J0323+0214	01 46 33	35.3	148.7	-1.7		-18.2	-14	1085	No stop
22 13 30	---	01 51 34	35.7	150.1	-1.6		-17.4	286	1123	22 08 31
22 14 00	J0323+0145	01 52 04	35.3	151.4	-1.5		-16.7	15	1123	22 14 00
22 17 00	=0320+015	01 55 04	35.5	152.3	-1.5		-16.2	180	1146	22 14 01
22 17 00	J0323+0214	01 55 04	35.9	151.2	-1.5		-16.8	-14	1146	No stop
22 22 00	---	02 00 05	36.3	152.7	-1.4		-16.0	286	1185	22 17 01
22 23 30	J0308+0406	02 01 35	39.1	158.0	-1.1		-13.0	65	1185	22 23 30
22 26 30	=NGC1218	02 04 36	39.3	159.0	-1.1		-12.5	180	1208	22 23 31
22 27 00	J0314+062	02 05 06	41.1	156.6	-1.2		-13.9	9	1208	22 27 00
22 32 00	---	02 10 07	41.4	158.2	-1.1		-13.0	300	1246	22 27 01
22 32 00	J0308+0406	02 10 07	39.6	160.7	-1.0		-11.5	-21	1246	No stop
22 35 00	=NGC1218	02 13 07	39.7	161.7	-0.9		-10.9	159	1269	22 32 01
22 35 00	J0314+062	02 13 07	41.6	159.1	-1.0		-12.4	-21	1269	No stop
22 40 00	---	02 18 08	41.9	160.8	-1.0		-11.5	279	1308	22 35 01
22 40 30	J0308+0406	02 18 38	40.0	163.4	-0.8		-9.9	9	1308	22 40 30
22 43 30	=NGC1218	02 21 39	40.1	164.4	-0.8		-9.3	180	1331	22 40 31

Schedule for TORUN (Code Tr)

Page 5

VLBI observations of UHBLs at 5 GHz

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

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 27 Oct 2015	Day 300	---							
22 43 30	J0314+062	02 21 39	42.0	161.9	-0.9		-10.8	-21	1331	No stop
22 48 30	---	02 26 39	42.3	163.6	-0.8		-9.8	279	1369	22 43 31
22 50 30	DA193	02 28 40	52.8	89.4	-3.5		-51.4	-43	1369	22 50 30
22 58 30	---	02 36 41	54.0	91.0	-3.3		-51.4	437	1431	22 50 31
23 00 30	J0323+0145	02 38 41	37.9	165.6	-0.8		-8.6	-45	1431	23 00 30
23 03 30	=0320+015	02 41 42	38.0	166.5	-0.7		-8.0	135	1454	23 00 31
23 03 30	J0323+0214	02 41 42	38.5	165.5	-0.8		-8.7	-14	1454	No stop
23 08 30	---	02 46 43	38.7	167.0	-0.7		-7.7	286	1492	23 03 31
23 08 30	J0323+0145	02 46 43	38.1	168.1	-0.6		-7.1	-15	1492	No stop
23 11 30	=0320+015	02 49 43	38.2	169.1	-0.6		-6.5	165	1515	23 08 31
23 11 30	J0323+0214	02 49 43	38.8	168.0	-0.6		-7.2	-14	1515	No stop
23 16 30	---	02 54 44	38.9	169.6	-0.5		-6.2	286	1554	23 11 31
23 18 00	J0323+0145	02 56 14	38.4	171.1	-0.5		-5.3	76	1554	23 18 00
23 21 00	=0320+015	02 59 15	38.5	172.1	-0.4		-4.7	180	1577	23 18 01
23 21 00	J0323+0214	02 59 15	39.1	171.0	-0.5		-5.4	-14	1577	No stop
23 26 00	---	03 04 16	39.2	172.6	-0.4		-4.4	286	1615	23 21 01
23 27 30	J0308+0406	03 05 46	41.1	178.8	-0.1		-0.7	63	1615	23 27 30
23 30 30	=NGC1218	03 08 46	41.1	179.8	-0.0		-0.1	180	1638	23 27 31
23 31 00	J0314+062	03 09 16	43.3	178.0	-0.1		-1.2	8	1638	23 31 00
23 36 00	---	03 14 17	43.3	179.7	-0.0		-0.2	300	1677	23 31 01
23 36 00	J0308+0406	03 14 17	41.1	181.7	0.1		1.0	-22	1677	No stop
23 39 00	=NGC1218	03 17 18	41.0	182.6	0.1		1.6	158	1700	23 36 01
23 39 00	J0314+062	03 17 18	43.3	180.7	0.0		0.4	-22	1700	No stop
23 44 00	---	03 22 18	43.3	182.4	0.1		1.5	278	1738	23 39 01
23 44 30	J0308+0406	03 22 49	41.0	184.5	0.2		2.7	8	1738	23 44 30
23 47 30	=NGC1218	03 25 49	41.0	185.5	0.3		3.3	180	1762	23 44 31
23 47 30	J0314+062	03 25 49	43.2	183.6	0.2		2.2	-22	1762	No stop
23 52 30	---	03 30 50	43.2	185.3	0.3		3.2	278	1800	23 47 31

Schedule for TORUN (Code Tr)

Page 6

VLBI observations of UHBLs at 5 GHz

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

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

--- Start: Tue 27 Oct 2015 Day 300 -- Stop: Wed 28 Oct 2015 Day 301 ---										
23 54 30	DA193	03 32 50	62.3	104.0	-2.4		-49.3	-57	1800	23 54 30
00 02 30	---	03 40 52	63.5	106.3	-2.3		-48.6	423	1862	23 54 31
00 05 00	J0958+4725	03 43 22	34.0	54.7	-6.3		-46.3	26	1862	00 05 00
00 08 00	=0955+476	03 46 22	34.4	55.1	-6.2		-46.6	180	1885	00 05 01
00 08 00	J1008+4705	03 46 22	33.0	54.0	-6.4		-45.4	-19	1885	No stop
00 13 00	---	03 51 23	33.6	54.7	-6.3		-45.9	281	1923	00 08 01
00 13 00	J0958+4725	03 51 23	35.0	55.8	-6.1		-47.1	-19	1923	No stop
00 16 00	=0955+476	03 54 24	35.4	56.2	-6.1		-47.4	161	1946	00 13 01
00 16 00	J1008+4705	03 54 24	34.0	55.1	-6.2		-46.3	-19	1946	No stop
00 21 00	---	03 59 25	34.6	55.8	-6.2		-46.8	281	1985	00 16 01
00 21 30	J0958+4725	03 59 55	36.1	57.0	-6.0		-48.0	11	1985	00 21 30
00 24 30	=0955+476	04 02 55	36.5	57.4	-5.9		-48.3	180	2008	00 21 31
00 24 30	J1008+4705	04 02 55	35.0	56.3	-6.1		-47.1	-19	2008	No stop
00 29 30	---	04 07 56	35.6	57.0	-6.0		-47.6	281	2046	00 24 31
00 31 00	J0840+1312	04 09 26	23.6	99.7	-4.5		-37.4	-10	2046	00 31 00
00 34 00	=0838+133	04 12 27	24.0	100.3	-4.5		-37.3	170	2069	00 31 01
00 34 30	J0847+1134	04 12 57	21.9	100.2	-4.6		-37.1	8	2069	00 34 30
00 39 30	---	04 17 58	22.6	101.2	-4.5		-36.9	300	2108	00 34 31
00 39 30	J0840+1312	04 17 58	24.9	101.5	-4.4		-37.2	-23	2108	No stop
00 42 30	=0838+133	04 20 58	25.3	102.2	-4.3		-37.1	157	2131	00 39 31
00 42 30	J0847+1134	04 20 58	23.0	101.9	-4.5		-36.8	-22	2131	No stop
00 47 30	---	04 25 59	23.8	102.9	-4.4		-36.7	278	2169	00 42 31
00 48 00	J0840+1312	04 26 29	26.1	103.3	-4.3		-36.9	7	2169	00 48 00
00 51 00	=0838+133	04 29 29	26.5	104.0	-4.2		-36.8	180	2192	00 48 01
00 51 00	J0847+1134	04 29 29	24.3	103.7	-4.3		-36.5	-22	2192	No stop
00 56 00	---	04 34 30	25.0	104.8	-4.2		-36.3	278	2231	00 51 01
00 58 30	DA193	04 37 01	71.0	126.4	-1.3		-39.0	-37	2231	00 58 30
01 06 30	---	04 45 02	72.0	130.3	-1.2		-36.6	443	2292	00 58 31
01 09 00	J0958+4725	04 47 32	42.3	63.6	-5.2		-52.6	2	2292	01 09 00
01 12 00	=0955+476	04 50 33	42.7	64.1	-5.1		-52.8	180	2315	01 09 01

Schedule for TORUN (Code Tr)

Page 7

VLBI observations of UHBLs at 5 GHz

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

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	28 Oct 2015	Day 301	---							
01 12 00	J1008+4705	04 50 33	41.2	63.0	-5.3		-51.7	-19	2315	No stop
01 17 00	---	04 55 34	41.9	63.7	-5.2		-52.2	281	2354	01 12 01
01 17 00	J0958+4725	04 55 34	43.4	64.8	-5.1		-53.3	-19	2354	No stop
01 20 00	=0955+476	04 58 34	43.8	65.2	-5.0		-53.5	161	2377	01 17 01
01 20 00	J1008+4705	04 58 34	42.3	64.2	-5.2		-52.4	-19	2377	No stop
01 25 00	---	05 03 35	42.9	64.9	-5.1		-52.9	281	2415	01 20 01
01 25 30	J0958+4725	05 04 05	44.5	65.9	-4.9		-54.0	11	2415	01 25 30
01 28 30	=0955+476	05 07 06	45.0	66.4	-4.9		-54.3	180	2438	01 25 31
01 28 30	J1008+4705	05 07 06	43.4	65.4	-5.0		-53.2	-19	2438	No stop
01 33 30	---	05 12 06	44.1	66.1	-5.0		-53.6	281	2477	01 28 31
01 35 00	J0840+1312	05 13 37	32.8	114.1	-3.5		-34.3	-21	2477	01 35 00
01 38 00	=0838+133	05 16 37	33.2	114.8	-3.4		-34.0	159	2500	01 35 01
01 38 30	J0847+1134	05 17 07	31.0	114.5	-3.5		-33.9	8	2500	01 38 30
01 43 30	---	05 22 08	31.7	115.7	-3.4		-33.5	300	2538	01 38 31
01 43 30	J0840+1312	05 22 08	34.0	116.1	-3.3		-33.6	-22	2538	No stop
01 46 30	=0838+133	05 25 09	34.4	116.9	-3.3		-33.4	158	2562	01 43 31
01 47 00	J0847+1134	05 25 39	32.2	116.5	-3.4		-33.3	8	2562	01 47 00
01 52 00	---	05 30 40	32.9	117.7	-3.3		-32.9	300	2600	01 47 01
01 52 30	J0840+1312	05 31 10	35.2	118.4	-3.2		-32.9	8	2600	01 52 30
01 55 30	=0838+133	05 34 10	35.6	119.1	-3.1		-32.6	180	2623	01 52 31
01 55 30	J0847+1134	05 34 10	33.3	118.6	-3.2		-32.6	-22	2623	No stop
02 00 30	---	05 39 11	34.0	119.8	-3.1		-32.1	278	2662	01 55 31
02 03 00	DA193	05 41 41	76.5	167.6	-0.2		-9.6	-23	2662	02 03 00
02 11 00	---	05 49 43	76.7	174.2	-0.1		-4.5	457	2723	02 03 01
02 12 30	J0958+4725	05 51 13	51.2	72.6	-4.1		-57.7	-128	2723	02 12 30
02 15 30	=0955+476	05 54 13	51.6	73.0	-4.1		-58.0	52	2746	02 12 31
02 15 30	J1008+4705	05 54 13	50.0	72.1	-4.2		-56.9	-19	2746	No stop
02 20 30	---	05 59 14	50.7	72.8	-4.2		-57.3	281	2785	02 15 31
02 20 30	J0958+4725	05 59 14	52.3	73.8	-4.0		-58.3	-20	2785	No stop
02 23 30	=0955+476	06 02 15	52.7	74.2	-4.0		-58.5	160	2808	02 20 31

Schedule for TORUN (Code Tr)

Page 8

VLBI observations of UHBLs at 5 GHz

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

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	28 Oct 2015	Day 301	---							
02 23 30	J1008+4705	06 02 15	51.2	73.2	-4.1		-57.5	-19	2808	No stop
02 28 30	---	06 07 16	51.9	74.0	-4.0		-57.8	281	2846	02 23 31
02 29 00	J0958+4725	06 07 46	53.5	75.0	-3.9		-58.9	10	2846	02 29 00
02 32 00	=0955+476	06 10 46	54.0	75.5	-3.8		-59.1	180	2869	02 29 01
02 32 00	J1008+4705	06 10 46	52.4	74.5	-4.0		-58.1	-19	2869	No stop
02 37 00	---	06 15 47	53.1	75.2	-3.9		-58.4	281	2908	02 32 01
02 38 30	J0840+1312	06 17 17	40.9	130.7	-2.4		-27.9	-36	2908	02 38 30
02 41 30	=0838+133	06 20 18	41.2	131.5	-2.4		-27.5	144	2931	02 38 31
02 41 30	J0847+1134	06 20 18	39.0	130.7	-2.5		-27.7	-22	2931	No stop
02 46 30	---	06 25 18	39.6	132.1	-2.4		-27.0	278	2969	02 41 31
02 47 00	J0840+1312	06 25 49	41.8	133.1	-2.3		-26.8	8	2969	02 47 00
02 50 00	=0838+133	06 28 49	42.2	134.0	-2.2		-26.3	180	2992	02 47 01
02 50 00	J0847+1134	06 28 49	40.0	133.1	-2.3		-26.6	-22	2992	No stop
02 55 00	---	06 33 50	40.5	134.5	-2.2		-25.9	278	3031	02 50 01
02 55 30	J0840+1312	06 34 20	42.7	135.6	-2.1		-25.5	8	3031	02 55 30
02 58 30	=0838+133	06 37 20	43.1	136.5	-2.1		-25.1	180	3054	02 55 31
02 58 30	J0847+1134	06 37 20	40.9	135.6	-2.2		-25.4	-22	3054	No stop
03 03 30	---	06 42 21	41.4	137.0	-2.1		-24.7	278	3092	02 58 31
03 05 00	J0958+4725	06 43 52	58.8	80.5	-3.3		-60.9	-38	3092	03 05 00
03 08 00	=0955+476	06 46 52	59.3	81.0	-3.2		-61.1	142	3115	03 05 01
03 08 00	J1008+4705	06 46 52	57.7	80.0	-3.4		-60.1	-20	3115	No stop
03 13 00	---	06 51 53	58.4	80.8	-3.3		-60.4	280	3154	03 08 01
03 13 00	J0958+4725	06 51 53	60.0	81.8	-3.1		-61.3	-20	3154	No stop
03 16 00	=0955+476	06 54 53	60.5	82.3	-3.1		-61.4	160	3177	03 13 01
03 16 00	J1008+4705	06 54 53	58.9	81.3	-3.2		-60.5	-20	3177	No stop
03 21 00	---	06 59 54	59.6	82.1	-3.2		-60.7	280	3215	03 16 01
03 21 30	J0958+4725	07 00 24	61.3	83.2	-3.0		-61.6	10	3215	03 21 30
03 24 30	=0955+476	07 03 25	61.7	83.7	-2.9		-61.7	180	3238	03 21 31
03 24 30	J1008+4705	07 03 25	60.1	82.7	-3.1		-60.9	-20	3238	No stop
03 29 30	---	07 08 26	60.9	83.5	-3.0		-61.0	280	3277	03 24 31

Schedule for TORUN (Code Tr)

Page 9

VLBI observations of UHBLs at 5 GHz

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

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	28 Oct 2015	Day 301	---							
03 31 00	J0840+1312	07 09 56	46.1	146.8	-1.5		-19.7	-52	3277	03 31 00
03 34 00	=0838+133	07 12 56	46.3	147.8	-1.5		-19.2	128	3300	03 31 01
03 34 00	J0847+1134	07 12 56	44.3	146.5	-1.6		-19.8	-22	3300	No stop
03 39 00	---	07 17 57	44.7	148.1	-1.5		-18.9	278	3338	03 34 01
03 39 30	J0840+1312	07 18 27	46.8	149.7	-1.4		-18.1	8	3338	03 39 30
03 42 30	=0838+133	07 21 28	47.0	150.7	-1.3		-17.6	180	3362	03 39 31
03 42 30	J0847+1134	07 21 28	44.9	149.3	-1.4		-18.2	-21	3362	No stop
03 47 30	---	07 26 28	45.3	150.9	-1.4		-17.3	279	3400	03 42 31
03 48 00	J0840+1312	07 26 59	47.4	152.6	-1.2		-16.5	8	3400	03 48 00
03 51 00	=0838+133	07 29 59	47.6	153.6	-1.2		-15.9	180	3423	03 48 01
03 51 00	J0847+1134	07 29 59	45.6	152.1	-1.3		-16.7	-21	3423	No stop
03 56 00	---	07 35 00	45.9	153.8	-1.2		-15.7	279	3462	03 51 01
03 57 30	J0958+4725	07 36 30	66.7	89.8	-2.4		-62.4	-53	3462	03 57 30
04 00 30	=0955+476	07 39 31	67.2	90.4	-2.3		-62.4	127	3485	03 57 31
04 00 30	J1008+4705	07 39 31	65.5	89.2	-2.5		-61.7	-20	3485	No stop
04 05 30	---	07 44 31	66.3	90.1	-2.4		-61.7	280	3523	04 00 31
04 05 30	J0958+4725	07 44 31	67.9	91.4	-2.2		-62.4	-20	3523	No stop
04 08 30	=0955+476	07 47 32	68.4	92.0	-2.2		-62.3	160	3546	04 05 31
04 08 30	J1008+4705	07 47 32	66.7	90.8	-2.4		-61.7	-20	3546	No stop
04 13 30	---	07 52 33	67.5	91.8	-2.3		-61.7	280	3585	04 08 31
04 14 00	J0958+4725	07 53 03	69.2	93.2	-2.1		-62.2	10	3585	04 14 00
04 17 00	=0955+476	07 56 03	69.6	93.9	-2.1		-62.1	180	3608	04 14 01
04 17 00	J1008+4705	07 56 03	68.0	92.5	-2.2		-61.6	-20	3608	No stop
04 22 00	---	08 01 04	68.8	93.7	-2.1		-61.5	280	3646	04 17 01
04 23 30	J0840+1312	08 02 34	49.3	165.3	-0.7		-9.0	-69	3646	04 23 30
04 26 30	=0838+133	08 05 35	49.4	166.4	-0.6		-8.3	111	3669	04 23 31
04 26 30	J0847+1134	08 05 35	47.5	164.5	-0.7		-9.4	-21	3669	No stop
04 31 30	---	08 10 36	47.7	166.3	-0.6		-8.4	279	3708	04 26 31
04 31 30	J0840+1312	08 10 36	49.6	168.3	-0.5		-7.2	-21	3708	No stop
04 34 30	=0838+133	08 13 36	49.7	169.4	-0.5		-6.5	159	3731	04 31 31

Schedule for TORUN (Code Tr)

Page 10

VLBI observations of UHBLs at 5 GHz

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

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	28 Oct 2015	Day 301	---							
04 34 30	J0847+1134	08 13 36	47.8	167.4	-0.6		-7.7	-21	3731	No stop
04 39 30	---	08 18 37	48.0	169.2	-0.5		-6.6	279	3769	04 34 31
04 40 00	J0840+1312	08 19 07	49.8	171.5	-0.4		-5.2	9	3769	04 40 00
04 43 00	=0838+133	08 22 08	49.9	172.6	-0.3		-4.5	180	3792	04 40 01
04 43 00	J0847+1134	08 22 08	48.1	170.5	-0.4		-5.8	-20	3792	No stop
04 48 00	---	08 27 08	48.2	172.3	-0.3		-4.7	280	3831	04 43 01
04 49 30	J0958+4725	08 28 39	74.5	102.6	-1.5		-59.9	-64	3831	04 49 30
04 52 30	=0955+476	08 31 39	74.9	103.6	-1.5		-59.5	116	3854	04 49 31
04 52 30	J1008+4705	08 31 39	73.3	101.5	-1.6		-59.6	-19	3854	No stop
04 57 30	---	08 36 40	74.0	103.1	-1.5		-59.1	281	3892	04 52 31
04 57 30	J0958+4725	08 36 40	75.6	105.3	-1.4		-58.7	-20	3892	No stop
05 00 30	=0955+476	08 39 40	76.1	106.4	-1.3		-58.2	160	3915	04 57 31
05 00 30	J1008+4705	08 39 40	74.5	104.1	-1.5		-58.7	-19	3915	No stop
05 05 30	---	08 44 41	75.2	105.8	-1.4		-57.9	281	3954	05 00 31
05 06 00	J0958+4725	08 45 11	76.9	108.5	-1.2		-57.2	10	3954	05 06 00
05 09 00	=0955+476	08 48 12	77.3	109.8	-1.2		-56.5	180	3977	05 06 01
05 09 00	J1008+4705	08 48 12	75.7	107.1	-1.3		-57.3	-20	3977	No stop
05 14 00	---	08 53 13	76.4	109.0	-1.3		-56.4	280	4015	05 09 01
05 16 00	3C286	08 55 13	36.1	85.8	-4.6		-44.0	-45	4015	05 16 00
05 24 00	---	09 03 14	37.3	87.4	-4.5		-44.1	435	4077	05 16 01
05 26 00	J1439+4958	09 05 15	40.8	57.8	-5.6		-52.1	46	4077	05 26 00
05 29 00	=1438+501	09 08 15	41.2	58.2	-5.5		-52.4	180	4100	05 26 01
05 29 00	J1456+5048	09 08 15	39.7	55.2	-5.8		-51.2	-20	4100	No stop
05 34 00	---	09 13 16	40.3	55.8	-5.7		-51.8	280	4138	05 29 01
05 34 00	J1439+4958	09 13 16	41.8	58.8	-5.5		-52.9	-21	4138	No stop
05 37 00	=1438+501	09 16 16	42.2	59.2	-5.4		-53.2	159	4162	05 34 01
05 37 00	J1456+5048	09 16 16	40.7	56.2	-5.7		-52.1	-20	4162	No stop
05 42 00	---	09 21 17	41.3	56.9	-5.6		-52.6	280	4200	05 37 01
05 42 30	J1439+4958	09 21 47	43.0	59.9	-5.3		-53.8	9	4200	05 42 30
05 45 30	=1438+501	09 24 48	43.3	60.3	-5.3		-54.1	180	4223	05 42 31

Schedule for TORUN (Code Tr)

Page 11

VLBI observations of UHBLs at 5 GHz

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

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	28 Oct 2015	Day 301	---							
05 45 30	J1456+5048	09 24 48	41.8	57.3	-5.5		-53.0	-20	4223	No stop
05 50 30	---	09 29 49	42.4	58.0	-5.4		-53.6	280	4262	05 45 31
05 52 30	3C286	09 31 49	41.6	93.1	-4.0		-44.1	35	4262	05 52 30
06 00 30	---	09 39 50	42.8	94.8	-3.9		-43.9	480	4323	05 52 31
06 02 30	J1439+4958	09 41 51	45.6	62.5	-5.0		-55.8	40	4323	06 02 30
06 05 30	=1438+501	09 44 51	46.0	62.9	-4.9		-56.1	180	4346	06 02 31
06 05 30	J1456+5048	09 44 51	44.3	59.9	-5.2		-55.2	-21	4346	No stop
06 10 30	---	09 49 52	45.0	60.5	-5.1		-55.7	279	4385	06 05 31
06 10 30	J1439+4958	09 49 52	46.7	63.6	-4.8		-56.6	-21	4385	No stop
06 13 30	=1438+501	09 52 52	47.1	64.0	-4.8		-56.9	159	4408	06 10 31
06 13 30	J1456+5048	09 52 52	45.4	60.9	-5.1		-56.0	-21	4408	No stop
06 18 30	---	09 57 53	46.0	61.5	-5.0		-56.5	279	4446	06 13 31
06 19 00	J1439+4958	09 58 23	47.8	64.7	-4.7		-57.4	9	4446	06 19 00
06 22 00	=1438+501	10 01 24	48.2	65.1	-4.6		-57.7	180	4469	06 19 01
06 22 00	J1456+5048	10 01 24	46.5	62.0	-4.9		-56.9	-21	4469	No stop
06 27 00	---	10 06 25	47.2	62.6	-4.8		-57.4	279	4508	06 22 01
06 28 30	J1545+5135	10 07 55	41.5	55.7	-5.6		-52.9	54	4508	06 28 30
06 31 30	=1543+517	10 10 55	41.9	56.1	-5.6		-53.3	180	4531	06 28 31
06 31 30	J1533+535	10 10 55	44.1	55.4	-5.4		-55.8	-23	4531	No stop
06 36 30	---	10 15 56	44.8	56.0	-5.3		-56.4	277	4569	06 31 31
06 36 30	J1545+5135	10 15 56	42.5	56.7	-5.5		-53.8	-22	4569	No stop
06 39 30	=1543+517	10 18 57	42.9	57.1	-5.4		-54.2	158	4592	06 36 31
06 39 30	J1533+535	10 18 57	45.1	56.3	-5.3		-56.7	-22	4592	No stop
06 44 30	---	10 23 58	45.8	56.9	-5.2		-57.3	278	4631	06 39 31
06 45 00	J1545+5135	10 24 28	43.6	57.8	-5.3		-54.8	8	4631	06 45 00
06 48 00	=1543+517	10 27 28	44.0	58.2	-5.3		-55.1	180	4654	06 45 01
06 48 00	J1533+535	10 27 28	46.2	57.3	-5.1		-57.7	-22	4654	No stop
06 53 00	---	10 32 29	46.9	57.9	-5.0		-58.3	278	4692	06 48 01
06 54 30	J1439+4958	10 33 59	52.7	69.3	-4.1		-60.7	52	4692	06 54 30
06 57 30	=1438+501	10 37 00	53.2	69.7	-4.1		-61.0	180	4715	06 54 31

Schedule for TORUN (Code Tr)

Page 12

VLBI observations of UHBLs at 5 GHz

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

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	28 Oct 2015	Day 301	---							
06 57 30	J1456+5048	10 37 00	51.3	66.4	-4.3		-60.4	-21	4715	No stop
07 02 30	---	10 42 01	52.0	67.0	-4.2		-60.9	279	4754	06 57 31
07 02 30	J1439+4958	10 42 01	53.9	70.3	-4.0		-61.4	-21	4754	No stop
07 05 30	=1438+501	10 45 01	54.3	70.7	-3.9		-61.7	159	4777	07 02 31
07 05 30	J1456+5048	10 45 01	52.4	67.4	-4.2		-61.2	-21	4777	No stop
07 10 30	---	10 50 02	53.1	68.0	-4.1		-61.7	279	4815	07 05 31
07 11 00	J1439+4958	10 50 32	55.1	71.5	-3.8		-62.1	9	4815	07 11 00
07 14 00	=1438+501	10 53 32	55.5	71.8	-3.8		-62.4	180	4838	07 11 01
07 14 00	J1456+5048	10 53 32	53.6	68.5	-4.0		-62.0	-21	4838	No stop
07 19 00	---	10 58 33	54.3	69.1	-4.0		-62.4	279	4877	07 14 01
07 21 00	3C286	11 00 34	54.5	114.5	-2.5		-39.3	14	4877	07 21 00
07 29 00	---	11 08 35	55.6	116.8	-2.4		-38.4	480	4938	07 21 01
07 31 00	J1439+4958	11 10 35	57.9	74.1	-3.5		-63.7	19	4938	07 31 00
07 34 00	=1438+501	11 13 36	58.4	74.5	-3.4		-64.0	180	4962	07 31 01
07 34 00	J1456+5048	11 13 36	56.4	71.0	-3.7		-63.8	-22	4962	No stop
07 39 00	---	11 18 37	57.1	71.6	-3.6		-64.2	278	5000	07 34 01
07 39 00	J1439+4958	11 18 37	59.1	75.2	-3.4		-64.3	-22	5000	No stop
07 42 00	=1438+501	11 21 37	59.5	75.6	-3.3		-64.6	158	5023	07 39 01
07 42 00	J1456+5048	11 21 37	57.6	72.0	-3.6		-64.5	-22	5023	No stop
07 47 00	---	11 26 38	58.3	72.6	-3.5		-64.9	278	5062	07 42 01
07 47 30	J1439+4958	11 27 08	60.3	76.4	-3.2		-65.0	8	5062	07 47 30
07 50 30	=1438+501	11 30 08	60.8	76.8	-3.2		-65.2	180	5085	07 47 31
07 50 30	J1456+5048	11 30 08	58.8	73.1	-3.4		-65.2	-22	5085	No stop
07 55 30	---	11 35 09	59.5	73.7	-3.4		-65.7	278	5123	07 50 31
08 01 00	J1008+4705	11 40 40	74.2	256.6	1.5		58.9	-51	5123	08 01 00
08 06 00	---	11 45 41	73.5	258.2	1.6		59.5	249	5162	08 01 01
08 06 00	J0958+4725	11 45 41	72.2	261.9	1.8		61.3	-23	5162	No stop
08 09 00	=0955+476	11 48 41	71.7	262.7	1.8		61.5	157	5185	08 06 01
08 09 00	J1008+4705	11 48 41	73.0	259.1	1.7		59.8	-22	5185	No stop
08 14 00	---	11 53 42	72.3	260.5	1.7		60.3	278	5223	08 09 01

Schedule for TORUN (Code Tr)

Page 13

VLBI observations of UHBLs at 5 GHz

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

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	28 Oct 2015	Day 301	---							
08 14 30	J0958+4725	11 54 12	70.9	264.1	1.9		61.8	8	5223	08 14 30
08 17 30	=0955+476	11 57 13	70.4	264.8	2.0		61.9	180	5246	08 14 31
08 17 30	J1008+4705	11 57 13	71.7	261.5	1.8		60.6	-21	5246	No stop
08 22 30	---	12 02 14	71.0	262.8	1.9		60.9	279	5285	08 17 31
08 24 00	J0840+1312	12 03 44	33.6	244.5	3.4		33.8	-65	5285	08 24 00
08 27 00	=0838+133	12 06 44	33.2	245.2	3.4		34.0	115	5308	08 24 01
08 27 00	J0847+1134	12 06 44	32.7	242.6	3.3		33.0	-19	5308	No stop
08 32 00	---	12 11 45	32.0	243.8	3.4		33.4	281	5346	08 27 01
08 32 30	J0840+1312	12 12 15	32.5	246.5	3.5		34.5	10	5346	08 32 30
08 35 30	=0838+133	12 15 16	32.0	247.3	3.6		34.7	180	5369	08 32 31
08 35 30	J0847+1134	12 15 16	31.6	244.6	3.5		33.6	-19	5369	No stop
08 40 30	---	12 20 17	30.9	245.8	3.5		34.0	281	5408	08 35 31
08 41 00	J0840+1312	12 20 47	31.3	248.6	3.7		35.0	10	5408	08 41 00
08 44 00	=0838+133	12 23 47	30.9	249.3	3.7		35.2	180	5431	08 41 01
08 44 00	J0847+1134	12 23 47	30.4	246.7	3.6		34.2	-19	5431	No stop
08 49 00	---	12 28 48	29.7	247.8	3.7		34.6	281	5469	08 44 01
08 52 00	3C286	12 31 49	64.8	148.3	-1.0		-21.5	-34	5469	08 52 00
09 00 00	---	12 39 50	65.4	152.2	-0.9		-19.0	446	5531	08 52 01
09 01 30	J1439+4958	12 41 20	71.4	87.8	-2.0		-68.7	-53	5531	09 01 30
09 04 30	=1438+501	12 44 21	71.8	88.4	-1.9		-68.7	127	5554	09 01 31
09 04 30	J1456+5048	12 44 21	69.7	83.2	-2.2		-70.5	-25	5554	No stop
09 09 30	---	12 49 21	70.4	84.0	-2.1		-70.7	275	5592	09 04 31
09 09 30	J1439+4958	12 49 21	72.6	89.3	-1.8		-68.8	-26	5592	No stop
09 12 30	=1438+501	12 52 22	73.0	89.9	-1.8		-68.8	154	5615	09 09 31
09 12 30	J1456+5048	12 52 22	70.9	84.5	-2.1		-70.8	-26	5615	No stop
09 17 30	---	12 57 23	71.6	85.3	-2.0		-71.1	274	5654	09 12 31
09 18 00	J1439+4958	12 57 53	73.8	91.1	-1.7		-68.8	4	5654	09 18 00
09 21 00	=1438+501	13 00 53	74.3	91.7	-1.7		-68.7	180	5677	09 18 01
09 21 00	J1456+5048	13 00 53	72.1	85.9	-1.9		-71.2	-27	5677	No stop
09 26 00	---	13 05 54	72.9	86.7	-1.8		-71.3	273	5715	09 21 01

Schedule for TORUN (Code Tr)

Page 14

VLBI observations of UHBLs at 5 GHz

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

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	28 Oct 2015	Day 301	---							
09 27 30	J1545+5135	13 07 24	66.1	77.7	-2.6		-70.6	50	5715	09 27 30
09 30 30	=1543+517	13 10 25	66.5	78.1	-2.6		-70.8	180	5738	09 27 31
09 30 30	J1533+535	13 10 25	68.5	74.8	-2.4		-75.8	-21	5738	No stop
09 35 30	---	13 15 26	69.2	75.3	-2.3		-76.4	279	5777	09 30 31
09 35 30	J1545+5135	13 15 26	67.3	78.7	-2.5		-71.2	-22	5777	No stop
09 38 30	=1543+517	13 18 26	67.7	79.1	-2.5		-71.4	158	5800	09 35 31
09 38 30	J1533+535	13 18 26	69.7	75.6	-2.3		-76.7	-22	5800	No stop
09 43 30	---	13 23 27	70.4	76.1	-2.2		-77.2	278	5838	09 38 31
09 44 00	J1545+5135	13 23 57	68.5	79.8	-2.4		-71.9	8	5838	09 44 00
09 47 00	=1543+517	13 26 58	69.0	80.2	-2.3		-72.1	180	5862	09 44 01
09 47 00	J1533+535	13 26 58	70.9	76.4	-2.1		-77.6	-22	5862	No stop
09 52 00	---	13 31 58	71.7	76.9	-2.1		-78.1	278	5900	09 47 01
09 53 30	J1545+5135	13 33 29	70.0	81.1	-2.2		-72.5	67	5900	09 53 30
09 56 30	=1543+517	13 36 29	70.4	81.5	-2.1		-72.7	180	5923	09 53 31
09 56 30	J1533+535	13 36 29	72.3	77.4	-2.0		-78.6	-23	5923	No stop
10 01 30	---	13 41 30	73.1	77.9	-1.9		-79.2	277	5962	09 56 31
10 01 30	J1545+5135	13 41 30	71.1	82.2	-2.1		-73.0	-24	5962	No stop
10 04 30	=1543+517	13 44 30	71.6	82.6	-2.0		-73.2	156	5985	10 01 31
10 04 30	J1533+535	13 44 30	73.5	78.1	-1.8		-79.5	-24	5985	No stop
10 09 30	---	13 49 31	74.2	78.6	-1.8		-80.0	276	6023	10 04 31
10 10 00	J1545+5135	13 50 01	72.4	83.4	-1.9		-73.6	5	6023	10 10 00
10 13 00	=1543+517	13 53 02	72.9	83.9	-1.9		-73.7	180	6046	10 10 01
10 13 00	J1533+535	13 53 02	74.7	79.0	-1.7		-80.4	-25	6046	No stop
10 18 00	---	13 58 03	75.5	79.4	-1.6		-81.0	275	6085	10 13 01
10 20 00	3C286	14 00 03	66.8	195.6	0.5		10.8	-129	6085	10 20 00
10 28 00	---	14 08 04	66.4	199.8	0.6		13.7	351	6146	10 20 01
10 29 30	J1439+4958	14 09 35	84.3	120.7	-0.5		-53.3	-81	6146	10 29 30
10 32 30	=1438+501	14 12 35	84.6	123.8	-0.5		-50.8	99	6169	10 29 31
10 32 30	J1456+5048	14 12 35	82.8	104.7	-0.7		-66.6	-52	6169	No stop
10 37 30	---	14 17 36	83.6	107.5	-0.6		-64.8	248	6208	10 32 31

Schedule for TORUN (Code Tr)

Page 15

VLBI observations of UHBLs at 5 GHz

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

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	28 Oct 2015	Day 301	---							
10 37 30	J1439+4958	14 17 36	85.2	129.9	-0.4		-45.7	-62	6208	No stop
10 40 30	=1438+501	14 20 36	85.6	134.2	-0.3		-41.9	118	6231	10 37 31
10 40 30	J1456+5048	14 20 36	84.0	109.4	-0.6		-63.5	-63	6231	No stop
10 45 30	---	14 25 37	84.7	113.1	-0.5		-60.8	237	6269	10 40 31
10 46 00	J1439+4958	14 26 07	86.1	144.0	-0.2		-33.3	-49	6269	10 46 00
10 49 00	=1438+501	14 29 08	86.4	150.4	-0.2		-27.5	131	6292	10 46 01
10 49 00	J1456+5048	14 29 08	85.2	116.3	-0.5		-58.3	-80	6292	No stop
10 54 00	---	14 34 09	85.8	122.0	-0.4		-53.6	220	6331	10 49 01
10 55 30	J1439+4958	14 35 39	86.7	166.8	-0.1		-12.3	-16	6331	10 55 30
10 58 30	=1438+501	14 38 39	86.8	175.3	-0.0		-4.4	164	6354	10 55 31
10 58 30	J1456+5048	14 38 39	86.4	128.7	-0.3		-47.8	-102	6354	No stop
11 03 30	---	14 43 40	86.9	138.5	-0.2		-38.9	198	6392	10 58 31
11 03 30	J1439+4958	14 43 40	86.8	189.7	0.1		9.1	-128	6392	No stop
11 06 30	=1438+501	14 46 41	86.7	198.0	0.1		16.7	52	6415	11 03 31
11 06 30	J1456+5048	14 46 41	87.2	146.1	-0.2		-31.9	-108	6415	No stop
11 11 30	---	14 51 41	87.5	161.9	-0.1		-17.1	192	6454	11 06 31
11 12 00	J1439+4958	14 52 12	86.3	211.3	0.2		29.0	-89	6454	11 12 00
11 15 00	=1438+501	14 55 12	86.1	217.5	0.2		34.6	91	6477	11 12 01
11 15 00	J1456+5048	14 55 12	87.6	174.9	-0.0		-4.9	-88	6477	No stop
11 20 00	---	15 00 13	87.6	194.0	0.1		13.2	212	6515	11 15 01
11 21 30	J1545+5135	15 01 43	83.1	98.7	-0.7		-72.6	-114	6515	11 21 30
11 24 30	=1543+517	15 04 44	83.6	100.0	-0.7		-72.0	66	6538	11 21 31
11 24 30	J1533+535	15 04 44	85.4	84.4	-0.5		-89.4	-46	6538	No stop
11 29 30	---	15 09 44	86.2	84.4	-0.4		-90.4	254	6577	11 24 31
11 29 30	J1545+5135	15 09 44	84.3	102.3	-0.6		-70.6	-52	6577	No stop
11 32 30	=1543+517	15 12 45	84.8	104.0	-0.5		-69.5	128	6600	11 29 31
11 32 30	J1533+535	15 12 45	86.6	84.3	-0.4		-91.1	-54	6600	No stop
11 37 30	---	15 17 46	87.4	83.9	-0.3		-92.6	246	6638	11 32 31
11 38 00	J1545+5135	15 18 16	85.6	107.8	-0.5		-66.8	-34	6638	11 38 00
11 41 00	=1543+517	15 21 16	86.0	110.4	-0.4		-64.8	146	6662	11 38 01

Schedule for TORUN (Code Tr)

Page 16

VLBI observations of UHBLs at 5 GHz

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

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	28 Oct 2015	Day 301	---							
11 41 00	J1533+535	15 21 16	87.9	83.2	-0.2		-94.0	-70	6662	No stop
11 46 00	---	15 26 17	88.6	80.7	-0.2		-97.5	230	6700	11 41 01
11 47 30	J1545+5135	15 27 47	86.9	118.2	-0.3		-58.3	0	6700	11 47 30
11 50 30	=1543+517	15 30 48	87.3	123.3	-0.2		-53.8	180	6723	11 47 31
11 50 30	J1533+535	15 30 48	89.3	73.3	-0.1		-105.8	-134	6723	No stop
11 55 30	---	15 35 49	89.8	-17.1	0.0		162.9	166	6762	11 50 31
12 04 00	J1545+5135	15 44 20	88.4	173.6	-0.0		-6.1	135	6762	12 04 00
12 07 00	=1543+517	15 47 21	88.4	190.7	0.0		10.4	180	6785	12 04 01
12 07 00	J1533+535	15 47 21	88.2	277.6	0.2		95.2	-187	6785	No stop
12 12 00	---	15 52 21	87.5	276.2	0.3		92.8	113	6823	12 07 01
12 13 30	J1439+4958	15 53 52	78.1	261.8	1.2		67.3	42	6823	12 13 30
12 16 30	=1438+501	15 56 52	77.7	262.7	1.3		67.6	180	6846	12 13 31
12 16 30	J1456+5048	15 56 52	80.4	261.9	1.0		70.0	-24	6846	No stop
12 21 30	---	16 01 53	79.7	263.4	1.1		70.5	276	6885	12 16 31
12 21 30	J1439+4958	16 01 53	77.0	264.1	1.4		68.0	-24	6885	No stop
12 24 30	=1438+501	16 04 53	76.5	264.8	1.4		68.2	156	6908	12 21 31
12 24 30	J1456+5048	16 04 53	79.2	264.3	1.1		70.8	-24	6908	No stop
12 29 30	---	16 09 54	78.5	265.6	1.2		71.1	276	6946	12 24 31
12 30 00	J1439+4958	16 10 24	75.7	266.2	1.5		68.5	6	6946	12 30 00
12 33 00	=1438+501	16 13 25	75.2	266.9	1.6		68.6	180	6969	12 30 01
12 33 00	J1456+5048	16 13 25	78.0	266.5	1.3		71.3	-24	6969	No stop
12 38 00	---	16 18 26	77.2	267.7	1.4		71.5	276	7008	12 33 01
12 39 30	J1545+5135	16 19 56	84.5	257.0	0.6		70.2	48	7008	12 39 30
12 42 30	=1543+517	16 22 56	84.1	258.6	0.6		71.1	180	7031	12 39 31
12 42 30	J1533+535	16 22 56	82.9	276.4	0.8		86.8	-51	7031	No stop
12 47 30	---	16 27 57	82.1	276.7	0.9		86.2	249	7069	12 42 31
12 47 30	J1545+5135	16 27 57	83.3	260.8	0.7		72.4	-46	7069	No stop
12 50 30	=1543+517	16 30 58	82.9	261.9	0.8		72.9	134	7092	12 47 31
12 50 30	J1533+535	16 30 58	81.7	276.9	0.9		85.8	-45	7092	No stop
12 55 30	---	16 35 59	80.9	277.3	1.0		85.2	255	7131	12 50 31

Schedule for TORUN (Code Tr)

Page 17

VLBI observations of UHBLs at 5 GHz

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

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 28 Oct 2015 Day 301 ---								
12 56 00	J1545+5135	16 36 29	82.1	263.8	0.9	73.7 -12	7131	12 56 00
12 59 00	=1543+517	16 39 29	81.6	264.7	0.9	74.0 168	7154	12 56 01
12 59 00	J1533+535	16 39 29	80.4	277.6	1.1	84.8 -41	7154	No stop
13 04 00	---	16 44 30	79.7	278.0	1.2	84.2 259	7192	12 59 01
13 05 30	J1545+5135	16 46 00	80.6	266.5	1.0	74.5 51	7192	13 05 30
13 08 30	=1543+517	16 49 01	80.2	267.3	1.1	74.7 180	7215	13 05 31
13 08 30	J1533+535	16 49 01	79.0	278.4	1.2	83.6 -37	7215	No stop
13 13 30	---	16 54 01	78.3	278.9	1.3	83.1 263	7254	13 08 31
13 13 30	J1545+5135	16 54 01	79.4	268.4	1.1	74.8 -36	7254	No stop
13 16 30	=1543+517	16 57 02	79.0	269.1	1.2	74.9 144	7277	13 13 31
13 16 30	J1533+535	16 57 02	77.8	279.1	1.4	82.7 -35	7277	No stop
13 21 30	---	17 02 03	77.1	279.6	1.4	82.2 265	7315	13 16 31
13 22 00	J1545+5135	17 02 33	78.2	270.2	1.3	74.9 -4	7315	13 22 00
13 25 00	=1543+517	17 05 33	77.7	270.8	1.3	74.9 176	7338	13 22 01
13 25 00	J1533+535	17 05 33	76.6	279.9	1.5	81.8 -33	7338	No stop
13 30 00	---	17 10 34	75.8	280.4	1.6	81.2 267	7377	13 25 01
13 30 00	J1545+5135	17 10 34	76.9	271.7	1.4	74.8 -32	7377	No stop
13 33 00	=1543+517	17 13 35	76.5	272.3	1.5	74.7 148	7400	13 30 01
13 33 00	J1533+535	17 13 35	75.4	280.7	1.6	80.9 -32	7400	No stop
13 38 00	---	17 18 35	74.6	281.1	1.7	80.3 268	7438	13 33 01
13 38 30	J1545+5135	17 19 06	75.7	273.2	1.6	74.6 -1	7438	13 38 30
13 41 30	=1543+517	17 22 06	75.2	273.7	1.6	74.5 179	7462	13 38 31
13 41 30	J1533+535	17 22 06	74.1	281.5	1.8	80.0 -31	7462	No stop
13 46 30	---	17 27 07	73.4	281.9	1.9	79.4 269	7500	13 41 31

SETUP FILE INFORMATION:

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

===== Setup file: sess315.C1024

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

The following frequency sets based on these setups were used.

Frequency Set: 9 Setup file default. Used with PCAL = off

LO sum=	4942.49	4942.49	4942.49	4942.49	4974.49	4974.49	4974.49	4974.49
	5006.49	5006.49	5006.49	5006.49	5038.49	5038.49	5038.49	5038.49
BBC fr=	742.49	742.49	742.49	742.49	774.49	774.49	774.49	774.49
	806.49	806.49	806.49	806.49	838.49	838.49	838.49	838.49
Bandwd=	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00

Matching frequency sets: 9 11

Track assignments are:

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

barrel=roll_off

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		Error
	(B1950)	(J2000)	(mas)
* J0314+062	03 11 44.697516	* 03 14 23.900000	0.00
	06 08 48.23213	* 06 19 55.30000	0.00
* J0323+0214	03 23 38.075479	* 03 26 13.949000	0.00
	02 14 47.17587	* 02 25 14.68000	0.00
* J0847+1134	08 44 28.857621	* 08 47 12.931000	0.00
	11 44 53.72157	* 11 33 50.25000	0.00
* J1008+4705	10 05 03.419133	* 10 08 11.430000	0.00
	47 20 03.19616	* 47 05 21.42000	0.00
* J1456+5048	14 54 26.787622	* 14 56 03.643000	0.00
	51 00 28.82624	* 50 48 25.93000	0.00
* J1533+535	15 33 39.471412	* 15 35 00.801000	0.00
	53 30 32.02240	* 53 20 37.33000	0.00
J0137+3309	01 34 49.826374	* 01 37 41.299440	0.52
0134+329	32 54 20.25881	* 33 09 35.13299	0.50
* 3C48	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.vlba.2012jul		
* J0308+0406	03 05 49.053827	* 03 08 26.223802	0.11
NGC1218	03 55 13.05194	* 04 06 39.30071	0.11
* J0323+0145	03 20 34.614175	* 03 23 09.872339	0.22

0320+015	01 35 12.61434	* 01 45 50.50726	01 49 09.54629	0.44
J0555+3948	05 52 01.407174	* 05 55 30.805616	05 56 37.962052	0.13
0552+398	39 48 21.94578	* 39 48 49.16493	39 48 40.87827	0.10
* DA193	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.vlba.2012jul			
* J0840+1312	08 38 01.723598	* 08 40 47.588428	08 41 39.718507	0.13
0838+133	13 23 05.67978	* 13 12 23.56367	13 08 54.17107	0.18
* J0958+4725	09 55 08.528429	* 09 58 19.671644	09 59 18.458074	0.15
0955+476	47 39 28.28168	* 47 25 07.84237	47 20 21.49398	0.10
J1331+3030	13 28 49.657778	* 13 31 08.288070	13 31 50.208220	0.20
* 3C286	30 45 58.64061	* 30 30 32.95925	30 25 48.43717	0.19
* J1439+4958	14 38 04.222300	* 14 39 46.976196	14 40 16.821440	0.30
1438+501	50 10 55.89335	* 49 58 05.45533	49 54 14.10128	0.31
* J1545+5135	15 43 39.139303	* 15 45 02.823694	15 45 26.852146	0.27
1543+517	51 44 19.78337	* 51 35 00.87299	51 32 22.17714	0.26

OBSERVATIONS OF THE CORE OF THE GIANT RADIO GALAXY J145049+100649

PI: G.H. Heald

Address: ASTRON

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

Schedule for TORUN (Code Tr)

Page 2

Observations of the core of the giant radio galaxy J145049+100649

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

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

Disk: GBytes recorded to this point.

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

SYNC: Time correlator 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 29 Oct 2015	Day 302 ---								
Next scan frequencies:		4942.49	4942.49	4942.49	4942.49	4974.49	4974.49	4974.49	4974.49	4974.49
		5006.49	5006.49	5006.49	5006.49	5038.49	5038.49	5038.49	5038.49	5038.49
Next BBC frequencies:		742.49	742.49	742.49	742.49	774.49	774.49	774.49	774.49	774.49
		806.49	806.49	806.49	806.49	838.49	838.49	838.49	838.49	838.49
Next scan bandwidths:		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00

07 00 00	4C39.25	10 43 27	70.9	230.0	1.3		36.3	0	0	07 00 00
07 05 00	---	10 48 27	70.3	232.4	1.3		37.7	300	38	07 00 01

07 10 08	J1450+0910	10 53 36	25.4	109.8	-4.0		-34.9	47	38	07 10 08
07 11 58	=1448+093	10 55 36	25.6	110.3	-3.9		-34.8	110	53	07 10 09

07 11 58	UGC09555	10 55 26	26.3	109.6	-3.9		-35.1	-15	53	No stop
07 20 58	---	11 04 28	27.6	111.6	-3.8		-34.5	525	122	07 11 59

07 21 33	J1450+0910	11 05 03	27.0	112.4	-3.8		-34.2	20	122	07 21 33
07 23 33	=1448+093	11 07 03	27.2	112.9	-3.7		-34.1	120	137	07 21 34

07 23 33	UGC09555	11 07 03	28.0	112.2	-3.7		-34.4	-15	137	No stop
07 32 33	---	11 16 05	29.2	114.3	-3.6		-33.8	525	206	07 23 34

07 34 27	OQ208	11 18 00	50.4	111.5	-2.8		-39.4	22	206	07 34 27
07 39 17	---	11 23 00	51.1	112.9	-2.7		-39.0	290	244	07 34 28

07 41 13	J1450+0910	11 24 46	29.7	117.0	-3.4		-32.8	21	244	07 41 13
07 43 03	=1448+093	11 26 47	29.9	117.5	-3.4		-32.6	110	258	07 41 14

07 43 03	UGC09555	11 26 37	30.6	116.8	-3.4		-33.0	-15	258	No stop
07 52 03	---	11 35 38	31.8	119.0	-3.3		-32.2	525	327	07 43 04

07 52 38	J1450+0910	11 36 13	31.2	119.8	-3.3		-31.9	20	327	07 52 38
07 54 38	=1448+093	11 38 13	31.4	120.3	-3.2		-31.7	120	342	07 52 39

07 54 38	UGC09555	11 38 13	32.2	119.6	-3.2		-32.0	-15	342	No stop
08 03 38	---	11 47 15	33.3	121.9	-3.1		-31.2	525	412	07 54 39

08 04 13	J1450+0910	11 47 50	32.7	122.7	-3.1		-30.8	20	412	08 04 13
08 06 13	=1448+093	11 49 50	32.9	123.2	-3.0		-30.6	120	427	08 04 14

08 06 13	UGC09555	11 49 50	33.7	122.5	-3.0		-30.9	-15	427	No stop
08 15 13	---	11 58 52	34.8	124.9	-2.9		-30.0	525	496	08 06 14

08 15 48	J1450+0910	11 59 27	34.1	125.7	-2.9		-29.6	20	496	08 15 48
08 17 48	=1448+093	12 01 27	34.3	126.2	-2.8		-29.4	120	512	08 15 49

Schedule for TORUN (Code Tr)

Page 3

Observations of the core of the giant radio galaxy J145049+100649

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

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	29 Oct 2015	Day 302	---							
08 17 48	UGC09555	12 01 27	35.1	125.5	-2.8		-29.8	-15	512	No stop
08 26 48	---	12 10 29	36.2	127.9	-2.7		-28.8	525	581	08 17 49
08 29 10	3C286	12 12 52	63.2	139.8	-1.3		-26.7	28	581	08 29 10
08 34 00	---	12 17 52	63.6	142.0	-1.2		-25.4	290	618	08 29 11
08 36 23	J1450+0910	12 20 06	36.5	131.2	-2.5		-27.3	27	618	08 36 23
08 38 13	=1448+093	12 22 06	36.8	131.7	-2.5		-27.0	110	632	08 36 24
08 38 13	UGC09555	12 21 56	37.5	131.0	-2.5		-27.4	-15	632	No stop
08 47 13	---	12 30 58	38.5	133.6	-2.3		-26.2	525	701	08 38 14
08 47 48	J1450+0910	12 31 33	37.8	134.3	-2.3		-25.8	20	701	08 47 48
08 49 48	=1448+093	12 33 33	38.0	134.9	-2.3		-25.5	120	717	08 47 49
08 49 48	UGC09555	12 33 33	38.8	134.3	-2.3		-25.9	-16	717	No stop
08 58 48	---	12 42 35	39.8	136.9	-2.1		-24.6	524	786	08 49 49
08 59 26	J1450+0910	12 43 12	39.0	137.7	-2.1		-24.2	22	786	08 59 26
09 01 16	=1448+093	12 45 12	39.2	138.2	-2.1		-23.9	110	800	08 59 27
09 01 16	UGC09555	12 45 02	40.0	137.6	-2.1		-24.3	-16	800	No stop
09 10 16	---	12 54 04	40.9	140.3	-2.0		-22.9	524	869	09 01 17
09 10 51	J1450+0910	12 54 39	40.1	141.0	-1.9		-22.5	20	869	09 10 51
09 12 51	=1448+093	12 56 39	40.3	141.6	-1.9		-22.2	120	885	09 10 52
09 12 51	UGC09555	12 56 39	41.2	141.1	-1.9		-22.5	-16	885	No stop
09 21 51	---	13 05 41	42.0	143.8	-1.8		-21.1	524	954	09 12 52
09 23 47	OQ208	13 07 37	62.9	150.0	-1.0		-20.0	24	954	09 23 47
09 28 37	---	13 12 38	63.3	152.3	-0.9		-18.5	290	991	09 23 48
09 30 35	J1450+0910	13 14 26	41.9	147.1	-1.6		-19.3	24	991	09 30 35
09 32 25	=1448+093	13 16 27	42.0	147.7	-1.6		-19.0	110	1005	09 30 36
09 32 25	UGC09555	13 16 17	42.9	147.1	-1.6		-19.3	-16	1005	No stop
09 41 25	---	13 25 18	43.6	150.0	-1.4		-17.7	524	1074	09 32 26
09 42 00	J1450+0910	13 25 53	42.8	150.7	-1.4		-17.3	19	1074	09 42 00
09 44 00	=1448+093	13 27 54	42.9	151.3	-1.4		-17.0	120	1090	09 42 01
09 44 00	UGC09555	13 27 54	43.8	150.9	-1.4		-17.3	-16	1090	No stop
09 53 00	---	13 36 55	44.4	153.8	-1.2		-15.6	524	1159	09 44 01

Schedule for TORUN (Code Tr)

Page 4

Observations of the core of the giant radio galaxy J145049+100649

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

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 29 Oct 2015	Day 302	---							
09 53 35	J1450+0910	13 37 30	43.6	154.5	-1.2		-15.2	19	1159	09 53 35
09 55 35	=1448+093	13 39 30	43.7	155.1	-1.2		-14.8	120	1174	09 53 36
09 55 35	UGC09555	13 39 30	44.6	154.7	-1.2		-15.1	-16	1174	No stop
10 04 35	---	13 48 32	45.1	157.7	-1.1		-13.4	524	1244	09 55 36
10 05 10	J1450+0910	13 49 07	44.3	158.3	-1.0		-13.0	19	1244	10 05 10
10 07 10	=1448+093	13 51 07	44.4	159.0	-1.0		-12.6	120	1259	10 05 11
10 07 10	UGC09555	13 51 07	45.3	158.6	-1.0		-12.9	-16	1259	No stop
10 16 10	---	14 00 09	45.7	161.7	-0.9		-11.0	524	1328	10 07 11
10 18 21	3C286	14 02 20	66.7	196.8	0.5		11.6	39	1328	10 18 21
10 23 11	---	14 07 21	66.4	199.4	0.6		13.4	290	1365	10 18 22
10 25 23	J1450+0910	14 09 23	45.2	165.2	-0.7		-8.9	38	1365	10 25 23
10 27 13	=1448+093	14 11 24	45.3	165.9	-0.7		-8.5	110	1379	10 25 24
10 27 13	UGC09555	14 11 14	46.2	165.6	-0.7		-8.7	-16	1379	No stop
10 36 13	---	14 20 15	46.5	168.8	-0.5		-6.8	524	1449	10 27 14
10 36 48	J1450+0910	14 20 50	45.6	169.2	-0.5		-6.5	19	1449	10 36 48
10 38 48	=1448+093	14 22 51	45.6	169.9	-0.5		-6.1	120	1464	10 36 49
10 38 48	UGC09555	14 22 51	46.6	169.7	-0.5		-6.3	-16	1464	No stop
10 47 48	---	14 31 52	46.8	172.9	-0.3		-4.3	524	1533	10 38 49
10 48 25	J1450+0910	14 32 29	45.9	173.3	-0.3		-4.0	21	1533	10 48 25
10 50 15	=1448+093	14 34 30	45.9	174.0	-0.3		-3.6	110	1547	10 48 26
10 50 15	UGC09555	14 34 20	46.8	173.8	-0.3		-3.8	-16	1547	No stop
10 59 15	---	14 43 21	46.9	177.0	-0.1		-1.8	524	1617	10 50 16
10 59 50	J1450+0910	14 43 56	46.0	177.4	-0.1		-1.6	19	1617	10 59 50
11 01 50	=1448+093	14 45 57	46.0	178.1	-0.1		-1.2	120	1632	10 59 51
11 01 50	UGC09555	14 45 57	46.9	178.0	-0.1		-1.2	-16	1632	No stop
11 10 50	---	14 54 58	47.0	181.2	0.1		0.7	524	1701	11 01 51
11 12 39	OQ208	14 56 47	63.7	205.0	0.8		16.7	32	1701	11 12 39
11 17 29	---	15 01 48	63.3	207.3	0.9		18.2	290	1738	11 12 40
11 19 20	J1450+0910	15 03 29	45.9	184.3	0.2		2.6	32	1738	11 19 20
11 21 10	=1448+093	15 05 29	45.9	185.1	0.2		3.1	110	1753	11 19 21

Schedule for TORUN (Code Tr)

Page 5

Observations of the core of the giant radio galaxy J145049+100649

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

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	29 Oct 2015	Day 302 ---								
11 21 10	UGC09555	15 05 19	46.9	185.0	0.2		3.0	-16	1753	No stop
11 30 10	---	15 14 21	46.7	188.2	0.4		5.0	524	1822	11 21 11
11 30 45	J1450+0910	15 14 56	45.8	188.4	0.4		5.1	19	1822	11 30 45
11 32 45	=1448+093	15 16 56	45.7	189.1	0.4		5.5	120	1837	11 30 46
11 32 45	UGC09555	15 16 56	46.7	189.1	0.4		5.5	-16	1837	No stop
11 41 45	---	15 25 58	46.4	192.3	0.6		7.5	524	1906	11 32 46
11 42 20	J1450+0910	15 26 33	45.4	192.5	0.6		7.5	19	1906	11 42 20
11 44 20	=1448+093	15 28 33	45.4	193.2	0.6		8.0	120	1922	11 42 21
11 44 20	UGC09555	15 28 33	46.3	193.2	0.6		8.0	-16	1922	No stop
11 53 20	---	15 37 35	46.0	196.4	0.8		9.9	524	1991	11 44 21
11 53 55	J1450+0910	15 38 10	45.0	196.5	0.8		9.9	19	1991	11 53 55
11 55 55	=1448+093	15 40 10	44.9	197.2	0.8		10.3	120	2006	11 53 56
11 55 55	UGC09555	15 40 10	45.9	197.3	0.8		10.5	-16	2006	No stop
12 04 55	---	15 49 12	45.4	200.4	1.0		12.3	524	2076	11 55 56
12 07 24	3C286	15 51 42	56.0	242.2	2.3		38.0	52	2076	12 07 24
12 12 14	---	15 56 42	55.4	243.7	2.4		38.6	290	2113	12 07 25
12 14 41	J1450+0910	15 58 59	43.9	203.5	1.1		14.1	50	2113	12 14 41
12 16 31	=1448+093	16 00 59	43.8	204.2	1.2		14.4	110	2127	12 14 42
12 16 31	UGC09555	16 00 49	44.8	204.4	1.2		14.6	-16	2127	No stop
12 25 31	---	16 09 51	44.2	207.4	1.3		16.3	524	2196	12 16 32
12 26 06	J1450+0910	16 10 26	43.2	207.3	1.3		16.2	19	2196	12 26 06
12 28 06	=1448+093	16 12 26	43.1	207.9	1.4		16.6	120	2212	12 26 07
12 28 06	UGC09555	16 12 26	44.0	208.2	1.3		16.8	-16	2212	No stop
12 37 06	---	16 21 28	43.3	211.1	1.5		18.4	524	2281	12 28 07
12 40 53	3C345	16 25 15	76.3	165.0	-0.3		-11.6	90	2281	12 40 53
12 45 43	---	16 30 16	76.5	169.1	-0.2		-8.5	290	2318	12 40 54
12 49 40	J1450+0910	16 34 05	41.4	214.8	1.7		20.3	93	2318	12 49 40
12 51 30	=1448+093	16 36 05	41.2	215.4	1.7		20.6	110	2332	12 49 41
12 51 30	UGC09555	16 35 55	42.1	215.7	1.7		20.9	-16	2332	No stop
13 00 30	---	16 44 56	41.3	218.5	1.9		22.3	524	2401	12 51 31

Schedule for TORUN (Code Tr)

Page 6

Observations of the core of the giant radio galaxy J145049+100649

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

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 29 Oct 2015 Day 302 ---								
13 01 05	J1450+0910	16 45 31	40.3	218.3	1.9	22.1 19	2401	13 01 05
13 03 05	=1448+093	16 47 32	40.2	218.9	1.9	22.4 120	2417	13 01 06
13 03 05	UGC09555	16 47 32	41.1	219.3	1.9	22.7 -16	2417	No stop
13 12 05	---	16 56 33	40.2	221.9	2.1	24.1 524	2486	13 03 06
13 13 58	OQ208	16 58 26	50.2	248.8	2.8	39.5 44	2486	13 13 58
13 18 48	---	17 03 27	49.5	250.1	2.9	39.9 290	2523	13 13 59
13 20 39	J1450+0910	17 05 08	38.4	224.0	2.2	25.0 43	2523	13 20 39
13 22 29	=1448+093	17 07 08	38.2	224.6	2.3	25.3 110	2537	13 20 40
13 22 29	UGC09555	17 06 58	39.1	225.0	2.3	25.5 -16	2537	No stop
13 31 29	---	17 15 59	38.1	227.5	2.4	26.7 524	2606	13 22 30
13 32 04	J1450+0910	17 16 35	37.2	227.2	2.4	26.5 19	2606	13 32 04
13 34 04	=1448+093	17 18 35	37.0	227.8	2.5	26.8 120	2622	13 32 05
13 34 04	UGC09555	17 18 35	37.8	228.2	2.5	27.1 -16	2622	No stop
13 43 04	---	17 27 36	36.8	230.7	2.6	28.2 524	2691	13 34 05
13 43 39	J1450+0910	17 28 11	35.9	230.4	2.6	27.9 19	2691	13 43 39
13 45 39	=1448+093	17 30 12	35.6	230.9	2.6	28.2 120	2706	13 43 40
13 45 39	UGC09555	17 30 12	36.5	231.4	2.6	28.5 -16	2706	No stop
13 54 39	---	17 39 13	35.4	233.8	2.8	29.5 524	2776	13 45 40
13 55 14	J1450+0910	17 39 48	34.5	233.5	2.8	29.3 19	2776	13 55 14
13 57 14	=1448+093	17 41 49	34.3	234.0	2.8	29.5 120	2791	13 55 15
13 57 14	UGC09555	17 41 49	35.1	234.5	2.8	29.8 -16	2791	No stop
14 06 14	---	17 50 50	34.0	236.8	3.0	30.7 524	2860	13 57 15
14 08 45	3C286	17 53 22	38.4	271.2	4.4	44.1 68	2860	14 08 45
14 13 35	---	17 58 23	37.6	272.2	4.4	44.1 290	2897	14 08 46
14 16 03	J1450+0910	18 00 41	31.9	238.8	3.2	31.3 65	2897	14 16 03
14 17 53	=1448+093	18 02 41	31.6	239.3	3.2	31.5 110	2912	14 16 04
14 17 53	UGC09555	18 02 31	32.5	239.8	3.2	31.8 -16	2912	No stop
14 26 53	---	18 11 33	31.3	242.0	3.3	32.6 524	2981	14 17 54
14 27 28	J1450+0910	18 12 08	30.4	241.6	3.3	32.3 19	2981	14 27 28
14 29 28	=1448+093	18 14 08	30.1	242.1	3.4	32.5 120	2996	14 27 29

Schedule for TORUN (Code Tr)

Page 7

Observations of the core of the giant radio galaxy J145049+100649

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

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	29 Oct 2015	Day 302					---		
14 29 28	UGC09555	18 14 08	31.0	242.6	3.4		32.8	-15	2996	No stop
14 38 28	---	18 23 10	29.8	244.8	3.5		33.5	525	3065	14 29 29
14 39 03	J1450+0910	18 23 45	28.8	244.4	3.5		33.3	19	3065	14 39 03
14 41 03	=1448+093	18 25 45	28.6	244.9	3.6		33.4	120	3081	14 39 04
14 41 03	UGC09555	18 25 45	29.4	245.4	3.6		33.7	-15	3081	No stop
14 48 03	---	18 32 46	28.4	247.0	3.7		34.2	405	3135	14 41 04
14 48 38	J1450+0910	18 33 21	27.5	246.6	3.7		33.9	19	3135	14 48 38
14 50 38	=1448+093	18 35 22	27.3	247.1	3.7		34.1	120	3150	14 48 39
14 50 38	UGC09555	18 35 22	28.1	247.6	3.7		34.3	-15	3150	No stop
14 57 38	---	18 42 23	27.1	249.2	3.8		34.8	405	3204	14 50 39
14 58 13	J1450+0910	18 42 58	26.2	248.8	3.9		34.5	19	3204	14 58 13
15 00 13	=1448+093	18 44 58	25.9	249.3	3.9		34.7	120	3219	14 58 14

SETUP FILE INFORMATION:

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

===== Setup file: sess315.C1024

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

Disk used to record data.

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

The following frequency sets based on these setups were used.

Frequency Set: 7 Setup file default. Used with PCAL = off

LO sum=	4942.49	4942.49	4942.49	4942.49	4974.49	4974.49	4974.49	4974.49
	5006.49	5006.49	5006.49	5006.49	5038.49	5038.49	5038.49	5038.49
BBC fr=	742.49	742.49	742.49	742.49	774.49	774.49	774.49	774.49
	806.49	806.49	806.49	806.49	838.49	838.49	838.49	838.49
Bandwd=	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00

Matching frequency sets: 7 14

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)		
* UGC09555	14 48 23.739225	* 14 50 49.397000	14 51 33.992817	0.00
	10 19 09.23120	* 10 06 49.31000	10 03 10.17262	0.00
* 4C39.25	09 23 55.319215	* 09 27 03.013936	09 28 01.327347	0.30
J0927+3902	39 15 23.56645	* 39 02 20.85186	38 57 59.46665	0.16
* 3C286	13 28 49.657758	* 13 31 08.288051	13 31 50.222714	0.18
J1331+3030	30 45 58.64059	* 30 30 32.95924	30 25 48.03854	0.17
* 0Q208	14 04 45.615156	* 14 07 00.394414	14 07 41.165979	0.24
J1407+2827	28 41 29.23518	* 28 27 14.69022	28 22 55.47023	0.34
1448+093	14 48 04.740055	* 14 50 31.168932	14 51 16.020728	0.13
* J1450+0910	09 22 48.79490	* 09 10 27.95504	09 06 48.51791	0.27
* 3C345	16 41 17.606228	* 16 42 58.809966	16 43 29.155393	0.76
J1642+3948	39 54 10.81496	* 39 48 36.99402	39 47 13.37989	0.52

rk12dztr

RADIOASTRON AGN SURVEY
PI: Yuri Kovalev

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

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

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

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
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 29 Oct 2015 Day 302 ---

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

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

16 00 00	0007+106	19 44 55	22.8	102.3	-4.4		-36.7	0	0	16 00 00
16 14 30	---	19 59 28	24.9	105.4	-4.2		-36.1	870	28	16 00 01
16 15 00	0007+106	19 59 58	25.0	105.5	-4.2		-36.1	24	28	16 15 00
16 29 30	---	20 14 30	27.1	108.8	-3.9		-35.4	870	56	16 15 01
16 30 00	0007+106	20 15 00	27.1	108.9	-3.9		-35.4	24	56	16 30 00
16 44 30	---	20 29 33	29.2	112.2	-3.7		-34.5	870	84	16 30 01
16 45 00	0007+106	20 30 03	29.3	112.3	-3.7		-34.5	24	84	16 45 00
17 00 00	---	20 45 05	31.3	115.9	-3.4		-33.4	900	112	16 45 01

SETUP FILE INFORMATION:

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

===== Setup file: ra6cm2.set

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

Disk used to record data.


```

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

```

The following frequency sets based on these setups were used.

```

Frequency Set:   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 29.839742	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 31.94643	0.00
	fake circumpolar target for a TS to look at			
* 0007+106	00 07 56.721989	* 00 10 31.005907	00 11 20.937494	0.00
J0010+1058	10 41 48.22044	* 10 58 29.50423	11 03 53.77321	0.00
	./rk12dz_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 3268 observations, RA-A03-04			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0007+106	149.8

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 $60 \deg F^{-0.6}$ 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

rk12eatr

RADIOASTRON AGN SURVEY
PI: Yuri Kovalev

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

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

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN Survey

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

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 29 Oct 2015 Day 302 ---

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

Next scan frequencies:	4836.00	4836.00	4836.00	4836.00					
Next BBC frequencies:	736.00	736.00	736.00	736.00					
Next scan bandwidths:	16.00	16.00	16.00	16.00					
20 00 00	2200+420	23 45 35	69.9	248.0	1.7	48.9	0	0	20 00 00
20 12 00	---	23 57 37	68.2	252.1	1.9	50.6	720	23	20 00 01
20 12 30	2200+420	23 58 07	68.1	252.2	1.9	50.7	24	23	20 12 30
20 24 30	---	00 10 09	66.4	255.8	2.1	52.0	720	46	20 12 31
20 25 00	2200+420	00 10 39	66.3	255.9	2.1	52.0	24	46	20 25 00
20 37 00	---	00 22 41	64.6	259.2	2.3	53.0	720	69	20 25 01
20 37 30	2200+420	00 23 11	64.5	259.3	2.3	53.0	24	69	20 37 30
20 50 00	---	00 35 43	62.6	262.4	2.5	53.7	750	93	20 37 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:	3	Station:	TORUN	Total bit rate:	256
Format:	MKIV1:4	Bits per sample:	2	Sample rate:	32.000
Number of channels:	4	DBE type:		Speedup factor:	1.00

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 29.859243	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 31.88537	0.00
	fake circumpolar target for a TS to look at			
* 2200+420	22 00 39.362504	* 22 02 43.291371	22 03 23.593690	0.00
J2202+4216	42 02 08.59073	* 42 16 39.97987	42 21 37.66778	0.00
BLLAC	./rk12ea_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 59417 observations, RA-A03-04, RA-A02-1			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
2200+420	119.0

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 $60 \deg F^{-0.6}$ 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

rk12ebtr

RADIOASTRON AGN SURVEY
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 Survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
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 29 Oct 2015 Day 302 ---

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

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

23 10 00	2201+315	02 56 06	34.8	278.3	4.9		44.4	0	0	23 10 00
23 22 00	---	03 08 08	33.0	280.5	5.1		44.0	720	23	23 10 01
23 22 30	2201+315	03 08 38	32.9	280.6	5.1		44.0	24	23	23 22 30
23 30 00	---	03 16 09	31.8	282.0	5.2		43.7	450	37	23 22 31

----- 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

23 35 00	2201+315	03 21 10	31.1	282.9	5.3		43.6	293	37	23 35 00
23 47 00	---	03 33 12	29.4	285.0	5.5		43.1	720	60	23 35 01
23 47 30	2201+315	03 33 42	29.3	285.1	5.5		43.0	24	60	23 47 30
23 59 59	---	03 46 14	27.5	287.3	5.7		42.4	749	84	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: 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: 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

===== Setup file: ra18cm2.set

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

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 29.875182	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 31.83636	0.00
	fake circumpolar target for a TS to look at			
* 2201+315	22 01 01.441997	* 22 03 14.975788	22 03 58.060976	0.00
J2203+3145	31 31 05.87498	* 31 45 38.26991	31 50 34.37908	0.00
	./rk12eb_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 33331 observations, RA-A03-04, RA-A02-1			

EFFECT OF SOLAR CORONA

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

```

Source      Sun distance (deg)
2201+315    120.0

```

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

```

VLBI OBSERVATIONS OF UHBLs AT 5 GHz

PI: *Zhongzu WU*

Address: College of Science, Guizhou University

Observing mode: Phase-referencing of UHBLs at 6cm (1 Gb/s)

Schedule for TORUN (Code Tr)

Page 2

VLBI observations of UHBLs at 5 GHz

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

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 30 Oct 2015	Day 303 ---								
Next scan frequencies:		4942.49	4942.49	4942.49	4942.49	4974.49	4974.49	4974.49	4974.49	4974.49
		5006.49	5006.49	5006.49	5006.49	5038.49	5038.49	5038.49	5038.49	5038.49
Next BBC frequencies:		742.49	742.49	742.49	742.49	774.49	774.49	774.49	774.49	774.49
		806.49	806.49	806.49	806.49	838.49	838.49	838.49	838.49	838.49
Next scan bandwidths:		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00

02 00 00	J0541+6745	05 46 34	75.3	-1.4	0.1		177.8	0	0	02 00 00
02 03 00	=0535+677	05 49 34	75.3	-2.5	0.1		176.1	180	23	02 00 01
02 03 00	J0502+675	05 49 34	74.7	-14.5	0.7		156.8	-39	23	No stop
02 08 00	---	05 54 35	74.5	-16.1	0.7		154.0	261	62	02 03 01
02 08 30	J0541+6745	05 55 05	75.3	-4.5	0.2		172.8	-8	62	02 08 30
02 11 30	=0535+677	05 58 06	75.2	-5.6	0.3		171.0	172	85	02 08 31
02 11 30	J0502+675	05 58 06	74.3	-17.2	0.8		152.2	-38	85	No stop
02 16 30	---	06 03 07	74.1	-18.7	0.9		149.5	262	123	02 11 31
02 17 00	J0541+6745	06 03 37	75.1	-7.6	0.3		167.8	-7	123	02 17 00
02 20 00	=0535+677	06 06 37	75.1	-8.7	0.4		166.1	173	146	02 17 01
02 20 00	J0502+675	06 06 37	73.9	-19.8	0.9		147.7	-37	146	No stop
02 25 00	---	06 11 38	73.7	-21.2	1.0		145.2	263	185	02 20 01
02 28 30	J1349+5341	06 15 09	30.0	38.8	-7.6		-39.4	32	185	02 28 30
02 31 30	=1347+539	06 18 09	30.3	39.2	-7.5		-39.8	180	208	02 28 31
02 31 30	J1353+5601	06 18 09	31.7	37.0	-7.6		-40.2	-19	208	No stop
02 36 30	---	06 23 10	32.2	37.6	-7.5		-40.9	281	246	02 31 31
02 36 30	J1349+5341	06 23 10	30.8	39.9	-7.4		-40.5	-19	246	No stop
02 39 30	=1347+539	06 26 10	31.1	40.3	-7.4		-40.9	161	269	02 36 31
02 39 30	J1353+5601	06 26 10	32.5	38.0	-7.5		-41.3	-19	269	No stop
02 44 30	---	06 31 11	32.9	38.6	-7.4		-42.0	281	308	02 39 31
02 45 00	J1349+5341	06 31 41	31.6	41.0	-7.3		-41.6	11	308	02 45 00
02 48 00	=1347+539	06 34 42	31.9	41.4	-7.3		-42.0	180	331	02 45 01
02 48 00	J1353+5601	06 34 42	33.3	39.1	-7.3		-42.5	-19	331	No stop
02 53 00	---	06 39 43	33.7	39.7	-7.2		-43.2	281	369	02 48 01
02 55 00	J1150+2417	06 41 43	26.6	84.4	-5.2		-40.9	16	369	02 55 00
02 58 00	=1147+245	06 44 43	27.1	85.0	-5.1		-41.0	180	392	02 55 01

Schedule for TORUN (Code Tr)

Page 3

VLBI observations of UHBLs at 5 GHz

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

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 30 Oct 2015	Day 303		---						
02 58 00	J1149+2455	06 44 43	27.4	84.9	-5.1		-41.1	-12	392	No stop
03 03 00	---	06 49 44	28.2	85.9	-5.0		-41.2	288	431	02 58 01
03 03 00	J1150+2417	06 49 44	27.8	86.0	-5.0		-41.1	-12	431	No stop
03 06 00	=1147+245	06 52 45	28.3	86.6	-5.0		-41.1	168	454	03 03 01
03 06 00	J1149+2455	06 52 45	28.7	86.5	-5.0		-41.2	-12	454	No stop
03 11 00	---	06 57 46	29.4	87.5	-4.9		-41.3	288	492	03 06 01
03 11 00	J1150+2417	06 57 46	29.0	87.6	-4.9		-41.1	-12	492	No stop
03 14 00	=1147+245	07 00 46	29.5	88.2	-4.8		-41.2	168	515	03 11 01
03 14 00	J1149+2455	07 00 46	29.9	88.0	-4.8		-41.3	-12	515	No stop
03 19 00	---	07 05 47	30.6	89.0	-4.7		-41.3	288	554	03 14 01
03 21 00	J1349+5341	07 07 47	35.3	45.6	-6.7		-46.3	18	554	03 21 00
03 24 00	=1347+539	07 10 48	35.7	46.0	-6.7		-46.7	180	577	03 21 01
03 24 00	J1353+5601	07 10 48	36.8	43.4	-6.7		-47.5	-19	577	No stop
03 29 00	---	07 15 49	37.4	44.0	-6.6		-48.2	281	615	03 24 01
03 29 00	J1349+5341	07 15 49	36.2	46.6	-6.6		-47.4	-20	615	No stop
03 32 00	=1347+539	07 18 49	36.5	47.0	-6.5		-47.8	160	638	03 29 01
03 32 00	J1353+5601	07 18 49	37.7	44.4	-6.6		-48.6	-19	638	No stop
03 37 00	---	07 23 50	38.2	44.9	-6.5		-49.2	281	677	03 32 01
03 37 30	J1349+5341	07 24 20	37.1	47.7	-6.4		-48.5	10	677	03 37 30
03 40 30	=1347+539	07 27 20	37.5	48.1	-6.4		-48.8	180	700	03 37 31
03 40 30	J1353+5601	07 27 20	38.6	45.4	-6.4		-49.7	-20	700	No stop
03 45 30	---	07 32 21	39.1	45.9	-6.4		-50.4	280	738	03 40 31
03 47 30	J1150+2417	07 34 22	34.5	95.0	-4.3		-41.0	7	738	03 47 30
03 50 30	=1147+245	07 37 22	34.9	95.6	-4.2		-40.9	180	762	03 47 31
03 50 30	J1149+2455	07 37 22	35.3	95.5	-4.2		-41.1	-12	762	No stop
03 55 30	---	07 42 23	36.1	96.5	-4.1		-41.0	288	800	03 50 31
03 55 30	J1150+2417	07 42 23	35.7	96.7	-4.1		-40.8	-12	800	No stop
03 58 30	=1147+245	07 45 23	36.1	97.3	-4.1		-40.8	168	823	03 55 31
03 58 30	J1149+2455	07 45 23	36.5	97.2	-4.1		-40.9	-12	823	No stop
04 03 30	---	07 50 24	37.3	98.3	-4.0		-40.8	288	862	03 58 31

Schedule for TORUN (Code Tr)

Page 4

VLBI observations of UHBLs at 5 GHz

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

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 30 Oct 2015	Day 303 ---								
04 04 00	J1150+2417	07 50 54	37.0	98.5	-4.0		-40.6	18	862	04 04 00
04 07 00	=1147+245	07 53 55	37.4	99.1	-4.0		-40.5	180	885	04 04 01
04 07 00	J1149+2455	07 53 55	37.8	99.0	-3.9		-40.7	-12	885	No stop
04 12 00	---	07 58 56	38.5	100.1	-3.9		-40.5	288	923	04 07 01
04 14 00	J1349+5341	08 00 56	41.3	52.1	-5.8		-53.0	9	923	04 14 00
04 17 00	=1347+539	08 03 56	41.7	52.5	-5.8		-53.4	180	946	04 14 01
04 17 00	J1353+5601	08 03 56	42.6	49.5	-5.8		-54.6	-20	946	No stop
04 22 00	---	08 08 57	43.2	50.0	-5.8		-55.3	280	985	04 17 01
04 22 00	J1349+5341	08 08 57	42.3	53.1	-5.7		-54.0	-21	985	No stop
04 25 00	=1347+539	08 11 58	42.7	53.4	-5.6		-54.4	159	1008	04 22 01
04 25 00	J1353+5601	08 11 58	43.5	50.4	-5.7		-55.7	-21	1008	No stop
04 30 00	---	08 16 59	44.1	50.9	-5.6		-56.3	279	1046	04 25 01
04 30 30	J1349+5341	08 17 29	43.3	54.1	-5.5		-55.0	9	1046	04 30 30
04 33 30	=1347+539	08 20 29	43.7	54.4	-5.5		-55.4	180	1069	04 30 31
04 33 30	J1353+5601	08 20 29	44.5	51.3	-5.6		-56.8	-21	1069	No stop
04 38 30	---	08 25 30	45.1	51.8	-5.5		-57.5	279	1108	04 33 31
04 40 30	J1150+2417	08 27 30	42.3	106.8	-3.4		-39.1	-5	1108	04 40 30
04 43 30	=1147+245	08 30 31	42.8	107.5	-3.3		-38.9	175	1131	04 40 31
04 43 30	J1149+2455	08 30 31	43.2	107.4	-3.3		-39.1	-12	1131	No stop
04 48 30	---	08 35 32	43.9	108.6	-3.2		-38.7	288	1169	04 43 31
04 48 30	J1150+2417	08 35 32	43.5	108.7	-3.3		-38.6	-12	1169	No stop
04 51 30	=1147+245	08 38 32	43.9	109.5	-3.2		-38.4	168	1192	04 48 31
04 51 30	J1149+2455	08 38 32	44.3	109.4	-3.2		-38.5	-12	1192	No stop
04 56 30	---	08 43 33	45.0	110.6	-3.1		-38.2	288	1231	04 51 31
04 56 30	J1150+2417	08 43 33	44.6	110.7	-3.1		-38.0	-12	1231	No stop
04 59 30	=1147+245	08 46 33	45.0	111.5	-3.1		-37.8	168	1254	04 56 31
04 59 30	J1149+2455	08 46 33	45.4	111.4	-3.1		-37.9	-12	1254	No stop
05 04 30	---	08 51 34	46.1	112.7	-3.0		-37.5	288	1292	04 59 31
05 06 06	3C286	08 53 11	35.8	85.4	-4.6		-44.0	27	1292	05 06 06
05 11 06	---	08 58 12	36.5	86.4	-4.6		-44.0	300	1331	05 06 07

Schedule for TORUN (Code Tr)

Page 5

VLBI observations of UHBLs at 5 GHz

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

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	30 Oct 2015	Day 303 ---								
05 12 36	0Q208	08 59 42	29.9	81.6	-5.1		-42.5	51	1331	05 12 36
05 17 36	---	09 04 43	30.7	82.5	-5.0		-42.6	300	1369	05 12 37
05 19 06	J1217+3007	09 06 13	48.4	104.1	-3.2		-42.3	10	1369	05 19 06
05 22 06	=1215+303	09 09 14	48.8	104.8	-3.2		-42.1	180	1392	05 19 07
05 22 06	J1218+304	09 09 14	35.7	117.0	-3.2		-33.5	-62	1392	No stop
05 27 06	---	09 14 14	36.4	118.3	-3.1		-33.1	238	1431	05 22 07
05 27 06	J1217+3007	09 14 14	49.5	106.1	-3.1		-41.8	-64	1431	No stop
05 30 06	=1215+303	09 17 15	50.0	106.8	-3.0		-41.6	116	1454	05 27 07
05 30 06	J1218+304	09 17 15	36.8	119.1	-3.1		-32.8	-63	1454	No stop
05 35 06	---	09 22 16	37.5	120.3	-3.0		-32.3	237	1492	05 30 07
05 35 36	J1217+3007	09 22 46	50.7	108.2	-2.9		-41.2	-34	1492	05 35 36
05 38 36	=1215+303	09 25 46	51.2	109.0	-2.9		-41.0	146	1515	05 35 37
05 38 36	J1218+304	09 25 46	37.9	121.2	-2.9		-32.0	-63	1515	No stop
05 43 36	---	09 30 47	38.5	122.6	-2.9		-31.5	237	1554	05 38 37
05 45 31	0Q208	09 32 41	34.9	87.9	-4.6		-43.0	29	1554	05 45 31
05 50 31	---	09 37 42	35.6	88.9	-4.5		-43.0	300	1592	05 45 32
05 52 01	J1349+5341	09 39 13	53.8	63.2	-4.2		-64.6	8	1592	05 52 01
05 55 01	=1347+539	09 42 13	54.2	63.6	-4.1		-65.0	180	1615	05 52 02
05 55 01	J1353+5601	09 42 13	54.6	59.5	-4.2		-67.5	-23	1615	No stop
06 00 01	---	09 47 14	55.3	60.0	-4.1		-68.2	277	1654	05 55 02
06 00 01	J1349+5341	09 47 14	54.9	64.1	-4.0		-65.6	-23	1654	No stop
06 03 01	=1347+539	09 50 14	55.3	64.4	-4.0		-65.9	157	1677	06 00 02
06 03 01	J1353+5601	09 50 14	55.7	60.2	-4.1		-68.6	-23	1677	No stop
06 08 01	---	09 55 15	56.3	60.7	-4.0		-69.2	277	1715	06 03 02
06 08 31	J1349+5341	09 55 45	56.0	65.0	-3.9		-66.5	6	1715	06 08 31
06 11 31	=1347+539	09 58 46	56.4	65.3	-3.9		-66.9	180	1738	06 08 32
06 11 31	J1353+5601	09 58 46	56.8	61.0	-3.9		-69.7	-24	1738	No stop
06 16 31	---	10 03 47	57.4	61.4	-3.8		-70.4	276	1777	06 11 32
06 18 24	3C286	10 05 41	46.6	100.5	-3.4		-43.2	21	1777	06 18 24
06 23 24	---	10 10 42	47.4	101.6	-3.4		-43.0	300	1815	06 18 25

Schedule for TORUN (Code Tr)

Page 6

VLBI observations of UHBLs at 5 GHz

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

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 30 Oct 2015	Day 303 ---								
06 24 54	J1150+2417	10 12 12	55.6	137.5	-1.6		-26.4	3	1815	06 24 54
06 27 54	=1147+245	10 15 12	55.9	138.6	-1.6		-25.8	180	1838	06 24 55
06 27 54	J1149+2455	10 15 12	56.3	138.6	-1.6		-25.9	-12	1838	No stop
06 32 54	---	10 20 13	56.8	140.5	-1.5		-24.9	288	1877	06 27 55
06 32 54	J1150+2417	10 20 13	56.4	140.4	-1.5		-24.8	-12	1877	No stop
06 35 54	=1147+245	10 23 14	56.7	141.6	-1.5		-24.2	168	1900	06 32 55
06 35 54	J1149+2455	10 23 14	57.1	141.6	-1.5		-24.2	-12	1900	No stop
06 40 54	---	10 28 14	57.6	143.5	-1.4		-23.1	288	1938	06 35 55
06 40 54	J1150+2417	10 28 14	57.2	143.5	-1.4		-23.1	-12	1938	No stop
06 43 54	=1147+245	10 31 15	57.4	144.7	-1.3		-22.4	168	1962	06 40 55
06 43 54	J1149+2455	10 31 15	57.8	144.7	-1.3		-22.4	-12	1962	No stop
06 48 54	---	10 36 16	58.3	146.7	-1.2		-21.2	288	2000	06 43 55
06 50 24	J1217+3007	10 37 46	60.5	131.5	-1.7		-31.3	44	2000	06 50 24
06 53 24	=1215+303	10 40 46	60.9	132.6	-1.6		-30.7	180	2023	06 50 25
06 53 24	J1218+304	10 40 46	46.3	143.1	-1.7		-21.8	-68	2023	No stop
06 58 24	---	10 45 47	46.7	144.8	-1.6		-20.9	232	2062	06 53 25
06 58 24	J1217+3007	10 45 47	61.4	134.5	-1.5		-29.6	-69	2062	No stop
07 01 24	=1215+303	10 48 48	61.7	135.7	-1.5		-29.0	111	2085	06 58 25
07 01 24	J1218+304	10 48 48	47.0	145.8	-1.6		-20.4	-69	2085	No stop
07 06 24	---	10 53 49	47.4	147.4	-1.5		-19.5	231	2123	07 01 25
07 06 24	J1217+3007	10 53 49	62.2	137.8	-1.4		-27.8	-70	2123	No stop
07 09 24	=1215+303	10 56 49	62.5	139.0	-1.4		-27.1	110	2146	07 06 25
07 09 24	J1218+304	10 56 49	47.6	148.5	-1.4		-18.9	-70	2146	No stop
07 14 24	---	11 01 50	48.0	150.2	-1.3		-17.9	230	2185	07 09 25
07 15 54	J1217+3007	11 03 20	63.2	141.8	-1.3		-25.4	19	2185	07 15 54
07 18 54	=1215+303	11 06 21	63.4	143.1	-1.2		-24.6	180	2208	07 15 55
07 18 54	J1218+304	11 06 21	48.3	151.7	-1.3		-17.1	-70	2208	No stop
07 23 54	---	11 11 21	48.7	153.5	-1.2		-16.0	230	2246	07 18 55
07 23 54	J1217+3007	11 11 21	63.9	145.3	-1.1		-23.2	-71	2246	No stop
07 26 54	=1215+303	11 14 22	64.1	146.7	-1.1		-22.4	109	2269	07 23 55

Schedule for TORUN (Code Tr)

Page 7

VLBI observations of UHBLs at 5 GHz

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

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 30 Oct 2015	Day 303 ---								
07 26 54	J1218+304	11 14 22	48.9	154.6	-1.1		-15.4	-71	2269	No stop
07 31 54	---	11 19 23	49.2	156.4	-1.0		-14.4	229	2308	07 26 55
07 31 54	J1217+3007	11 19 23	64.5	149.0	-1.0		-20.9	-72	2308	No stop
07 34 54	=1215+303	11 22 23	64.8	150.5	-0.9		-20.0	108	2331	07 31 55
07 34 54	J1218+304	11 22 23	49.4	157.4	-1.0		-13.7	-71	2331	No stop
07 39 54	---	11 27 24	49.6	159.3	-0.9		-12.7	229	2369	07 34 55
07 42 08	0Q208	11 29 39	52.0	114.7	-2.6		-38.3	30	2369	07 42 08
07 47 08	---	11 34 39	52.7	116.1	-2.6		-37.8	300	2408	07 42 09
07 48 08	J1419+2706	11 35 40	50.0	114.1	-2.8		-38.0	36	2408	07 48 08
07 51 08	=1417+273	11 38 40	50.4	114.9	-2.7		-37.7	180	2431	07 48 09
07 51 08	J1415+2557	11 38 40	49.5	116.8	-2.7		-36.5	-17	2431	No stop
07 56 08	---	11 43 41	50.2	118.2	-2.6		-36.0	283	2469	07 51 09
07 56 08	J1419+2706	11 43 41	51.1	116.3	-2.6		-37.2	-17	2469	No stop
07 59 08	=1417+273	11 46 41	51.5	117.2	-2.6		-36.9	163	2492	07 56 09
07 59 08	J1415+2557	11 46 41	50.6	119.0	-2.5		-35.6	-17	2492	No stop
08 04 08	---	11 51 42	51.3	120.5	-2.4		-35.0	283	2531	07 59 09
08 04 08	J1415+2557	11 51 42	51.3	120.5	-2.4		-35.0	-5	2531	No stop
08 07 08	---	11 54 43	51.6	121.4	-2.4		-34.7	175	2554	08 04 09
08 07 08	J1415+2557	11 54 43	51.6	121.4	-2.4		-34.7	-5	2554	No stop
08 12 08	---	11 59 44	52.3	122.9	-2.3		-34.0	295	2592	08 07 09
08 13 38	3C286	12 01 14	62.0	135.0	-1.5		-29.5	40	2592	08 13 38
08 18 38	---	12 06 15	62.5	137.0	-1.4		-28.3	300	2631	08 13 39
08 20 08	J1419+2706	12 07 45	54.2	123.5	-2.2		-34.2	45	2631	08 20 08
08 23 08	=1417+273	12 10 45	54.6	124.4	-2.2		-33.8	180	2654	08 20 09
08 23 08	J1415+2557	12 10 45	53.6	126.4	-2.1		-32.4	-18	2654	No stop
08 28 08	---	12 15 46	54.2	128.0	-2.0		-31.7	282	2692	08 23 09
08 28 08	J1419+2706	12 15 46	55.2	126.1	-2.1		-33.0	-17	2692	No stop
08 31 08	=1417+273	12 18 47	55.5	127.0	-2.0		-32.6	163	2715	08 28 09
08 31 08	J1415+2557	12 18 47	54.6	129.0	-2.0		-31.2	-18	2715	No stop
08 36 08	---	12 23 47	55.2	130.7	-1.9		-30.3	282	2754	08 31 09

Schedule for TORUN (Code Tr)

Page 8

VLBI observations of UHBLs at 5 GHz

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

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 30 Oct 2015	Day 303 ---								
08 36 08	J1415+2557	12 23 47	55.2	130.7	-1.9		-30.3	-5	2754	No stop
08 39 08	---	12 26 48	55.5	131.7	-1.9		-29.8	175	2777	08 36 09
08 39 08	J1415+2557	12 26 48	55.5	131.7	-1.9		-29.8	-5	2777	No stop
08 44 08	---	12 31 49	56.1	133.5	-1.8		-28.9	295	2815	08 39 09
08 45 38	J1419+2706	12 33 19	57.2	132.0	-1.8		-30.0	73	2815	08 45 38
08 48 38	=1417+273	12 36 20	57.6	133.1	-1.7		-29.5	180	2838	08 45 39
08 48 38	J1415+2557	12 36 20	56.6	135.1	-1.7		-28.1	-18	2838	No stop
08 53 38	---	12 41 20	57.1	136.9	-1.6		-27.1	282	2877	08 48 39
08 53 38	J1419+2706	12 41 20	58.1	135.0	-1.7		-28.5	-17	2877	No stop
08 56 38	=1417+273	12 44 21	58.4	136.1	-1.6		-27.9	163	2900	08 53 39
08 56 38	J1415+2557	12 44 21	57.4	138.0	-1.6		-26.5	-18	2900	No stop
09 01 38	---	12 49 22	57.9	139.9	-1.5		-25.4	282	2938	08 56 39
09 01 38	J1415+2557	12 49 22	57.9	139.9	-1.5		-25.4	-5	2938	No stop
09 04 38	---	12 52 22	58.2	141.1	-1.4		-24.7	175	2962	09 01 39
09 04 38	J1415+2557	12 52 22	58.2	141.1	-1.4		-24.7	-5	2962	No stop
09 09 38	---	12 57 23	58.6	143.1	-1.4		-23.6	295	3000	09 04 39
09 11 08	0Q208	12 58 53	62.2	146.1	-1.1		-22.4	63	3000	09 11 08
09 16 08	---	13 03 54	62.6	148.3	-1.1		-21.0	300	3038	09 11 09
09 17 38	3C286	13 05 24	66.8	165.4	-0.4		-10.1	42	3038	09 17 38
09 22 38	---	13 10 25	67.0	168.1	-0.4		-8.2	300	3077	09 17 39
09 24 08	J1217+3007	13 11 55	65.0	208.1	0.9		19.1	-5	3077	09 24 08
09 27 08	=1215+303	13 14 56	64.7	209.6	0.9		20.0	175	3100	09 24 09
09 27 08	J1218+304	13 14 56	49.7	200.0	0.9		12.2	-70	3100	No stop
09 32 08	---	13 19 57	49.5	201.9	1.0		13.3	230	3138	09 27 09
09 32 08	J1217+3007	13 19 57	64.4	211.9	1.0		21.5	-69	3138	No stop
09 35 08	=1215+303	13 22 57	64.1	213.3	1.1		22.4	111	3162	09 32 09
09 35 08	J1218+304	13 22 57	49.3	202.9	1.0		14.0	-70	3162	No stop
09 40 08	---	13 27 58	49.0	204.7	1.1		15.0	230	3200	09 35 09
09 40 08	J1217+3007	13 27 58	63.7	215.6	1.2		23.8	-69	3200	No stop
09 43 08	=1215+303	13 30 58	63.4	216.9	1.2		24.6	111	3223	09 40 09

Schedule for TORUN (Code Tr)

Page 9

VLBI observations of UHBLs at 5 GHz

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

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 30 Oct 2015	Day 303 ---								
09 43 08	J1218+304	13 30 58	48.8	205.8	1.1		15.6	-69	3223	No stop
09 48 08	---	13 35 59	48.5	207.6	1.2		16.7	231	3262	09 43 09
09 49 38	J1419+2706	13 37 30	62.7	158.6	-0.7		-14.2	-23	3262	09 49 38
09 52 38	=1417+273	13 40 30	62.9	160.1	-0.7		-13.3	157	3285	09 49 39
09 52 38	J1415+2557	13 40 30	61.6	161.7	-0.6		-12.1	-18	3285	No stop
09 57 38	---	13 45 31	61.9	164.0	-0.6		-10.6	282	3323	09 52 39
09 57 38	J1419+2706	13 45 31	63.1	162.5	-0.6		-11.7	-18	3323	No stop
10 00 38	=1417+273	13 48 31	63.3	163.9	-0.5		-10.8	162	3346	09 57 39
10 00 38	J1415+2557	13 48 31	62.0	165.4	-0.5		-9.6	-18	3346	No stop
10 05 38	---	13 53 32	62.2	167.8	-0.4		-8.1	282	3385	10 00 39
10 05 38	J1415+2557	13 53 32	62.2	167.8	-0.4		-8.1	-5	3385	No stop
10 08 38	---	13 56 33	62.2	169.3	-0.4		-7.1	175	3408	10 05 39
10 08 38	J1415+2557	13 56 33	62.2	169.3	-0.4		-7.1	-5	3408	No stop
10 13 38	---	14 01 33	62.4	171.7	-0.3		-5.5	295	3446	10 08 39
10 15 08	0Q208	14 03 04	65.3	177.6	-0.1		-1.7	64	3446	10 15 08
10 20 08	---	14 08 05	65.3	180.2	0.0		0.1	300	3485	10 15 09
10 21 38	3C286	14 09 35	66.3	200.6	0.6		14.2	35	3485	10 21 38
10 26 38	---	14 14 36	66.0	203.2	0.7		15.9	300	3523	10 21 39
10 28 08	J1150+2417	14 16 06	50.3	237.6	2.4		33.8	6	3523	10 28 08
10 31 08	=1147+245	14 19 06	49.9	238.5	2.5		34.2	180	3546	10 28 09
10 31 08	J1149+2455	14 19 06	50.1	239.1	2.5		34.5	-12	3546	No stop
10 36 08	---	14 24 07	49.5	240.5	2.6		35.1	288	3585	10 31 09
10 36 08	J1150+2417	14 24 07	49.3	240.0	2.6		34.7	-11	3585	No stop
10 39 08	=1147+245	14 27 08	48.9	240.8	2.6		35.1	169	3608	10 36 09
10 39 08	J1149+2455	14 27 08	49.1	241.4	2.6		35.4	-12	3608	No stop
10 44 08	---	14 32 08	48.4	242.8	2.7		36.0	288	3646	10 39 09
10 44 08	J1150+2417	14 32 08	48.2	242.2	2.7		35.6	-11	3646	No stop
10 47 08	=1147+245	14 35 09	47.8	243.1	2.7		35.9	169	3669	10 44 09
10 47 08	J1149+2455	14 35 09	48.0	243.6	2.7		36.3	-12	3669	No stop
10 52 08	---	14 40 10	47.3	245.0	2.8		36.7	288	3708	10 47 09

Schedule for TORUN (Code Tr)

Page 10

VLBI observations of UHBLs at 5 GHz

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

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 30 Oct 2015 Day 303 ---								
10 53 38	J1150+2417	14 41 40	47.0	244.8	2.8	36.6 79	3708	10 53 38
10 56 38	=1147+245	14 44 41	46.5	245.6	2.9	36.9 180	3731	10 53 39
10 56 38	J1149+2455	14 44 41	46.7	246.2	2.9	37.2 -12	3731	No stop
11 01 38	---	14 49 41	46.0	247.5	3.0	37.6 288	3769	10 56 39
11 01 38	J1150+2417	14 49 41	45.9	247.0	3.0	37.3 -11	3769	No stop
11 04 38	=1147+245	14 52 42	45.4	247.7	3.0	37.5 169	3792	11 01 39
11 04 38	J1149+2455	14 52 42	45.6	248.3	3.0	37.8 -12	3792	No stop
11 09 38	---	14 57 43	44.9	249.5	3.1	38.2 288	3831	11 04 39
11 09 38	J1150+2417	14 57 43	44.7	249.0	3.1	37.9 -11	3831	No stop
11 12 38	=1147+245	15 00 43	44.3	249.8	3.2	38.2 169	3854	11 09 39
11 12 38	J1149+2455	15 00 43	44.5	250.3	3.2	38.4 -12	3854	No stop
11 17 38	---	15 05 44	43.8	251.5	3.3	38.8 288	3892	11 12 39
11 19 08	J1419+2706	15 07 14	62.5	202.9	0.8	15.2 -22	3892	11 19 08
11 22 08	=1417+273	15 10 15	62.4	204.3	0.8	16.1 158	3915	11 19 09
11 22 08	J1415+2557	15 10 15	60.9	204.5	0.9	16.0 -19	3915	No stop
11 27 08	---	15 15 16	60.6	206.7	0.9	17.4 281	3954	11 22 09
11 27 08	J1419+2706	15 15 16	62.0	206.6	0.9	17.6 -19	3954	No stop
11 30 08	=1417+273	15 18 16	61.8	208.0	1.0	18.4 161	3977	11 27 09
11 30 08	J1415+2557	15 18 16	60.4	208.0	1.0	18.2 -19	3977	No stop
11 35 08	---	15 23 17	60.0	210.1	1.1	19.5 281	4015	11 30 09
11 35 08	J1415+2557	15 23 17	60.0	210.1	1.1	19.5 -5	4015	No stop
11 38 08	---	15 26 17	59.8	211.4	1.1	20.3 175	4038	11 35 09
11 38 08	J1415+2557	15 26 17	59.8	211.4	1.1	20.3 -5	4038	No stop
11 43 08	---	15 31 18	59.4	213.5	1.2	21.6 295	4077	11 38 09
11 44 38	J1150+2417	15 32 48	39.7	257.4	3.7	40.0 -13	4077	11 44 38
11 47 38	=1147+245	15 35 49	39.3	258.1	3.7	40.1 167	4100	11 44 39
11 47 38	J1149+2455	15 35 49	39.4	258.6	3.8	40.3 -11	4100	No stop
11 52 38	---	15 40 50	38.7	259.7	3.8	40.5 289	4138	11 47 39
11 52 38	J1150+2417	15 40 50	38.5	259.2	3.8	40.3 -11	4138	No stop
11 55 38	=1147+245	15 43 50	38.1	259.9	3.9	40.4 169	4162	11 52 39

Schedule for TORUN (Code Tr)

Page 11

VLBI observations of UHBLs at 5 GHz

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

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	30 Oct 2015	Day 303 ---								
11 55 38	J1149+2455	15 43 50	38.2	260.4	3.9		40.6	-11	4162	No stop
12 00 38	---	15 48 51	37.5	261.5	4.0		40.8	289	4200	11 55 39
12 00 38	J1150+2417	15 48 51	37.3	261.0	4.0		40.6	-11	4200	No stop
12 03 38	=1147+245	15 51 52	36.9	261.6	4.0		40.6	169	4223	12 00 39
12 03 38	J1149+2455	15 51 52	37.0	262.1	4.0		40.8	-11	4223	No stop
12 08 38	---	15 56 52	36.3	263.2	4.1		41.0	289	4262	12 03 39
12 10 08	J1217+3007	15 58 23	44.3	262.2	3.7		43.4	45	4262	12 10 08
12 13 08	=1215+303	16 01 23	43.9	262.8	3.7		43.5	180	4285	12 10 09
12 13 08	J1218+304	16 01 23	32.1	249.3	3.7		35.4	-58	4285	No stop
12 18 08	---	16 06 24	31.4	250.5	3.7		35.7	242	4323	12 13 09
12 18 08	J1217+3007	16 06 24	43.1	263.9	3.8		43.6	-57	4323	No stop
12 21 08	=1215+303	16 09 24	42.7	264.6	3.8		43.7	123	4346	12 18 09
12 21 08	J1218+304	16 09 24	31.0	251.2	3.8		35.9	-58	4346	No stop
12 26 08	---	16 14 25	30.3	252.3	3.9		36.2	242	4385	12 21 09
12 26 08	J1217+3007	16 14 25	41.9	265.6	3.9		43.8	-57	4385	No stop
12 29 08	=1215+303	16 17 26	41.5	266.3	4.0		43.8	123	4408	12 26 09
12 29 08	J1218+304	16 17 26	29.8	253.0	3.9		36.3	-58	4408	No stop
12 34 08	---	16 22 27	29.1	254.1	4.0		36.6	242	4446	12 29 09
12 37 38	J1810+5649	16 25 57	74.7	425.5	-1.7		-93.0	-148	4446	12 37 38
12 40 38	=1809+568	16 28 58	75.1	425.4	-1.7		-93.8	32	4469	12 37 39
12 40 38	J1756+5522	16 28 58	77.1	431.1	-1.5		-91.1	-26	4469	No stop
12 45 38	---	16 33 58	77.8	431.0	-1.4		-92.2	274	4508	12 40 39
12 45 38	J1810+5649	16 33 58	75.8	425.2	-1.6		-95.0	-27	4508	No stop
12 48 38	=1809+568	16 36 59	76.2	425.0	-1.6		-95.8	153	4531	12 45 39
12 48 38	J1756+5522	16 36 59	78.2	430.9	-1.3		-92.9	-27	4531	No stop
12 53 38	---	16 42 00	78.9	430.7	-1.2		-94.1	273	4569	12 48 39
12 54 08	J1810+5649	16 42 30	76.9	424.6	-1.5		-97.3	3	4569	12 54 08
12 57 08	=1809+568	16 45 30	77.3	424.4	-1.4		-98.2	180	4592	12 54 09
12 57 08	J1756+5522	16 45 30	79.4	430.5	-1.2		-95.1	-27	4592	No stop
13 02 08	---	16 50 31	80.1	430.1	-1.1		-96.5	273	4631	12 57 09

Schedule for TORUN (Code Tr)

Page 12

VLBI observations of UHBLs at 5 GHz

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

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	30 Oct 2015	Day 303 ---								
13 07 38	J1415+2557	16 56 02	49.9	242.5	2.6		36.2	-60	4631	13 07 38
13 12 38	---	17 01 03	49.2	243.9	2.7		36.7	240	4669	13 07 39
13 12 38	J1419+2706	17 01 03	50.6	244.6	2.7		37.5	-18	4669	No stop
13 15 38	=1417+273	17 04 03	50.2	245.5	2.7		37.8	162	4692	13 12 39
13 15 38	J1415+2557	17 04 03	48.8	244.7	2.8		37.0	-19	4692	No stop
13 20 38	---	17 09 04	48.1	246.1	2.8		37.5	281	4731	13 15 39
13 20 38	J1415+2557	17 09 04	48.1	246.1	2.8		37.5	-5	4731	No stop
13 23 38	---	17 12 05	47.7	246.9	2.9		37.8	175	4754	13 20 39
13 23 38	J1415+2557	17 12 05	47.7	246.9	2.9		37.8	-5	4754	No stop
13 28 38	---	17 17 06	47.0	248.2	3.0		38.2	295	4792	13 23 39
13 30 08	J1349+5341	17 18 36	59.6	292.3	3.5		69.5	-13	4792	13 30 08
13 33 08	=1347+539	17 21 36	59.2	292.6	3.5		69.1	167	4815	13 30 09
13 33 08	J1353+5601	17 21 36	60.5	296.6	3.5		73.4	-23	4815	No stop
13 38 08	---	17 26 37	59.8	297.1	3.5		72.7	277	4854	13 33 09
13 38 08	J1349+5341	17 26 37	58.5	293.1	3.6		68.6	-23	4854	No stop
13 41 08	=1347+539	17 29 38	58.1	293.4	3.7		68.2	157	4877	13 38 09
13 41 08	J1353+5601	17 29 38	59.4	297.3	3.6		72.3	-23	4877	No stop
13 46 08	---	17 34 38	58.7	297.7	3.7		71.6	277	4915	13 41 09
13 47 38	J1349+5341	17 36 09	57.2	294.1	3.8		67.5	68	4915	13 47 38
13 50 38	=1347+539	17 39 09	56.8	294.4	3.8		67.1	180	4938	13 47 39
13 50 38	J1353+5601	17 39 09	58.1	298.1	3.8		71.0	-22	4938	No stop
13 55 38	---	17 44 10	57.5	298.6	3.8		70.4	278	4977	13 50 39
13 59 38	J0541+6745	17 48 11	30.9	360.6-11.9			-0.9	101	4977	13 59 38
14 02 38	=0535+677	17 51 11	30.9	360.9-11.9			-1.4	180	5000	13 59 39
14 02 38	J0502+675	17 51 11	31.0	364.6-11.3			-7.3	-22	5000	No stop
14 07 38	---	17 56 12	31.0	365.1-11.2			-8.1	278	5038	14 02 39
14 07 38	J0541+6745	17 56 12	30.9	361.5-11.8			-2.3	-22	5038	No stop
14 10 38	=0535+677	17 59 12	30.9	361.8-11.7			-2.8	158	5062	14 07 39
14 10 38	J0502+675	17 59 12	31.1	365.5-11.2			-8.7	-22	5062	No stop
14 15 38	---	18 04 13	31.2	366.0-11.1			-9.5	278	5100	14 10 39

Schedule for TORUN (Code Tr)

Page 13

VLBI observations of UHBLs at 5 GHz

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

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	30 Oct 2015	Day 303 ---								
14 15 38	J0541+6745	18 04 13	30.9	362.3-11.6			-3.7	-22	5100	No stop
14 18 38	=0535+677	18 07 14	30.9	362.7-11.6			-4.2	158	5123	14 15 39
14 18 38	J0502+675	18 07 14	31.2	366.4-11.0			-10.1	-22	5123	No stop
14 23 38	---	18 12 15	31.3	366.9-11.0			-10.9	278	5162	14 18 39
14 24 38	J0541+6745	18 13 15	31.0	363.3-11.5			-5.3	38	5162	14 24 38
14 27 38	=0535+677	18 16 15	31.0	363.7-11.4			-5.8	180	5185	14 24 39
14 27 38	J0502+675	18 16 15	31.4	367.3-10.9			-11.6	-22	5185	No stop
14 32 38	---	18 21 16	31.5	367.9-10.8			-12.5	278	5223	14 27 39
14 32 38	J0541+6745	18 21 16	31.1	364.2-11.4			-6.7	-22	5223	No stop
14 35 38	=0535+677	18 24 17	31.1	364.5-11.3			-7.2	158	5246	14 32 39
14 35 38	J0502+675	18 24 17	31.5	368.2-10.8			-13.0	-22	5246	No stop
14 40 38	---	18 29 17	31.6	368.8-10.7			-13.9	278	5285	14 35 39
14 40 38	J0541+6745	18 29 17	31.2	365.1-11.2			-8.1	-22	5285	No stop
14 43 38	=0535+677	18 32 18	31.2	365.4-11.2			-8.6	158	5308	14 40 39
14 43 38	J0502+675	18 32 18	31.7	369.1-10.6			-14.4	-22	5308	No stop
14 48 38	---	18 37 19	31.8	369.6-10.5			-15.3	278	5346	14 43 39
14 49 38	J0541+6745	18 38 19	31.3	366.1-11.1			-9.7	38	5346	14 49 38
14 52 38	=0535+677	18 41 19	31.3	366.4-11.0			-10.2	180	5369	14 49 39
14 52 38	J0502+675	18 41 19	31.9	370.1-10.5			-16.0	-22	5369	No stop
14 57 38	---	18 46 20	32.1	370.6-10.4			-16.9	278	5408	14 52 39
14 57 38	J0541+6745	18 46 20	31.4	367.0-10.9			-11.1	-22	5408	No stop
15 00 38	=0535+677	18 49 21	31.5	367.3-10.9			-11.6	158	5431	14 57 39
15 00 38	J0502+675	18 49 21	32.2	370.9-10.3			-17.4	-22	5431	No stop
15 05 38	---	18 54 21	32.3	371.5-10.3			-18.3	278	5469	15 00 39
15 05 38	J0541+6745	18 54 21	31.6	367.8-10.8			-12.5	-22	5469	No stop
15 08 38	=0535+677	18 57 22	31.6	368.2-10.8			-13.0	158	5492	15 05 39
15 08 38	J0502+675	18 57 22	32.4	371.8-10.2			-18.8	-22	5492	No stop
15 13 38	---	19 02 23	32.6	372.3-10.1			-19.7	278	5531	15 08 39
15 17 38	J1349+5341	19 06 23	45.3	304.0	5.3		57.0	88	5531	15 17 38
15 20 38	=1347+539	19 09 24	45.0	304.4	5.3		56.7	180	5554	15 17 39

Schedule for TORUN (Code Tr)

Page 14

VLBI observations of UHBLs at 5 GHz

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

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	30 Oct 2015	Day 303 ---							
15 20 38	J1353+5601	19 09 24	46.7	306.8	5.3	59.2	-20	5554	No stop
15 25 38	---	19 14 25	46.1	307.3	5.3	58.5	280	5592	15 20 39
15 25 38	J1349+5341	19 14 25	44.3	305.0	5.4	56.0	-20	5592	No stop
15 28 38	=1347+539	19 17 25	44.0	305.3	5.5	55.7	160	5615	15 25 39
15 28 38	J1353+5601	19 17 25	45.7	307.6	5.4	58.1	-20	5615	No stop
15 33 38	---	19 22 26	45.1	308.2	5.5	57.5	280	5654	15 28 39
15 34 08	J1349+5341	19 22 56	43.3	306.0	5.5	55.0	10	5654	15 34 08
15 37 08	=1347+539	19 25 57	42.9	306.3	5.6	54.7	180	5677	15 34 09
15 37 08	J1353+5601	19 25 57	44.7	308.5	5.5	57.0	-20	5677	No stop
15 42 08	---	19 30 57	44.1	309.1	5.6	56.3	280	5715	15 37 09
15 43 08	J1349+5341	19 31 58	42.2	307.0	5.7	53.9	39	5715	15 43 08
15 46 08	=1347+539	19 34 58	41.9	307.4	5.7	53.6	180	5738	15 43 09
15 46 08	J1353+5601	19 34 58	43.7	309.5	5.7	55.8	-20	5738	No stop
15 51 08	---	19 39 59	43.1	310.1	5.8	55.1	280	5777	15 46 09
15 51 08	J1349+5341	19 39 59	41.3	308.0	5.8	52.9	-21	5777	No stop
15 54 08	=1347+539	19 42 59	40.9	308.3	5.9	52.6	159	5800	15 51 09
15 54 08	J1353+5601	19 42 59	42.7	310.4	5.8	54.7	-20	5800	No stop
15 59 08	---	19 48 00	42.2	310.9	5.9	54.1	280	5838	15 54 09
15 59 38	J1349+5341	19 48 30	40.3	309.0	6.0	51.9	9	5838	15 59 38
16 02 38	=1347+539	19 51 31	39.9	309.3	6.0	51.5	180	5862	15 59 39
16 02 38	J1353+5601	19 51 31	41.8	311.3	6.0	53.6	-21	5862	No stop
16 07 38	---	19 56 32	41.2	311.9	6.0	52.9	279	5900	16 02 39
16 10 08	J1810+5649	19 59 02	74.1	294.4	1.8	92.0	13	5900	16 10 08
16 13 08	=1809+568	20 02 03	73.7	294.4	1.9	91.4	180	5923	16 10 09
16 13 08	J1756+5522	20 02 03	71.7	289.8	2.1	84.1	-24	5923	No stop
16 18 08	---	20 07 03	71.0	290.0	2.2	83.3	276	5962	16 13 09
16 18 08	J1810+5649	20 07 03	73.0	294.4	1.9	90.3	-24	5962	No stop
16 21 08	=1809+568	20 10 04	72.6	294.4	2.0	89.6	156	5985	16 18 09
16 21 08	J1756+5522	20 10 04	70.5	290.2	2.2	82.8	-23	5985	No stop
16 26 08	---	20 15 05	69.8	290.4	2.3	82.0	277	6023	16 21 09

Schedule for TORUN (Code Tr)

Page 15

VLBI observations of UHBLs at 5 GHz

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

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	30 Oct 2015	Day 303				---				
16 27 38	J1810+5649	20 16 35	71.7	294.4	2.1		88.3	67	6023	16 27 38	
16 30 38	=1809+568	20 19 35	71.3	294.4	2.2		87.7	180	6046	16 27 39	
16 30 38	J1756+5522	20 19 35	69.2	290.7	2.4		81.4	-22	6046	No stop	
16 35 38	---	20 24 36	68.5	291.0	2.5		80.6	278	6085	16 30 39	
16 36 38	J1810+5649	20 25 36	70.4	294.6	2.3		86.6	38	6085	16 36 38	
16 39 38	=1809+568	20 28 37	70.0	294.7	2.3		86.0	180	6108	16 36 39	
16 39 38	J1756+5522	20 28 37	67.9	291.3	2.5		80.0	-22	6108	No stop	
16 44 38	---	20 33 38	67.2	291.6	2.6		79.3	278	6146	16 39 39	
16 44 38	J1810+5649	20 33 38	69.3	294.8	2.4		85.1	-22	6146	No stop	
16 47 38	=1809+568	20 36 38	68.9	294.9	2.4		84.6	158	6169	16 44 39	
16 47 38	J1756+5522	20 36 38	66.8	291.8	2.7		78.9	-22	6169	No stop	
16 52 38	---	20 41 39	66.1	292.2	2.8		78.2	278	6208	16 47 39	
16 54 08	J1810+5649	20 43 09	68.0	295.2	2.5		83.5	68	6208	16 54 08	
16 57 08	=1809+568	20 46 10	67.6	295.3	2.6		83.0	180	6231	16 54 09	
16 57 08	J1756+5522	20 46 10	65.5	292.5	2.8		77.5	-22	6231	No stop	
17 02 08	---	20 51 11	64.8	292.9	2.9		76.9	278	6269	16 57 09	
17 03 08	J1810+5649	20 52 11	66.8	295.6	2.7		82.0	38	6269	17 03 08	
17 06 08	=1809+568	20 55 11	66.4	295.7	2.7		81.5	180	6292	17 03 09	
17 06 08	J1756+5522	20 55 11	64.2	293.2	3.0		76.3	-22	6292	No stop	
17 11 08	---	21 00 12	63.6	293.6	3.1		75.6	278	6331	17 06 09	
17 11 08	J1810+5649	21 00 12	65.7	296.0	2.8		80.7	-22	6331	No stop	
17 14 08	=1809+568	21 03 13	65.3	296.1	2.9		80.2	158	6354	17 11 09	
17 14 08	J1756+5522	21 03 13	63.1	293.8	3.1		75.2	-22	6354	No stop	
17 19 08	---	21 08 13	62.5	294.2	3.2		74.6	278	6392	17 14 09	
17 20 38	J1810+5649	21 09 44	64.5	296.5	3.0		79.2	68	6392	17 20 38	
17 23 38	=1809+568	21 12 44	64.1	296.7	3.0		78.7	180	6415	17 20 39	
17 23 38	J1756+5522	21 12 44	61.8	294.6	3.3		74.0	-22	6415	No stop	
17 28 38	---	21 17 45	61.2	295.0	3.4		73.3	278	6454	17 23 39	
17 29 38	J1810+5649	21 18 45	63.2	297.1	3.1		77.8	38	6454	17 29 38	
17 32 38	=1809+568	21 21 46	62.8	297.3	3.2		77.3	180	6477	17 29 39	

Schedule for TORUN (Code Tr)

Page 16

VLBI observations of UHBLs at 5 GHz

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

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 30 Oct 2015	Day 303 ---								
17 32 38	J1756+5522	21 21 46	60.6	295.4	3.4		72.8	-22	6477	No stop
17 37 38	---	21 26 46	59.9	295.8	3.5		72.1	278	6515	17 32 39
17 37 38	J1810+5649	21 26 46	62.2	297.6	3.3		76.6	-22	6515	No stop
17 40 38	=1809+568	21 29 47	61.8	297.8	3.3		76.1	158	6538	17 37 39
17 40 38	J1756+5522	21 29 47	59.5	296.0	3.6		71.7	-22	6538	No stop
17 45 38	---	21 34 48	58.9	296.5	3.6		71.1	278	6577	17 40 39
17 47 08	J1810+5649	21 36 18	60.9	298.3	3.4		75.2	68	6577	17 47 08
17 50 08	=1809+568	21 39 18	60.5	298.5	3.5		74.7	180	6600	17 47 09
17 50 08	J1756+5522	21 39 18	58.2	296.9	3.7		70.5	-23	6600	No stop
17 55 08	---	21 44 19	57.6	297.4	3.8		69.8	277	6638	17 50 09
17 56 08	J1810+5649	21 45 19	59.7	298.9	3.6		73.8	38	6638	17 56 08
17 59 08	=1809+568	21 48 20	59.3	299.2	3.6		73.4	180	6662	17 56 09
17 59 08	J1756+5522	21 48 20	57.0	297.7	3.9		69.3	-23	6662	No stop
18 04 08	---	21 53 21	56.4	298.2	3.9		68.7	277	6700	17 59 09
18 04 08	J1810+5649	21 53 21	58.7	299.6	3.7		72.7	-22	6700	No stop
18 07 08	=1809+568	21 56 21	58.3	299.8	3.8		72.3	158	6723	18 04 09
18 07 08	J1756+5522	21 56 21	56.0	298.5	4.0		68.3	-23	6723	No stop
18 12 08	---	22 01 22	55.3	298.9	4.1		67.7	277	6762	18 07 09
18 13 38	J1810+5649	22 02 52	57.4	300.3	3.9		71.3	68	6762	18 13 38
18 16 38	=1809+568	22 05 53	57.0	300.6	3.9		70.9	180	6785	18 13 39
18 16 38	J1756+5522	22 05 53	54.7	299.4	4.2		67.1	-23	6785	No stop
18 21 38	---	22 10 54	54.1	299.9	4.2		66.4	277	6823	18 16 39
18 27 38	J0541+6745	22 16 55	41.1	387.8	-7.4		-47.8	170	6823	18 27 38
18 30 38	=0535+677	22 19 55	41.3	388.1	-7.4		-48.3	180	6846	18 27 39
18 30 38	J0502+675	22 19 55	43.7	390.9	-6.8		-54.1	-23	6846	No stop
18 35 38	---	22 24 56	44.0	391.3	-6.7		-55.0	277	6885	18 30 39
18 35 38	J0541+6745	22 24 56	41.6	388.5	-7.3		-49.2	-23	6885	No stop
18 38 38	=0535+677	22 27 56	41.8	388.8	-7.2		-49.8	157	6908	18 35 39
18 38 38	J0502+675	22 27 56	44.3	391.5	-6.7		-55.6	-23	6908	No stop
18 43 38	---	22 32 57	44.7	391.9	-6.6		-56.5	277	6946	18 38 39

Schedule for TORUN (Code Tr)

Page 17

VLBI observations of UHBLs at 5 GHz

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

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 30 Oct 2015	Day 303 ---								
18 43 38	J0541+6745	22 32 57	42.2	389.2	-7.2		-50.6	-23	6946	No stop
18 46 38	=0535+677	22 35 58	42.4	389.4	-7.1		-51.2	157	6969	18 43 39
18 46 38	J0502+675	22 35 58	44.9	392.1	-6.6		-57.0	-23	6969	No stop
18 51 38	---	22 40 59	45.3	392.5	-6.5		-57.9	277	7008	18 46 39
18 52 38	J0541+6745	22 41 59	42.9	389.9	-7.0		-52.2	37	7008	18 52 38
18 55 38	=0535+677	22 44 59	43.1	390.1	-7.0		-52.8	180	7031	18 52 39
18 55 38	J0502+675	22 44 59	45.6	392.8	-6.4		-58.6	-24	7031	No stop
19 00 38	---	22 50 00	46.1	393.1	-6.3		-59.5	276	7069	18 55 39
19 00 38	J0541+6745	22 50 00	43.5	390.5	-6.9		-53.7	-23	7069	No stop
19 03 38	=0535+677	22 53 01	43.7	390.7	-6.8		-54.2	157	7092	19 00 39
19 03 38	J0502+675	22 53 01	46.3	393.3	-6.3		-60.1	-24	7092	No stop
19 08 38	---	22 58 01	46.7	393.7	-6.2		-61.0	276	7131	19 03 39
19 08 38	J0541+6745	22 58 01	44.1	391.1	-6.7		-55.1	-24	7131	No stop
19 11 38	=0535+677	23 01 02	44.3	391.4	-6.7		-55.6	156	7154	19 08 39
19 11 38	J0502+675	23 01 02	47.0	393.9	-6.1		-61.6	-24	7154	No stop
19 16 38	---	23 06 03	47.4	394.2	-6.1		-62.5	276	7192	19 11 39
19 17 38	J0541+6745	23 07 03	44.8	391.8	-6.6		-56.7	36	7192	19 17 38
19 20 38	=0535+677	23 10 03	45.0	392.0	-6.5		-57.3	180	7215	19 17 39
19 20 38	J0502+675	23 10 03	47.7	394.4	-6.0		-63.2	-24	7215	No stop
19 25 38	---	23 15 04	48.2	394.8	-5.9		-64.1	276	7254	19 20 39
19 26 38	J0541+6745	23 16 04	45.5	392.5	-6.4		-58.3	36	7254	19 26 38
19 29 38	=0535+677	23 19 05	45.8	392.7	-6.4		-58.9	180	7277	19 26 39
19 29 38	J0502+675	23 19 05	48.5	395.0	-5.8		-64.9	-24	7277	No stop
19 34 38	---	23 24 06	48.9	395.3	-5.8		-65.8	276	7315	19 29 39
19 34 38	J0541+6745	23 24 06	46.2	393.0	-6.3		-59.8	-24	7315	No stop
19 37 38	=0535+677	23 27 06	46.4	393.2	-6.3		-60.3	156	7338	19 34 39
19 37 38	J0502+675	23 27 06	49.2	395.5	-5.7		-66.4	-24	7338	No stop
19 42 38	---	23 32 07	49.6	395.8	-5.6		-67.3	276	7377	19 37 39
19 42 38	J0541+6745	23 32 07	46.8	393.6	-6.2		-61.3	-24	7377	No stop
19 45 38	=0535+677	23 35 07	47.1	393.8	-6.1		-61.8	156	7400	19 42 39

Schedule for TORUN (Code Tr)

Page 18

VLBI observations of UHBLs at 5 GHz

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

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 30 Oct 2015 Day 303 ---

19 45 38	J0502+675	23 35 07	49.9	395.9	-5.6		-67.9	-25	7400	No stop
19 50 38	---	23 40 08	50.3	396.2	-5.5		-68.8	275	7438	19 45 39
19 51 38	J0541+6745	23 41 08	47.6	394.1	-6.0		-62.9	36	7438	19 51 38
19 54 38	=0535+677	23 44 09	47.8	394.3	-6.0		-63.5	180	7462	19 51 39
19 54 38	J0502+675	23 44 09	50.7	396.4	-5.4		-69.6	-25	7462	No stop
19 59 38	---	23 49 10	51.1	396.7	-5.3		-70.5	275	7500	19 54 39

SETUP FILE INFORMATION:

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

===== Setup file: sess315.C1024

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

The following frequency sets based on these setups were used.

Frequency Set: 9 Setup file default. Used with PCAL = off

LO sum=	4942.49	4942.49	4942.49	4942.49	4974.49	4974.49	4974.49	4974.49
	5006.49	5006.49	5006.49	5006.49	5038.49	5038.49	5038.49	5038.49
BBC fr=	742.49	742.49	742.49	742.49	774.49	774.49	774.49	774.49
	806.49	806.49	806.49	806.49	838.49	838.49	838.49	838.49
Bandwd=	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00

Matching frequency sets: 9 11

Track assignments are:

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

barrel=roll_off

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* J0502+675	05 02 45.108345	* 05 07 56.250000	05 09 37.825441	0.00
	67 33 27.78958	* 67 37 24.40000	67 38 16.97810	0.00
* J1149+2455	11 46 54.953895	* 11 49 30.300000	11 50 17.930011	0.00
	24 56 07.63970	* 24 39 27.00000	24 34 10.98513	0.00
* J1353+5601	13 51 41.236974	* 13 53 28.049000	13 53 58.636916	0.00
	56 15 40.33497	* 56 00 56.98000	55 56 23.66168	0.00
* J1756+5522	17 55 18.814374	* 17 56 15.883000	17 56 32.388564	0.00
	55 22 36.46454	* 55 22 18.13000	55 22 38.34563	0.00
* J1218+304	12 18 49.684715	* 12 21 21.941000	12 22 08.713712	0.00
	14 34 34.84733	* 14 17 56.68000	14 12 46.20966	0.00
* J1415+2557	14 15 41.091656	* 14 17 56.680000	14 18 37.788799	0.00
	25 57 14.88399	* 25 43 26.24000	25 39 16.09705	0.00
* J0541+6745	05 35 57.150558	* 05 41 13.396986	05 42 55.880082	3.73
0535+677	67 43 49.85999	* 67 45 23.27306	67 45 28.26602	1.83
* J1150+2417	11 47 44.000024	* 11 50 19.212177	11 51 06.805620	0.11
1147+245	24 34 34.65373	* 24 17 53.83516	24 12 37.91839	0.10
* J1217+3007	12 15 21.141963	* 12 17 52.081965	12 18 38.071604	0.12
1215+303	30 23 39.93982	* 30 07 00.63581	30 01 46.00945	0.11

J1331+3030	13 28 49.657778	* 13 31 08.288070	13 31 50.233295	0.20
* 3C286	30 45 58.64061	* 30 30 32.95925	30 25 47.80703	0.19
* J1349+5341	13 47 42.568696	* 13 49 34.656617	13 50 07.097826	0.17
1347+539	53 56 08.38322	* 53 41 17.04009	53 36 41.12191	0.10
J1407+2827	14 04 45.615156	* 14 07 00.394414	14 07 41.173234	0.24
1404+286	28 41 29.23519	* 28 27 14.69022	28 22 55.25347	0.34
* 0Q208	GSFC 2011B astro solution 66461 Observations			
* J1419+2706	14 17 45.094588	* 14 19 59.297073	14 20 39.934952	0.12
1417+273	27 20 09.10590	* 27 06 25.55268	27 02 17.05741	0.11
* J1810+5649	18 09 11.584556	* 18 10 03.319195	18 10 18.241275	0.93
1809+568	56 48 40.83676	* 56 49 22.96827	56 50 02.88048	0.78

rk12ectr

RADIOASTRON AGN SURVEY

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 Survey

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

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

Disk: GBytes recorded to this point.

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

SYNC: Time correlator 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 30 Oct 2015 Day 303 ---

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

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00

Next BBC frequencies: 732.00 732.00 732.00 732.00

Next scan bandwidths: 16.00 16.00 16.00 16.00

21 00 00	0014+813	00 49 41	61.3	-2.4	0.5		170.2	0	0	21 00 00
21 14 30	---	01 04 14	61.2	-3.4	0.8		165.6	870	28	21 00 01
21 15 00	0014+813	01 04 44	61.2	-3.5	0.8		165.5	25	28	21 15 00
21 29 30	---	01 19 16	61.1	-4.5	1.0		161.0	870	56	21 15 01
21 30 00	0014+813	01 19 46	61.0	-4.5	1.0		160.8	25	56	21 30 00
21 44 30	---	01 34 19	60.9	-5.6	1.3		156.3	870	84	21 30 01
21 45 00	0014+813	01 34 49	60.8	-5.6	1.3		156.2	25	84	21 45 00
22 00 00	---	01 49 51	60.6	-6.6	1.5		151.6	900	112	21 45 01

SETUP FILE INFORMATION:

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

===== Setup file: ra18cm2.set

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

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

Frequency Set:   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 29.993791	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 31.49559	0.00
	fake circumpolar target for a TS to look at			
* 0014+813	00 14 04.461856	* 00 17 08.474899	00 18 19.565699	0.00
J0017+8135	81 18 28.65820	* 81 35 08.13656	81 40 35.25465	0.00
	./rk12ec_sources.radioastron			
	HIGHz, rfc_2013d Petrov, 2013, unpublished 73794 observations, RA-A03-03, RA-A02			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0014+813	111.0

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

gm073atr

GRAVITATIONAL LENSING BY LOW-MASS DARK MATTER HALOES

PI: *John McKean*

Address: ASTRON

Observing mode: 6cm 2048-32-2

Schedule for TORUN (Code Tr)

Page 2

Gravitational lensing by low-mass dark matter haloes

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

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 30 Oct 2015	Day 303 ---									
Next scan frequencies:		4884.25	4884.25	4884.25	4884.25	4916.25	4916.25	4916.25	4916.25	4916.25
		4948.25	4948.25	4948.25	4948.25	4980.25	4980.25	4980.25	4980.25	4980.25
Next BBC frequencies:		684.25	684.25	684.25	684.25	716.25	716.25	716.25	716.25	716.25
		748.25	748.25	748.25	748.25	780.25	780.25	780.25	780.25	780.25
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

22 30 00	J0746+273	02 19 56	26.4	78.5	-5.5		-41.6	0	0	22 30 00
22 33 00	---	02 22 56	26.8	79.1	-5.4		-41.7	180	23	22 30 01
22 33 00	J0751+271	02 22 56	25.9	78.4	-5.5		-41.4	-16	23	No stop
22 36 30	---	02 26 27	26.4	79.0	-5.4		-41.5	194	50	22 33 01
22 37 00	J0746+273	02 26 57	27.4	79.8	-5.3		-41.8	13	50	22 37 00
22 38 30	---	02 28 27	27.6	80.1	-5.3		-41.8	90	62	22 37 01
22 38 30	J0751+271	02 28 27	26.7	79.4	-5.4		-41.6	-16	62	No stop
22 42 00	---	02 31 58	27.2	80.1	-5.3		-41.7	194	88	22 38 31
22 42 00	J0746+273	02 31 58	28.2	80.8	-5.3		-41.9	-17	88	No stop
22 43 30	---	02 33 28	28.4	81.1	-5.2		-42.0	73	100	22 42 01
22 43 30	J0751+271	02 33 28	27.4	80.3	-5.3		-41.7	-16	100	No stop
22 47 00	---	02 36 59	27.9	81.0	-5.3		-41.8	194	127	22 43 31
22 47 30	J0746+273	02 37 29	29.0	81.8	-5.2		-42.1	13	127	22 47 30
22 49 00	---	02 38 59	29.2	82.1	-5.1		-42.1	90	138	22 47 31
22 49 00	J0751+271	02 38 59	28.2	81.4	-5.2		-41.9	-16	138	No stop
22 52 30	---	02 42 30	28.8	82.0	-5.2		-42.0	194	165	22 49 01
22 52 30	J0746+273	02 42 30	29.7	82.7	-5.1		-42.2	-17	165	No stop
22 54 00	---	02 44 00	30.0	83.0	-5.1		-42.2	73	177	22 52 31
22 54 00	J0751+271	02 44 00	29.0	82.3	-5.1		-42.0	-16	177	No stop
22 57 30	---	02 47 31	29.5	83.0	-5.1		-42.1	194	204	22 54 01
22 58 00	J0746+273	02 48 01	30.6	83.8	-5.0		-42.3	13	204	22 58 00
22 59 30	---	02 49 31	30.8	84.1	-5.0		-42.3	90	215	22 58 01
22 59 30	J0751+271	02 49 31	29.8	83.4	-5.1		-42.1	-16	215	No stop
23 03 00	---	02 53 01	30.3	84.0	-5.0		-42.2	194	242	22 59 31

Schedule for TORUN (Code Tr)

Page 3

Gravitational lensing by low-mass dark matter haloes

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

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	30 Oct 2015	Day 303	---							
23 03 00	J0746+273	02 53 01	31.3	84.8	-4.9		-42.4	-17	242	No stop
23 04 30	---	02 54 32	31.5	85.0	-4.9		-42.4	73	254	23 03 01
23 04 30	J0751+271	02 54 32	30.5	84.3	-5.0		-42.2	-16	254	No stop
23 08 00	---	02 58 02	31.1	85.0	-4.9		-42.3	194	281	23 04 31
23 08 30	J0746+273	02 58 32	32.1	85.8	-4.8		-42.5	13	281	23 08 30
23 10 00	---	03 00 03	32.4	86.1	-4.8		-42.5	90	292	23 08 31
23 10 00	J0751+271	03 00 03	31.4	85.4	-4.9		-42.3	-16	292	No stop
23 13 30	---	03 03 33	31.9	86.1	-4.8		-42.4	194	319	23 10 01
23 13 30	J0746+273	03 03 33	32.9	86.8	-4.7		-42.5	-17	319	No stop
23 15 00	---	03 05 03	33.1	87.1	-4.7		-42.6	73	331	23 13 31
23 15 00	J0751+271	03 05 03	32.1	86.4	-4.8		-42.4	-16	331	No stop
23 18 30	---	03 08 34	32.7	87.0	-4.7		-42.4	194	358	23 15 01
23 19 00	J0746+273	03 09 04	33.7	87.9	-4.6		-42.6	13	358	23 19 00
23 20 30	---	03 10 34	33.9	88.2	-4.6		-42.6	90	369	23 19 01
23 20 30	J0751+271	03 10 34	33.0	87.4	-4.7		-42.4	-16	369	No stop
23 24 00	---	03 14 05	33.5	88.1	-4.6		-42.5	194	396	23 20 31
23 24 00	J0746+273	03 14 05	34.5	88.9	-4.6		-42.6	-17	396	No stop
23 25 30	---	03 15 35	34.7	89.1	-4.5		-42.6	73	408	23 24 01
23 25 30	J0751+271	03 15 35	33.7	88.4	-4.6		-42.5	-16	408	No stop
23 29 00	---	03 19 06	34.2	89.1	-4.6		-42.5	194	435	23 25 31
23 29 30	J0746+273	03 19 36	35.3	89.9	-4.5		-42.6	13	435	23 29 30
23 31 00	---	03 21 06	35.5	90.2	-4.4		-42.6	90	446	23 29 31
23 31 00	J0751+271	03 21 06	34.5	89.5	-4.5		-42.5	-16	446	No stop
23 34 30	---	03 24 37	35.1	90.2	-4.5		-42.5	194	473	23 31 01
23 34 30	J0746+273	03 24 37	36.0	91.0	-4.4		-42.6	-17	473	No stop
23 36 00	---	03 26 07	36.3	91.3	-4.4		-42.6	73	485	23 34 31
23 36 00	J0751+271	03 26 07	35.3	90.5	-4.4		-42.5	-16	485	No stop
23 39 30	---	03 29 37	35.8	91.2	-4.4		-42.5	194	512	23 36 01
23 40 00	J0746+273	03 30 07	36.9	92.1	-4.3		-42.6	13	512	23 40 00
23 41 30	---	03 31 38	37.1	92.4	-4.3		-42.6	90	523	23 40 01
23 41 30	J0751+271	03 31 38	36.1	91.6	-4.4		-42.5	-16	523	No stop
23 45 00	---	03 35 08	36.6	92.3	-4.3		-42.4	194	550	23 41 31

Schedule for TORUN (Code Tr)

Page 4

Gravitational lensing by low-mass dark matter haloes

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

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	30 Oct 2015	Day 303	---							
23 45 00	J0746+273	03 35 08	37.6	93.1	-4.2		-42.5	-17	550	No stop
23 46 30	---	03 36 39	37.8	93.4	-4.2		-42.5	73	562	23 45 01
23 46 30	J0751+271	03 36 39	36.9	92.6	-4.3		-42.4	-16	562	No stop
23 50 00	---	03 40 09	37.4	93.4	-4.2		-42.4	194	588	23 46 31
23 50 30	J0746+273	03 40 39	38.4	94.2	-4.1		-42.5	13	588	23 50 30
23 52 00	---	03 42 09	38.7	94.6	-4.1		-42.5	90	600	23 50 31
23 52 00	J0751+271	03 42 09	37.7	93.8	-4.2		-42.4	-16	600	No stop
23 55 30	---	03 45 40	38.2	94.5	-4.1		-42.3	194	627	23 52 01
23 55 30	J0746+273	03 45 40	39.2	95.3	-4.0		-42.4	-17	627	No stop
23 57 00	---	03 47 10	39.4	95.6	-4.0		-42.4	73	638	23 55 31
--- Sat	31 Oct 2015	Day 304	---							
00 02 00	DA193	03 52 11	65.1	109.6	-2.1		-47.4	192	638	00 02 00
00 12 00	---	04 02 13	66.5	112.8	-1.9		-46.1	600	715	00 02 01
00 12 00	J0746+273	04 02 13	41.7	98.9	-3.8		-42.0	-106	715	No stop
00 16 30	---	04 06 43	42.3	99.9	-3.7		-41.9	164	750	00 12 01
00 16 30	J0751+271	04 06 43	41.4	99.0	-3.8		-41.8	-16	750	No stop
00 20 00	---	04 10 14	41.9	99.8	-3.7		-41.7	194	777	00 16 31
00 20 30	J0746+273	04 10 44	42.9	100.8	-3.6		-41.7	13	777	00 20 30
00 22 00	---	04 12 14	43.1	101.1	-3.6		-41.6	90	788	00 20 31
00 22 00	J0751+271	04 12 14	42.2	100.3	-3.7		-41.6	-16	788	No stop
00 25 30	---	04 15 45	42.7	101.0	-3.6		-41.5	194	815	00 22 01
00 25 30	J0746+273	04 15 45	43.7	101.9	-3.5		-41.5	-17	815	No stop
00 27 00	---	04 17 15	43.9	102.3	-3.5		-41.4	73	827	00 25 31
00 27 00	J0751+271	04 17 15	42.9	101.4	-3.6		-41.5	-16	827	No stop
00 30 30	---	04 20 46	43.4	102.2	-3.5		-41.3	194	854	00 27 01
00 31 00	J0746+273	04 21 16	44.5	103.2	-3.4		-41.3	13	854	00 31 00
00 32 30	---	04 22 46	44.7	103.5	-3.4		-41.2	90	865	00 31 01
00 32 30	J0751+271	04 22 46	43.7	102.7	-3.5		-41.2	-16	865	No stop
00 36 00	---	04 26 17	44.2	103.5	-3.4		-41.1	194	892	00 32 31

Schedule for TORUN (Code Tr)

Page 5

Gravitational lensing by low-mass dark matter haloes

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

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	31 Oct 2015	Day 304	---							
00 36 00	J0746+273	04 26 17	45.2	104.4	-3.4		-41.0	-16	892	No stop
00 37 30	---	04 27 47	45.4	104.7	-3.3		-40.9	74	904	00 36 01
00 37 30	J0751+271	04 27 47	44.5	103.8	-3.4		-41.0	-16	904	No stop
00 41 00	---	04 31 18	45.0	104.7	-3.4		-40.8	194	931	00 37 31
00 41 30	J0746+273	04 31 48	46.0	105.7	-3.3		-40.7	14	931	00 41 30
00 43 00	---	04 33 18	46.2	106.1	-3.2		-40.6	90	942	00 41 31
00 43 00	J0751+271	04 33 18	45.3	105.1	-3.3		-40.7	-16	942	No stop
00 46 30	---	04 36 48	45.8	106.0	-3.3		-40.5	194	969	00 43 01
00 46 30	J0746+273	04 36 48	46.7	106.9	-3.2		-40.4	-16	969	No stop
00 48 00	---	04 38 19	46.9	107.3	-3.2		-40.3	74	981	00 46 31
00 48 00	J0751+271	04 38 19	46.0	106.3	-3.2		-40.4	-16	981	No stop
00 51 30	---	04 41 49	46.5	107.2	-3.2		-40.2	194	1008	00 48 01
00 52 00	J0746+273	04 42 19	47.5	108.3	-3.1		-40.0	14	1008	00 52 00
00 53 30	---	04 43 50	47.7	108.7	-3.1		-39.9	90	1019	00 52 01
00 53 30	J0751+271	04 43 50	46.8	107.7	-3.1		-40.0	-16	1019	No stop
00 57 00	---	04 47 20	47.3	108.6	-3.1		-39.8	194	1046	00 53 31
00 57 00	J0746+273	04 47 20	48.2	109.6	-3.0		-39.7	-16	1046	No stop
00 58 30	---	04 48 50	48.4	109.9	-3.0		-39.5	74	1058	00 57 01
00 58 30	J0751+271	04 48 50	47.5	109.0	-3.1		-39.7	-16	1058	No stop
01 02 00	---	04 52 21	48.0	109.9	-3.0		-39.4	194	1085	00 58 31
01 02 30	J0746+273	04 52 51	49.0	111.0	-2.9		-39.2	14	1085	01 02 30
01 04 00	---	04 54 21	49.2	111.4	-2.9		-39.1	90	1096	01 02 31
01 04 00	J0751+271	04 54 21	48.3	110.4	-3.0		-39.3	-16	1096	No stop
01 07 30	---	04 57 52	48.8	111.3	-2.9		-39.0	194	1123	01 04 01
01 07 30	J0746+273	04 57 52	49.7	112.3	-2.8		-38.8	-16	1123	No stop
01 09 00	---	04 59 22	49.9	112.7	-2.8		-38.7	74	1135	01 07 31
01 09 00	J0751+271	04 59 22	49.0	111.7	-2.9		-38.9	-16	1135	No stop
01 12 30	---	05 02 53	49.5	112.6	-2.8		-38.6	194	1162	01 09 01
01 13 00	J0746+273	05 03 23	50.5	113.8	-2.7		-38.3	14	1162	01 13 00
01 14 30	---	05 04 53	50.7	114.2	-2.7		-38.1	90	1173	01 13 01

Schedule for TORUN (Code Tr)

Page 6

Gravitational lensing by low-mass dark matter haloes

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

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 31 Oct 2015	Day 304 ---								
01 14 30	J0751+271	05 04 53	49.7	113.1	-2.8		-38.4	-16	1173	No stop
01 18 00	---	05 08 24	50.2	114.1	-2.7		-38.1	194	1200	01 14 31
01 18 00	J0746+273	05 08 24	51.1	115.2	-2.7		-37.8	-16	1200	No stop
01 19 30	---	05 09 54	51.3	115.6	-2.6		-37.6	74	1212	01 18 01
01 19 30	J0751+271	05 09 54	50.4	114.5	-2.7		-37.9	-16	1212	No stop
01 23 00	---	05 13 24	50.9	115.5	-2.7		-37.6	194	1238	01 19 31
01 23 30	J0746+273	05 13 55	51.9	116.7	-2.6		-37.2	14	1238	01 23 30
01 25 00	---	05 15 25	52.1	117.2	-2.5		-37.0	90	1250	01 23 31
01 25 00	J0751+271	05 15 25	51.2	116.0	-2.6		-37.4	-16	1250	No stop
01 28 30	---	05 18 55	51.6	117.0	-2.6		-37.0	194	1277	01 25 01
01 28 30	J0746+273	05 18 55	52.6	118.2	-2.5		-36.6	-16	1277	No stop
01 30 00	---	05 20 26	52.8	118.6	-2.5		-36.5	74	1288	01 28 31
01 30 00	J0751+271	05 20 26	51.8	117.5	-2.5		-36.8	-16	1288	No stop
01 33 30	---	05 23 56	52.3	118.5	-2.5		-36.4	194	1315	01 30 01
01 34 00	J0746+273	05 24 26	53.3	119.8	-2.4		-36.0	14	1315	01 34 00
01 35 30	---	05 25 56	53.5	120.3	-2.4		-35.8	90	1327	01 34 01
01 35 30	J0751+271	05 25 56	52.6	119.1	-2.4		-36.2	-16	1327	No stop
01 39 00	---	05 29 27	53.0	120.1	-2.4		-35.7	194	1354	01 35 31
01 39 00	J0746+273	05 29 27	53.9	121.3	-2.3		-35.3	-16	1354	No stop
01 40 30	---	05 30 57	54.1	121.8	-2.3		-35.1	74	1365	01 39 01
01 40 30	J0751+271	05 30 57	53.2	120.6	-2.4		-35.5	-16	1365	No stop
01 44 00	---	05 34 28	53.7	121.7	-2.3		-35.1	194	1392	01 40 31
01 44 30	J0746+273	05 34 58	54.6	123.1	-2.2		-34.6	14	1392	01 44 30
01 46 00	---	05 36 28	54.8	123.5	-2.2		-34.4	90	1404	01 44 31
01 46 00	J0751+271	05 36 28	53.9	122.3	-2.3		-34.8	-16	1404	No stop
01 49 30	---	05 39 59	54.4	123.4	-2.2		-34.3	194	1431	01 46 01
01 49 30	J0746+273	05 39 59	55.3	124.7	-2.1		-33.8	-16	1431	No stop
01 51 00	---	05 41 29	55.4	125.2	-2.1		-33.6	74	1442	01 49 31
01 51 00	J0751+271	05 41 29	54.6	123.8	-2.2		-34.1	-16	1442	No stop
01 54 30	---	05 45 00	55.0	125.0	-2.1		-33.6	194	1469	01 51 01

Schedule for TORUN (Code Tr)

Page 7

Gravitational lensing by low-mass dark matter haloes

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

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	31 Oct 2015	Day 304	---							
01 55 00	J0746+273	05 45 30	55.9	126.5	-2.0		-33.0	14	1469	01 55 00
01 56 30	---	05 47 00	56.1	127.0	-2.0		-32.8	90	1481	01 55 01
01 56 30	J0751+271	05 47 00	55.2	125.6	-2.1		-33.3	-16	1481	No stop
02 00 00	---	05 50 30	55.7	126.8	-2.0		-32.8	194	1508	01 56 31
02 00 00	J0746+273	05 50 30	56.5	128.2	-2.0		-32.2	-16	1508	No stop
02 01 30	---	05 52 01	56.7	128.7	-1.9		-31.9	74	1519	02 00 01
02 01 30	J0751+271	05 52 01	55.8	127.3	-2.0		-32.5	-16	1519	No stop
02 05 00	---	05 55 31	56.3	128.5	-2.0		-31.9	194	1546	02 01 31
02 05 30	J0746+273	05 56 01	57.2	130.1	-1.9		-31.2	14	1546	02 05 30
02 07 00	---	05 57 32	57.3	130.6	-1.8		-31.0	90	1558	02 05 31
02 07 00	J0751+271	05 57 32	56.5	129.1	-1.9		-31.6	-16	1558	No stop
02 10 30	---	06 01 02	56.9	130.4	-1.9		-31.0	194	1585	02 07 01
02 10 30	J0746+273	06 01 02	57.7	131.8	-1.8		-30.3	-16	1585	No stop
02 12 00	---	06 02 32	57.9	132.4	-1.8		-30.0	74	1596	02 10 31
02 12 00	J0751+271	06 02 32	57.1	130.9	-1.8		-30.7	-16	1596	No stop
02 15 30	---	06 06 03	57.5	132.1	-1.8		-30.1	194	1623	02 12 01
02 16 00	J0746+273	06 06 33	58.3	133.8	-1.7		-29.2	14	1623	02 16 00
02 17 30	---	06 08 03	58.5	134.4	-1.7		-28.9	90	1635	02 16 01
02 17 30	J0751+271	06 08 03	57.7	132.8	-1.7		-29.7	-16	1635	No stop
02 21 00	---	06 11 34	58.1	134.1	-1.7		-29.0	194	1662	02 17 31
02 21 00	J0746+273	06 11 34	58.9	135.7	-1.6		-28.2	-17	1662	No stop
02 22 30	---	06 13 04	59.0	136.3	-1.6		-27.9	73	1673	02 21 01
02 22 30	J0751+271	06 13 04	58.2	134.7	-1.7		-28.7	-16	1673	No stop
02 26 00	---	06 16 35	58.6	136.0	-1.6		-28.0	194	1700	02 22 31
02 26 30	J0746+273	06 17 05	59.4	137.8	-1.5		-27.0	13	1700	02 26 30
02 28 00	---	06 18 35	59.6	138.4	-1.5		-26.7	90	1712	02 26 31
02 28 00	J0751+271	06 18 35	58.8	136.7	-1.6		-27.6	-16	1712	No stop
02 31 30	---	06 22 06	59.2	138.1	-1.5		-26.8	194	1738	02 28 01
02 31 30	J0746+273	06 22 06	59.9	139.8	-1.4		-25.9	-17	1738	No stop
02 33 00	---	06 23 36	60.1	140.4	-1.4		-25.6	73	1750	02 31 31

Schedule for TORUN (Code Tr)

Page 8

Gravitational lensing by low-mass dark matter haloes

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

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	31 Oct 2015	Day 304 ---								
02 33 00	J0751+271	06 23 36	59.3	138.7	-1.5		-26.5	-16	1750	No stop
02 36 30	---	06 27 06	59.7	140.1	-1.4		-25.7	194	1777	02 33 01
02 37 00	J0746+273	06 27 37	60.5	142.0	-1.3		-24.6	13	1777	02 37 00
02 38 30	---	06 29 07	60.6	142.6	-1.3		-24.3	90	1788	02 37 01
02 38 30	J0751+271	06 29 07	59.9	140.9	-1.4		-25.2	-17	1788	No stop
02 42 00	---	06 32 37	60.2	142.3	-1.3		-24.4	193	1815	02 38 31
02 42 00	J0746+273	06 32 37	60.9	144.1	-1.3		-23.4	-17	1815	No stop
02 43 30	---	06 34 08	61.0	144.7	-1.2		-23.0	73	1827	02 42 01
02 48 30	4C39.25	06 39 08	58.1	99.0	-2.8		-49.7	192	1827	02 48 30
02 58 30	---	06 49 10	59.5	101.5	-2.6		-49.2	600	1904	02 48 31
02 58 30	J0746+273	06 49 10	62.2	151.3	-1.0		-19.0	-116	1904	No stop
03 03 00	---	06 53 41	62.6	153.3	-0.9		-17.7	154	1938	02 58 31
03 03 00	J0751+271	06 53 41	61.9	151.3	-1.0		-18.9	-18	1938	No stop
03 06 30	---	06 57 11	62.2	152.8	-0.9		-18.0	192	1965	03 03 01
03 07 00	J0746+273	06 57 42	62.8	155.2	-0.8		-16.5	12	1965	03 07 00
03 08 30	---	06 59 12	62.9	155.9	-0.8		-16.1	90	1977	03 07 01
03 08 30	J0751+271	06 59 12	62.3	153.8	-0.9		-17.4	-18	1977	No stop
03 12 00	---	07 02 42	62.5	155.4	-0.8		-16.3	192	2004	03 08 31
03 12 00	J0746+273	07 02 42	63.1	157.5	-0.7		-15.0	-18	2004	No stop
03 13 30	---	07 04 13	63.2	158.2	-0.7		-14.5	72	2015	03 12 01
03 13 30	J0751+271	07 04 13	62.6	156.1	-0.8		-15.9	-18	2015	No stop
03 17 00	---	07 07 43	62.8	157.7	-0.7		-14.8	192	2042	03 13 31
03 17 30	J0746+273	07 08 13	63.4	160.2	-0.7		-13.3	11	2042	03 17 30
03 19 00	---	07 09 43	63.5	160.9	-0.6		-12.8	90	2054	03 17 31
03 19 00	J0751+271	07 09 43	62.9	158.7	-0.7		-14.2	-18	2054	No stop
03 22 30	---	07 13 14	63.1	160.3	-0.7		-13.1	192	2081	03 19 01
03 22 30	J0746+273	07 13 14	63.7	162.6	-0.6		-11.7	-19	2081	No stop
03 24 00	---	07 14 44	63.7	163.3	-0.5		-11.2	71	2092	03 22 31
03 24 00	J0751+271	07 14 44	63.2	161.0	-0.6		-12.7	-18	2092	No stop
03 27 30	---	07 18 15	63.4	162.7	-0.6		-11.6	192	2119	03 24 01

Schedule for TORUN (Code Tr)

Page 9

Gravitational lensing by low-mass dark matter haloes

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

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	31 Oct 2015	Day 304 ---								
03 28 00	J0746+273	07 18 45	63.9	165.3	-0.5		-9.9	11	2119	03 28 00
03 29 30	---	07 20 15	63.9	166.1	-0.5		-9.4	90	2131	03 28 01
03 29 30	J0751+271	07 20 15	63.4	163.7	-0.5		-10.9	-18	2131	No stop
03 33 00	---	07 23 46	63.6	165.4	-0.5		-9.8	192	2158	03 29 31
03 33 00	J0746+273	07 23 46	64.1	167.8	-0.4		-8.2	-19	2158	No stop
03 34 30	---	07 25 16	64.1	168.6	-0.4		-7.7	71	2169	03 33 01
03 34 30	J0751+271	07 25 16	63.6	166.2	-0.5		-9.3	-19	2169	No stop
03 38 00	---	07 28 47	63.8	167.9	-0.4		-8.1	191	2196	03 34 31
03 38 30	J0746+273	07 29 17	64.2	170.6	-0.3		-6.3	11	2196	03 38 30
03 40 00	---	07 30 47	64.3	171.4	-0.3		-5.8	90	2208	03 38 31
03 40 00	J0751+271	07 30 47	63.8	168.9	-0.4		-7.5	-19	2208	No stop
03 43 30	---	07 34 17	63.9	170.7	-0.3		-6.3	191	2235	03 40 01
03 43 30	J0746+273	07 34 17	64.3	173.2	-0.2		-4.6	-19	2235	No stop
03 45 00	---	07 35 48	64.4	173.9	-0.2		-4.1	71	2246	03 43 31
03 45 00	J0751+271	07 35 48	63.9	171.4	-0.3		-5.8	-19	2246	No stop
03 48 30	---	07 39 18	64.0	173.2	-0.2		-4.6	191	2273	03 45 01
03 49 00	J0746+273	07 39 48	64.4	176.0	-0.1		-2.7	10	2273	03 49 00
03 50 30	---	07 41 19	64.4	176.7	-0.1		-2.2	90	2285	03 49 01
03 50 30	J0751+271	07 41 19	64.0	174.2	-0.2		-3.9	-19	2285	No stop
03 54 00	---	07 44 49	64.1	176.0	-0.1		-2.7	191	2312	03 50 31
03 54 00	J0746+273	07 44 49	64.4	178.5	-0.0		-1.0	-20	2312	No stop
03 55 30	---	07 46 19	64.4	179.3	-0.0		-0.5	70	2323	03 54 01
03 55 30	J0751+271	07 46 19	64.1	176.8	-0.1		-2.2	-19	2323	No stop
03 59 00	---	07 49 50	64.1	178.6	-0.0		-1.0	191	2350	03 55 31
03 59 30	J0746+273	07 50 20	64.4	181.4	0.0		0.9	10	2350	03 59 30
04 01 00	---	07 51 50	64.4	182.2	0.1		1.5	90	2362	03 59 31
04 01 00	J0751+271	07 51 50	64.1	179.6	-0.0		-0.3	-19	2362	No stop
04 04 30	---	07 55 21	64.1	181.4	0.0		0.9	191	2388	04 01 01
04 04 30	J0746+273	07 55 21	64.4	184.0	0.1		2.7	-20	2388	No stop
04 06 00	---	07 56 51	64.4	184.7	0.2		3.2	70	2400	04 04 31

Schedule for TORUN (Code Tr)

Page 10

Gravitational lensing by low-mass dark matter haloes

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

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	31 Oct 2015	Day 304 ---								
04 06 00	J0751+271	07 56 51	64.1	182.1	0.1		1.4	-19	2400	No stop
04 09 30	---	08 00 22	64.1	183.9	0.1		2.6	191	2427	04 06 01
04 10 00	J0746+273	08 00 52	64.3	186.8	0.2		4.6	10	2427	04 10 00
04 11 30	---	08 02 22	64.3	187.5	0.2		5.1	90	2438	04 10 01
04 11 30	J0751+271	08 02 22	64.1	184.9	0.2		3.3	-19	2438	No stop
04 15 00	---	08 05 53	64.0	186.7	0.2		4.5	191	2465	04 11 31
04 15 00	J0746+273	08 05 53	64.2	189.3	0.3		6.3	-20	2465	No stop
04 16 30	---	08 07 23	64.2	190.1	0.3		6.8	70	2477	04 15 01
04 16 30	J0751+271	08 07 23	64.0	187.5	0.2		5.0	-19	2477	No stop
04 20 00	---	08 10 53	63.9	189.2	0.3		6.2	191	2504	04 16 31
04 20 30	J0746+273	08 11 24	64.1	192.1	0.4		8.2	10	2504	04 20 30
04 22 00	---	08 12 54	64.0	192.9	0.4		8.7	90	2515	04 20 31
04 22 00	J0751+271	08 12 54	63.9	190.3	0.3		6.9	-19	2515	No stop
04 25 30	---	08 16 24	63.8	192.0	0.4		8.1	191	2542	04 22 01
04 25 30	J0746+273	08 16 24	63.9	194.6	0.5		9.8	-20	2542	No stop
04 27 00	---	08 17 55	63.8	195.4	0.5		10.3	70	2554	04 25 31
04 27 00	J0751+271	08 17 55	63.7	192.8	0.4		8.6	-19	2554	No stop
04 30 00	---	08 20 55	63.6	194.2	0.5		9.6	161	2577	04 27 01
04 30 00	J0746+273	08 20 55	63.7	196.8	0.6		11.3	-20	2577	No stop
04 32 00	---	08 22 55	63.6	197.8	0.6		12.0	100	2592	04 30 01
04 32 00	J0751+271	08 22 55	63.5	195.2	0.5		10.2	-19	2592	No stop
04 35 30	---	08 26 26	63.4	196.9	0.6		11.3	191	2619	04 32 01
04 36 00	J0746+273	08 26 56	63.4	199.8	0.7		13.2	10	2619	04 36 00
04 37 30	---	08 28 26	63.3	200.5	0.7		13.7	90	2631	04 36 01
04 37 30	J0751+271	08 28 26	63.3	197.9	0.6		12.0	-19	2631	No stop
04 41 00	---	08 31 57	63.1	199.6	0.7		13.1	191	2658	04 37 31
04 41 00	J0746+273	08 31 57	63.2	202.2	0.7		14.8	-20	2658	No stop
04 42 30	---	08 33 27	63.1	202.9	0.8		15.3	70	2669	04 41 01
04 42 30	J0751+271	08 33 27	63.0	200.3	0.7		13.6	-19	2669	No stop
04 46 00	---	08 36 58	62.9	202.0	0.7		14.6	191	2696	04 42 31

Schedule for TORUN (Code Tr)

Page 11

Gravitational lensing by low-mass dark matter haloes

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

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	31 Oct 2015	Day 304 ---								
04 46 30	J0746+273	08 37 28	62.8	204.8	0.8		16.5	10	2696	04 46 30
04 48 00	---	08 38 58	62.7	205.5	0.9		16.9	90	2708	04 46 31
04 48 00	J0751+271	08 38 58	62.7	202.9	0.8		15.3	-19	2708	No stop
04 51 30	---	08 42 29	62.5	204.6	0.8		16.3	191	2735	04 48 01
04 51 30	J0746+273	08 42 29	62.5	207.1	0.9		17.9	-19	2735	No stop
04 53 00	---	08 43 59	62.4	207.8	0.9		18.4	71	2746	04 51 31
04 53 00	J0751+271	08 43 59	62.4	205.3	0.9		16.7	-19	2746	No stop
04 56 30	---	08 47 29	62.2	206.9	0.9		17.8	191	2773	04 53 01
04 57 00	J0746+273	08 48 00	62.1	209.6	1.0		19.5	11	2773	04 57 00
04 58 30	---	08 49 30	62.0	210.2	1.0		19.9	90	2785	04 57 01
04 58 30	J0751+271	08 49 30	62.1	207.8	0.9		18.3	-19	2785	No stop
05 02 00	---	08 53 00	61.8	209.3	1.0		19.3	191	2812	04 58 31
05 02 00	J0746+273	08 53 00	61.7	211.8	1.1		20.9	-19	2812	No stop
05 03 30	---	08 54 31	61.6	212.4	1.1		21.3	71	2823	05 02 01
05 03 30	J0751+271	08 54 31	61.7	210.0	1.0		19.7	-19	2823	No stop
05 07 00	---	08 58 01	61.4	211.5	1.1		20.7	191	2850	05 03 31
05 07 30	J0746+273	08 58 31	61.3	214.2	1.2		22.3	11	2850	05 07 30
05 09 00	---	09 00 02	61.1	214.8	1.2		22.7	90	2862	05 07 31
05 09 00	J0751+271	09 00 02	61.3	212.4	1.1		21.2	-19	2862	No stop
05 12 30	---	09 03 32	61.0	213.9	1.2		22.1	191	2888	05 09 01
05 12 30	J0746+273	09 03 32	60.8	216.3	1.3		23.6	-19	2888	No stop
05 14 00	---	09 05 02	60.7	216.9	1.3		24.0	71	2900	05 12 31
05 14 00	J0751+271	09 05 02	60.9	214.5	1.2		22.5	-18	2900	No stop
05 17 30	---	09 08 33	60.6	216.0	1.3		23.4	192	2927	05 14 01
05 18 00	J0746+273	09 09 03	60.3	218.5	1.4		25.0	11	2927	05 18 00
05 19 30	---	09 10 33	60.2	219.1	1.4		25.3	90	2938	05 18 01
05 19 30	J0751+271	09 10 33	60.4	216.8	1.3		23.9	-18	2938	No stop
05 23 00	---	09 14 04	60.1	218.3	1.4		24.7	192	2965	05 19 31
05 23 00	J0746+273	09 14 04	59.9	220.5	1.4		26.1	-19	2965	No stop
05 24 30	---	09 15 34	59.7	221.1	1.5		26.5	71	2977	05 23 01

Schedule for TORUN (Code Tr)

Page 12

Gravitational lensing by low-mass dark matter haloes

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

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	TPStart SYNC

--- Sat	31 Oct 2015	Day 304 ---								
05 24 30	J0751+271	09 15 34	59.9	218.9	1.4		25.1	-18	2977	No stop
05 28 00	---	09 19 05	59.6	220.3	1.4		25.9	192	3004	05 24 31
05 28 30	J0746+273	09 19 35	59.3	222.7	1.5		27.3	11	3004	05 28 30
05 30 00	---	09 21 05	59.2	223.3	1.6		27.7	90	3015	05 28 31
05 30 00	J0751+271	09 21 05	59.4	221.1	1.5		26.3	-18	3015	No stop
05 33 30	---	09 24 36	59.0	222.4	1.5		27.1	192	3042	05 30 01
05 33 30	J0746+273	09 24 36	58.8	224.6	1.6		28.4	-18	3042	No stop
05 35 00	---	09 26 06	58.6	225.2	1.6		28.7	72	3054	05 33 31
05 35 00	J0751+271	09 26 06	58.9	223.0	1.6		27.4	-18	3054	No stop
05 38 30	---	09 29 36	58.5	224.3	1.6		28.2	192	3081	05 35 01
05 39 00	J0746+273	09 30 06	58.2	226.7	1.7		29.5	12	3081	05 39 00
05 40 30	---	09 31 37	58.0	227.2	1.7		29.8	90	3092	05 39 01
05 40 30	J0751+271	09 31 37	58.3	225.1	1.6		28.6	-18	3092	No stop
05 44 00	---	09 35 07	57.9	226.4	1.7		29.3	192	3119	05 40 31
05 44 00	J0746+273	09 35 07	57.6	228.5	1.8		30.5	-18	3119	No stop
05 45 30	---	09 36 38	57.5	229.0	1.8		30.7	72	3131	05 44 01
05 45 30	J0751+271	09 36 38	57.8	226.9	1.7		29.6	-18	3131	No stop
05 49 00	---	09 40 08	57.4	228.2	1.8		30.2	192	3158	05 45 31
05 49 30	J0746+273	09 40 38	57.0	230.4	1.9		31.5	12	3158	05 49 30
05 51 00	---	09 42 08	56.8	230.9	1.9		31.7	90	3169	05 49 31
05 51 00	J0751+271	09 42 08	57.1	228.9	1.8		30.6	-18	3169	No stop
05 54 30	---	09 45 39	56.7	230.1	1.9		31.2	192	3196	05 51 01
05 54 30	J0746+273	09 45 39	56.4	232.1	2.0		32.3	-18	3196	No stop
05 56 00	---	09 47 09	56.2	232.6	2.0		32.6	72	3208	05 54 31
05 56 00	J0751+271	09 47 09	56.6	230.6	1.9		31.5	-17	3208	No stop
05 59 30	---	09 50 40	56.2	231.8	2.0		32.1	193	3235	05 56 01
06 00 00	J0746+273	09 51 10	55.8	234.0	2.1		33.2	12	3235	06 00 00
06 01 30	---	09 52 40	55.6	234.5	2.1		33.4	90	3246	06 00 01
06 01 30	J0751+271	09 52 40	55.9	232.5	2.0		32.4	-17	3246	No stop
06 05 00	---	09 56 11	55.5	233.7	2.1		33.0	193	3273	06 01 31

Schedule for TORUN (Code Tr)

Page 13

Gravitational lensing by low-mass dark matter haloes

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

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	31 Oct 2015	Day 304 ---								
06 05 00	J0746+273	09 56 11	55.1	235.6	2.1		34.0	-18	3273	No stop
06 06 30	---	09 57 41	55.0	236.1	2.2		34.2	72	3285	06 05 01
06 06 30	J0751+271	09 57 41	55.3	234.2	2.1		33.2	-17	3285	No stop
06 10 00	---	10 01 12	54.9	235.3	2.1		33.7	193	3312	06 06 31
06 10 30	J0746+273	10 01 42	54.5	237.4	2.2		34.8	12	3312	06 10 30
06 12 00	---	10 03 12	54.3	237.8	2.3		35.0	90	3323	06 10 31
06 12 00	J0751+271	10 03 12	54.6	236.0	2.2		34.0	-17	3323	No stop
06 15 30	---	10 06 42	54.2	237.1	2.2		34.5	193	3350	06 12 01
06 15 30	J0746+273	10 06 42	53.8	238.9	2.3		35.4	-17	3350	No stop
06 17 00	---	10 08 13	53.6	239.4	2.3		35.6	73	3362	06 15 31
06 17 00	J0751+271	10 08 13	54.0	237.5	2.3		34.7	-17	3362	No stop
06 20 30	---	10 11 43	53.6	238.6	2.3		35.2	193	3388	06 17 01
06 21 00	J0746+273	10 12 13	53.1	240.6	2.4		36.1	13	3388	06 21 00
06 22 30	---	10 13 44	52.9	241.0	2.4		36.3	90	3400	06 21 01
06 22 30	J0751+271	10 13 44	53.3	239.2	2.4		35.5	-17	3400	No stop
06 26 00	---	10 17 14	52.9	240.3	2.4		35.9	193	3427	06 22 31
06 26 00	J0746+273	10 17 14	52.4	242.1	2.5		36.7	-17	3427	No stop
06 27 30	---	10 18 44	52.2	242.5	2.5		36.9	73	3438	06 26 01
06 27 30	J0751+271	10 18 44	52.7	240.7	2.4		36.1	-17	3438	No stop
06 31 00	---	10 22 15	52.2	241.8	2.5		36.5	193	3465	06 27 31
06 31 30	J0746+273	10 22 45	51.7	243.6	2.6		37.4	13	3465	06 31 30
06 33 00	---	10 24 15	51.5	244.1	2.6		37.5	90	3477	06 31 31
06 33 00	J0751+271	10 24 15	51.9	242.3	2.5		36.7	-17	3477	No stop
06 36 30	---	10 27 46	51.5	243.3	2.6		37.1	193	3504	06 33 01
06 36 30	J0746+273	10 27 46	51.0	245.1	2.7		37.9	-17	3504	No stop
06 38 00	---	10 29 16	50.8	245.5	2.7		38.0	73	3515	06 36 31
06 38 00	J0751+271	10 29 16	51.3	243.8	2.6		37.3	-16	3515	No stop
06 41 30	---	10 32 47	50.8	244.8	2.7		37.6	194	3542	06 38 01
06 42 00	J0746+273	10 33 17	50.3	246.6	2.8		38.4	13	3542	06 42 00
06 43 30	---	10 34 47	50.1	247.0	2.8		38.6	90	3554	06 42 01

Schedule for TORUN (Code Tr)

Page 14

Gravitational lensing by low-mass dark matter haloes

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

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	TPStart SYNC

--- Sat	31 Oct 2015	Day 304 ---								
06 43 30	J0751+271	10 34 47	50.5	245.3	2.7		37.8	-16	3554	No stop
06 47 00	---	10 38 18	50.0	246.3	2.8		38.2	194	3581	06 43 31
06 47 00	J0746+273	10 38 18	49.6	247.9	2.8		38.9	-17	3581	No stop
06 48 30	---	10 39 48	49.4	248.3	2.9		39.0	73	3592	06 47 01
06 48 30	J0751+271	10 39 48	49.8	246.7	2.8		38.3	-16	3592	No stop
06 52 00	---	10 43 18	49.3	247.6	2.8		38.6	194	3619	06 48 31
06 52 30	J0746+273	10 43 49	48.8	249.4	2.9		39.3	13	3619	06 52 30
06 54 00	---	10 45 19	48.6	249.8	3.0		39.5	90	3631	06 52 31
06 54 00	J0751+271	10 45 19	49.1	248.2	2.9		38.8	-16	3631	No stop
06 57 30	---	10 48 49	48.6	249.1	2.9		39.1	194	3658	06 54 01
06 57 30	J0746+273	10 48 49	48.1	250.7	3.0		39.7	-16	3658	No stop
06 59 00	---	10 50 20	47.9	251.0	3.0		39.8	74	3669	06 57 31
06 59 00	J0751+271	10 50 20	48.4	249.5	3.0		39.2	-16	3669	No stop
07 01 30	---	10 52 50	48.0	250.1	3.0		39.4	134	3688	06 59 01
07 06 30	4C39.25	10 57 51	69.1	236.4	1.5		40.1	205	3688	07 06 30
07 16 30	---	11 07 52	67.8	240.5	1.7		42.2	600	3765	07 06 31
07 16 30	J0746+273	11 07 52	45.4	255.4	3.3		40.9	-99	3765	No stop
07 21 00	---	11 12 23	44.7	256.4	3.4		41.2	171	3800	07 16 31
07 21 00	J0751+271	11 12 23	45.2	255.0	3.3		40.7	-16	3800	No stop
07 24 30	---	11 15 54	44.7	255.8	3.4		40.9	194	3827	07 21 01
07 25 00	J0746+273	11 16 24	44.1	257.4	3.5		41.4	14	3827	07 25 00
07 26 30	---	11 17 54	43.9	257.7	3.5		41.4	90	3838	07 25 01
07 26 30	J0751+271	11 17 54	44.4	256.3	3.4		41.0	-16	3838	No stop
07 30 00	---	11 21 25	43.9	257.1	3.5		41.2	194	3865	07 26 31
07 30 00	J0746+273	11 21 25	43.4	258.5	3.6		41.6	-16	3865	No stop
07 31 30	---	11 22 55	43.2	258.9	3.6		41.6	74	3877	07 30 01
07 31 30	J0751+271	11 22 55	43.7	257.4	3.5		41.2	-16	3877	No stop
07 35 00	---	11 26 26	43.2	258.2	3.6		41.4	194	3904	07 31 31
07 35 30	J0746+273	11 26 56	42.6	259.8	3.7		41.8	14	3904	07 35 30
07 37 00	---	11 28 26	42.3	260.1	3.7		41.8	90	3915	07 35 31

Schedule for TORUN (Code Tr)

Page 15

Gravitational lensing by low-mass dark matter haloes

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

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	31 Oct 2015	Day 304 ---								
07 37 00	J0751+271	11 28 26	42.9	258.7	3.6		41.5	-15	3915	No stop
07 40 30	---	11 31 56	42.3	259.5	3.7		41.6	195	3942	07 37 01
07 40 30	J0746+273	11 31 56	41.8	260.9	3.7		42.0	-16	3942	No stop
07 42 00	---	11 33 27	41.6	261.2	3.8		42.0	74	3954	07 40 31
07 42 00	J0751+271	11 33 27	42.1	259.8	3.7		41.7	-15	3954	No stop
07 45 30	---	11 36 57	41.6	260.6	3.7		41.8	195	3981	07 42 01
07 46 00	J0746+273	11 37 27	41.0	262.1	3.8		42.1	14	3981	07 46 00
07 47 30	---	11 38 58	40.8	262.4	3.9		42.2	90	3992	07 46 01
07 47 30	J0751+271	11 38 58	41.3	261.0	3.8		41.8	-15	3992	No stop
07 51 00	---	11 42 28	40.8	261.8	3.8		41.9	195	4019	07 47 31
07 51 00	J0746+273	11 42 28	40.3	263.2	3.9		42.3	-16	4019	No stop
07 52 30	---	11 43 58	40.0	263.5	3.9		42.3	74	4031	07 51 01
07 52 30	J0751+271	11 43 58	40.6	262.1	3.9		42.0	-15	4031	No stop
07 56 00	---	11 47 29	40.0	262.9	3.9		42.1	195	4058	07 52 31
07 56 30	J0746+273	11 47 59	39.4	264.4	4.0		42.4	14	4058	07 56 30
07 58 00	---	11 49 29	39.2	264.7	4.0		42.4	90	4069	07 56 31
07 58 00	J0751+271	11 49 29	39.7	263.3	3.9		42.1	-15	4069	No stop
08 01 30	---	11 53 00	39.2	264.1	4.0		42.2	195	4096	07 58 01
08 01 30	J0746+273	11 53 00	38.7	265.4	4.1		42.5	-15	4096	No stop
08 03 00	---	11 54 30	38.5	265.7	4.1		42.5	75	4108	08 01 31
08 03 00	J0751+271	11 54 30	39.0	264.4	4.0		42.2	-15	4108	No stop
08 06 30	---	11 58 01	38.5	265.1	4.1		42.3	195	4135	08 03 01
08 07 00	J0746+273	11 58 31	37.9	266.6	4.2		42.5	15	4135	08 07 00
08 08 30	---	12 00 01	37.6	266.9	4.2		42.5	90	4146	08 07 01
08 08 30	J0751+271	12 00 01	38.2	265.6	4.1		42.3	-15	4146	No stop
08 12 00	---	12 03 32	37.6	266.3	4.2		42.4	195	4173	08 08 31
08 12 00	J0746+273	12 03 32	37.1	267.6	4.3		42.6	-15	4173	No stop
08 13 30	---	12 05 02	36.9	267.9	4.3		42.6	75	4185	08 12 01
08 13 30	J0751+271	12 05 02	37.4	266.6	4.2		42.4	-15	4185	No stop
08 17 00	---	12 08 32	36.9	267.3	4.3		42.4	195	4212	08 13 31

Schedule for TORUN (Code Tr)

Page 16

Gravitational lensing by low-mass dark matter haloes

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

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	31 Oct 2015	Day 304	---							
08 17 30	J0746+273	12 09 03	36.3	268.7	4.4		42.6	15	4212	08 17 30
08 19 00	---	12 10 33	36.1	269.0	4.4		42.6	90	4223	08 17 31
08 19 00	J0751+271	12 10 33	36.6	267.7	4.3		42.4	-15	4223	No stop
08 22 30	---	12 14 03	36.1	268.5	4.4		42.5	195	4250	08 19 01
08 22 30	J0746+273	12 14 03	35.5	269.7	4.4		42.6	-15	4250	No stop
08 24 00	---	12 15 34	35.3	270.0	4.5		42.6	75	4262	08 22 31
08 24 00	J0751+271	12 15 34	35.8	268.8	4.4		42.5	-15	4262	No stop
08 27 30	---	12 19 04	35.3	269.5	4.4		42.5	195	4288	08 24 01
08 28 00	J0746+273	12 19 34	34.7	270.8	4.5		42.6	15	4288	08 28 00
08 29 30	---	12 21 04	34.5	271.1	4.6		42.6	90	4300	08 28 01
08 29 30	J0751+271	12 21 04	35.0	269.9	4.5		42.5	-15	4300	No stop
08 33 00	---	12 24 35	34.5	270.6	4.5		42.5	195	4327	08 29 31
08 33 00	J0746+273	12 24 35	34.0	271.8	4.6		42.6	-15	4327	No stop
08 34 30	---	12 26 05	33.7	272.1	4.6		42.6	75	4338	08 33 01
08 34 30	J0751+271	12 26 05	34.3	270.9	4.6		42.5	-15	4338	No stop
08 38 00	---	12 29 36	33.7	271.6	4.6		42.5	195	4365	08 34 31
08 38 30	J0746+273	12 30 06	33.1	272.9	4.7		42.6	15	4365	08 38 30
08 40 00	---	12 31 36	32.9	273.2	4.7		42.5	90	4377	08 38 31
08 40 00	J0751+271	12 31 36	33.4	272.0	4.6		42.4	-15	4377	No stop
08 43 30	---	12 35 07	32.9	272.6	4.7		42.4	195	4404	08 40 01
08 43 30	J0746+273	12 35 07	32.4	273.9	4.8		42.5	-15	4404	No stop
08 45 00	---	12 36 37	32.1	274.2	4.8		42.5	75	4415	08 43 31
08 45 00	J0751+271	12 36 37	32.7	272.9	4.7		42.4	-15	4415	No stop
08 48 30	---	12 40 08	32.1	273.6	4.8		42.4	195	4442	08 45 01
08 49 00	J0746+273	12 40 38	31.5	274.9	4.9		42.4	15	4442	08 49 00
08 50 30	---	12 42 08	31.3	275.2	4.9		42.4	90	4454	08 49 01
08 50 30	J0751+271	12 42 08	31.8	274.0	4.8		42.4	-15	4454	No stop
08 54 00	---	12 45 39	31.3	274.7	4.9		42.3	195	4481	08 50 31
08 54 00	J0746+273	12 45 39	30.8	275.9	5.0		42.3	-15	4481	No stop
08 55 30	---	12 47 09	30.6	276.2	5.0		42.3	75	4492	08 54 01

Schedule for TORUN (Code Tr)

Page 17

Gravitational lensing by low-mass dark matter haloes

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

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	31 Oct 2015	Day 304 ---								
08 55 30	J0751+271	12 47 09	31.1	275.0	4.9		42.3	-15	4492	No stop
08 59 00	---	12 50 39	30.6	275.6	5.0		42.2	195	4519	08 55 31
08 59 30	J0746+273	12 51 09	30.0	276.9	5.1		42.2	15	4519	08 59 30
09 01 00	---	12 52 40	29.8	277.2	5.1		42.2	90	4531	08 59 31
09 01 00	J0751+271	12 52 40	30.3	276.0	5.0		42.2	-15	4531	No stop
09 04 30	---	12 56 10	29.7	276.7	5.1		42.1	195	4558	09 01 01
09 04 30	J0746+273	12 56 10	29.2	277.9	5.1		42.1	-15	4558	No stop
09 06 00	---	12 57 40	29.0	278.2	5.2		42.1	75	4569	09 04 31
09 06 00	J0751+271	12 57 40	29.5	277.0	5.1		42.1	-15	4569	No stop
09 09 30	---	13 01 11	29.0	277.6	5.1		42.0	195	4596	09 06 01
09 10 00	J0746+273	13 01 41	28.4	278.9	5.2		42.0	15	4596	09 10 00
09 11 30	---	13 03 11	28.2	279.2	5.3		42.0	90	4608	09 10 01
09 11 30	J0751+271	13 03 11	28.7	278.0	5.2		42.0	-15	4608	No stop
09 15 00	---	13 06 42	28.2	278.7	5.2		41.9	195	4635	09 11 31
09 15 00	J0746+273	13 06 42	27.7	279.9	5.3		41.9	-15	4635	No stop
09 16 30	---	13 08 12	27.4	280.1	5.3		41.8	75	4646	09 15 01
09 16 30	J0751+271	13 08 12	28.0	279.0	5.3		41.8	-15	4646	No stop
09 20 00	---	13 11 43	27.4	279.6	5.3		41.7	195	4673	09 16 31
09 20 30	J0746+273	13 12 13	26.9	280.9	5.4		41.7	15	4673	09 20 30
09 22 00	---	13 13 43	26.6	281.2	5.4		41.6	90	4685	09 20 31
09 22 00	J0751+271	13 13 43	27.1	280.0	5.4		41.7	-15	4685	No stop
09 25 30	---	13 17 14	26.6	280.7	5.4		41.6	195	4712	09 22 01
09 25 30	J0746+273	13 17 14	26.1	281.8	5.5		41.5	-15	4712	No stop
09 27 00	---	13 18 44	25.9	282.1	5.5		41.5	75	4723	09 25 31
09 27 00	J0751+271	13 18 44	26.4	280.9	5.4		41.5	-14	4723	No stop
09 30 30	---	13 22 15	25.9	281.6	5.5		41.4	196	4750	09 27 01
09 31 00	J0746+273	13 22 45	25.3	282.8	5.6		41.3	15	4750	09 31 00
09 32 30	---	13 24 15	25.1	283.1	5.6		41.3	90	4762	09 31 01
09 32 30	J0751+271	13 24 15	25.6	282.0	5.5		41.4	-14	4762	No stop
09 36 00	---	13 27 45	25.1	282.6	5.6		41.2	196	4788	09 32 31

Schedule for TORUN (Code Tr)

Page 18

Gravitational lensing by low-mass dark matter haloes

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

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	31 Oct 2015	Day 304 ---								
09 36 00	J0746+273	13 27 45	24.6	283.8	5.7		41.1	-15	4788	No stop
09 37 30	---	13 29 16	24.4	284.0	5.7		41.1	75	4800	09 36 01
09 37 30	J0751+271	13 29 16	24.9	282.9	5.6		41.2	-14	4800	No stop
09 41 00	---	13 32 46	24.3	283.5	5.7		41.0	196	4827	09 37 31
09 41 30	J0746+273	13 33 16	23.8	284.8	5.8		40.9	15	4827	09 41 30
09 43 00	---	13 34 47	23.6	285.0	5.8		40.8	90	4838	09 41 31
09 43 00	J0751+271	13 34 47	24.0	283.9	5.7		41.0	-14	4838	No stop
09 46 30	---	13 38 17	23.5	284.5	5.8		40.8	196	4865	09 43 01
09 46 30	J0746+273	13 38 17	23.0	285.7	5.8		40.7	-15	4865	No stop
09 48 00	---	13 39 47	22.8	286.0	5.9		40.6	75	4877	09 46 31
09 48 00	J0751+271	13 39 47	23.3	284.8	5.8		40.8	-14	4877	No stop
09 51 30	---	13 43 18	22.8	285.5	5.8		40.6	196	4904	09 48 01
09 52 00	J0746+273	13 43 48	22.3	286.7	5.9		40.4	15	4904	09 52 00
09 53 30	---	13 45 18	22.0	287.0	6.0		40.4	90	4915	09 52 01
09 53 30	J0751+271	13 45 18	22.5	285.8	5.9		40.5	-14	4915	No stop
09 57 00	---	13 48 49	22.0	286.5	5.9		40.4	196	4942	09 53 31
09 57 00	J0746+273	13 48 49	21.5	287.6	6.0		40.2	-15	4942	No stop
09 58 30	---	13 50 19	21.3	287.9	6.0		40.1	75	4954	09 57 01
09 58 30	J0751+271	13 50 19	21.8	286.7	6.0		40.3	-14	4954	No stop
10 02 00	---	13 53 50	21.3	287.4	6.0		40.1	196	4981	09 58 31
10 02 30	J0746+273	13 54 20	20.7	288.6	6.1		39.9	15	4981	10 02 30
10 04 00	---	13 55 50	20.5	288.9	6.1		39.9	90	4992	10 02 31
10 04 00	J0751+271	13 55 50	21.0	287.8	6.1		40.0	-14	4992	No stop
10 07 30	---	13 59 21	20.5	288.4	6.1		39.9	196	5019	10 04 01
10 07 30	J0746+273	13 59 21	20.0	289.5	6.2		39.7	-15	5019	No stop
10 09 00	---	14 00 51	19.8	289.8	6.2		39.6	75	5031	10 07 31
10 09 00	J0751+271	14 00 51	20.3	288.7	6.1		39.8	-14	5031	No stop
10 12 30	---	14 04 21	19.8	289.3	6.2		39.6	196	5058	10 09 01
10 13 00	J0746+273	14 04 51	19.3	290.5	6.3		39.4	15	5058	10 13 00
10 14 30	---	14 06 22	19.0	290.8	6.3		39.3	90	5069	10 13 01

Schedule for TORUN (Code Tr)

Page 19

Gravitational lensing by low-mass dark matter haloes

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

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	31 Oct 2015	Day 304	---							
10 14 30	J0751+271	14 06 22	19.5	289.7	6.2		39.5	-14	5069	No stop
10 18 00	---	14 09 52	19.0	290.3	6.3		39.3	196	5096	10 14 31
10 18 00	J0746+273	14 09 52	18.6	291.4	6.4		39.1	-15	5096	No stop
10 19 30	---	14 11 23	18.3	291.7	6.4		39.0	75	5108	10 18 01
10 19 30	J0751+271	14 11 23	18.8	290.6	6.3		39.2	-14	5108	No stop
10 23 00	---	14 14 53	18.3	291.2	6.4		39.0	196	5135	10 19 31
10 23 30	J0746+273	14 15 23	17.8	292.4	6.5		38.8	15	5135	10 23 30
10 25 00	---	14 16 53	17.6	292.7	6.5		38.7	90	5146	10 23 31
10 25 00	J0751+271	14 16 53	18.0	291.6	6.4		38.9	-14	5146	No stop
10 28 30	---	14 20 24	17.5	292.2	6.5		38.7	196	5173	10 25 01
10 28 30	J0746+273	14 20 24	17.1	293.3	6.5		38.4	-15	5173	No stop
10 30 00	---	14 21 54	16.9	293.6	6.6		38.4	75	5185	10 28 31
10 30 00	J0751+271	14 21 54	17.3	292.5	6.5		38.6	-14	5185	No stop
10 33 30	---	14 25 25	16.8	293.1	6.5		38.4	196	5212	10 30 01
10 34 00	J0746+273	14 25 55	16.3	294.3	6.6		38.1	15	5212	10 34 00
10 35 30	---	14 27 25	16.1	294.6	6.7		38.0	90	5223	10 34 01
10 35 30	J0751+271	14 27 25	16.6	293.5	6.6		38.3	-14	5223	No stop
10 39 00	---	14 30 56	16.1	294.1	6.6		38.0	196	5250	10 35 31
10 39 00	J0746+273	14 30 56	15.7	295.2	6.7		37.8	-15	5250	No stop
10 40 30	---	14 32 26	15.4	295.5	6.7		37.7	75	5262	10 39 01
10 40 30	J0751+271	14 32 26	15.9	294.4	6.7		37.9	-14	5262	No stop
10 44 00	---	14 35 57	15.4	295.1	6.7		37.7	196	5288	10 40 31
10 44 30	J0746+273	14 36 27	14.9	296.3	6.8		37.4	15	5288	10 44 30
10 46 00	---	14 37 57	14.7	296.5	6.8		37.3	90	5300	10 44 31
10 46 00	J0751+271	14 37 57	15.1	295.4	6.8		37.6	-14	5300	No stop
10 49 30	---	14 41 27	14.7	296.1	6.8		37.3	196	5327	10 46 01
10 49 30	J0746+273	14 41 27	14.2	297.2	6.9		37.0	-15	5327	No stop
10 51 00	---	14 42 58	14.0	297.4	6.9		36.9	75	5338	10 49 31
10 51 00	J0751+271	14 42 58	14.5	296.3	6.8		37.2	-14	5338	No stop
10 54 30	---	14 46 28	14.0	297.0	6.9		37.0	196	5365	10 51 01

Schedule for TORUN (Code Tr)

Page 20

Gravitational lensing by low-mass dark matter haloes

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

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 31 Oct 2015	Day 304 ---								
10 55 00	J0746+273	14 46 58	13.5	298.2	7.0		36.7	15	5365	10 55 00
10 56 30	---	14 48 29	13.3	298.5	7.0		36.5	90	5377	10 55 01
10 56 30	J0751+271	14 48 29	13.7	297.3	6.9		36.9	-14	5377	No stop
11 00 00	---	14 51 59	13.3	298.0	7.0		36.6	196	5404	10 56 31
11 00 00	J0746+273	14 51 59	12.8	299.1	7.1		36.3	-15	5404	No stop
11 01 30	---	14 53 29	12.6	299.4	7.1		36.2	75	5415	11 00 01
11 01 30	J0751+271	14 53 29	13.1	298.3	7.0		36.5	-14	5415	No stop
11 05 00	---	14 57 00	12.6	298.9	7.1		36.2	196	5442	11 01 31
11 05 30	J0746+273	14 57 30	12.1	300.1	7.2		35.9	15	5442	11 05 30
11 07 00	---	14 59 00	11.9	300.4	7.2		35.7	90	5454	11 05 31
11 07 00	J0751+271	14 59 00	12.3	299.3	7.1		36.1	-14	5454	No stop
11 10 30	---	15 02 31	11.9	299.9	7.2		35.8	196	5481	11 07 01
11 10 30	J0746+273	15 02 31	11.5	301.0	7.2		35.5	-15	5481	No stop
11 12 00	---	15 04 01	11.3	301.3	7.3		35.4	75	5492	11 10 31
11 12 00	J0751+271	15 04 01	11.7	300.2	7.2		35.7	-14	5492	No stop
11 15 00	---	15 07 02	11.3	300.8	7.2		35.5	166	5515	11 12 01
11 20 00	4C39.25	15 12 02	32.4	293.3	5.7		45.2	205	5515	11 20 00
11 30 00	---	15 22 04	31.0	294.9	5.9		44.4	600	5592	11 20 01

SETUP FILE INFORMATION:

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

===== Setup file: sess315.C2048glob

Setup group: 25	Station: TORUN	Total bit rate: 1024
Format: MARK5B	Bits per sample: 2	Sample rate: 32.000
Number of channels: 16	DBE type: DBBC_DDC	Speedup factor: 1.00

Disk used to record data.

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

The following frequency sets based on these setups were used.

Frequency Set: 4 Setup file default. Used with PCAL = off

LO sum=	4884.25	4884.25	4884.25	4884.25	4916.25	4916.25	4916.25	4916.25
	4948.25	4948.25	4948.25	4948.25	4980.25	4980.25	4980.25	4980.25
BBC fr=	684.25	684.25	684.25	684.25	716.25	716.25	716.25	716.25
	748.25	748.25	748.25	748.25	780.25	780.25	780.25	780.25
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: 4

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
	(B1950)	(J2000)		(mas)
* J0751+271	07 48 37.111510	* 07 51 41.480000	07 52 39.797999	0.00
	27 24 14.86401	* 27 16 31.60000	27 13 51.64801	0.00
* J0746+273	07 43 35.316257	* 07 46 40.432312	07 47 39.025050	0.00
	27 42 22.72654	* 27 34 59.04716	27 32 25.08666	0.00
* DA193	05 52 01.407170	* 05 55 30.805612	05 56 38.083713	0.00
	39 48 21.94583	* 39 48 49.16498	39 48 40.91302	0.00
* 4C39.25	09 23 55.319213	* 09 27 03.013934	09 28 01.394705	0.00
	39 15 23.56646	* 39 02 20.85186	38 57 59.10474	0.00

rk12edtr

RADIOASTRON AGN SURVEY
PI: Yuri Kovalev

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

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

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN Survey

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

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 31 Oct 2015 Day 304 ---

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

Next scan frequencies:	4836.00	4836.00	4836.00	4836.00					
Next BBC frequencies:	736.00	736.00	736.00	736.00					
Next scan bandwidths:	16.00	16.00	16.00	16.00					
18 00 00	0106+013	21 53 08	24.6	123.8	-3.3	-29.9	0	0	18 00 00
18 14 30	---	22 07 41	26.4	127.3	-3.0	-28.5	870	28	18 00 01
18 15 00	0106+013	22 08 11	26.4	127.5	-3.0	-28.5	24	28	18 15 00
18 29 30	---	22 22 43	28.1	131.1	-2.8	-26.9	870	56	18 15 01
18 30 00	0106+013	22 23 13	28.2	131.2	-2.8	-26.9	24	56	18 30 00
18 44 30	---	22 37 46	29.8	134.9	-2.5	-25.2	870	84	18 30 01
18 45 00	0106+013	22 38 16	29.8	135.1	-2.5	-25.1	24	84	18 45 00
18 55 00	---	22 48 17	30.9	137.7	-2.4	-23.8	600	103	18 45 01

SETUP FILE INFORMATION:

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

===== Setup file: ra6cm2.set

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

Disk used to record data.


```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 30.121331	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 31.16960	0.00
	fake circumpolar target for a TS to look at			
* 0106+013	01 06 04.517938	* 01 08 38.771107	01 09 28.734949	0.00
J0108+0135	01 19 01.13979	* 01 35 00.31717	01 40 06.49973	0.00
	./rk12ed_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 46104 observations, RA-A03-04, RA-A02-1			

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0106+013	158.0

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 $60 \deg F^{-0.6}$ 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

X-SHAPED RADIO GALAXIES
PI: *David H. Roberts*

Address: Brandeis University

Observing mode: Phase-referencing of eight of nine target sources at 6cm

Schedule for TORUN (Code Tr)

Page 2

X-Shaped Radio Galaxies

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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 1 Nov 2015	Day 305 ---								
-----	>>> Please do EB pointing check during following scan <<< -----									
Next scan frequencies:		4942.49	4942.49	4942.49	4942.49	4974.49	4974.49	4974.49	4974.49	
		5006.49	5006.49	5006.49	5006.49	5038.49	5038.49	5038.49	5038.49	
Next BBC frequencies:		742.49	742.49	742.49	742.49	774.49	774.49	774.49	774.49	
		806.49	806.49	806.49	806.49	838.49	838.49	838.49	838.49	
Next scan bandwidths:		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	
		16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	
01 30 00	OJ287	05 24 22	37.9	108.3	-3.5		-37.4	0	0	01 30 00
01 40 00	---	05 34 24	39.4	110.7	-3.4		-36.7	600	77	01 30 01
01 40 15	OJ287	05 34 39	39.4	110.8	-3.4		-36.7	9	77	01 40 15
01 43 15	---	05 37 39	39.8	111.5	-3.3		-36.5	180	100	01 40 16
01 46 13	J1017+6116	05 40 37	53.3	49.1	-4.6		-70.4	38	100	01 46 13
01 48 13	=1014+615	05 42 38	53.6	49.2	-4.6		-70.7	120	115	01 46 14
01 48 43	J1015	05 43 08	53.3	51.8	-4.6		-69.1	11	115	01 48 43
01 53 13	---	05 47 39	53.8	52.1	-4.5		-69.8	270	150	01 48 44
01 53 43	J1017+6116	05 48 09	54.2	49.6	-4.5		-71.6	11	150	01 53 43
01 55 43	=1014+615	05 50 09	54.4	49.7	-4.5		-71.9	120	165	01 53 44
01 59 00	J1043	05 53 27	34.7	82.3	-4.8		-44.2	109	165	01 59 00
02 03 30	---	05 57 58	35.4	83.1	-4.8		-44.3	270	200	01 59 01
02 05 44	J1011+0106	06 00 12	16.7	111.6	-4.2		-33.9	49	200	02 05 44
02 07 44	=1008+013	06 02 13	17.0	112.0	-4.2		-33.8	120	215	02 05 45
02 08 14	J1008	06 02 43	17.0	113.2	-4.1		-33.5	16	215	02 08 14
02 12 44	---	06 07 13	17.6	114.2	-4.0		-33.2	270	250	02 08 15
02 13 14	J1011+0106	06 07 44	17.7	113.2	-4.1		-33.5	16	250	02 13 14
02 15 14	=1008+013	06 09 44	18.0	113.7	-4.0		-33.4	120	265	02 13 15
02 19 30	J1017+6116	06 14 00	57.2	51.1	-4.1		-76.0	95	265	02 19 30
02 21 30	=1014+615	06 16 00	57.4	51.2	-4.0		-76.3	120	281	02 19 31
02 22 00	J1015	06 16 31	57.3	54.1	-4.0		-74.4	11	281	02 22 00
02 26 30	---	06 21 02	57.9	54.4	-3.9		-75.1	270	315	02 22 01
02 27 01	J1017+6116	06 21 33	58.1	51.5	-3.9		-77.3	11	315	02 27 01
02 29 01	=1014+615	06 23 33	58.3	51.6	-3.9		-77.7	120	331	02 27 02

Schedule for TORUN (Code Tr)

Page 3

X-Shaped Radio Galaxies

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	1 Nov 2015	Day 305	---							
02 31 34	J1043	06 26 06	39.6	88.5	-4.3		-44.7	64	331	02 31 34
02 36 04	---	06 30 37	40.3	89.4	-4.2		-44.7	270	365	02 31 35
02 38 18	J1011+0106	06 32 51	21.1	118.8	-3.7		-31.7	48	365	02 38 18
02 40 18	=1008+013	06 34 51	21.4	119.3	-3.6		-31.6	120	381	02 38 19
02 40 48	J1008	06 35 21	21.3	120.5	-3.6		-31.2	16	381	02 40 48
02 45 18	---	06 39 52	21.9	121.5	-3.5		-30.8	270	415	02 40 49
02 45 48	J1011+0106	06 40 22	22.1	120.6	-3.5		-31.1	16	415	02 45 48
02 47 48	=1008+013	06 42 23	22.4	121.0	-3.5		-31.0	120	431	02 45 49
02 49 56	0J287	06 44 31	48.4	129.9	-2.2		-29.4	17	431	02 49 56
02 54 26	---	06 49 02	49.0	131.3	-2.1		-28.7	270	465	02 49 57
02 57 50	J1017+6116	06 52 26	61.7	52.8	-3.4		-83.0	32	465	02 57 50
02 59 50	=1014+615	06 54 27	62.0	52.9	-3.4		-83.4	120	481	02 57 51
03 00 22	J1015	06 54 59	62.0	56.2	-3.4		-80.9	11	481	03 00 22
03 04 52	---	06 59 30	62.6	56.4	-3.3		-81.8	270	515	03 00 23
03 05 24	J1017+6116	07 00 02	62.6	53.0	-3.3		-84.5	11	515	03 05 24
03 07 24	=1014+615	07 02 02	62.9	53.1	-3.3		-84.8	120	531	03 05 25
03 09 35	J1043	07 04 14	45.3	96.4	-3.7		-44.4	30	531	03 09 35
03 14 05	---	07 08 44	46.0	97.4	-3.6		-44.3	270	565	03 09 36
03 16 19	J1011+0106	07 10 59	25.9	127.8	-3.0		-28.3	44	565	03 16 19
03 18 19	=1008+013	07 12 59	26.1	128.3	-3.0		-28.1	120	581	03 16 20
03 18 49	J1008	07 13 29	26.0	129.5	-2.9		-27.6	16	581	03 18 49
03 23 19	---	07 18 00	26.5	130.6	-2.8		-27.1	270	615	03 18 50
03 23 49	J1011+0106	07 18 30	26.8	129.7	-2.9		-27.5	16	615	03 23 49
03 25 49	=1008+013	07 20 30	27.0	130.2	-2.9		-27.3	120	631	03 23 50
03 30 04	J1017+6116	07 24 46	65.6	53.4	-2.9		-89.6	87	631	03 30 04
03 32 04	=1014+615	07 26 46	65.9	53.4	-2.9		-90.0	120	646	03 30 05
03 32 38	J1015	07 27 20	66.1	57.1	-2.8		-87.0	11	646	03 32 38
03 37 08	---	07 31 51	66.7	57.2	-2.7		-88.0	270	681	03 32 39
03 37 41	J1017+6116	07 32 24	66.5	53.4	-2.8		-91.2	11	681	03 37 41
03 39 41	=1014+615	07 34 25	66.8	53.3	-2.7		-91.7	120	696	03 37 42

Schedule for TORUN (Code Tr)

Page 4

X-Shaped Radio Galaxies

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	1 Nov 2015	Day 305	---							
03 41 52	J1043	07 36 36	50.1	103.8	-3.1		-43.1	15	696	03 41 52
03 46 22	---	07 41 07	50.8	104.9	-3.1		-42.8	270	731	03 41 53
03 48 36	J1011+0106	07 43 21	29.5	136.0	-2.5		-24.6	40	731	03 48 36
03 50 36	=1008+013	07 45 21	29.7	136.5	-2.4		-24.4	120	746	03 48 37
03 51 06	J1008	07 45 51	29.5	137.8	-2.4		-23.8	15	746	03 51 06
03 55 36	---	07 50 22	30.0	139.0	-2.3		-23.2	270	781	03 51 07
03 56 06	J1011+0106	07 50 52	30.3	138.0	-2.4		-23.7	16	781	03 56 06
03 58 06	=1008+013	07 52 53	30.5	138.5	-2.3		-23.4	120	796	03 56 07
04 00 12	0J287	07 54 59	54.9	154.6	-1.0		-15.9	20	796	04 00 12
04 04 42	---	07 59 29	55.2	156.4	-0.9		-14.8	270	831	04 00 13
04 08 49	J1017+6116	08 03 37	70.3	52.4	-2.2		-98.9	25	831	04 08 49
04 10 49	=1014+615	08 05 38	70.5	52.3	-2.2		-99.5	120	846	04 08 50
04 11 24	J1015	08 06 13	71.0	56.8	-2.2		-95.7	11	846	04 11 24
04 15 54	---	08 10 44	71.6	56.6	-2.1		-96.9	270	881	04 11 25
04 16 30	J1017+6116	08 11 19	71.2	52.0	-2.1		-101.1	11	881	04 16 30
04 18 30	=1014+615	08 13 19	71.4	51.8	-2.1		-101.6	120	896	04 16 31
04 22 53	J1043	08 17 44	55.9	114.7	-2.4		-39.7	124	896	04 22 53
04 27 23	---	08 22 14	56.5	116.1	-2.4		-39.2	270	931	04 22 54
04 29 37	J1011+0106	08 24 29	33.4	147.2	-1.8		-19.0	33	931	04 29 37
04 31 37	=1008+013	08 26 29	33.5	147.8	-1.8		-18.7	120	946	04 29 38
04 32 07	J1008	08 26 59	33.2	149.0	-1.7		-18.0	15	946	04 32 07
04 36 37	---	08 31 30	33.6	150.3	-1.6		-17.3	270	981	04 32 08
04 37 07	J1011+0106	08 32 00	34.0	149.4	-1.7		-17.8	16	981	04 37 07
04 39 07	=1008+013	08 34 00	34.1	149.9	-1.6		-17.5	120	996	04 37 08
04 43 22	J1017+6116	08 38 16	74.3	49.1	-1.7		-109.8	39	996	04 43 22
04 45 22	=1014+615	08 40 16	74.6	48.7	-1.6		-110.5	120	1012	04 43 23
04 45 59	J1015	08 40 53	75.3	54.0	-1.6		-106.0	11	1012	04 45 59
04 50 29	---	08 45 24	75.9	53.3	-1.5		-107.6	270	1046	04 46 00
04 51 06	J1017+6116	08 46 01	75.2	47.8	-1.5		-112.7	11	1046	04 51 06
04 53 06	=1014+615	08 48 02	75.4	47.4	-1.5		-113.5	120	1062	04 51 07

Schedule for TORUN (Code Tr)

Page 5

X-Shaped Radio Galaxies

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	1 Nov 2015	Day 305	---							
04 56 11	J1043	08 51 07	60.3	125.5	-1.9		-35.0	14	1062	04 56 11
05 00 41	---	08 55 38	60.8	127.1	-1.8		-34.2	270	1096	04 56 12
05 02 55	J1011+0106	08 57 52	35.7	156.9	-1.2		-13.6	26	1096	05 02 55
05 04 55	=1008+013	08 59 52	35.8	157.5	-1.2		-13.3	120	1112	05 02 56
05 05 25	J1008	09 00 23	35.4	158.8	-1.1		-12.6	15	1112	05 05 25
05 09 55	---	09 04 53	35.7	160.1	-1.1		-11.8	270	1146	05 05 26
05 10 25	J1011+0106	09 05 23	36.1	159.2	-1.1		-12.3	16	1146	05 10 25
05 12 25	=1008+013	09 07 24	36.2	159.8	-1.1		-12.0	120	1162	05 10 26
05 14 21	0J287	09 09 20	56.8	185.9	0.2		3.7	25	1162	05 14 21
05 18 51	---	09 13 51	56.8	187.8	0.3		5.0	270	1196	05 14 22
05 24 16	J1017+6116	09 19 17	78.6	38.7	-1.0		-128.8	12	1196	05 24 16
05 26 16	=1014+615	09 21 17	78.8	37.9	-1.0		-130.0	120	1212	05 24 17
05 26 55	J1015	09 21 56	80.0	43.5	-0.9		-125.0	12	1212	05 26 55
05 31 25	---	09 26 27	80.5	41.5	-0.8		-128.0	270	1246	05 26 56
05 32 04	J1017+6116	09 27 06	79.4	35.5	-0.9		-133.7	12	1246	05 32 04
05 34 04	=1014+615	09 29 06	79.5	34.5	-0.8		-135.1	120	1262	05 32 05
05 37 54	J1043	09 32 57	64.8	142.2	-1.2		-25.5	0	1262	05 37 54
05 42 24	---	09 37 28	65.2	144.3	-1.1		-24.3	270	1296	05 37 55
05 44 38	J1011+0106	09 39 42	37.5	169.8	-0.5		-6.1	16	1296	05 44 38
05 46 38	=1008+013	09 41 42	37.6	170.4	-0.5		-5.7	120	1312	05 44 39
05 47 08	J1008	09 42 12	37.0	171.6	-0.4		-5.0	16	1312	05 47 08
05 51 38	---	09 46 43	37.1	173.0	-0.4		-4.2	270	1346	05 47 09
05 52 08	J1011+0106	09 47 13	37.7	172.1	-0.4		-4.7	16	1346	05 52 08
05 54 08	=1008+013	09 49 13	37.7	172.8	-0.4		-4.3	120	1362	05 52 09
05 59 30	J1017+6116	09 54 36	81.3	19.3	-0.4		-155.6	0	1362	05 59 30
06 01 30	=1014+615	09 56 37	81.4	17.9	-0.4		-157.5	120	1377	05 59 31
06 02 08	J1015	09 57 15	82.9	20.3	-0.3		-155.6	18	1377	06 02 08
06 06 38	---	10 01 46	83.1	16.0	-0.2		-160.9	270	1412	06 02 09
06 21 08	J1017+6116	10 16 18	81.9	1.9	-0.0		-177.7	850	1412	06 21 08
06 23 08	=1014+615	10 18 18	81.9	0.2	-0.0		-179.8	120	1427	06 21 09

Schedule for TORUN (Code Tr)

Page 6

X-Shaped Radio Galaxies

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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 1 Nov 2015 Day 305 ---

06 33 23	J1043	10 28 35	68.2	171.0	-0.3		-6.3	264	1427	06 33 23
06 37 53	---	10 33 06	68.2	173.6	-0.2		-4.5	270	1462	06 33 24
06 40 07	J1011+0106	10 35 20	37.7	187.4	0.4		4.4	5	1462	06 40 07
06 42 07	=1008+013	10 37 21	37.7	188.0	0.4		4.8	120	1477	06 40 08
06 42 37	J1008	10 37 51	37.0	189.0	0.5		5.4	15	1477	06 42 37
06 47 07	---	10 42 21	36.9	190.4	0.6		6.3	270	1512	06 42 38
06 47 37	J1011+0106	10 42 52	37.5	189.7	0.5		5.8	15	1512	06 47 37
06 49 37	=1008+013	10 44 52	37.5	190.4	0.5		6.2	120	1527	06 47 38

----- >>> Please do EB pointing check during following scan <<< -----

06 51 26	OJ287	10 46 41	50.7	223.6	1.8		26.2	28	1527	06 51 26
07 01 26	---	10 56 43	49.6	226.9	2.0		27.8	600	1604	06 51 27
07 05 43	J1331-0341	11 01 00	24.9	137.6	-2.5		-23.9	62	1604	07 05 43
07 07 43	=1328-034	11 03 00	25.1	138.1	-2.5		-23.7	120	1619	07 05 44
07 08 13	J1327	11 03 30	27.0	138.5	-2.4		-23.5	9	1619	07 08 13
07 12 43	---	11 08 01	27.5	139.6	-2.3		-22.9	270	1654	07 08 14
07 13 13	J1331-0341	11 08 31	25.6	139.5	-2.4		-23.0	9	1654	07 13 13
07 15 13	=1328-034	11 10 31	25.8	140.0	-2.4		-22.8	120	1669	07 13 14
07 16 20	J1410+0731	11 11 39	31.7	124.6	-3.0		-29.9	21	1669	07 16 20
07 18 20	=1408+077	11 13 39	31.9	125.1	-3.0		-29.7	120	1685	07 16 21
07 18 50	J1406	11 14 09	32.1	126.7	-2.9		-29.0	14	1685	07 18 50
07 23 20	---	11 18 40	32.6	127.9	-2.8		-28.5	270	1719	07 18 51
07 23 50	J1410+0731	11 19 10	32.6	126.5	-2.9		-29.1	14	1719	07 23 50
07 25 50	=1408+077	11 21 11	32.8	127.1	-2.8		-28.9	120	1735	07 23 51
07 26 29	J1410+0203	11 21 49	28.2	130.3	-2.8		-27.3	7	1735	07 26 29
07 28 29	=1407+022	11 23 50	28.4	130.8	-2.8		-27.0	120	1750	07 26 30
07 28 59	J1408	11 24 20	29.0	131.2	-2.7		-26.9	17	1750	07 28 59
07 33 29	---	11 28 51	29.5	132.3	-2.7		-26.4	270	1785	07 29 00
07 33 59	J1410+0203	11 29 21	29.0	132.2	-2.7		-26.4	17	1785	07 33 59
07 35 59	=1407+022	11 31 21	29.2	132.8	-2.7		-26.2	120	1800	07 34 00

Schedule for TORUN (Code Tr)

Page 7

X-Shaped Radio Galaxies

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	1 Nov 2015	Day 305	---							
07 37 37	3C273	11 33 00	37.5	162.0	-0.9		-10.7	25	1800	07 37 37
07 47 37	---	11 43 01	38.0	165.1	-0.8		-8.9	600	1877	07 37 38
07 51 45	0J287	11 47 10	43.4	241.7	2.9		34.2	80	1877	07 51 45
07 56 15	---	11 51 40	42.8	242.8	2.9		34.7	270	1912	07 51 46
08 08 22	J1017+6116	12 03 50	73.7	310.2	1.8		107.9	575	1912	08 08 22
08 10 22	=1014+615	12 05 50	73.5	310.0	1.8		107.2	120	1927	08 08 23
08 11 07	J1015	12 06 35	73.6	304.5	1.8		101.4	18	1927	08 11 07
08 15 37	---	12 11 06	73.0	304.1	1.9		100.1	270	1962	08 11 08
08 16 19	J1017+6116	12 11 48	72.8	309.3	1.9		105.3	17	1962	08 16 19
08 18 19	=1014+615	12 13 49	72.6	309.1	1.9		104.6	120	1977	08 16 20
08 29 27	J1043	12 24 58	61.7	230.1	1.7		32.7	488	1977	08 29 27
08 33 57	---	12 29 29	61.2	231.7	1.8		33.5	270	2012	08 29 28
08 36 24	J1011+0106	12 31 56	30.4	221.6	2.3		23.5	18	2012	08 36 24
08 38 24	=1008+013	12 33 56	30.2	222.2	2.4		23.8	120	2027	08 36 25
08 38 54	J1008	12 34 26	29.3	222.8	2.4		24.1	14	2027	08 38 54
08 43 24	---	12 38 57	28.8	224.0	2.5		24.7	270	2062	08 38 55
08 43 54	J1011+0106	12 39 27	29.7	223.6	2.5		24.5	14	2062	08 43 54
08 45 54	=1008+013	12 41 27	29.5	224.2	2.5		24.7	120	2077	08 43 55
08 49 10	J1331-0341	12 44 44	32.3	165.9	-0.8		-8.4	64	2077	08 49 10
08 51 10	=1328-034	12 46 44	32.3	166.5	-0.8		-8.1	120	2092	08 49 11
08 51 40	J1327	12 47 14	34.1	167.5	-0.7		-7.4	10	2092	08 51 40
08 56 10	---	12 51 45	34.2	168.9	-0.6		-6.6	270	2127	08 51 41
08 56 40	J1331-0341	12 52 15	32.5	168.1	-0.7		-7.1	10	2127	08 56 40
08 58 40	=1328-034	12 54 15	32.6	168.7	-0.6		-6.8	120	2142	08 56 41
08 59 49	J1410+0731	12 55 25	41.8	154.4	-1.3		-15.2	21	2142	08 59 49
09 01 49	=1408+077	12 57 25	41.9	155.0	-1.2		-14.8	120	2158	08 59 50
09 02 19	J1406	12 57 55	41.7	156.8	-1.1		-13.8	13	2158	09 02 19
09 06 49	---	13 02 26	42.0	158.3	-1.1		-12.9	270	2192	09 02 20
09 07 19	J1410+0731	13 02 56	42.3	156.8	-1.1		-13.8	14	2192	09 07 19
09 09 19	=1408+077	13 04 56	42.4	157.4	-1.1		-13.4	120	2208	09 07 20

Schedule for TORUN (Code Tr)

Page 8

X-Shaped Radio Galaxies

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	1 Nov 2015	Day 305	---							
09 10 00	J1410+0203	13 05 38	37.1	159.4	-1.1		-12.2	8	2208	09 10 00
09 12 00	=1407+022	13 07 38	37.2	160.0	-1.1		-11.9	120	2223	09 10 01
09 12 30	J1408	13 08 08	37.7	160.6	-1.0		-11.5	17	2223	09 12 30
09 17 00	---	13 12 39	37.9	162.0	-0.9		-10.7	270	2258	09 12 31
09 17 30	J1410+0203	13 13 09	37.5	161.7	-1.0		-10.9	17	2258	09 17 30
09 19 30	=1407+022	13 15 09	37.6	162.3	-0.9		-10.5	120	2273	09 17 31
09 21 11	J1557-0001	13 16 51	27.1	133.2	-2.7		-26.0	28	2273	09 21 11
09 23 11	=1555+001	13 18 51	27.3	133.7	-2.7		-25.7	120	2288	09 21 12
09 23 41	J1606	13 19 21	26.5	131.7	-2.8		-26.6	12	2288	09 23 41
09 28 11	---	13 23 52	27.0	132.8	-2.7		-26.1	270	2323	09 23 42
09 28 41	J1557-0001	13 24 22	27.9	135.1	-2.6		-25.1	12	2323	09 28 41
09 30 41	=1555+001	13 26 22	28.1	135.6	-2.5		-24.8	120	2338	09 28 42
09 37 39	0J287	13 33 21	28.2	266.2	4.6		39.6	142	2338	09 37 39
09 42 09	---	13 37 52	27.5	267.1	4.7		39.7	270	2373	09 37 40
09 45 31	J1017+6116	13 41 15	62.1	307.1	3.4		83.6	58	2373	09 45 31
09 47 31	=1014+615	13 43 15	61.9	307.2	3.4		83.2	120	2388	09 45 32
09 48 09	J1015	13 43 53	61.4	304.1	3.5		80.0	17	2388	09 48 09
09 52 39	---	13 48 23	60.8	304.3	3.5		79.2	270	2423	09 48 10
09 53 15	J1017+6116	13 49 00	61.2	307.3	3.5		82.1	16	2423	09 53 15
09 55 15	=1014+615	13 51 00	61.0	307.4	3.5		81.7	120	2438	09 53 16
09 59 24	J1043	13 55 10	49.6	257.0	3.2		43.3	132	2438	09 59 24
10 03 54	---	13 59 40	48.9	258.1	3.3		43.5	270	2473	09 59 25
10 06 13	J1011+0106	14 02 00	19.7	243.6	3.8		32.5	16	2473	10 06 13
10 08 13	=1008+013	14 04 00	19.4	244.0	3.9		32.7	120	2488	10 06 14
10 08 43	J1008	14 04 30	18.4	244.5	3.9		32.8	14	2488	10 08 43
10 13 13	---	14 09 01	17.8	245.5	4.0		33.1	270	2523	10 08 44
10 13 43	J1011+0106	14 09 31	18.7	245.2	4.0		33.1	14	2523	10 13 43
10 15 43	=1008+013	14 11 31	18.4	245.7	4.0		33.2	120	2538	10 13 44
10 18 59	J1331-0341	14 14 48	32.4	192.6	0.7		7.5	75	2538	10 18 59
10 20 59	=1328-034	14 16 49	32.4	193.2	0.7		7.9	120	2554	10 19 00

Schedule for TORUN (Code Tr)

Page 9

X-Shaped Radio Galaxies

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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 1 Nov 2015 Day 305 ---

10 21 29	J1327	14 17 19	33.8	194.8	0.8		8.8	11	2554	10 21 29
10 25 59	---	14 21 50	33.6	196.1	0.9		9.6	270	2588	10 21 30
10 26 29	J1331-0341	14 22 20	32.2	194.8	0.8		8.8	11	2588	10 26 29
10 28 29	=1328-034	14 24 20	32.1	195.4	0.9		9.2	120	2604	10 26 30
10 29 35	J1410+0731	14 25 25	44.3	184.9	0.2		3.0	6	2604	10 29 35
10 31 35	=1408+077	14 27 26	44.2	185.6	0.3		3.4	120	2619	10 29 36
10 32 05	J1406	14 27 56	43.6	187.2	0.4		4.4	14	2619	10 32 05
10 36 35	---	14 32 27	43.5	188.8	0.4		5.3	270	2654	10 32 06
10 37 05	J1410+0731	14 32 57	44.1	187.5	0.4		4.5	14	2654	10 37 05
10 39 05	=1408+077	14 34 57	44.1	188.2	0.4		4.9	120	2669	10 37 06
10 39 48	J1410+0203	14 35 40	38.6	187.9	0.4		4.8	9	2669	10 39 48
10 41 48	=1407+022	14 37 41	38.6	188.6	0.4		5.1	120	2685	10 39 49
10 42 18	J1408	14 38 11	38.9	189.3	0.5		5.6	18	2685	10 42 18
10 46 48	---	14 42 41	38.8	190.7	0.6		6.4	270	2719	10 42 19
10 47 18	J1410+0203	14 43 12	38.4	190.3	0.5		6.2	18	2719	10 47 18
10 49 18	=1407+022	14 45 12	38.4	191.0	0.6		6.6	120	2735	10 47 19
10 51 09	J1557-0001	14 47 03	34.8	158.0	-1.2		-13.0	30	2735	10 51 09
10 53 09	=1555+001	14 49 04	34.9	158.6	-1.2		-12.6	120	2750	10 51 10
10 53 39	J1606	14 49 34	34.5	156.3	-1.3		-14.0	11	2750	10 53 39
10 58 09	---	14 54 05	34.7	157.6	-1.2		-13.2	270	2785	10 53 40
10 58 40	J1557-0001	14 54 36	35.2	160.3	-1.1		-11.7	12	2785	10 58 40
11 00 40	=1555+001	14 56 36	35.3	160.9	-1.0		-11.3	120	2800	10 58 41

----- >>> Please do EB pointing check during following scan <<< -----

11 04 14	3C273	15 00 10	30.2	224.8	2.5		25.1	71	2800	11 04 14
11 14 14	---	15 10 12	29.1	227.4	2.7		26.3	600	2877	11 04 15
11 14 44	3C273	15 10 42	29.1	227.6	2.7		26.3	24	2877	11 14 44
11 24 44	---	15 20 44	27.9	230.1	2.8		27.5	600	2954	11 14 45
11 28 20	OJ287	15 24 21	11.8	287.8	6.5		37.5	86	2954	11 28 20
11 32 50	---	15 28 51	11.1	288.7	6.6		37.3	270	2988	11 28 21

Schedule for TORUN (Code Tr)

Page 10

X-Shaped Radio Galaxies

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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 1 Nov 2015 Day 305 ---								
11 35 48	J1017+6116	15 31 49	49.4	313.5	5.2	64.6 20	2988	11 35 48
11 37 48	=1014+615	15 33 50	49.2	313.7	5.3	64.3 120	3004	11 35 49
11 38 18	J1015	15 34 20	48.2	311.8	5.3	62.4 13	3004	11 38 18
11 42 48	---	15 38 51	47.7	312.2	5.4	61.7 270	3038	11 38 19
11 43 19	J1017+6116	15 39 21	48.6	314.1	5.3	63.4 13	3038	11 43 19
11 45 19	=1014+615	15 41 22	48.4	314.3	5.4	63.1 120	3054	11 43 20
11 47 59	J1043	15 44 02	33.4	279.4	5.0	44.0 75	3054	11 47 59
11 52 29	---	15 48 33	32.7	280.2	5.1	43.8 270	3088	11 48 00
11 56 12	J1331-0341	15 52 17	26.0	219.6	2.3	22.5 87	3088	11 56 12
11 58 12	=1328-034	15 54 18	25.8	220.1	2.4	22.8 120	3104	11 56 13
11 58 42	J1327	15 54 48	26.9	221.9	2.4	23.7 13	3104	11 58 42
12 03 12	---	15 59 19	26.4	223.1	2.5	24.2 270	3138	11 58 43
12 03 42	J1331-0341	15 59 49	25.3	221.5	2.5	23.5 13	3138	12 03 42
12 05 42	=1328-034	16 01 49	25.1	222.0	2.5	23.7 120	3154	12 03 43
12 06 58	J1410+0731	16 03 05	39.0	216.7	1.9	21.2 9	3154	12 06 58
12 08 58	=1408+077	16 05 05	38.9	217.3	1.9	21.5 120	3169	12 06 59
12 09 28	J1406	16 05 35	37.9	218.5	2.0	22.1 14	3169	12 09 28
12 13 58	---	16 10 06	37.4	219.8	2.1	22.8 270	3204	12 09 29
12 14 28	J1410+0731	16 10 36	38.3	218.9	2.0	22.4 14	3204	12 14 28
12 16 28	=1408+077	16 12 36	38.1	219.5	2.0	22.7 120	3219	12 14 29
12 17 11	J1410+0203	16 13 19	33.0	217.3	2.0	21.4 10	3219	12 17 11
12 19 11	=1407+022	16 15 19	32.8	217.9	2.1	21.7 120	3235	12 17 12
12 19 41	J1408	16 15 50	32.9	218.6	2.1	22.0 18	3235	12 19 41
12 24 11	---	16 20 20	32.5	219.9	2.2	22.7 270	3269	12 19 42
12 24 41	J1410+0203	16 20 50	32.3	219.4	2.2	22.4 18	3269	12 24 41
12 26 41	=1407+022	16 22 51	32.1	220.0	2.2	22.7 120	3285	12 24 42
12 28 43	J1557-0001	16 24 53	36.6	188.2	0.4	4.9 43	3285	12 28 43
12 30 43	=1555+001	16 26 53	36.5	188.8	0.5	5.3 120	3300	12 28 44
12 31 14	J1606	16 27 25	36.7	186.4	0.3	3.8 12	3300	12 31 14
12 35 44	---	16 31 56	36.6	187.8	0.4	4.7 270	3335	12 31 15

Schedule for TORUN (Code Tr)

Page 11

X-Shaped Radio Galaxies

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	1 Nov 2015	Day 305	---							
12 36 17	J1557-0001	16 32 29	36.4	190.5	0.6		6.3	13	3335	12 36 17
12 38 17	=1555+001	16 34 29	36.3	191.1	0.6		6.7	120	3350	12 36 18
12 40 27	J1606+2717	16 36 39	63.6	194.6	0.5		9.8	14	3350	12 40 27
12 42 27	=1604+274	16 38 40	63.5	195.6	0.5		10.5	120	3365	12 40 28
12 43 05	J1614	16 39 18	64.8	192.6	0.4		8.5	17	3365	12 43 05
12 47 35	---	16 43 49	64.6	194.9	0.5		10.1	270	3400	12 43 06
12 48 15	J1606+2717	16 44 29	63.3	198.5	0.6		12.3	18	3400	12 48 15
12 50 15	=1604+274	16 46 29	63.2	199.4	0.6		13.0	120	3415	12 48 16
12 51 09	J1625	16 47 23	63.7	190.7	0.4		7.2	20	3415	12 51 09
12 55 39	---	16 51 53	63.5	192.9	0.4		8.7	270	3450	12 51 10
12 56 34	J1606+2717	16 52 49	62.8	202.4	0.8		14.9	22	3450	12 56 34
12 58 34	=1604+274	16 54 49	62.7	203.4	0.8		15.5	120	3465	12 56 35
13 04 25	3C454.3	17 00 41	13.8	81.2	-5.9		-38.2	91	3465	13 04 25
13 08 55	---	17 05 12	14.5	82.1	-5.8		-38.3	270	3500	13 04 26
13 19 58	J1017+6116	17 16 17	38.9	-36.9	7.0		48.4	409	3500	13 19 58
13 21 58	=1014+615	17 18 17	38.8	-36.7	7.0		48.1	120	3515	13 19 59
13 22 28	J1015	17 18 47	37.5	-37.9	7.0		46.8	12	3515	13 22 28
13 26 58	---	17 23 18	37.1	-37.4	7.1		46.2	270	3550	13 22 29
13 27 28	J1017+6116	17 23 48	38.3	-36.1	7.1		47.2	12	3550	13 27 28
13 29 28	=1014+615	17 25 49	38.1	-35.9	7.1		46.9	120	3565	13 27 29
13 31 39	J1043	17 28 00	18.6	-62.1	6.7		38.5	45	3565	13 31 39
13 36 09	---	17 32 31	18.0	-61.3	6.8		38.1	270	3600	13 31 40
13 51 43	J1331-0341	17 48 07	12.2	246.5	4.3		33.5	305	3600	13 51 43
13 53 43	=1328-034	17 50 08	11.9	246.9	4.3		33.6	120	3615	13 51 44
13 54 13	J1327	17 50 38	12.6	248.8	4.4		34.1	13	3615	13 54 13
13 58 43	---	17 55 08	12.0	249.7	4.4		34.3	270	3650	13 54 14
13 59 13	J1331-0341	17 55 38	11.1	248.1	4.4		33.9	13	3650	13 59 13
14 01 13	=1328-034	17 57 39	10.8	248.5	4.4		34.1	120	3665	13 59 14
14 02 33	J1410+0731	17 58 59	25.4	246.9	3.8		33.8	11	3665	14 02 33
14 04 33	=1408+077	18 00 59	25.1	247.3	3.8		34.0	120	3681	14 02 34

Schedule for TORUN (Code Tr)

Page 12

X-Shaped Radio Galaxies

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	1 Nov 2015	Day 305	---							
14 05 03	J1406	18 01 29	23.9	248.1	3.9		34.1	13	3681	14 05 03
14 09 33	---	18 06 00	23.3	249.1	4.0		34.4	270	3715	14 05 04
14 10 03	J1410+0731	18 06 30	24.3	248.6	3.9		34.3	13	3715	14 10 03
14 12 03	=1408+077	18 08 30	24.1	249.0	4.0		34.4	120	3731	14 10 04
14 12 43	J1410+0203	18 09 11	19.4	246.0	4.0		33.3	9	3731	14 12 43
14 14 43	=1407+022	18 11 11	19.1	246.4	4.0		33.4	120	3746	14 12 44
14 15 13	J1408	18 11 41	19.1	247.1	4.0		33.6	18	3746	14 15 13
14 19 43	---	18 16 12	18.5	248.1	4.1		33.9	270	3781	14 15 14
14 20 13	J1410+0203	18 16 42	18.3	247.6	4.1		33.8	18	3781	14 20 13
14 22 13	=1407+022	18 18 42	18.0	248.1	4.1		33.9	120	3796	14 20 14
14 24 07	J1557-0001	18 20 37	29.2	221.7	2.4		23.5	46	3796	14 24 07
14 26 07	=1555+001	18 22 37	29.0	222.2	2.4		23.8	120	3812	14 24 08
14 26 38	J1606	18 23 08	29.8	220.2	2.3		22.8	13	3812	14 26 38
14 31 08	---	18 27 38	29.4	221.4	2.3		23.4	270	3846	14 26 39
14 31 39	J1557-0001	18 28 10	28.4	223.7	2.5		24.5	13	3846	14 31 39
14 33 39	=1555+001	18 30 10	28.2	224.2	2.5		24.7	120	3862	14 31 40
14 35 43	J1606+2717	18 32 14	52.9	240.3	2.4		35.9	17	3862	14 35 43
14 37 43	=1604+274	18 34 15	52.6	240.9	2.4		36.2	120	3877	14 35 44
14 38 13	J1614	18 34 45	54.3	239.8	2.3		36.1	10	3877	14 38 13
14 42 43	---	18 39 15	53.7	241.2	2.4		36.7	270	3912	14 38 14
14 43 13	J1606+2717	18 39 45	51.9	242.5	2.5		36.8	9	3912	14 43 13
14 45 13	=1604+274	18 41 46	51.6	243.1	2.6		37.0	120	3927	14 43 14
14 46 00	J1625	18 42 33	53.8	237.6	2.3		34.7	20	3927	14 46 00
14 50 30	---	18 47 03	53.2	239.0	2.3		35.3	270	3962	14 46 01
14 51 18	J1606+2717	18 47 52	50.8	244.8	2.7		37.7	22	3962	14 51 18
14 53 18	=1604+274	18 49 52	50.5	245.4	2.7		37.9	120	3977	14 51 19

----- >>> Please do EB pointing check during following scan <<< -----

15 00 09	3C454.3	18 56 44	31.1	105.0	-4.0	-37.2	114	3977	15 00 09
15 10 09	---	19 06 46	32.5	107.3	-3.8	-36.7	600	4054	15 00 10

Schedule for TORUN (Code Tr)

Page 13

X-Shaped Radio Galaxies

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	1 Nov 2015	Day 305	---							
15 10 39	3C454.3	19 07 16	32.6	107.4	-3.8		-36.6	24	4054	15 10 39
15 15 09	---	19 11 47	33.2	108.4	-3.7		-36.4	270	4088	15 10 40
15 26 12	J1017+6116	19 22 51	29.5	-22.6	9.1		28.6	384	4088	15 26 12
15 28 12	=1014+615	19 24 52	29.4	-22.3	9.1		28.3	120	4104	15 26 13
15 28 42	J1015	19 25 22	27.9	-22.9	9.1		27.5	11	4104	15 28 42
15 33 12	---	19 29 52	27.6	-22.3	9.2		26.8	270	4138	15 28 43
15 33 42	J1017+6116	19 30 23	29.1	-21.7	9.2		27.4	11	4138	15 33 42
15 35 42	=1014+615	19 32 23	28.9	-21.4	9.2		27.1	120	4154	15 33 43
15 48 44	J1557-0001	19 45 28	19.2	242.3	3.8		32.1	242	4154	15 48 44
15 50 44	=1555+001	19 47 28	18.9	242.7	3.8		32.2	120	4169	15 48 45
15 51 14	J1606	19 47 58	20.0	241.0	3.7		31.7	13	4169	15 51 14
15 55 44	---	19 52 29	19.4	242.0	3.8		32.0	270	4204	15 51 15
15 56 14	J1557-0001	19 52 59	18.2	243.9	3.9		32.6	12	4204	15 56 14
15 58 14	=1555+001	19 54 59	17.9	244.4	3.9		32.8	120	4219	15 56 15
16 00 16	J1606+2717	19 57 01	40.9	261.7	3.8		41.9	21	4219	16 00 16
16 02 16	=1604+274	19 59 01	40.6	262.2	3.9		42.0	120	4235	16 00 17
16 02 46	J1614	19 59 31	42.3	261.6	3.7		42.4	9	4235	16 02 46
16 07 16	---	20 04 02	41.7	262.5	3.8		42.5	270	4269	16 02 47
16 07 46	J1606+2717	20 04 32	39.7	263.4	3.9		42.1	9	4269	16 07 46
16 09 46	=1604+274	20 06 32	39.4	263.8	4.0		42.2	120	4285	16 07 47
16 10 25	J1625	20 07 12	42.0	259.7	3.7		41.6	16	4285	16 10 25
16 14 55	---	20 11 42	41.3	260.7	3.8		41.7	270	4319	16 10 26
16 15 35	J1606+2717	20 12 22	38.6	265.0	4.1		42.3	16	4319	16 15 35
16 17 35	=1604+274	20 14 23	38.3	265.5	4.1		42.3	120	4335	16 15 36
16 31 28	J1017+6116	20 28 19	26.4	345.6	10.2		18.1	661	4335	16 31 28
16 33 28	=1014+615	20 30 19	26.3	345.9	10.2		17.7	120	4350	16 31 29
16 33 58	J1015	20 30 49	24.7	345.6	10.2		17.1	11	4350	16 33 58
16 38 28	---	20 35 20	24.6	346.2	10.3		16.4	270	4385	16 33 59
16 38 58	J1017+6116	20 35 50	26.1	346.6	10.3		16.8	11	4385	16 38 58
16 40 58	=1014+615	20 37 50	26.0	346.8	10.3		16.5	120	4400	16 38 59

Schedule for TORUN (Code Tr)

Page 14

X-Shaped Radio Galaxies

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	TPStart
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	TPStart
---	Sun	1 Nov 2015	Day 305	---						
16 54 27	J1557-0001	20 51 20	10.0	256.4	4.9		35.7	608	4400	16 54 27
16 56 27	=1555+001	20 53 21	9.7	256.8	4.9		35.8	120	4415	16 54 28
16 56 57	J1606	20 53 51	10.8	255.2	4.8		35.5	12	4415	16 56 57
17 01 27	---	20 58 22	10.2	256.1	4.9		35.7	270	4450	16 56 58
17 01 57	J1557-0001	20 58 52	8.9	257.9	5.0		36.0	12	4450	17 01 57
17 03 57	=1555+001	21 00 52	8.6	258.3	5.0		36.0	120	4465	17 01 58
17 05 58	J1606+2717	21 02 54	31.0	275.1	4.9		42.3	23	4465	17 05 58
17 07 58	=1604+274	21 04 54	30.7	275.5	5.0		42.2	120	4481	17 05 59
17 08 28	J1614	21 05 24	32.5	275.0	4.8		42.8	9	4481	17 08 28
17 12 58	---	21 09 55	31.8	275.9	4.9		42.7	270	4515	17 08 29
17 13 28	J1606+2717	21 10 25	29.9	276.6	5.0		42.1	9	4515	17 13 28
17 15 28	=1604+274	21 12 25	29.6	277.0	5.1		42.1	120	4531	17 13 29
17 16 04	J1625	21 13 02	32.1	273.4	4.8		42.3	13	4531	17 16 04
17 20 34	---	21 17 32	31.4	274.3	4.9		42.3	270	4565	17 16 05
17 21 11	J1606+2717	21 18 09	28.7	278.0	5.2		42.0	13	4565	17 21 11
17 23 11	=1604+274	21 20 10	28.4	278.4	5.2		41.9	120	4581	17 21 12
17 30 34	3C454.3	21 27 34	49.4	146.8	-1.5		-20.0	163	4581	17 30 34
17 35 04	---	21 32 05	49.7	148.4	-1.4		-19.1	270	4615	17 30 35
17 42 36	J1606+2717	21 39 38	25.5	282.1	5.5		41.3	171	4615	17 42 36
17 44 36	=1604+274	21 41 38	25.2	282.4	5.6		41.3	120	4631	17 42 37
17 45 06	J1614	21 42 08	27.0	281.9	5.5		41.8	9	4631	17 45 06
17 49 36	---	21 46 39	26.4	282.7	5.5		41.7	270	4665	17 45 07
17 50 06	J1606+2717	21 47 09	24.4	283.4	5.7		41.1	9	4665	17 50 06
17 52 06	=1604+274	21 49 09	24.1	283.8	5.7		41.0	120	4681	17 50 07
17 52 41	J1625	21 49 45	26.6	280.4	5.4		41.6	12	4681	17 52 41
17 57 11	---	21 54 16	26.0	281.2	5.5		41.4	270	4715	17 52 42
17 57 47	J1606+2717	21 54 52	23.3	284.9	5.8		40.8	12	4715	17 57 47
17 59 47	=1604+274	21 56 52	23.0	285.2	5.8		40.7	120	4731	17 57 48
18 14 14	J1017+6116	22 11 21	24.3	359.1	11.9		1.2	707	4731	18 14 14
18 16 14	=1014+615	22 13 21	24.3	359.3	11.9		0.8	120	4746	18 14 15

Schedule for TORUN (Code Tr)

Page 15

X-Shaped Radio Galaxies

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	1 Nov 2015	Day 305	---							
18 16 44	J1015	22 13 51	22.8	359.6	12.0		0.5	11	4746	18 16 44
18 21 14	---	22 18 22	22.8	360.2	-12.0		-0.3	270	4781	18 16 45
18 21 44	J1017+6116	22 18 52	24.3	360.1	-12.0		-0.1	11	4781	18 21 44
18 23 44	=1014+615	22 20 52	24.3	360.3	-12.0		-0.4	120	4796	18 21 45
18 28 46	J1606+2717	22 25 55	18.9	290.5	6.3		39.2	147	4796	18 28 46
18 30 46	=1604+274	22 27 56	18.6	290.9	6.3		39.1	120	4812	18 28 47
18 31 16	J1614	22 28 26	20.4	290.3	6.2		39.7	10	4812	18 31 16
18 35 46	---	22 32 57	19.7	291.1	6.3		39.5	270	4846	18 31 17
18 36 16	J1606+2717	22 33 27	17.8	291.9	6.4		38.8	9	4846	18 36 16
18 38 16	=1604+274	22 35 27	17.5	292.3	6.5		38.7	120	4862	18 36 17
18 38 51	J1625	22 36 02	19.9	288.9	6.2		39.7	12	4862	18 38 51
18 43 21	---	22 40 33	19.3	289.7	6.2		39.4	270	4896	18 38 52
18 43 56	J1606+2717	22 41 08	16.8	293.3	6.6		38.3	12	4896	18 43 56
18 45 56	=1604+274	22 43 08	16.5	293.7	6.6		38.2	120	4912	18 43 57
19 01 31	J1017+6116	22 58 46	24.6	365.3	-11.3		-6.6	780	4912	19 01 31
19 03 31	=1014+615	23 00 46	24.6	365.6	-11.3		-7.0	120	4927	19 01 32
19 04 01	J1015	23 01 16	23.1	366.1	-11.3		-7.2	11	4927	19 04 01
19 08 31	---	23 05 47	23.2	366.7	-11.2		-8.0	270	4962	19 04 02
19 09 01	J1017+6116	23 06 17	24.7	366.3	-11.2		-7.9	11	4962	19 09 01
19 11 01	=1014+615	23 08 17	24.7	366.6	-11.2		-8.2	120	4977	19 09 02
19 21 01	3C454.3	23 18 19	52.9	189.4	0.4		5.9	228	4977	19 21 01
19 25 31	---	23 22 50	52.7	191.2	0.5		7.0	270	5012	19 21 02
19 35 15	J1017+6116	23 32 35	25.2	369.7	-10.8		-12.2	212	5012	19 35 15
19 37 15	=1014+615	23 34 35	25.3	370.0	-10.7		-12.5	120	5027	19 35 16
19 37 45	J1015	23 35 05	23.9	370.7	-10.7		-12.7	11	5027	19 37 45
19 42 15	---	23 39 36	24.0	371.3	-10.6		-13.4	270	5062	19 37 46
19 42 45	J1017+6116	23 40 06	25.4	370.7	-10.6		-13.4	11	5062	19 42 45
19 44 45	=1014+615	23 42 07	25.5	371.0	-10.6		-13.7	120	5077	19 42 46
19 45 15	J1015	23 42 37	24.1	371.7	-10.6		-13.9	11	5077	19 45 15
19 49 45	---	23 47 07	24.2	372.3	-10.5		-14.7	270	5112	19 45 16

Schedule for TORUN (Code Tr)

Page 16

X-Shaped Radio Galaxies

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	1 Nov 2015	Day 305	---							
19 50 15	J1017+6116	23 47 37	25.7	371.7	-10.5		-14.6	11	5112	19 50 15
19 52 15	=1014+615	23 49 38	25.7	372.0	-10.5		-15.0	120	5127	19 50 16
19 52 45	J1015	23 50 08	24.3	372.7	-10.4		-15.1	11	5127	19 52 45
19 57 15	---	23 54 39	24.5	373.3	-10.4		-15.9	270	5162	19 52 46
19 57 45	J1017+6116	23 55 09	25.9	372.7	-10.4		-15.9	11	5162	19 57 45
19 59 45	=1014+615	23 57 09	26.0	372.9	-10.4		-16.2	120	5177	19 57 46
20 00 15	J1015	23 57 39	24.6	373.7	-10.3		-16.3	11	5177	20 00 15
20 04 45	---	00 02 10	24.7	374.3	-10.2		-17.1	270	5212	20 00 16
20 05 15	J1017+6116	00 02 40	26.1	373.6	-10.3		-17.1	11	5212	20 05 15
20 07 15	=1014+615	00 04 40	26.2	373.9	-10.2		-17.4	120	5227	20 05 16
20 07 45	J1015	00 05 10	24.8	374.7	-10.2		-17.6	11	5227	20 07 45
20 12 15	---	00 09 41	25.0	375.3	-10.1		-18.3	270	5262	20 07 46
20 12 45	J1017+6116	00 10 11	26.4	374.6	-10.1		-18.3	11	5262	20 12 45
20 14 45	=1014+615	00 12 12	26.5	374.9	-10.1		-18.6	120	5277	20 12 46
20 15 15	J1015	00 12 42	25.1	375.7	-10.1		-18.8	11	5277	20 15 15
20 19 45	---	00 17 12	25.3	376.3	-10.0		-19.5	270	5312	20 15 16
20 20 15	J1017+6116	00 17 42	26.7	375.6	-10.0		-19.5	11	5312	20 20 15
20 22 15	=1014+615	00 19 43	26.8	375.8	-10.0		-19.8	120	5327	20 20 16
20 22 45	J1015	00 20 13	25.5	376.7	-9.9		-20.0	12	5327	20 22 45
20 27 15	---	00 24 44	25.7	377.3	-9.9		-20.7	270	5362	20 22 46
20 27 45	J1017+6116	00 25 14	27.0	376.5	-9.9		-20.7	12	5362	20 27 45
20 29 45	=1014+615	00 27 14	27.1	376.8	-9.9		-21.1	120	5377	20 27 46
20 30 15	J1015	00 27 44	25.8	377.7	-9.8		-21.1	12	5377	20 30 15
20 34 45	---	00 32 15	26.0	378.3	-9.7		-21.9	270	5412	20 30 16
20 35 15	J1017+6116	00 32 45	27.4	377.5	-9.8		-22.0	12	5412	20 35 15
20 37 15	=1014+615	00 34 45	27.4	377.7	-9.7		-22.3	120	5427	20 35 16
20 37 45	J1015	00 35 15	26.1	378.6	-9.7		-22.3	12	5427	20 37 45
20 42 15	---	00 39 46	26.4	379.2	-9.6		-23.1	270	5462	20 37 46
20 42 45	J1017+6116	00 40 16	27.7	378.4	-9.6		-23.2	12	5462	20 42 45
20 44 45	=1014+615	00 42 16	27.8	378.7	-9.6		-23.5	120	5477	20 42 46

Schedule for TORUN (Code Tr)

Page 17

X-Shaped Radio Galaxies

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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	1 Nov 2015	Day 305 ---								
20 45 15	J1015	00 42 47	26.5	379.6	-9.6		-23.5	12	5477	20 45 15
20 49 45	---	00 47 17	26.7	380.2	-9.5		-24.2	270	5512	20 45 16
20 50 15	J1017+6116	00 47 47	28.1	379.3	-9.5		-24.4	12	5512	20 50 15
20 52 15	=1014+615	00 49 48	28.2	379.6	-9.5		-24.7	120	5527	20 50 16
21 01 46	3C84	00 59 20	63.7	101.6	-2.4		-51.8	0	5527	21 01 46
21 14 46	---	01 12 22	65.6	105.2	-2.1		-50.8	780	5627	21 01 47

SETUP FILE INFORMATION:

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

===== Setup file: sess315.C1024

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

Disk used to record data.

1st L0=	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: 6 Setup file default. Used with PCAL = off

L0 sum=	4942.49	4942.49	4942.49	4942.49	4974.49	4974.49	4974.49	4974.49
	5006.49	5006.49	5006.49	5006.49	5038.49	5038.49	5038.49	5038.49
BBC fr=	742.49	742.49	742.49	742.49	774.49	774.49	774.49	774.49
	806.49	806.49	806.49	806.49	838.49	838.49	838.49	838.49
Bandwd=	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00

Matching frequency sets: 6 14

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)		
* J1008	10 05 37.392918	* 10 08 11.487490	10 08 59.676075	0.00
	00 44 42.34388	* 00 29 59.80040	00 25 21.80150	0.00
* J1015	10 12 16.038168	* 10 15 41.149970	10 16 43.587288	0.00
	59 59 41.83961	* 59 44 45.28990	59 39 44.14365	0.00
* J1043	10 40 31.127033	* 10 43 18.639442	10 44 10.324326	0.00
	31 46 50.55491	* 31 31 06.20794	31 26 00.48582	0.00
* J1327	13 25 03.557342	* 13 27 38.152000	13 28 25.801958	0.00
	-01 47 37.85564	*-02 03 09.68000	-02 07 53.10262	0.00
* J1406	14 03 32.859735	* 14 06 02.338690	14 06 48.210078	0.00
	07 11 31.83645	* 06 57 14.70240	06 52 55.86534	0.00
* J1408	14 05 56.185938	* 14 08 28.391860	14 09 15.182489	0.00
	02 40 01.94005	* 02 25 50.29030	02 21 33.63933	0.00
* J1606	16 03 39.239632	* 16 06 12.945720	16 07 00.298233	0.00
	00 08 30.77747	* 00 00 28.54250	-00 01 47.25799	0.00
* J1614	16 12 26.849375	* 16 14 28.406430	16 15 05.283889	0.00
	28 25 00.21121	* 28 17 31.07690	28 15 28.21293	0.00
* J1625	16 23 28.241808	* 16 25 30.695410	16 26 07.920859	0.00
	27 12 31.81859	* 27 05 46.29290	27 03 57.76520	0.00
* 3C84	03 16 29.567263	* 03 19 48.160094	03 20 53.157693	1.30
J0319+4130	41 19 51.91701	* 41 30 42.10413	41 34 00.96742	2.69
* 0J287	08 51 57.250615	* 08 54 48.874926	08 55 42.804002	0.00
J0854+2006	20 17 58.41743	* 20 06 30.64088	20 02 44.04225	0.00
1008+013	10 08 41.222919	* 10 11 15.639207	10 12 03.906044	0.19
* J1011+0106	01 21 31.32544	* 01 06 42.51264	01 02 02.47251	0.40
1014+615	10 13 58.293035	* 10 17 25.887560	10 18 28.942968	0.04
* J1017+6116	61 31 27.38297	* 61 16 27.49661	61 11 25.02871	0.02
3C273B	12 26 33.245833	* 12 29 06.699729	12 29 54.074094	1.05
J1229+0203	02 19 43.30578	* 02 03 08.59828	01 58 01.81496	1.37
* 3C273	/home/guest/rmc/SCHED/sched11.4/catalogs/sources.gsfc			
1328-034	13 28 53.798583	* 13 31 29.161457	13 32 17.065891	0.16
* J1331-0341	-03 25 48.59441	*-03 41 14.11400	-03 45 55.19965	0.31
1407+022	14 07 32.231494	* 14 10 04.655975	14 10 51.519101	0.07
* J1410+0203	02 17 14.85098	* 02 03 06.91262	01 58 51.53288	0.17
1408+077	14 08 06.095468	* 14 10 35.075358	14 11 20.778373	0.24
* J1410+0731	07 45 28.14690	* 07 31 21.48920	07 27 06.15856	0.44
1555+001	15 55 17.692621	* 15 57 51.433973	15 58 38.783730	0.01
* J1557-0001	00 06 43.53290	*-00 01 50.41371	-00 04 16.44219	0.02
1604+274	16 04 54.881876	* 16 06 58.300347	16 07 35.758139	0.32
* J1606+2717	27 25 03.85151	* 27 17 05.58303	27 14 53.03664	0.50
* 3C454.3	22 51 29.519738	* 22 53 57.747938	22 54 45.489670	0.67
J2253+1608	15 52 54.34810	* 16 08 53.56093	16 14 10.62376	0.70

Contents

Graphical Plan of Experiments in Oct 2015	1
Experiment Listing	3
rk12cktr – RadioAstron AGN Survey	5
rk12cmtr – RadioAstron AGN Survey	7
rk12cntr – RadioAstron AGN Survey	9
rk12cotr – RadioAstron AGN Survey	11
rk12cptr – RadioAstron AGN Survey	13
rk12cqtr – RadioAstron AGN Survey	15
em118btr – e-EVN: em118b, ec054b, eg082f	17
rk12cttr – RadioAstron AGN Survey	52
rk12cutr – RadioAstron AGN Survey	54
ga037btr – Maser imaging	56
rk12cvtr – RadioAstron AGN Survey	77
rk12cxtr – RadioAstron AGN Survey	80
rk12cztr – RadioAstron AGN Survey	83
rk12datr – RadioAstron AGN Survey	85
rk12dbtr – RadioAstron AGN Survey	88
rk12dctr – RadioAstron AGN Survey	90
rk12ddtr – RadioAstron AGN Survey	92
rk12detr – RadioAstron AGN Survey	94
rk12dftr – RadioAstron AGN Survey	96
rk12dgtr – RadioAstron AGN Survey	98
n15l3tr – Network Monitoring Experiment	100
rk12dhtr – RadioAstron AGN Survey	103
ea057atr – GPS Satellite Observations: Frequency Setup Tests	105
eg089atr – RadioAstron Imaging of high-redshift quasars	112
ey023tr – EVN 1.6GHz Observations of Changing-look AGN Mrk 590	117
eh032atr – Observations of the core of the giant radio galaxy J145049+100649 ..	143
ea055btr – EA055b - NGC660 HI	150
rsf08tr – Binary SMBH candidate J2216+0124	160
ek036atr – Long overdue - Measuring the Parallax and proper motion of the Crab	164
rk12djtr – RadioAstron AGN Survey	167
eh028dtr – Parallax Measurement to 1.6GHz OH Masers in OH/IR star OH 138.0+7.4	169
rk12dktr – RadioAstron AGN Survey	177
rk12dltr – RadioAstron AGN Survey	179
f15m1tr – Network Monitoring Experiment	181
es072ntr – 6.7GHz CH3OH maser polarization towards massive protostars. II. .	183
rk12dmtr – RadioAstron AGN Survey	187
rk12dntr – RadioAstron AGN Survey	189
rk12dotr – RadioAstron AGN Survey	191
n15m2tr – Network Monitoring Experiment	193
es072otr – 6.7GHz CH3OH maser polarization towards massive protostars. II. .	200
rk12dptr – RadioAstron AGN Survey	204
es072ptr – 6.7GHz CH3OH maser polarization towards massive protostars. II. .	206
rk12drtr – RadioAstron AGN Survey	210
eg073btr – How do O-type forming stars accrete their mass?	212
rk12dstr – RadioAstron AGN Survey	224
rk12dttr – RadioAstron AGN Survey	226
rk12dutr – RadioAstron AGN Survey	228
rk12dvtr – RadioAstron AGN Survey	230
rk12dwtr – RadioAstron AGN Survey	232
rk12dxtr – RadioAstron AGN Survey	234
n15c3tr – Network Monitoring Experiment	236

ew017atr	– VLBI observations of UHBLs at 5 GHz	239
eh032btr	– Observations of the core of the giant radio galaxy J145049+100649 .	257
rk12dztr	– RadioAstron AGN Survey	264
rk12eatr	– RadioAstron AGN Survey	266
rk12ebtr	– RadioAstron AGN Survey	268
ew017btr	– VLBI observations of UHBLs at 5 GHz	271
rk12ectr	– RadioAstron AGN Survey	290
gm073atr	– Gravitational lensing by low-mass dark matter haloes	292
rk12edtr	– RadioAstron AGN Survey	312
er038tr	– X-Shaped Radio Galaxies	314