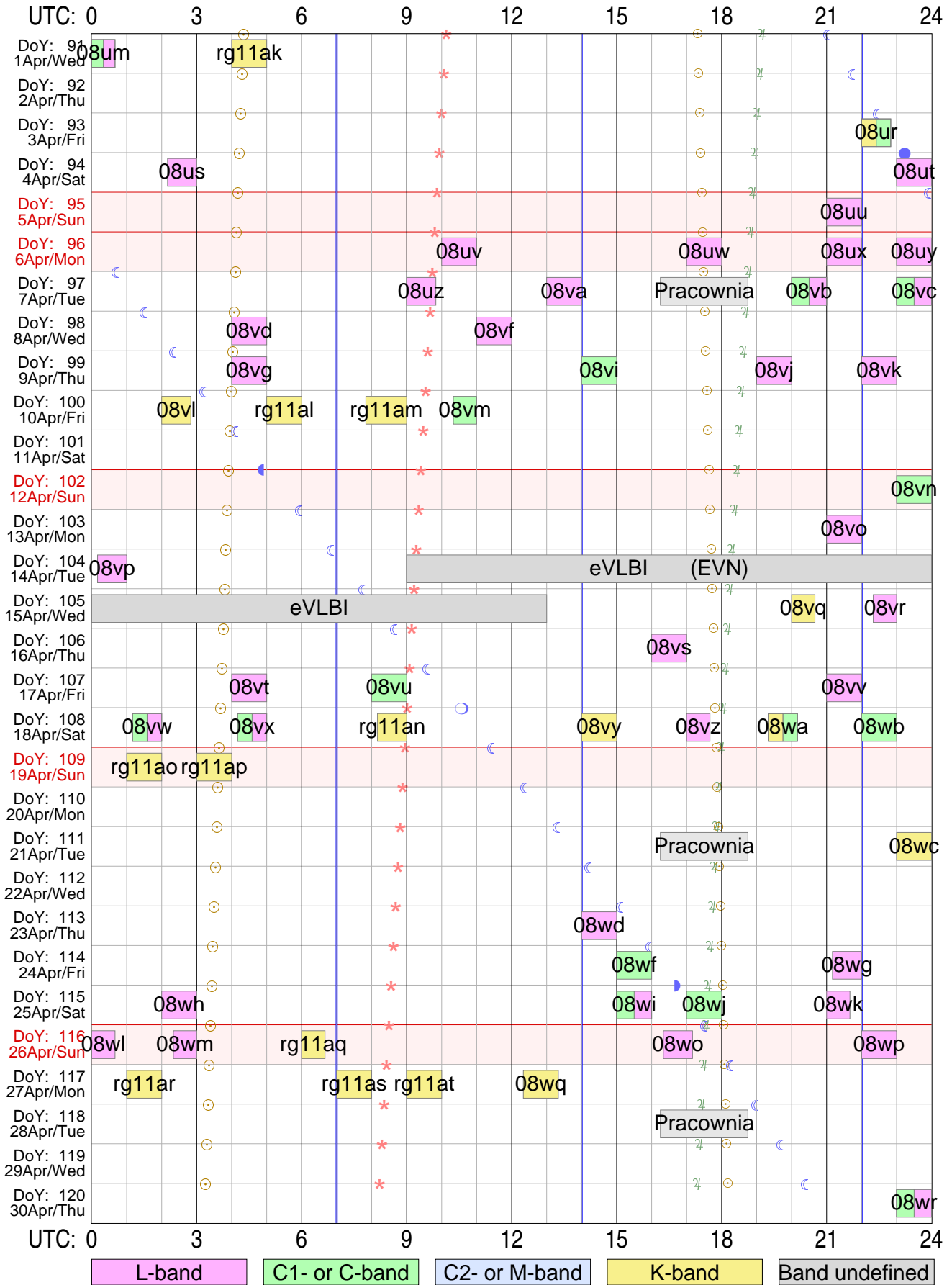


Tr VLBI plan for Apr 2015



Version: 2015.03.27

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: 83.3 hours in 61 experiments scheduled

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

Strona zostawiona celowo pusta

RadioAstron & EVN Experiments

Apr 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

DoY	D	M	WD	UT_Start	UT_Stop	Experiment	Band	Correlator
				h m	h m	name		
91	1	04	Sro	0 00	0 40	rk08um C>L		
91	1	04	Sro	4 00	5 00	rg11ak K		
93	3	04	Pia	22 00	22 50	rk08ur K>C		
94	4	04	Sob	2 10	3 00	rk08us L		
94	4	04	Sob	23 00	24 00	rk08ut L		
95	5	04	Nie	21 00	22 00	rk08uu L		
96	6	04	Pon	10 00	11 00	rk08uv L		
96	6	04	Pon	17 00	18 00	rk08uw L		
96	6	04	Pon	21 00	22 00	rk08ux L		
96	6	04	Pon	23 00	24 00	rk08uy L		
97	7	04	Wto	9 00	9 50	rk08uz L		
97	7	04	Wto	13 00	14 00	rk08va L		
97	7	04	Wto	20 00	21 00	rk08vb C>L		
97	7	04	Wto	23 00	24 00	rk08vc C>L		
98	8	04	Sro	4 00	5 00	rk08vd L		
98	8	04	Sro	11 00	12 00	rk08vf L		
99	9	04	Czw	4 00	5 00	rk08vg L		
99	9	04	Czw	14 00	15 00	rk08vi C		
99	9	04	Czw	19 00	20 00	rk08vj L		
99	9	04	Czw	22 00	23 00	rk08vk L		
100	10	04	Pia	2 00	2 50	rk08vl K		
100	10	04	Pia	5 00	6 00	rg11al K		
100	10	04	Pia	7 50	9 00	rg11am K		
100	10	04	Pia	10 20	11 00	rk08vm C		
102	12	04	Nie	23 00	24 00	rk08vn C		
103	13	04	Pon	21 00	22 00	rk08vo L		
104	14	04	Wto	0 10	1 00	rk08vp L		
104	14	04	Wto	9 00	11 30	ep096a L eEVN		
105	15	04	Sro	20 00	20 40	rk08vq K		
105	15	04	Sro	22 20	23 00	rk08vr L		
106	16	04	Czw	16 00	17 00	rk08vs L		
107	17	04	Pia	4 00	5 00	rk08vt L		
107	17	04	Pia	8 00	9 00	rk08vu C		
107	17	04	Pia	21 00	22 00	rk08vv L		
108	18	04	Sob	1 10	2 00	rk08vw C>L		
108	18	04	Sob	4 10	5 00	rk08vx C>L		
108	18	04	Sob	8 10	9 00	rg11an K		
108	18	04	Sob	14 00	15 00	rk08vy K		
108	18	04	Sob	17 00	17 40	rk08vz L		
108	18	04	Sob	19 20	20 10	rk08wa K>C		

108	18	04	Sob	22	00	23	00	rk08wb	C
109	19	04	Nie	1	00	2	00	rg11ao	K
109	19	04	Nie	3	00	4	00	rg11ap	K
111	21	04	Wto	23	00	24	00	rk08wc	K
113	23	04	Czw	14	00	15	00	rk08wd	L
114	24	04	Pia	15	00	16	00	rk08wf	C
114	24	04	Pia	21	10	22	00	rk08wg	L
115	25	04	Sob	2	00	3	00	rk08wh	L
115	25	04	Sob	15	00	16	00	rk08wi	C>L
115	25	04	Sob	17	00	18	00	rk08wj	C
115	25	04	Sob	21	00	21	40	rk08wk	L
116	26	04	Nie	0	00	0	40	rk08wl	L
116	26	04	Nie	2	20	3	00	rk08wm	L
116	26	04	Nie	6	00	6	40	rg11aq	K
116	26	04	Nie	16	20	17	10	rk08wo	L
116	26	04	Nie	22	00	23	00	rk08wp	L
117	27	04	Pon	1	00	2	00	rg11ar	K
117	27	04	Pon	7	00	8	00	rg11as	K
117	27	04	Pon	9	00	10	00	rg11at	K
117	27	04	Pon	12	20	13	20	rk08wq	K
120	30	04	Czw	23	00	24	00	rk08wr	C>L

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

<http://paulo.astro.uni.torun.pl/~pw/VLBI/schedules/apr15.pdf>

rk08umtr

RADIOASTRON AGN SURVEY

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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
-----
```

--- Wed 1 Apr 2015 Day 91 ---

----- 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 1639-062        13 50 24 20.3 133.6 -2.9        -25.9    0        0    00 00 00
00 15 00 ---                14 05 27 21.9 137.2 -2.6        -24.2   900       29   00 00 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
```

```
00 20 00 1639-062        14 10 28 22.4 138.5 -2.5        -23.6   293       29   00 20 00
00 40 00 ---                14 30 31 24.3 143.5 -2.2        -21.1 1200       67   00 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:        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:  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)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 1639-062	16 39 21.443869	* 16 42 02.177715	16 42 52.044543	0.00
J1642-0621	-06 15 43.81949	*-06 21 23.69513	-06 23 03.58992	0.00

rg11aktr

RADIOASTRON MASER OBSERVATIONS

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Observing mode: K-band, dual-pol

Schedule for TORUN (Code Tr) Page 2

RadioAstron Maser observations

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

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

--- Wed 1 Apr 2015 Day 91 ---

----- This is a fringe finder/clock offset calibrator 15.4 deg. from IRAS1811 -----

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 52 00	1730-130	17 43 03	23.8	182.4	0.2		1.5	0	0	03 52 00
03 57 00	---	17 48 03	23.7	183.8	0.2		2.3	300	10	03 52 01

----- Please, make sure PCAL is OFF for IRAS1811 maser observations. -----

04 00 00	IRAS1811	17 51 04	11.7	174.4	-0.4		-3.7	121	10	04 00 00
04 19 30	---	18 10 37	11.9	178.9	-0.1		-0.7	1170	47	04 00 01
04 20 00	IRAS1811	18 11 07	11.9	179.0	-0.1		-0.7	24	47	04 20 00
04 39 30	---	18 30 40	11.8	183.5	0.3		2.3	1170	84	04 20 01
04 40 00	IRAS1811	18 31 10	11.8	183.7	0.3		2.4	24	84	04 40 00
05 00 00	---	18 51 14	11.5	188.3	0.6		5.5	1200	123	04 40 01

SETUP FILE INFORMATION:

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

=====
Setup file: ra1cm2.set

Matching groups in ./rg11ak_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 = 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:  2

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error
	(B1950)	(J2000)		(mas)
* IRAS1811	18 11 21.765772	* 18 14 26.740000	18 15 23.487040	0.00
IRAS18113-25	-25 03 51.20060	*-25 02 54.80000	-25 02 25.65764	0.00
* 1730-130	17 30 13.535189	* 17 33 02.705787	17 33 54.888286	0.00
J1733-1304	-13 02 45.83991	*-13 04 49.54838	-13 05 20.19970	0.00

rk08urtr

RADIOASTRON AGN SURVEY

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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

--- Fri 3 Apr 2015 Day 93 ---

----- 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	0851+202	12 01 54	41.5	245.5	3.1	35.6	0	0	22 00 00
22 12 00	---	12 13 56	39.8	248.5	3.3	36.5	720	23	22 00 01
22 12 30	0851+202	12 14 26	39.7	248.6	3.3	36.5	24	23	22 12 30
22 20 00	---	12 21 58	38.7	250.5	3.4	37.0	450	37	22 12 31

----- 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 25 00	0851+202	12 26 59	38.0	251.7	3.5	37.4	293	37	22 25 00
22 37 00	---	12 39 01	36.2	254.5	3.7	38.0	720	60	22 25 01
22 37 30	0851+202	12 39 31	36.2	254.6	3.7	38.0	24	60	22 37 30
22 50 00	---	12 52 03	34.3	257.4	3.9	38.6	750	84	22 37 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

Matching groups in ./rk08ur_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:  4  Setup file default.  Used with PCAL = 1MHz
LO sum= 22236.00 22236.00 22236.00 22236.00
BBC fr=  736.00  736.00  736.00  736.00
Bandwd=  16.00  16.00  16.00  16.00
Matching frequency sets:  4

```

Track assignments are:

```

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

```

==== 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:  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) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 0851+202	08 51 57.250618	* 08 54 48.874930	08 55 41.848413	0.00
J0854+2006	20 17 58.41733	* 20 06 30.64078	20 02 50.28920	0.00


```

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)	(Date)	Error (mas)
* FAKERA	11 57 21.769299 * 12 00 00.000000	12 00 54.021285	0.00
	85 16 41.77889 * 85 00 00.000000	84 54 57.17245	0.00
	fake circumpolar target for a TS to look at		
* 1327+321	13 27 34.876201 * 13 29 52.864906	13 30 36.184074	0.00
J1329+3154	32 09 38.80938 * 31 54 11.05448	31 49 22.91678	0.00
	./rk08us_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 617 observations, 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)
1327+321    141.5

```

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

```

rk08uttr

RADIOASTRON AGN SURVEY

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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

--- Sat 4 Apr 2015 Day 94 ---

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

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

23 00 00	1442+101	13 06 01	42.4	145.7	-1.7	-20.1	0	0	23 00 00
23 14 30	---	13 20 33	43.5	150.3	-1.4	-17.6	870	28	23 00 01
23 15 00	1442+101	13 21 03	43.5	150.5	-1.4	-17.5	24	28	23 15 00
23 29 30	---	13 35 36	44.5	155.3	-1.2	-14.8	870	56	23 15 01
23 30 00	1442+101	13 36 06	44.6	155.4	-1.2	-14.7	24	56	23 30 00
23 44 30	---	13 50 38	45.4	160.4	-0.9	-11.8	870	84	23 30 01
23 45 00	1442+101	13 51 08	45.4	160.6	-0.9	-11.7	24	84	23 45 00
23 59 59	---	14 06 11	46.1	165.8	-0.7	-8.6	899	112	23 45 01

SETUP FILE INFORMATION:

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

===== Setup file: ra18cm2.set

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

Disk used to record data.

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

The following frequency sets based on these setups were used.

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

Track assignments are:

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

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.952194	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 57.46704	0.00
	fake circumpolar target for a TS to look at			
* 1442+101	14 42 50.483804	* 14 45 16.465253	14 46 02.220943	0.00
J1445+0958	10 11 12.14439	* 09 58 36.07265	09 54 42.51993	0.00
QQ172	./rk08ut_sources.radioastron			
	AGN, HIGHz, rfc_2013d Petrov, 2013, unpublished 1336 observations, RA-A02-03, 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)
1442+101	148.1

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

rk08uutr

RADIOASTRON AGN SURVEY

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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

--- Sun 5 Apr 2015 Day 95 ---

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

Table with columns: Time, Source, LST, EL, AZ, HA, UP, ParA, Dwell, Disk, GBytes, SYNC. Rows include scan frequencies and detailed scan data for 1547+507.

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)	(Date)	Error (mas)	
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.870958	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 57.76911	0.00
	fake circumpolar target for a TS to look at			
* 1547+507	15 47 52.271615	* 15 49 17.468556	15 49 44.664826	0.00
J1549+5038	50 47 09.25434	* 50 38 05.78805	50 35 13.06866	0.00
	./rk08uu_sources.radioastron AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 1541 observations, 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)
1547+507	112.3

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

rk08uvtr

RADIOASTRON AGN SURVEY

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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

--- Mon 6 Apr 2015 Day 96 ---

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

Table with 11 columns: Start UT, Stop UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. It lists scan frequencies, BBC frequencies, and bandwidths, followed by a detailed scan schedule for 1636+473.

SETUP FILE INFORMATION:

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

==== Setup file: ra18cm2.set

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

Disk used to record data.

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

The following frequency sets based on these setups were used.

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

Track assignments are:

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

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.819974	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 57.94237	0.00
	fake circumpolar target for a TS to look at			
* 1636+473	16 36 19.144415	* 16 37 45.130558	16 38 12.353663	0.00
J1637+4717	47 23 28.57983	* 47 17 33.83103	47 15 38.08753	0.00
	./rk08uv_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 4851 observations, 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)
1636+473	108.0

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

For common VLBI bands, this is:

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

rk08uwtr

RADIOASTRON AGN SURVEY

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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 6 Apr 2015 Day 96 ---

----- 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

17 00 00	1156+295	07 12 55	33.6	84.8	-4.8	-43.2	0	0	17 00 00
17 14 30	---	07 27 27	35.7	87.6	-4.5	-43.4	870	28	17 00 01
17 15 00	1156+295	07 27 57	35.8	87.7	-4.5	-43.4	24	28	17 15 00
17 29 30	---	07 42 30	38.0	90.6	-4.3	-43.4	870	56	17 15 01
17 30 00	1156+295	07 43 00	38.1	90.7	-4.3	-43.4	24	56	17 30 00
17 44 30	---	07 57 32	40.3	93.7	-4.0	-43.3	870	84	17 30 01
17 45 00	1156+295	07 58 02	40.3	93.8	-4.0	-43.3	24	84	17 45 00
18 00 00	---	08 13 05	42.6	97.0	-3.8	-43.0	900	112	17 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: 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 53.791898	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 58.03385	0.00
	fake circumpolar target for a TS to look at			
* 1156+295	11 56 57.786212	* 11 59 31.833913	12 00 19.957792	0.00
J1159+2914	29 31 25.73868	* 29 14 43.82678	29 09 32.93946	0.00
	./rk08uw_sources.radioastron AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 70591 observations, 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)
1156+295	141.4

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

rk08uxtr

RADIOASTRON AGN SURVEY
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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

--- Mon 6 Apr 2015 Day 96 ---

----- 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	1357+769	11 13 34	61.9	18.8	-2.7	-122.9	0	0	21 00 00	
21 14 30	---	11 28 07	62.6	17.8	-2.5	-127.4	870	28	21 00 01	
21 15 00	1357+769	11 28 37	62.7	17.8	-2.5	-127.5	25	28	21 15 00	
21 29 30	---	11 43 09	63.3	16.6	-2.2	-132.1	870	56	21 15 01	
21 30 00	1357+769	11 43 39	63.3	16.5	-2.2	-132.3	25	56	21 30 00	
21 44 30	---	11 58 12	63.9	15.2	-2.0	-137.0	870	84	21 30 01	
21 45 00	1357+769	11 58 42	63.9	15.2	-2.0	-137.2	24	84	21 45 00	
22 00 00	---	12 13 44	64.5	13.6	-1.7	-142.2	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:	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 53.775715	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 58.08553	0.00
	fake circumpolar target for a TS to look at			
* 1357+769	13 57 42.117007	* 13 57 55.371538	13 58 03.108571	0.00
J1357+7643	76 57 53.35418	* 76 43 21.05098	76 38 52.57875	0.00
	./rk08ux_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 226762 observations, 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)
1357+769        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 $60 \text{ deg } F^{-0.6}$ 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

```

rk08uytr

RADIOASTRON AGN SURVEY

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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 6 Apr 2015 Day 96 ---

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

Next scan frequencies:	1668.00	1668.00	1668.00	1668.00						
Next BBC frequencies:	732.00	732.00	732.00	732.00						
Next scan bandwidths:	16.00	16.00	16.00	16.00						
23 00 00	1502+036	13 13 54	35.2	145.0	-1.9		-20.2	0	0	23 00 00
23 14 30	---	13 28 26	36.4	149.2	-1.6		-17.9	870	28	23 00 01
23 15 00	1502+036	13 28 56	36.4	149.4	-1.6		-17.8	24	28	23 15 00
23 29 30	---	13 43 29	37.5	153.7	-1.4		-15.4	870	56	23 15 01
23 30 00	1502+036	13 43 59	37.5	153.9	-1.4		-15.4	24	56	23 30 00
23 44 30	---	13 58 31	38.4	158.3	-1.1		-12.8	870	84	23 30 01
23 45 00	1502+036	13 59 01	38.4	158.5	-1.1		-12.7	24	84	23 45 00
23 59 59	---	14 14 04	39.2	163.2	-0.9		-10.0	899	112	23 45 01

SETUP FILE INFORMATION:

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

==== Setup file: ra18cm2.set

Setup group: 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 53.767594	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 58.11120	0.00
	fake circumpolar target for a TS to look at			
* 1502+036	15 02 35.669002	* 15 05 06.477156	15 05 53.735131	0.00
J1505+0326	03 38 07.37337	* 03 26 30.81249	03 22 57.10905	0.00
	./rk08uy_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 5451 observations, 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)
1502+036    147.5

```

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

```


rk08uztr

RADIOASTRON AGN SURVEY

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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

--- Tue 7 Apr 2015 Day 97 ---

----- 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							
09 00 00	1758+388	23 15 33	36.4	-71.6	5.2		47.0	0	0	09 00 00	
09 12 00	---	23 27 35	34.7	-69.7	5.4		46.3	720	23	09 00 01	
09 12 30	1758+388	23 28 05	34.6	-69.6	5.5		46.2	24	23	09 12 30	
09 24 30	---	23 40 07	32.9	-67.6	5.7		45.4	720	46	09 12 31	
09 25 00	1758+388	23 40 37	32.9	-67.5	5.7		45.4	24	46	09 25 00	
09 37 00	---	23 52 39	31.2	-65.6	5.9		44.6	720	69	09 25 01	
09 37 30	1758+388	23 53 09	31.1	-65.5	5.9		44.5	24	69	09 37 30	
09 50 00	---	00 05 41	29.4	-63.5	6.1		43.6	750	93	09 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 53.726973	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 58.23739	0.00
	fake circumpolar target for a TS to look at			
* 1758+388	17 58 44.703952	* 18 00 24.765361	18 00 55.869143	0.00
J1800+3848	38 48 32.47341	* 38 48 30.69739	38 48 22.89161	0.00
	./rk08uz_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 3569 observations, 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)
1758+388	97.8

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

rk08vatr

RADIOASTRON AGN SURVEY

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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.

Table with columns: Start UT, Source, Stop UT, LST, EL, AZ, HA, UP, ParA, Early Dwell, Disk GBytes, TPStart SYNC. Includes scan data for 0749+426 on 2015-04-07.

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 53.710448	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 58.28781	0.00
	fake circumpolar target for a TS to look at			
* 0749+426	07 49 35.292496	* 07 53 03.337499	07 54 06.954141	0.00
J0753+4231	42 39 18.53136	* 42 31 30.76523	42 29 04.03053	0.00
	./rk08va_sources.radioastron HIGHz, rfc_2013d Petrov, 2013, unpublished 80 observations, RA-A02-03			

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)
0749+426	94.5

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

rk08vbtr

RADIOASTRON AGN SURVEY
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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

--- Tue 7 Apr 2015 Day 97 ---

----- 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	1357+769	10 17 21	59.0	21.6	-3.7	-106.8	0	0	20 00 00
20 14 30	---	10 31 53	59.8	21.1	-3.4	-110.8	870	28	20 00 01
20 15 00	1357+769	10 32 23	59.8	21.0	-3.4	-111.0	25	28	20 15 00
20 25 00	---	10 42 25	60.4	20.6	-3.3	-113.8	600	47	20 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

20 30 00	1357+769	10 47 26	60.6	20.4	-3.2	-115.2	294	47	20 30 00
20 44 30	---	11 01 58	61.4	19.6	-2.9	-119.4	870	75	20 30 01
20 45 00	1357+769	11 02 28	61.4	19.5	-2.9	-119.6	25	75	20 45 00
21 00 00	---	11 17 31	62.1	18.6	-2.7	-124.1	900	104	20 45 01

SETUP FILE INFORMATION:

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

==== Setup file: ra6cm2.set

Setup group: 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

```

==== 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)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 1357+769	13 57 42.117007	* 13 57 55.371538	13 58 03.121565	0.00
J1357+7643	76 57 53.35418	* 76 43 21.05098	76 38 52.89341	0.00

rk08vctr

RADIOASTRON AGN SURVEY

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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

--- Tue 7 Apr 2015 Day 97 ---

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

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

23 00 00 1045-188 13 17 51 10.8 215.6 2.5 21.7 0 0 23 00 00
23 14 30 --- 13 32 23 9.5 218.8 2.7 23.5 870 28 23 00 01
23 15 00 1045-188 13 32 53 9.5 218.9 2.7 23.5 24 28 23 15 00
23 25 00 --- 13 42 55 8.5 221.1 2.9 24.7 600 47 23 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

23 30 00 1045-188 13 47 55 8.0 222.2 3.0 25.3 293 47 23 30 00
23 44 30 --- 14 02 28 6.5 225.3 3.2 26.9 870 75 23 30 01
23 45 00 1045-188 14 02 58 6.4 225.4 3.2 26.9 24 75 23 45 00
23 59 59 --- 14 18 00 4.8 228.5 3.5 28.5 899 104 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: 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

```

==== 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)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 1045-188	10 45 40.093264	* 10 48 06.620604	10 48 52.775661	0.00
J1048-1909	-18 53 44.08720	*-19 09 35.72683	-19 14 41.37237	0.00

rk08vdtr

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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

--- Wed 8 Apr 2015 Day 98 ---

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

Table with columns: Time, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. Rows include scan frequencies and detailed scan data for 1602-115 source.

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)	(Date)	Error (mas)	
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.650558	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 58.46749	0.00
	fake circumpolar target for a TS to look at			
* 1602-115	16 02 31.767572	* 16 05 17.531656	16 06 09.312526	0.00
J1605-1139	-11 31 20.63036	*-11 39 26.83121	-11 41 50.87344	0.00
	./rk08vd_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 1740 observations, 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)
3C286	142.0
1602-115	135.5

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

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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 LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Table with 11 columns: Start UT, Stop UT, Source, LST, Start / Stop (EL, AZ, HA, UP), ParA, Early Dwell, Disk GBytes, TPStart SYNC.

--- Wed 8 Apr 2015 Day 98 ---

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

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

Table with 11 columns: Start UT, Stop UT, Source, LST, Start / Stop (EL, AZ, HA, UP), ParA, Early Dwell, Disk GBytes, TPStart SYNC. Contains multiple rows of scan data.

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: 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= 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)	(Date)	Error (mas)	
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.622198	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 58.55155	0.00
	fake circumpolar target for a TS to look at			
* 1547+507	15 47 52.271615	* 15 49 17.468556	15 49 44.730130	0.00
J1549+5038	50 47 09.25434	* 50 38 05.78805	50 35 13.69729	0.00
	./rk08vf_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 1541 observations, 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)
1547+507    112.5

```

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

```

rk08vgtr

RADIOASTRON AGN SURVEY

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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 9 Apr 2015 Day 99 ---

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

Next scan frequencies:	1668.00	1668.00	1668.00	1668.00							
Next BBC frequencies:	732.00	732.00	732.00	732.00							
Next scan bandwidths:	16.00	16.00	16.00	16.00							
04 00 00	1602-115	18 22 36	18.9 215.5	2.3		20.9	0	0	04 00 00		
04 14 30	---	18 37 09	17.6 219.0	2.5		22.7	870	28	04 00 01		
04 15 00	1602-115	18 37 39	17.6 219.1	2.5		22.7	24	28	04 15 00		
04 29 30	---	18 52 11	16.2 222.5	2.8		24.5	870	56	04 15 01		
04 30 00	1602-115	18 52 41	16.1 222.6	2.8		24.5	24	56	04 30 00		
04 44 30	---	19 07 14	14.6 226.0	3.0		26.2	870	84	04 30 01		
04 45 00	1602-115	19 07 44	14.5 226.1	3.0		26.2	24	84	04 45 00		
05 00 00	---	19 22 46	12.9 229.4	3.3		27.8	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: 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)	(Date)	Error (mas)	
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.556198	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 58.74717	0.00
	fake circumpolar target for a TS to look at			
* 1602-115	16 02 31.767572	* 16 05 17.531656	16 06 09.338308	0.00
J1605-1139	-11 31 20.63036	*-11 39 26.83121	-11 41 50.87334	0.00
	./rk08vg_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 1740 observations, 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)
3C286	141.8
1602-115	136.5

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

rk08vitr

RADIOASTRON AGN SURVEY

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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

--- Thu 9 Apr 2015 Day 99 ---

----- 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

14 00 00	1637+574	04 24 15	20.4	-2.1	11.8		2.3	0	0	14 00 00
14 14 30	---	04 38 47	20.4	0.0-12.0			-0.0	870	28	14 00 01
14 15 00	1637+574	04 39 17	20.4	0.1-12.0			-0.1	24	28	14 15 00
14 24 30	---	04 48 49	20.4	1.5-11.8			-1.6	570	46	14 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

14 30 00	1637+574	04 54 20	20.5	2.3-11.7			-2.5	324	46	14 30 00
14 44 30	---	05 08 52	20.6	4.4-11.5			-4.9	870	74	14 30 01
14 45 00	1637+574	05 09 22	20.6	4.4-11.5			-4.9	24	74	14 45 00
15 00 00	---	05 24 25	20.8	6.6-11.2			-7.3	900	103	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: ra1cm2.set

Matching groups in ./rk08vi_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 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

```

==== 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)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 1637+574	16 37 17.425182	* 16 38 13.456297	16 38 31.839981	0.00
J1638+5720	57 26 15.76127	* 57 20 23.97898	57 18 28.89054	0.00

rk08vjtr

RADIOASTRON AGN SURVEY

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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 9 Apr 2015 Day 99 ---

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

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

SETUP FILE INFORMATION:

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

==== Setup file: 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)	(Date)	Error (mas)	
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.500020	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 58.91670	0.00
	fake circumpolar target for a TS to look at			
* 1357+769	13 57 42.117007	* 13 57 55.371538	13 58 03.148532	0.00
J1357+7643	76 57 53.35418	* 76 43 21.05098	76 38 53.49349	0.00
	./rk08vj_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 226762 observations, 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)
3C286	141.6
1357+769	95.4

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

rk08vktr

RADIOASTRON AGN SURVEY

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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

--- Thu 9 Apr 2015 Day 99 ---

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

Table with columns: Time, Source, LST, EL, AZ, HA, UP, ParA, Dwell, Disk, GBytes, TPStart, SYNC. Contains scan data for 1606+106 source.

SETUP FILE INFORMATION:

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

==== Setup file: ra18cm2.set

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

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.488666	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 58.95164	0.00
	fake circumpolar target for a TS to look at			
* 1606+106	16 06 23.396622	* 16 08 46.203185	16 09 30.846578	0.00
J1608+1029	10 36 59.80094	* 10 29 07.77564	10 26 42.95795	0.00
	./rk08vk_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 128489 observations, 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)
3C286	141.6
1606+106	132.4

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

rk08vltr

RADIOASTRON AGN SURVEY

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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

--- Fri 10 Apr 2015 Day 100 ---

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

Next scan frequencies: 22236.00 22236.00 22236.00 22236.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

02 00 00	1741-038	16 26 13	30.7	157.0	-1.3		-13.6	0	0	02 00 00
02 12 00	---	16 38 15	31.4	160.5	-1.1		-11.6	720	23	02 00 01
02 12 30	1741-038	16 38 45	31.4	160.6	-1.1		-11.5	24	23	02 12 30
02 24 30	---	16 50 47	31.9	164.1	-0.9		-9.5	720	46	02 12 31
02 25 00	1741-038	16 51 17	32.0	164.2	-0.9		-9.4	24	46	02 25 00
02 37 00	---	17 03 19	32.4	167.7	-0.7		-7.4	720	69	02 25 01
02 37 30	1741-038	17 03 49	32.4	167.9	-0.7		-7.3	24	69	02 37 30
02 50 00	---	17 16 21	32.8	171.6	-0.5		-5.1	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: ra1cm2.set

Matching groups in ./rk08vl_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:  4 Setup file default. Used with PCAL = 1MHz
LO sum= 22236.00 22236.00 22236.00 22236.00
BBC fr=  736.00  736.00  736.00  736.00
Bandwd=  16.00  16.00  16.00  16.00
Matching frequency sets:  4

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.474435	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 58.99587	0.00
	fake circumpolar target for a TS to look at			
* 1741-038	17 41 20.616010	* 17 43 58.856134	17 44 47.836005	0.00
J1743-0350	-03 48 48.90004	*-03 50 04.61684	-03 50 23.25702	0.00
	./rk08vl_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 173236 observations, 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)
3C286	141.5
1741-038	112.5

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

For common VLBI bands, this is:

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


```

1st LO= 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 = off
LO sum= 22228.00 22228.00 22228.00 22228.00
BBC fr=  728.00  728.00  728.00  728.00
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)		(Date)	Error (mas)
	(B1950)	(J2000)		
* W48_OH	18 59 13.091049	* 19 01 45.540000	19 02 32.316086	0.00
	01 09 11.13768	* 01 13 32.60000	01 14 55.18010	0.00
* 1937-101	19 37 12.649200	* 19 39 57.256582	19 40 47.474764	0.00
J1939-1002	-10 09 39.45684	*-10 02 41.52079	-10 00 27.69338	0.00

rg11amtr

RADIOASTRON MASER OBSERVATIONS

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Observing mode: K-band, dual-pol

Schedule for TORUN (Code Tr) Page 2
 RadioAstron Maser observations

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are L0 sum (band edge).
SYNC: Time correlator is expected to sync up.

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

--- Fri 10 Apr 2015 Day 100 ---

----- This is a fringe finder/clock offset calibrator 15.6 deg. from W43A_H20 -----

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

```
07 42 00 1937-101        22 09 09 19.4 219.0 2.5        22.6    0        0    07 42 00
07 47 00 ---            22 14 10 19.0 220.2 2.6        23.2   300        10   07 42 01
```

----- Please, make sure PCAL is OFF for W43A_H20 maser observations. -----

```
07 50 00 W43A_H20        22 17 11 20.1 237.2 3.5        30.3  132        10   07 50 00
08 09 30 ---            22 36 44 17.6 241.6 3.8        31.9 1170        47   07 50 01

08 10 00 W43A_H20        22 37 14 17.5 241.8 3.8        32.0    24        47   08 10 00
08 29 30 ---            22 56 47 14.9 246.0 4.1        33.3 1170        84   08 10 01

08 30 00 W43A_H20        22 57 17 14.8 246.1 4.1        33.3    24        84   08 30 00
08 49 30 ---            23 16 50 12.1 250.3 4.5        34.4 1170       122   08 30 01

08 50 00 W43A_H20        23 17 21 12.0 250.4 4.5        34.5    24       122   08 50 00
09 00 00 ---            23 27 22 10.6 252.5 4.6        35.0  600       141   08 50 01
```

SETUP FILE INFORMATION:

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

===== Setup file: ra1cm2.set

Matching groups in ./rg11am_freq.dat:
tr1cm

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

```

The following frequency sets based on these setups were used.

```

Frequency Set:  4  Setup file default.  Used with PCAL = 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:  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)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* W43A_H2O	18 45 05.342703 -01 48 33.18223	* 18 47 41.166000 *-01 45 11.70000	18 48 29.050897 -01 44 06.29006	0.00 0.00
* 1937-101 J1939-1002	19 37 12.649200 -10 09 39.45684	* 19 39 57.256582 *-10 02 41.52079	19 40 47.478693 -10 00 27.68213	0.00 0.00

rk08vmtr

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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

--- Fri 10 Apr 2015 Day 100 ---

----- 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

10 20 00	1751+288	00 47 35	15.3	-62.1	6.9		37.3	0	0	10 20 00
10 39 30	---	01 07 09	12.8	-58.6	7.2		35.8	1170	37	10 20 01
10 40 00	1751+288	01 07 39	12.7	-58.5	7.2		35.8	24	37	10 40 00
11 00 00	---	01 27 42	10.2	-54.8	7.6		34.1	1200	76	10 40 01

SETUP FILE INFORMATION:

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

===== Setup file: 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 53.444078	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 59.09213	0.00
	fake circumpolar target for a TS to look at			
* 1751+288	17 51 45.401873	* 17 53 42.473645	17 54 18.858632	0.00
J1753+2848	28 48 36.64948	* 28 48 04.93876	28 47 50.53537	0.00
	./rk08vm_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 5304 observations, 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)
1751+288    103.4

```

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

```

rk08vntr

RADIOASTRON AGN SURVEY

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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

--- Sun 12 Apr 2015 Day 102 ---

----- 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	0917+449	13 37 33	48.6	-75.0	4.3		54.6	0	0	23 00 00
23 14 30	---	13 52 06	46.5	-72.7	4.5		53.7	870	28	23 00 01
23 15 00	0917+449	13 52 36	46.4	-72.7	4.5		53.7	24	28	23 15 00
23 24 30	---	14 02 07	45.0	-71.2	4.7		53.0	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	0917+449	14 07 38	44.3	-70.4	4.8		52.6	323	46	23 30 00
23 44 30	---	14 22 11	42.2	-68.2	5.0		51.6	870	74	23 30 01
23 45 00	0917+449	14 22 41	42.2	-68.1	5.0		51.5	24	74	23 45 00
23 59 59	---	14 37 43	40.1	-65.9	5.3		50.4	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 ./rk08vn_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:  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 (mas)
	(B1950)	(J2000)	(Date)	
* 0917+449	09 17 41.919222	* 09 20 58.458485	09 21 58.842104	0.00
J0920+4441	44 54 39.62449	* 44 41 53.98501	44 37 58.40927	0.00


```

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)	(Date)	Error (mas)	
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.198079	0.00
	85 16 41.77889	* 85 00 00.000000	84 55 00.01763	0.00
	fake circumpolar target for a TS to look at			
* 1502+106	15 02 00.157714	* 15 04 24.979783	15 05 10.494583	0.00
J1504+1029	10 41 17.73982	* 10 29 39.19840	10 26 04.29063	0.00
	./rk08vo_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 15421 observations, 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)
3C286	140.4
1502+106	148.8

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

rk08vptr

RADIOASTRON AGN SURVEY

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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 14 Apr 2015 Day 104 ---

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

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

Table with 12 columns: Start UT, Stop UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. It lists scan times and coordinates for 1637+574.

SETUP FILE INFORMATION:

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

==== Setup file: ra18cm2.set

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

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.188713	0.00
	85 16 41.77889	* 85 00 00.000000	84 55 00.05571	0.00
	fake circumpolar target for a TS to look at			
* 1637+574	16 37 17.425182	* 16 38 13.456297	16 38 32.000211	0.00
J1638+5720	57 26 15.76127	* 57 20 23.97898	57 18 29.72831	0.00
	./rk08vp_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 8888 observations, 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)
3C286	140.3
1637+574	103.0

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

ep096atr

E-EVN: EP096A

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Observing mode: realtime e-vlbi

Schedule for TORUN (Code Tr) Page 2
 e-EVN: ep096a

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
 Early: Seconds between end of slew and start. Dwell: On source seconds.
 Disk: GBytes recorded to this point.
 TPStart: Recording start time. Frequencies are L0 sum (band edge).
 SYNC: Time correlator 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 14 Apr 2015 Day 104 ---										
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
09 00 00	0234+285	23 43 08	49.9	109.5	-2.9		-40.3	0	0	09 00 00
09 15 00	---	23 58 11	52.0	113.5	-2.7		-39.0	900	115	09 00 01
09 15 40	0234+285	23 58 51	52.1	113.7	-2.7		-38.9	34	115	09 15 40
09 30 00	---	00 13 13	54.0	117.8	-2.4		-37.3	860	226	09 15 41
09 30 40	0234+285	00 13 53	54.1	118.0	-2.4		-37.3	34	226	09 30 40
09 45 00	---	00 28 16	56.0	122.4	-2.2		-35.4	860	336	09 30 41
09 45 40	0234+285	00 28 56	56.1	122.6	-2.2		-35.3	34	336	09 45 40
10 00 00	---	00 43 18	57.8	127.4	-1.9		-33.0	860	446	09 45 41
10 00 40	0234+285	00 43 58	57.9	127.6	-1.9		-32.9	34	446	10 00 40
10 15 00	---	00 58 21	59.6	132.8	-1.7		-30.2	860	556	10 00 41
10 15 40	0234+285	00 59 01	59.6	133.1	-1.7		-30.1	34	556	10 15 40
10 30 00	---	01 13 23	61.1	138.7	-1.4		-26.9	860	667	10 15 41
10 30 40	0234+285	01 14 03	61.2	138.9	-1.4		-26.8	33	667	10 30 40
10 45 00	---	01 28 26	62.5	145.0	-1.2		-23.2	860	777	10 30 41
10 45 40	0234+285	01 29 06	62.6	145.3	-1.2		-23.0	33	777	10 45 40
11 00 00	---	01 43 28	63.7	151.8	-0.9		-18.9	860	887	10 45 41
11 03 00	0528+134	01 46 29	30.7	109.7	-3.8		-35.5	42	887	11 03 00
11 15 00	---	01 58 31	32.4	112.6	-3.6		-34.8	720	979	11 03 01
11 15 40	0528+134	01 59 11	32.5	112.7	-3.5		-34.7	34	979	11 15 40
11 30 00	---	02 13 33	34.5	116.2	-3.3		-33.7	860	1090	11 15 41
11 30 40	0528+134	02 14 13	34.6	116.3	-3.3		-33.6	34	1090	11 30 40
11 45 00	---	02 28 36	36.5	119.9	-3.1		-32.4	860	1200	11 30 41
11 45 40	0528+134	02 29 16	36.5	120.1	-3.0		-32.3	34	1200	11 45 40
12 00 00	---	02 43 38	38.4	123.9	-2.8		-30.9	860	1310	11 45 41

Schedule for TORUN (Code Tr)
e-EVN: ep096a

Page 3

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are L0 sum (band edge).
SYNC: Time correlator is expected to sync up.

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

---	Tue 14 Apr 2015	Day 104					---				
12 00 40	0528+134	02 44 18	38.5	124.0	-2.8		-30.8	34	1310	12 00 40	
12 15 00	---	02 58 40	40.2	127.9	-2.6		-29.1	860	1421	12 00 41	
12 15 40	0528+134	02 59 21	40.3	128.1	-2.5		-29.1	34	1421	12 15 40	
12 30 00	---	03 13 43	41.9	132.2	-2.3		-27.2	860	1531	12 15 41	
12 30 40	0528+134	03 14 23	42.0	132.4	-2.3		-27.1	34	1531	12 30 40	
12 45 00	---	03 28 45	43.5	136.7	-2.1		-25.1	860	1641	12 30 41	
12 45 40	0528+134	03 29 25	43.6	136.9	-2.0		-25.0	34	1641	12 45 40	
13 00 00	---	03 43 48	45.0	141.4	-1.8		-22.7	860	1751	12 45 41	
13 00 40	0528+134	03 44 28	45.1	141.6	-1.8		-22.6	34	1751	13 00 40	
13 15 00	---	03 58 50	46.4	146.2	-1.5		-20.1	860	1862	13 00 41	
13 16 00	J0535+1942	03 59 50	51.8	141.7	-1.6		-23.3	26	1862	13 16 00	
13 17 00	=0532+196	04 00 51	51.9	142.0	-1.6		-23.1	60	1869	13 16 01	
13 18 00	J0534+2200	04 01 51	54.2	141.0	-1.6		-24.0	38	1869	13 18 00	
13 19 00	---	04 02 51	54.3	141.4	-1.5		-23.8	60	1877	13 18 01	
13 20 00	J0535+1942	04 03 51	52.2	143.1	-1.5		-22.5	38	1877	13 20 00	
13 21 00	=0532+196	04 04 51	52.3	143.4	-1.5		-22.3	60	1885	13 20 01	
13 23 00	J0604+2429	04 06 52	53.7	130.3	-2.0		-30.2	78	1885	13 23 00	
13 24 00	=0601+245	04 07 52	53.8	130.6	-2.0		-30.1	60	1892	13 23 01	
13 25 00	J0614+2229	04 08 52	51.1	129.5	-2.1		-30.1	36	1892	13 25 00	
13 26 00	---	04 09 52	51.3	129.9	-2.1		-29.9	60	1900	13 25 01	
13 27 00	J0604+2429	04 10 52	54.2	131.6	-1.9		-29.5	35	1900	13 27 00	
13 28 00	=0601+245	04 11 52	54.3	132.0	-1.9		-29.4	60	1908	13 27 01	
13 30 00	J0623+2241	04 13 53	50.8	128.1	-2.2		-30.8	92	1908	13 30 00	
13 31 00	=0620+227	04 14 53	50.9	128.5	-2.2		-30.6	60	1915	13 30 01	
13 32 00	J0629+2415	04 15 53	51.7	125.6	-2.2		-32.4	39	1915	13 32 00	
13 33 00	---	04 16 53	51.8	125.9	-2.2		-32.2	60	1923	13 32 01	
13 34 00	J0623+2241	04 17 53	51.3	129.4	-2.1		-30.2	39	1923	13 34 00	
13 35 00	=0620+227	04 18 54	51.4	129.7	-2.1		-30.0	60	1931	13 34 01	
13 37 00	0528+134	04 20 54	48.0	153.7	-1.2		-15.9	58	1931	13 37 00	
13 39 00	---	04 22 54	48.1	154.4	-1.1		-15.5	120	1946	13 37 01	
13 40 30	J0619+0736	04 24 24	38.8	142.1	-1.9		-21.9	41	1946	13 40 30	
13 42 00	=0616+076	04 25 55	39.0	142.5	-1.9		-21.6	90	1958	13 40 31	

Schedule for TORUN (Code Tr)
e-EVN: ep096a

Page 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
--- Tue 14 Apr 2015 Day 104 ---										
13 42 00	J0628+09	04 25 55	39.6	139.3	-2.0		-23.4	-21	1958	No stop
13 48 00	---	04 31 56	40.2	141.1	-1.9		-22.5	339	2004	13 42 01
13 48 00	J0619+0736	04 31 56	39.5	144.3	-1.8		-20.7	-21	2004	No stop
13 49 30	=0616+076	04 33 26	39.6	144.8	-1.8		-20.5	69	2015	13 48 01
13 49 30	J0628+09	04 33 26	40.3	141.5	-1.9		-22.2	-21	2015	No stop
13 55 30	---	04 39 27	40.9	143.3	-1.8		-21.3	339	2062	13 49 31
13 56 30	J0619+0736	04 40 27	40.2	146.9	-1.7		-19.3	39	2062	13 56 30
13 58 00	=0616+076	04 41 57	40.3	147.4	-1.6		-19.1	90	2073	13 56 31
13 58 00	J0628+09	04 41 57	41.1	144.1	-1.8		-20.9	-21	2073	No stop
14 04 00	---	04 47 58	41.6	145.9	-1.7		-19.9	339	2119	13 58 01
14 04 00	J0619+0736	04 47 58	40.8	149.2	-1.5		-18.1	-21	2119	No stop
14 05 30	=0616+076	04 49 29	40.9	149.7	-1.5		-17.8	69	2131	14 04 01
14 05 30	J0628+09	04 49 29	41.7	146.4	-1.6		-19.7	-21	2131	No stop
14 11 30	---	04 55 30	42.2	148.3	-1.5		-18.6	339	2177	14 05 31
14 12 30	J0619+0736	04 56 30	41.4	151.9	-1.4		-16.6	39	2177	14 12 30
14 14 00	=0616+076	04 58 00	41.6	152.4	-1.4		-16.3	90	2188	14 12 31
14 15 30	J0632+1559	04 59 30	48.5	144.6	-1.6		-21.2	50	2188	14 15 30
14 17 00	=0629+160	05 01 00	48.7	145.1	-1.5		-20.9	90	2200	14 15 31
14 17 00	J0627+16	05 01 00	49.3	146.9	-1.5		-20.0	-17	2200	No stop
14 23 00	---	05 07 01	49.8	149.0	-1.4		-18.8	343	2246	14 17 01
14 23 00	J0632+1559	05 07 01	49.2	147.2	-1.4		-19.8	-17	2246	No stop
14 24 30	=0629+160	05 08 32	49.3	147.7	-1.4		-19.5	73	2258	14 23 01
14 24 30	J0627+16	05 08 32	49.9	149.5	-1.3		-18.5	-17	2258	No stop
14 30 30	---	05 14 33	50.4	151.6	-1.2		-17.3	343	2304	14 24 31
14 31 30	J0632+1559	05 15 33	49.8	150.1	-1.3		-18.1	43	2304	14 31 30
14 33 00	=0629+160	05 17 03	50.0	150.7	-1.3		-17.8	90	2315	14 31 31
14 33 00	J0627+16	05 17 03	50.5	152.6	-1.2		-16.8	-18	2315	No stop
14 39 00	---	05 23 04	50.9	154.7	-1.1		-15.5	342	2362	14 33 01
14 39 00	J0632+1559	05 23 04	50.4	152.8	-1.2		-16.6	-17	2362	No stop
14 40 30	=0629+160	05 24 34	50.5	153.4	-1.2		-16.3	73	2373	14 39 01

Schedule for TORUN (Code Tr)
e-EVN: ep096a

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UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are L0 sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 14 Apr 2015 Day 104 ---										
14 40 30	J0627+16	05 24 34	51.0	155.3	-1.1		-15.1	-18	2373	No stop
14 46 30	---	05 30 35	51.4	157.5	-1.0		-13.8	342	2419	14 40 31
14 47 30	J0632+1559	05 31 36	50.9	155.9	-1.0		-14.8	43	2419	14 47 30
14 49 00	=0629+160	05 33 06	51.0	156.5	-1.0		-14.4	90	2431	14 47 31
14 57 00	J0306+6243	05 41 07	67.9	311.0	2.6		98.1	156	2431	14 57 00
14 59 00	=0302+625	05 43 07	67.7	311.0	2.6		97.6	120	2446	14 57 01
15 00 00	J0248+6021	05 44 08	65.5	304.8	2.9		87.7	33	2446	15 00 00
15 01 00	---	05 45 08	65.4	304.8	2.9		87.5	60	2454	15 00 01
15 02 00	J0306+6243	05 46 08	67.4	310.8	2.6		96.8	33	2454	15 02 00
15 03 00	=0302+625	05 47 08	67.2	310.8	2.7		96.6	60	2462	15 02 01
15 05 00	J0346+5400	05 49 08	72.1	285.3	2.0		80.7	54	2462	15 05 00
15 06 00	=0342+538	05 50 09	71.9	285.4	2.0		80.6	60	2469	15 05 01
15 07 00	J0332+5434	05 51 09	69.9	288.2	2.3		80.2	39	2469	15 07 00
15 08 00	---	05 52 09	69.8	288.3	2.3		80.1	60	2477	15 07 01
15 09 00	J0346+5400	05 53 09	71.5	285.6	2.1		80.2	39	2477	15 09 00
15 10 00	=0342+538	05 54 09	71.4	285.7	2.1		80.0	60	2485	15 09 01
15 12 00	J0356+6043	05 56 10	72.3	307.4	2.0		102.4	61	2485	15 12 00
15 13 00	=0352+605	05 57 10	72.2	307.3	2.0		102.1	60	2492	15 12 01
15 14 00	J0406+6138	05 58 10	73.0	311.2	1.8		107.8	37	2492	15 14 00
15 15 00	---	05 59 10	72.9	311.1	1.9		107.5	60	2500	15 14 01
15 16 00	J0356+6043	06 00 10	71.8	307.1	2.0		101.2	37	2500	15 16 00
15 17 00	=0352+605	06 01 10	71.7	307.0	2.1		100.9	60	2508	15 16 01
15 22 00	OJ287	06 06 11	43.7	118.9	-2.8		-34.0	-91	2508	15 22 00
15 30 00	---	06 14 12	44.7	121.1	-2.7		-33.2	389	2569	15 22 01
15 30 40	OJ287	06 14 53	44.8	121.2	-2.7		-33.1	34	2569	15 30 40
15 45 00	---	06 29 15	46.6	125.3	-2.4		-31.4	860	2679	15 30 41
15 45 40	OJ287	06 29 55	46.7	125.5	-2.4		-31.3	34	2679	15 45 40
16 00 00	---	06 44 17	48.4	129.8	-2.2		-29.4	860	2790	15 45 41
16 00 40	OJ287	06 44 58	48.5	130.0	-2.2		-29.3	34	2790	16 00 40
16 15 00	---	06 59 20	50.1	134.6	-1.9		-27.1	860	2900	16 00 41

Schedule for TORUN (Code Tr)
e-EVN: ep096a

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UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are L0 sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 14 Apr 2015 Day 104 ---										
16 15 40	OJ287	07 00 00	50.2	134.8	-1.9		-27.0	34	2900	16 15 40
16 30 00	---	07 14 22	51.6	139.7	-1.7		-24.4	860	3010	16 15 41
16 30 40	OJ287	07 15 02	51.7	139.9	-1.7		-24.3	34	3010	16 30 40
16 45 00	---	07 29 25	53.0	145.0	-1.4		-21.5	860	3121	16 30 41
16 48 00	1156+295	07 32 25	36.5	88.6	-4.5		-43.4	52	3121	16 48 00
17 00 00	---	07 44 27	38.3	91.0	-4.3		-43.4	720	3213	16 48 01
17 00 40	1156+295	07 45 07	38.4	91.1	-4.3		-43.4	34	3213	17 00 40
17 10 00	---	07 54 29	39.8	93.1	-4.1		-43.4	560	3285	17 00 41
17 10 40	1156+295	07 55 09	39.9	93.2	-4.1		-43.4	34	3285	17 10 40
17 20 00	---	08 04 31	41.3	95.2	-3.9		-43.2	560	3356	17 10 41
17 22 00	J1250+1621	08 06 31	24.2	95.1	-4.7		-38.5	42	3356	17 22 00
17 25 00	=1247+166	08 09 31	24.7	95.7	-4.7		-38.5	180	3379	17 22 01
17 25 00	ASASSN-14LI	08 09 31	26.1	95.1	-4.7		-38.9	-19	3379	No stop
17 28 30	---	08 13 02	26.6	95.8	-4.6		-38.8	191	3406	17 25 01
17 28 30	J1250+1621	08 13 02	25.2	96.4	-4.6		-38.4	-18	3406	No stop
17 30 00	=1247+166	08 14 32	25.4	96.7	-4.6		-38.4	72	3418	17 28 31
17 30 00	ASASSN-14LI	08 14 32	26.8	96.1	-4.6		-38.8	-19	3418	No stop
17 33 30	---	08 18 03	27.4	96.9	-4.5		-38.7	191	3445	17 30 01
17 34 00	J1250+1621	08 18 33	26.0	97.6	-4.5		-38.3	12	3445	17 34 00
17 35 00	=1247+166	08 19 33	26.2	97.8	-4.5		-38.3	60	3453	17 34 01
17 35 00	ASASSN-14LI	08 19 33	27.6	97.2	-4.5		-38.7	-19	3453	No stop
17 38 30	---	08 23 04	28.1	97.9	-4.4		-38.6	191	3479	17 35 01
17 38 30	J1250+1621	08 23 04	26.7	98.5	-4.5		-38.2	-18	3479	No stop
17 40 00	=1247+166	08 24 34	26.9	98.8	-4.4		-38.2	72	3491	17 38 31
17 40 00	ASASSN-14LI	08 24 34	28.3	98.2	-4.4		-38.6	-19	3491	No stop
17 43 30	---	08 28 04	28.9	99.0	-4.3		-38.5	191	3518	17 40 01
17 44 00	J1250+1621	08 28 34	27.5	99.7	-4.4		-38.1	12	3518	17 44 00
17 45 00	=1247+166	08 29 35	27.7	99.9	-4.4		-38.0	60	3526	17 44 01
17 45 00	ASASSN-14LI	08 29 35	29.1	99.3	-4.3		-38.5	-19	3526	No stop
17 48 30	---	08 33 05	29.6	100.0	-4.3		-38.4	191	3553	17 45 01

Schedule for TORUN (Code Tr)
e-EVN: ep096a

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UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are L0 sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 14 Apr 2015 Day 104 ---										
17 48 30	J1250+1621	08 33 05	28.2	100.6	-4.3		-37.9	-18	3553	No stop
17 50 00	=1247+166	08 34 35	28.4	101.0	-4.3		-37.9	72	3564	17 48 31
17 50 00	ASASSN-14LI	08 34 35	29.8	100.4	-4.2		-38.3	-19	3564	No stop
17 53 30	---	08 38 06	30.3	101.1	-4.2		-38.2	191	3591	17 50 01
17 54 00	J1250+1621	08 38 36	29.0	101.8	-4.2		-37.8	12	3591	17 54 00
17 55 00	=1247+166	08 39 36	29.2	102.0	-4.2		-37.7	60	3599	17 54 01
17 55 00	ASASSN-14LI	08 39 36	30.6	101.5	-4.2		-38.2	-19	3599	No stop
17 58 30	---	08 43 07	31.1	102.2	-4.1		-38.0	191	3626	17 55 01
17 58 30	J1250+1621	08 43 07	29.7	102.8	-4.1		-37.6	-18	3626	No stop
18 00 00	=1247+166	08 44 37	29.9	103.1	-4.1		-37.5	72	3637	17 58 31
18 00 00	ASASSN-14LI	08 44 37	31.3	102.5	-4.1		-38.0	-19	3637	No stop
18 03 30	---	08 48 08	31.8	103.3	-4.0		-37.8	191	3664	18 00 01
18 04 00	J1250+1621	08 48 38	30.5	104.0	-4.0		-37.4	11	3664	18 04 00
18 05 00	=1247+166	08 49 38	30.6	104.2	-4.0		-37.3	60	3672	18 04 01
18 05 00	ASASSN-14LI	08 49 38	32.0	103.7	-4.0		-37.8	-19	3672	No stop
18 08 30	---	08 53 09	32.5	104.4	-3.9		-37.6	191	3699	18 05 01
18 08 30	J1250+1621	08 53 09	31.1	105.0	-4.0		-37.2	-19	3699	No stop
18 10 00	=1247+166	08 54 39	31.4	105.4	-3.9		-37.1	71	3710	18 08 31
18 10 00	ASASSN-14LI	08 54 39	32.8	104.8	-3.9		-37.5	-19	3710	No stop
18 13 30	---	08 58 09	33.3	105.6	-3.8		-37.4	191	3737	18 10 01
18 14 00	J1250+1621	08 58 39	31.9	106.3	-3.9		-36.9	11	3737	18 14 00
18 15 00	=1247+166	08 59 40	32.1	106.5	-3.9		-36.9	60	3745	18 14 01
18 15 00	ASASSN-14LI	08 59 40	33.5	105.9	-3.8		-37.3	-19	3745	No stop
18 18 30	---	09 03 10	34.0	106.7	-3.8		-37.1	191	3772	18 15 01
18 18 30	J1250+1621	09 03 10	32.6	107.3	-3.8		-36.7	-19	3772	No stop
18 20 00	=1247+166	09 04 40	32.8	107.6	-3.8		-36.6	71	3783	18 18 31
18 20 00	ASASSN-14LI	09 04 40	34.2	107.1	-3.7		-37.1	-19	3783	No stop
18 23 30	---	09 08 11	34.7	107.9	-3.7		-36.9	191	3810	18 20 01
18 24 00	J1250+1621	09 08 41	33.4	108.6	-3.7		-36.4	11	3810	18 24 00
18 25 00	=1247+166	09 09 41	33.5	108.8	-3.7		-36.3	60	3818	18 24 01

Schedule for TORUN (Code Tr)
e-EVN: ep096a

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Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are L0 sum (band edge).
SYNC: Time correlator 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 14 Apr 2015 Day 104 ---										
18 25 00	ASASSN-14LI	09 09 41	34.9	108.2	-3.7		-36.8	-19	3818	No stop
18 28 30	---	09 13 12	35.4	109.0	-3.6		-36.6	191	3845	18 25 01
18 28 30	J1250+1621	09 13 12	34.0	109.6	-3.6		-36.1	-19	3845	No stop
18 30 00	=1247+166	09 14 42	34.2	110.0	-3.6		-36.0	71	3856	18 28 31
18 30 00	ASASSN-14LI	09 14 42	35.6	109.4	-3.6		-36.5	-19	3856	No stop
18 33 30	---	09 18 13	36.1	110.2	-3.5		-36.3	191	3883	18 30 01
18 34 00	J1250+1621	09 18 43	34.8	110.9	-3.5		-35.8	11	3883	18 34 00
18 35 00	=1247+166	09 19 43	34.9	111.1	-3.5		-35.7	60	3891	18 34 01
18 35 00	ASASSN-14LI	09 19 43	36.3	110.6	-3.5		-36.2	-19	3891	No stop
18 38 30	---	09 23 13	36.8	111.4	-3.4		-35.9	191	3918	18 35 01
18 38 30	J1250+1621	09 23 13	35.4	112.0	-3.5		-35.5	-19	3918	No stop
18 40 00	=1247+166	09 24 44	35.6	112.3	-3.4		-35.3	71	3929	18 38 31
18 40 00	ASASSN-14LI	09 24 44	37.0	111.8	-3.4		-35.8	-19	3929	No stop
18 43 30	---	09 28 14	37.5	112.6	-3.3		-35.6	191	3956	18 40 01
18 44 00	J1250+1621	09 28 44	36.2	113.3	-3.4		-35.1	11	3956	18 44 00
18 45 00	=1247+166	09 29 45	36.3	113.6	-3.4		-35.0	60	3964	18 44 01
18 45 00	ASASSN-14LI	09 29 45	37.7	113.0	-3.3		-35.5	-19	3964	No stop
18 48 30	---	09 33 15	38.2	113.9	-3.3		-35.2	191	3991	18 45 01
18 48 30	J1250+1621	09 33 15	36.8	114.4	-3.3		-34.7	-19	3991	No stop
18 50 00	=1247+166	09 34 45	37.0	114.8	-3.3		-34.6	71	4003	18 48 31
18 50 00	ASASSN-14LI	09 34 45	38.4	114.2	-3.2		-35.1	-19	4003	No stop
18 53 30	---	09 38 16	38.9	115.1	-3.2		-34.8	191	4029	18 50 01
18 54 00	J1250+1621	09 38 46	37.5	115.8	-3.2		-34.3	11	4029	18 54 00
18 55 00	=1247+166	09 39 46	37.7	116.0	-3.2		-34.2	60	4037	18 54 01
18 55 00	ASASSN-14LI	09 39 46	39.1	115.5	-3.2		-34.7	-19	4037	No stop
18 58 30	---	09 43 17	39.6	116.4	-3.1		-34.4	191	4064	18 55 01
18 58 30	J1250+1621	09 43 17	38.2	116.9	-3.1		-33.9	-19	4064	No stop
19 00 00	=1247+166	09 44 47	38.4	117.3	-3.1		-33.8	71	4076	18 58 31
19 00 00	ASASSN-14LI	09 44 47	39.8	116.8	-3.1		-34.2	-19	4076	No stop
19 03 30	---	09 48 18	40.3	117.7	-3.0		-33.9	191	4103	19 00 01

Schedule for TORUN (Code Tr)
e-EVN: ep096a

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TPStart: Recording start time. Frequencies are L0 sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 14 Apr 2015 Day 104 ---										
19 04 00	J1250+1621	09 48 48	38.9	118.3	-3.0		-33.4	11	4103	19 04 00
19 05 00	=1247+166	09 49 48	39.0	118.6	-3.0		-33.3	60	4110	19 04 01
19 05 00	ASASSN-14LI	09 49 48	40.5	118.1	-3.0		-33.8	-19	4110	No stop
19 08 30	---	09 53 18	40.9	119.0	-2.9		-33.5	191	4137	19 05 01
19 08 30	J1250+1621	09 53 18	39.5	119.5	-3.0		-33.0	-19	4137	No stop
19 10 00	=1247+166	09 54 49	39.7	119.9	-2.9		-32.8	71	4149	19 08 31
19 10 00	ASASSN-14LI	09 54 49	41.1	119.4	-2.9		-33.3	-19	4149	No stop
19 13 30	---	09 58 19	41.6	120.3	-2.8		-33.0	191	4176	19 10 01
19 14 00	J1250+1621	09 58 49	40.2	121.0	-2.9		-32.4	11	4176	19 14 00
19 15 00	=1247+166	09 59 49	40.3	121.2	-2.9		-32.3	60	4183	19 14 01
19 15 00	ASASSN-14LI	09 59 49	41.8	120.7	-2.8		-32.8	-19	4183	No stop
19 18 30	---	10 03 20	42.2	121.7	-2.8		-32.4	191	4210	19 15 01
19 18 30	J1250+1621	10 03 20	40.8	122.2	-2.8		-32.0	-19	4210	No stop
19 20 00	=1247+166	10 04 50	41.0	122.6	-2.8		-31.8	71	4222	19 18 31
19 20 00	ASASSN-14LI	10 04 50	42.4	122.1	-2.7		-32.3	-19	4222	No stop
19 23 30	---	10 08 21	42.9	123.0	-2.7		-31.9	191	4249	19 20 01
19 24 00	J1250+1621	10 08 51	41.5	123.7	-2.7		-31.4	11	4249	19 24 00
19 25 00	=1247+166	10 09 51	41.6	123.9	-2.7		-31.3	60	4256	19 24 01
19 25 00	ASASSN-14LI	10 09 51	43.0	123.5	-2.7		-31.7	-19	4256	No stop
19 28 30	---	10 13 22	43.5	124.4	-2.6		-31.3	191	4283	19 25 01
19 28 30	J1250+1621	10 13 22	42.0	124.9	-2.6		-30.9	-19	4283	No stop
19 30 00	=1247+166	10 14 52	42.2	125.3	-2.6		-30.7	71	4295	19 28 31
19 30 00	ASASSN-14LI	10 14 52	43.7	124.9	-2.6		-31.1	-19	4295	No stop
19 33 30	---	10 18 22	44.1	125.8	-2.5		-30.7	191	4322	19 30 01
19 34 00	J1250+1621	10 18 53	42.7	126.4	-2.5		-30.2	11	4322	19 34 00
19 35 00	=1247+166	10 19 53	42.8	126.7	-2.5		-30.1	60	4329	19 34 01
19 35 00	ASASSN-14LI	10 19 53	44.3	126.3	-2.5		-30.5	-19	4329	No stop
19 38 30	---	10 23 23	44.7	127.3	-2.4		-30.1	191	4356	19 35 01
19 38 30	J1250+1621	10 23 23	43.2	127.7	-2.5		-29.7	-19	4356	No stop
19 40 00	=1247+166	10 24 54	43.4	128.2	-2.4		-29.5	71	4368	19 38 31

Schedule for TORUN (Code Tr)
e-EVN: ep096a

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TPStart: Recording start time. Frequencies are L0 sum (band edge).
SYNC: Time correlator is expected to sync up.

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

--- Tue 14 Apr 2015 Day 104 ---										
19 40 00	ASASSN-14LI	10 24 54	44.9	127.7	-2.4		-29.9	-19	4368	No stop
19 43 30	---	10 28 24	45.3	128.8	-2.3		-29.4	191	4395	19 40 01
19 44 00	J1250+1621	10 28 54	43.9	129.3	-2.4		-28.9	11	4395	19 44 00
19 45 00	=1247+166	10 29 54	44.0	129.6	-2.4		-28.8	60	4403	19 44 01
19 45 00	ASASSN-14LI	10 29 54	45.5	129.2	-2.3		-29.2	-19	4403	No stop
19 48 30	---	10 33 25	45.9	130.2	-2.3		-28.8	191	4429	19 45 01
19 48 30	J1250+1621	10 33 25	44.4	130.6	-2.3		-28.3	-19	4429	No stop
19 50 00	=1247+166	10 34 55	44.6	131.1	-2.3		-28.1	71	4441	19 48 31
19 50 00	ASASSN-14LI	10 34 55	46.0	130.7	-2.2		-28.5	-19	4441	No stop
19 53 30	---	10 38 26	46.4	131.8	-2.2		-28.0	191	4468	19 50 01
19 54 00	J1250+1621	10 38 56	45.0	132.3	-2.2		-27.6	11	4468	19 54 00
19 55 00	=1247+166	10 39 56	45.1	132.6	-2.2		-27.4	60	4476	19 54 01
19 55 00	ASASSN-14LI	10 39 56	46.6	132.2	-2.2		-27.8	-19	4476	No stop
19 58 30	---	10 43 27	47.0	133.3	-2.1		-27.3	191	4503	19 55 01
19 58 30	J1250+1621	10 43 27	45.5	133.7	-2.1		-26.9	-19	4503	No stop
20 00 00	=1247+166	10 44 57	45.7	134.1	-2.1		-26.7	71	4514	19 58 31
20 00 00	ASASSN-14LI	10 44 57	47.2	133.8	-2.1		-27.1	-19	4514	No stop
20 03 30	---	10 48 27	47.5	134.9	-2.0		-26.5	191	4541	20 00 01
20 04 00	J1250+1621	10 48 57	46.1	135.4	-2.0		-26.1	11	4541	20 04 00
20 05 00	=1247+166	10 49 58	46.2	135.7	-2.0		-25.9	60	4549	20 04 01
20 05 00	ASASSN-14LI	10 49 58	47.7	135.4	-2.0		-26.3	-19	4549	No stop
20 08 30	---	10 53 28	48.1	136.5	-1.9		-25.7	191	4576	20 05 01
20 08 30	J1250+1621	10 53 28	46.6	136.8	-2.0		-25.4	-19	4576	No stop
20 10 00	=1247+166	10 54 58	46.7	137.2	-1.9		-25.1	71	4587	20 08 31
20 10 00	ASASSN-14LI	10 54 58	48.2	137.0	-1.9		-25.5	-19	4587	No stop
20 13 30	---	10 58 29	48.6	138.1	-1.8		-24.9	191	4614	20 10 01
20 14 00	J1250+1621	10 58 59	47.1	138.5	-1.9		-24.5	11	4614	20 14 00
20 15 00	=1247+166	10 59 59	47.2	138.8	-1.8		-24.3	60	4622	20 14 01
20 15 00	ASASSN-14LI	10 59 59	48.7	138.6	-1.8		-24.6	-19	4622	No stop
20 18 30	---	11 03 30	49.1	139.7	-1.8		-24.0	191	4649	20 15 01

Schedule for TORUN (Code Tr)
e-EVN: ep096a

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UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are L0 sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 14 Apr 2015 Day 104 ---										
20 18 30	J1250+1621	11 03 30	47.6	140.0	-1.8		-23.7	-19	4649	No stop
20 20 00	=1247+166	11 05 00	47.7	140.5	-1.8		-23.5	71	4660	20 18 31
20 20 00	ASASSN-14LI	11 05 00	49.2	140.2	-1.7		-23.8	-19	4660	No stop
20 23 30	---	11 08 31	49.5	141.4	-1.7		-23.1	191	4687	20 20 01
20 24 00	J1250+1621	11 09 01	48.1	141.8	-1.7		-22.8	11	4687	20 24 00
20 25 00	=1247+166	11 10 01	48.2	142.1	-1.7		-22.6	60	4695	20 24 01
20 25 00	ASASSN-14LI	11 10 01	49.7	141.9	-1.7		-22.9	-19	4695	No stop
20 28 30	---	11 13 32	50.0	143.1	-1.6		-22.2	191	4722	20 25 01
20 28 30	J1250+1621	11 13 32	48.5	143.3	-1.6		-22.0	-19	4722	No stop
20 30 00	=1247+166	11 15 02	48.7	143.8	-1.6		-21.7	71	4733	20 28 31
20 30 00	ASASSN-14LI	11 15 02	50.1	143.6	-1.6		-21.9	-19	4733	No stop
20 33 30	---	11 18 32	50.4	144.9	-1.5		-21.3	191	4760	20 30 01
20 34 00	J1250+1621	11 19 02	49.0	145.2	-1.5		-20.9	11	4760	20 34 00
20 35 00	=1247+166	11 20 03	49.1	145.5	-1.5		-20.7	60	4768	20 34 01
20 35 00	ASASSN-14LI	11 20 03	50.6	145.4	-1.5		-21.0	-19	4768	No stop
20 38 30	---	11 23 33	50.9	146.6	-1.4		-20.3	191	4795	20 35 01
20 38 30	J1250+1621	11 23 33	49.4	146.7	-1.5		-20.1	-19	4795	No stop
20 40 00	=1247+166	11 25 03	49.5	147.2	-1.4		-19.8	71	4806	20 38 31
20 40 00	ASASSN-14LI	11 25 03	51.0	147.2	-1.4		-20.0	-19	4806	No stop
20 43 30	---	11 28 34	51.3	148.4	-1.3		-19.3	191	4833	20 40 01
20 44 00	J1250+1621	11 29 04	49.8	148.6	-1.4		-19.0	11	4833	20 44 00
20 45 00	=1247+166	11 30 04	49.9	149.0	-1.3		-18.8	60	4841	20 44 01
20 45 00	ASASSN-14LI	11 30 04	51.4	149.0	-1.3		-19.0	-19	4841	No stop
20 48 30	---	11 33 35	51.7	150.2	-1.3		-18.2	191	4868	20 45 01
20 48 30	J1250+1621	11 33 35	50.2	150.2	-1.3		-18.1	-19	4868	No stop
20 50 00	=1247+166	11 35 05	50.3	150.8	-1.3		-17.8	71	4879	20 48 31
20 50 00	ASASSN-14LI	11 35 05	51.8	150.8	-1.2		-17.9	-19	4879	No stop
20 53 30	---	11 38 36	52.0	152.1	-1.2		-17.2	191	4906	20 50 01
20 54 00	J1250+1621	11 39 06	50.6	152.2	-1.2		-16.9	11	4906	20 54 00
20 55 00	=1247+166	11 40 06	50.6	152.6	-1.2		-16.7	60	4914	20 54 01

Schedule for TORUN (Code Tr)
e-EVN: ep096a

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UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are L0 sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 14 Apr 2015 Day 104 ---										
20 55 00	ASASSN-14LI	11 40 06	52.1	152.6	-1.1		-16.8	-19	4914	No stop
20 58 30	---	11 43 36	52.4	153.9	-1.1		-16.1	191	4941	20 55 01
20 58 30	J1250+1621	11 43 36	50.9	153.9	-1.1		-16.0	-19	4941	No stop
21 00 00	=1247+166	11 45 07	51.0	154.4	-1.1		-15.7	71	4953	20 58 31
21 00 00	ASASSN-14LI	11 45 07	52.5	154.5	-1.1		-15.7	-19	4953	No stop
21 03 30	---	11 48 37	52.7	155.8	-1.0		-15.0	191	4979	21 00 01
21 04 00	J1250+1621	11 49 07	51.2	155.9	-1.0		-14.8	11	4979	21 04 00
21 05 00	=1247+166	11 50 08	51.3	156.3	-1.0		-14.6	60	4987	21 04 01
21 07 00	OQ208	11 52 08	54.9	121.3	-2.3		-35.7	35	4987	21 07 00
21 10 00	---	11 55 08	55.3	122.3	-2.2		-35.3	180	5010	21 07 01
21 12 00	J1250+1621	11 57 09	51.7	158.9	-0.9		-13.0	32	5010	21 12 00
21 15 00	=1247+166	12 00 09	51.8	160.0	-0.8		-12.3	180	5033	21 12 01
21 15 00	ASASSN-14LI	12 00 09	53.3	160.3	-0.8		-12.3	-19	5033	No stop
21 18 30	---	12 03 40	53.5	161.6	-0.8		-11.5	191	5060	21 15 01
21 18 30	J1250+1621	12 03 40	52.0	161.4	-0.8		-11.5	-19	5060	No stop
21 20 00	=1247+166	12 05 10	52.1	161.9	-0.8		-11.2	71	5072	21 18 31
21 20 00	ASASSN-14LI	12 05 10	53.6	162.2	-0.7		-11.1	-19	5072	No stop
21 23 30	---	12 08 41	53.7	163.6	-0.7		-10.2	191	5099	21 20 01
21 24 00	J1250+1621	12 09 11	52.3	163.5	-0.7		-10.2	11	5099	21 24 00
21 25 00	=1247+166	12 10 11	52.3	163.9	-0.7		-10.0	60	5106	21 24 01
21 25 00	ASASSN-14LI	12 10 11	53.8	164.2	-0.6		-9.9	-19	5106	No stop
21 28 30	---	12 13 41	53.9	165.6	-0.6		-9.0	191	5133	21 25 01
21 28 30	J1250+1621	12 13 41	52.5	165.2	-0.6		-9.2	-19	5133	No stop
21 30 00	=1247+166	12 15 12	52.5	165.8	-0.6		-8.8	71	5145	21 28 31
21 30 00	ASASSN-14LI	12 15 12	54.0	166.2	-0.6		-8.6	-19	5145	No stop
21 33 30	---	12 18 42	54.1	167.6	-0.5		-7.8	191	5172	21 30 01
21 34 00	J1250+1621	12 19 12	52.7	167.4	-0.5		-7.9	11	5172	21 34 00
21 35 00	=1247+166	12 20 12	52.7	167.8	-0.5		-7.6	60	5179	21 34 01
21 35 00	ASASSN-14LI	12 20 12	54.1	168.2	-0.5		-7.4	-19	5179	No stop
21 38 30	---	12 23 43	54.3	169.6	-0.4		-6.5	191	5206	21 35 01

Schedule for TORUN (Code Tr)
e-EVN: ep096a

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UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are L0 sum (band edge).
SYNC: Time correlator is expected to sync up.

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

--- Tue 14 Apr 2015 Day 104 ---										
21 38 30	J1250+1621	12 23 43	52.8	169.2	-0.5		-6.8	-19	5206	No stop
21 40 00	=1247+166	12 25 13	52.8	169.8	-0.4		-6.4	71	5218	21 38 31
21 40 00	ASASSN-14LI	12 25 13	54.3	170.3	-0.4		-6.1	-19	5218	No stop
21 43 30	---	12 28 44	54.4	171.7	-0.3		-5.2	191	5245	21 40 01
21 44 00	J1250+1621	12 29 14	52.9	171.3	-0.4		-5.4	11	5245	21 44 00
21 45 00	=1247+166	12 30 14	53.0	171.7	-0.3		-5.2	60	5253	21 44 01
21 45 00	ASASSN-14LI	12 30 14	54.4	172.3	-0.3		-4.8	-19	5253	No stop
21 48 30	---	12 33 45	54.5	173.7	-0.3		-3.9	191	5279	21 45 01
21 48 30	J1250+1621	12 33 45	53.0	173.1	-0.3		-4.3	-19	5279	No stop
21 50 00	=1247+166	12 35 15	53.0	173.7	-0.3		-3.9	71	5291	21 48 31
21 50 00	ASASSN-14LI	12 35 15	54.5	174.3	-0.2		-3.6	-19	5291	No stop
21 53 30	---	12 38 45	54.5	175.8	-0.2		-2.7	191	5318	21 50 01
21 54 00	J1250+1621	12 39 16	53.1	175.3	-0.2		-2.9	11	5318	21 54 00
21 55 00	=1247+166	12 40 16	53.1	175.7	-0.2		-2.7	60	5326	21 54 01
21 55 00	ASASSN-14LI	12 40 16	54.6	176.4	-0.1		-2.3	-19	5326	No stop
21 58 30	---	12 43 46	54.6	177.8	-0.1		-1.4	191	5353	21 55 01
21 58 30	J1250+1621	12 43 46	53.1	177.1	-0.1		-1.8	-19	5353	No stop
22 00 00	=1247+166	12 45 17	53.2	177.7	-0.1		-1.4	71	5364	21 58 31
22 00 00	ASASSN-14LI	12 45 17	54.6	178.5	-0.1		-1.0	-19	5364	No stop
22 03 30	---	12 48 47	54.6	179.9	-0.0		-0.1	191	5391	22 00 01
22 04 00	J1250+1621	12 49 17	53.2	179.3	-0.0		-0.4	11	5391	22 04 00
22 05 00	=1247+166	12 50 17	53.2	179.7	-0.0		-0.2	60	5399	22 04 01
22 05 00	ASASSN-14LI	12 50 17	54.6	180.5	0.0		0.3	-19	5399	No stop
22 08 30	---	12 53 48	54.6	182.0	0.1		1.2	191	5426	22 05 01
22 08 30	J1250+1621	12 53 48	53.2	181.1	0.0		0.7	-19	5426	No stop
22 10 00	=1247+166	12 55 18	53.2	181.7	0.1		1.1	71	5437	22 08 31
22 10 00	ASASSN-14LI	12 55 18	54.6	182.6	0.1		1.6	-19	5437	No stop
22 13 30	---	12 58 49	54.5	184.0	0.2		2.5	191	5464	22 10 01
22 14 00	J1250+1621	12 59 19	53.1	183.4	0.1		2.1	11	5464	22 14 00
22 15 00	=1247+166	13 00 19	53.1	183.8	0.2		2.3	60	5472	22 14 01

Schedule for TORUN (Code Tr)

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e-EVN: ep096a

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 sum (band edge).

SYNC: Time correlator 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 14 Apr 2015 Day 104 ---										
22 15 00	ASASSN-14LI	13 00 19	54.5	184.6	0.2		2.9	-19	5472	No stop
22 18 30	---	13 03 50	54.5	186.1	0.2		3.8	191	5499	22 15 01
22 18 30	J1250+1621	13 03 50	53.1	185.2	0.2		3.2	-19	5499	No stop
22 20 00	=1247+166	13 05 20	53.1	185.8	0.2		3.6	71	5510	22 18 31
22 20 00	ASASSN-14LI	13 05 20	54.5	186.7	0.3		4.2	-19	5510	No stop
22 23 30	---	13 08 50	54.4	188.1	0.3		5.1	191	5537	22 20 01
22 24 00	J1250+1621	13 09 20	53.0	187.4	0.3		4.6	11	5537	22 24 00
22 25 00	=1247+166	13 10 21	53.0	187.8	0.3		4.8	60	5545	22 24 01
22 25 00	ASASSN-14LI	13 10 21	54.4	188.7	0.4		5.5	-18	5545	No stop
22 28 30	---	13 13 51	54.3	190.2	0.4		6.4	192	5572	22 25 01
22 28 30	J1250+1621	13 13 51	52.9	189.1	0.4		5.7	-19	5572	No stop
22 30 00	=1247+166	13 15 21	52.9	189.7	0.4		6.1	71	5583	22 28 31
22 30 00	ASASSN-14LI	13 15 21	54.2	190.8	0.4		6.8	-18	5583	No stop
22 33 30	---	13 18 52	54.1	192.2	0.5		7.6	192	5610	22 30 01
22 34 00	J1250+1621	13 19 22	52.8	191.3	0.5		7.1	12	5610	22 34 00
22 35 00	=1247+166	13 20 22	52.7	191.7	0.5		7.3	60	5618	22 34 01
22 35 00	ASASSN-14LI	13 20 22	54.1	192.8	0.5		8.0	-18	5618	No stop
22 38 30	---	13 23 53	53.9	194.2	0.6		8.9	192	5645	22 35 01
22 38 30	J1250+1621	13 23 53	52.6	193.1	0.5		8.1	-18	5645	No stop
22 40 00	=1247+166	13 25 23	52.6	193.7	0.6		8.5	72	5656	22 38 31
22 40 00	ASASSN-14LI	13 25 23	53.9	194.8	0.6		9.3	-18	5656	No stop
22 43 30	---	13 28 54	53.7	196.2	0.7		10.1	192	5683	22 40 01
22 44 00	J1250+1621	13 29 24	52.4	195.2	0.6		9.5	12	5683	22 44 00
22 45 00	=1247+166	13 30 24	52.4	195.6	0.7		9.7	60	5691	22 44 01
22 45 00	ASASSN-14LI	13 30 24	53.7	196.8	0.7		10.5	-18	5691	No stop
22 48 30	---	13 33 55	53.5	198.2	0.7		11.3	192	5718	22 45 01
22 48 30	J1250+1621	13 33 55	52.2	197.0	0.7		10.5	-18	5718	No stop
22 50 00	=1247+166	13 35 25	52.2	197.6	0.7		10.9	72	5729	22 48 31
22 50 00	ASASSN-14LI	13 35 25	53.5	198.8	0.8		11.7	-18	5729	No stop
22 53 30	---	13 38 55	53.3	200.1	0.8		12.5	192	5756	22 50 01

Schedule for TORUN (Code Tr)

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e-EVN: ep096a

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

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

Disk: GBytes recorded to this point.

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

SYNC: Time correlator 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 14 Apr 2015 Day 104 ---

```
22 54 00  J1250+1621  13 39 25  52.0 199.1  0.8      11.8  12    5756  22 54 00
22 55 00  =1247+166     13 40 26  51.9 199.5  0.8      12.0  60    5764  22 54 01

22 57 00  QQ208          13 42 26  64.8 166.8 -0.4     -8.9  39    5764  22 57 00
23 00 00  ---            13 45 26  64.9 168.4 -0.4     -7.9  180   5787  22 57 01
```

SETUP FILE INFORMATION:

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

==== Setup file: sess115.L1024

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

The following frequency sets based on these setups were used.

```
Frequency Set:  5  Setup file default.  Used with PCAL = 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: 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)		(Date)	Error (mas)
	(B1950)	(J2000)		
* J0534+2200	05 31 31.427725	* 05 34 31.973000	05 35 26.647957	0.00
	21 58 54.40670	* 22 00 52.06000	22 01 15.97947	0.00
* J0248+6021	02 44 27.256691	* 02 48 18.617000	02 49 28.265959	0.00
	60 09 05.51461	* 60 21 34.72000	60 25 17.51468	0.00
* J0332+5434	03 29 11.066308	* 03 32 59.368000	03 34 08.190944	0.00
	54 24 37.47697	* 54 34 43.57000	54 37 42.77137	0.00
* J0406+6138	04 02 08.302683	* 04 06 30.082000	04 07 49.043993	0.00
	61 30 36.59652	* 61 38 41.04000	61 41 05.01216	0.00
* J0614+2229	06 11 15.764703	* 06 14 17.160000	06 15 12.239943	0.00
	22 31 31.81944	* 22 30 36.00000	22 30 07.39651	0.00
* J0629+2415	06 26 02.069795	* 06 29 05.728000	06 30 01.550866	0.00
	24 17 43.52461	* 24 15 43.30000	24 14 55.74752	0.00
* J0627+16	06 24 19.951538	* 06 27 13.000000	06 28 05.600668	0.00
	16 13 52.44452	* 16 12 00.00000	16 11 12.20271	0.00
* J0628+09	06 24 48.548099	* 06 27 33.000000	06 28 22.990473	0.00
	09 10 54.19941	* 09 09 00.00000	09 08 09.41893	0.00
* ASASSN-14LI	12 45 45.847416	* 12 48 15.215000	12 49 02.077095	0.00
	18 02 47.40095	* 17 46 26.41000	17 41 22.17252	0.00
J0237+2848	02 34 55.589591	* 02 37 52.405678	02 38 45.561738	0.11
* 0234+285	28 35 11.40773	* 28 48 08.98998	28 51 55.91779	0.10
* J0306+6243	03 02 35.870310	* 03 06 42.659550	03 07 56.983220	0.22
0302+625	62 31 28.17733	* 62 43 02.02422	62 46 28.65410	0.10
* J0346+5400	03 42 44.555632	* 03 46 34.504133	03 47 43.850148	0.41
0342+538	53 51 41.29013	* 54 00 59.10868	54 03 43.75690	0.33
* J0356+6043	03 52 10.044235	* 03 56 25.198795	03 57 42.147109	0.92
0352+605	60 35 15.64651	* 60 43 57.97986	60 46 33.13686	0.70
J0530+1331	05 28 06.759218	* 05 30 56.416749	05 31 47.758858	0.10
* 0528+134	13 29 42.28877	* 13 31 55.14944	13 32 21.23617	0.10
* J0535+1942	05 32 06.106247	* 05 35 03.597575	05 35 57.344823	1.23
0532+196	19 40 25.82183	* 19 42 21.08022	19 42 43.59289	1.46
* J0604+2429	06 01 50.936476	* 06 04 55.121381	06 05 51.011385	0.12
0601+245	24 30 09.83044	* 24 29 55.03637	24 29 39.49419	0.11
* J0619+0736	06 16 27.314926	* 06 19 09.971063	06 19 59.376918	2.00
0616+076	07 37 58.99742	* 07 36 41.22074	07 36 01.24766	1.09
* J0623+2241	06 20 16.241619	* 06 23 17.811823	06 24 12.979891	9.58
0620+227	22 43 10.85995	* 22 41 35.76509	22 40 55.31735	8.68
* J0632+1559	06 29 50.392031	* 06 32 43.135530	06 33 35.666982	0.14
0629+160	16 02 13.94581	* 15 59 57.62002	15 59 02.51159	0.19
J0854+2006	08 51 57.250618	* 08 54 48.874930	08 55 41.690898	0.11
* 0J287	20 17 58.41733	* 20 06 30.64078	20 02 50.84701	0.10

J1159+2914	11 56 57.786211	* 11 59 31.833912	12 00 19.953843	0.11
* 1156+295	29 31 25.73868	* 29 14 43.82678	29 09 34.07666	0.10
* J1250+1621	12 47 39.650422	* 12 50 09.227073	12 50 56.165702	1.40
1247+166	16 37 40.73664	* 16 21 21.46225	16 16 17.64606	1.30
J1407+2827	14 04 45.615156	* 14 07 00.394414	14 07 42.837713	0.24
* 0Q208	28 41 29.23519	* 28 27 14.69022	28 22 50.72433	0.34

rk08vqtr

RADIOASTRON AGN SURVEY

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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 15 Apr 2015 Day 105 ---

----- 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

20 00 00	0851+202	10 48 53	50.4	224.4	1.9	26.5	0	0	20 00 00
20 19 30	---	11 08 27	48.3	230.6	2.2	29.6	1170	37	20 00 01
20 20 00	0851+202	11 08 57	48.2	230.7	2.2	29.7	24	37	20 20 00
20 40 00	---	11 29 00	45.8	236.6	2.6	32.3	1200	76	20 20 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 ./rk08vq_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 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 53.035594	0.00
	85 16 41.77889	* 85 00 00.000000	84 55 00.61405	0.00
	fake circumpolar target for a TS to look at			
* 0851+202	08 51 57.250618	* 08 54 48.874930	08 55 41.662189	0.00
J0854+2006	20 17 58.41733	* 20 06 30.64078	20 02 50.98692	0.00
OJ287	./rk08vq_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 213710 observations, 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)
3C147	64.7
0851+202	105.2

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

For common VLBI bands, this is:

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


```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 53.024280	0.00
	85 16 41.77889	* 85 00 00.000000	84 55 00.64973	0.00
	fake circumpolar target for a TS to look at			
* 1817+387	18 17 46.175701	* 18 19 26.547379	18 19 57.940127	0.00
J1819+3845	38 43 40.47033	* 38 45 01.78611	38 45 20.01483	0.00
	./rk08vr_sources.radioastron			
	AGN, IDV, rfc_2013d Petrov, 2013, unpublished 89 observations, 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)
1817+387    98.0

```

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

```

rk08vstr

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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

--- Thu 16 Apr 2015 Day 106 ---

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

Table with columns: Time, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. Rows include scan frequencies and detailed scan data for 1101+384.

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: 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)	(Date)	Error (mas)
* FAKERA	11 57 21.769299 * 12 00 00.000000	12 00 52.944289	0.00
	85 16 41.77889 * 85 00 00.000000	84 55 00.88274	0.00
	fake circumpolar target for a TS to look at		
* 1101+384	11 01 40.567856 * 11 04 27.313945	11 05 19.050859	0.00
J1104+3812	38 28 42.95187 * 38 12 31.79894	38 07 33.36388	0.00
MRK421	./rk08vs_sources.radioastron AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 17168 observations, 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)
1101+384    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

```


rk08vttr

RADIOASTRON AGN SURVEY

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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 17 Apr 2015 Day 107 ---

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

Table with columns: Time, Source, LST, EL, AZ, HA, UP, ParA, Dwell, Disk, GBytes, SYNC. Rows include scan frequencies and detailed scan data for 1639-062.

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: 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 52.883104	0.00
	85 16 41.77889	* 85 00 00.000000	84 55 01.04158	0.00
	fake circumpolar target for a TS to look at			
* 1639-062	16 39 21.443869	* 16 42 02.177715	16 42 52.423854	0.00
J1642-0621	-06 15 43.81949	*-06 21 23.69513	-06 23 03.22774	0.00
	./rk08vt_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 7228 observations, 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)
1639-062	134.6

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

For common VLBI bands, this is:

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

rk08vutr

RADIOASTRON AGN SURVEY

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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 17 Apr 2015 Day 107 ---

----- 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	1758+388	22 54 48	39.4	-75.1	4.9	48.1	0	0	08 00 00		
08 14 30	---	23 09 21	37.3	-72.7	5.1	47.4	870	28	08 00 01		
08 15 00	1758+388	23 09 51	37.2	-72.6	5.1	47.3	24	28	08 15 00		
08 29 30	---	23 24 23	35.1	-70.2	5.4	46.5	870	56	08 15 01		
08 30 00	1758+388	23 24 53	35.1	-70.1	5.4	46.4	24	56	08 30 00		
08 44 30	---	23 39 26	33.0	-67.7	5.6	45.5	870	84	08 30 01		
08 45 00	1758+388	23 39 56	33.0	-67.6	5.6	45.4	24	84	08 45 00		
09 00 00	---	23 54 58	30.9	-65.2	5.9	44.4	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 52.861557	0.00
	85 16 41.77889	* 85 00 00.000000	84 55 01.09419	0.00
	fake circumpolar target for a TS to look at			
* 1758+388	17 58 44.703952	* 18 00 24.765361	18 00 56.189014	0.00
J1800+3848	38 48 32.47341	* 38 48 30.69739	38 48 24.09153	0.00
	./rk08vu_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 3569 observations, 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)
1758+388        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

```



```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 52.790367	0.00
	85 16 41.77889	* 85 00 00.000000	84 55 01.25768	0.00
	fake circumpolar target for a TS to look at			
* 1045-188	10 45 40.093264	* 10 48 06.620604	10 48 52.684611	0.00
J1048-1909	-18 53 44.08720	*-19 09 35.72683	-19 14 42.15662	0.00
	./rk08vv_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 2578 observations, 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)
3C286	138.9
1045-188	137.3

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

rk08vwtr

RADIOASTRON AGN SURVEY

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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

--- Sat 18 Apr 2015 Day 108 ---

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

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

01 10 00	1717+178	16 07 37	51.9	151.4	-1.2	-17.6	0	0	01 10 00
01 22 00	---	16 19 39	52.7	155.9	-1.0	-14.9	720	23	01 10 01
01 22 30	1717+178	16 20 09	52.8	156.1	-1.0	-14.8	24	23	01 22 30
01 30 00	---	16 27 41	53.2	158.9	-0.9	-13.1	450	37	01 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

01 35 00	1717+178	16 32 42	53.5	160.9	-0.8	-11.9	292	37	01 35 00
01 47 00	---	16 44 44	54.0	165.7	-0.6	-9.0	720	60	01 35 01
01 47 30	1717+178	16 45 14	54.0	165.9	-0.6	-8.9	24	60	01 47 30
02 00 00	---	16 57 46	54.4	170.9	-0.4	-5.7	750	84	01 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: 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

```

==== Setup file: ra18cm2.set

```

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

```

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 1717+178	17 17 00.324732	* 17 19 13.048481	17 19 54.532496	0.00
J1719+1745	17 48 08.51592	* 17 45 06.43714	17 44 09.72059	0.00

rk08vxtr

RADIOASTRON AGN SURVEY

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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

--- Sat 18 Apr 2015 Day 108 ---

----- 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 10 00 1741-038 19 08 07 30.4 204.3 1.4 14.3 0 0 04 10 00
04 22 00 --- 19 20 09 29.6 207.6 1.6 16.2 720 23 04 10 01
04 22 30 1741-038 19 20 39 29.6 207.8 1.6 16.3 24 23 04 22 30
04 30 00 --- 19 28 10 29.1 209.8 1.7 17.4 450 37 04 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
04 35 00 1741-038 19 33 11 28.7 211.2 1.8 18.2 293 37 04 35 00
04 47 00 --- 19 45 13 27.7 214.4 2.0 19.9 720 60 04 35 01
04 47 30 1741-038 19 45 43 27.7 214.5 2.0 20.0 24 60 04 47 30
05 00 00 --- 19 58 15 26.5 217.8 2.2 21.7 750 84 04 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: 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

```

==== Setup file: ra18cm2.set

```

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

```

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
* 1741-038	17 41 20.616010	* 17 43 58.856134	17 44 48.049308	0.00
J1743-0350	-03 48 48.90004	*-03 50 04.61684	-03 50 22.91480	0.00


```

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 = off
LO sum= 22228.00 22228.00 22228.00 22228.00
BBC fr=  728.00  728.00  728.00  728.00
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)		(Date)	Error
	(B1950)	(J2000)		(mas)
* OH043_H2O	19 09 30.923822	* 19 11 53.997000	19 12 38.107234	0.00
OH043.8-00.1	09 30 46.27092	* 09 35 50.59000	09 37 23.94374	0.00
* 1749+096	17 49 10.387929	* 17 51 32.818572	17 52 17.132205	0.00
J1751+0939	09 39 42.82575	* 09 39 00.72830	09 38 48.80570	0.00


```

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)	(Date)	Error (mas)	
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 52.685920	0.00
	85 16 41.77889	* 85 00 00.000000	84 55 01.47432	0.00
	fake circumpolar target for a TS to look at			
* 1547+507	15 47 52.271615	* 15 49 17.468556	15 49 44.977710	0.00
J1549+5038	50 47 09.25434	* 50 38 05.78805	50 35 16.08052	0.00
	./rk08vy_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 1541 observations, 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)
1547+507	112.8

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

For common VLBI bands, this is:

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

1st LO=	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:  1  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:  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 52.664963	0.00
	85 16 41.77889	* 85 00 00.000000	84 55 01.51511	0.00
	fake circumpolar target for a TS to look at			
* 1633+382	16 33 30.625100	* 16 35 15.492975	16 35 48.719415	0.00
J1635+3808	38 14 10.08266	* 38 08 04.50043	38 06 08.88838	0.00
	./rk08vz_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 16451 observations, RA-A02-10, 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)
1633+382	116.9

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

rk08watr

RADIOASTRON AGN SURVEY

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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

--- Sat 18 Apr 2015 Day 108 ---

----- 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

19 20 00	1045-188	10 20 36	17.4	173.0	-0.5		-4.4	0	0	19 20 00
19 32 00	---	10 32 38	17.6	176.0	-0.3		-2.6	720	23	19 20 01
19 32 30	1045-188	10 33 09	17.6	176.1	-0.3		-2.5	24	23	19 32 30
19 40 00	---	10 40 40	17.6	178.0	-0.1		-1.3	450	37	19 32 31

----- 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

19 45 00	1045-188	10 45 41	17.7	179.2	-0.1		-0.5	293	37	19 45 00
19 57 00	---	10 57 43	17.6	182.2	0.1		1.4	720	60	19 45 01
19 57 30	1045-188	10 58 13	17.6	182.3	0.2		1.5	24	60	19 57 30
20 10 00	---	11 10 45	17.5	185.4	0.4		3.4	750	84	19 57 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

Matching groups in ./rk08wa_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:  3          Station: TORUN          Total bit rate:  256
Format: MKIV1:4          Bits per sample:  2          Sample rate: 32.000
Number of channels:  4  DBE type:          Speedup factor:  1.00

```

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
* 1045-188	10 45 40.093264	* 10 48 06.620604	10 48 52.671974	0.00
J1048-1909	-18 53 44.08720	*-19 09 35.72683	-19 14 42.20381	0.00


```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(Date)	Error (mas)	
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 52.635613	0.00
	85 16 41.77889	* 85 00 00.000000	84 55 01.57097	0.00
	fake circumpolar target for a TS to look at			
* 1717+178	17 17 00.324732	* 17 19 13.048481	17 19 54.551477	0.00
J1719+1745	17 48 08.51592	* 17 45 06.43714	17 44 09.87082	0.00
	./rk08wb_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 2632 observations, 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)
3C286	138.5
1717+178	119.9

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

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 = off
 LO sum= 22228.00 22228.00 22228.00 22228.00
 BBC fr= 728.00 728.00 728.00 728.00
 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)		(Date)	Error
	(B1950)	(J2000)		(mas)
* VX_SGR_H20	18 05 02.967625	* 18 08 04.048310	18 09 00.170362	0.00
	-22 13 55.31085	*-22 13 26.63270	-22 13 06.62536	0.00
* 1730-130	17 30 13.535189	* 17 33 02.705787	17 33 55.358112	0.00
J1733-1304	-13 02 45.83991	*-13 04 49.54838	-13 05 19.75952	0.00

rg1laptr

RADIOASTRON MASER OBSERVATIONS

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Observing mode: K-band, dual-pol

Schedule for TORUN (Code Tr) Page 2

RadioAstron Maser observations

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
 Early: Seconds between end of slew and start. Dwell: On source seconds.
 Disk: GBytes recorded to this point.
 TPStart: Recording start time. Frequencies are L0 sum (band edge).
 SYNC: Time correlator is expected to sync up.

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

--- Sun 19 Apr 2015 Day 109 ---

----- This is a fringe finder/clock offset calibrator 15.7 deg. from SGR_B2M -----

```
Next scan frequencies: 22228.00 22228.00 22228.00 22228.00
Next BBC frequencies:   728.00   728.00   728.00   728.00
Next scan bandwidths:  16.00   16.00   16.00   16.00
```

```
02 52 00 1730-130    17 53 51 23.7 185.3 0.3      3.3   0      0   02 52 00
02 57 00 ---          17 58 52 23.6 186.6 0.4      4.1  300     10   02 52 01
```

----- Please, make sure PCAL is OFF for SGR_B2M maser observations. -----

```
03 00 00 SGR_B2M    18 01 52  8.5 183.0 0.2      2.1  109     10   03 00 00
03 19 30 ---          18 21 25  8.2 187.4 0.6      5.0 1170     47   03 00 01

03 20 00 SGR_B2M    18 21 55  8.2 187.5 0.6      5.1   24     47   03 20 00
03 39 30 ---          18 41 29  7.7 191.8 0.9      8.0 1170     84   03 20 01

03 40 00 SGR_B2M    18 41 59  7.7 191.9 0.9      8.1   24     84   03 40 00
04 00 00 ---          19 02 02  7.0 196.3 1.2     11.0 1200    123   03 40 01
```

SETUP FILE INFORMATION:

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

==== Setup file: ra1cm2.set

Matching groups in ./rg1lap_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: 3 Setup file default. Used with PCAL = off
 LO sum= 22228.00 22228.00 22228.00 22228.00
 BBC fr= 728.00 728.00 728.00 728.00
 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)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* SGR_B2M	17 44 10.342460	* 17 47 20.150000	17 48 19.136702	0.00
SGR_B2M_H20	-28 22 01.76093	*-28 23 04.03000	-28 23 10.20709	0.00
* 1730-130	17 30 13.535189	* 17 33 02.705787	17 33 55.360173	0.00
J1733-1304	-13 02 45.83991	*-13 04 49.54838	-13 05 19.75312	0.00

rk08wctr

RADIOASTRON AGN SURVEY
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Observing mode: K/P-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 21 Apr 2015 Day 111 ---

----- 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	0827+243	14 13 02	21.8 -78.4	5.7		40.1	0		0	23 00 00	
23 14 30	---	14 27 35	19.7 -75.7	5.9		39.6	870		28	23 00 01	
23 15 00	0827+243	14 28 05	19.6 -75.6	5.9		39.6	24		28	23 15 00	
23 29 30	---	14 42 37	17.5 -72.9	6.2		39.0	870		56	23 15 01	
23 30 00	0827+243	14 43 07	17.4 -72.8	6.2		39.0	24		56	23 30 00	
23 44 30	---	14 57 40	15.4 -70.1	6.4		38.2	870		84	23 30 01	
23 45 00	0827+243	14 58 10	15.3 -70.0	6.4		38.2	24		84	23 45 00	
23 59 59	---	15 13 12	13.2 -67.2	6.7		37.4	899		112	23 45 01	

SETUP FILE INFORMATION:

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

=====
Setup file: ra1cm2.set

Matching groups in ./rk08wc_freq.dat:

tr1cm

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= 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 52.168736	0.00
	85 16 41.77889	* 85 00 00.000000	84 55 02.35208	0.00
	fake circumpolar target for a TS to look at			
* 0827+243	08 27 54.398594	* 08 30 52.086193	08 31 46.461786	0.00
J0830+2410	24 21 07.66367	* 24 10 59.82026	24 07 45.65857	0.00
	./rk08wc_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 3847 observations, 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)
0827+243    92.7

```

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

For common VLBI bands, this is:

```

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

```

rk08wdtr

RADIOASTRON AGN SURVEY
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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

--- Thu 23 Apr 2015 Day 113 ---

----- 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	0917+449	05 19 27	50.5	77.0	-4.0		-55.3	0	0	14 00 00	
14 14 30	---	05 33 59	52.6	79.4	-3.8		-56.0	870	28	14 00 01	
14 15 00	0917+449	05 34 29	52.7	79.5	-3.8		-56.1	24	28	14 15 00	
14 29 30	---	05 49 02	54.8	81.9	-3.5		-56.7	870	56	14 15 01	
14 30 00	0917+449	05 49 32	54.9	82.0	-3.5		-56.7	24	56	14 30 00	
14 44 30	---	06 04 04	57.1	84.5	-3.3		-57.1	870	84	14 30 01	
14 45 00	0917+449	06 04 34	57.2	84.6	-3.3		-57.1	24	84	14 45 00	
15 00 00	---	06 19 37	59.4	87.3	-3.0		-57.4	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: 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 51.946118	0.00
	85 16 41.77889	* 85 00 00.000000	84 55 02.72288	0.00
	fake circumpolar target for a TS to look at			
* 0917+449	09 17 41.919222	* 09 20 58.458485	09 21 58.594320	0.00
J0920+4441	44 54 39.62449	* 44 41 53.98501	44 37 59.51995	0.00
	./rk08wd_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 2520 observations, 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)
0917+449	94.6

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

rk08wfr

RADIOASTRON AGN SURVEY

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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 24 Apr 2015 Day 114 ---

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

Table with columns: Time, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. Rows include scan frequencies and detailed scan data for source 0917+449.

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 51.814425	0.00
	85 16 41.77889	* 85 00 00.000000	84 55 02.96003	0.00
	fake circumpolar target for a TS to look at			
* 0917+449	09 17 41.919222	* 09 20 58.458485	09 21 58.576610	0.00
J0920+4441	44 54 39.62449	* 44 41 53.98501	44 37 59.59988	0.00
	./rk08wf_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 2520 observations, 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)
0917+449	93.7

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

For common VLBI bands, this is:

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


```

1st LO=  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 51.782802	0.00
	85 16 41.77889	* 85 00 00.000000	84 55 03.01910	0.00
	fake circumpolar target for a TS to look at			
* 1713+218	17 13 13.643015	* 17 15 21.257012	17 16 01.378435	0.00
J1715+2145	21 48 50.17212	* 21 45 31.70121	21 44 30.31165	0.00
	./rk08wg_sources.radioastron HIGHz, rfc_2013d Petrov, 2013, unpublished 50 observations, RA-A02-03			

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)
1713+218	122.4

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

rk08whtr

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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

--- Sat 25 Apr 2015 Day 115 ---

----- 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	1123+264	17 25 22	20.8 -73.9	6.0		40.0	0	0	02 00 00
02 14 30	---	17 39 54	18.7 -71.2	6.2		39.3	870	28	02 00 01
02 15 00	1123+264	17 40 24	18.6 -71.1	6.2		39.2	24	28	02 15 00
02 29 30	---	17 54 56	16.6 -68.4	6.5		38.4	870	56	02 15 01
02 30 00	1123+264	17 55 26	16.5 -68.3	6.5		38.4	24	56	02 30 00
02 44 30	---	18 09 59	14.5 -65.7	6.7		37.5	870	84	02 30 01
02 45 00	1123+264	18 10 29	14.4 -65.6	6.7		37.5	24	84	02 45 00
03 00 00	---	18 25 31	12.4 -62.8	7.0		36.5	900	112	02 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: 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)	(Date)	Error (mas)	
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 51.757716	0.00
	85 16 41.77889	* 85 00 00.000000	84 55 03.06646	0.00
	fake circumpolar target for a TS to look at			
* 1123+264	11 23 14.869304	* 11 25 53.711924	11 26 43.105674	0.00
J1125+2610	26 26 49.99096	* 26 10 19.97856	26 05 14.27264	0.00
	./rk08wh_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 3323 observations, 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)
1123+264	124.4

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


```

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 51.690894	0.00
	85 16 41.77889	* 85 00 00.000000	84 55 03.19442	0.00
	fake circumpolar target for a TS to look at			
* 1637+574	16 37 17.425182	* 16 38 13.456297	16 38 32.348977	0.00
J1638+5720	57 26 15.76127	* 57 20 23.97898	57 18 32.72872	0.00
	./rk08wi_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 8888 observations, 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)
1637+574	103.2

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

rk08wktr

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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  
-----
```

--- Sat 25 Apr 2015 Day 115 ---

----- 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 1637+574 12 28 29 55.4 57.4 -4.2 -69.5 0 0 21 00 00  
21 19 30 --- 12 48 02 57.8 59.0 -3.8 -72.4 1170 37 21 00 01  
  
21 20 00 1637+574 12 48 32 57.9 59.0 -3.8 -72.4 24 37 21 20 00  
21 40 00 --- 13 08 35 60.5 60.5 -3.5 -75.4 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: ra18cm2.set

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

Disk used to record data.

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

The following frequency sets based on these setups were used.

Frequency Set: 3 Setup file default. Used with PCAL = 1MHz
 LO sum= 1668.00 1668.00 1668.00 1668.00
 BBC fr= 732.00 732.00 732.00 732.00
 Bandwd= 16.00 16.00 16.00 16.00
 Matching frequency sets: 3

Track assignments are:

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

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 51.659518	0.00
	85 16 41.77889	* 85 00 00.000000	84 55 03.25519	0.00
	fake circumpolar target for a TS to look at			
* 1637+574	16 37 17.425182	* 16 38 13.456297	16 38 32.356079	0.00
J1638+5720	57 26 15.76127	* 57 20 23.97898	57 18 32.79106	0.00
	./rk08wk_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 8888 observations, 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)
1637+574	103.2

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

rk08wltr

RADIOASTRON AGN SURVEY

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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

--- Sun 26 Apr 2015 Day 116 ---

----- 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	1327+321	15 28 58	59.9	236.8	2.0	36.3	0	0	00 00 00			
00 19 30	---	15 48 32	57.4	243.2	2.3	39.1	1170	37	00 00 01			
00 20 00	1327+321	15 49 02	57.3	243.3	2.3	39.2	24	37	00 20 00			
00 40 00	---	16 09 05	54.6	249.1	2.6	41.3	1200	76	00 20 01			

SETUP FILE INFORMATION:

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

=====
Setup file: ra18cm2.set

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

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

Frequency Set:  3  Setup file default.  Used with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00   732.00   732.00   732.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  3

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 51.643990	0.00
	85 16 41.77889	* 85 00 00.000000	84 55 03.28538	0.00
	fake circumpolar target for a TS to look at			
* 1327+321	13 27 34.876201	* 13 29 52.864906	13 30 36.292081	0.00
J1329+3154	32 09 38.80938	* 31 54 11.05448	31 49 27.28501	0.00
	./rk08wl_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 617 observations, 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)
1327+321	133.7

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

rk08wmtr

RADIOASTRON AGN SURVEY
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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

--- Sun 26 Apr 2015 Day 116 ---

----- 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 20 00	1751+441	17 49 21	81.0	174.8	-0.1		-4.3	0	0	02 20 00
02 39 30	---	18 08 55	80.7	197.0	0.3		14.2	1170	37	02 20 01
02 40 00	1751+441	18 09 25	80.7	197.5	0.3		14.6	22	37	02 40 00
03 00 00	---	18 29 28	79.3	216.8	0.6		30.1	1200	76	02 40 01

SETUP FILE INFORMATION:

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

==== Setup file: 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 51.631880	0.00
	85 16 41.77889	* 85 00 00.000000	84 55 03.30895	0.00
	fake circumpolar target for a TS to look at			
* 1751+441	17 51 53.712584	* 17 53 22.647889	17 53 51.038064	0.00
J1753+4409	44 10 17.80399	* 44 09 45.68615	44 09 30.86347	0.00
	./rk08wm_sources.radioastron AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 1851 observations, 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)
1751+441	103.7

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

For common VLBI bands, this is:

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


```

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

```

The following frequency sets based on these setups were used.

```

Frequency Set:  4  Setup file default.  Used with PCAL = off
LO sum= 22228.00 22228.00 22228.00 22228.00
BBC fr=  728.00  728.00  728.00  728.00
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)		(Date)	Error
	(B1950)	(J2000)		(mas)
* W49N_H2O	19 07 49.797628	* 19 10 13.409600	19 10 57.935905	0.00
	09 01 15.49441	* 09 06 12.80300	09 07 45.21205	0.00
* 1749+096	17 49 10.387929	* 17 51 32.818572	17 52 17.352105	0.00
J1751+0939	09 39 42.82575	* 09 39 00.72830	09 38 49.82959	0.00

rk08wotr

RADIOASTRON AGN SURVEY

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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 LO sum (band edge).
SYNC: Time correlator 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 26 Apr 2015 Day 116 ---

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

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

Table with 11 columns: Start UT, Stop UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. It lists scan times and parameters for source 1817+387.

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: 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)	(Date)	Error (mas)	
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 51.560139	0.00
	85 16 41.77889	* 85 00 00.000000	84 55 03.44887	0.00
	fake circumpolar target for a TS to look at			
* 1817+387	18 17 46.175701	* 18 19 26.547379	18 19 58.277481	0.00
J1819+3845	38 43 40.47033	* 38 45 01.78611	38 45 21.86796	0.00
	./rk08wo_sources.radioastron			
	AGN, IDV, rfc_2013d Petrov, 2013, unpublished 89 observations, 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)
1817+387	102.6

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

For common VLBI bands, this is:

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

1st LO=	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)	(Date)	Error (mas)
* FAKERA	11 57 21.769299 * 12 00 00.000000	12 00 51.528620	0.00
	85 16 41.77889 * 85 00 00.000000	84 55 03.51022	0.00
	fake circumpolar target for a TS to look at		
* 1617+229	16 17 06.466940 * 16 19 14.824597	16 19 55.363035	0.00
J1619+2247	22 54 58.47369 * 22 47 47.85093	22 45 36.00224	0.00
	./rk08wp_sources.radioastron AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 8180 observations, 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)
1617+229	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 $60 \text{ deg } F^{-0.6}$ 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

rg11artr

RADIOASTRON MASER OBSERVATIONS

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Observing mode: K-band, dual-pol

Schedule for TORUN (Code Tr) Page 2

RadioAstron Maser observations

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are L0 sum (band edge).
SYNC: Time correlator is expected to sync up.

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

--- Mon 27 Apr 2015 Day 117 ---

----- This is a fringe finder/clock offset calibrator 19.4 deg. from W49N_H20 -----

Next scan frequencies: 22228.00 22228.00 22228.00 22228.00
Next BBC frequencies: 728.00 728.00 728.00 728.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

00 52 00 1749+096 16 25 03 43.1 149.9 -1.5 -17.8 0 0 00 52 00
00 57 00 --- 16 30 04 43.5 151.5 -1.4 -16.9 300 10 00 52 01

----- Please, make sure PCAL is OFF for W49N_H20 maser observations. -----

01 00 00 W49N_H20 16 33 05 35.8 129.3 -2.6 -28.1 120 10 01 00 00
01 19 30 --- 16 52 38 38.0 134.7 -2.3 -25.6 1170 47 01 00 01

01 20 00 W49N_H20 16 53 08 38.0 134.8 -2.3 -25.5 24 47 01 20 00
01 39 30 --- 17 12 41 40.0 140.5 -2.0 -22.8 1170 84 01 20 01

01 40 00 W49N_H20 17 13 11 40.0 140.7 -2.0 -22.7 24 84 01 40 00
02 00 00 --- 17 33 15 41.8 146.8 -1.6 -19.5 1200 123 01 40 01

SETUP FILE INFORMATION:

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

=====
Setup file: ra1cm2.set

Matching groups in ./rg11ar_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:  3  Setup file default.  Used with PCAL = off
LO sum= 22228.00 22228.00 22228.00 22228.00
BBC fr=  728.00  728.00  728.00  728.00
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)		(Date)	Error
	(B1950)	(J2000)		(mas)
* W49N_H20	19 07 49.797628	* 19 10 13.409600	19 10 57.957775	0.00
	09 01 15.49441	* 09 06 12.80300	09 07 45.28919	0.00
* 1749+096	17 49 10.387929	* 17 51 32.818572	17 52 17.371258	0.00
J1751+0939	09 39 42.82575	* 09 39 00.72830	09 38 49.91017	0.00

rg11astr

RADIOASTRON MASER OBSERVATIONS

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Observing mode: K-band, dual-pol

Schedule for TORUN (Code Tr) Page 2

RadioAstron Maser observations

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are L0 sum (band edge).
SYNC: Time correlator is expected to sync up.

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

--- Mon 27 Apr 2015 Day 117 ---

----- This is a fringe finder/clock offset calibrator 15.6 deg. from W43A_H20 -----

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

06 52 00	1937-101	22 26 03	17.8	223.1	2.8	24.6	0	0	06 52 00
06 57 00	---	22 31 03	17.3	224.2	2.8	25.2	300	10	06 52 01

----- Please, make sure PCAL is OFF for W43A_H20 maser observations. -----

07 00 00	W43A_H20	22 34 04	17.9	241.0	3.8	31.7	132	10	07 00 00
07 19 30	---	22 53 37	15.3	245.4	4.1	33.1	1170	47	07 00 01
07 20 00	W43A_H20	22 54 07	15.3	245.5	4.1	33.1	24	47	07 20 00
07 39 30	---	23 13 40	12.5	249.6	4.4	34.3	1170	84	07 20 01
07 40 00	W43A_H20	23 14 10	12.5	249.8	4.4	34.3	24	84	07 40 00
08 00 00	---	23 34 14	9.6	253.9	4.8	35.3	1200	123	07 40 01

SETUP FILE INFORMATION:

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

=====
Setup file: ra1cm2.set

Matching groups in ./rg11as_freq.dat:
tr1cm

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

```

The following frequency sets based on these setups were used.

```

Frequency Set:  4  Setup file default.  Used with PCAL = 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:  4

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error
	(B1950)	(J2000)		(mas)
* W43A_H2O	18 45 05.342703	* 18 47 41.166000	18 48 29.545169	0.00
	-01 48 33.18223	*-01 45 11.70000	-01 44 04.85000	0.00
* 1937-101	19 37 12.649200	* 19 39 57.256582	19 40 47.996335	0.00
J1939-1002	-10 09 39.45684	*-10 02 41.52079	-10 00 26.08722	0.00

rg11attr

RADIOASTRON MASER OBSERVATIONS

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Observing mode: K-band, dual-pol

Schedule for TORUN (Code Tr) Page 2

RadioAstron Maser observations

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are L0 sum (band edge).
SYNC: Time correlator is expected to sync up.

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

--- Mon 27 Apr 2015 Day 117 ---

----- This is a fringe finder/clock offset calibrator 16.7 deg. from W51_E8_H20 -----

Next scan frequencies: 22228.00 22228.00 22228.00 22228.00
Next BBC frequencies: 728.00 728.00 728.00 728.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

08 52 00 2029+121 00 26 22 28.6 251.4 3.9 35.6 0 0 08 52 00
08 57 00 --- 00 31 23 27.9 252.5 4.0 35.9 300 10 08 52 01

----- Please, make sure PCAL is OFF for W51_E8_H20 maser observations. -----

09 00 00 W51_E8_H20 00 34 24 19.1 269.0 5.2 38.3 133 10 09 00 00
09 19 30 --- 00 53 57 16.1 272.9 5.5 38.3 1170 47 09 00 01

09 20 00 W51_E8_H20 00 54 27 16.1 273.0 5.5 38.3 24 47 09 20 00
09 39 30 --- 01 14 00 13.1 276.8 5.8 38.0 1170 84 09 20 01

09 40 00 W51_E8_H20 01 14 30 13.1 276.9 5.8 38.0 24 84 09 40 00
10 00 00 --- 01 34 33 10.1 280.8 6.2 37.5 1200 123 09 40 01

SETUP FILE INFORMATION:

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

=====
Setup file: ra1cm2.set
Matching groups in ./rg11at_freq.dat:
tr1cm

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= 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 = off
LO sum= 22228.00 22228.00 22228.00 22228.00
BBC fr=  728.00  728.00  728.00  728.00
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)		(Date)	Error (mas)
	(B1950)	(J2000)		
* W51_E8_H20	19 21 26.205840	* 19 23 43.873630	19 24 26.569021	0.00
	14 24 36.09430	* 14 30 29.45360	14 32 17.25357	0.00
* 2029+121	20 29 32.681261	* 20 31 54.994268	20 32 38.749004	0.00
J2031+1219	12 09 28.75295	* 12 19 41.34011	12 22 47.60674	0.00

rk08wqtr

RADIOASTRON AGN SURVEY

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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

--- Mon 27 Apr 2015 Day 117 ---

----- 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

Table with columns: Start UT, Stop UT, Source, LST, EL, AZ, HA, UP, ParA, Early Dwell, Disk GBytes, TPStart SYNC. Contains scan data for 1751+441.

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 ./rk08wq_freq.dat:
tr1cm

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= 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)	(Date)	Error (mas)
* FAKERA	11 57 21.769299 * 12 00 00.000000	12 00 51.451769	0.00
	85 16 41.77889 * 85 00 00.000000	84 55 03.65860	0.00
	fake circumpolar target for a TS to look at		
* 1751+441	17 51 53.712584 * 17 53 22.647889	17 53 51.078462	0.00
J1753+4409	44 10 17.80399 * 44 09 45.68615	44 09 31.12241	0.00
	./rk08wq_sources.radioastron AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 1851 observations, 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)
1751+441    104.1

```

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

For common VLBI bands, this is:

```

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

```


rk08wrtr

RADIOASTRON AGN SURVEY

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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

--- Thu 30 Apr 2015 Day 120 ---

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

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

23 00 00 1005+066 14 48 31 17.0 257.5 4.7 36.1 0 0 23 00 00
23 14 30 --- 15 03 04 14.9 260.5 4.9 36.6 870 28 23 00 01
23 15 00 1005+066 15 03 34 14.8 260.6 4.9 36.6 24 28 23 15 00
23 25 00 --- 15 13 35 13.3 262.7 5.1 36.8 600 47 23 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

23 30 00 1005+066 15 18 36 12.5 263.7 5.2 36.9 293 47 23 30 00
23 44 30 --- 15 33 09 10.4 266.6 5.4 37.1 870 75 23 30 01
23 45 00 1005+066 15 33 39 10.3 266.7 5.4 37.1 24 75 23 45 00
23 59 59 --- 15 48 41 8.0 269.8 5.7 37.2 899 104 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: 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

```

==== 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)		(Date)	Error (mas)
	(B1950)	(J2000)		
* 1005+066	10 05 23.466064	* 10 08 00.816157	10 08 49.486621	0.00
J1008+0621	06 36 03.30797	* 06 21 21.21593	06 16 40.80908	0.00

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