

RadioAstron Schedule for Mar 2013

W nazwach eksperymentów RA zamiast re* jest L_*, C_* lub K_*, zależnie od pasma

0 3 6 9 12 15 18 21 24

Day 60 1.03/Pia				es071a		C_03nk	L_06o	C_03nl				
Day 61 2.03/Sob				eb052a			L_03no	L_03np				
Day 62 3.03/Nie				eb052b		L_03nq	C_03nr					
Day 63 4.03/Pon				eb052c		L_03ns	C_03nt					
Day 64 5.03/Wto				eb052d			L_03nv					
Day 67 8.03/Pia				Check L	f1311							
Day 68 9.03/Sob								gk047a				
Day 69 10.03/Nie	gk047a							et028				
Day 70 11.03/Pon				et028	n1311			em100a				
Day 71 12.03/Wto	em100a			c11311		em100b		em100c				
Day 72 13.03/Sro	em100c		ed039b					ep087c				
Day 73 14.03/Czw	ep087c					em100d		em100e				
Day 76 17.03/Nie						K_03ol	C_03om	C_03on	C_03oo			
Day 77 18.03/Pon	C_03op	K_02av	K_03oq	L_03or	K_02aw	L_03os	L_03ot	L_03ou	K_03ov	C_03ow	L_03ox	
Day 78 19.03/Wto											C-band e-VLBI	
Day 79 20.03/Sro								C-band e-VLBI		C_03pe	K_02ax	
Day 80 21.03/Czw										C_03pf	C_03pg	
Day 81 22.03/Pia										L_06q	L_03ph	L_03pi

0 3 6 9 12 15 18 21 24

RadioAstron Sessions, Mar 2013 r.

Użytkownik i hasło ftp dla logów i schedules: grt K0&th%

ftp://webinet.asc.rssi.ru

Przykład dla log files: cd GRT_log_files/2013_01/2013_01_10_raes03jj

Przykład dla sched files: cd schedule/grtsched/RAES/re03jj

Name	Band	DoY	D	M	WD	UT_Start		UT_Stop		
						h	m	h	m	
re03nk	C	60	1.03/Pia			18	40	19	20	
re06o	L	60	1.03/Pia			20	30	21	10	
re03nl	C	60	1.03/Pia			22	30	24	0	
re03no	L	61	2.03/Sob			20	20	21	0	
re03np	L	61	2.03/Sob			22	0	23	0	
re03nq	L	62	3.03/Nie			16	20	17	0	
re03nr	C	62	3.03/Nie			20	10	20	40	
re03ns	L	63	4.03/Pon			16	20	17	0	
re03nt	C	63	4.03/Pon			20	10	20	40	
re03nv	L	64	5.03/Wto			19	20	20	0	
re12a	L	68	9.03/Sob			10	00	1	00	= gk047a
re03ol	K	76	17.03/Nie			17	0	17	40	
re03om	C	76	17.03/Nie			19	0	19	40	
re03on	C	76	17.03/Nie			20	50	21	30	
re03oo	C	76	17.03/Nie			22	40	23	20	
re03op	C	77	18.03/Pon			0	0	0	40	
re02av	K	77	18.03/Pon			4	0	4	30	
re03oq	K	77	18.03/Pon			6	0	6	30	
re03or	L	77	18.03/Pon			7	40	8	10	
re02aw	K	77	18.03/Pon			11	0	11	40	
re03os	L	77	18.03/Pon			13	20	14	0	
re03ot	L	77	18.03/Pon			15	0	15	40	
re03ou	L	77	18.03/Pon			16	20	17	0	
re03ov	K	77	18.03/Pon			18	20	19	0	
re03ow	C	77	18.03/Pon			19	40	20	20	
re03ox	L	77	18.03/Pon			22	20	23	40	
re03pe	C	79	20.03/Sro			17	40	18	20	
re02ax	K	79	20.03/Sro			19	20	20	0	
re03pf	C	80	21.03/Czw			16	0	16	40	
re03pg	C	80	21.03/Czw			19	20	20	0	
re06q	L	81	22.03/Pia			14	0	14	40	
re03ph	L	81	22.03/Pia			16	0	16	40	
re03pi	L	81	22.03/Pia			19	10	19	50	

RADIOASTRON AGN FRINGE SURVEY

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

Notes: C/L-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN fringe 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 1 Mar 2013 Day 60 ---

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

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
 Next BBC frequencies: 636.00 636.00 636.00 636.00
 Next scan bandwidths: 16.00 16.00 16.00 16.00

18 40 00	0727-115	06 33 10	24.0	164.5	-1.0	-9.4	0	0	18 40 00
18 49 30	---	06 42 41	24.4	167.0	-0.8	-7.9	570	18	18 40 01
18 50 00	0727-115	06 43 11	24.4	167.1	-0.8	-7.8	24	18	18 50 00
18 59 30	---	06 52 43	24.7	169.7	-0.6	-6.3	570	36	18 50 01
19 00 00	0727-115	06 53 13	24.7	169.8	-0.6	-6.2	24	36	19 00 00
19 09 30	---	07 02 45	24.9	172.4	-0.5	-4.7	570	55	19 00 01
19 10 00	0727-115	07 03 15	24.9	172.5	-0.5	-4.6	24	55	19 10 00
19 20 00	---	07 13 16	25.1	175.2	-0.3	-2.9	600	74	19 10 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

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr6cm E-mail Borkowski 23Apr03 (CR 1May03)

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=	4200.00	4200.00	4200.00	4200.00
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 pcal sets:	1
LO sum=	4836.00	4836.00	4836.00	4836.00
BBC fr=	636.00	636.00	636.00	636.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	2			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

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)		
J0730-1141	07 27 58.097814	* 07 30 19.112474	07 30 57.958786	0.10
* 0727-115	-11 34 52.58107	*-11 41 12.60063	-11 43 11.75504	0.10

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0727-115	126.7

RADIOASTRON PULSAR OBSERVATIONS

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Observing mode: L-band, dual-pol

Notes: L-band, Radioastron-compatible frequency setup
 P-CAL is OFF
 Tsys is OFF
 auto-level (AGC) is OFF

Schedule for TORUN (Code Tr) Page 2

RadioAstron pulsar observations

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

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

--- Fri 1 Mar 2013 Day 60 ---

----- This is a 1min calibration scan with auto-level (AGC) ON -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
 Next BBC frequencies: 632.00 632.00 632.00 632.00
 Next scan bandwidths: 16.00 16.00 16.00 16.00

20 28 00	CRAB	08 21 28	45.8	241.8	2.8	34.8	0	0	Stopped
20 29 00	---	08 22 28	45.6	242.1	2.8	34.9	60	0	

----- Please make sure Pcal, noise diode (Tsys) and auto-level (AGC) are OFF now -----

20 30 00	CRAB	08 23 28	45.5	242.3	2.8	35.0	54	0	20 30 00
20 39 30	---	08 32 59	44.2	244.9	3.0	35.9	570	18	20 30 01
20 40 00	CRAB	08 33 30	44.2	245.0	3.0	35.9	24	18	20 40 00
20 49 30	---	08 43 01	42.8	247.4	3.1	36.7	570	36	20 40 01
20 50 00	CRAB	08 43 31	42.8	247.6	3.1	36.8	24	36	20 50 00
20 59 30	---	08 53 03	41.4	249.9	3.3	37.5	570	55	20 50 01
21 00 00	CRAB	08 53 33	41.4	250.1	3.3	37.5	24	55	21 00 00
21 10 00	---	09 03 34	39.9	252.5	3.5	38.1	600	74	21 00 01

SETUP FILE INFORMATION:

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

=====
Setup file: ra18cm2_autolevel.set

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

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:

Disk used to record data.

Setup not used for recording data.

1st LO=	2300.00	2300.00	2300.00	2300.00
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 pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 2

The following pulse cal sets were used with this setup:

Pulse cal detection set: 1 PCAL = OFF
PCALXB1= S1 S2 S3 S4 OFF OFF OFF OFF
PCALXB2= M1 M2 M3 M4 OFF OFF OFF OFF
PCALFR1= 0 0 0 0 0 0 0 0
PCALFR2= 0 0 0 0 0 0 0 0

=====
Setup file: ra18cm2.set

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

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=	2300.00	2300.00	2300.00	2300.00
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 pcal sets:  1
LO sum=    1668.00  1668.00  1668.00  1668.00
BBC fr=     632.00  632.00  632.00  632.00
Bandwd=     16.00   16.00   16.00   16.00
Matching frequency sets:  5

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = OFF
PCALXB1=  S1  S2  S3  S4  OFF  OFF  OFF  OFF
PCALXB2=  M1  M2  M3  M4  OFF  OFF  OFF  OFF
PCALFR1=   0   0   0   0   0   0   0   0
PCALFR2=   0   0   0   0   0   0   0   0

```

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)		
* CRAB	05 31 31.427725	* 05 34 31.973000	05 35 20.911817	0.00
	21 58 54.40670	* 22 00 52.06000	22 01 15.90025	0.00

SOURCE SCAN SUMMARY FOR SOURCES LISTED ABOVE

Scan hours are for recording scans only.

Baseline hours are only counted for scans above horizon at both ends.

Source	Setup file	Frequency sets (duplicates not shown)	Observing hours	
			Scan	Baseline
CRAB	ra18cm2.set	4 5 6	0.642	1.925

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)
CRAB	102.8

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

For common VLBI bands, this is:

327 MHz	117. deg
610 MHz	81. deg
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
43.0 GHz	6. deg

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

Notes: C/K-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN fringe 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 1 Mar 2013 Day 60 ---

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

Next scan frequencies:	4836.00	4836.00	4836.00	4836.00						
Next BBC frequencies:	636.00	636.00	636.00	636.00						
Next scan bandwidths:	16.00	16.00	16.00	16.00						
22 30 00	0528+134	10 23 48	21.0	264.7	4.9		38.0	0	0	22 30 00
22 39 30	---	10 33 19	19.5	266.6	5.0		38.1	570	18	22 30 01
22 40 00	0528+134	10 33 49	19.5	266.7	5.0		38.1	24	18	22 40 00
22 49 30	---	10 43 21	18.0	268.7	5.2		38.1	570	36	22 40 01
22 50 00	0528+134	10 43 51	18.0	268.8	5.2		38.1	24	36	22 50 00
22 59 30	---	10 53 22	16.5	270.7	5.4		38.1	570	55	22 50 01
23 00 00	0528+134	10 53 53	16.4	270.8	5.4		38.1	24	55	23 00 00
23 09 30	---	11 03 24	15.0	272.7	5.5		38.1	570	73	23 00 01
23 10 00	0528+134	11 03 54	14.9	272.8	5.5		38.1	24	73	23 10 00
23 19 30	---	11 13 26	13.5	274.6	5.7		38.0	570	91	23 10 01
23 20 00	0528+134	11 13 56	13.4	274.7	5.7		38.0	24	91	23 20 00
23 29 30	---	11 23 27	12.0	276.6	5.9		37.8	570	109	23 20 01
23 30 00	0528+134	11 23 57	11.9	276.7	5.9		37.8	24	109	23 30 00
23 39 30	---	11 33 29	10.5	278.6	6.0		37.6	570	128	23 30 01
23 40 00	0528+134	11 33 59	10.5	278.7	6.0		37.6	24	128	23 40 00
23 49 30	---	11 43 31	9.0	280.5	6.2		37.4	570	146	23 40 01
23 50 00	0528+134	11 44 01	9.0	280.6	6.2		37.4	24	146	23 50 00
23 59 59	---	11 54 02	7.5	282.6	6.4		37.1	599	165	23 50 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

Matching groups in /home/kirx/sched/catalogs/freq.dat:
 tr6cm E-mail Borkowski 23Apr03 (CR 1May03)

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=	4200.00	4200.00	4200.00	4200.00
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 pcal sets:	1
LO sum=	4836.00	4836.00	4836.00	4836.00
BBC fr=	636.00	636.00	636.00	636.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	2			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

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)
J0530+1331	05 28 06.759218	* 05 30 56.416749	05 31 42.381833	0.10
* 0528+134	13 29 42.28877	* 13 31 55.14944	13 32 20.27656	0.10

Source	Sun distance (deg)
0528+134	101.3

RADIOASTRON AGN FRINGE SURVEY

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

Notes: C/L-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr)

Page 2

RadioAstron AGN fringe 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 2 Mar 2013 Day 61 ---

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

Next scan frequencies:	1668.00	1668.00	1668.00	1668.00						
Next BBC frequencies:	632.00	632.00	632.00	632.00						
Next scan bandwidths:	16.00	16.00	16.00	16.00						
20 20 00	0727-115	08 17 23	24.4	192.5	0.8		7.6	0	0	20 20 00
20 29 30	---	08 26 54	24.1	195.0	0.9		9.1	570	18	20 20 01
20 30 00	0727-115	08 27 24	24.1	195.2	0.9		9.2	24	18	20 30 00
20 39 30	---	08 36 56	23.7	197.7	1.1		10.7	570	36	20 30 01
20 40 00	0727-115	08 37 26	23.6	197.8	1.1		10.8	24	36	20 40 00
20 49 30	---	08 46 58	23.2	200.3	1.3		12.3	570	55	20 40 01
20 50 00	0727-115	08 47 28	23.1	200.4	1.3		12.4	24	55	20 50 00
21 00 00	---	08 57 29	22.6	203.0	1.4		13.9	600	74	20 50 01

SETUP FILE INFORMATION:

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

=====
Setup file: ra18cm2.set

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

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=	2300.00	2300.00	2300.00	2300.00
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 pcal sets:	1
LO sum=	1668.00	1668.00	1668.00	1668.00
BBC fr=	632.00	632.00	632.00	632.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	4			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

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)
J0730-1141	07 27 58.097814	* 07 30 19.112474	07 30 57.944512	0.10
* 0727-115	-11 34 52.58107	*-11 41 12.60063	-11 43 11.90408	0.10
Source	Sun distance (deg)			
0727-115	125.9			

RADIOASTRON AGN FRINGE SURVEY

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

Notes: C/L-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN fringe 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 2 Mar 2013 Day 61 ---

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

Next scan frequencies:	1668.00	1668.00	1668.00	1668.00						
Next BBC frequencies:	632.00	632.00	632.00	632.00						
Next scan bandwidths:	16.00	16.00	16.00	16.00						
22 00 00	0528+134	09 57 39	24.8	259.2	4.4	37.4	0	0	22 00 00	
22 09 30	---	10 07 11	23.4	261.2	4.6	37.6	570	18	22 00 01	
22 10 00	0528+134	10 07 41	23.4	261.3	4.6	37.6	24	18	22 10 00	
22 19 30	---	10 17 12	21.9	263.3	4.8	37.8	570	36	22 10 01	
22 20 00	0528+134	10 17 43	21.9	263.4	4.8	37.9	24	36	22 20 00	
22 29 30	---	10 27 14	20.4	265.4	4.9	38.0	570	55	22 20 01	
22 30 00	0528+134	10 27 44	20.4	265.5	4.9	38.0	24	55	22 30 00	
22 39 30	---	10 37 16	18.9	267.4	5.1	38.1	570	73	22 30 01	
22 40 00	0528+134	10 37 46	18.9	267.5	5.1	38.1	24	73	22 40 00	
22 49 30	---	10 47 17	17.4	269.5	5.3	38.1	570	91	22 40 01	
22 50 00	0528+134	10 47 47	17.4	269.6	5.3	38.1	24	91	22 50 00	
23 00 00	---	10 57 49	15.9	271.6	5.4	38.1	600	110	22 50 01	

SETUP FILE INFORMATION:

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

=====
Setup file: ra18cm2.set

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

```
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= 2300.00 2300.00 2300.00 2300.00
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 pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 4
```

The following pulse cal sets were used with this setup:

```
Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0
```

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)
J0530+1331	05 28 06.759218	* 05 30 56.416749	05 31 42.364744	0.10
* 0528+134	13 29 42.28877	* 13 31 55.14944	13 32 20.21478	0.10

```
Source            Sun distance (deg)
0528+134            100.4
```

re03nqtr

RADIOASTRON AGN FRINGE SURVEY

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

Notes: C/L-band, Radioastron-compatible frequency setup
P-CAL is ON
Tsys is ON
auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN fringe 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 3 Mar 2013 Day 62 ---

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

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 632.00 632.00 632.00 632.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

16 20 00	0821+394	04 20 40	46.8	83.1	-4.1	-50.3	0	0	16 20 00
16 29 30	---	04 30 12	48.2	84.8	-3.9	-50.5	570	18	16 20 01
16 30 00	0821+394	04 30 42	48.3	84.9	-3.9	-50.6	24	18	16 30 00
16 39 30	---	04 40 13	49.7	86.7	-3.8	-50.7	570	36	16 30 01
16 40 00	0821+394	04 40 43	49.8	86.8	-3.8	-50.7	24	36	16 40 00
16 49 30	---	04 50 15	51.2	88.6	-3.6	-50.8	570	55	16 40 01
16 50 00	0821+394	04 50 45	51.3	88.7	-3.6	-50.8	24	55	16 50 00
17 00 00	---	05 00 47	52.8	90.7	-3.4	-50.8	600	74	16 50 01

SETUP FILE INFORMATION:

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

=====
Setup file: ra18cm2.set

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

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=	2300.00	2300.00	2300.00	2300.00
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 pcal sets:	1
LO sum=	1668.00	1668.00	1668.00	1668.00
BBC fr=	632.00	632.00	632.00	632.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	5			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

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)
J0824+3916	08 21 37.310231	* 08 24 55.483856	08 25 49.855640	0.13
* 0821+394	39 26 28.25687	* 39 16 41.90401	39 13 58.57275	0.10
Source	Sun distance (deg)			
0821+394	132.7			

RADIOASTRON AGN FRINGE SURVEY

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

Notes: C/K-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN fringe 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 3 Mar 2013 Day 62 ---

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

```
Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies:  636.00  636.00  636.00  636.00
Next scan bandwidths:  16.00  16.00  16.00  16.00
```

```
20 10 00 0528+134 08 11 18 39.4 233.8 2.7 29.9 0 0 20 10 00
20 19 30 --- 08 20 49 38.3 236.4 2.8 31.0 570 18 20 10 01

20 20 00 0528+134 08 21 19 38.2 236.5 2.8 31.0 24 18 20 20 00
20 29 30 --- 08 30 51 37.0 239.0 3.0 32.0 570 36 20 20 01

20 30 00 0528+134 08 31 21 36.9 239.1 3.0 32.0 24 36 20 30 00
20 40 00 --- 08 41 23 35.6 241.7 3.2 32.9 600 56 20 30 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

Matching groups in /home/kirx/sched/catalogs/freq.dat:
tr6cm E-mail Borkowski 23Apr03 (CR 1May03)

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=	4200.00	4200.00	4200.00	4200.00
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 pcal sets:	1
LO sum=	4836.00	4836.00	4836.00	4836.00
BBC fr=	636.00	636.00	636.00	636.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	3			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

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)
J0530+1331	05 28 06.759218	* 05 30 56.416749	05 31 42.351500	0.10
* 0528+134	13 29 42.28877	* 13 31 55.14944	13 32 20.16252	0.10
Source	Sun distance (deg)			
0528+134	99.5			

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

Notes: C/L-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr)

Page 2

RadioAstron AGN fringe 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 4 Mar 2013 Day 63 ---

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

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
 Next BBC frequencies: 632.00 632.00 632.00 632.00
 Next scan bandwidths: 16.00 16.00 16.00 16.00

16 20 00	0821+394	04 24 37	47.4	83.8	-4.0	-50.4	0	0	16 20 00
16 29 30	---	04 34 08	48.8	85.6	-3.9	-50.6	570	18	16 20 01
16 30 00	0821+394	04 34 38	48.9	85.7	-3.9	-50.6	24	18	16 30 00
16 39 30	---	04 44 10	50.3	87.5	-3.7	-50.8	570	36	16 30 01
16 40 00	0821+394	04 44 40	50.4	87.6	-3.7	-50.8	24	36	16 40 00
16 49 30	---	04 54 11	51.8	89.4	-3.5	-50.8	570	55	16 40 01
16 50 00	0821+394	04 54 41	51.9	89.5	-3.5	-50.8	24	55	16 50 00
17 00 00	---	05 04 43	53.4	91.5	-3.4	-50.8	600	74	16 50 01

SETUP FILE INFORMATION:

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

=====
Setup file: ra18cm2.set

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

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=	2300.00	2300.00	2300.00	2300.00
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 pcal sets:	1
LO sum=	1668.00	1668.00	1668.00	1668.00
BBC fr=	632.00	632.00	632.00	632.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	5			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

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)
J0824+3916	08 21 37.310231	* 08 24 55.483856	08 25 49.849737	0.13
* 0821+394	39 26 28.25687	* 39 16 41.90401	39 13 58.65550	0.10

Source	Sun distance (deg)
0821+394	131.8

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

Notes: C/K-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr)

Page 2

RadioAstron AGN fringe 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 4 Mar 2013 Day 63 ---

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

Next scan frequencies:	4836.00	4836.00	4836.00	4836.00						
Next BBC frequencies:	636.00	636.00	636.00	636.00						
Next scan bandwidths:	16.00	16.00	16.00	16.00						
20 10 00	0528+134	08 15 14	38.9	234.9	2.7		30.4	0	0	20 10 00
20 19 30	---	08 24 46	37.8	237.4	2.9		31.4	570	18	20 10 01
20 20 00	0528+134	08 25 16	37.7	237.6	2.9		31.4	24	18	20 20 00
20 29 30	---	08 34 47	36.5	240.0	3.1		32.3	570	36	20 20 01
20 30 00	0528+134	08 35 18	36.4	240.2	3.1		32.4	24	36	20 30 00
20 40 00	---	08 45 19	35.1	242.7	3.2		33.3	600	56	20 30 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

Matching groups in /home/kirx/sched/catalogs/freq.dat:
tr6cm E-mail Borkowski 23Apr03 (CR 1May03)

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=	4200.00	4200.00	4200.00	4200.00
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 pcal sets:	1
LO sum=	4836.00	4836.00	4836.00	4836.00
BBC fr=	636.00	636.00	636.00	636.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	3			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

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)
J0530+1331	05 28 06.759218	* 05 30 56.416749	05 31 42.339684	0.10
* 0528+134	13 29 42.28877	* 13 31 55.14944	13 32 20.12111	0.10

Source	Sun distance (deg)
0528+134	98.5

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Observing mode: L-band, dual-pol

Notes: L-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN fringe 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 5 Mar 2013 Day 64 ---

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

```
Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies:  632.00  632.00  632.00  632.00
Next scan bandwidths:  16.00   16.00   16.00   16.00
```

```
19 20 00 1228+126    07 29 03 18.4 94.0 -5.0   -37.8    0    0 19 20 00
19 29 30 ---          07 38 34 19.9 95.9 -4.9   -37.7   570   18 19 20 01

19 30 00 1228+126    07 39 04 19.9 96.0 -4.9   -37.7   24   18 19 30 00
19 39 30 ---          07 48 36 21.4 98.0 -4.7   -37.5   570   36 19 30 01

19 40 00 1228+126    07 49 06 21.4 98.1 -4.7   -37.5   24   36 19 40 00
19 49 30 ---          07 58 37 22.8 100.1 -4.5  -37.2   570   55 19 40 01

19 50 00 1228+126    07 59 08 22.9 100.2 -4.5  -37.2   24   55 19 50 00
20 00 00 ---          08 09 09 24.4 102.3 -4.4  -36.9   600   74 19 50 01
```

SETUP FILE INFORMATION:

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

=====
Setup file: ra18cm2.set

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

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=	2300.00	2300.00	2300.00	2300.00
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 pcal sets:	1
LO sum=	1668.00	1668.00	1668.00	1668.00
BBC fr=	632.00	632.00	632.00	632.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	2			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

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)		
J1230+1223	12 28 17.569280	* 12 30 49.423382	12 31 31.380104	0.10
* 1228+126	12 40 01.74884	* 12 23 28.04366	12 18 52.11681	0.10

Source	Sun distance (deg)
1228+126	158.0

RADIOASTRON AGN FRINGE SURVEY

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Observing mode: K-band, dual-pol

Notes: K-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN fringe 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 17 Mar 2013 Day 76 ---

----- 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
```

```
17 00 00 0716+714    05 55 58  69.4  19.8 -1.5   -140.6    0    0  17 00 00
17 09 30 ---          06 05 30  69.9  18.1 -1.3   -144.4   570   18  17 00 01

17 10 00 0716+714    06 06 00  69.9  18.0 -1.3   -144.6    24   18  17 10 00
17 19 30 ---          06 15 32  70.3  16.1 -1.1   -148.7   570   36  17 10 01

17 20 00 0716+714    06 16 02  70.3  16.0 -1.1   -148.9    24   36  17 20 00
17 29 30 ---          06 25 33  70.7  14.0 -1.0   -153.0   570   55  17 20 01

17 30 00 0716+714    06 26 03  70.7  13.9 -1.0   -153.2    24   55  17 30 00
17 40 00 ---          06 36 05  71.0  11.7 -0.8   -157.7   600   74  17 30 01
```


SETUP FILE INFORMATION:

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

=====
Setup file: ralcm2.set

--- WARNING --- This group does not match an entry in the frequency catalog.
This might be ok because the catalog is not complete.
But be very careful to be sure that the setup is correct.

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 pcal sets:	1
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			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ
PCALXB1=	S1 S3 S1 S3 S1 S2 S3 S4	
PCALXB2=	S2 S4 S2 S4 M1 M2 M3 M4	
PCALFR1=	1000 1000 13000 13000 0 0 0 0	
PCALFR2=	1000 1000 13000 13000 0 0 0 0	

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)
J0721+7120	07 16 13.029741	* 07 21 53.448476	07 23 26.015378	0.31
* 0716+714	71 26 15.17406	* 71 20 36.36340	71 19 09.61932	0.10

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0716+714	98.3

RADIOASTRON AGN FRINGE SURVEY

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

Notes: C/K-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN fringe 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 17 Mar 2013 Day 76 ---

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

```
Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies:  636.00  636.00  636.00  636.00
Next scan bandwidths:  16.00  16.00  16.00  16.00
```

```
19 00 00 0836+710    07 56 18  71.5 12.0 -0.8  -157.6    0    0  19 00 00
19 09 30 ---        08 05 50  71.8  9.7 -0.6  -162.0   570   18  19 00 01

19 10 00 0836+710    08 06 20  71.8  9.6 -0.6  -162.3   24   18  19 10 00
19 19 30 ---        08 15 51  72.0  7.1 -0.4  -166.8   570   36  19 10 01

19 20 00 0836+710    08 16 21  72.0  7.0 -0.4  -167.1   24   36  19 20 00
19 29 30 ---        08 25 53  72.1  4.5 -0.3  -171.7   570   55  19 20 01

19 30 00 0836+710    08 26 23  72.2  4.4 -0.3  -171.9   24   55  19 30 00
19 40 00 ---        08 36 25  72.2  1.7 -0.1  -176.9   600   74  19 30 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

Matching groups in /home/kirx/sched/catalogs/freq.dat:
tr6cm E-mail Borkowski 23Apr03 (CR 1May03)

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=	4200.00	4200.00	4200.00	4200.00
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 pcal sets:	1
LO sum=	4836.00	4836.00	4836.00	4836.00
BBC fr=	636.00	636.00	636.00	636.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	2			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ
PCALXB1=	S1 S3 S1 S3 S1 S2 S3 S4	
PCALXB2=	S2 S4 S2 S4 M1 M2 M3 M4	
PCALFR1=	1000 1000 13000 13000 0 0 0 0	
PCALFR2=	1000 1000 13000 13000 0 0 0 0	

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)
J0841+7053	08 36 21.556645	* 08 41 24.365283	08 42 47.280715	0.31
* 0836+710	71 04 22.42740	* 70 53 42.17302	70 50 52.61778	0.10

EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0836+710	104.0

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

Notes: C/K-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2
 RadioAstron AGN fringe 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 17 Mar 2013 Day 76 ---

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

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
 Next BBC frequencies: 636.00 636.00 636.00 636.00
 Next scan bandwidths: 16.00 16.00 16.00 16.00

20 50 00	0917+624	09 46 36	80.4	-16.8	0.4	158.1	0	0	20 50 00
20 59 30	---	09 56 08	79.9	-22.7	0.6	150.2	570	18	20 50 01
21 00 00	0917+624	09 56 38	79.8	-23.0	0.6	149.8	23	18	21 00 00
21 09 30	---	10 06 09	79.2	-28.0	0.7	142.7	570	36	21 00 01
21 10 00	0917+624	10 06 39	79.2	-28.3	0.7	142.4	23	36	21 10 00
21 19 30	---	10 16 11	78.5	-32.6	0.9	136.0	570	55	21 10 01
21 20 00	0917+624	10 16 41	78.4	-32.8	0.9	135.7	23	55	21 20 00
21 30 00	---	10 26 43	77.6	-36.6	1.1	129.8	600	74	21 20 01

SETUP FILE INFORMATION:

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

=====
Setup file: ra6cm2.set

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr6cm E-mail Borkowski 23Apr03 (CR 1May03)

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=	4200.00	4200.00	4200.00	4200.00
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 pcal sets:	1
LO sum=	4836.00	4836.00	4836.00	4836.00
BBC fr=	636.00	636.00	636.00	636.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	2			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

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)
J0921+6215	09 17 40.306860	* 09 21 36.231074	09 22 41.078545	0.22
* 0917+624	62 28 38.64009	* 62 15 52.18031	62 12 26.14298	0.10

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+624	112.8

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

Notes: C/K-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN fringe 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 17 Mar 2013 Day 76 ---

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

Next scan frequencies:	4836.00	4836.00	4836.00	4836.00
Next BBC frequencies:	636.00	636.00	636.00	636.00
Next scan bandwidths:	16.00	16.00	16.00	16.00

22 40 00	1642+690	11 36 54	52.9	35.4	-5.1	-75.1	0	0	22 40 00
22 49 30	---	11 46 26	53.7	35.7	-4.9	-77.1	570	18	22 40 01
22 50 00	1642+690	11 46 56	53.7	35.7	-4.9	-77.2	24	18	22 50 00
22 59 30	---	11 56 27	54.6	36.0	-4.8	-79.2	570	36	22 50 01
23 00 00	1642+690	11 56 57	54.6	36.1	-4.8	-79.3	24	36	23 00 00
23 09 30	---	12 06 29	55.5	36.3	-4.6	-81.3	570	55	23 00 01
23 10 00	1642+690	12 06 59	55.5	36.3	-4.6	-81.4	24	55	23 10 00
23 20 00	---	12 17 01	56.4	36.5	-4.4	-83.5	600	74	23 10 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

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr6cm E-mail Borkowski 23Apr03 (CR 1May03)

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=	4200.00	4200.00	4200.00	4200.00
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 pcal sets:	1
LO sum=	4836.00	4836.00	4836.00	4836.00
BBC fr=	636.00	636.00	636.00	636.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	2			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

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)		
J1642+6856	16 42 18.064877	* 16 42 07.848507	16 42 05.862125	0.28
* 1642+690	69 02 13.21709	* 68 56 39.75637	68 54 54.93826	0.10
Source	Sun distance (deg)			
1642+690	97.0			

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

Notes: C/L-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN fringe 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 18 Mar 2013 Day 77 ---

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

```
Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies:  636.00  636.00  636.00  636.00
Next scan bandwidths:  16.00   16.00   16.00   16.00
```

```
00 00 00 0657+172    12 57 07  14.2 279.8  5.9    38.3    0    0  00 00 00
00 09 30 ---        13 06 39  12.8 281.6  6.1    38.0   570    18  00 00 01

00 10 00 0657+172    13 07 09  12.7 281.7  6.1    38.0   24    18  00 10 00
00 19 30 ---        13 16 40  11.3 283.6  6.3    37.7   570    36  00 10 01

00 20 00 0657+172    13 17 11  11.2 283.6  6.3    37.6   24    36  00 20 00
00 29 30 ---        13 26 42   9.8 285.5  6.4    37.3   570    55  00 20 01

00 30 00 0657+172    13 27 12   9.8 285.6  6.4    37.2   24    55  00 30 00
00 40 00 ---        13 37 14   8.3 287.5  6.6    36.8   600    74  00 30 01
```


SETUP FILE INFORMATION:

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

=====
Setup file: ra6cm2.set

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr6cm E-mail Borkowski 23Apr03 (CR 1May03)

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=	4200.00	4200.00	4200.00	4200.00
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 pcal sets:	1
LO sum=	4836.00	4836.00	4836.00	4836.00
BBC fr=	636.00	636.00	636.00	636.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	2			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

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)
J0700+1709	06 57 07.785942	* 07 00 01.525540	07 00 48.727142	0.11
* 0657+172	17 13 35.02507	* 17 09 21.70126	17 08 03.52830	0.10

Source	Sun distance (deg)
0657+172	106.9

RADIOASTRON H2O MASER OBSERVATIONS

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Observing mode: K-band, dual-pol

Notes: K-band, Radioastron-compatible frequency setup
 P-CAL is OFF
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron H2O 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
-----
```

--- Mon 18 Mar 2013 Day 77 ---

----- Please, make sure PCAL is OFF for NGC3079_H2O maser observations. -----

```
Next scan frequencies: 22172.00 22172.00 22172.00 22172.00
Next BBC frequencies:   672.00   672.00   672.00   672.00
Next scan bandwidths:  16.00   16.00   16.00   16.00

04 00 00  NGC3079_H2O  16 57 47  35.4 -42.3  6.9    45.7    0    0  04 00 00
04 09 30  ---          17 07 18  34.5 -41.2  7.1    44.4   570   18  04 00 01

04 10 00  NGC3079_H2O  17 07 48  34.4 -41.1  7.1    44.3   24   18  04 10 00
04 19 30  ---          17 17 20  33.5 -39.9  7.2    43.0   570   36  04 10 01

04 20 00  NGC3079_H2O  17 17 50  33.4 -39.9  7.2    43.0   24   36  04 20 00
04 30 00  ---          17 27 52  32.5 -38.6  7.4    41.6   600   56  04 20 01
```

SETUP FILE INFORMATION:

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

=====
Setup file: ralcm2.set

--- WARNING --- This group does not match an entry in the frequency catalog.
This might be ok because the catalog is not complete.
But be very careful to be sure that the setup is correct.

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 pcal sets:	1
LO sum=	22172.00	22172.00	22172.00	22172.00
BBC fr=	672.00	672.00	672.00	672.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	3			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = OFF
PCALXB1=	S1 S2 S3 S4	OFF OFF OFF OFF
PCALXB2=	M1 M2 M3 M4	OFF OFF OFF OFF
PCALFR1=	0 0 0 0	0 0 0 0
PCALFR2=	0 0 0 0	0 0 0 0

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)
* NGC3079_H20	09 58 35.011191	* 10 01 57.802000	10 02 53.721700	0.00
	55 55 15.50111	* 55 40 47.26000	55 36 51.44809	0.00

Source	Sun distance (deg)
NGC3079_H20	121.0

re03oqtr

RADIOASTRON AGN FRINGE SURVEY

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

Notes: C/K-band, Radioastron-compatible frequency setup
P-CAL is ON
Tsys is ON
auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN fringe 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 18 Mar 2013 Day 77 ---

----- 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

06 00 00 1413+135 18 58 06 22.3 262.3 4.7 37.7 0 0 06 00 00
06 09 30 --- 19 07 38 20.9 264.3 4.8 37.9 570 18 06 00 01
06 10 00 1413+135 19 08 08 20.8 264.4 4.9 37.9 24 18 06 10 00
06 19 30 --- 19 17 40 19.4 266.3 5.0 38.0 570 36 06 10 01
06 20 00 1413+135 19 18 10 19.3 266.4 5.0 38.0 24 36 06 20 00
06 30 00 --- 19 28 11 17.8 268.5 5.2 38.1 600 56 06 20 01

SETUP FILE INFORMATION:

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

=====
Setup file: ralcm2.set

--- WARNING --- This group does not match an entry in the frequency catalog.
This might be ok because the catalog is not complete.
But be very careful to be sure that the setup is correct.

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 pcal sets:	1
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			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ
PCALXB1=	S1 S3 S1 S3 S1 S2 S3 S4	
PCALXB2=	S2 S4 S2 S4 M1 M2 M3 M4	
PCALFR1=	1000 1000 13000 13000 0 0 0 0	
PCALFR2=	1000 1000 13000 13000 0 0 0 0	

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)
J1415+1320	14 13 33.910858	* 14 15 58.817510	14 16 38.831015	0.11
* 1413+135	13 34 17.40450	* 13 20 23.71274	13 16 32.44095	0.11

Source	Sun distance (deg)
1413+135	142.1

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Observing mode: L-band, dual-pol

Notes: L-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN fringe 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 18 Mar 2013 Day 77 ---

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

```
Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies:  632.00  632.00  632.00  632.00
Next scan bandwidths:  16.00   16.00   16.00   16.00

07 40 00 1413+135    20 38 23  7.4 -77.7  6.4    37.1    0    0  07 40 00
07 49 30 ---      20 47 54  6.0 -75.8  6.5    36.7   570   18  07 40 01

07 50 00 1413+135    20 48 25  5.9 -75.7  6.5    36.7   24   18  07 50 00
07 59 30 ---      20 57 56  4.5 -73.8  6.7    36.3   570   36  07 50 01

08 00 00 1413+135    20 58 26  4.5 -73.7  6.7    36.3   24   36  08 00 00
08 10 00 ---      21 08 28  3.0 -71.8  6.9    35.9   600   56  08 00 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

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

```
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= 2300.00 2300.00 2300.00 2300.00
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 pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 2
```

The following pulse cal sets were used with this setup:

```
Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0
```

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)
J1415+1320	14 13 33.910858	* 14 15 58.817510	14 16 38.832560	0.11
* 1413+135	13 34 17.40450	* 13 20 23.71274	13 16 32.44271	0.11
Source	Sun distance (deg)			
1413+135	142.2			

RADIOASTRON H2O MASER OBSERVATIONS

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Observing mode: K-band, dual-pol

Notes: K-band, Radioastron-compatible frequency setup
 P-CAL is OFF
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron H2O 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

--- Mon 18 Mar 2013 Day 77 ---

----- Please, make sure PCAL is OFF for NGC3079_H2O maser observations. -----

Next scan frequencies: 22172.00 22172.00 22172.00 22172.00
 Next BBC frequencies: 672.00 672.00 672.00 672.00
 Next scan bandwidths: 16.00 16.00 16.00 16.00

11 00 00	NGC3079_H2O	23 58 56	21.3	17.1-10.1			-18.2	0	0	11 00 00
11 09 30	---	00 08 27	21.7	18.5 -9.9			-19.7	570	18	11 00 01
11 10 00	NGC3079_H2O	00 08 57	21.8	18.5 -9.9			-19.8	24	18	11 10 00
11 19 30	---	00 18 29	22.2	19.9 -9.7			-21.2	570	36	11 10 01
11 20 00	NGC3079_H2O	00 18 59	22.3	20.0 -9.7			-21.3	24	36	11 20 00
11 29 30	---	00 28 31	22.8	21.3 -9.6			-22.7	570	55	11 20 01
11 30 00	NGC3079_H2O	00 29 01	22.8	21.4 -9.6			-22.8	24	55	11 30 00
11 40 00	---	00 39 02	23.4	22.8 -9.4			-24.3	600	74	11 30 01

SETUP FILE INFORMATION:

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

=====
Setup file: ralcm2.set

--- WARNING --- This group does not match an entry in the frequency catalog.
This might be ok because the catalog is not complete.
But be very careful to be sure that the setup is correct.

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 pcal sets:	1
LO sum=	22172.00	22172.00	22172.00	22172.00
BBC fr=	672.00	672.00	672.00	672.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	2			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = OFF
PCALXB1=	S1 S2 S3 S4	OFF OFF OFF OFF
PCALXB2=	M1 M2 M3 M4	OFF OFF OFF OFF
PCALFR1=	0 0 0 0	0 0 0 0
PCALFR2=	0 0 0 0	0 0 0 0

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)
* NGC3079_H20	09 58 35.011191	* 10 01 57.802000	10 02 53.718902	0.00
	55 55 15.50111	* 55 40 47.26000	55 36 51.50628	0.00

Source	Sun distance (deg)
NGC3079_H20	120.8

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

Notes: L/K-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN fringe 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 18 Mar 2013 Day 77 ---

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

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
 Next BBC frequencies: 632.00 632.00 632.00 632.00
 Next scan bandwidths: 16.00 16.00 16.00 16.00

13 20 00	0716+714	02 19 19	53.5	31.5	-5.1	-78.5	0	0	13 20 00
13 29 30	---	02 28 50	54.3	31.7	-4.9	-80.5	570	18	13 20 01
13 30 00	0716+714	02 29 20	54.3	31.8	-4.9	-80.7	24	18	13 30 00
13 39 30	---	02 38 52	55.1	31.9	-4.7	-82.8	570	36	13 30 01
13 40 00	0716+714	02 39 22	55.1	32.0	-4.7	-82.9	24	36	13 40 00
13 49 30	---	02 48 54	55.9	32.1	-4.6	-85.0	570	55	13 40 01
13 50 00	0716+714	02 49 24	55.9	32.1	-4.6	-85.1	24	55	13 50 00
14 00 00	---	02 59 25	56.7	32.2	-4.4	-87.4	600	74	13 50 01

SETUP FILE INFORMATION:

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

=====
Setup file: ra18cm2.set

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

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=	2300.00	2300.00	2300.00	2300.00
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 pcal sets:	1
LO sum=	1668.00	1668.00	1668.00	1668.00
BBC fr=	632.00	632.00	632.00	632.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	2			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

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)		
J0721+7120	07 16 13.029741	* 07 21 53.448476	07 23 25.972142	0.31
* 0716+714	71 26 15.17406	* 71 20 36.36340	71 19 09.69554	0.10

Source	Sun distance (deg)
0716+714	97.8

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

Notes: C/L-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr)

Page 2

RadioAstron AGN fringe 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 18 Mar 2013 Day 77 ---

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

Next scan frequencies:	1668.00	1668.00	1668.00	1668.00						
Next BBC frequencies:	632.00	632.00	632.00	632.00						
Next scan bandwidths:	16.00	16.00	16.00	16.00						
15 00 00	0738+313	03 59 35	44.8	96.1	-3.7		-44.2	0	0	15 00 00
15 09 30	---	04 09 07	46.2	98.2	-3.5		-44.0	570	18	15 00 01
15 10 00	0738+313	04 09 37	46.2	98.3	-3.5		-44.0	24	18	15 10 00
15 19 30	---	04 19 08	47.7	100.5	-3.4		-43.6	570	36	15 10 01
15 20 00	0738+313	04 19 38	47.7	100.6	-3.4		-43.6	24	36	15 20 00
15 29 30	---	04 29 10	49.1	102.8	-3.2		-43.2	570	55	15 20 01
15 30 00	0738+313	04 29 40	49.2	102.9	-3.2		-43.2	24	55	15 30 00
15 40 00	---	04 39 42	50.7	105.4	-3.0		-42.6	600	74	15 30 01

SETUP FILE INFORMATION:

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

=====
Setup file: ra18cm2.set

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

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=	2300.00	2300.00	2300.00	2300.00
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 pcal sets:	1
LO sum=	1668.00	1668.00	1668.00	1668.00
BBC fr=	632.00	632.00	632.00	632.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	4			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

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)		
J0741+3112	07 38 00.178559	* 07 41 10.703308	07 42 02.603330	0.18
* 0738+313	31 19 02.05925	* 31 12 00.22924	31 10 01.03103	1.24

Source	Sun distance (deg)
0738+313	113.4

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

Notes: C/L-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN fringe 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 18 Mar 2013 Day 77 ---

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

Next scan frequencies:	1668.00	1668.00	1668.00	1668.00
Next BBC frequencies:	632.00	632.00	632.00	632.00
Next scan bandwidths:	16.00	16.00	16.00	16.00

16 20 00	0748+126	05 19 48	39.4	129.0	-2.5	-28.6	0	0	16 20 00
16 29 30	---	05 29 20	40.5	131.7	-2.4	-27.4	570	18	16 20 01
16 30 00	0748+126	05 29 50	40.6	131.8	-2.4	-27.3	24	18	16 30 00
16 39 30	---	05 39 21	41.6	134.6	-2.2	-26.0	570	36	16 30 01
16 40 00	0748+126	05 39 52	41.7	134.7	-2.2	-25.9	24	36	16 40 00
16 49 30	---	05 49 23	42.7	137.5	-2.0	-24.5	570	55	16 40 01
16 50 00	0748+126	05 49 53	42.7	137.7	-2.0	-24.5	24	55	16 50 00
17 00 00	---	05 59 55	43.7	140.8	-1.9	-22.9	600	74	16 50 01

SETUP FILE INFORMATION:

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

=====
Setup file: ra18cm2.set

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

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=	2300.00	2300.00	2300.00	2300.00
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 pcal sets:	1
LO sum=	1668.00	1668.00	1668.00	1668.00
BBC fr=	632.00	632.00	632.00	632.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	5			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

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)
J0750+1231	07 48 05.060493	* 07 50 52.045731	07 51 37.647879	0.10
* 0748+126	12 38 45.47744	* 12 31 04.82812	12 28 49.49881	0.10

Source	Sun distance (deg)
0748+126	118.9

RADIOASTRON AGN FRINGE SURVEY

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

Notes: C/K-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN fringe 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 18 Mar 2013 Day 77 ---

----- 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
```

```
18 20 00 0955+476    07 20 08 64.3 86.7 -2.7   -62.2    0    0 18 20 00
18 29 30 ---          07 29 40 65.7 88.4 -2.5   -62.4   570   18 18 20 01

18 30 00 0955+476    07 30 10 65.8 88.5 -2.5   -62.4   24   18 18 30 00
18 39 30 ---          07 39 41 67.2 90.4 -2.3   -62.4   570   36 18 30 01

18 40 00 0955+476    07 40 11 67.3 90.5 -2.3   -62.4   24   36 18 40 00
18 49 30 ---          07 49 43 68.7 92.5 -2.2   -62.3   570   55 18 40 01

18 50 00 0955+476    07 50 13 68.8 92.6 -2.1   -62.3   24   55 18 50 00
19 00 00 ---          08 00 15 70.3 94.9 -2.0   -62.0   600   74 18 50 01
```


SETUP FILE INFORMATION:

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

=====
Setup file: ralcm2.set

--- WARNING --- This group does not match an entry in the frequency catalog.
This might be ok because the catalog is not complete.
But be very careful to be sure that the setup is correct.

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 pcal sets:	1
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			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

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)
J0958+4725	09 55 08.528429	* 09 58 19.671644	09 59 12.309272	0.15
* 0955+476	47 39 28.28168	* 47 25 07.84237	47 21 12.74319	0.10

Source	Sun distance (deg)
0955+476	127.1

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

Notes: C/K-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN fringe 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 18 Mar 2013 Day 77 ---

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

```
Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies:  636.00  636.00  636.00  636.00
Next scan bandwidths:  16.00  16.00  16.00  16.00
```

```
19 40 00 0906+015    08 40 21 37.8 170.6 -0.5    -5.6    0    0    19 40 00
19 49 30 ---        08 49 53 38.0 173.6 -0.3    -3.8   570   18   19 40 01

19 50 00 0906+015    08 50 23 38.0 173.8 -0.3    -3.7   24   18   19 50 00
19 59 30 ---        08 59 54 38.2 176.8 -0.2    -1.9   570   36   19 50 01

20 00 00 0906+015    09 00 24 38.2 177.0 -0.2    -1.8   24   36   20 00 00
20 09 30 ---        09 09 56 38.2 180.0  0.0     0.0   570   55   20 00 01

20 10 00 0906+015    09 10 26 38.2 180.2  0.0     0.1   24   55   20 10 00
20 20 00 ---        09 20 28 38.2 183.4  0.2     2.0   600   74   20 10 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

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr6cm E-mail Borkowski 23Apr03 (CR 1May03)

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=	4200.00	4200.00	4200.00	4200.00
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 pcal sets:	1
LO sum=	4836.00	4836.00	4836.00	4836.00
BBC fr=	636.00	636.00	636.00	636.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	2			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

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)
J0909+0121	09 06 35.181593	* 09 09 10.091599	09 09 52.786242	0.11
* 0906+015	01 33 48.12922	* 01 21 35.61774	01 18 05.24262	0.14

Source	Sun distance (deg)
0906+015	138.9

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

Notes: C/L-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN fringe 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 18 Mar 2013 Day 77 ---

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

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
 Next BBC frequencies: 632.00 632.00 632.00 632.00
 Next scan bandwidths: 16.00 16.00 16.00 16.00

22 20 00	0657+172	11 20 47	28.6	260.4	4.3	38.3	0	0	22 20 00
22 29 30	---	11 30 19	27.2	262.4	4.5	38.5	570	18	22 20 01
22 30 00	0657+172	11 30 49	27.1	262.5	4.5	38.5	24	18	22 30 00
22 39 30	---	11 40 21	25.7	264.5	4.7	38.7	570	36	22 30 01
22 40 00	0657+172	11 40 51	25.6	264.6	4.7	38.7	24	36	22 40 00
22 49 30	---	11 50 22	24.2	266.6	4.8	38.8	570	55	22 40 01
22 50 00	0657+172	11 50 52	24.1	266.7	4.8	38.9	24	55	22 50 00
22 59 30	---	12 00 24	22.7	268.6	5.0	38.9	570	73	22 50 01
23 00 00	0657+172	12 00 54	22.6	268.7	5.0	38.9	24	73	23 00 00
23 09 30	---	12 10 26	21.1	270.6	5.2	38.9	570	91	23 00 01
23 10 00	0657+172	12 10 56	21.1	270.7	5.2	38.9	24	91	23 10 00
23 19 30	---	12 20 27	19.6	272.6	5.3	38.9	570	109	23 10 01
23 20 00	0657+172	12 20 57	19.6	272.7	5.3	38.9	24	109	23 20 00
23 29 30	---	12 30 29	18.1	274.6	5.5	38.8	570	128	23 20 01
23 30 00	0657+172	12 30 59	18.1	274.7	5.5	38.8	24	128	23 30 00
23 40 00	---	12 41 01	16.6	276.6	5.7	38.6	600	147	23 30 01

SETUP FILE INFORMATION:

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

=====
Setup file: ra18cm2.set

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

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=	2300.00	2300.00	2300.00	2300.00
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 pcal sets:	1
LO sum=	1668.00	1668.00	1668.00	1668.00
BBC fr=	632.00	632.00	632.00	632.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	4			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

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)
J0700+1709	06 57 07.785942	* 07 00 01.525540	07 00 48.714174	0.11
* 0657+172	17 13 35.02507	* 17 09 21.70126	17 08 03.52410	0.10

Source	Sun distance (deg)
0657+172	106.0

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Phone during observation: +7-915-1546281

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

Notes: C/K-band, Radioastron-compatible frequency setup
P-CAL is ON
Tsys is ON
auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN fringe 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 20 Mar 2013 Day 79 ---

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

```
Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies:  636.00  636.00  636.00  636.00
Next scan bandwidths:  16.00   16.00   16.00   16.00

17 40 00 0727-115    06 47 55  24.5 168.4 -0.7    -7.1   0       0   17 40 00
17 49 30 ---        06 57 26  24.8 171.0 -0.6    -5.5  570      18   17 40 01

17 50 00 0727-115    06 57 56  24.8 171.1 -0.6    -5.5   24      18   17 50 00
17 59 30 ---        07 07 28  25.0 173.7 -0.4    -3.9  570      36   17 50 01

18 00 00 0727-115    07 07 58  25.0 173.8 -0.4    -3.8   24      36   18 00 00
18 09 30 ---        07 17 29  25.1 176.4 -0.2    -2.2  570      55   18 00 01

18 10 00 0727-115    07 17 59  25.1 176.5 -0.2    -2.1   24      55   18 10 00
18 20 00 ---        07 28 01  25.2 179.2 -0.0    -0.5  600      74   18 10 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

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr6cm E-mail Borkowski 23Apr03 (CR 1May03)

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=	4200.00	4200.00	4200.00	4200.00
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 pcal sets:	1
LO sum=	4836.00	4836.00	4836.00	4836.00
BBC fr=	636.00	636.00	636.00	636.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	2			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

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)
J0730-1141	07 27 58.097814	* 07 30 19.112474	07 30 57.675109	0.10
* 0727-115	-11 34 52.58107	*-11 41 12.60063	-11 43 13.27468	0.10

Source	Sun distance (deg)
0727-115	112.0

RADIOASTRON H2O MASER OBSERVATIONS

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Observing mode: K-band, dual-pol

Notes: K-band, Radioastron-compatible frequency setup
 P-CAL is OFF
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron H2O 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 20 Mar 2013 Day 79 ---

----- Please, make sure PCAL is OFF for S269_H2O maser observations. -----

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

19 20 00	S269_H2O	08 28 11	42.8	226.4	2.2	26.6	0	0	19 20 00
19 29 30	---	08 37 43	41.7	229.2	2.4	27.9	570	18	19 20 01
19 30 00	S269_H2O	08 38 13	41.6	229.3	2.4	28.0	24	18	19 30 00
19 39 30	---	08 47 44	40.5	232.0	2.5	29.2	570	36	19 30 01
19 40 00	S269_H2O	08 48 14	40.5	232.2	2.5	29.2	24	36	19 40 00
19 49 30	---	08 57 46	39.3	234.8	2.7	30.3	570	55	19 40 01
19 50 00	S269_H2O	08 58 16	39.3	234.9	2.7	30.4	24	55	19 50 00
20 00 00	---	09 08 18	38.0	237.6	2.9	31.5	600	74	19 50 01

SETUP FILE INFORMATION:

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

==== Setup file: ralcm2.set

--- WARNING --- This group does not match an entry in the frequency catalog.
This might be ok because the catalog is not complete.
But be very careful to be sure that the setup is correct.

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 pcal sets:	1
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			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = OFF						
PCALXB1=	S1	S2	S3	S4	OFF	OFF	OFF	OFF
PCALXB2=	M1	M2	M3	M4	OFF	OFF	OFF	OFF
PCALFR1=	0	0	0	0	0	0	0	0
PCALFR2=	0	0	0	0	0	0	0	0

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)		
* S269_H20	06 11 46.911568	* 06 14 37.079330	06 15 23.064874	0.00
	13 50 34.36305	* 13 49 36.69450	13 49 10.12745	0.00

Source	Sun distance (deg)
S269_H20	93.4

RADIOASTRON AGN FRINGE SURVEY

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

Notes: C/L-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr)

Page 2

RadioAstron AGN fringe 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 21 Mar 2013 Day 80 ---

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

```
Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies:  636.00  636.00  636.00  636.00
Next scan bandwidths:  16.00   16.00   16.00   16.00

16 00 00 0827+243    05 11 35  42.8 107.7 -3.3    -38.8    0    0    16 00 00
16 09 30 ---          05 21 06  44.1 110.0 -3.2    -38.2   570    18    16 00 01

16 10 00 0827+243    05 21 36  44.2 110.2 -3.2    -38.1    24    18    16 10 00
16 19 30 ---          05 31 08  45.5 112.6 -3.0    -37.4   570    36    16 10 01

16 20 00 0827+243    05 31 38  45.6 112.7 -3.0    -37.4    24    36    16 20 00
16 29 30 ---          05 41 10  46.9 115.2 -2.8    -36.5   570    55    16 20 01

16 30 00 0827+243    05 41 40  47.0 115.4 -2.8    -36.5    24    55    16 30 00
16 40 00 ---          05 51 41  48.3 118.1 -2.7    -35.5   600    74    16 30 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

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr6cm E-mail Borkowski 23Apr03 (CR 1May03)

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=	4200.00	4200.00	4200.00	4200.00
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 pcal sets:	1
LO sum=	4836.00	4836.00	4836.00	4836.00
BBC fr=	636.00	636.00	636.00	636.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	2			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

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)
J0830+2410	08 27 54.398594	* 08 30 52.086193	08 31 40.686874	0.11
* 0827+243	24 21 07.66368	* 24 10 59.82027	24 08 08.44690	0.10
Source	Sun distance (deg)			
0827+243	122.9			

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

Notes: C/K-band, Radioastron-compatible frequency setup
P-CAL is ON
Tsys is ON
auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN fringe 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 21 Mar 2013 Day 80 ---

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

```
Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies:  636.00  636.00  636.00  636.00
Next scan bandwidths:  16.00   16.00   16.00   16.00
```

```
19 20 00 0851+202    08 32 08 56.6 169.9 -0.4    -6.4    0    0    19 20 00
19 29 30 ---        08 41 39 56.8 174.0 -0.2    -3.8   570    18    19 20 01

19 30 00 0851+202    08 42 09 56.9 174.2 -0.2    -3.7    23    18    19 30 00
19 39 30 ---        08 51 41 57.0 178.3 -0.1    -1.1   570    36    19 30 01

19 40 00 0851+202    08 52 11 57.0 178.5 -0.1    -0.9    23    36    19 40 00
19 49 30 ---        09 01 42 56.9 182.6  0.1     1.7   570    55    19 40 01

19 50 00 0851+202    09 02 12 56.9 182.8  0.1     1.8    23    55    19 50 00
20 00 00 ---        09 12 14 56.8 187.1  0.3     4.6   600    74    19 50 01
```

SETUP FILE INFORMATION:

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

=====
Setup file: ra6cm2.set

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr6cm E-mail Borkowski 23Apr03 (CR 1May03)

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=	4200.00	4200.00	4200.00	4200.00
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 pcal sets:	1
LO sum=	4836.00	4836.00	4836.00	4836.00
BBC fr=	636.00	636.00	636.00	636.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	1			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

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)
J0854+2006	08 51 57.250618	* 08 54 48.874930	08 55 35.933694	0.11
* 0851+202	20 17 58.41733	* 20 06 30.64078	20 03 16.64846	0.10

Source	Sun distance (deg)
0851+202	129.3

RADIOASTRON PULSAR OBSERVATIONS

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Observing mode: L-band, dual-pol

Notes: L-band, Radioastron-compatible frequency setup
 P-CAL is OFF
 Tsys is OFF
 auto-level (AGC) is OFF

Schedule for TORUN (Code Tr) Page 2

RadioAstron pulsar observations

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

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

--- Fri 22 Mar 2013 Day 81 ---

----- This is a 1min calibration scan with auto-level (AGC) ON -----

```
Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies:  632.00  632.00  632.00  632.00
Next scan bandwidths:  16.00   16.00   16.00   16.00
```

```
13 58 00 B0823+26    03 13 11  27.6  81.7 -5.2   -41.6    0    0  Stopped
13 59 00 ---          03 14 11  27.8  81.9 -5.2   -41.7   60    0
```

----- Please make sure Pcal, noise diode (Tsys) and auto-level (AGC) are OFF now -----

```
14 00 00 B0823+26    03 15 12  27.9  82.1 -5.2   -41.7   54    0  14 00 00
14 09 30 ---          03 24 43  29.3  83.9 -5.0   -41.9  570   18  14 00 01

14 10 00 B0823+26    03 25 13  29.4  84.0 -5.0   -41.9   24   18  14 10 00
14 19 30 ---          03 34 45  30.8  85.8 -4.9   -42.0  570   36  14 10 01

14 20 00 B0823+26    03 35 15  30.9  85.9 -4.9   -42.0   24   36  14 20 00
14 29 30 ---          03 44 46  32.3  87.8 -4.7   -42.1  570   55  14 20 01

14 30 00 B0823+26    03 45 16  32.4  87.9 -4.7   -42.1   24   55  14 30 00
14 40 00 ---          03 55 18  33.9  89.9 -4.5   -42.2  600   74  14 30 01
```

SETUP FILE INFORMATION:

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

=====
Setup file: ra18cm2_autolevel.set

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

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:

Disk used to record data.

Setup not used for recording data.

1st LO=	2300.00	2300.00	2300.00	2300.00
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 pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 2

The following pulse cal sets were used with this setup:

Pulse cal detection set: 1 PCAL = OFF
PCALXB1= S1 S2 S3 S4 OFF OFF OFF OFF
PCALXB2= M1 M2 M3 M4 OFF OFF OFF OFF
PCALFR1= 0 0 0 0 0 0 0 0
PCALFR2= 0 0 0 0 0 0 0 0

=====
Setup file: ra18cm2.set

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

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=	2300.00	2300.00	2300.00	2300.00
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 pcal sets:  1
LO sum=    1668.00  1668.00  1668.00  1668.00
BBC fr=     632.00  632.00  632.00  632.00
Bandwd=     16.00   16.00   16.00   16.00
Matching frequency sets:  4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = OFF
PCALXB1=  S1   S2   S3   S4   OFF  OFF  OFF  OFF
PCALXB2=  M1   M2   M3   M4   OFF  OFF  OFF  OFF
PCALFR1=   0   0   0   0   0   0   0   0
PCALFR2=   0   0   0   0   0   0   0   0

```

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)		
* B0823+26	08 23 50.567067	* 08 26 51.383300	08 27 40.798925	0.00
	26 47 17.50121	* 26 37 23.79000	26 34 37.01046	0.00

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)
B0823+26	120.4

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:

327 MHz	117. deg
610 MHz	81. deg
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
43.0 GHz	6. deg

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

Notes: C/L-band, Radioastron-compatible frequency setup
P-CAL is ON
Tsys is ON
auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN fringe survey

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

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

--- Fri 22 Mar 2013 Day 81 ---

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

```
Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies:  632.00  632.00  632.00  632.00
Next scan bandwidths:  16.00   16.00   16.00   16.00

16 00 00 0827+243    05 15 31  43.3 108.7 -3.3    -38.6    0    0    16 00 00
16 09 30 ---          05 25 03  44.7 111.0 -3.1    -37.9   570   18    16 00 01

16 10 00 0827+243    05 25 33  44.7 111.2 -3.1    -37.9   24   18    16 10 00
16 19 30 ---          05 35 04  46.1 113.6 -2.9    -37.1   570   36    16 10 01

16 20 00 0827+243    05 35 35  46.1 113.8 -2.9    -37.0   24   36    16 20 00
16 29 30 ---          05 45 06  47.4 116.3 -2.8    -36.1   570   55    16 20 01

16 30 00 0827+243    05 45 36  47.5 116.4 -2.8    -36.1   24   55    16 30 00
16 40 00 ---          05 55 38  48.8 119.2 -2.6    -35.0   600   74    16 30 01
```

SETUP FILE INFORMATION:

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

=====
Setup file: ra18cm2.set

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

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=	2300.00	2300.00	2300.00	2300.00
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 pcal sets:	1
LO sum=	1668.00	1668.00	1668.00	1668.00
BBC fr=	632.00	632.00	632.00	632.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	4			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

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)
J0830+2410	08 27 54.398594	* 08 30 52.086193	08 31 40.673943	0.11
* 0827+243	24 21 07.66368	* 24 10 59.82027	24 08 08.53036	0.10

Source	Sun distance (deg)
0827+243	121.9

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

Notes: C/L-band, Radioastron-compatible frequency setup
 P-CAL is ON
 Tsys is ON
 auto-level (AGC) is ON

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN fringe 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 22 Mar 2013 Day 81 ---

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

```
Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies:  632.00  632.00  632.00  632.00
Next scan bandwidths:  16.00   16.00   16.00   16.00
```

```
19 10 00 0851+202    08 26 02  56.5 167.4 -0.5    -8.0    0    0    19 10 00
19 19 30 ---          08 35 34  56.7 171.4 -0.3    -5.5   570    18    19 10 01

19 20 00 0851+202    08 36 04  56.7 171.6 -0.3    -5.3    23    18    19 20 00
19 29 30 ---          08 45 36  56.9 175.7 -0.2    -2.8   570    36    19 20 01

19 30 00 0851+202    08 46 06  56.9 175.9 -0.2    -2.6    23    36    19 30 00
19 39 30 ---          08 55 37  57.0 180.0  0.0     0.0   570    55    19 30 01

19 40 00 0851+202    08 56 07  57.0 180.2  0.0     0.1    23    55    19 40 00
19 50 00 ---          09 06 09  56.9 184.5  0.2     2.9   600    74    19 40 01
```

SETUP FILE INFORMATION:

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

=====
Setup file: ra18cm2.set

Matching groups in /home/kirx/sched/catalogs/freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

```
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= 2300.00 2300.00 2300.00 2300.00
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 pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 4
```

The following pulse cal sets were used with this setup:

```
Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0
```

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)
J0854+2006	08 51 57.250618	* 08 54 48.874930	08 55 35.922504	0.11
* 0851+202	20 17 58.41733	* 20 06 30.64078	20 03 16.72425	0.10
Source	Sun distance (deg)			
0851+202	128.3			

RadioAstron Mission

http://www.asc.rssi.ru/radioastron/description/intro_eng.htm

RadioAstron project is an international collaborative mission to launch a free flying satellite carrying a 10-meter radio telescope in high apogee orbit around the Earth. The aim of the mission is to use the space telescope to conduct interferometer observations in conjunction with the global ground radio telescope network in order to obtain images, coordinates, motions and evolution of angular structure of different radio emitting objects in the Universe with the extraordinary high angular resolution.

The orbit of RadioAstron satellite will have apogee radius in the range up to 350 000 km. The spacecraft's operational lifetime will be no less than five years. Space-ground Very Long Baseline Interferometer (VLBI) measurements with this orbit will provide morphological and coordinate information on galactic and extragalactic radio sources with fringe size up to 8 micro arc second at the shortest wavelength 1.35 cm.

The RadioAstron program, initiated by Astro Space Center (ASC) of Lebedev Physical Institute of Russian Academy of Sciences (RAS) in collaboration with other institutions of RAS and Federal Space Agency (FSA), has expanded into a broad international collaboration: scientists from over 20 countries are constructing the instruments, planning the mission profile, and assuring ground radio telescopes support for RadioAstron. Russia will provide the satellite, most of the on-board hardware, interferometer integration and all kinds of the tests. General designer of satellite and SRT construction is Lavochkin Association (LA) of the RosKosmos.

Several other countries contribute to the on-board scientific payload. The 92-cm receiver is being built in India - National Center for Radio Astrophysics (NCRA) and Russia (Nizhny Novgorod, OAO KB "Gorizont"), the 18-cm receiver in Australia (CSIRO - Commonwealth Scientific and Industrial Research Organization), the 6-cm receiver by Russia, the 1.35-cm receiver by Finland (HUT - Helsinki University of Technology) and upgraded in USA (National Radio Astronomy Observatory- NRAO) and Russia (Moscow Institute of Radioengineering and Electronics - IRE), rubidium on-board frequency standard was built by the European Space Agency (ESA) at Neuchatel observatory in Switzerland. H-maser on-board frequency standard is being developed in Russia (Nizhny Novgorod, ZAO "Vremya-CH"). Russian (ASC) recording system on 6-system HDD and tapes will be able to accept a digital data stream at a maximum data rate of 128 Mbit/s. The correlator will be able to process the data from up to 5 interferometer stations (including the space element) at a maximum data rate of 128 Mbit/s. European Space Agency (ESA) participated in testing of the space radio telescope antenna. On board operating spacecraft system and command communication centers at Bear Lake (near Moscow) and near Ussuriisk (Eastern Russia), and also a tracking station at Pushchino are under preparation.

Main scientific goal of the mission is the study of various astronomical objects with unprecedented angular resolution up to few millionth of an arcsecond. The resolution achieved with RadioAstron will allow us in principle to study the following phenomena and problems:

- central engine of AGN and physical processes near super massive black holes providing an acceleration of cosmic rays — size, velocity and shape of emitting region in the core, spectrum, polarization and variability of emitting components;
- cosmological models, dark matter and dark energy - by studying dependence of above mentioned AGN's parameters with redshift, and by observing gravitational lensing;
- structure and dynamics of star and planets forming regions in our Galaxy and in AGN — by studying maser and Mega maser radio emission;
- neutron (quark?) stars and black holes in our Galaxy, their structure and dynamics — by VLBI and measurements of visibility scintillations, proper motions and parallaxes;
- structure and distribution of interstellar and interplanetary plasma — by fringe visibility scintillations of pulsars;
- building of high accuracy astronomical reference system of coordinates;
- building of high accuracy model of the Earth gravity field.

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