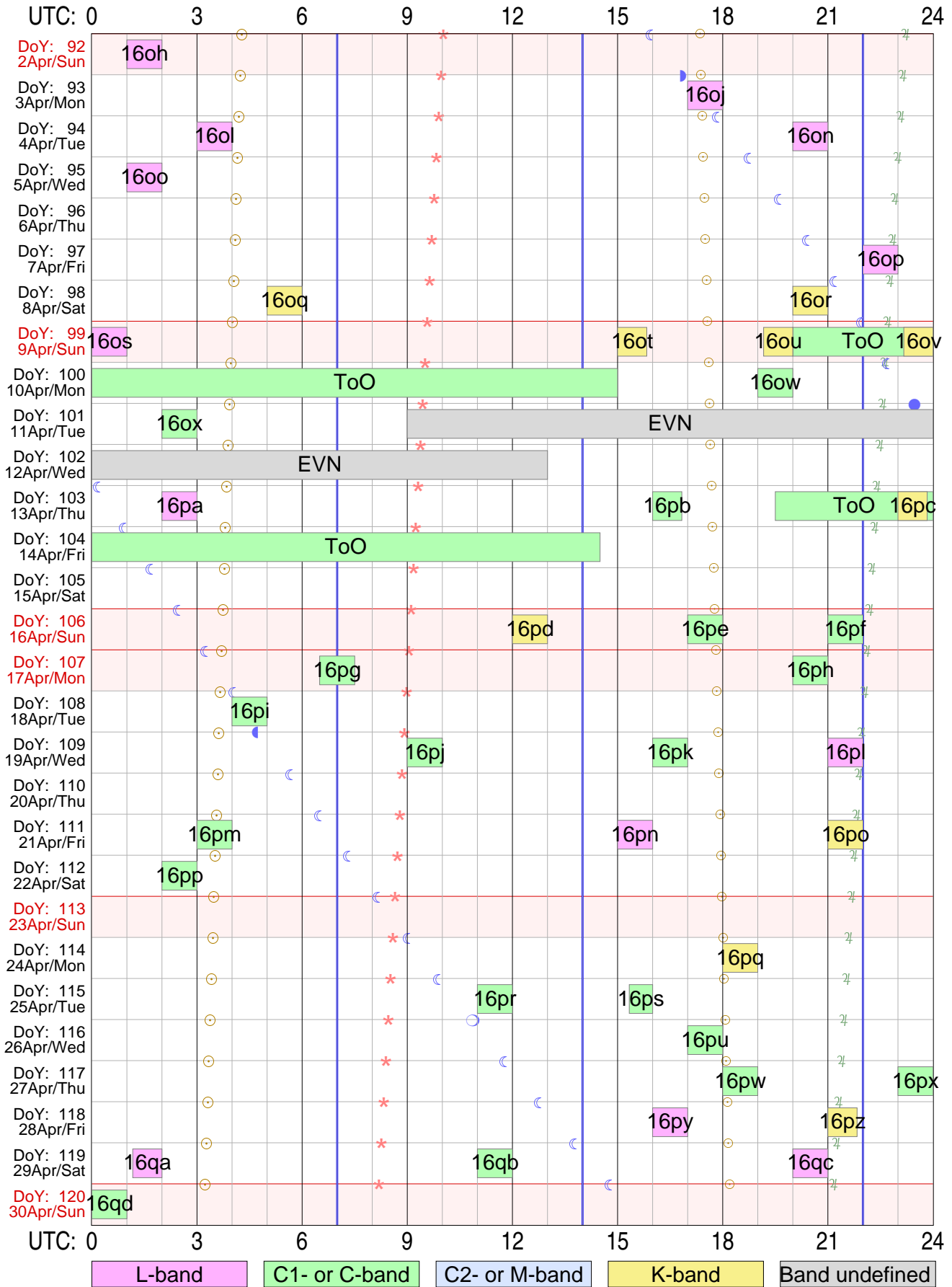


# Tr VLBI plan for Apr 2017



Version: 2017.04.07

Sky events at Tr: ☉ Sunrise & sunset ☾☽ Transit of Moon ♃ Transit of Jupiter ★ Transit of Aries (0h ST)

Vertical lines in blue mark operator shift times at Tr

Total observing time: 106.5 hours in 44 experiments scheduled

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

Strona zostawiona celowo pusta

# RadioAstron & EVN Experiments

## Feb 2017

Uytownik ftp dla logw i schedulw RA: grt

ftp://webinet.asc.rssi.ru

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

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

Year	Date	UTstart	UTstop	Exper.	xxComment
2017	D M DoW	hh mm	hh mm	name	
92	2 04 xxx	0 0	0 0	empty	"1" <- remove rk from RA names
92	2 04 Nie	1 00	2 00	rk16oh	"L"
93	3 04 Pon	17 00	18 00	rk16oj	"L"
94	4 04 Wto	3 00	4 00	rk16ol	"L"
94	4 04 Wto	20 00	21 00	rk16on	"L"
95	5 04 Sro	1 00	2 00	rk16oo	"L"
97	7 04 Pia	22 00	23 00	rk16op	"L"
98	8 04 Sob	5 00	6 00	rk16oq	"K"
98	8 04 Sob	20 00	21 00	rk16or	"K"
99	9 04 Nie	0 00	1 00	rk16os	"L"
99	9 04 Nie	15 00	15 50	rk16ot	"K"
99	9 04 Nie	19 10	20 00	rk16ou	"K"
99	9 04 Nie	23 10	24 00	rk16ov	"K"
100	10 04 Pon	19 00	20 00	rk16ow	"C"
101	11 04 Wto	2 00	3 00	rk16ox	"C"
103	13 04 Czw	2 00	3 00	rk16pa	"L"
103	13 04 Czw	16 00	16 50	rk16pb	"C"
103	13 04 Czw	23 00	23 50	rk16pc	"K"
106	16 04 Nie	12 00	13 00	rk16pd	"K"
106	16 04 Nie	17 00	18 00	rk16pe	"C"
106	16 04 Nie	21 00	22 00	rk16pf	"C"
107	17 04 Pon	6 30	7 30	rk16pg	"C"
107	17 04 Pon	20 00	21 00	rk16ph	"C"
108	18 04 Wto	4 00	5 00	rk16pi	"C"
109	19 04 Sro	9 00	10 00	rk16pj	"C"
109	19 04 Sro	16 00	17 00	rk16pk	"C"
109	19 04 Sro	21 00	22 00	rk16pl	"L"
111	21 04 Pia	3 00	4 00	rk16pm	"C"
111	21 04 Pia	15 00	16 00	rk16pn	"L"
111	21 04 Pia	21 00	22 00	rk16po	"K"
112	22 04 Sob	2 00	3 00	rk16pp	"C"
114	24 04 Pon	18 00	19 00	rk16pq	"K"
115	25 04 Wto	11 00	12 00	rk16pr	"C"
115	25 04 Wto	15 20	16 00	rk16ps	"C"
116	26 04 Sro	17 00	18 00	rk16pu	"C"
117	27 04 Czw	18 00	19 00	rk16pw	"C"

117	27	04	Czw	23	00	24	00	rk16px	"C	"
118	28	04	Pia	16	00	17	00	rk16py	"L	"
118	28	04	Pia	21	00	21	50	rk16pz	"K	"
119	29	04	Sob	1	10	2	00	rk16qa	"L	"
119	29	04	Sob	11	00	12	00	rk16qb	"C	"
119	29	04	Sob	20	00	21	00	rk16qc	"L	"
120	30	04	Nie	0	00	1	00	rk16qd	"C	"

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

<http://paulo.astro.uni.torun.pl/~pw/VLBI/schedules/feb17.pdf>



```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 01 00.101747	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 21.18073	0.00
	fake circumpolar target for a TS to look at			
* 1005+066	10 05 23.466064	* 10 08 00.816157	10 08 55.407614	0.00
J1008+0621	06 36 03.30797	* 06 21 21.21593	06 16 08.60061	0.00
	./rk16oh_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 317 observations, RA-A04-07, RA-			

#### EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
1005+066	139.2

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

For common VLBI bands, this is:

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



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

The following frequency sets based on these setups were used.

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

Track assignments are:

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

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 01 00.018819	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 21.62599	0.00
	fake circumpolar target for a TS to look at			
* 0814+425	08 14 51.669840	* 08 18 15.999600	08 19 25.944044	0.00
J0818+4222	42 32 07.73231	* 42 22 45.41481	42 19 30.22732	0.00
	./rk16oj_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 3620 observations, RA-A04-07, RA			

#### EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0814+425	102.0

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

For common VLBI bands, this is:

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





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

The following frequency sets based on these setups were used.

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

Track assignments are:

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

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 01 00.001581	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 21.74210	0.00
	fake circumpolar target for a TS to look at			
* 1222+216	12 22 23.408709	* 12 24 54.458394	12 25 47.133255	0.00
J1224+2122	21 39 23.03696	* 21 22 46.38857	21 17 00.64887	0.00
	./rk16ol_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 406 observations, RA-A04-07, RA-A03-04,			

#### EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
1222+216	152.1

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

For common VLBI bands, this is:

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



```

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

```

The following frequency sets based on these setups were used.

```

Frequency Set: 2 Setup file default. Used with PCAL = 1MHz
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 732.00 732.00 732.00 732.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 2

```

Track assignments are:

```

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

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(Date)	Error (mas)	
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 59.974953	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 21.93991	0.00
	fake circumpolar target for a TS to look at			
* 0727-115	07 27 58.097813	* 07 30 19.112473	07 31 07.479589	0.00
J0730-1141	-11 34 52.58107	*-11 41 12.60063	-11 43 43.22676	0.00
	./rk16on_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 155894 observations, RA-A04-07, RA-A03-			

#### 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    99.7

```

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

For common VLBI bands, this is:

```

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

```



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

The following frequency sets based on these setups were used.

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

Track assignments are:

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

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 59.967404	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 21.99902	0.00
	fake circumpolar target for a TS to look at			
* 1222+216	12 22 23.408709	* 12 24 54.458394	12 25 47.139348	0.00
J1224+2122	21 39 23.03696	* 21 22 46.38857	21 17 00.73702	0.00
	./rk16oo_sources.radioastron AGN, rfc_2013d Petrov, 2013, unpublished 406 observations, RA-A04-07, RA-A03-04,			

#### EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
1222+216	151.6

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

For common VLBI bands, this is:

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



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

The following frequency sets based on these setups were used.

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

Track assignments are:

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

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 59.839667	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 22.88049	0.00
	fake circumpolar target for a TS to look at			
* 0814+425	08 14 51.669840	* 08 18 15.999600	08 19 25.858724	0.00
J0818+4222	42 32 07.73231	* 42 22 45.41481	42 19 30.67020	0.00
	./rk16op_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 3620 observations, RA-A04-07, RA			

#### EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0814+425	98.2

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

For common VLBI bands, this is:

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





```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 59.821553	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 22.97574	0.00
	fake circumpolar target for a TS to look at			
* 1044+719	10 44 49.735111	* 10 48 27.619927	10 49 42.923071	0.00
J1048+7143	71 59 26.88535	* 71 43 35.93838	71 38 15.73846	0.00
	./rk16oq_sources.radioastron AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 141793 observations, RA-A04-07,			

#### 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)
1044+719	97.8

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

For common VLBI bands, this is:

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

**rk16or**

RADIOASTRON AGN MONITORING

PI: *Yuri Kovalev*

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

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

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN Monitoring

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

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

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are 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    8 Apr 2017    Day 98 ---

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

Next scan frequencies:	22236.00	22236.00	22236.00	22236.00							
Next BBC frequencies:	736.00	736.00	736.00	736.00							
Next scan bandwidths:	16.00	16.00	16.00	16.00							
20 00 00	0814+425	10 23 19	66.8	254.9	2.1		51.6	0	0	20 00 00	
20 14 30	---	10 37 52	64.7	258.9	2.3		52.8	870	28	20 00 01	
20 15 00	0814+425	10 38 22	64.6	259.0	2.3		52.9	24	28	20 15 00	
20 29 30	---	10 52 54	62.4	262.7	2.6		53.7	870	56	20 15 01	
20 30 00	0814+425	10 53 24	62.4	262.8	2.6		53.7	24	56	20 30 00	
20 44 30	---	11 07 57	60.2	266.1	2.8		54.1	870	84	20 30 01	
20 45 00	0814+425	11 08 27	60.1	266.2	2.8		54.1	24	84	20 45 00	
21 00 00	---	11 23 29	57.9	269.3	3.1		54.3	900	112	20 45 01	

SETUP FILE INFORMATION:

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

=====  
Setup file: ra1cm2.set

Matching groups in ./rk16or\_freq.dat:

tr1cm

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

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 59.779329	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 23.17729	0.00
	fake circumpolar target for a TS to look at			
* 0814+425	08 14 51.669840	* 08 18 15.999600	08 19 25.833155	0.00
J0818+4222	42 32 07.73231	* 42 22 45.41481	42 19 30.76989	0.00
	./rk16or_sources.radioastron			
	AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 3620 observations, RA-A04-07, RA			

#### EFFECT OF SOLAR CORONA

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

```

Source      Sun distance (deg)
0814+425    97.4

```

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

For common VLBI bands, this is:

```

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

```



```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 59.765759	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 23.23702	0.00
	fake circumpolar target for a TS to look at			
* 1044+719	10 44 49.735111	* 10 48 27.619927	10 49 42.891559	0.00
J1048+7143	71 59 26.88535	* 71 43 35.93838	71 38 15.96217	0.00
	./rk16os_sources.radioastron AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 141793 observations, RA-A04-07,			

#### 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)
1044+719	97.4

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

For common VLBI bands, this is:

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



```

1st LO= 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:  6 Setup file default. Used with PCAL = 1MHz
LO sum= 22236.00 22236.00 22236.00 22236.00
BBC fr=  736.00  736.00  736.00  736.00
Bandwd=  16.00  16.00  16.00  16.00
Matching frequency sets:  6

```

Track assignments are:

```

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

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 59.715156	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 23.44277	0.00
	fake circumpolar target for a TS to look at			
* 0827+243	08 27 54.398594	* 08 30 52.086193	08 31 52.988926	0.00
J0830+2410	24 21 07.66367	* 24 10 59.82026	24 07 24.10889	0.00
	./rk16ot_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 3847 observations, RA-A04-07, RA-A03-04			

#### EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0827+243	104.3

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

For common VLBI bands, this is:

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





```

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: 6 Setup file default. Used with PCAL = 1MHz
LO sum= 22236.00 22236.00 22236.00 22236.00
BBC fr= 736.00 736.00 736.00 736.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 6

```

Track assignments are:

```

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

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 59.699907	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 23.50036	0.00
	fake circumpolar target for a TS to look at			
* 0727-115	07 27 58.097813	* 07 30 19.112473	07 31 07.377388	0.00
J0730-1141	-11 34 52.58107	*-11 41 12.60063	-11 43 43.01058	0.00
	./rk16ou_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 155894 observations, RA-A04-07, RA-A03-			

#### 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    95.7

```

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

For common VLBI bands, this is:

```

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

```



```

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:  9  Setup file default.  Used with PCAL = 1MHz
LO sum= 22236.00 22236.00 22236.00 22236.00
BBC fr=  736.00  736.00  736.00  736.00
Bandwd=  16.00  16.00  16.00  16.00
Matching frequency sets:  9

```

Track assignments are:

```

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

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(Date)	Error (mas)
* FAKERA	11 57 21.769299 * 12 00 00.000000	12 00 59.685601	0.00
	85 16 41.77889 * 85 00 00.000000	84 54 23.55280	0.00
	fake circumpolar target for a TS to look at		
* 1044+719	10 44 49.735111 * 10 48 27.619927	10 49 42.849833	0.00
J1048+7143	71 59 26.88535 * 71 43 35.93838	71 38 16.22811	0.00
	./rk16ov_sources.radioastron AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 141793 observations, RA-A04-07,		

#### 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)
1044+719    96.9

```

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

For common VLBI bands, this is:

```

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

```

**rk16owtr**

RADIOASTRON AGN MONITORING

PI: *Yuri Kovalev*

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

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

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN Monitoring

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

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

Disk: GBytes recorded to this point.

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

SYNC: Time correlator is expected to sync up.

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

--- Mon 10 Apr 2017    Day 100 ---

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

Next scan frequencies:	4836.00	4836.00	4836.00	4836.00						
Next BBC frequencies:	736.00	736.00	736.00	736.00						
Next scan bandwidths:	16.00	16.00	16.00	16.00						
19 00 00	0727-115	09 31 03	20.3	211.4	2.0	18.7	0	0	19 00 00	
19 14 30	---	09 45 35	19.1	215.0	2.2	20.6	870	28	19 00 01	
19 15 00	0727-115	09 46 05	19.0	215.1	2.2	20.7	24	28	19 15 00	
19 29 30	---	10 00 38	17.7	218.6	2.5	22.5	870	56	19 15 01	
19 30 00	0727-115	10 01 08	17.7	218.7	2.5	22.6	24	56	19 30 00	
19 44 30	---	10 15 40	16.3	222.1	2.7	24.3	870	84	19 30 01	
19 45 00	0727-115	10 16 10	16.2	222.3	2.8	24.4	24	84	19 45 00	
20 00 00	---	10 31 13	14.7	225.7	3.0	26.0	900	112	19 45 01	

SETUP FILE INFORMATION:

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

=====  
Setup file: ra6cm2.set

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

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

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

```

Track assignments are:

```

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

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* FAKERA	11 57 21.769299	* 12 00 00.000000	12 00 59.605108	0.00
	85 16 41.77889	* 85 00 00.000000	84 54 23.82447	0.00
	fake circumpolar target for a TS to look at			
* 0727-115	07 27 58.097813	* 07 30 19.112473	07 31 07.354508	0.00
J0730-1141	-11 34 52.58107	*-11 41 12.60063	-11 43 42.98358	0.00
	./rk16ow_sources.radioastron			
	AGN, rfc_2013d Petrov, 2013, unpublished 155894 observations, RA-A04-07, RA-A03-			

#### 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    94.8

```

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

For common VLBI bands, this is:

```

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

```



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

The following frequency sets based on these setups were used.

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

Track assignments are:

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

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(Date)	Error (mas)
* FAKERA	11 57 21.769299 * 12 00 00.000000	12 00 59.573113	0.00
	85 16 41.77889 * 85 00 00.000000	84 54 23.92352	0.00
	fake circumpolar target for a TS to look at		
* 0814+425	08 14 51.669840 * 08 18 15.999600	08 19 25.765014	0.00
J0818+4222	42 32 07.73231 * 42 22 45.41481	42 19 30.97338	0.00
	./rk16ox_sources.radioastron AGN, MASIV, rfc_2013d Petrov, 2013, unpublished 3620 observations, RA-A04-07, RA		

#### EFFECT OF SOLAR CORONA

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

Source	Sun distance (deg)
0814+425	95.3

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

For common VLBI bands, this is:

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



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