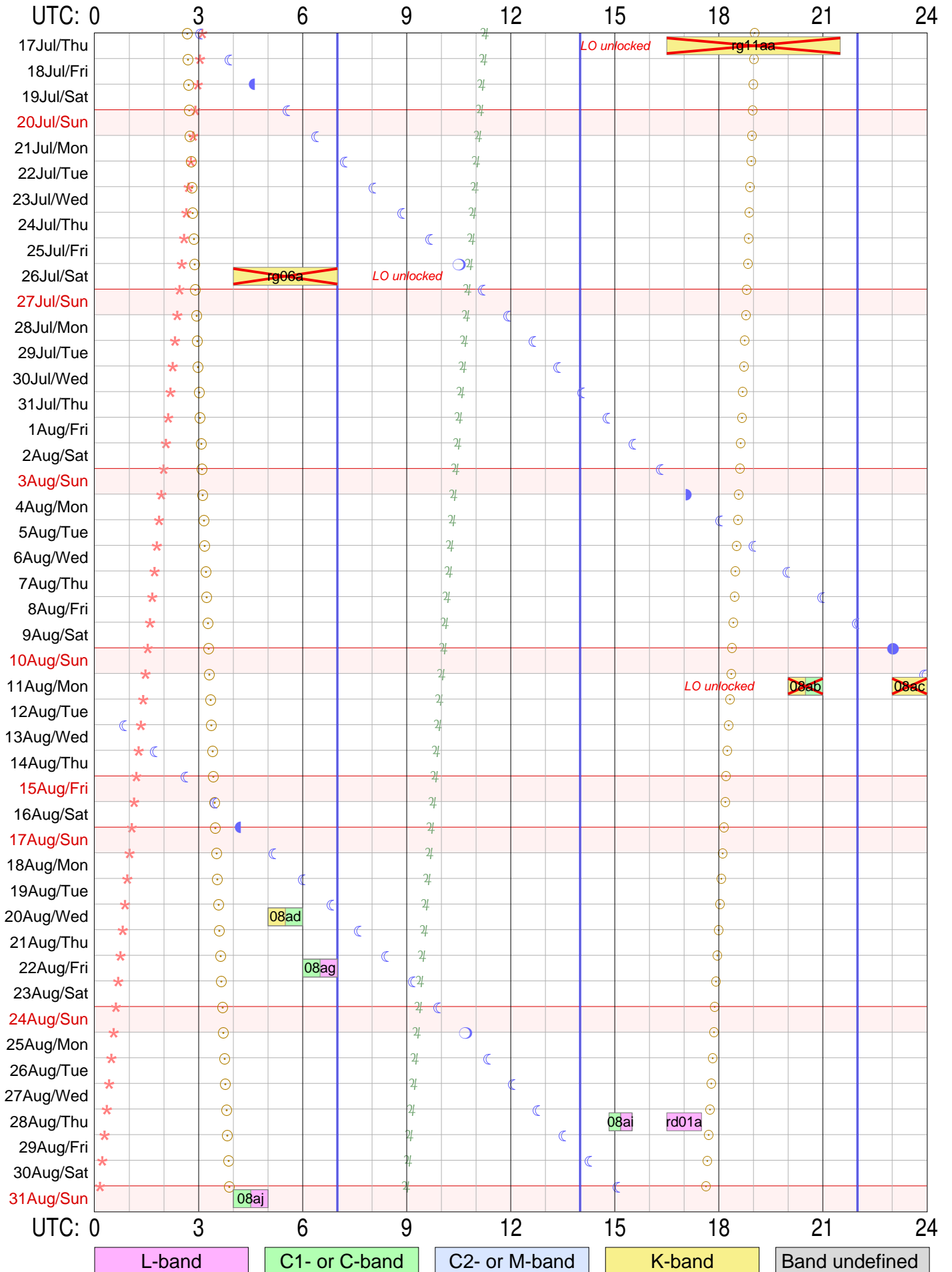


Tr VLBI plan for Jul/Aug 2014



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: 24.7 hours in 9 experiments scheduled

Two initial characters (rk) are omitted from RA experiment names!

RadioAstron Experiments

July-August 2014

Użytkownik i hasło ftp dla logów i schedulów RA: grt K0&th%
ftp://webinet.asc.rssi.ru
Przykład dla log files: cd GRT_log_files/2013_08/2013_08_01_raks02aa
Przykład dla sched files: cd schedule/grtsched/RAKS/rk02aa

DoY	DoM	WD	UT_Start	UT_Stop	Experiment	Band	Uwagi
			h m	h m	name		
198	17	Jul	16 30	21 30	rg11aa	K	515 GB
207	26	Jul	04 00	07 00	rg06a	K	348 GB
223	11	Aug	20 00	21 00	rk08ab	K->C	104 GB
223	11	Aug	23 00	24 00	rk08ac	K	110 GB
232	20	Aug	05 00	06 00	rk08ad	K->C	104 GB
234	22	Aug	06 00	07 00	rk08ag	C->L	104 GB
240	28	Aug	14 50	15 30	rk08ai	C->L	67 GB
240	28	Aug	16 30	17 30	rd01a	L	112 GB
243	31	Aug	04 00	05 00	rk08aj	C->L	104 GB
					Razem	9 eksperymentow RA	(14.7 godz.)

Uaktualniany plik pdf tego dokumentu jest dostępny w sieci pod adresem:
<http://cosmo.astro.umk.pl/foswiki/pub/Main/KazB/VLBI2014Jul-Aug.pdf>

RADIOASTRON MASER OBSERVATIONS

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Observing mode: K-band, dual-pol

Schedule for TORUN (Code Tr) Page 2

RadioAstron Maser observations

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

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

--- Thu 17 Jul 2014 Day 198 ---

----- This is a fringe finder/clock offset calibrator 0.4 deg. from IRAS1519 -----

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

```
16 20 00 1520+319    13 15 54 58.7 120.5 -2.1    -37.5    0        0    16 20 00
16 25 00 ---        13 20 55 59.4 122.1 -2.0    -36.7    300     10    16 20 01
```

----- Space segment 01. Please, make sure PCAL is OFF for IRAS1519 maser observations. -----

```
16 30 00 IRAS1519    13 25 56 59.8 124.5 -1.9    -35.4    287     10    16 30 00
16 39 30 ---        13 35 27 61.0 127.9 -1.8    -33.7    570     28    16 30 01

16 40 00 IRAS1519    13 35 57 61.0 128.1 -1.8    -33.6    24     28    16 40 00
16 49 30 ---        13 45 29 62.1 131.7 -1.6    -31.7    570     46    16 40 01

16 50 00 IRAS1519    13 45 59 62.2 131.9 -1.6    -31.5    24     46    16 50 00
16 59 30 ---        13 55 31 63.2 135.7 -1.4    -29.4    570     64    16 50 01

17 00 00 IRAS1519    13 56 01 63.2 135.9 -1.4    -29.3    24     64    17 00 00
17 09 30 ---        14 05 32 64.2 140.0 -1.3    -26.9    570     83    17 00 01

17 10 00 IRAS1519    14 06 02 64.3 140.2 -1.3    -26.7    23     83    17 10 00
17 19 30 ---        14 15 34 65.1 144.5 -1.1    -24.1    570    101    17 10 01

17 20 00 IRAS1519    14 16 04 65.2 144.7 -1.1    -23.9    23    101    17 20 00
17 29 30 ---        14 25 36 65.9 149.3 -0.9    -21.0    570    119    17 20 01

17 30 00 IRAS1519    14 26 06 66.0 149.5 -0.9    -20.9    23    119    17 30 00
17 39 30 ---        14 35 37 66.7 154.3 -0.8    -17.7    570    137    17 30 01

17 40 00 IRAS1519    14 36 07 66.7 154.6 -0.8    -17.6    23    137    17 40 00
17 49 30 ---        14 45 39 67.3 159.6 -0.6    -14.2    570    156    17 40 01

17 50 00 IRAS1519    14 46 09 67.3 159.8 -0.6    -14.0    23    156    17 50 00
17 59 30 ---        14 55 41 67.7 165.0 -0.4    -10.5    570    174    17 50 01
```

Schedule for TORUN (Code Tr)

Page 3

RadioAstron Maser observations

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

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

Disk: GBytes recorded to this point.

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

SYNC: Time correlator is expected to sync up.

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

--- Thu 17 Jul 2014 Day 198 ---

```
18 00 00  IRAS1519    14 56 11  67.7 165.3 -0.4   -10.3   23    174  18 00 00
18 10 00  ---          15 06 12  68.0 170.9 -0.3    -6.4   600    193  18 00 01
```

----- Ground only segment 01. Please, make sure PCAL is OFF for IRAS1519 maser observations. -----

```
18 10 30  IRAS1519    15 06 42  68.0 171.2 -0.3    -6.2   23    193  18 10 30
18 20 00  ---          15 16 14  68.2 176.7 -0.1    -2.3  570    211  18 10 31
```

```
18 20 30  IRAS1519    15 16 44  68.2 177.0 -0.1    -2.1   23    211  18 20 30
18 30 00  ---          15 26 16  68.2 182.4  0.1     1.7  570    229  18 20 31
```

```
18 30 30  IRAS1519    15 26 46  68.2 182.7  0.1     1.9   23    229  18 30 30
18 40 00  ---          15 36 17  68.1 188.2  0.2     5.7  570    248  18 30 31
```

```
18 40 30  IRAS1519    15 36 47  68.1 188.5  0.2     5.9   23    248  18 40 30
18 50 00  ---          15 46 19  67.8 193.8  0.4     9.7  570    266  18 40 31
```

----- This is time for pointing -----

```
18 55 00  3C286       15 51 20  56.1 242.1  2.3    38.0  191    266  Stopped
19 03 00  ---          15 59 21  55.0 244.5  2.5    38.9  480    266
```

----- Ground only segment 03. Please, make sure PCAL is OFF for IRAS1519 maser observations. -----

```
19 10 00  IRAS1519    16 06 22  66.8 204.6  0.7    17.0  320    266  19 10 00
19 19 30  ---          16 15 54  66.1 209.5  0.9    20.2  570    284  19 10 01
```

```
19 20 00  IRAS1519    16 16 24  66.1 209.7  0.9    20.4   23    284  19 20 00
19 29 30  ---          16 25 55  65.3 214.3  1.1    23.3  570    302  19 20 01
```

```
19 30 00  IRAS1519    16 26 25  65.3 214.5  1.1    23.5   23    302  19 30 00
19 40 00  ---          16 36 27  64.4 219.1  1.2    26.3  600    322  19 30 01
```

----- This is a fringe finder/clock offset calibrator 0.4 deg. from IRAS1519 -----

```
19 42 00  1520+319    16 38 27  64.6 220.1  1.3    27.0  108    322  19 42 00
19 47 00  ---          16 43 28  64.1 222.2  1.3    28.3  300    331  19 42 01
```

----- Space segment 02. Please, make sure PCAL is OFF for IRAS1519 maser observations. -----

```
19 50 00  IRAS1519    16 46 29  63.4 223.4  1.4    28.9  168    331  19 50 00
19 59 30  ---          16 56 00  62.4 227.3  1.6    31.1  570    349  19 50 01
```

```
20 00 00  IRAS1519    16 56 30  62.3 227.5  1.6    31.2   24    349  20 00 00
20 09 30  ---          17 06 02  61.2 231.1  1.7    33.2  570    368  20 00 01
```

Schedule for TORUN (Code Tr)

Page 4

RadioAstron Maser observations

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

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

Disk: GBytes recorded to this point.

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

SYNC: Time correlator is expected to sync up.

```

-----
Start UT  Source          Start / Stop          Early  Disk  TPStart
Stop UT   LST      EL  AZ  HA  UP  ParA  Dwell  GBytes  SYNC
-----
--- Thu 17 Jul 2014 Day 198 ---

20 10 00  IRAS1519    17 06 32  61.2 231.3  1.7    33.3   24    368   20 10 00
20 19 30  ---          17 16 04  60.0 234.8  1.9    35.0  570    386   20 10 01

20 20 00  IRAS1519    17 16 34  60.0 234.9  1.9    35.1   24    386   20 20 00
20 29 30  ---          17 26 05  58.8 238.2  2.1    36.7  570    404   20 20 01

20 30 00  IRAS1519    17 26 35  58.7 238.3  2.1    36.7   24    404   20 30 00
20 39 30  ---          17 36 07  57.5 241.4  2.2    38.1  570    422   20 30 01

20 40 00  IRAS1519    17 36 37  57.4 241.6  2.2    38.2   24    422   20 40 00
20 49 30  ---          17 46 08  56.2 244.4  2.4    39.4  570    441   20 40 01

20 50 00  IRAS1519    17 46 39  56.1 244.6  2.4    39.4   24    441   20 50 00
20 59 30  ---          17 56 10  54.8 247.3  2.6    40.4  570    459   20 50 01

21 00 00  IRAS1519    17 56 40  54.7 247.5  2.6    40.5   24    459   21 00 00
21 09 30  ---          18 06 12  53.4 250.1  2.7    41.4  570    477   21 00 01

21 10 00  IRAS1519    18 06 42  53.3 250.2  2.7    41.4   24    477   21 10 00
21 19 30  ---          18 16 13  51.9 252.7  2.9    42.2  570    495   21 10 01

21 20 00  IRAS1519    18 16 43  51.9 252.9  2.9    42.2   24    495   21 20 00
21 30 00  ---          18 26 45  50.4 255.4  3.1    42.9  600    515   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: ra1cm2.set

Matching groups in ./rg11aa_freq.dat:

tr1cm

```

Setup group:      1          Station: TORUN          Total bit rate: 256
Format: MKIV1:4   Bits per sample: 2    Sample rate: 32.000
Number of channels: 4    DBE type:          Speedup factor: 1.00

```

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

Frequency Set: 7 Setup file default. Used with PCAL = off
LO sum= 22228.00 22228.00 22228.00 22228.00
BBC fr= 728.00 728.00 728.00 728.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 7

```

```

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)		
* 1520+319	15 20 08.107557	* 15 22 09.991700	15 22 46.301455	0.00
	31 54 54.51274	* 31 44 14.38200	31 41 26.42252	0.00
IRAS15193+31	15 19 21.526559	* 15 21 23.956080	15 22 00.421147	0.00
* IRAS1519	31 32 45.29719	* 31 22 02.57300	31 19 13.76501	0.00
1328+307	13 28 49.657778	* 13 31 08.288070	13 31 48.673226	0.00
* 3C286	30 45 58.64060	* 30 30 32.95924	30 26 17.94020	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)
FAKERA	66.7
1520+319	97.4
3C286	76.1
IRAS1519	97.5

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

For common VLBI bands, this is:

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

rg06atr

RADIOASTRON MASER OBSERVATIONS

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Observing mode: K-band, dual-pol

Schedule for TORUN (Code Tr) Page 2

RadioAstron Maser observations

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

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

--- Sat 26 Jul 2014 Day 207 ---

----- This is a fringe finder/clock offset calibrator -----

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

03 50 00 2037+511 01 19 20 48.8 -63.0 4.7 59.0 0 0 03 50 00
03 55 00 --- 01 24 21 48.1 -62.4 4.8 58.5 300 10 03 50 01

----- Please, make sure PCAL is OFF for IC1396N_H2O maser observations. -----

04 00 00 IC1396N_H2O 01 29 22 58.4 -57.3 3.8 74.3 245 10 04 00 00
04 09 30 --- 01 38 53 57.2 -56.6 4.0 72.8 570 28 04 00 01

04 10 00 IC1396N_H2O 01 39 23 57.2 -56.6 4.0 72.8 24 28 04 10 00
04 19 30 --- 01 48 55 56.0 -55.9 4.1 71.3 570 46 04 10 01

04 20 00 IC1396N_H2O 01 49 25 55.9 -55.9 4.1 71.2 24 46 04 20 00
04 29 30 --- 01 58 56 54.7 -55.1 4.3 69.8 570 64 04 20 01

04 30 00 IC1396N_H2O 01 59 27 54.7 -55.1 4.3 69.7 24 64 04 30 00
04 39 30 --- 02 08 58 53.5 -54.3 4.5 68.3 570 83 04 30 01

04 40 00 IC1396N_H2O 02 09 28 53.5 -54.3 4.5 68.3 24 83 04 40 00
04 49 30 --- 02 19 00 52.3 -53.5 4.6 66.9 570 101 04 40 01

04 50 00 IC1396N_H2O 02 19 30 52.2 -53.5 4.6 66.8 24 101 04 50 00
04 59 30 --- 02 29 01 51.1 -52.6 4.8 65.4 570 119 04 50 01

05 00 00 IC1396N_H2O 02 29 31 51.0 -52.6 4.8 65.3 24 119 05 00 00
05 09 30 --- 02 39 03 49.9 -51.8 5.0 63.9 570 137 05 00 01

05 10 00 IC1396N_H2O 02 39 33 49.9 -51.7 5.0 63.9 24 137 05 10 00
05 19 30 --- 02 49 05 48.7 -50.8 5.1 62.5 570 156 05 10 01

05 20 00 IC1396N_H2O 02 49 35 48.7 -50.8 5.1 62.4 24 156 05 20 00
05 29 30 --- 02 59 06 47.6 -49.9 5.3 61.1 570 174 05 20 01

Schedule for TORUN (Code Tr)

Page 3

RadioAstron Maser observations

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

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

Disk: GBytes recorded to this point.

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

SYNC: Time correlator is expected to sync up.

```

-----
Start UT  Source          Start / Stop      Early   Disk   TPStart
Stop UT          LST      EL    AZ    HA  UP   ParA Dwell  GBytes  SYNC
-----
--- Sat 26 Jul 2014  Day 207 ---

05 30 00  IC1396N_H2O  02 59 36  47.5 -49.9  5.3      61.0   24    174   05 30 00
05 39 30  ---          03 09 08  46.4 -49.0  5.5      59.6   570    192   05 30 01

05 40 00  IC1396N_H2O  03 09 38  46.4 -48.9  5.5      59.6   24    192   05 40 00
05 49 30  ---          03 19 10  45.3 -48.0  5.6      58.2   570    210   05 40 01

05 50 00  IC1396N_H2O  03 19 40  45.3 -47.9  5.6      58.1   24    210   05 50 00
05 59 30  ---          03 29 11  44.2 -47.0  5.8      56.8   570    228   05 50 01

06 00 00  IC1396N_H2O  03 29 41  44.1 -46.9  5.8      56.7   24    228   06 00 00
06 09 30  ---          03 39 13  43.1 -46.0  6.0      55.3   570    247   06 00 01

06 10 00  IC1396N_H2O  03 39 43  43.1 -45.9  6.0      55.3   24    247   06 10 00
06 19 30  ---          03 49 15  42.0 -44.9  6.1      53.9   570    265   06 10 01

06 20 00  IC1396N_H2O  03 49 45  42.0 -44.9  6.1      53.8   24    265   06 20 00
06 29 30  ---          03 59 16  41.0 -43.9  6.3      52.5   570    283   06 20 01

06 30 00  IC1396N_H2O  03 59 46  40.9 -43.8  6.3      52.4   24    283   06 30 00
06 39 30  ---          04 09 18  39.9 -42.8  6.5      51.0   570    301   06 30 01

06 40 00  IC1396N_H2O  04 09 48  39.9 -42.8  6.5      50.9   24    301   06 40 00
06 49 30  ---          04 19 19  38.9 -41.7  6.6      49.6   570    320   06 40 01

06 50 00  IC1396N_H2O  04 19 50  38.9 -41.7  6.6      49.5   24    320   06 50 00
07 00 00  ---          04 29 51  37.9 -40.6  6.8      48.1   600    339   06 50 01

```

----- This is a fringe finder/clock offset calibrator -----

```

07 02 00  2037+511    04 31 52  26.6 -38.0  7.9      36.3   64    339   07 02 00
07 07 00  ---          04 36 52  26.1 -37.3  8.0      35.6   300    348   07 02 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 ./rg06a_freq.dat:

tr1cm

```

Setup group:      1          Station: TORUN          Total bit rate: 256
Format: MKIV1:4   Bits per sample: 2     Sample rate: 32.000
Number of channels: 4    DBE type:              Speedup factor: 1.00

```


Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

Frequency Set:  5  Setup file default.  Used with PCAL = off
LO sum=  22228.00  22228.00  22228.00  22228.00
BBC fr=   728.00   728.00   728.00   728.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  5

```

Track assignments are:

```

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

```

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
* IC1396N_H20	21 39 09.678974	* 21 40 41.750000	21 41 11.932287	0.00
	58 02 31.36343	* 58 16 11.90000	58 20 14.85721	0.00
* 2037+511	20 37 07.456977	* 20 38 37.034732	20 39 05.946303	0.00
J2038+5119	51 08 35.76950	* 51 19 12.66253	51 22 28.47939	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)
FAKERA	67.7
IC1396N_H20	100.5
2037+511	109.1

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:

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

rk08abtr

RADIOASTRON AGN SURVEY

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UWAGA: zmiana pasma w czasie tego eksperymentu!!!

```
#####
##### Observing mode: K&C-band, dual-pol #####
#####
```

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

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

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

--- Mon 11 Aug 2014 Day 223 ---

----- 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 1633+382      18 35 04 64.6 245.9 2.0    44.1    0    0    20 00 00
20 14 30 ---          18 49 37 62.6 250.4 2.2    46.0   870   28    20 00 01

20 15 00 1633+382      18 50 07 62.5 250.6 2.2    46.0   24   28    20 15 00
20 25 00 ---          19 00 08 61.1 253.4 2.4    47.0   600   47    20 15 01
```

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

```
Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies:   736.00   736.00   736.00   736.00
```

```
20 30 00 1633+382      19 05 09 60.4 254.8 2.5    47.4   293   47    20 30 00
20 44 30 ---          19 19 42 58.2 258.6 2.7    48.4   870   75    20 30 01

20 45 00 1633+382      19 20 12 58.2 258.7 2.7    48.4   24   75    20 45 00
21 00 00 ---          19 35 14 55.9 262.3 3.0    49.1   900  104    20 45 01
```

SETUP FILE INFORMATION:

```
===== Setup file: ra1cm2.set
Matching groups in ./rk08ab_freq.dat:    tr1cm
```

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

Disk used to record data.

```

1st LO= 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: 7 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: 7

```

Track assignments are:

```

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

```

==== Setup file: ra6cm2.set

```

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

```

Disk used to record data.

```

1st LO= 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: 9 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: 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)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 1633+382	16 33 30.625100	* 16 35 15.492975	16 35 46.913598	0.00
J1635+3808	38 14 10.08266	* 38 08 04.50043	38 06 41.57855	0.00

rk08actr

RADIOASTRON AGN SURVEY

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Observing mode: K-band, dual-pol

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN Survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
 Early: Seconds between end of slew and start. Dwell: On source seconds.
 Disk: GBytes recorded to this point.
 TPStart: Recording start time. Frequencies are 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 11 Aug 2014 Day 223 ---

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

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

23 00 00	1652+398	21 35 34	41.8	-76.3	4.7	49.3	0	0	23 00 00
23 09 30	---	21 45 05	40.4	-74.7	4.8	48.9	570	18	23 00 01
23 10 00	1652+398	21 45 35	40.4	-74.6	4.9	48.8	24	18	23 10 00
23 19 30	---	21 55 07	39.0	-73.0	5.0	48.3	570	36	23 10 01
23 20 00	1652+398	21 55 37	38.9	-73.0	5.0	48.3	24	36	23 20 00
23 29 30	---	22 05 09	37.6	-71.4	5.2	47.7	570	55	23 20 01
23 30 00	1652+398	22 05 39	37.5	-71.3	5.2	47.7	24	55	23 30 00
23 39 30	---	22 15 10	36.1	-69.8	5.3	47.1	570	73	23 30 01
23 40 00	1652+398	22 15 40	36.1	-69.7	5.4	47.1	24	73	23 40 00
23 49 30	---	22 25 12	34.7	-68.1	5.5	46.5	570	91	23 40 01
23 50 00	1652+398	22 25 42	34.7	-68.1	5.5	46.4	24	91	23 50 00
23 59 59	---	22 35 44	33.3	-66.5	5.7	45.7	599	110	23 50 01

SETUP FILE INFORMATION:

==== Setup file: ra1cm2.set

Matching groups in ./rk08ac_freq.dat: tr1cm

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

Disk used to record data.

```

1st LO= 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: 7 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: 7

```

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)		
* 1652+398	16 52 11.729418	* 16 53 52.216683	16 54 22.504469	0.00
J1653+3945	39 50 25.15723	* 39 45 36.60881	39 44 36.53596	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)
3C48	103.0
1652+398	96.4

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

For common VLBI bands, this is:

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

rk08adtr

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UWAGA: zmiana pasma w czasie tego eksperymentu!!!

#####
Observing mode: K&C-band, dual-pol
#####

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

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

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

--- Wed 20 Aug 2014 Day 232 ---

----- 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

05 00 00 1849+670 04 08 05 34.0 -17.7 9.3 27.9 0 0 05 00 00
05 14 30 --- 04 22 38 33.3 -16.1 9.6 25.4 870 28 05 00 01
05 15 00 1849+670 04 23 08 33.3 -16.1 9.6 25.3 24 28 05 15 00
05 25 00 --- 04 33 09 32.9 -15.0 9.7 23.6 600 47 05 15 01

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

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 736.00 736.00 736.00 736.00

05 30 00 1849+670 04 38 10 32.7 -14.5 9.8 22.7 294 47 05 30 00
05 44 30 --- 04 52 43 32.2 -12.9 10.1 20.2 870 75 05 30 01
05 45 00 1849+670 04 53 13 32.2 -12.9 10.1 20.1 24 75 05 45 00
06 00 00 --- 05 08 15 31.7 -11.2 10.3 17.5 900 104 05 45 01

SETUP FILE INFORMATION:

==== Setup file: ra1cm2.set
Matching groups in ./rk08ad_freq.dat: tr1cm

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

Disk used to record data.

```
1st LO= 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:  8  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:  8
```

Track assignments are:

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

==== Setup file: ra6cm2.set

```
Setup group:  3      Station: TORUM      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: 10  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: 10
```

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)
* 1849+670	18 49 16.505869	* 18 49 16.072282	18 49 18.509792	0.00
J1849+6705	67 02 07.88049	* 67 05 41.68023	67 07 07.82929	0.00

rk08agtr

RADIOASTRON AGN SURVEY

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UWAGA: zmiana pasma w czasie tego eksperymentu!!!

```
#####
##### Observing mode: C&L-band, dual-pol #####
#####
```

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN Survey

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

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

--- Fri 22 Aug 2014 Day 234 ---

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

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

```
06 00 00 0403-132    05 16 08 22.1 198.4 1.2    11.2    0    0    06 00 00
06 14 30 ---          05 30 41 21.4 202.1 1.4    13.4   870   28    06 00 01

06 15 00 0403-132    05 31 11 21.3 202.3 1.4    13.5   24   28    06 15 00
06 25 00 ---          05 41 12 20.7 204.8 1.6    15.0  600   47    06 15 01
```

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

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

```
06 30 00 0403-132    05 46 13 20.4 206.0 1.7    15.7   293   47    06 30 00
06 44 30 ---          06 00 46 19.4 209.7 1.9    17.8   870   75    06 30 01

06 45 00 0403-132    06 01 16 19.4 209.8 1.9    17.8   24   75    06 45 00
07 00 00 ---          06 16 18 18.2 213.4 2.2    19.9  900  104    06 45 01
```

SETUP FILE INFORMATION:

==== Setup file: ra6cm2.set

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


Disk used to record data.

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

The following frequency sets based on these setups were used.

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

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

==== Setup file: ra18cm2.set

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

Disk used to record data.

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

The following frequency sets based on these setups were used.

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

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

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 0403-132	04 03 13.979060	* 04 05 34.003395	04 06 15.289548	0.00
J0405-1308	-13 16 18.08449	*-13 08 13.69083	-13 05 48.43087	0.00

rk08aitr

RADIOASTRON AGN SURVEY

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UWAGA: zmiana pasma w czasie tego eksperymentu!!!

Observing mode: C&L-band, dual-pol #####
#####

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN Survey

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

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

--- Thu 28 Aug 2014 Day 240 ---

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

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

14 50 00	1957+405	14 31 15	35.7	67.6	-5.5	-47.1	0	0	14 50 00
15 05 00	---	14 46 17	37.8	69.9	-5.2	-48.2	900	29	14 50 01

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

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

15 10 00	1957+405	14 51 18	38.6	70.8	-5.1	-48.5	293	29	15 10 00
15 30 00	---	15 11 21	41.4	74.0	-4.8	-49.7	1200	67	15 10 01

SETUP FILE INFORMATION:

=====
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: 8 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: 8

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

==== Setup file: ra18cm2.set

Setup group:	9	Station: TORUN	Total bit rate:	256
Format:	MKIV1:4	Bits per sample:	2	Sample rate: 32.000
Number of channels:	4	DBE type:		Speedup factor: 1.00

Disk used to record data.

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

The following frequency sets based on these setups were used.

Frequency Set: 9 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: 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)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 1957+405	19 57 44.440786	* 19 59 28.356463	20 00 00.709638	0.00
J1959+4044	40 35 46.36320	* 40 44 02.09701	40 46 49.69696	0.00

rd01atr

RADIO ASTRON EXPLORATORY MICROQUASAR OBSERVATIONS

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Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr) Page 2

RadioAstron Exploratory microquasar 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

--- Thu 28 Aug 2014 Day 240 ---

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

16 30 00	LSI+61303	16 11 31	25.8	11.8-10.5	-14.8	0	0	16 30 00
16 44 30	---	16 26 04	26.2	13.6-10.3	-17.1	870	28	16 30 01
16 45 00	LSI+61303	16 26 34	26.3	13.7-10.3	-17.2	24	28	16 45 00
16 59 30	---	16 41 06	26.8	15.5-10.0	-19.6	870	56	16 45 01
17 00 00	LSI+61303	16 41 36	26.8	15.6-10.0	-19.6	24	56	17 00 00
17 14 30	---	16 56 08	27.5	17.4 -9.8	-22.0	870	84	17 00 01
17 15 00	LSI+61303	16 56 39	27.5	17.5 -9.8	-22.1	24	84	17 15 00
17 30 00	---	17 11 41	28.2	19.4 -9.5	-24.5	900	112	17 15 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

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

Disk used to record data.

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

The following frequency sets based on these setups were used.

Frequency Set: 8 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: 8

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)		
* LSI+61303	02 36 40.625326	* 02 40 31.665160	02 41 42.297306	0.00
	61 00 54.26599	* 61 13 45.61150	61 17 14.94291	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)
LSI+61303	93.9

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

rk08ajtr

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UWAGA: zmiana pasma w czasie tego eksperymentu!!!

Observing mode: C&L-band, dual-pol #####
#####

Schedule for TORUN (Code Tr) Page 2

RadioAstron AGN Survey

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

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

--- Sun 31 Aug 2014 Day 243 ---

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

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

04 00 00	0420-014	03 51 18	35.2	170.0	-0.5	-6.0	0	0	04 00 00
04 14 30	---	04 05 50	35.5	174.4	-0.3	-3.3	870	28	04 00 01
04 15 00	0420-014	04 06 20	35.5	174.6	-0.3	-3.3	24	28	04 15 00
04 25 00	---	04 16 22	35.6	177.6	-0.1	-1.4	600	47	04 15 01

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

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

04 30 00	0420-014	04 21 23	35.6	179.2	-0.0	-0.5	293	47	04 30 00
04 44 30	---	04 35 55	35.5	183.7	0.2	2.2	870	75	04 30 01
04 45 00	0420-014	04 36 25	35.5	183.8	0.2	2.3	24	75	04 45 00
05 00 00	---	04 51 27	35.3	188.4	0.5	5.0	900	104	04 45 01

SETUP FILE INFORMATION:

=====
Setup file: ra6cm2.set

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

Disk used to record data.

```

1st LO=  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: 10 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: 10

```

Track assignments are:

```

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

```

==== Setup file: ra18cm2.set

```

Setup group:  13      Station: TORUM      Total bit rate:  256
Format: MKIV1:4      Bits per sample: 2      Sample rate: 32.000
Number of channels:  4      DBE type:      Speedup factor:  1.00

```

Disk used to record data.

```

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

```

The following frequency sets based on these setups were used.

```

Frequency Set: 12 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: 12

```

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)
* 0420-014	04 20 43.539850	* 04 23 15.800727	04 24 00.905988	0.00
J0423-0120	-01 27 28.70027	*-01 20 33.06557	-01 18 31.56666	0.00

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.

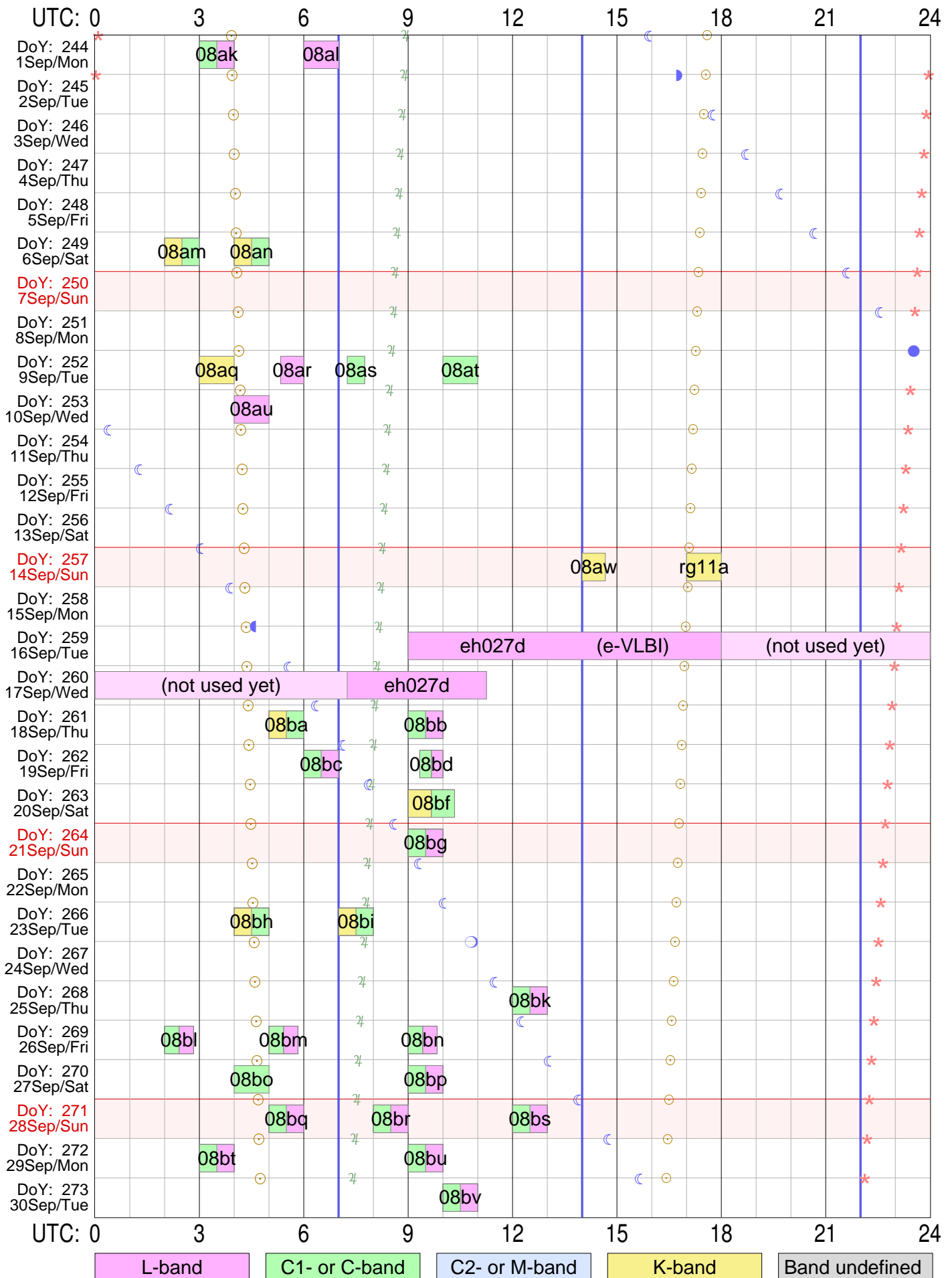
The RadioAstron program, initiated by Astro Space Center (ASC) of Lebedev Physical Institute of Russian Academy of Sciences (RAS) in collaboration with other institutions of RAS and Federal Space Agency (FSA), has expanded into a broad international collaboration: scientists from over 20 countries are 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.

Tr VLBI plan for Sep 2014



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: 55.6 hours in 34 experiments scheduled

Two initial characters (rk) are omitted from RA experiment names!

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