Performance and Reliability of the EVN

EVN Session 2/2010

The session consisted of three frequency blocks (6cm, 5cm, 18cm). In each block, ftp−fringe tests and NME experiments were performed before the user experiments. In N10L2, the MERLIN out−station Da initially had swapped polarizations, corrected soon after the first ftp scan. Wb data from the first ftp scan was unreadable; after changing the disk pack, the ftp files were OK. Badary failed on last two scans due to a power failure. There were problems with decoding the data both sent by ftp and on the disk from Urumqi in N10C2. Cm did not have fringes in RCP in N10M2.

There were 24 user experiments (8 at 6cm, 3 at 5cm, 13 at 18cm) in the session. The last three experiments were done in e−VLBI model. There were three Global VLBI experiments (GB071B, GV020C, GB071C). Russian stations Bd and Zc have started as the EVN members to participate in the user experiments since the session.

Station and correlator feedback for individual stations:

Ef − Tsys curves did not look smooth and stable in some BBCs in 6cm experiments because there was a broken amplifier in the IF chain that caused interference or drifts in the IF power. Ef was out for about two hours due to thunderstorm in EL040A.

Wb − At 5cm, the plot of correlation amplitude and phase versus time showed small scale irregular variation in all subbands on all the baselines to Wb. After investigation, the problem was most likely because the signal from the other unused telescopes was not properly attenuated and went in the adding box. In the future observations, the maximum attenuation will be set for the unused telescope output.

On − Its pointing precision is sensitive to winds even at 6−7 m/s, reported by Michael Linquvist. On suffered a MK5−hanging problem for half hour in EV018A. Thanks to the good weather in Summer, there was no experiment missed.

Tr − There was significantly sensitivity loss in EF022A and EP064M after the recovery from a power shortage. It lost the first 45 min due to Mark5A recording problems in EP 064N. No fringes were seen in BBC 8 (IF 7−8, LL) in th 18cm user experiments.

Nt − One of the antenna wheels has been damaged. There were no any observations scheduled for Nt in the session.

Mc − It had strange auto−correlation bandpass shape in EB045B. The amplitude had a ~10% variation across the band and no RFI−like spikes. The bandpass shape varied with time and it was good in a certain scans. Sometimes, the pattern seems to move across the band. The problem was probably caused by a not tight connection.

Ur − BBC 1 and 8 had low (< 0.5x) correlation amplitude in 6cm experiments. Problems reported in EV018A with their 1pps (vital for the 5B recording). They showed a great deal of GPS−formatter clock jumps ranging from under a couple micro−sec (1 us = 32 lags, correlated with 64) to a few 0.1ms − few ms (unrecoverable).

Sh − No known problems.

Ys − Out for the entire session due to mechanical problems with antenna support beams.

Mh − No scheduled observations.

Jb − Jb2 had no RR fringes and LL amplitudes was low in IF 7−8 in EF022A. Jb2 had no fringes in BBC 7 in EV018A.

Cm − No fringes in RCP channels in the 5cm experiments.

Kn & Da − The 14 MHz signal in two IFs (3&4) instead of one in the 6cm Gbps experiments. Kn had no fringes due to an incorrect frequency setup in EP064N.

Ro − No experiments required Ro in the session.

Ar − Participated in one experiment: GV020C. Good fringes were observed in all subbands.

Bd − No fringes for 1 hour in EF022B. LSB IFs have passbands that lose power away from DC, with an overshoot around the middle of the band.

Zc − No disk packs sent in EL040A. Patching not correctly changed from previous geodesy experiment in EF022A and weak fringes present only in IF 2 (LL) and IF 2, 4 and 6 (RR). IF4 is heavily affected by known RFIs and IF3, 5−8/RCP had no fringes in EV018A. Varying cross−correlation amplitudes across IFs (LL amps lower than RR in IF 1,2,4, 6 and 8) in EF022B. The sampler stats were quite far from optimal (fraction of high−low bits was 90% before running the 2bit Van Vleck correction) in the problematic IFs 3, 5 and 7. No fringes in LL IF 7. The attenuation levels were clearly not set right. Presence of strong DC component in IFs 3, 5 and 7.

Sv − Out the entire session due to antenna maintenance.

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