

Performance and Reliability of the EVN

EVN Session 3/2011

Session 3/2011 started on Oct 20 and ended on Nov 10. The session consisted of five frequency blocks (6cm, 5cm, 18cm, 3.6cm, 1.3cm). In each block, ftp-fringe tests and NME experiments were performed before the user experiments. Sh had a problem with its receiver in N11M3 and the problem was solved before the user experiments. Ur 22 GHz new receiver had no fringes in N11K1. Onsala also put their DBBC in the NME experiments. Although fringes to Onsala DBBC were clearly found, there were some phase jumps on scales of ~ 1 ns during and between scans.

There were 26 user experiments (8 at 6cm, 5 at 5cm, 11 at 18cm, 1 at 3.6cm, and 1 at 1.3cm). The 55-hour large experiment ET018 was split into five parts and done in e-VLBI mode. There were three global VLBI experiments (GB072, GV020G, and GM068). Two experiments (EY013C, ER027) were correlated at Bonn.

There were two great news for the e-EVN: the first real-time e-VLBI fringes to Hh at 896 Mbps on 26 Aug 2011 and the first KVN-EVN real time e-VLBI fringes on 19 Oct 2011.

Station and correlator feedback for individual stations:

Ef - DBBC was used. Because of elevation tracking stopped for unknown reason, Ef lost 1.5 hour data in EP075A. The failure of elevation control was also reported in a few other experiments (such as ER026C and ER026D) and caused loss of a few minutes. Ef had poor data for 1 hour in ET018D because IF power dropped to zero.

Wb - There were no known major failures. The Fieldsystem logfiles contained improper values for outside temperature and humidity due to broken sensors. These sensors have been replaced on Nov 03, 2011.

On - Out for last hour in ET081A due to antenna hardware problems. The RCP lightpath had lower sensitivity at 18cm. The local engineers have started to investigate the reason.

Tr - BBC 6 was unlocked in the whole session. Tr lost 2 hour data in EP075A, 1.5 hour data in ET018B and 8 hour data in ER027 due to MK5A recording failure. Fringes to Tr were quite weak in EP075A and probably useless. Because of bad recording, Tr had low correlation weight (~ 0.6) and amplitude in EY015B.

Nt - Out again as the problem of antenna wheels.

Mc - MK5A recording failure in EF023B. There was a bad disk in the GV020G pack caused the weights to be low, and over ~1/3 of the experiment not to be recoverable. Because of MK5A recording problem, MC lost 1 hour data in EG049C. There was also a 6.5 hour loss in EM084D, likely associated with a recording problem. Problem with antenna pointing was reported in EP075A.

Ur - The new 22 GHz receiver was tested and no fringes were detected because one of its receiver synthesizers did not work properly. After the synthesizer was replaced, high SNR fringes were later found in Session 1/2012.

Sh - No major failure reported in the user experiments.

Ys - No known major failures.

Mh - Only in 1.3cm experiments. No known problems.

Jb - Jb2 was used only at 5 cm. The rest observations were done by Jb1. The observations were done without any major failure. Significantly sensitivity loss in Jb1 (c.f. the earlier report) and Jb2 (SEFD ~ 1000 Jy at 5&6 cm) has been investigated by local engineers.

Ro - No scheduled observations.

Ar - Only in GV020G. Due to unexpected delay in the communication system between the FS computer and the telescope's drive system, the phase connection between calibrator and target got hampered in some scans.

Bd - Fringes in BBC 2 (IF 1-2, LCP) were very weak in the 8.4 GHz experiment EA046 (unlikely due to RFI).

Zc - No fringes in BBC 4 (IF 7-8, RCP) in EG049C.

Sv - No fringes in EM084C due to no good data in the diskpacks.

The problem with FS time jump was reported in

Session 1/2012: EM071D and EM081A at Mc

Session 3/2011: GB072 at Ef, EA046 at Hh, N11X2 at Ys;

Session 2/2011: EV018D at Wb;

Session 1/2011: EG051A at Sh.

All the time jumps were back to year 2010. Via discussion with Ed Himwich, this is most likely the "day 49" bug. To avoid the problem, stations should reboot their FS system once per month.

There were no continuous Tsys/total power measurements at Ur and Hh due to FS Mark5B bug.

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