Performance and Reliability of the EVN

EVN Session 2/2011

Session 2/2011 was scheduled between 26 May and 16 Jun. The session consisted of five frequency blocks (5cm, 6cm, 90cm, 21&18cm, 1.3 cm). In each block, ftp-fringe tests and NME experiments were carried out before the user experiments. Ef, as the first station in the EVN, has started to use DBBC in the routine EVN experiment since Session 2/2011.The first fringes to the Ef new P-band receiver were successfully detected in N11P1. There were no fringes in N11P1 due to a problem with power supply unit. Jb1 fixed a problem of LO error and Tr suffered a power down caused by a thunderstorm during the 21cm ftp fringe test N11L2. The ftp fringes to Tr were too weak to be identified due to a warm receiver (the disk fringes were fine) and Jb1 was temporarily replaced by Jb2 in N11C2. Ef swapped polarisation and Tr had trouble with recording on disk pack in bank A, which was due to a recent firmware upgrade and fixed in time for the later ftp tests, in N11M2.

There were 25 user experiments (6 at 5cm, 6 at 5cm, 2 at 90cm, 2 at 21cm and 9 at 18cm) plus 3 ToO experiments (RM007, RT011/RM008 and EE008A at 1.3cm). All the experiment were done in the disk-recording mode. There were five global VLBI experiments (GV021, GW022A, GW022B, GG074, GV020F). There were four experiments (EM077F, GW022A, GW022B, EY010E) correlated at Bonn.

The two chinese stations: Shanghai and Urumqi were listed as the optional stations due to possible national tasks in the EVN block schedule.

Station and correlator feedback for individual stations:

Ef - The problem that all the baselines to EF (RR, all IFs) had un-periodic drops in phases at 18cm in Session 1/2011 was not seen in Session 2/2011. The new 49/90 cm recevier displayed good performance (SEFD ~600 Jy) in N11P1 and GV021 although there were some RFIs. LCP data were lost in ES066A and B due to an bug in the script that produces the procedure files for the DBBC (only RCP was recorded). Because of the failure, the two experiments were re-observed (ES066D and ES066E) in Session 3/2011. Ef was out in EG049B as its antenna control crashed and cound not be fixed during the night and out for the last ~2.5 hour in GV020F because of a broken network switch, which cost communication between the field-system and the Mark5. The last disk-pack was bad in EV018D, losing about 1.5h at the end of the expeirment. Ef lost first 1.5 hours in EY015A and had low correlation amplitude in LCP subbands: IF 2, 4, 6, 8. As its antenna was at a wrong frequency due to a control error, no fringes detected in EP068D.

Wb - As Wb TADUMax backend requests 3-5 minutes to change mode, there were some scans lost in the multi-mode experiment EZ020.

On - No known major failures.

Tr - The C-band receiver did not work stably and had a Tsys >100 K. BBC6 was unlocked in all the L-band experiments.

Nt - No observations were scheduled for Nt in Sessions 2/2011 as one of the antenna wheels was damaged before Session 2/2010.

Mc - Failed to record at 1 Gbps in the whole session. The reason is not clear. All the C-band 1Gbps experiments were lost. The later L-band 1Gbps experiments were done with 512 Mbps recording rate via 1-bit sampling. No fringes in EP068D.

Ur - As an optional station, Ur participated in 14 experiments and missed only 1 (EY010E). Ur had a problem with 1pps in EV018D.

Sh - An an optional station, Sh was in 12 experiments and missed 4 (EY010E, EC032, EC033, and EP068D).

Ys - Fringes only seen at the beginning of each in EG049B and in some scans of EV018D and EG051. The FS scan_check reported a flag of "E". This MK5B-related recording problem has been reported to Haystack and now being investigated.

Mh - Only in 1.3cm ToO experiment. Because of 1Gbps recording failure, there were no disk packs sent to JIVE.

Jb - Only Jb1 was scheduled in Session 2/2011. Bad sampler statistics were less seen. However, its sensitivity was not as high as the EVN user expected. Jb1 had a SEFD ~80 Jy (~2x poorer) at 6cm and ~65 Jy (1.5x poorer) at 18cm. Correlation amplitude in Jb1 RCP channels were much weaker than LCP channels in GV021. Parked for winds for three hours in EV018D and had weaker detections in all LCP channels and in the upper 2 IFs. There were no fringes found in GV020F although over wide delay windows and trying instegral-second formatter offsets were used.

Ro70 - Only in EP068D and ToO experiment RT011/RM008. No finges in RT011 likely due to the improper setup of its subreflector. EP068D data quality varies. Most of the data in time interval ~12:20-14:45 has very low weights, indicating its limited usefulness. Another region with low data weight (~0.5) that should be watched is 15:00-15:30 UT. Right pol for all bands seems to be mostly unsuable. Lots of RFI in sb4/IF5.

Ar - Participated in four EVN experiments: EG051F, GV021, GW022A, GW022B, and GV020F. Three of them were correlated at JIVE. The fringes to Ar looked fine.

Hh - There were six EVN user experiments that Hh was in. Hh performed very well.

Bd - No known major failures.

Zc - No/weak finges in BBC 11 (IF 5-6, LL) and BBC 4 (IF 7-8, RR) in EV018D, EG051E and EG049B.

Sv - No fringes in upper four IFs as its receiver has a cutoff at 5.0 GHz in C-band 1024 Mbps experiments.

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