

# EUROPEAN VLBI NETWORK – TECHNICAL & OPERATIONS GROUP

12<sup>th</sup> November 2007 – Yebes, Spain

## Report on VLBI Operations for Jodrell Bank Observatory

This report covers the period from May 2007 to November 2007 and includes the VLBI observing sessions carried out in June 2007 and October 2007.

### 1. June 2007 Session

This session comprised 4 experiments at 6cm, 11 at 18cm and 8 at 5cm. At 6cm, the Lovell telescope was scheduled for 12 hours and only 0.01% data loss at the telescope was reported. The Mk2 was scheduled for 14 hours and Cambridge for 19 hours at 6cm, with no data loss reported. At L-band, the Lovell telescope was scheduled for 97 hours and reported 0.22% data loss whilst Cambridge was scheduled for 65 hours and reported 0.1% data loss. At 6cm and 18cm, data loss was caused by sporadic elevation encoder faults on both the Lovell and Cambridge. At 5cm, both the Mk2 and Cambridge were scheduled for 80.5 hours. Cambridge suffered 0.04% data loss, again due to an elevation encoder fault. The most substantial data loss occurred for the Mk2 (experiment eh020) since the primary LO was incorrectly set. The problem was not spotted during the fringe test experiment since the results of the correlation from JIVE were delayed by 24 hours. The problem did not affect the Cambridge data for the same experiment since the secondary LO accounted for the frequency offset. The data loss for eh020 was 9.25 hours. At 6cm, 1 of the 4 experiments (12 hours, ek025) were joint MERLIN observations which involved both the Lovell and Cambridge telescopes. Two of the 18cm experiments (es057a and em063) and 6 of the 5cm experiments were joint MERLIN observations. In conclusion, a total of 368 hours of observations were performed, with a data loss at the telescope of only 9 hours 34 minutes (2.6%), i.e. a success rate of 97.4%.

### 2. October 2007 Session

For Jodrell Bank telescopes, this session comprised 3 experiments at 18/21cm, 3 at 5cm and 4 at 6cm. At L-band, the Lovell telescope and the Cambridge antenna were used for two experiments totalling 13 hours whilst the Mk2 telescope performed the remaining experiment for 2 hours. At 5cm, the Mk2 telescope was scheduled for 40 hours of observations and the Cambridge antenna for 16 hours. Finally, at 6cm the Mk2 telescope was scheduled for 52 hours of observations and the Cambridge antenna for a further 16 hours. In general, there were few serious problems with hardware/software during the session, and no data loss due to adverse weather. Sometime prior to the 5cm NME the VLBA rack (Cambridge) formatter lost synch which resulted in a lack of FTP fringes but this was corrected before user experiments began. Also during the 5cm session, one experiment appears to have run for the first few hours with the Cambridge receiver carousel in the wrong position resulting in about 2.5 hours data loss (experiment eh022), although the correct carousel position appears to have been sent to the telescope at experiment start. During experiment gp044 (6cm) the Cambridge antenna appears to have picked up random offset values at semi-regular intervals due to some unknown problem with the antenna control software. Eventually, correcting commands were inserted into the schedule. We estimate that possibly up to 1 hour of on-source time may have been lost as a result. These problems combined mean the Cambridge data loss amounted to 7.5 hours of 45 scheduled (17%). However, there appears to have been no reported data loss on either the Mk2 or Lovell telescopes this session. In conclusion, Jodrell Bank telescopes were scheduled for a total of 152 hours of observations during this session and the estimated data loss at the telescope was 5%.

### 3. Technical Developments

There have been no major technical upgrades to the VLBI observing systems or logistics procedures since the last EVN CBD report in May 2007. Four e-VLBI observations have been performed since May 2007, mainly testing network connection speed and reliability. The progress towards routine e-VLBI operations is going well.

*Alastair Gunn, Paul Burgess*