

13th December 2023 – Torun, Poland

Report on VLBI Operations for Jodrell Bank Observatory

1. February/March 2023 Session

The October/November 2023 EVN session for JBO consisted of 23 experiments: 10 at 6cm and 13 at 18/21cm. Sixteen of these were joint EVN+e-MERLIN observations; 5 at 6cm and 11 at 18/21cm. At 6cm, 37.5h of observations were scheduled on the Lovell telescope and 35h on the Mk2 telescope. There was no reported data loss at 6cm, although the first three experiments of the session are without calibration data as the noise diode failed just prior to the session. At 18/21cm, 97h of observations were scheduled on the Lovell telescope and 11.75h (12.1%) were lost solely due to high winds. In summary, 169.5h of observations were scheduled on JBO telescopes with 11.75h (6.9%) data lost, i.e. a success rate of 93.1%.

1. May/June 2023 Session

The May/June 2023 EVN session for JBO consisted of 22 experiments; 6 at 6cm, 6 at 5cm, 3 at 1.3cm and 7 at 18/21cm. Eight of these were joint EVN+e-MERLIN observations, 2 of which were at 6cm, 2 at 1.3cm and 4 at 18/21cm. Engineering work on the Lovell telescope meant that the entire EVN session was performed on the Mk2 telescope. At 6cm, 49h of observations were scheduled on the Mk2 with no data loss reported. At 5cm, 61h of observations were scheduled, while at 1.3cm 99h of observations were performed. In both cases there was no reported data loss. At 18/21cm, 75h of observations were scheduled on the Mk2 telescope. A total data loss of 30m (0.7%) was suffered due to a Field System crash and problems with antenna control. In summary, 284h of observations were scheduled on JBO telescopes with 30m (0.18%) data lost, i.e. a success rate of 99.8%.

2. October/November 2023 Session

The October/November 2023 EVN session for JBO consisted of 33 experiments; 5 at 5cm, 13 at 18/21cm, 12 at 6cm and 3 at 1.3cm. Thirteen of these were joint EVN+e-MERLIN observations; 9 at 18/21cm and 4 at 6cm. The Lovell telescope was used for both 18/21cm and 6cm observations in this session. At 5cm, 28h of observations were scheduled on the Mk2 telescope with no data loss reported. At 18/21cm, 97h of observations were performed with the Lovell telescope with no reported data loss. At 6cm, 10h were scheduled on the Mk2 telescope (experiment EM170B) and 79h on the Lovell telescope. A total of 2h32m were lost due to elevation encoder faults but primarily due to a crash of the FS machine. At 1.3cm, 29h of observations were performed on the Mk2 telescope with no reported data loss. In summary, 243h of observations were scheduled on JBO telescopes (67h on Mk2; 176h on Lovell) with a total data loss of 2h32m (1.04%), i.e. a success rate of about 99%.

3. Technical Developments

Very little has changed in the VLBI equipment setup during the last reporting period. A new Flexbuff has been built for use with the DBBC3 following its commissioning and has been installed in a rack along with the DBBC3 itself. The new Flexbuff4 has 36x16TB disks giving 576TB unformatted disk space. A speed test on this Flexbuff gives in excess of 10Gb/sec. Some parts for Flexbuff5 have been purchased but some still need to be purchased. A Petabuff has been purchased for JIVE to facilitate network transfer of VLBI data from multiple e-MERLIN telescopes. It will have 72x18TB SAS drives (maximum number of drives is 90) and so a capacity of 1296TB (unformatted). This will be sent to JIVE in the near future. Work is still ongoing to interface the new Field System (FS) computer to the e-MERLIN control system. Following completion of the code the new DBBC3 will be integrated into operations at the same time as the new FS machine. In the meantime some ancillary items are required to integrate the DBBC3 into the current system and these are currently being dealt with.

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