

23rd May 2017 – Ventspils, Latvia

Report on VLBI Operations for Jodrell Bank Observatory

1. October/November 2017 Session

The October/November 2017 EVN session for JBO consisted of 26 experiments; 2 at 5cm, 12 at 6cm, 6 at 5cm, 9 at 18/21cm and 3 at 1.3cm. Four of these experiments were joint e-MERLIN/EVN observations. At 5cm, 13h of observations were scheduled on the Mk2 telescope and there was no reported data loss. At 6cm, 25h of time was scheduled on the Lovell telescope and 62.5h was scheduled on the Mk2 telescope, with only 5m of lost time reported on the Mk2 due to a power glitch. At 18/21cm, 79h of observations were performed with the Lovell telescope with a total reported data loss of only 13m due to servo faults or computer control issues. At 1.3cm, 26h of time was scheduled on the Mk2 telescope with no reported data loss. In conclusion, a total of 208.5h of observations were performed on JBO telescopes with a total reported data loss of only 18m. In addition to regular sessions, JBO provided 107.5h of eVLBI observations and 26.5h of EVN out-of-session observations (includes target-of-opportunity and regular proposed projects) during the period October 2016 to April 2017.

2. February/March 2017 Session

The February/March 2017 EVN session for JBO consisted of 23 experiments; 8 at 18/21cm, 3 at 6cm, 3 at 92cm and 9 at 1.3cm. One of these was a joint e-MERLIN/EVN observation. At 18cm, 52.5h of observations were scheduled on the Lovell telescope of which 14.5h (27.6%) were lost due to high winds. At 6cm, 21h of time was scheduled on JBO telescopes (9h on the Lovell and 12h on the Mk2). At 92cm, 8h of time was scheduled on the Lovell telescope and 41h was scheduled on the Mk2 telescope at 1.3cm. No lost time was reported at 6cm, 92cm or 1.3cm during this session. In conclusion, a total of 122.5h of observations were scheduled on JBO telescopes (69.5h on Lovell and 53h on Mk2) with a total data loss (entirely due to high winds) of 14.5h (11.8%), or a success rate of 88.2%.

3. Technical Developments

Our Mark5C is now available at 2Gbps for recording. In the absence of a formal test we will record one or more experiments at 2Gbps with Mark5-554 in the upcoming session (Session II 2017). Tests were delayed after a power outage in December 2016. Initial concerns about damage were unfounded but it took some time to re-establish the equipment configuration. eVLBI at 2Gbps is not yet possible as the 100G Ciena router has yet to be commissioned at Manchester/JBO. A backup plan in which we aggregated the 3x1G links was set up by Jimmy Cullen using a spare PC and the hardware has been tested. At present, data has been successfully transmitted to JIVE at 2Gbps. The Mark5C is upgraded to 'wheezy' and SD9.4. Hence, incoming packs may need reformatting. Most of the upcoming recording will be on the Mark5B unit until the Mark5C is fully tested. Les Parry has completed construction of one Flexbuff and we have decommissioned the old VLBA DAR and installed a new rack intended for Flexbuff and 10GE eVLBI. We are building a second Flexbuff to supply to JIVE, as agreed. We can record with either the Mark5C or with a Flexbuff for the e-MERLIN antennas. Recording of e-MERLIN VDIF data appears to be functioning correctly and we recorded data for four e-MERLIN antennas for the four joint e-MERLIN/EVN experiments in EVN Session I 2017, each to be correlated with EVN antennas. This data has yet to be correlated. This represents a significant enhancement over the traditional joint observations which provided only Cambridge as the common antenna. If it becomes necessary we can upgrade the other Mark5 unit so that e-MERLIN data can be recorded on diskpacks.

Alastair Gunn, Paul Burgess