

Onsala Station Report

R&D activity

The new DBBC3+Flexbuff VLBI system has been further improved. To get full support of the new firmware DDC_E, the latest FS version 10.2.0-beta2 has been installed on the new FS computer Froste. The local program *caltemp* has been recently updated to support Chopper-wheel calibration at 22, 43 and 86 GHz and output opacity-free Tsys* data in the FS log files. The new Flexbuff Koll has been optimized to do loss-free 32 Gbps recording. Fringes to the DBBC3 backend at 16 Gbps have also been found in the correlation. All the DBBC3 data of the GMVA session 1/2023 have been transferred to Bonn for the production correlation.

The backend has been also used to run an ad-hoc VLBI experiment at 22 GHz with the KVN, T6, EF and ON. All the stations did 16-Gbps recording. The multi-thread VDIF data will be transferred to the KVN for the correlation with DiFX.

A project has been proposed to look for a solution to improve the tracking precision of the 25-m telescope. Hopefully, there is a cheap solution available for us to get rid of these annoying transient (5-30 s) off-source events during scans.

e-VLBI sessions and ToOs

e-VLBI sessions have been booked as three-day sessions in the local calendar. The Onsala station participated in all the e-VLBI sessions and Target of Opportunity (ToO) observations. Except for some loss due to strong winds, these observations went successfully. During e-VLBI sessions, some real-time data (e.g. wind speed, on-source/off-source) have also been shared with JIVE. This helped correlator operators to do trouble-shooting rapidly, in particular at night.

EVN Session 3/2023

During the session, Mugundhan Vijayaraghavan took care of L-band experiments, and Jun Yang did the rest experiments.

There were fringes to both telescopes in all the NME experiments. In the autumn session, the weather was quite friendly to the 25-m telescope. Only two experiments were slightly affected by the high-speed winds. There were no observations for 2.5 h in EM172B and 2.0 h in GC039. In the rest experiments, the observations went smoothly.

EVN Session 2/2023

During the May-June session, Mugundhan Vijayaraghavan and Jun Yang ran these experiments. Bright fringes are found to both telescopes in all the NME experiments. There were no major issues in all the experiments.

In EC092, about 20 scans were missed because the antenna wrap/unwrap commands were incorrect in the SNAP file. This resulted from the incorrect keyword value of AX1LIM in the NRAO Sched station data file. After communication with Bob Campbell, this problem was fixed.

EVN Session 1/2023

The session was operated by Mugundhan Vijayaraghavan during the X-band part and Jun Yang during the rest parts. As planned, the Onsala station participated in all the experiments.

There were fringes to the Onsala station in all the NME experiments. During X- band observations, the 20-m telescope failed to be on-source during a few scans because of the incorrect keyword value of AXILIM. The 25-m telescope also successfully participated in most experiments. Because of high-speed winds, the 25-m telescope missed some observations: ED050B (2-h loss), EC088G (3.5-h loss), EJ027B (3-h loss) and GV028C(2-h loss) .

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