

## **Onsala Station Report**

### **R&D activity**

A 2L2H DBBC dedicated for Astronomical VLBI observations has been ordered and will be delivered after 2022 Summer. A new FS computer will be purchased to support the testing observations with the new DBBC3.

New Flexbuff and broad-band connection to JIVE have been approved by our Director. Together with JIVE experts, Roger Hammargren is investigating the next-generation Flexbuff hardware and the possible upgrade of the network to 8/10+ Gbps. Currently, the disks for the new Flexbuff have been delivered to the observatory.

A local project to develop a backend to search for fast radio bursts has been initiated by Gary Hovey et al. Investigating COTS ADC/FPGA (ADQ7WB) initially for FRB monitoring. The unit has two 12bit ADCs with 6 GHz BW and samples at 5Gsp/s. Testing is underway with initial results expected by June.

Onsala is currently developing a 3-band (22/43/86 GHz) receiver for the 20 m telescope. The C/X (4-9 GHz) receiver has been designed. While its building plan may be significantly delayed because of the very limited space of the receiver cabin of the 20 m telescope.

### **EVN Session 3/2021**

The session vex files came late. The number of the email notifications during the session has reached a new record, 10 times. This gave stations little time to verify the setup and caused additional worry and pressure. The EVN users should be reminded to follow the deadline strictly.

The session was operated by Franz Kirsten during the L-band part and Jun Yang during the rest parts. The Onsala station participated in all the experiments. Because of strong winds, the Onsala 25m telescope was off-source in N21C3. In the other NME experiments, there were high-SNR fringes to the Onsala 25-m and 20-m telescopes. Because of high-speed winds, the Onsala 25-m telescope was stowed automatically and thus stayed off-source for a certain time during the following three user experiments EH039A (9 h loss), EC079A (1.5 h) and EN009B (5.5 h).

Onsala also participated in all the e-VLBI sessions between sessions 2/2021 and 1/2022 and the multi-epoch dual-frequency ToO observations RG012. Except for some minor loss due to strong winds, these observations went successfully.

The FS version 9.13.2 and DBBC2 firmware DDC V107 Beta3 were used during the session. Before the 1st e-VLBI session of 2022, we replaced the old FS computer with a new computer, and started to use FS 10.

### **EVN Session 2/2021**

There were clearly seen fringes to the Onsala 20-m telescope at K band and the Onsala 25m telescope at L and C bands in the NMEs. The FS version 9.13.2 and DBBC2 firmware DDC V107 Beta3 were used. The session was operated remotely by Franz Kirsten during the K-band part and Jun Yang during the rest parts. Because of high-speed winds, the Onsala 25-m telescope failed to run the experiments EC071M and EC077A completely, and EC077B during the first 2.5 hour. Furthermore, the Declination encoder of the 25m telescope stopped working because of a broken lamp on 2021 June 14. This failure caused the loss of the experiments EF029B and EC077C. All the e-VLBI sessions between sessions 1/2021 and 2/2021 went successfully.

Jun Yang, on behalf of the Astro-VLBI Group of Onsala Space Observatory