SRT station report

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This report covers the period between May ‘20 - November ‘20

Antenna

The antenna had a technical problem with the cooling system of the servo drives in mid May ‘20 that required an important maintenance activity that ended in August 20’. The reason for this long period of maintenance was due to the Covid-19 crisis that slowed down the shipping and installation of the new machines. Due to the long inactivity we performed antenna tests during September. The antenna was ready to observe at the end of September.
The continuous calibration (80Hz) is regularly used at M-band, while more tests are necessary at K-band..

Receivers

The L/P-band, the K-band, and the M-band receivers are available.
The Sardinia Radio Telescope has been awarded of one of the grants of the Italian Ministry of Education, Universities and Research (MIUR) aimed to enhance research infrastructures, pursuant to Action II.1 of the National Operative Programme – Research and Innovation 2014-2020.
Thanks to this grant Sr will be equipped with new high-frequency receivers and backends within the next 3 years. The new receivers are a simultaneous microwave compact triple-band receiving system, a multi-beam cryogenic receiver in W Band (75 – 116 GHz), a multi-beam cryogenic receiver in Q Band (33 – 50 GHz), and a millimetre camera (80 – 116 GHz). The backend DBBC3 will be purchased and installed at Sr by 2021. In addition, a metrology system will also be installed to allow high efficiency performances at the highest operating frequencies.
In addition the receivers under development/construction are:

- dual pol, single feed, C band. Advanced status.
- dual pol, 5 feeds, S band. Advanced status.

VLBI sessions

Sr did not participate to the PI experiments of session 02/2020 due to the technical problem (see Antenna section), but it participated in session 03/2020 with all the available and scheduled receivers (L-, M-, and K-band). Fringes were obtained at K-band and L-band during the

ftp-fringe tests. During the ftp-fringe tests at M-band we had a problem with one of the boards of the DBBC, which was fixed on time for the first PI experiment.
Sr successfully participated in the e-VLBI session on the 6th-7th October 2020 (L-band) at full data rate. We missed the e-VLBI sessions in May and June 2020 because of the technical problem (see Antenna section), and in September and November 2020 because the session was at C-band (unavailable at SRT).

VLBI terminal and Field System

Firmware and softwares:

Field System: fs-9.13.1-rc2 (testing version 10.0.0-beta2 at 64 bit)

DBBC: DDC (v107_281019), PFB (16)

Fila10G: v4.1_231118

Jive5ab: 3.1.0

Antabfs: antabfs.py (last available)

The flexbuff units (one at JIVE and one at SRT, of 360 Tb each) are fully operational.

Fiber link

The 10 Gbps fiber link works perfectly.