

SRT station report

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This report covers the period between December '20 - April '21

Antenna

The observations of the fourth call of proposal finished on the 31st December.

The observation period of the fifth call of proposal has started on the 1st of January 2021 and will finish on the 30th of June 2021 (semester 2021A). SRT cannot be offered during semester 2021B (1st July - 31st December 2021) due to the planned work for its upgrade at higher frequency (see <https://sites.google.com/a/inaf.it/pon-srt/home>). These civil works which are suspending the observations will last several months, and we really hope to be able to offer SRT again for 2022A (1st January - 30th June 2022). In this maintenance period the antenna might be available at best effort for the EVN observations (sessions 03/2021, 01/2022 and eVLBI sessions). We hope to be fully operational again since session 02/2022.

The continuous calibration (80Hz) is regularly used at M-band, L-band, and K-band since session 01/2021.

SRT regularly operated during the Covid-19 crisis both as single dish antenna and as VLBI antenna.

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 year. The new receivers are a simultaneous microwave compact triple-band receiving system (K/Q/W), 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 participated in session 01/2021 with all the available and scheduled receivers (L- and K-band). Fringes were obtained at K-band and L-band during the ftp-fringe tests.

Sr participated in the e-VLBI sessions in March and April 2021 in L-band. Sr did not participate in e-VLBI sessions in January 2021 because of an external internet connection problem, while it missed the e-VLBI sessions in December 2020 and in February 2021 because the sessions were at C-band (unavailable at SRT).

VLBI terminal and Field System

Firmware and softwares:

Field System: 10.0.0 at 64 bit

DBBC: DDC (v107_281019), PFB (16)

Fila10G: v4.1_231118

Jive5ab: 3.1.0

Antabfs: antabfs.py

The flexbuff units (one at JIVE and one at SRT, of 360 Tb each) are fully operational. Two new flexbuff units of 500 TB will be purchased, one for SRT and the other for JIVE.

Fiber link

The 10 Gbps fiber link works perfectly.

Uwe's questions

** How much disk space do you plan to install this year at your stations and at JIVE? The commitment from the CBD is that each stations should provide 1000 TB by the end of 2021, split between the station and JIVE (500TB/500TB).*

We are planning to purchase two new flexbuff units of 500 TB each, one to be installed at SRT the other at JIVE.

** Did your station purchase/order a DBBC3 or plans to do so? Or any other VLBI backend that is capable of recording rates of more than 4 Gbps.*

We already purchased one DBBC3 and it will be realistically installed by 2021

** How fast is your eVLBI connection speed currently and if below 10 Gbps, are there options/plan to increase it to 10 Gbps?*

Our connection is at 10 Gbps but it will not be used entirely for an e-VLBI run (the island connection to the continent is 10 Gbps), at the moment we use 2 Gbps and in the near future we can use the 4 Gbps.

** Wide band receivers:*

- Which receivers provide at least 1 GHz of bandwidth?

Our receivers that provide at least 1 GHz of bandwidth are the M- and K-band receivers.

- Are there any new system planned (e.g. CX-band 4-9 GHz, Double(Triple)-band 22/43/(86) GHz) ?

See Receivers section above