

Stations report for the EVN meeting

2021 April 29

Period 2020/11 – 2021/04

General Information

Quasar VLBI network is a part of the Institute of Applied Astronomy (IAA) and includes three stations: Badary, Svetloe and Zelenchukskaya. These stations are equipped with a 32-m fully steerable radiotelescopes RT-32 marked as Bd, Sv and Zc respectively. IAA stations are also equipped with a 13-m VGOS radiotelescopes marked as Zv, Bv and Sw, which at present are in test operation.

During the reporting period in all Quasar stations the standard maintenance work with antennas, servo, receivers and cryogenic systems were carried out. Technical improvements and problems are presented below by topics.

EVN session 1 in 2021/02/25-03/18

Quasar successfully participated in 30 experiments at X, C, L and K bands. Two 1 hour pauses during EVN experiments EN007B, EN008B was planned because of priority IAA intensive experiments Ru-I at Bd and Zc stations. The total volume of session was about 82.2 TB in Bd, 134 TB in Sv and 134 TB too in Zc.

Also two early endings on 1-3 hours of experiments EB081C and EB084 at station Zc was planned for 6 hours procedure of receiver cooling to prepare to the next EVN network monitoring experiment. At present the remote control systems for microcryogenic systems are fully operational only at Sv and Bd – there are possible to start vacuuming and cooling needed receivers right during of running experiment. At present on Zc station needs 6 hours for switching on another cooled receiver.

Out of Session experiments

Quasar supported: five EVN e-VLBI sessions in 2020 December 1-2 and in 2021 January 19-20, February 9-10, March30-31 and April 13-14.

Receivers *(no changes)*

All RT-32 Quasar radio telescopes are equipped with receivers in the next bands: L, C, S/X and K.

Backends *(no changes)*

From 2012 February the IAA data acquisition systems R1002M is fully functional at all Quasar stations and using in all VLBI observations, including IVS, EVN and domestic programs.

Recording system *(no changes)*

The Mark5B+ is the data recording system at all Quasar stations. At May 2014 Mark5B+ software was upgraded to SDK 9.3.

H-masers (*no changes*)

Since July 2011 the new Active Hydrogen Masers VCH-1003M were put into operation in all stations of the Quasar network. The H-maser VCH-1003M is a modern, high-performance maser with low phase noise option. It uses the latest technologies, including Stand-alone Auto Cavity Tuning (no external reference required), remote IP control, monitoring and self-diagnostics.

Another two Active Hydrogen Masers VCH-1005 (old models) are in reserve in Sv and Zc.

Disks (*no changes*)

IAA provides 160 TB (8TB×20) for the EVN disk pool and 80 TB (10TB×8) for the Flexbuff for JIVE correlator.

Field System (*no changes*)

Release 9.10.4 is used at all Quasar stations.

Personnel

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