Station report for EVN TOG meeting, Shanghai, China, March 19-20, 2018
Irbene station, Ventspils.

Irbene Ir – RT-32 radio telescope

RT-32 telescope participated in EVN 2017 May-June and Oct-Nov session. May-June session was partly successful due to L band receiver IF level issue and ACU power supply issues at beginning of C band session. Large part of Oct-Nov session was in L band and due to low receiver sensitivity these observations are considered partly successful and/or unsuccessful. Currently work is ongoing to improve L band receiver sensitivity and functionality. C/M/X session observations of Oct-Nov were successful with minor issues of back-ends. RT-32 continued to participate in eVLBI, RadioAstron and EOFUS observations until 2018.
At the beginning of 2018, faulty ACU modules of RT-32 were sent to manufacturer for repair. We also encountered cryostat and IF unit issues of C/M/X receiver so it was sent to manufacturer also. Currently C/M/X receiver is not available at RT-32 and all VLBI observations are carried out with RT-16.

Irbene Ib – RT-16 radio telescope

RT-16 was used at 2018 Feb-Mar EVN session with partial success due to failed ACU during ES085A, ES085B and EM1117. No participation was possible in L band part of this session because L band is not available at RT-16 but RT-32 was not operational. RT-16 continues to participate in eVLBI and RadioAstron observations.

VLBI equipment status

RT-32:
Field System: 9.11.19
DBBC: 4xADB3L, Internal Fila10g, DDC v106/v106E
Mark5c + Glapper, jive5ab : 2.7.1 64bit, AMAZON,10GbE

It was found that v106E firmware gives poor fringe amplitudes which it is also evident in local tests by doing cross-correlation between different DBBC channels. With the same hardware there are no issues in case of v106 firmware. Currently this is unresolved problem, because ADB3L only supports V106/v106E.

RT-16:
Field System: 9.11.8,
DBBC: 4xADB2, External Fila10g (only one VSI connection right now), DDC v105_1/v105E_1
Mark5c + Glapper (now repaired and operational), jive5ab : 2.7.1 64bit, AMAZON,10GbE

Flexbuffs:
1. Capacity: 8 TB, jive5ab : 2.8.1 64bit on Ubuntu 16.04
2. Capacity: 288 TB (36x8TB), jive5ab : 2.8.2-jet 64bit on Debian 9.3. In operation since February 2018. Due to compiler issues of newer Debian releases, unofficial jive5ab version 2.8.2-jet is installed and seems to work stable.
Another 288TB Flexbuff is ready to be shipped to Jive.

Currently only one Hydrogen maser is available in Irbene which complicates switching of VLBI observations between RT-32 and RT-16 when necessary. Hopefully second maser will be back from repair soon which will allow operating both telescopes in interferometer mode simultaneously.

Continuous calibration

Due to reason of manufacturer warranty of C/M/X receivers currently it is difficult to do required hardware modifications directly and for this reason continuous calibration implementation is still delayed. Currently work is ongoing to implement temporal, 'non-invasive' solution and first tests at RT-32 are planned within next few months.

Beam maps

Beam maps of RT-16 at C band were measured at different elevations and data sent to A. Keimpema. Maps at M and X bands will be measured as soon as possible. Maps of RT-32 will be carried as soon as possible when receiver is back after manufacturer repair. L maps will be available no sooner than end of Summer, 2018.