OAN - Yebes station report - September 2014

VLBI Equipment

Currently at the Observatorio de Yebes there are 3 Mark5B+ and 1 Mark5C on on loan from JIVE. One Mark5B+ is used for operations with the 40 m, and the other two are to be used with the 13.2m geodetic antennas at Yebes and Azores.

The last Mark5B+ received at Yebes (to be deployed at Azores islands) does not work correctly and the Amazon board together with its daughter boards (10 Ge and FPDP2) have been sent back to Conduant for repair and/or exchange. Application ssprintVersions does not report any information on the daughter board.

SDK 9.2 is installed in both working Mark5B+s and the Mark5C on Ioan. All observations are done with jive5ab (2.5.1 version since last week). Disk conditioning and scan copies are also managed with tools provided with jive5ab since may 2014.

After repair in Bonn in May 2014 the DBBC worked successfully in the NME experiments during last EVN session in June. There is a small difference in amplitude between the RCP and LCP channel that has also been detected in the last GMVA session and in the last geodetic experiments. This difference between IFA and IFB is still being investigated. Nevertheless the DBBC will be used for regular operations since October 1st 2014.

Field System

We are runing two computers with Field System version 9.11.5 on a Debian Debian Squeeze. One of the computers controls the antenna, the VLBA5 and the first Mark5B+ and the second one is used for the DBBC and the second Mark5B+. After regular operations with the DBBC the second computer will be used for operations with the 13.2 m antenna. Upgrade of the FS computer from Lenny to Squeeze required some work with the GPIB libraries and the multiboard serial card (for the VLBA5 connection).

We are about to modify the connection method between the FS and the control computer of the 40m radiotelescope. This will allow to completely decouple both systems, deploying them in different computers with different Debian versions. The new connection will be probably implemented after the last EVN session.

VLBI observations

We regularly run several VLBI programs at Yebes: EVN, IVS (geodetic observations), GMVA (Global millimeter VLBI) and Radioastron observations. Since June 2011 the telescope is managed by operators during 80% of the time. The rest of the time operations are done in an unattended and automatic way.

Gigabit connection

Yebes is connected to RedIris, the spanish NREN using a 10 Gb/s dark fiber since May 2012. The fiber has been working successfully since then.

VLBI data transfer

We regularly send geodetic experiments via the Gb line to MPIfR correlator and Washington correlator using fuseMk5 and tsunami. We also transfer VLBI data to Moscow using scp and a server where we store our Radioastron data.

We have also transferred some data to JIVE via Internet using jive5ab. The whole process is controlled remotely by JIVE.

In order to avoid "blocking" our Mark5B we often use the Mark5C for data transfer. Differed eVLBI requires a second terminal or an equivalent device that acts as buffer and does not prevent the usage of the main recorder for observations.

40m radiotelescope

The radiotelescope tower cladding was damaged and it was removed during August. This maintenance operations reduced the observing telescope time significatively during last summer. The 40m also had a breakdown due to a failure in 4 fans of the elevation drives. The fans have been repaired and spares have been requested for purchase.

A 3 mm receiver on loand from IRAM and equipped with two cooled HEMTs was installed at the telescope. Single dish and VLBI observations have been performed. The first ones were successful but not the VLBI ones. No fringes have been found up to date. A breakdown in this receiver has been discovered and the receiver is still under evaluation.

13m radiotelescope

Works in the 13m radiotelescope continue. A pointing model at X and Ka band has been obtained and implemented. RMS pointing errors through the sky is close to 5% of the HPBW. Commissioning at X band has started. Aperture efficiency is approximately 70 % and flat with elevation. Tsys is approximately 50-60 K. RFI is important at S band and wide band calibration is complex. Ka band calibration is still pending.

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