

Medicina Station Status Report

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Abstract General information about the Medicina Radio Astronomy Station, the 32-m antenna status, and the staff in charge of VLBI observations are provided. Updates to the hardware were performed and are briefly described.

1 The Medicina 32-m Antenna: General Information

The Medicina 32-m antenna is located at the Medicina Radio Astronomy Station. The station is run by the Istituto di Radioastronomia and is located approximately 33 km east of Bologna. The Consiglio Nazionale delle Ricerche was the funding agency of the Istituto di Radioastronomia until the end of 2004. Since January 1, 2005, the funding agency has been the Istituto Nazionale di Astrofisica (INAF). The antenna, which was inaugurated in 1983, has regularly taken part in IVS observations since 1985 and is an element of the European VLBI network.

A permanent GPS station (MEDI), which is a part of the IGS network, is installed in the vicinity. Another GPS system (MSEL) is installed near the VLBI telescope and is part of the EUREF network.

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2 Current Status and Activities

- Antenna - VLBI and e-VLBI experimental tests were performed by using fiber optic link instead of coaxial cables to send receiver outputs to VLBI data acquisition system. Fringes were found and compared to the fringes obtained by the coaxial link, nothing of significantly different was observed. Fiber optic link allows much less band disequalization with respect to coaxial connection when using large bandwidth receivers, so Medicina will use fiber optics from now on.
- DBBC - Many VLBI tests were performed in combination with a Mark 5C in parallel with the Mark IV. We are currently running version 104 (Aug14) of the firmware. The FILA10G is now equipped with a new release of the firmware (provided by *HAT LAB*), in order to work around the problem related to the decimation and the track mapping of the Mark 5C (see below).
- Mark 5C - After the repair and upgrade by Conduant, the unit still showed many problems, even if the larger part of them has been solved. The crucial issues still under investigation are:



Fig. 1 View of the Medicina 32-m dish taken during a geodetic VLBI observations.

- decimation and track mapping capabilities are not yet implemented in Mark 5C software, This prevents the unit to work fully compliant to Mark 5B mode.
- reliability and robustness of *drs* program. We are currently running a buggy version 0.9.9 – 1. The latest release 0.9.9 – 19 is not usable at all, the system crashes every time `reset=erase` is performed.
- Field System - Release 9.11.4 was installed and almost completed with testing. In order to make our FS able to command our Mark 5C, we put in place some ad-hoc solutions. Hopefully we are now able to run a VLBI observation fully compliant to other Mark 5B stations.

The new H-Maser was installed and is regularly used for observation.

The cryogenics of the S/X receivers were restored.

3 Staff

Giuseppe Maccaferri returned to his full-time position during 2013.

4 Geodetic VLBI Observations

In 2013, Medicina took part in 31 24-hour routine geodetic sessions (namely three IVS-T2, 20 IVS-R4, three EUROPE, two RDV, and three R&D experiments).