

PERFORMANCE OF THE MEDICINA RADIOTELESCOPE AND
THE NEW S/X RECEIVER FOR GEODYNAMICS VLBI

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INTRODUCTION

At the beginning of 1980 the Istituto di Radioastronomia of the Consiglio Nazionale delle Ricerche (C.N.R.) started the Italian VLBI Project.

The first antenna was completed in October 1983 (see Table 1 for telescope characteristics). The first VLBI Mark2 experiment was performed in March 1984. In December 1984 we had the first Mark3 experiment. From that time our Institute is officially member of the European VLBI Network (EVN) and since January 1986 it is also Associate Member of the US Network.

Table 1

Diameter	32 m
Surface Accuracy	1 mm rms
Mount	Az-El
Pointing Accuracy	10 arcsec rms
Slew Rate Az/El	48/30 deg/min
Limits Az	+ 270 deg
El	- 0.5/109 deg
HPBW (5 GHz)	8 arcmin

1. RECEIVER CHARACTERISTICS

Freq. GHz	Tsys K	Bandwidth MHz	Peak Ant. Gain K/Jy	Polariz. Channels
22.3	180	400	0.08	1
10.7	100	300	0.12	2
5.0	55	500	0.18	2
1.6	90	100	0.12	2 +
1.4	90	100	0.12	2 +
2.2	180	140	0.15	1 +
8.2	210	400	0.15	1 +

+ uncooled (room temperature)

All the receivers listed above, are MesFet-GaAs receivers, fully developed at the Institute. Half of them are at present cooled at 20K, using CTI, closed circuit helium cryogenic pumps. Feeds and receivers are located in the cassegrain focus. Only the S/X receiver is set-up for the primary focus.

2. GEODYNAMIC PROGRAMS

We joined Wettzell and Hartrao for our first geodynamic experiment (called SARG), from January 31st to February 7th 1987. Twentyone tapes were recorded during seven days of that experiment dealing with Polar Motion.

We have also observed two IRIS 24 hours sessions (No. 389, April 3rd and No. 395, May 3th) and, from April 10th to May 8th we took part to an ad hoc Intensive Campaigne for UT1 monotoring with the baseline Medicina-Richmond. The aim of that experiment was to repeat with a second independent baseline previous measurements done with the baseline Westford-Wettzell, in which UT1 glitches on short time scale were observed. Data analysis for both SARG and Intensive Campaigne is in progress.

Calc and Solve have been installed on the HP1000 E-Series of the Medicina Station. Computer facilities also include a 404 MByte disk that allows to analyze VLBI geodynamic data.

It may be of interest to state the plans we have for the next future related to geodynamic activities. They can be shortly summarized as follows:

- cooling of the S/X dual band receiver (expected System Temperature 60K and 80K in the S and X band respectively);
- construction of a platform for Mobile Satellite Laser Ranging;
- participation, on a regular basis, to the IRIS campagne;
- participation to ad-hoc VLBI Geodynamic experiments.

It is also worth mentioning that construction of the second antenna started last April, near the town of Noto, Sicily. The antenna is scheduled to be in operation for both Radio Astronomy and Geodynamic in late 1988.