

Report from the Noto VLBI Station

G. Tuccari, C. Stanghellini

Abstract

An upgrade of the Noto 32 m antenna is under way. We describe the main points related to a recent past.



Figure 1. The Noto antenna

1. The Noto VLBI Station

The Noto VLBI station is an alt-az 32 m antenna belonging, as its twin in Medicina, to the “Istituto di Radioastronomia del C.N.R.” and is a part of the European VLBI Network (EVN). It is located close to the baroque town of Noto at a latitude of 36.9° .

The staff is composed of: Carla Buemi, Salvo Buttaccio, Corrado Contavalle, Paolo Leto, Gaetano Nicotra, Leonardo Nicotra, Carlo Nocita, Luigi Papaleo, Carlo Stanghellini, Corrado Trigilio, Gino Tuccari, Grazia Umana.

Gino Tuccari is responsible for the technical aspects and the hardware set up of the geodetic experiments, while Carlo Stanghellini is responsible for the schedule, the pre-observation and

post-observation performance checks. Corrado Trigilio is the scheduler and should be contacted to arrange any change in the dates of the observations, or to request the Noto antenna for new experiments.

All the staff contribute as operators and/or in the set up of the system during geodetic experiments.

2. The New Subreflector

During the summer of 1998 the new automatic subreflector positioning system has been mounted and successfully tested. The system, similarly to Medicina, allows now to switch between the secondary mirror and the primary focus receiver in a few minutes. The new equipment avoids the risk to loose geo-experiments due to bad weather conditions and the related difficulty to set the receiver.

3. A New Primary Focus Receiver System

The new primary focus receiver system is under construction and is expected to be operating at the end of 1999. It includes the 2.5, 3.6, 13, 18, 21 cm, and the 250-1000 MHz bands. It represents the second phase of the frequency agility program in Noto. The third phase will get the 0.7, 1.3, 6 cm bands operative in the secondary focus, switching in few seconds through subreflector movement. Regarding the S/X receiver the present and planned system features are:

Table 1. Present and Future S/X Receiver Characteristics

X band	present	future
Polarization:	right	left and right
frequency range:	8.1-8.5 GHz	8.1-8.9 GHz (wide band)
cryogenic	no	yes
Tsys	130 K	35 K
S band	present	future
Polarization:	right	left and right
frequency range:	2.10-2.36 GHz	2.10-2.36 GHz
cryogenic	no	yes
Tsys	140 K	35 K

Both right/right or left/left polarization in the S/X band will be available.

4. A New 12 GHz Receiver for Holography

A new 12 GHz receiver has been added in the primary focus box, able to work phase-locked with H-maser. It is mainly oriented to holography of the main dish. Indeed the efficiency at 22 GHz has increased only a little with respect to the past, due to the use of a new subreflector mirror (rms 0.12 mm), making the surface error determination mandatory. Recent measurements show a deviation from the ideal parabolic shape with a mean rms of about 1.6 mm. Actions to

correct the surface are under evaluation.

5. New Software

New software procedures have been created in order to automatically set the system with the requested observing band.

6. The Mark IV Formatter

The Mark IV formatter is fully integrated in the VLBA environment and both formatters, VLBA and Mark IV, are available. In a near future, when the appropriate Field System version will be available, the Mark IV will be used and VLBA taken as spare. This will allow to avoid manual hardware and software modifications to switch between recording modes.

7. Geodetic Observations

In 1998 Noto took part in 12 geodetic VLBI experiments, namely five CORE-B, five Europe, one NEOS and the BF43A experiment. In 1999 six CORE-B, six Europe and one CRF experiments have been scheduled. It is worth to mention that Noto is deeply involved in the VSOP (plus ground based telescopes which make use of the Canadian S2 recording terminal) survey of compact extragalactic radio sources.