



Measuring the VLBI parabolic shape at different elevation steps by means of terrestrial laser scanning: the case studies of Noto and Medicina

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In order to determine the deformations due to the gravity during the rotation around the elevation axis of the antenna, an experimental test about the use of terrestrial laser scanner was accomplished in September 2005 at Noto and Medicina VLBI observatories. The VLBI dish movements in elevation result in occlusion of visibility of the inner part of the parabola from the ground, thus *ad hoc* supports were fixed to the antenna primary focus allowing a complete laser coverage of the inner dish surface during rotation. The pulse laser used in this experiences had a resolution in range of about 1.5 mm @ 50m. Both Noto and Medicina antenna's surface have been scanned at different elevation angles of the Radio-Telescopes.

The raw data acquired with the laser scanner intrinsically define clouds of points expressed with respect to an instrumental reference system; in order to connect the observed points to an external reference system, it is necessary to relatively align the different clouds using tie points and moreover *ad hoc* terrestrial surveys are required to frame the laser survey in to the external reference system.

The so-surveyed surfaces will be analyzed with respect both to the shape of the parabola itself and to a local topographical reference system.