

## 5.4 IA

### High-tech low cost alt-azimuth mount decimetric radio telescope

Neri, J. A. C. F., Sawant, H. S., BDA Team

*Instituto Nacional de Pesquisas Espaciais (INPE) - Av. dos Astronautas, 1758 - Caixa Postal: 515 -  
Cep.: 12227-010 São José dos Campos - S.P. - Brasil*

The Brazilian Decimetric Array (BDA), under development, will have high spatial and time resolutions of 5 arc sec and 100 ms respectively at 5.0 GHz. It is planned to employ modern technology at low cost. The BDA will have the capability to observe solar and non-solar phenomena in the following radio protected bands: 1.2-1.7, 2.7 and 5.0 GHz. The Prototype of Brazilian Decimetric Array (PBDA) consisting of 5 element alt-azimuth mounted parabolic dishes is the unique in Latin American successfully developed. The final version of the BDA will be an interferometer array consisting of 38 parabolic antennas of 5 meters diameter. At the BDA center will be located a compact "T" shaped array having 32 antennas. The array will be located at Cachoeira Paulista (CP) (Longitude 45 0 22 W and Latitude 22 41 19 S). Tracking allows observing almost all sky with high pointing and tracking accuracies. In house development of the mechanical and electronic subsystems employing recent technology has increased the performance to cost ratio. Presently the 5 antennas prototype array is operating at INPE Campus with base lines up to 32 meters. These base lines will be extending up to 300 meters. Simulation has been carried out at INPE campus to send reference signal toward the antennas to synchronize the local oscillators up to distances of 400 meters. We developed a programmable attenuator for solar observations. Characteristics of all subsystems are now estimated and results of tests of subsystems including that of 5 elements array will be presented. The BDA will obtain ten solar maps per second if required. Apart from the scientific purposes, the developed alt-azimuth mount and phase locked oscillators type receivers are being tested for receiving satellite signals, radio interferences monitoring and in various applications in communication. Results of these applications will be presented.

Keywords: **radio telescope, alt-azimuth mount**

Corresponding author's e-mail: sawant@das.inpe.br