

Technical Page

This proposal has not been submitted before.

Proposal Type: Regular
 General Category: VLBI
 Observation Category: Pulsars, ISM
 Total Time Requested: 20 Hours
 Minimum Useful Time: 4 hours

Proposal Title: Two-dimensional mapping of the interstellar scattering screen for Crab pulsar
ABSTRACT:

The aim of this project is to observe giant pulses from the Crab pulsar at 18 and 92 cm wavelengths on Earth-Space baselines up to 300,000 km with simultaneous observations at both wavelengths. Previous observations with RadioAstron have uncovered remarkable changes in the shapes of giant pulses between ground stations and RadioAstron, suggestive of propagation effects within the pulsar’s magnetosphere or in scattering material local to the pulsar. With our proposed observations, we should be able to measure both the distance to the screens as well as the physical separation between the regions of emissions of the main pulse and the interpulse in the pulsar’s magnetosphere.

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Remote Observing Request

- Observer will travel to AO
- Remote Observing
- In Absentia (instructions to operator)

Instrument Setup

L-wide

Atmospheric Observation Instruments:

Description of Observer Equipment: N/A

Special Equipment or setup: Data to be transmitted via internet or on diskpack to ASC in Moscow; this is routinely used for Radioastron AGN VLBI observations at Arecibo. Correlation of data at the ASC correlator in Moscow. Radioastron backend have the following configuration: 2 x 16 MHz bands (USB, LSB), 2 bit quantization, two polarization channels (RCP, LCP), resulting bitrate 256 Mbps. We would like to have PUPPI+VLBI backend to record a maximum possible bandwidth data (up to 200 MHz), covering Radioastron frequency range. ASC Correlator is capable of cutting down the frequency for correlating the space-ground VLBI data.

RFI Considerations

Frequency Ranges Planned

1552-1784 MHz (should overlap Radioastron bands USB and LSB 1652-1684 MHz)