

Technical Page

Proposal Type: Regular
 General Category: Pulsars
 Observation Category: Galactic
 Total Time Requested: 50 Hours
 Minimum Useful Time: 2:30

Proposal Title: Assessing the Impact of the ISM in Precision Pulsar Timing: A Case Study of PSR J1713+0747

ABSTRACT:

The detection of gravitational waves using a pulsar timing array requires the ability to determine pulsar times-of-arrival (TOAs) to unprecedented timing precision. One unexplored source of uncertainty in pulsar TOAs is associated with the propagation of the radio emission through the warm electrons of the interstellar medium (ISM). As a pilot project, we request 50 hours to conduct a systematic study of propagation effects and timing for the millisecond pulsar J1713+0747. We will use established techniques to characterize the ISM in the direction of this pulsar. To assess the strength of the effects, we will correlate the properties of the scattering with simultaneously-obtained TOAs. This study is the first part of a larger program to identify and mitigate propagation effects in pulsar TOAs.

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Remote Observing Request

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

Instrument Setup

430 G L-wide S-low 327

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

302-352

422-442

1150-1750

1800-3100

This proposal requires coordination with Punta Salinas radar within the band 1222-1381 MHz..

This proposal requires coordination with GPS L3 at 1381 MHz.