

Technical Page

Proposal Type: Regular
 General Category: Pulsars
 Observation Category: Galactic
 Total Time Requested: 60 Hours
 Minimum Useful Time: 1 hour

Proposal Title: Measuring Shapiro Delay in NANOGrav Pulsars

ABSTRACT:

Measuring Shapiro delay (SD) via pulsar timing is a popular technique to measure companion masses, orbital inclination angles and to infer neutron star masses. We propose to make directed orbital observations of a sub-sample of the NANOGrav millisecond pulsars (MSPs) using PUPPI. A similar NRAO proposal has been submitted for the NANOGrav MSPs observable with the GBT (using GUPPI). This joint study will likely yield a handful of new or improved SD measurements, providing neutron star and companion masses, and inclination angles, the former of which carries large scientific impact. The NANOGrav pulsars have the advantage of being stable timers and having had long-term parameters determined. However, additional strategic observations across the orbit and at conjunction are necessary in order to make detections of SD, particularly in order to recisely infer the neutron star mass. We request 15 hours for each of 4 sources, totaling 60 hours.

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Remote Observing Request

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

Instrument Setup

L-wide 327

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

1100 - 1900 MHz (PUPPI)

This proposal requires Iridium RFI protection at 1612 MHz between 10pm and 6am EST.

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

This proposal requires coordination with GPS L3 at 1381 MHz.