

Technical Page

Proposal Type: Followup
 General Category: Pulsars
 Observation Category: Galactic
 Total Time Requested: 45 Hours
 Minimum Useful Time: 1

Proposal Title: Measuring Two Neutron-Star Masses Using Shapiro Delay

ABSTRACT:

Very recently, Demorest et al. (2010, Nature, 467, 1081) measured a pulsar mass of $1.97 \pm 0.04 M_{\odot}$, thereby greatly extending the known range of precisely measured neutron-star masses, and significantly constraining the equation of state for supra-nuclear-density matter. This major result further emphasizes the questions of (i) how high a neutron-star mass can be? and (ii) what is the true distribution of neutron-star masses? Only through additional, new neutron-star mass measurements can these fundamental questions be answered, but opportunities for this are rare. Here we request 45 hr of Arecibo time in order to measure the Shapiro delay in two PALFA-discovered binary pulsars that are very likely to enable two new precise neutron-star mass measurements.

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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:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

1100-1800

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.