

## Technical Page

This proposal has not been submitted before.

Proposal Type: Regular  
 General Category: Pulsars  
 Observation Category: Pulsar  
 Total Time Requested: 14.5 Hours  
 Minimum Useful Time: 1 hour

**Proposal Title:** Timing PSR J0709+0458: A new neutron star mass measurement via the potential detection of Shapiro delay

*ABSTRACT:*

This is a request for Arecibo Observatory observing time for a timing campaign of a binary millisecond pulsar, PSR J0709+0458, discovered in the Arecibo Observatory 327 MHz Drift Pulsar Survey (AO327). We have identified this pulsar as a promising candidate for achieving a new, precise neutron mass measurement via detection the Shapiro delay in the system. The companion mass of PSR J0709+0458 inferred from the mass function implies a high orbital inclination, leading us to predict that the Shapiro delay signal will be easily detected with this proposed timing campaign.

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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**

1150 - 1730 MHz.

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.