

Technical Page

This proposal has not been submitted before.

Proposal Type: Short
 General Category: Pulsars
 Observation Category: Galactic
 Total Time Requested: 3 Hours
 Minimum Useful Time: 60 min

Proposal Title: Initial Broadband Timing Observations of the wide-binary PSR J0407+1607
ABSTRACT:

We request two, 1.5-hr timing observations of PSR J0407+1607, a 25.7-ms pulsar in a 1.8-hr orbit, using the wide-band PUPPI backend. The short spin period, long orbital period, and comparably high brightness of J0407+1607 makes this source an interesting candidate for high-precision, broadband timing with Arecibo for several reasons discussed in the attached proposal. In particular, measurements of the relativistic Shapiro delay and timing signatures due to orbital-reflex motion will yield direct constraints on the component masses, which serve as uniquely powerful constraints on nuclear astrophysics and long-term binary evolution. However, no PUPPI observations of this source are known to exist. We therefore propose for initial observations at two radio frequencies to determine the timing precision currently achievable with PUPPI, and evaluate prospects for a future regular-cadence observing program at Arecibo.

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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

Atmospheric Observation Instruments:

Special Equipment or setup: We only request to use the PUPPI coherent-dedispersion backend, which has been actively used by the pulsar community at large for several years.

RFI Considerations

Frequency Ranges Planned

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

This proposal requires coordination with GPS L3 at 1381 MHz.