

Technical Page

Proposal Type: Long-term
 General Category: Pulsars
 Observation Category: Galactic
 Total Time Requested: 96 Hours

Proposal Title: Timing millisecond pulsars. II. The PSR J2016+1947 binary system.

ABSTRACT:

We request 96 hours of telescope time to determine the timing ephemeris of the 65-millisecond pulsar - white dwarf system, PSR J2016+1947. This system is notable in having the second longest orbital period known for such a system, 635 days. The longest is a similar system now being timed at Arecibo, PSR J0407+16. Our objectives are to determine the positional, rotational and orbital parameters to good accuracy, to study the radio emission characteristics and timing precision achievable at several frequencies and to study the implications of such binaries for theories of the formation of millisecond pulsars and their binary systems. This is probably the best binary system known to date (by a factor of five) for testing the Strong Equivalence Principle, a basic feature of all metric theories of gravitation (including General Relativity), in the strong-field regime. The analogous test in the weak-field limit is performed by the Lunar Laser Ranging experiments.

Name	Institution	E-mail	Phone	Student
Paulo C Freire	NAIC / Cornell University	pfreire@naic.edu	+1 787 878-2612, Ext. 358	no

Service Observing Request

- None
- All of the observing run.
- Part of the observing run.
- Queue Observing

Remote Observing Request

- No
- Maybe
- Yes

Instrument Setup

430 G L-wide

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

424-436

1400-1500

This proposal requires coordination with AFTWF within the band 425-435 MHz.