

Technical Page

Proposal Type: Regular
 General Category: Pulsars
 Observation Category: Galactic
 Total Time Requested: 49 Hours
 Minimum Useful Time: 3 hr but see above

Proposal Title: Relativistic Timing and Profile Measurements of the First Binary Pulsar B1913+16
ABSTRACT:

We propose to conduct an intensive timing and profile measurement session on binary pulsar B1913+16, the first since 2006. The prime target for timing measurements is a determination of the Shapiro gravitational propagation delay, which will provide two additional tests of relativistic gravitation. We will also continue narrowband HI spectrometry in an effort to determine a kinematic distance to the system, which will help in quantifying a systematic error whose uncertainty now limits the accuracy of the gravitational radiation test. We will also continue to measure changes in the pulse profile which are caused by relativistic spin-orbit precession of the pulsar spin axis, giving us the unique opportunity to map the emission beam in two dimensions. Current estimates indicate that the beam will precess out of our line of sight in about a decade, rendering the pulsar invisible.

Name	Institution	E-mail	Phone	Student
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Remote Observing Request

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

Instrument Setup

L-wide ALFA

Atmospheric Observation Instruments:

Special Equipment or setup: WAPPs and Mocks, preferably to cover best 300 MHz on L-Wide. Failing that, probably use both on ALFA.

RFI Considerations

Frequency Ranges Planned

current WAPP LWide setup (preferred), with 2 mocks covering roughly same overall band:

1320-1420

1420-1520

1520-1620

If Mocks can not go to LWide, then ALFA range: 1225-1525

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.