Proposal Identification No.: P3317

This proposal has not been submitted before.

Proposal Type: Regular
General Category: Pulsars
Observation Category: Galactic
Total Time Requested: 37.5 Hours
Minimum Useful Time: 2.5 hours

Proposal Title: Continued Monitoring of Relativistic Binary Pulsar B1913+16 and a Pilot Survey for its Companion

ABSTRACT:

We request 15 days of 19-hour LST time to observe the first binary pulsar B1913+16 for the first time since 2016.6. From these data, we will measure times-of-arrival (TOAs), pulse profiles, and conduct a pilot periodicity survey for the neutron star companion for the first time in \( \approx 30 \) years. The TOAs will be used for refining our measurements of relativistic parameters including gravitational-radiation-induced orbital decay and Shapiro gravitational propagation delay, thereby further improving our tests of general relativity. Profiles will be useful in modeling the pulsar emission beam in two dimensions, as relativistic geodetic spin-axis precession slowly sweeps our line of sight up and down the pulsar. These observations, the first in 2.5 years, are crucial in maintaining our phase lock on the pulsar. In addition, some spin-precession models suggest that within several years, the pulsar beam may precess away from us and disappear.

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>E-mail</th>
<th>Phone</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joseph K Swiggum</td>
<td>University of Wisconsin - Milwaukee</td>
<td><a href="mailto:swiggumj@uwm.edu">swiggumj@uwm.edu</a></td>
<td>608-215-6734</td>
<td>no</td>
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</tbody>
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Remote Observing Request

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

Instrument Setup

430 G L-wide S-low

Atmospheric Observation Instruments:
Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

420-440 MHz for 2-day session
2300-2700 MHz for 2-day session
1100-1900 MHz for 12-day/1-day sessions

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.