This proposal has been submitted before.

The previous proposal number is 2863.

Proposal Type: Regular
General Category: Pulsars
Observation Category: Galactic
Total Time Requested: 10.25 Hours
Minimum Useful Time: 2.5

**Proposal Title:** PSR J1913+1102: a highly asymmetric and relativistic double neutron star system

**ABSTRACT:**

PSR J1913+1102 is a double neutron star system (DNS) discovered in the PALFA survey. With previous observing campaigns, we have measured very precisely the rate of advance of periastron for the system and the Einstein delay. In the context of general relativity, this results in precise mass measurements: 1.62(3) and 1.27(3) solar masses for the pulsar and NS companion, respectively. This is most massive double neutron star system known, and among the most asymmetric in mass among compact DNS binaries. We have now also measured the orbital decay to 15-sigma significance. In this proposal, we request 20.5 hours of observations to improve these measurements, with the orbital decay expected to improve by a factor 3. This will allow, e.g., stringent limits on the effects of dipolar radiation that is predicted by alternative theories of gravity, and give tighter constraints on models of its formation and evolution.

<table>
<thead>
<tr>
<th>Name</th>
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<th>Student</th>
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<tbody>
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</tr>
</tbody>
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**Remote Observing Request**

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

**Instrument Setup**

S-low

**Atmospheric Observation Instruments:**
Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

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.