**Technical Page**

This proposal has not been submitted before.

- **Proposal Type**: Regular
- **General Category**: Pulsars
- **Observation Category**: Galactic
- **Total Time Requested**: 12 Hours
- **Minimum Useful Time**: 3 hours

**Proposal Title**: Timing J1913+1102: A compact, possibly asymmetric double neutron star system

**ABSTRACT**:

J1913+1102, a 27.3-ms pulsar, was discovered by the PALFA Survey in 2012. Follow-up timing observations have determined this pulsar is in a 4.95-hour binary system with another neutron star. Our preliminary determination of the rate of advance of periastron enables a measurement of the total mass of the system of \( M_{\text{tot}} \approx 2.87 M_\odot \), assuming General Relativity. The system’s low orbital eccentricity, \( e = 0.0895 \), suggests the pulsar’s companion formed in an electron capture supernova, and is thus relatively light compared to J1913+1102. Alternative theories of gravity predict that such a large mass asymmetry would give rise to dipolar gravitational waves. In this proposal we request 24 hours divided into 4 epochs, each covering a complete orbit of J1913+1102. These observations are the first steps towards determining the masses of the two neutron stars and ultimately testing General Relativity.

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>E-mail</th>
<th>Phone</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patrick Lazarus</td>
<td>Max-Planck-Institute for Radio Astronomy</td>
<td><a href="mailto:plazarus@mpifr-bonn.mpg.de">plazarus@mpifr-bonn.mpg.de</a></td>
<td>+49 228 525 181</td>
<td>G</td>
</tr>
</tbody>
</table>

**Remote Observing Request**

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

**Instrument Setup**

- L-wide

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

RFI Considerations

Frequency Ranges Planned

1150 - 1730

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.