Technical Page

Proposal Type: Regular
General Category: Pulsars
Observation Category: Galactic
Total Time Requested: 24 Hours
Minimum Useful Time: 1 hour

Proposal Title: Improved timing of PSR J1738+0333: A unique gravitational laboratory gets even better!

ABSTRACT:
The orbital decay of the J1738+0333 binary system, caused by its emission of gravitational waves, has been measured with good significance after only 8 years of timing with the Arecibo telescope. This measurement has provided the most stringent constraints ever on several classes of theories of gravity alternative to general relativity (Freire et al. 2012, MNRAS, 423, 3328). It also provides new limits on violation of the local Lorenz invariance five times better than the best previous limits, derived from lunar laser ranging (Shao and Wex 2012, submitted to CQG). In this proposal, we aim to significantly improve the measurement of orbital decay of this system and the timing parallax of the pulsar. This will greatly increase its power as a test of alternative theories of gravity: together with the timing results from the double pulsar system (J0737-3039) it will rule out a wide class of theories of gravity that seek to explain Dark Matter as a gravitational phenomenon.

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<tr>
<th>Name</th>
<th>Institution</th>
<th>E-mail</th>
<th>Phone</th>
<th>Student</th>
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<tbody>
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<td>no</td>
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Remote Observing Request

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

Instrument Setup

L-wide

Atmospheric Observation Instruments:
Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

1120 - 1720

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.