Technical Page

This proposal has not been submitted before.

Proposal Type: Urgent
General Category: Pulsars
Observation Category: Galactic
Total Time Requested: 12.5 Hours
Minimum Useful Time: 1 hr

Proposal Title: Exploring Scintillation Arcs in the Transition to Weak Scattering

ABSTRACT:

We recently published three-frequency scintillation arc observations from the nearby pulsar B1133+16 (Arecibo program P2952). At 1400MHz we found that the dynamic spectrum was only about 60% modulated and that it was criss-crossed by fine structure that yielded a sharp scintillation arc. Less than 100% modulation generally means that the observations are in the transition from strong to weak scintillation. But, what then explains the narrow fringe patterns that we observed in the same data? Our conclusion is that a highly one-dimensional scattering PSF can yield the otherwise contradictory result. This is supported by other one-dimensional modeling we present in the paper. Here, we propose to follow up on this idea by observing several other pulsars for which we have previously detected thick scintillation arcs at 327MHz or 430MHz. By observing them at higher frequencies (inc 2.4 GHz, if possible) we will continue our quantitative study of the freq development of scintillation arcs.

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

☐ Observer will travel to AO
X 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

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.