

Technical Page

Proposal Type: Regular
 General Category: Pulsars
 Observation Category: Galactic
 Total Time Requested: 21 Hours

Proposal Title: Scintillation Arcs in Weak Scattering – PSR B1133+16

ABSTRACT:

We propose to measure dynamic spectra of ISS of the well-studied pulsar B1133+16. The difference is that we wish to observe when the intensity fluctuations are weak. The "secondary-spectra" of this source in strong scattering, formed by a 2-D spectral analysis of the dynamic spectrum, show "parabolic arcs" and a variety of peculiar substructure. In weak scattering the secondary spectra can be directly inverted (except for a two-fold ambiguity) to estimate the full 2-D spatial spectrum of the electric field. This will allow us to estimate the 2-D structure of both the plasma turbulence and the source with high resolution. We are particularly interested in: (1) the cause of the peculiar substructure in the strong scattering observations, which we suspect is anomalous plasma structure; and (2) the anisotropy and the inner scale of the turbulence. We should be able to measure an inner scale as small as 8000 km; (3) any source structure effects, such as a shift in the position of the emission region with pulse phase. We should be able to resolve spatial source structure as small as 8000 km.

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Service Observing Request

Remote Observing Request

- | | | | |
|-------------------------------------|----------------------------|-------------------------------------|-------|
| <input checked="" type="checkbox"/> | None | <input type="checkbox"/> | No |
| <input type="checkbox"/> | All of the observing run. | <input checked="" type="checkbox"/> | Maybe |
| <input type="checkbox"/> | Part of the observing run. | <input type="checkbox"/> | Yes |
| <input type="checkbox"/> | Queue Observing | | |

Instrument Setup

610 L-wide C 327

Atmospheric Observation Instruments:

Special Equipment or setup: WAPP stacked to cover 800 MHz of instantaneous bandwidth with summed polarizations.

RFI Considerations

Frequency Ranges Planned