

Technical Page

Proposal Type: Regular
 General Category: Pulsars
 Observation Category:
 Total Time Requested: 20 Hours
 Minimum Useful Time: 2.5 hrs

Proposal Title: NANOGrav precision timing: Testing a new ISM correction technique

ABSTRACT:

Gravitational waves may be directly detected within the next decade through precise timing of an array of pulsars. Removal of frequency-dependent ISM effects such as dispersion and scattering delays is a key issue in the detection process. Even though the dispersion phenomenon has been recognized to cause significant fluctuations in the times of arrival (TOAs) of pulses and is addressed in current timing algorithms, scattering remains relatively unexplored. Our simulations show that the method of cyclic spectroscopy (CS) can be used to correct TOAs for the scattering delay of a pulsar signal to high levels of precision. So far this method has been successfully applied in an exploratory manner on Arecibo data of pulsar B1937+21 by Demorest and colleagues. In this proposal, we request time to use the cyclic spectroscopy technique to understand and characterize the scattering effects for millisecond pulsar J1713+0747.

Name	Institution	E-mail	Phone	Student
Nipuni T Palliyaguru	West Virginia University	npalliya@mix.wvu.edu	(304) 293-3422	G

Remote Observing Request

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

Instrument Setup

430 G L-wide 327

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

This proposal requires coordination with Punta Salinas radar within the band 1222-1381 MHz..

This proposal requires coordination with GPS L3 at 1381 MHz.