

Technical Page

This proposal has not been submitted before.

Proposal Type: Regular
 General Category: Pulsars
 Observation Category: Galactic
 Total Time Requested: 6.66 Hours
 Minimum Useful Time: 1 hour

Proposal Title: Observing J1745+1017 for NANOGrav Inclusion and Astrophysical Study
ABSTRACT:

In recent years, searches in the radio of Fermi unidentified gamma-ray sources have been responsible for 70 new millisecond pulsar discoveries, of which a third are highly accelerated black widow (BW) binaries. Historically, this variety of binary system was considered unsatisfactory for pulsar timing arrays, as they display long-term orbital variation and possible timing noise. However, a new publication by Bochenek et al. (2015) shows that modeling these binaries with higher-order orbital frequency derivatives will only decrease sensitivity to gravitational waves by 5 percent. Additionally, a long-duration study of J2051-0827 by Shaifullah et al. both presents new, astrophysically interesting timing variations and suggests that it may be possible to time more of these BW systems. We request 10 hours of on-source time using the Arecibo Telescope at 430 and 1400 MHz to study the BW binary J1745+1017 and assess whether it can be incorporated into the NANOGrav pulsar timing array.

Name	Institution	E-mail	Phone	Student
H. Thankful Cromartie	University of Virginia	thankful@virginia.edu	(919) 923-4444	G

Remote Observing Request

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

Instrument Setup

430 G L-wide

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

422-442

1150-1730

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

This proposal requires coordination with GPS L3 at 1381 MHz.