Proposal Identification No.: P1877

Date Received: 2004-Oct-01 23:28:48

Technical Page

Proposal Type: Regular
General Category: Pulsars
Observation Category: 
Total Time Requested: 9 Hours

Proposal Title: ow-frequency millisecond pulsar polarimetry

ABSTRACT:

We request 9 hrs of observing time to investigate the emission properties (spectral behavior, intensity-profile complexity and polarization) of a small sample of millisecond pulsars (MSPs) at 327 MHz. Results from our high-frequency polarimetric study indicated that the properties of the MSP pulse components do not fit easily into successful classification schemes proposed for slower pulsars. A critical role to the formulation of classification schemes is played by a wide frequency coverage of the emission properties. The newly commissioned receiver in combination with the large collecting area of Arecibo, provides a unique instrument to study some MSPs at low frequencies. Our expectation is that since pulsars in general are stronger sources at lower frequencies and the radioemission inherently strongly polarized, the polarization properties will appear more pronounced allowing higher quality data to be obtained. In particular the polarization position-angle (PPA) swing might be better defined and across a wider range of longitudes at lower frequencies. Knowledge of the PPA can potentially lead to reliable estimates of the viewing geometry of MSPs (magnetic inclination). Such data can then be used to search for a tendency of the magnetic axis to align with the rotation axis. Also, well defined PPA swings can be used to estimate the location of the emission region in the MSP magneto-spheres.

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>E-mail</th>
<th>Phone</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kiriaki Xilouris</td>
<td>University of Virginia</td>
<td><a href="mailto:kx8u@virginia.edu">kx8u@virginia.edu</a></td>
<td>434 924-7470</td>
<td>no</td>
</tr>
</tbody>
</table>

Service Observing Request

☐ None
☐ All of the observing run.
☒ Part of the observing run.
☐ Queue Observing

Remot e Observing Request

☒ No
☐ Maybe
☐ Yes

Instrument Setup

327

Atmospheric Observation Instruments:
Special Equipment or setup:  none

RFI Considerations

Frequency Ranges Planned

312-342MHz