Technical Page

Proposal Type: Regular
General Category: Astronomy
Sub-Category: Spectroscopy
Observation Category: Extragalactic
Total Time Requested: 36 Hours

Proposal Title: Probing Active Galactic Nuclei with the HI Fine Structure Line

ABSTRACT:

We propose to conduct a pilot search for the redshifted n=2 fine structure line of neutral atomic hydrogen in a sample of z=0.7 to z=1.5 sources that exhibit AGN properties. In such sources the n=2 fine structure line which has a rest frequency near 9.9 GHz, is redshifted into the bandwidth observable with the C-band receiver. A successful detection of the line will provide (1) a determination of the excitation (density and temperature) in the ionized gas in galactic nuclei; (2) an assessment of the HI population in the ground state, and from that a value for the optical depth of the Lyman alpha line; and (3) a kinematic probe useful through VLBI imaging to determine the mass of the central black hole.

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>E-mail</th>
<th>Phone</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robert L Brown</td>
<td>NAIC</td>
<td><a href="mailto:rbrown@astro.cornell.edu">rbrown@astro.cornell.edu</a></td>
<td>607 255-7578</td>
<td>no</td>
</tr>
</tbody>
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Service Observing Request

X None

Remote Observing Request

X No

☐ All of the observing run.
☐ Part of the observing run.
☐ Queue Observing

Instrument Setup

C

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned