Proposal Identification No.: A1754  Date Received: 2003-Feb-02 11:06:07

Technical Page

Proposal Type: Regular
General Category: Astronomy
Sub-Category: Spectroscopy
Observation Category: Galactic
Total Time Requested: 8 Hours

Proposal Title: Probing the chemistry of interstellar OH and H2O using the world’s largest and smallest radiotelescopes

ABSTRACT:

The water molecule and hydroxyl radical play a key role in the chemistry of the interstellar medium. In a recent study, we have combined observations of H2O absorption, carried out with the Submillimeter Wave Astronomy Satellite (SWAS), with OH observations, performed at the Arecibo observatory, to obtain significant constraints upon the chemistry in a diffuse molecular cloud lying along the line-of-sight to W51. This study yielded the first detections of OH and H2O in the same diffuse molecular cloud, and the first measurement of the column density ratio, N(H2O)/N(OH). Here we propose to obtain analogous observations of OH toward a second source in which SWAS observations of foreground H2O absorption have already been carried out - the star-forming region W49. The requested Arecibo time allocation of 8 hours will significantly enhance the scientific output of a study to which over 800 hours of SWAS spacecraft time has already been devoted.

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>E-mail</th>
<th>Phone</th>
<th>Student</th>
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<tbody>
<tr>
<td>David A Neufeld</td>
<td>Johns Hopkins University</td>
<td><a href="mailto:neufeld@pha.jhu.edu">neufeld@pha.jhu.edu</a></td>
<td>410-516-8582</td>
<td>no</td>
</tr>
</tbody>
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Service Observing Request

X None

Remot e Observing Request

X No

☐ Maybe

☐ Yes

Instrument Setup

L-wide

Atmospheric Observation Instruments:

Special Equipment or setup: none
RFI Considerations

Frequency Ranges Planned

1610-1614
1663-1669
1718-1722

This proposal requires Iridium RFI protection at 1612 MHz between 10pm and 6am EST.