Technical Page

Proposal Type: Regular
General Category: Astronomy
Sub-Category: Spectroscopy
Observation Category: Galactic
Total Time Requested: 12 Hours

Proposal Title: Environments of UCHII regions: Carbon Recombination Lines as Probes of Ultra-Dense PDRs

ABSTRACT:

A majority of extended HII regions appear to be density bounded, implying that no cold CII regions will form around them. In fact, there are only a handful of HII regions that have CII emission associated with them. However, UCHII regions are often surrounded by dense molecular material and thus appear to be ideal regions to search for carbon recombination lines. In fact, recent VLA observations were very successful in detecting carbon lines near UCHII regions. We propose to make a survey of carbon lines toward a selected set of UCHII regions. Our objectives are: (1) to understand the relationship between the morphological type of UCHII region and carbon line forming region; (2) to determine the physical properties of the neutral material in the vicinity of UCHII region. If dense molecular material confines the UCHII regions, then it should be detectable in carbon recombination lines near 8 GHz. If the line is not detected, we will be able to set stringent limits on the temperature and density of the molecular material in the surrounding medium.

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>E-mail</th>
<th>Phone</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anish Roshi</td>
<td>National Radio Astronomy Observatory</td>
<td><a href="mailto:aroshi@nrao.edu">aroshi@nrao.edu</a></td>
<td>1-304-456-2130</td>
<td>no</td>
</tr>
</tbody>
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Service Observing Request

- [X] None
- [ ] All of the observing run.
- [ ] Part of the observing run.
- [ ] Queue Observing

Remot e Observing Request

- [X] No
- [ ] Maybe
- [ ] Yes

Instrument Setup

- X-high

Atmospheric Observation Instruments:
Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned