Technical Page

Proposal Type: Regular
General Category: Astronomy
Sub-Category: Spectroscopy
Observation Category:
Total Time Requested: 76 Hours

Proposal Title: HI Narrow Line Absorption: A New Tracer for Measuring Magnetic Field in Dense Molecular Clouds

ABSTRACT:

We propose to measure Zeeman effect in dense molecular clouds using HI narrow line absorption (HI NLA, also known as self-absorption). HI NLA is correlated with OH and CO as shown in our recent AO HI survey and FCRAO observations. Two OH (1665, 1667 MHz) emission lines will also be observed simultaneously to provide confirmation. Two targets are chosen from the AO HI survey based on their deep HI absorption and strong OH emission. They also represent two distinctive cases in terms of coupling with high density tracers, such as C^{18}O. If successful, we will have an important new probe of B field in dark clouds because the HI NLA line is strong and has a large Landé g factor. A meaningful upper limit is also significant in understanding the role of magnetic support, which is assumed to be crucial in star forming regions.

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<thead>
<tr>
<th>Name</th>
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I might want to do remote observing.

Instrument Setup

L-wide

Atmospheric Optical Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

1400-1670