

Technical Page

Proposal Type: Regular
 General Category: Astronomy
 Sub-Category: Spectroscopy
 Observation Category: Galactic
 Total Time Requested: 8.5 Hours
 Minimum Useful Time: 1.25

Proposal Title: Are Dense Cores Pressure Confined?

ABSTRACT:

Using high sensitivity maps of ammonia emission from star forming cores, we have discovered that the velocity line width of the gas increases sharply (factor of 2) on small scales (0.03 pc) at the core boundary. The cores are quiescent in the interior and turbulent outside. However, we cannot determine whether this transition is dynamically significant without knowledge of the gas density on either side of this sharp transition. Hence, we propose observation of formaldehyde absorption as a direct measurement of the density of molecular gas in the intercore medium. The proposal is submitted to both the Arecibo Radio Telescope to measure the 4.8 GHz line and the GBT to measure the 14.5 GHz resulting in beam matched observations at high resolution ($52''=0.06$ pc). The line ratio provides an unambiguous diagnostic of the particle density in the region studied.

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Remote Observing Request

- Observer will travel to AO
- Remote Observing
- In Absentia (instructions to operator)

Instrument Setup

C

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

4826-4832