

Technical Page

Proposal Type: Regular
 General Category: Astronomy
 Sub-Category: Spectroscopy
 Observation Category: Galactic
 Total Time Requested: 6 Hours
 Minimum Useful Time: 1 hour

Proposal Title: A Survey for Thermal CH₃OH 6.7 GHz Emission toward Massive Star Forming Regions

ABSTRACT:

Massive stars form in dense molecular cores where the intense radiation field from young massive proto-stellar objects heats the surrounding molecular material, producing a rich spectrum of molecular transitions. We have successfully used thermal CH₃OH 44 GHz emission to study the gas kinematics in the G31.41+0.31 hot molecular core with the VLA. However, the CH₃OH 44 GHz line is not a convenient probe because the observations are strongly affected by tropospheric water vapor. In contrast, the CH₃OH 6.7 GHz transition would be a better probe because atmospheric instabilities are substantially less significant at cm wavelengths. In addition, in the near future the new EVLA receivers will enable observations of the CH₃OH 6.7 GHz transition with excellent imaging fidelity (*u-v* coverage) and sensitivity. Thus, we propose to conduct an Arecibo survey for *thermal* CH₃OH 6.7 GHz emission toward a sample of 10 massive star forming region to select candidates for future EVLA sub-arcsecond angular resolution studies. Arecibo is the ideal instrument for this project given its large collecting area and the availability of the C-Band High receiver.

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Remote Observing Request

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

Instrument Setup

C-high

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

6660 - 6680