This proposal has not been submitted before.

Proposal Title: CH as a probe of dark molecular gas - Investigating the excitation temperature

ABSTRACT:

Recent studies claim that the molecular mass inventory of the Galaxy is split between molecular gas that can be detected by the CO(1-0) line and gas that is detectable primarily by gamma-ray and infrared emission (i.e., not spectroscopically). However, sensitive observations of species other than CO may reveal the presence of at least a portion of this gas. The CH ground level, hyperfine, main line transition at 3335 MHz has a long history of tracing low-density molecular gas in low-extinction regions - the type of regions which are supposed to be the main repositories of dark gas. Before submitting a large proposal to survey this weak transition at the edges of a sample of molecular clouds, a nagging problem regarding the excitation temperature must be resolved. In this proposal we will observe 5 lines of sight to stars where foreground CH has been observed optically in absorption and compare those column densities with those obtained from the proposed observations at 3.3 GHz.

Remote Observing Request

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

Instrument Setup

S-high

Atmospheric Observation Instruments:

Special Equipment or setup: none
RFI Considerations

Frequency Ranges Planned