

## Technical Page

Proposal Type: Long-term  
 General Category: Astronomy  
 Sub-Category: Spectroscopy  
 Observation Category: Galactic  
 Total Time Requested: 400 Hours

**Proposal Title:** A Large Survey for Methanol Masers

*ABSTRACT:*

The  $5_1 - 6_0 A^+$  methanol line at 6.668 GHz discovered by Menten (1991) is the brightest of the methanol maser transitions. It is also the second brightest maser line ever observed with the peak flux density of the brightest source being over 5000 Jy. Theoretical and observational studies so far suggest that these masers are precursors of ultracompact HII regions, and are excellent tracers of sites of high-mass star formation. Since high-mass star formation occurs preferentially in the spiral arms of our galaxy, methanol masers are potential candidates for tracing spiral arm structure. To this end, we propose making a large blind survey for methanol masers in a portion of the galactic plane visible from Arecibo. Such a survey will also yield a large sample of methanol masers from which properties including the methanol maser luminosity function can be deduced. In addition to giving an excellent candidate list of new ultracompact HII regions in the surveyed region, this work will also be a prelude to extensive VLBI studies probing the dynamics of high-mass star forming regions.

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**Service Observing Request**

- None
- All of the observing run.
- Part of the observing run.
- Queue Observing

**Remote Observing Request**

- No
- Maybe
- Yes

**Instrument Setup**

**Atmospheric Observation Instruments:**

**Special Equipment or setup:** none

## **RFI Considerations**

### **Frequency Ranges Planned**

band around 6.668 GHz