

Technical Page

Proposal Type: Long-term
 General Category: Astronomy
 Sub-Category: Spectroscopy
 Observation Category: Galactic
 Total Time Requested: 37 Hours
 Minimum Useful Time: 1

Proposal Title: Periodic Maser Flares in IRAS18566+0408: Continuing the Arecibo Monitoring Program

ABSTRACT:

Using Arecibo we discovered H₂CO maser emission in IRAS18566+0408, a very young massive stellar object. Subsequent observations resulted in the detection of the first short-term flare of an H₂CO maser. Two years ago we started a monitoring program of the H₂CO maser with Arecibo that, together with VLA observations, resulted in the detection of three more flare events. The flares appear to be periodic; we have discovered the first periodic H₂CO maser flare system. We also discovered correlated variability between the H₂CO and CH₃OH masers in the region. After a comprehensive study of IRAS18566+0408 using Arecibo, (E)VLA, MERLIN, GBT, as well as Spitzer, we have found evidence that the flares are tracing changes in the infrared field, perhaps caused by pulsations of the massive protostar. If this is confirmed, the periodic maser flares may be giving us fundamental new insight into the structure of massive protostars. Here we propose to continue our Arecibo monitoring program to study the next flare event with high temporal resolution, and investigate long term changes in the periodicity and peak intensity of the flares.

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Remote Observing Request

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

Instrument Setup

C C-high

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

4820 - 4840 (H₂CO 6cm)

6660 - 6680 (CH₃OH 6.7 GHz)