# Technical Page

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|---|---|
| Proposal Type: | Regular |
| General Category: | Astronomy |
| Sub-Category: | Spectroscopy |
| Observation Category: | Extragalactic |
| Total Time Requested: | 79.0 Hours |
| Minimum Useful Time: | 60 min |

**Proposal Title:** OH Megamasers: Your New Extragalactic Magnetometers!

*ABSTRACT:*

All OH megamasers are observed in luminous infrared galaxies, stongly favoring the most FIR-luminous, the ULIRGs. A minumum energy estimate suggests that ULIRGs should have characteristic magnetic field strengths of roughly 100 microGauss; an equipartition treatment implies the field strengths should be in the region 1-10 milliGauss. OH is the most sensitive magnetic tracer in molecular regions; OH masers probe fields of up to 10 milliGauss in our own Galaxy. OH megamasers are therefore the perfect tool for probing the magnetic fields in ULIRGs. Previous Arecibo observations of OH megamasers by the authors have increased the sample of extragalactic Zeeman detections 16-fold and yielded a typical field in ULIRGs of about 3 milliGauss. We propose to use 79 hours of Arecibo time to observe 8 of the brightest OH megamasers in full-Stokes mode in order to detect Zeeman splitting of the 1667 MHz transition. This will allow us to completely sample the known OH megamasers visible to Arecibo down to a flux level of 10 mJy.



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|---|---|---|---|---|
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**Remote Observing Request**

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

## Instrument Setup

L-wide

**Atmospheric Observation Instruments:**

**Special Equipment or setup:** none

## RFI Considerations

## Frequency Ranges Planned

1420-1610