

## Technical Page

Proposal Type:           Regular  
 General Category:       Astronomy  
 Sub-Category:           Spectroscopy  
 Observation Category:   Galactic  
 Total Time Requested:   20 Hours

**Proposal Title:**   OH Zeeman Test of Faraday Rotation in Dark Cloud Envelopes

*ABSTRACT:*

The magnetic support model for star formation has ambipolar diffusion increasing the mass-to-magnetic flux ratio in cores until they become magnetically supercritical and collapse. The model absolutely requires that envelopes be subcritical. Previous OH Zeeman measurements were pointed toward cores and do not address whether envelopes are subcritical. Recently Wollenben and Reich interpreted low synchrotron polarization found at the boundaries of nearby molecular clouds as being due to Faraday screens produced by Faraday rotation in the envelopes of these clouds. They inferred line-of-sight field strengths of 20 microgauss. We propose to measure the line-of-sight field with OH Zeeman observations toward one of their positions. This will test their interpretation, and if it is confirmed, enable the Faraday screen technique to be used for measuring magnetic field strengths in the envelopes of molecular clouds, greatly enhancing our ability to test the magnetic support model for star formation.

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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**

L-wide

**Atmospheric Observation Instruments:**

**Special Equipment or setup:**   none

**RFI Considerations**

## Frequency Ranges Planned