Technical Page

Proposal Type:	Regular
General Category:	Astronomy
Sub-Category:	Galactic
Sub-Category:	Galactic
Observation Category:	
Total Time Requested:	49 Hours

Proposal Title: MAGNETIC FIELDS AND STAR FORMATION - ARECIBO OH ZEEMAN OBSERVATIONS OF MOLECULAR CORES

ABSTRACT:

Understanding star formation is one of the outstanding challenges of modern astrophysics. Theoretical work suggests that magnetic fields play a significant role - specifically, that the mass to magnetic flux ratio is potentially as important for star formation as the Chandrasekhar limit is for the theory of stellar evolution. Existing measurements of the Zeeman effect in molecular lines are woefully inadequate to define this crucial parameter. The 1665 and 1667 MHz lines of OH are the only viable Zeeman probes in dark cloud cores. We propose a program of OH Zeeman observations in order to measure line-of-sight magnetic field strengths. Arecibo is the only telescope capable of such studies, since it is the only telescope with a small enough 18-cm beamwidth to isolate OH emission from dark cloud cores. Our results will be used in a statistical study with the long-term goal of determining definitively the "Chandrasekhar limit" of star formation.

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I NA want to do remote observing.

Instrument Setup

L-wide

Atmospheric Optical Instruments:

Special Equipment or setup: dual circular polarization

RFI Considerations

Frequency Ranges Planned

not given