

## MAGNETIC FIELDS IN STAR-FORMING REGIONS

Richard M. Crutcher (University of Illinois)

This talk will review the motivation for the study of magnetic fields in star-forming regions and discuss observational techniques that will be possible with the ALMA. Although observations of densities, temperatures, kinematics, and structures in dense interstellar clouds have yielded a considerable volume of information about star formation, empirical information about magnetic fields is much more sparse. The ALMA has the potential to greatly expand our knowledge of the role of magnetic fields in the evolution of molecular clouds and in the star formation process. Three types of observations will be possible. (1) Imaging of linearly polarized thermal radiation from dust grains aligned by magnetic fields, (2) imaging of linearly polarized molecular spectral-line emission, and (3) imaging of the Zeeman effect in molecular lines. The first two techniques have been used successfully by observers with University-operated millimeter-wave arrays. Both techniques yield maps of the morphology of the magnetic field in the plane of the sky. If magnetic fields are strong, field lines should be regular with an hourglass morphology centered on contracting molecular cores. If turbulence dominates, magnetic fields would be more irregular or random. Moreover, the role of magnetic fields in outflows from young stars may be explored using these techniques.

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