

Astrophysics Seminar

Monday, March 28, 2016

Magnetic fields in star forming regions: from dense core to disk scales.

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Abstract:

Molecular clouds are threaded by magnetic fields. Despite of the low ionization levels in molecular clouds, ion-neutral collisions are efficient enough in order to have the magnetic fields well coupled with the gas. However, there is still a vivid discussion on whether the magnetic field are relevant in the dynamical evolution of molecular cloud and in the process of star formation. In this talk I will focus on the results of aperture synthesis (sub)millimeter polarimetric observations to study the role of magnetic fields in the early stages of star formation at scales from 0.1 pc (molecular dense cores) to few tens of AU. In last decade, the Submillimeter Array (SMA) have provided a handful of examples where the magnetic fields appear to play an important role in star forming molecular dense cores, showing a well organized morphology, consistent with the expected hour-glass morphology. An SMA survey of a sample of 14 massive molecular clumps have confirmed this picture. However and at least for the most massive cases, stellar feedback in more evolved regions appears to affect the net effect of magnetic fields in the dynamics of the dense cores. Finally, I will show some examples of very recently polarimetric subarcsecond observations taken with ALMA in cycle 2 and cycle 3 toward a couple star forming regions.

3:15 pm

Refreshments
CAS Room 500

3:30 pm

Seminar
CAS Room 502

Next Week

- Savvas Koushiapas
Brown University
- TBD

