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Abstract:

The magnetic field is an important parameter in governing the dynamics of the molecular clouds and the star formation process. Different techniques like polarimetry in optical or far-infrared wavelengths can be used to map the magnetic field structure in molecular clouds. However, there are fewer observations available to directly estimate the magnetic field strength at the small-scale structure of molecular clouds. The Zeeman splitting of HINSA ((HI narrow self-absorption) lines in dark cloud cores is the novel technique to achieve our goal owing to less depletion and higher line strength. Therefore, we propose here to observe Zeeman measurements of HINSA lines towards two Planck Galactic Cold Clumps (PGCCs) which represent the earliest stages of star formation. The proposed study will help us in understanding the dynamical role of magnetic fields in core formation.