

Observations of magnetic fields in star-forming clouds

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Abstract. This review examines observations of magnetic fields in molecular clouds, that is, at spatial scales ranging from tens to tenths of parsecs and densities up to hundreds of particles per cubic centimetre. I will briefly summarize the techniques for observing and mapping magnetic fields in molecular clouds. I will review important examples of observational results obtained using each technique and their implications for our understanding of the role of the magnetic field in molecular cloud formation and evolution. Finally, I will briefly discuss the prospects for advances in our observational capabilities with telescopes and instruments now beginning operation or under construction.

Keywords. ISM: general / ISM: magnetic fields / ISM: clouds / ISM: structure / dust, extinction / submillimeter: ISM / infrared: ISM / magnetic fields / (magnetohydrodynamics:) MHD.

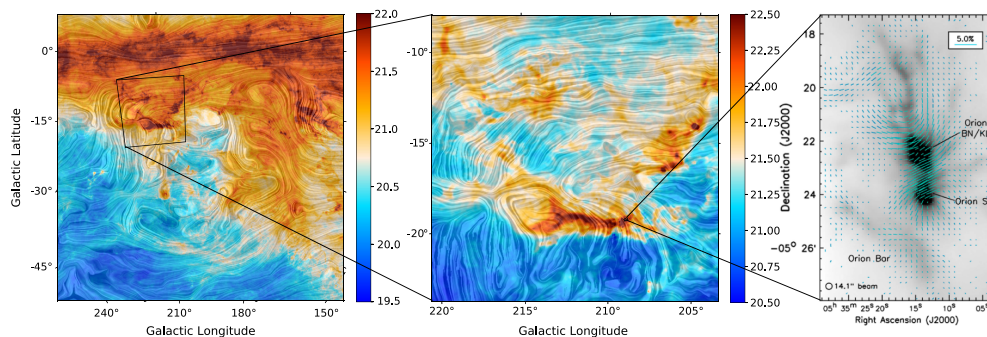


Figure 1. Magnetic field morphology in and around star-forming clouds as revealed by dust polarized thermal emission. The drapery pattern and vectors represent the direction of the magnetic field integrated along the line of sight and projected in the plane of the sky as inferred from submillimeter polarization observations by European Space Agency's *Planck* satellite and POL-2 at the East Asian Observatory James Clerk Maxwell Telescope. From left to right, the panels show: the Orion-Eridanus superbubble (Soler, Bracco & Pon, 2018), the Orion molecular clouds (*Planck* Collaboration I, 2016; *Planck* Collaboration XXXV, 2016), and the Orion A filament (Pattle *et al.*, 2017; Ward-Thompson *et al.*, 2017).

References

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