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## Farideh S. Tabatabaei - Unveiling the interplay between magnetic fields and accretion in a young protocluster

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The Pipe Nebula and Barnard 59 The Pipe Nebula is one of the closest known star-forming regions, with a distance of  $d = 163$  pc (Dzib et al. 2018). The Pipe cloud has a very low rate of star formation. Indeed, only one active star-forming clump, Barnard 59 (B59), has been found in the cloud (Brooke et al. 2007; Forbrich et al. 2009, 2010). Alves et al. (2008) and Franco et al. (2010) suggested that the fact that only B59 has been active in star formation might be linked to the different magnetic properties of the Pipe. Studies of the morphology of the magnetic field with optical polarimetric observation showed that the filamentary structure is threaded by a magnetic field, which is aligned perpendicular to the cloud's axis, possibly preventing or delaying its global collapse. Magnetic field lines can be bent by gravitational pull and/or infalling material toward the core. In fact, the magnetic field lines in the filament located to the east of the core appear to show a sudden bent in their direction (from parallel to the filament spine to perpendicular to it) as they approach the main core. Our goal is to comprehensively understand the kinematics in the filament located east of the core in B59 and investigate its connection with magnetic field morphology. With the combined analysis of molecular line (13CO, C18O, 12CO all in (3-2)) data from JCMT and polarization data from Pico dos Dias Observatory we obtain a comprehensive understanding of the B59 cloud dynamical evolution.

**Session Classification:** Posters: 1-minute talks