P104a Magnetic Field Dragging in the Filamentary High-mass Star-forming Region G35.20-0.74N due to Gravity

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Magnetic fields can play an important role in regulating star formation processes against gravity or turbulence. However, the role of the magnetic field in massive star-forming regions is still debated. We investigate magnetic field orientation, strength, and gas kinematics in the massive star-forming region G35.20-0.74N (G35) using the polarized dust emission and $H^{13}CO^+$ spectral line data obtained by the Atacama Large Millimeter/submillimeter Array (ALMA) as part of the Magnetic fields in Massive star-forming Regions (MagMaR) survey. The G35 region shows a mini filamentary structure with a length of $\sim$0.1 pc and a width of 0.02 pc, in which six bright cores are fragmented. We apply the Davis-Chandrasekhar-Fermi method using a small moving box on the polarization data to derive the map of magnetic field strengths in G35. We estimate magnetic field strengths varying from 0.2 to 5.1 mG with a mean value of 1.1 $\pm$ 0.6 mG. We also estimate the mass to magnetic flux ratio in units of the critical value, which ranges from 0.2 to 5.5. Values greater than 1 near the six cores indicate that gravity is significantly more dominant than the magnetic field. We also estimate velocity gradient along the filament of 27 km s^{-1} pc^{-1}. Magnetic field lines are aligned along the direction of velocity gradient. Magnetic field lines on scales of $\sim$0.1 pc, which are larger than the ALMA beam, are perpendicular to the filament. Based on these results, we suggest that gas flows and gravity can drag magnetic field lines along the filament.