P112a Study of effects of magnetic field in magnetized colliding molecular clouds.

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We study the effects of magnetic field strength and its orientation on dense core formation in colliding molecular clouds with the goal of understanding massive star formation. We performed sub parsec (≈ 0.015pc) magneto-hydrodynamic (MHD) simulations of two unequal mass molecular clouds with turbulence and a cloud collision speed of 10kms^{-1}. We assume different global magnetic field cases with varying strengths in the range of 0.1 to 4.0μG and with three different orientations indicating parallel, perpendicular and oblique with respect to the collision axis. The weak magnetic field cases show a partial arc gas morphology in the shock region. The strong parallel magnetic fields also show similar morphology to the weak cases whereas the strong perpendicular and oblique magnetic field cases show a stronger influence of the magnetic field on the gas morphology in the shock region. Gas clumps with the density greater than 5×10^{-20}gcm^{-3} are identified as dense cores and are traced throughout the simulation to investigate effects of the magnetic field on the resulting core population. The core mass function (CMF) shows more massive core formation in the strong magnetic fields cases compared to the weak cases. The strong perpendicular and oblique magnetic field cases were more favorable for massive core formation compared to the other cases. We will discuss the implications of our results for massive star formation.