P146b Star Cluster Formation Triggered by Giant Molecular Cloud Collisions

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Collisions between molecular clouds have been proposed as a mechanism for creating dense clumps and triggering massive star cluster formation. This process may even determine the global star formation rate in disk galaxies. Observationally, the number of cloud collision candidates is growing, but they remain difficult to verify using current methods. We have developed a numerical model of giant molecular cloud (GMC) collisions using magnetohydrodynamic (MHD) simulations with photo-dissociation region (PDR)-based heating/cooling functions, supersonic turbulence, and magnetically regulated star formation (see Wu et al. 2017 ApJ 835 137W, 2017 ApJ 841 88W). They are capable of producing synthetic line emission and polarization maps with which regions in the Galaxy can be compared. In this study, we focus on the addition of protostellar outflow feedback and how it affects the formation and evolution of star clusters and their surrounding gas.