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GRAPE-A GRAPE-B GRAPE-C PC
REPORT

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CATEGORY: XC-30Trial

TITLE: Study of star formation by collision of magnetized clouds

Cloud Cloud Collisions(CCCs) are quite interesting because they are a strong candidate for massive star formation as shown by the recent observations. However, effects of magnetic fields in CCCs are not well studied. We are trying simulations of CCC including magnetic field to study magnetic field effects on formation and evolution of dense cores to show their possible effects on the core mass function which is expected to have close connection to IMF.

We tested numerical simulation of CCCs including magnetic fields and turbulence by ENZO code on XC-30trial. We show the test result our simulation of no turbulence and no collision to verify MHD in ENZO. Fig.1 shows slice-plot of two non-colliding clouds are collapsing in case of the uniform grid simulation. The images on left and right are cases of the weak and strong uniform initial x-direction oriented magnetic fields respectively. Difference between weak and strong magnetic cases can clearly been seen. For example in the strong magnetic field case the gas flow is highly restricted across the magnetic field line.

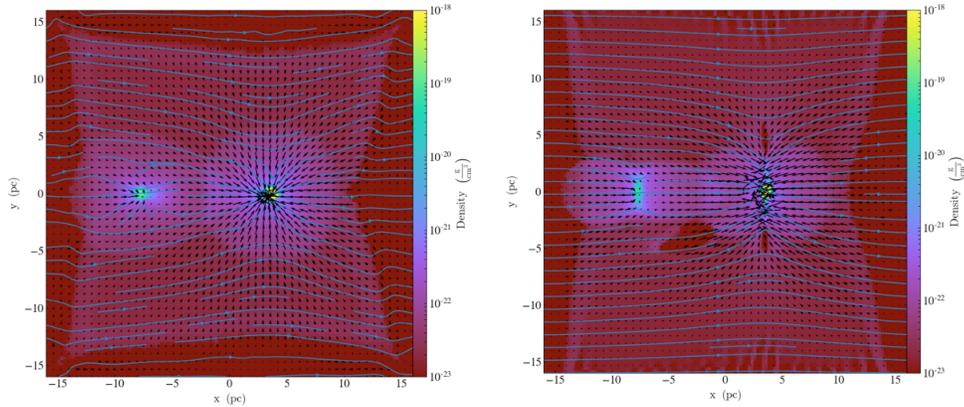


Fig.1

Next we will proceed to simulations of CCCs including turbulence and magnetic fields in colliding clouds in the next term.

We found from our test simulations of such case in this term that a highly spatial resolution simulation is needed to get well resolved cores with high density and strong magnetic fields. Based on the future simulations in the next term, we will study effects of magnetic fields on property of CMF formed in CCCs and increase our understanding about possible connection between CCCs and high mass star formation and about CMF and IMF.