

Clumps With Self Contained Magnetic Field And Their Interaction With Shocks

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Abstract

Problems involving magnetized clouds and clumps, especially their interaction with shocks are common in astrophysical environments and have been a topic of research in the past decade. Many previous numerical studies have focused on the problem of clumps immersed in a globally uniform magnetic field subject to a oncoming shock. However, realistic clumps may have tangled magnetic field self contained within them. This magnetic field will be compressed by the shock and its energy spectrum and spatial structure may affect the evolution of the clump during the shock encounter. Using our parallel MHD code AstroBEAR, we set up an initial state with magnetized clumps of different contained magnetic field configurations, study their interaction with shocks, and compare them to the previous studied global uniform field scenario.