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ISM Turbulence and Magnetic Fields as regulators of Star Formation

Star formation occurs in dense, turbulent and magnetized regions of the ISM. Gravity, turbulence and magnetic fields play different roles at different scales of the structure formation and collapse process. Both the mass distribution of cores and the formation efficiency/rate are thought to be dependent on these ingredients. Theories have been exploited for each particular process an specific scales, but a complete understanding of a complex, multiscale environment is yet to be provided. He we provide results of a number of high resolution numerical simulations of MHD turbulent ISM under effects of self-gravity. We follow the evolution of initially gravitationally unbound clouds, the structure formation as different levels of turbulence are present and the consequential collapse of these structures as they became individually gravitationally unstable. Different levels of magnetization are also studied. The core mass functions and the formation efficiency are obtained. They are shown to be dependent on the turbulent Mach number, but seem insensitive to the level of magnetization.

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