Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

Three dimensional Simulations of Self-Organization in a Driven Dissipative Plasma System DASTGEER SHAIKH, B. DASGUPTA, Q. HU, G.P. ZANK, The University of Alabama in Huntsville, — We perform a fully self-consistent 3-D numerical simulation for a compressible, driven dissipative magneto-plasma driven by large-scale perturbations, that contain a fairly broader spectrum of characteristic modes, ranging from largest scales to intermediate scales and down to the smallest scales, where the energy of the system are dissipated by collisional (Ohmic) and viscous dissipations. Additionally, our simulation includes nonlinear interactions amongst a wide range of ?uctuations that are initialized with random spectral amplitudes, leading to the cascade of spectral energy in the inertial range spectrum, and takes into account large scale as well as small scale perturbation that may have been induced by the background plasma ?uctuations, also the non adiabatic exchange of energy leading to the migration of energy from the energy containing modes or randomly injected energy driven by perturbations and further dissipated by the smaller scales. Besides demonstrating the comparative decays of total energy and dissipation rate of energy, our results show the existence of a perpendicular component of current, thus clearly con?rming that the self-organized state is non-force free.

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Date submitted: 17 Jul 2009 Electronic form version 1.4