3D EVOLUTION OF INTERPOSED COMPRESSIBLE MAGNETOFLUIDS

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The evolution of a massive layer suspended in magnetic and gravitational fields is examined. In this paper some effects of the influence of velocity fields on the linear stability properties of the magnetized suspended layer are examined. A fully compressible, three-dimensional analysis of the layer is described. The relevant equations are derived and then solved by the MagnetoHydroDynamic SPEctral Compressible Linear Stability (MHDSPECLS) algorithm, a Chebyshev collocation code [R. B. Dahlburg and G. Einaudi, *Phys. Plasmas* **7**, 1356 (2000)]. The code allows for the computation of magnetic and thermal effects. A most unstable positively skewed symmetric mode is found. It is found that, for both shearing and jet motions, the growth rates of these unstable modes modes decrease. Further data is presented on the influence of the streamwise and spanwise wavenumbers, and also the Alfvén, Mach and Froude numbers. The variations in stability are shown to be linked to the morphology of the perturbations. The objective of this study is to explore the possibility of maintaining a dusty plasma layer steady in the inertial frame long enough to artificially enhance drag on orbital debris to force rapid reentry.