Service d'Astrophysique
SÉMINAIRE

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Jeudi 5 novembre 11h00

CEA Saclay, Orme des Merisiers Bât 709, salle 3 (Rdc)

THREE NEW MHD INSTABILITIES IN WEAKLY COLLISIONAL PLASMAS

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Many astrophysical plasmas are so dilute that the mean free path of particles is long compared to their gyro-radius, and is comparable to macroscopic length scales in the system. In this regime, the simplest description of the plasma dynamics is given by the equations of MHD, supplemented with anisotropic transport coefficients for heat (conduction) and momentum (viscosity). Remarkably, this produces qualitative changes in the dynamics. For example, in this regime the convective stability criterion depends only on the temperature (rather than the entropy) gradient. The physics of this, and two other MHD instabilities, will be described, with application to the X-ray emitting plasma in clusters of galaxies, and hot accretion flows onto compact objects

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