



CEA - Saclay 91191 Gif-sur-yvette Cedex
Service de Physique de l'Etat Condensé - UMR 3680

SÉMINAIRE

Mercredi 11 mai 2016 à 11h15

Orme des Merisiers SPEC, Salle Itzykson, Bât.774

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Critical Transitions in Thin Layer Turbulence

Turbulence in the presence of rotation, in confined geometries or in the presence of magnetic fields shows a bidirectional cascade: energy is transferred simultaneously to small scales (forward) and to large scales (inverse). The amplitudes of the two cascades vary based on a control parameter. It is crucial to quantify these amplitudes for many applications in atmospheric physics, astrophysics and engineering as they control both the formation of large scale structures (like hurricanes) and the rate energy is dissipated in the small scales. I will argue that in some cases the transition from forward to inverse cascades or visa versa has a critical behavior: as the control parameter is varied a critical value is met for which the inverse/forward cascade becomes exactly zero similar to a second order phase transition. This behavior will be demonstrated in simple models of two-dimensional turbulence. The generality of these results will be discussed.

A coffee break will be served at 11h00. The seminar will be given in English.

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