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Colloquium of the Physics Department of ENS

Mardi 4 Fevrier 2020, 17 :15
DPT-PHYS-ENS, Conf IV (E244) - Département de Physique de l'ENS 24 rue Lhomond 75005 PARIS
Domaines : physics

Titre : *Dynamics of mixed turbulent / stably-stratified fluids : from nuclear safety to atmospheric and stellar circulation*

Orateur : **Michael Lebars (Institut de recherche sur les phénomènes hors équilibre (IRPHE), Marseille)**

Résumé : *The organization of fluid systems into a turbulent layer adjacent to a stably stratified one is common both in Nature (atmospheres, stellar interiors, ...) and in the industry (e.g. nuclear power plant in accidental configurations). Understanding the exchanges of mass and momentum at the interface and the coupled dynamics of such systems is challenging, because of the large range of involved time- and length-scales, from the rapid small-scale turbulence associated to the excitation of propagating waves, to their longterm non-linear interactions associated to large-scale circulations. I will present the results of various experimental investigations of idealised configurations, complemented by numerical simulations : a turbulent jet impinging a density interface, the convection in water around 4 degree Celsius, etc. Applications in meteorology, stellar evolution, and nuclear safety, will be addressed.*