



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

SÉMINAIRE

Mercredi 25 janvier 2017 à 11h15

Orme des Merisiers SPEC, Salle Itzykson, Bât.774

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Correlation functions in homogeneous and isotropic turbulence

Turbulence is an ubiquitous phenomenon in natural and industrial flows. Yet, calculating its statistical properties, and in particular what is generically called intermittency effects, that is violations of standard scale invariance, remains an unsolved issue. In this talk, I will focus on isotropic and homogeneous turbulence in three-dimensional incompressible flows. I will explain how one can derive an exact asymptotic (i.e. at large wave-numbers) expression for the full space-time dependent two-point correlation function of the turbulent flow, using a field-theoretic approach, based on Non-Perturbative (or Functional) Renormalisation Group. I will discuss its properties and show that it encompasses some intermittency effects.

These predictions are compared to results from direct numerical simulation of Navier-Stokes equations, showing a remarkable agreement. I will the present some generalization to higher order correlation functions.

LC, B. Delamotte, N. Wschebor, PRE 91 (2015) LC, B. Delamotte, N. Wschebor, PRE 93 (2016) LC, V. Rossetto, N. Wschebor, G. Balarac, arXiv:1607.03098 (2016)

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