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Università di Roma Tor Vergata
Dipartimento di Fisica



Seminar

Friday, 17 February 2017 - h. 14:30

Sala Struttura della Materia (Dipartimento di Fisica)

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“Energy dissipation in rotating turbulence”

Abstract

Rapidly rotating turbulence is present in many different contexts, ranging from industrial flows to atmospheric and oceanic motions. In these situations, the turbulent energy dissipation rate is a key quantity: engineers want to optimize the power efficiency, while oceanographers and climate scientists want to parametrize turbulent energy dissipation in the ocean-atmosphere coupled system. Finally, the dissipated power is the central quantity of the Obukhov-Kolmogorov theory of turbulence.

I will present two experiments aimed at studying the influence of global rotation on the energy dissipation rate: does the turbulent flow present a dissipation anomaly, like 3D turbulence, or does it dissipate energy at a laminar rate, like 2D turbulent flows? How is the drag coefficient of a moving object affected by global rotation?

This experimental work is supplemented by recent theoretical progress proving that a large class of rotating flows becomes exactly two-dimensional at low Rossby number, with no energy dissipation anomaly.

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