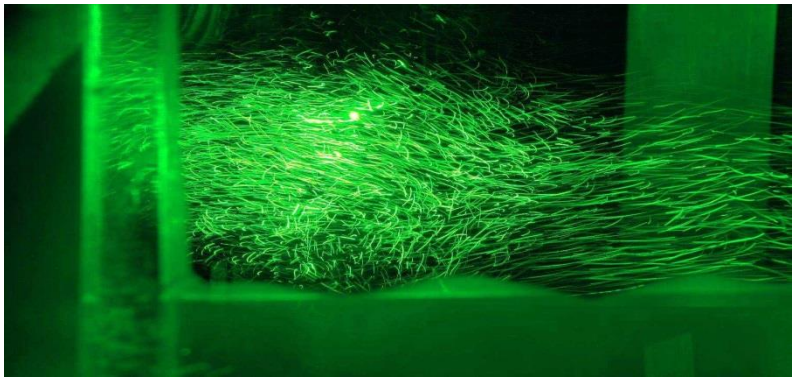
OIST SEMINAR

Date: February 23, 2015 (Mon)
Time: 11:00 am – 12:00 pm
Venue: **B503** Seminar room
Speaker: Anna Frishman
(Weizmann Institute of Science, Israel)

Pair dispersion in turbulence:
The permanent and the irreversible



Abstract:

Particle dispersion in turbulent flows in a key element of many processes in the ocean and atmosphere, as well as in the industry. From a fundamental viewpoint, the perspective of a fluid particle moving in the flow profices a way to study turbulence itself. This approach, the Lagrangian picture, is contrashed to the Eulerian picture where the location of the measuring probe is fixed in space. I will describe an analytic formalism that establishes a bridge between single-time Eulerian and long-time Lagrangian pictures of turbulent flows. The formalism gives rise to new exact relations that express the short-time dispersion of fluid particles via the single-time velocity correlation functions. In particular, I will discuss the imprint of time irreversibility on pair dispersion in the inertial range and the existence of a conservation law of turbulent dispersion at small scales. The latter is true even in non stationary turbulence and may help test the isotropy, incompressibility and dimensionality of flows in laboratory and computer experiments.

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