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10 rue Vauquelin, 75231 Paris Cedex 05



Séminaire PMMH

Salle de réunion du PMMH, Campus Jussieu, Bâtiment Cassan A, 1^{er} étage

Vendredi 6 juillet 2018, 11h00-12h00

Federico Toschi

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Turbulence and plastic events in fluid emulsions

Emulsions made of immiscible fluids can display a very rich phenomenology. In this talk we will discuss how to numerically model fluid emulsions and we will present results from recent numerical studies. The numerical model that we employ is based on the multi-component Lattice Boltzmann method as it provides a good compromise between accuracy and computational efficiency. Emulsions made of immiscible fluids are generally not stable as the immiscible fluid components tend to phase separate. Here we discuss the implications on the dynamics of two different stabilisation mechanisms : turbulent stirring and disjoining pressure. In turbulent emulsions a large-scale forcing provides the energy to breakup fluid interfaces keeping the fluid components mixed and arresting the coarsening dynamics. In presence of surface stabilisers, such as surfactants, droplets do not easily coalesce when in contact with each other. This provides elasticity to the emulsions that can display a rich phenomenology in-between those of an elastic solid and those of a fluid. Below a critical stress (yield stress) the emulsion can be used as a proxy to study the physics of avalanches and the phenomenology of earthquakes. Statistical analysis reveals scaling laws very close to the phenomenological Gutenberg-Richter law and Omori law for earthquakes.

Attention : pas de séminaire les semaines à venir : bonnes vacances !

Programme des séminaires : www.pmmh.espci.fr, onglet *Séminaires PMMH*

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