Date: **April 1**

Time: **03:00 PM**

Location: **Shaffer 101**

Speaker: **Dr. Jérémie Bec**
Observatoire de la Côte d'Azur, Nice

Title: **"Aggregation of inertial particles in turbulent flows"**

Abstract

The clustering properties of inertial (finite-size) particle suspensions in incompressible turbulent flow play an essential role in the understanding of many natural and industrial problems, such as optimization of combustion processes, the growth of droplets in turbulent clouds, the formation of planetesimals of the Solar System, co-existence between several species of plankton...

We consider the motion of collisionless inertial particles embedded in a d-dimensional smooth incompressible flow. This system is governed by a 2d-dimensional dissipative dynamical system in the position-velocity phase space, so that the phase-space density becomes singular in the statistical steady state. I will show that there exists a threshold in Stokes number (non-dimensional viscous friction time) for the condensation of the particles onto dynamical fractal clusters in the physical space. This result was confirmed by numerical studies which gave also some hints on the scaling properties of the multifractal distribution for the mass of particles.