



ESPCI
Laboratoire PMMH
10 rue Vauquelin, 75231 Paris Cedex 05



Séminaire PMMH

Bureau d'Études

Vendredi 30 juin 2017, 11h00-12h00

Pierre Rognon

Particles and Grains Lab. - School of Civil Engineering - University of Sidney

Rheology and mixing properties of dense granular flows

Granular materials like sand, rice and snow are composed of many grains interacting with each other. Predicting their ability to flow and to mix is key to a number of applications in geophysics, including snow avalanche and landslide hazard mitigation, and to many industrial processes. However, granular flows exhibit complex behaviours that have challenged physicists and engineers for decades. Can we predict an effective viscosity for dense granular flow? Can we predict how grains mix within a sheared granular layer? These two questions will be the focus of this talk. The discussion will be based on a set of experimental and numerical observations revealing some unusual rheological and mixing properties of granular matter. We will seek to rationalize these properties by analysing the internal kinematic of granular sheared layer, and evidencing the formation of large, transient clusters of grains moving like rigid bodies.