



## **How does a granular avalanche flow?**

**B. Andreotti**

PMMH, ESPCI Univ. P7, Paris, France

It is of strong interest, in order to investigate geophysical granular flows such as pyroclastic flows or debris avalanches, to analyse laboratory scale experiments. Along this line, we will review the results obtained on dense granular flows in the last decade. We will show why standard rheometers cannot be used for granular matter and how they can be replaced by key experiments allowing indirectly to determine the rheology. We will discuss the local rheology found above the jamming transition separating flowing grains from static ones. In particular, we will show how the main properties can be recovered in a mean field theory. We will discuss the proofs of failure of this rheology close to the jamming transition and the contemporary lines of thought to address a full description of the mechanics of granular matter.