108th MSS-Seminar
Thursday, April 27th, 16:00
Nägelsbachstr. 49b

Hydrodynamic modeling of granular materials

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Granular materials are composed by an ensemble of macroscopic solid particles with dissipative interaction upon the collision. This kind of material is omnipresent in our daily lives, therefore, a proper knowledge of its behavior is so important. Due to the dissipative nature of granular materials there are different interesting phenomena not observed in other kind of fluids. In this talk we sill show some interesting results that we obtained simulating different phenomena like: pattern formation appearing under the action of vertical vibration plate and gravity, clustering in a force-free granular system after small initial density fluctuations and collapse of a cloud of particles under the action of gravity. To do these simulations, we use a hydrodynamic model for rapid granular flow capable to deal with sharp profiles and discontinuities that arise in the hydrodynamic fields (density, velocity and granular temperature) as a direct consequence of the inelastic collisions.