37th MSS-Seminar

Wednesday, July 4th, 15:30, Nägelsbachstr. 49b

MSS

Vertically vibrated granular media (A) Flux measurement in compartmentalized granular gases and (B) Leidenfrost effect

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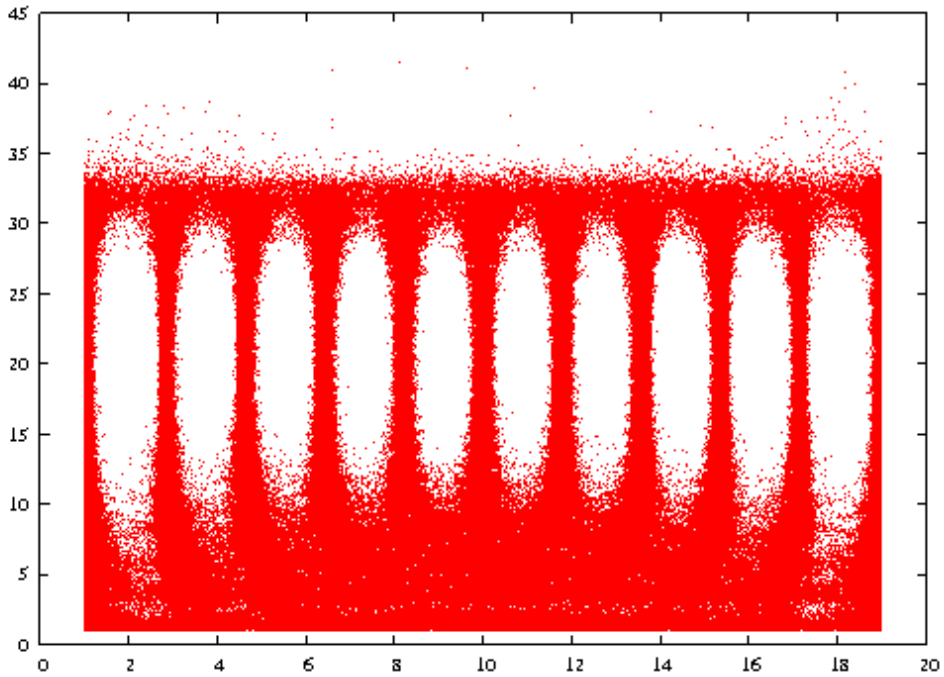

Flux models play a crucial role in understanding clustering behavior of compartmentalized granular gases. A method is proposed to measure the flux of monodisperse and bidisperse granular gases in an equivalent compartmentalized system by MD simulation. The simulation results are useful for quantitative comparison with an existing flux model that presents essential features of the oscillatory clustering behavior in a two compartment system. By some minor improvement to one of the models we show that there is some quantitative comparison between predictions of the model and our simulation results.

Leidenfrost phenomenon is observed in granular media vibrated vertically under gravity. In this phenomenon a solid phase floats on a ``hot'' gaseous phase. It is observed that under sufficiently high external excitation the solid phase in the phenomenon shows oscillations with dominant frequency. The dependence of the oscillations on the control parameters, namely the number of particles, external excitation are studied by keeping the amplitude of external excitation and inelasticity of the collisions unchanged. A simple mechanical piston model is proposed to explain the phenomenon. The model correctly predicts the dominant frequency of oscillation.