



ICTS Thesis Synopsis Seminar

Title : Mechanics of Immersed Collision and Granular Systems

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Date : Tuesday, June 25, 2019

Time : 5:00 PM

Venue : Emmy Noether Seminar Room, ICTS Campus, Bangalore

Abstract : As a sphere falling under gravity through a viscous medium approaches the bottom wall, there is a large increase in the fluid pressure between the sphere and the wall. At low Stokes number, the sphere slowly settles on the bottom wall, but above a threshold value, the sphere bounces without touching the wall. In this talk, I will show, using electrical measurements, that even near this threshold, bouncing involves direct mechanical contact with the bottom plate. To understand this difference from existing theory, I will present an analytical study which goes beyond lubrication theory by including unsteady terms and inertial terms. To further explore this difference, we measure the dynamics of a sphere preceding the collision. I will also present a numerical study about pressure variation in the bulk of a 2D granular column. Finally, I will present an experimental study of granular packing in an inclined 2D immersed system.