

ICTS Seminar

Title : Mechanics of Immersed Collision and Granular Systems

Speaker : Sumit Kumar Birwa, ICTS-TIFR, Bangalore

Date : Monday, November 11, 2019

Time : 04:00 PM

Venue : Madhava Lecture Hall, ICTS Campus, Bangalore

Abstract : This talk will offer new insights into the immersed collision of a sphere with a wall. In this talk, I will show, using electrical measurements that a bouncing sphere makes direct mechanical contact with the bottom plate. This is in contradiction with the elastohydrodynamic theory. To understand this difference, I will present an analytical study that goes beyond the lubrication theory by accounting for the unsteady terms and inertial terms that were neglected in the lubrication theory. To further explore this difference, we conducted experiments to measure optically the dynamics of a sphere up to a distance of a few micrometers preceding the normal collision. In the latter part of my talk, I will discuss the stress variation in the bulk of a 2D granular column, filled with monodisperse frictional spheres, using numerical simulations. Finally, I will present an experimental study of granular packing in an inclined 2D immersed system.