TIFR Centre for Interdisciplinary Sciences
21 Brundavan Colony, Narsingi, Hyderabad 500075

Students' Annual Seminar

The collision of a sphere with a plane in a viscous medium

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We discuss the experimental analysis of the normal collision process between a plane and a sphere, for a range of Stokes numbers. Our experiment tests for direct metallic conductive contact between the colliding bodies. We find that contact does occur for a finite fraction of the collisions above a critical Stokes number. However, an analysis of the post-collision flight indicates at larger Stokes number, fluid dissipation dominates the contact dynamics and the solid-on-solid contact only plays a minor role. At lower Stokes number, both the dissipation mechanisms become comparable. Solving of lubrication equation for a hard smooth sphere shows that, contrary to the popular assumption, hard contact does occur during collision.

Tuesday, Dec 15th 2015

4:00 PM (Tea/Coffee at 3:45 PM)

Seminar Hall, TCIS