ICTS Fluid Dynamics Seminar

Title : Forces and flows in soft systems

Speaker : Bhargav Rallabandi (University of California, Riverside, USA)

Date : Friday, 13 September 2024

Time : 11:30 AM (IST)

Abstract : Interactions between fluid flow and elastic structures are important in natural and engineered systems. In this talk I will discuss a particular class of these systems, namely those involving soft, wet surfaces near contact. First, I will discuss the motion of suspended particles near elastic interfaces and substrates. The interplay between flow and deformation leads to an elasto-hydrodynamic lift force on the particle. This force resembles inertial lift but occurs instead due to elasticity. I will then focus on soft objects sliding while being pressed into each other by an applied normal load. We will discuss the influence of surface roughness on the effective coefficient of friction of the lubricated elastic contact. Counter-intuitively, we will see that the friction depends non-monotonically on the roughness amplitude. Throughout, I will connect these phenomena with applications in the non-contact microrheometry of soft materials, tribology, and soft robotics.

Venue : Emmy Noether Seminar Room
Zoom Link: https://icts-res-in.zoom.us/j/97235541986?pwd=Os0X0lZ4ivDi9arcxSDAbsPWc7MpxT.1
Meeting ID: 972 3554 1986
Passcode: 202030