ICTS | INTERNATIONAL CENTRE for THEORETICAL SCIENCES

TATA INSTITUTE OF FUNDAMENTAL RESEARCH

ICTS Fluid Seminar (HYBRID)

Title : Interface Evolution of Fluids at Nanoscale: Zooming in on Droplets

Speaker : Sreehari Perumanath (University of Warwick)

Date : Friday, 1st December 2023

Time : 11:00 AM (IST)

Abstract : From water splashes to cloud formation, processes involving droplets are ubiquitous. Yet we know very little about their initial dynamics when two droplets coalesce or when a droplet wets a solid. Both coalescence and wetting are surface tension-driven processes where a liquid bridge grows in time. In the conventional fluid mechanics framework, as time is rolled back to the very beginning of these processes, one should observe singularities in bulk-flow parameters. In this talk, I will walk you through the mechanisms by which nature circumvents such singularities. Large scale molecular simulations reveal that, mediated by intermolecular attraction, the confronting interfaces of coalescing droplets 'zip together' in the initial stages until the bridge grows to a thermal-capillary length scale. Only after this stage does the dynamics follow the conventional framework. Towards the end, I will also discuss how coalescence-induced jumping of droplets from superhydrophobic surfaces facilitates heat transfer and their self-cleaning.

Venue : Offline: Chern Lecture Hall

Online: Please click on the below link to join the seminar

https://zoom.us/j/93629515091?pwd=eVJkcEc0YUQxR2djV2l6TXozVUl3dz09
Meeting ID: 936 2951 5091
Passcode: 690068

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