ICTS Fluid Dynamics Seminar

Title : Phase-Change at Scale: Evaporating Drunk Droplets, Pool-to-Film Boiling & Orbiting Particles

Speaker : Prashant Valluri (The University of Edinburgh, United Kingdom)

Date : Friday, 09 January 2026

Time : 11:30 AM (IST)

Abstract : Phase-change flows are already pretty complex and more so when these happen at scale. In this talk, I will focus on two types of phase-change: evaporation of droplets and bubble dynamics during boiling with added complexities. Complexities include contamination with alcohol or anything more volatile and substrate wettabilities. Also, in industry and in real life – droplets or bubbles are never alone, they are in large populations. Both population and contaminants like alcohol can have consequences on phase-change. My talk will have three parts: Firstly, I will focus on phase-change of binary mixtures using three-pronged approach (theory, experiment, and direct numerical simulations) to unravel the physics when this happens at scale. Secondly, I will use boiling as example to show how very large scale direct numerical simulations help understand the role of wettability on heat-transfer coefficients. Furthermore, particles are integral to many phase-change environments. Thirdly, I will also show how particles in phase-change systems can cause chaos and remixing!

Venue : Emmy Noether Seminar Room
Zoom Link: https://icts-res-in.zoom.us/j/98838161562?pwd=AGFLTLZt4XESFssm4ayS6Zsielstid.1
Meeting ID: 988 3816 1562
Passcode: 302010