

ICTS Fluid Dynamics seminar

Title : On the role of particle-flow interactions in cloud microphysics

Speaker : Anubhab Roy (Indian Institute of Technology Madras)

Date : Thursday, 22nd February 2024

Time : 11:30 AM (IST)

Abstract : The collision of particles sedimenting in a flow field is relevant to studying droplet growth in warm clouds. The evolution of the drop size distribution in clouds depends on the collision rate between the drops, where the combined effects of background flow, gravity, and interparticle interactions drive the collision dynamics. A study of this problem might explain the condensation-coalescence bottleneck (or the ‘size gap’ of 15 - 40 microns droplets) in warm rain formation, where neither condensation nor gravitational collision alone is the dominant growth mechanism. A major source of uncertainty in predicting precipitation formation is the absence of reliable theoretical predictions for collision efficiency. Since coalescence requires molecular contact between two drops, it is sensitive to the detailed near-field interaction physics between the colliding drops. In this talk I will discuss how non-continuum effects primarily allow for finite-time collisions for drop sizes $a > 5$ microns at atmospheric conditions.

Venue : Offline: Chern Lecture Hall

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

<https://icts-res-in.zoom.us/j/99470964521?pwd=cmJlcnEyVW4vODdHMVZhUjRzcmtGQT09>

Meeting ID: 994 7096 4521

Passcode: 223322