



ICTS Seminar (HYBRID)

Title : Bubbles generate their own kind of turbulence

Speaker : Immanuel Paul (Newcastle University, UK)

Date : Wednesday, 14th December 2023

Time : 11:00 AM (IST)

Abstract : Bubbly flows play a major role in many processing industries. In this study, we analyse bubble-induced turbulence (BIT) of low void fraction to understand whether its dynamics are similar to the classical homogeneous isotropic turbulence (HIT). Since only the small scales of turbulence exhibit universal characteristics, we focus on the fine-scale dynamics of BIT. We show that bubbles generate their own kind of turbulence where the inertial dynamics dominate the fine-scale turbulence. The reason for this anomalous behaviour is noted to be the weak action of pressure dynamics whose classical role is to oppose the inertial dynamics. The ramification of this study is that we now have turbulence which tends to generate steep gradients thanks to its inertial dynamics dominance. We are currently exploring this novel aspect for using bubbly systems as efficient mixers.

Venue : Offline: Emmy Noether Seminar Room

Online: <https://icts-res-in.zoom.us/j/91000109963?pwd=dmgwVTB1RlBwRHpVZHB0eDExY3dJZz09>

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