ICTS Fluid Dynamics Seminar

Title : "Turbulent" flows at two Reynolds number extremes

Speaker : Kenneth S. Breuer (Brown University, USA)

Date : Wednesday, 21 January 2026

Time : 10:00 AM (IST)

Abstract : My lab focuses on experimental fluid mechanics and in this presentation I will talk about two distinct projects in the lab at two very distinct Reynolds numbers.
The first flow is at at the microscale in a Kinesin-Microtubule active gel, first developed in the Dogic group at UCSB. Here the active fluid exhibits a transition from a disordered "turbulent" motion to one with a coherent directional flow. Our measurements characterize the changes that occur due to spatial confinement of the system; we also measure the structure of the velocity profile generated when the system transitions to a directional self-driven flow.
In the second problem, we move to high Reynolds number, and examine the nonlinear fluid-driven instability of a rigid plate supported by a torsional spring and exposed to a free stream velocity, Using extensions to the Force Moment Partitioning Method, we can quantify the relative roles of coherent and turbulent velocities on the fluid forces that drive the instability, and how they depend on the non-dimensional Cauchy number, the Mass ratio, and the plate geometry.

Venue : Emmy Noether Seminar Room
Zoom Link: https://icts-res-in.zoom.us/j/93276117969?pwd=wpHGORZyIjb9j1lRHyqsvB9eKRNTnm.1
Meeting ID: 932 7611 7969
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