

## ICTS Synopsis Seminar

**Title** : Transport properties and hydrodynamic behavior of classical many-body systems

**Speaker** : Umesh Kumar (ICTS-TIFR, Bengaluru)

**Date** : Wednesday, 21 January 2026

**Time** : 02:30 PM (IST)

**Abstract** : This seminar will present my PhD research on the interplay between nonlinear dynamics and hydrodynamic transport in classical many-body systems. The work comprises three studies: (i) the emergence of multiple attractors and diffusive transport in a periodically driven Klein–Gordon chain, (ii) the dynamics of an impurity particle in a zero-temperature hard-sphere gas, and (iii) transport properties of non-acoustic chains with bending energy and their description within the framework of fluctuating hydrodynamics. Together, these studies aim to elucidate how microscopic nonlinear dynamics give rise to emergent transport behavior far from equilibrium.

**Venue** : Nambu Discussion Room (Left)

Zoom link: <https://icts-res-in.zoom.us/j/93485914134?pwd=cMletXMTVoUODD0nQ5jNaGB01ytga9.1>

Meeting ID: 934 8591 4134

Passcode: 210126