



**S N BOSE NATIONAL CENTRE
FOR BASIC SCIENCES**

Block JD, Sector III, Salt Lake, Kolkata 700 106

DEPARTMENTAL SEMINAR

Physics of Complex Systems

05th September, 2022

4.00 PM

ONLINE / FERMION

SPEAKER



**Dr. ANUPAM KUNDU, Associate professor,
International Centre for Theoretical Sciences, Bangalore**

TITLE OF THE TALK

Hydrodynamics and crossover from diffusive to anomalous transport

ABSTRACT

Recently developed NFHD has been quite successful in describing anomalous transport in low-dimensional systems. This theory is based on extending the linear fluctuating hydrodynamics theory to non-linear order at the mesoscopic scale. The structure of the theory suggests the possibility of crossover from diffusive to anomalous transport as the size of the system is increased. In this talk, I will describe such a crossover in a stochastic system with two conserved quantities. Starting from a microscopic description, I will demonstrate how one can establish super-diffusive evolution with a diffusive correction. Our derivation is intuitive and is based on estimating the correction to the local-equilibrium distribution which reveals the importance and significance of the various approximations that go into the derivation of hydrodynamics on macroscopic scales. Moreover, the derivation discloses when and why one is required to invoke a stochastic HD theory at mesoscopic scales.

HOST FACULTY

Dr. Urna Basu

DEPT. OF PHYSICS OF COMPLEX SYSTEMS
