

# Physics Seminar

**Title:** Critical and Coarsening Dynamics in Active Matters with Aligning Interactions

**Speaker:** Prof. Subir K. Das, Theoretical Sciences Unit, JNCASR, Bangalore



**Abstract:**

Various aspects of *dynamic critical phenomena* are well-studied in passive matter systems. There, the experimental findings concerning the behavior of collective diffusivities and viscosities were understood via sophisticated theoretical approaches like the mode-coupling and renormalization group theories. These were also confirmed via atomistic simulations. While phase transitions and associated universality have also become a domain of much interest within the active matter community, study of transport in related systems did receive only discrete attentions. This is despite the fact that phase transitions in these systems are driven by dynamical rules. In the first part of the talk, I will discuss simulation results on transport coefficient(s) in a class of active matter systems where the rules encourage the constituents to align their directions of motion. Time permitting, in the second part, for similar systems, I will discuss results on coarsening dynamics, following quenches of disordered configurations to the ordered region of the phase diagram. In this part the focus will be to identify *Mpemba effect*, that relates to the query: When should the farthest reach the earliest?

**Date:** October 24, 2024

**Time:** 11 AM

**Venue:** Seminar room, Department of Physics, IIT(BHU)