



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

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

DEPARTMENTAL SEMINAR

Physics of Complex Systems

03rd January, 2024

3.00 PM

ONLINE / FERMION

SPEAKER

**Prof. Sanjib Sabhapandit,
Professor, Theoretical Physics,
Raman Research Institute**

TITLE OF THE TALK

Novel features of direction reversing active Brownian particle

ABSTRACT

Active Brownian motion with intermittent direction reversals is common in a class of bacteria like *Myxococcus xanthus* and *Pseudomonas putida*. In the absence of any external potential for such a motion in two dimensions, the presence of the two-time scales set by the rotational diffusion constant and the reversal rate gives rise to four dynamical regimes showing distinct behaviors. For a "direction reversing active Brownian particle" in a harmonic potential, due to the interplay between the rotational diffusion constant, the reversal rate, and the trap strength, the steady state distribution shows four different types of shapes. This talk will discuss the novel features that arise in an active particle model due to the interplay between multiple timescales.

HOST FACULTY

Dr. Urna Basu, Assistant Professor
DEPT. OF PHYSICS OF COMPLEX SYSTEMS
