



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

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

## **DEPARTMENTAL SEMINAR**

# **Physics of Complex Systems**

**4<sup>th</sup> June, 2024**

**3.00 PM**

**ONLINE / FERMION**

### **SPEAKER**

**Dr. Ashif Akram,  
Postdoctoral Fellow, Department of Physics,  
Kansas State University, Manhattan**

### **TITLE OF THE TALK**

*A minimalist model for bio-molecular condensates*

### **ABSTRACT**

Membraneless organelles are mysterious constituents of cell. They are membrane-less, yet physically separated. Notwithstanding their different bio-chemical properties, it's quite plausible that they are immiscible (i.e., they don't mix) not due to some underlying specific chemical properties but due to their physical characteristics. Liquid-liquid phase separation is a framework in which we can study these condensates. There are polymer-based models which explain a wide variety of such condensates. These models rely on average properties of polymer networks and don't depend on specific details of polymer structures. However, some classes of condensates seem to behave differently. For a specific type of condensates, the basic polymer chain can be broadly modeled as sticker-pacer type of chain.

In these classes of condensates, spacer length (the length of chain between two consecutive stickers) of the chain may play a role in the formation of these condensates. We propose a minimalist model which bridges these different classes of condensates. Our model is still in progress but offers an interesting insight into the average properties of these condensates.

### **HOST FACULTY**

**Prof. Jaydeb Chakrabarti,  
Senior Professor, Dept. of Physics of Complex Systems**

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