



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

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

DEPARTMENTAL SEMINAR

Department of Astrophysics and High Energy Physics

27th June, 2023

4.00 PM

ONLINE/ FERMION

SPEAKER

**Dr. Debashis Saha,
Assistant Professor, IISER TVM**

TITLE OF THE TALK

**Quantum correlations that are incompatible with
absoluteness of measurement**

ABSTRACT

We will first discuss the tension between the two dynamics of quantum theory that leads to inconsistency in empirical probabilities between two observers in the Wigner's Friend thought experiment. To avoid such inconsistent predictions in quantum theory, we will consider two distinct perspectives - "absoluteness of measurement (AoM)" and "non-absoluteness of measurement (NoM)" - about the objective status of the measurement process. We will discuss why the set of probabilities obtainable for NoM is strictly larger than for AoM. Remarkably, in the scenario with spatially separated observers, we will see a strict hierarchy among the sets of probabilities observed in the following three theories: classical or local realist, quantum theory with AoM, and quantum theory with NoM. Finally, we will briefly talk about different interpretations of quantum theory based on the perceptions of AoM/NoM and whether they lead to consistent predictions. The talk will be based on PRA 107, 022226 (2023).

HOST FACULTY

Dr. Archan S Majumdar, Senior Professor
Dept. of ASTROPHYSICS AND HIGH ENERGY PHYSICS
