



**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

6th July, 2023

3.00 PM

ONLINE/ FERMION

SPEAKER



**Dr. Sujoy Kr. Modak,
Assistant Professor of Physics,
Universidad de Colima**

TITLE OF THE TALK

Revisiting the enigmatic early universe with T-vacuum state

ABSTRACT

Inflationary cosmology, although very successful explaining the universe as we observe today, is not completely satisfactory. I will point out a couple of shortcomings in the existing explanation of generation of primordial density perturbations which are interpreted as the "seeds of structure formation". After stressing some problems associated with the usual choice of an all homogeneous and isotropic quantum vacuum state (Bunch-Davies vacuum), a complete guide will be provided to construct an alternative quantum state which is manifestly inhomogeneous and anisotropic (referred as the T-vacuum). Finally, I shall ponder on the physical implications of this novel vacuum state.

HOST FACULTY

**Prof. Rabin Banerjee, Raja Ramanna Fellow
Dept. of ASTROPHYSICS AND HIGH ENERGY PHYSICS**
