



**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

28th June, 2023

11.30 AM

ONLINE/ FERMION

SPEAKER

**Dr. Chayan Mondal,
Post-Doctoral Fellow, IUCAA, Pune**

TITLE OF THE TALK

AstroSat UV Deep Field - A unique view of the distant galaxies

ABSTRACT

Observation of deep fields provides a unique scope to explore multiple aspects of extragalactic astronomy by effectively detecting the faintest objects in the distant universe. We utilize the unique angular resolution, sensitivity, and field of view of the Ultra-Violet Imaging Telescope onboard AstroSat to perform deep imaging of the GOODS-north field in the FUV and NUV bands reaching a 3σ depth of ~ 27.3 AB mag. Our UV flux measurements of the identified sources complement existing multiband data in the GOODS-N field and enable us to probe properties of galaxies between redshift $z \sim 0$ and 1. We study the internal dust extinction of galaxies by constraining their UV continuum slope (β). Due to the lack of near-UV imaging with a larger field of view and good angular resolution, the β measurement of galaxies between $z \sim 0$ and 1 has not been explored well. We use the UVIT NUV images of the GOODS-N field to fill this ~ 8 Gyr age gap in the global β - z relation. Combining with HST F275W, F336W, and KPNO U bands, the UVIT data helped us to estimate β of 465 galaxies between redshift 0.40 and 0.75. Our β measurements add new data points to the least-explored redshift regime, further reinforcing the gradual reddening of the galaxy UV continuum with cosmic time. I will also discuss how observation of AstroSat UV deep field is unique to constrain the faint end slope of UV Luminosity Function, testing the nature of SFR scaling relation and the IRX law, and finally to search for Lyman Continuum leaking galaxies beyond redshift $z \sim 1$ which are important to understand the cosmic reionization process.

HOST FACULTY

Dr. Ramkrishna Das, Associate Professor

Dept. of ASTROPHYSICS AND HIGH ENERGY PHYSICS
