



**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

10th November, 2022

2.30 PM

ONLINE/ FERMION

SPEAKER



Dr. PRASANTA NAYAK,
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TITLE OF THE TALK

THE FIRST UVIT STUDY OF T-TAURI STARS

ABSTRACT

T-Tauri stars (TTSs) are low-mass pre-main-sequence (PMS) stars. Accreting TTSs are known as Classical TTS (CTTS) and are characterized by strong H-alpha line emission and significant continuum excess emission in the ultra-violet (UV) and infra-red (IR) regions over photospheric values, whereas non-accreting disk-less TTSs are called weak-line TTS (WTTS) as they show weak H-alpha emission. Emission from strong accretion shocks is thought to produce the UV excess in CTTS, whereas comparatively low UV excess in WTTS is due to chromospheric activity. Another defining characteristic of TTSs is that they show variability in line luminosities as well as in UV and optical continuum. The variations in UV line luminosities are also found to be correlated with variations in optical bands. The main source of variability is thought to be the change in accretion rate. The time scales of variability can be as short as a few hours to weeks, months, years, or longer. Though there have been many studies on TTSs at the optical and IR wavelengths, their UV properties are relatively less studied despite the importance of UV photons in disk heating and influencing gas chemistry within the disk. I will present results from multiband photometric and FUV spectroscopic observations of young TTSs in the Taurus molecular cloud and discuss what the UV properties of young stars can tell us about accretion and disk evolution. This will be the first UVIT study of TTSs. I will also discuss the excellent photometric capabilities of UVIT to study accretion variability in young TTSs.

HOST FACULTY

Dr. Ramkrishna Das

Associate Professor : ASTROPHYSICS AND HIGH ENERGY PHYSICS
