



**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

13th January, 2023

3.30 PM

ONLINE/ FERMION

SPEAKER

**Dr. Sayantan Bhattacharya,
Professor, Physics Department,
University of Massachusetts Lowell**

TITLE OF THE TALK

Blue Supergiant X-ray Binaries in The Starburst Galaxy IC 10

ABSTRACT

The nearby dwarf galaxy IC 10 is remarkable for its young stellar population, high density of Wolf-Rayet stars, and massive stars in general. We have used a series of *Chandra *observations to identify 110 X-ray point sources. Correlating our list of x-ray sources with published optical catalogs we found 42 of those having an optical counterpart. Applying an optical color-magnitude selection to isolate blue supergiant (SG) stars, we find 16 matches. The ongoing starburst has produced a rich population of exotic compact-object binaries, including IC 10 X-1 (a Wolf-Rayet and Blackhole high mass x-ray binary) and IC 10 X-2 (a Blue supergiant fast x-ray transient). Blue SG-XRBs include a major class of progenitors of double-degenerate binaries, hence their numbers are an important factor in modeling the rate of gravitational-wave sources. Identifying the nature of each individual source is a slow and difficult process, but ultimately necessary if we are to obtain a complete census of X-ray binaries (XRBs) for comparison with other galaxies, for example, the Magellanic Clouds.

HOST FACULTY

Dr. Ramkrishna Das

Associate Professor: ASTROPHYSICS AND HIGH ENERGY PHYSICS
