



**Seminar, Department of Physical Sciences,
Bose Institute, Kolkata**
**Nuclear Astrophysics with Charge-Exchange Reactions
at FRIB**

Dr. Sk Mustak Ali (Michigan State University, USA)



Abstract: Nuclear astrophysics is a multidisciplinary field at the intersection of nuclear physics and astrophysics. It focuses on studying nuclear processes occurring in diverse astrophysical environments, such as the evolution of massive stars, supernova explosions, and neutron stars. Charge-exchange (CE) reactions represent a crucial class of nuclear reactions that have significantly advanced our understanding of these exotic astrophysical phenomena. In these reactions, a proton from the target nucleus is exchanged with a neutron from the projectile nucleus, or vice versa, resulting in a transfer of charge between the target and the projectile. The advent of rare isotope beam (RIB) facilities worldwide has enabled the investigation of open questions in nuclear astrophysics through measurements of CE reactions employing RIBs and state-of-the-art detectors. I will discuss our recent experimental efforts at the Facility for Rare Isotope Beams (FRIB) in the USA to address several intriguing problems, including electron capture reactions in neutron stars and the phenomenon of giant resonances.

Date/time: January 07, 2025 (Tuesday) at 03:00 PM

Venue: LH1 (Ground floor, UAC, BI)