



**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

02nd August, 2023

4.00 PM

ONLINE/ FERMION

SPEAKER

**Dr. Ananda G. Maity,
PDRA, Networked Quantum Devices Unit,
Okinawa Institute of Science
and Technology, Japan**

TITLE OF THE TALK

Noise can be resource in quantum communication

ABSTRACT

Estimating the information transmission capability of a quantum channel remains one of the fundamental problems in quantum information processing. In contrast to classical channels, the information-carrying capability of quantum channels is contextual. One of the most significant manifestations of this is the superadditivity of the channel capacity: the capacity of two quantum channels used together can be larger than the sum of the individual capacities. In this talk I shall present a one-parameter family of channels for which as the parameter increases its one-way quantum and private capacities increase while its two-way capacities decrease. I shall also exhibit a one-parameter family of states with analogous behavior with respect to the one- and two-way distillable entanglement and secret key. This construction demonstrates that noise is context dependent in quantum communication.

Reference: arXiv:2305.00680 (2023).

HOST FACULTY

**Prof. Archan S Majumdar, Senior Professor
Dept. of ASTROPHYSICS AND HIGH ENERGY PHYSICS**
