S N BOSE NATIONAL CENTRE
FOR BASIC SCIENCES
Block JD, Sector III, Salt Lake, Kolkata 700 106

DEPARTMENTAL SEMINAR

Condensed Matter and Materials Physics

24th April,2023 **2.30 PM** **ONLINE/ FERMION**

SPEAKER

Dr. Kausik Majumdar,
Associate Professor,
Department of Electrical Communication Engineering
Indian Institute of Science, Bangalore

TITLE OF THE TALK

VAN DER WAALS HETEROJUNCTIONS FOR QUANTUM DEVICE APPLICATIONS

ABSTRACT

Van der Waals heterojunctions allow us to manipulate electrons in the atomic scale. In this talk, I shall discuss about probing discrete electron fluctuation in an electrically created quantum dot using such heterojunction. I shall show the application of the same in two interesting quantum devices, namely, (a) quantum random number generator with near-ideal min-entropy, and (b) room-temperature single photon detector @1550 nm with efficiency › 20%. If time permits, I shall show some results from our recent effort on building single photon source using layered materials, demonstrating extremely bright, highly pure sources of single photons around the 800 nm band.

HOST FACULTY

Dr. Atindra Nath Pal, Associate Professor

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