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

DEPARTMENTAL SEMINAR

Physics of Complex Systems

27th October, 2023 **3.00 PM** **FERMION**

SPEAKER
Dr. Amit Mukharjee,
Assistant Professor, I.I.T, Jodhpur

TITLE OF THE TALK

Application of Bell Nonlocality in vehicle routing problems

ABSTRACT

Vehicle routing problems, a comprehensive problem category originated from the seminal Chinese Postman Problem (first investigated by Chinese mathematician Mei-Gu Guan), entail strategic and tactical decision making for efficient scheduling and routing of vehicles. While Chinese postman problem is aimed at finding the minimum length cycle for a single postman, the broader challenges encompass scenarios with multiple postmen.

Making cost-effective decisions in such cases depends on various factors, including vehicle sizes and types, vehicle usage time, road tax variations across routes, and more. In this talk, we will discuss a class of such problems wherein Bell nonlocal correlations provide advantages in optimizing the costs for non-communicating postmen, and thus establish a nascent utilization of quantum entanglement in traffic routing problem.

Our investigation will show promising applications for nonlocal correlations within combinatorial optimization and operational research problems, which otherwise have predominantly been explored within the quantum foundation and quantum information theory community.

HOST FACULTY

Dr. Manik Banik, Associate Professor
DEPT. OF PHYSICS OF COMPLEX SYSTEMS

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