INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE
2A&B, Raja S.C. Mullick Road, Jadavpur, Kolkata-700032, India

Seminar Notice

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School of Physical Sciences

Title:	**Estimating entanglement in large-scale noisy topological codes**
Speaker:	**Amit Kumar Pal, Swansea University, Wales, UK**
Date:	**November 26, 2018 (Monday)**
Time:	**4:15 p.m.**
Venue:	**Physics Seminar Room (C406),3rd Floor, Centenary Building, IACS**
Abstract:	Entanglement is considered as resource in quantum information processing tasks. However, computation of the quantity is often challenging, particularly when the system is of large size, or when it is described by a mixed state -- for example, in the presence of noise. In this talk, we discuss how entanglement, as measured by localizable entanglement, in a noisy topological code of large size, such as the Kitaev's surface code and the color code, can be estimated via an experimentally accessible methodology using entanglement witness operators. We also demonstrate how graph states can be employed in the recipe, and discuss how insight about the distance dependence of entanglement can be obtained. The results are particularly relevant in characterizing the stabilizer states in the case of quantum error correction, where the topological codes serve as ideal candidate systems.

All are cordially invited to attend the seminar