



Institute Colloquium



6 April, 2022



4.00 PM



Webinar Link

YouTube YouTube Link



Title:

The Challenges and Prospects in Modeling Strongly Correlated Systems

Abstract:

In this talk, we shall describe in detail the key ingredients that are necessary to model strongly correlated systems. In particular, we shall illustrate the derivation of low energy tight-binding Hamiltonian that serve as the single electron part of the Hubbard and Kanamori models. We shall show in the strong coupling limit, we can derive spin models, eg. Heisenberg model and in the presence of strong spin-orbit coupling the Kitaev model. Finally we shall illustrate such models with built in chemical realism help us to understand emergent properties of quantum magnets [1], [2], [3].

- [1] Subhadeep Bandyopadhyay et. al. arXiv preprint arXiv:2203.02567 (2022)
- [2] Atasi Chakraborty et. al. Physical Review B **104**, 115106 (2021)
- [3] S. Kundu et. al. Physical Review Letters **125**, 267202 (2020)

Speaker:

Professor Indra Dasgupta

School of Physical Sciences

Indian Association for the Cultivation of Science, Kolkata