ICTS Thesis Defence Seminar

Title : Interplay of Microscopic and Emergent Symmetries in a Spin-Orbit Coupled Dirac Semi-Metal

Speaker : Basudeb Mondal (ICTS-TIFR, Bengaluru)

Date : Tuesday, 01 October 2024

Time : 2:00 PM (IST)

Abstract : In recent years, there have been discoveries of phases where not just the symmetry, but how the symmetries act on the low-energy degrees of freedom plays an important role in understanding various phases. Prime examples of this are the QSL phases where projective implementation of microscopic symmetries lead to fractionalization of the quantum numbers. In this talk, I will describe a system of d1 transition metal ions places on a honeycomb lattice where the low-energy physics is described by SU(8) symmetric Dirac fermions. The strong spin-orbit coupling present in this system leads to non-trivial implementation of the microscopic symmetries on the Dirac spinors, which in turn leads to realization of novel phases and phase transitions. I will also talk about some candidate materials where such scenario can be approximately realized.

Venue : Madhava Lecture Hall
Zoom Link: https://icts-res-in.zoom.us/j/99658241378?pwd=t3a3RUB6EhkWi4qeI2XpKM6HMdTw7q.1
Meeting ID: 996 5824 1378
Passcode: 202030