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TATA INSTITUTE OF FUNDAMENTAL RESEARCH

ICTS Synopsis Seminar

- Title** : Interplay of microscopic and emergent symmetries in a spin-orbit coupled Dirac semi-metal
- Speaker** : Basudeb Mondal (ICTS -TIFR, Bengaluru)
- Date** : Friday, 12th April 2024
- Time** : 11:30 AM (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 placed 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** : Emmy Noether Seminar Room
Zoom link: <https://icts-res-in.zoom.us/j/92033982664?pwd=aEVrSnViSjZKMDFXT0pTRnI1ZHQydz09>
Meeting ID: 920 3398 2664
Passcode: 121213

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