ICTS | INTERNATIONAL CENTRE for THEORETICAL SCIENCES

TATA INSTITUTE OF FUNDAMENTAL RESEARCH

ICTS Condensed Matter Seminar

Title : The Phase puzzle of ν = 0 (charge neutrality) Graphene

Speaker : Ankur Das (Weizmann Institute of Science, Israel)

Date : Friday, 2nd September 2022

Time : 03:30 pm (IST)

Abstract : The true ground state of ν=0 (charge neutrality) monolayer-graphene quantum Hall has long been debated. The symmetry of the monolayer-graphene at ν=0 was analyzed by J. Alicea and P. A. Fisher in (PRB 2006), and canted anti-ferromagnet (CAF) was predicted by I. F. Herbut in (PRB 2007). However, the complete picture of the Hamiltonian was missing until the seminal paper by M. Kharitonov (PRB 2012), which predicts a phase transition from a vanilla insulator (CAF) to a topological insulator ferromagnet via Zeeman. This was later confirmed in the experiment (Andrea Young et. al. Nature 2014). Motivated by recent experiments (L. He et. al. PRB 2019, Ali Yazdani et. al. Science 2022, B. Sacepe Nature 2022) we revisit this phase diagram. We show that, generically, in the regime of interest there is a region of coexistence between magnetic and bond orders in the phase diagram in both continuum and lattice models.

Venue : **Hybrid Mode**

Offline: Madhava Lecture Hall

Online: Please click on the link to join the seminar

https://icts-res-in.zoom.us/j/88190749750?pwd=RXdOanNndVJaRUtyMGhCR2hNUHlnUT09
Meeting ID: 881 9074 9750
Passcode: 974449