

Seminar

Symmetry-broken phases, topological order and geometry in Quantum Hall States of Graphene

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Quantum Hall phases are paradigmatic examples of topological phases that go beyond symmetry-broken order. Quantum Hall phases in Graphene are unique in that they form an interplay between correlations and topology, and also host spin- and valley-symmetry broken orders such as charge-density, Kekule, ferromagnetic and antiferromagnetic phases. In this talk, starting from basics of quantum Hall physics, I present how a diversity of multi-component fractional quantum Hall phases are realised in Graphene on hexagonal Boron Nitride substrate, which has been under many experimental investigations. I then present results on phase diagrams and phase transitions between different symmetry broken and topological phases, relating them to experimental findings. Finally, I show how geometry plays a key role in certain phase transitions. I will also present preliminary studies on curved quantum Hall samples and how they could be interesting platforms to study geometry-related aspects of quantum Hall phases.

Thursday, Oct 12th 2023

4:00 PM (Tea / Coffee 3.45 PM)

Seminar Hall, TIFR-H