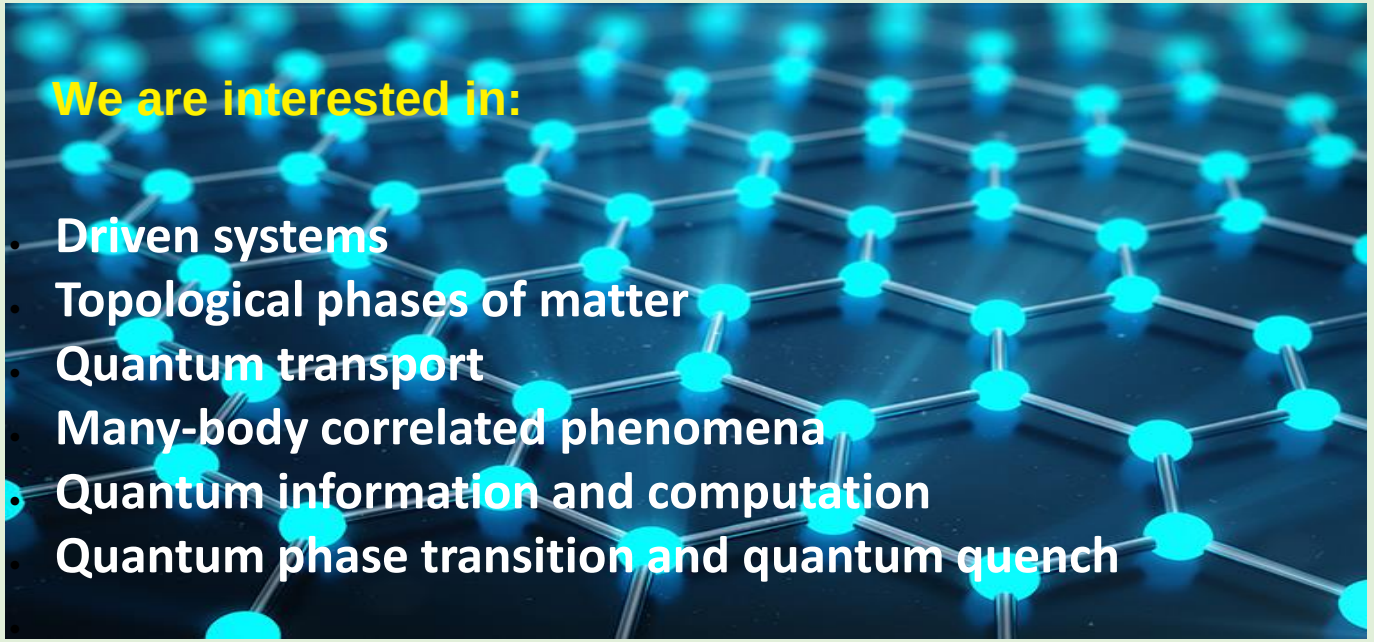
Quantum Matter Theory (QMT) Group

I am working in theoretical condensed matter theory that includes studies on statistical mechanics, quantum information, complex systems, non-equilibrium dynamics, many-body phenomena, topological aspects of model and materials. The specific questions that we address in the above topics are the following: Is it possible to tune the functionality of a material so that it supports non-trivial properties not present in the static system? How one can characterise various topological phases in non-interacting systems? are they robust against interaction, disorder? How does drive modify the situation? How do transport coefficients change in different regimes such as semi-classical Boltzmann regime, quantum regime and mesoscopic regime? How magnetism and superconductivity emerge in an interacting system? How does the localization property change in an interacting many-body disordered systems? How to engineer high-entangled states and characterise them with appropriate measures?

Faculty:

Dr. Tanay Nag



PhD students:

1. **Ms. Dahara Joshi**
2. **Mr. Sai Ruthvik**