

ICTS Statistical Physics and Condensed Matter Seminar

- Title** : Disorder and Transport in Strange Metals: Lessons from Theory and Computation
- Speaker** : Aavishkar Patel (Flatiron Institute, New York, USA)
- Date** : Friday, 26th July 2024
- Time** : 4:00 PM (IST)
- Abstract** : The transport properties of the enigmatic strange metal phase, which is often a parent state of correlated-electron superconductivity, continue to be challenging to understand theoretically. I will describe how disorder in electron interactions, a feature that should arise naturally in effective descriptions of doped or twisted correlated electron materials, can overcome constraints on transport scattering mechanisms imposed by experimental observations and fundamental theoretical principles. I will then present a simple theory of metallic quantum criticality that reproduces multiple aspects of the phenomenology of strange metals when solved at the saddle-point level. Going beyond such mean-field descriptions, I will present results from numerically exact large-scale simulations that uncover a microscopic basis for the origin of strange metal behavior at low temperatures, and also a mechanism for their universal ‘Planckian’ transport scattering rates that are of the order of $k_B T / \hbar$.
- Venue** : Emmy Noether Seminar Room
- Zoom Link: <https://icts-res-in.zoom.us/j/92271867844?pwd=pnGpuOS9gsimKqvqm1BOhxCNJLptjt.1>
Meeting ID: 922 7186 7844
Passcode: 262627