

ICTS Statistical Physics Journal Club Seminar (HYBRID)

Title : Sub-diffusive phases in open clean long-range systems

Speaker : Madhumita Saha (IISER, Pune)

Date : Tuesday, 09th November, 2021

Time : 03:30 pm (IST)

Abstract : We show that a one-dimensional ordered fermionic lattice system with power-law-decaying hopping, when connected to two baths at its two ends with different chemical potentials at zero temperature, features two phases showing sub-diffusive scaling of conductance with system size. These phases have no analogues in the isolated system (i.e, in absence of the baths) where the transport is perfectly ballistic. In the open system scenario, interestingly, there occurs two chemical-potential-driven sub-diffusive to ballistic phase transitions at zero temperature. We discuss how these phase transitions, to our knowledge, are different from all the known non-equilibrium quantum phase transitions. We provide a clear understanding of the microscopic origin of these phases and argue that the sub-diffusive phases are robust against the presence of arbitrary number-conserving many-body interactions in the system. These phases showing sub-diffusive scaling of conductance with system size in a two-terminal set-up are therefore universal properties of all ordered one-dimensional number-conserving fermionic systems with power-law-decaying hopping at zero temperature.

Venue : Please click on the below link to join the seminar

<https://us06web.zoom.us/j/83095760644?pwd=WkNIR3QrbEovTVNiWERrS2I3THZHdz09>

Meeting ID: 830 9576 0644

Passcode: 710710