ICTS | INTERNATIONAL CENTRE for THEORETICAL SCIENCES

TATA INSTITUTE OF FUNDAMENTAL RESEARCH

ICTS Thesis Defense Seminar

Title : Equilibrium and non-equilibrium properties of 1d interacting systems

Speaker : Jitendra Kethepalli (ICTS-TIFR, Bengaluru)

Date : Tuesday, 26 November 2024

Time : 2:00 PM (IST)

Abstract : Statistical physics has emerged as a powerful tool for studying many-particle interacting systems. These interactions can be mainly categorized as short-range (SR) and long-range (LR) interactions. While some equilibrium properties of SR systems are well understood, LR systems remain less explored. The Riesz gas model, where particles interact via a power-law potential, provides a natural setting to study SR and LR systems. We first discuss how equilibrium properties of coarse-grained quantities behave as interactions shift from short-range to long-range. Specifically, we focus on density profiles, edge particle statistics, and the distributions of particles within specific domains. Next, we discuss the equilibration of hard rods confined to harmonic and quartic traps. Without confinement, the hard rod model exhibits integrability--possessing an extensive number of conserved quantities. However, when confined, integrability breaks down, leading to equilibrium behavior distinct from typical non-integrable systems. We discuss potential causes for this deviation.

Venue : Feynman Lecture Hall
Zoom link: https://icts-res-in.zoom.us/j/98837438027?pwd=fuzKrqjv1XAKGMuxuqtA6wefYJe4Rd.1
Meeting ID: 988 3743 8027
Passcode: 683628