ICTS Synopsis Seminar

Title : Equilibrium and non-equilibrium properties of long-ranged systems

Speaker : Jitendra Kethepalli (ICTS-TIFR, Bengaluru)

Date : Wednesday, 05th June 2024

Time : 11:00 AM (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 the equilibrium properties of the SR systems are well-understood, LR systems remain less explored. The Riesz gas model where the particles interact via power-law potential provides a natural setting to study the properties of SR and LR systems. We first discuss, how equilibrium properties of coarse-grained quantities behave as the interactions are modified from short-range to long-range. Specifically, we focus on density profiles, edge particle statistics, and the distributions of number of particles within specific domains. Next, we discuss the equilibration of the hard rods confined to harmonic and quartic traps. In the absence of confinement, the hard rod model exhibits integrability--possessing an extensive number of conserved quantities. However, when confined, integrability breaks down, leading to equilibrium behaviour distinct from what is typically expected of non-integrable systems. We discuss potential causes for this deviation.

Venue : Emmy Noether Seminar Room

Zoom link: https://icts-res-in.zoom.us/j/91919516339?pwd=U3B0STA2YkNuY1NCSTJLYnN4SEhlUT09
Meeting ID: 919 1951 6339
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