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ICTS Condensed Matter Seminar

Title : Dynamical fluctuations in the Riesz gas

Speaker : Rahul Dandekar (Institut de Physique Theorique, CEA, CNRS, France)

Date : Wednesday, 4th January 2023

Time : 16:00 PM (IST)

Abstract : We apply the formalism used to study tagged particle fluctuations in stochastic particle systems to systems with long-ranged interactions. As a concrete example, we study the dynamical properties of a gas whose particles interact with each other through the potential $(|x-y|)^{-s}$, and are also subject to thermal noises. This corresponds to the Riesz gas at finite temperature. We consider the gas confined in a very shallow potential, and show that the fluctuations of a particle initially at the origin grow with time as $t^{s/2(s+1)}$ for $0 < s < 1$, that is, slower than for short-ranged interacting systems. We also show that for $s > 1$, the fluctuations are effectively governed by short-ranged dynamics and grow as $t^{1/4}$.

Venue : Online & Feynman Lecture Hall (ICTS)

Zoom link: <https://icts-res-in.zoom.us/j/84670244863?pwd=R0pjVkN1TnVmdGdVeXRrdkVBU3k3UT09>

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