



清华大学高等研究院

Institute for Advanced Study, Tsinghua University

物理学术报告

Physics Seminars (biweekly)

Title: Random matrices, black holes and the Sachdev-Ye-Kitaev model

Speaker: Antonio Miguel Garcia-Garcia
(*Shanghai Jiao Tong University*)

Time: 2:30pm, Tuesday, April 3, 2018
(2:00~2:30pm, Tea and Coffee)

Venue: Conference Hall 322, Science Building, Tsinghua University

Abstract

N Fermions with k -body infinite-range interactions, originally introduced in the context of quantum chaos, and recently re-labelled Sachdev-Ye-Kitaev (SYK) models, are attracting a great deal of attention in both high energy and condensed matter physics. In the first part of the talk I explain the reasons for this interest. Then, I present some of my recent contributions to this problem, including a detailed analysis of thermodynamic and long time dynamical properties, that strongly suggest that the the SYK model, and its supersymmetric extensions, are toy models for holography and that random matrix correlations are a universal feature of both quantum black holes and strongly-coupled metals. Finally, I discuss the robustness of these features by studying deformations of the SYK model which undergo chaotic-integrable and metal-insulator transitions.