



清华大学高等研究院

Institute for Advanced Study, Tsinghua University

学术报告

Title: Information Scrambling in Chaotic Systems with Dissipation

Speaker: Yong-Liang Zhang (*Caltech*)

Time: 2:00pm, Wednesday, September 12, 2018

Venue: Conference Hall 322, Science Building, Tsinghua University

Abstract

Chaotic dynamics in closed local quantum systems scrambles quantum information, which is manifested quantitatively in the decay of the out-of-time-ordered correlations (OTOC) of local operators. How is information scrambling affected when the system is coupled to the environment and suffers from dissipation? We address this question by defining a dissipative version of OTOC and numerically study its behavior in a prototypical chaotic quantum chain in the presence of dissipation. We find that dissipation leads to not only the overall decay of quantum information due to leaking, but also structural changes in the scrambled information so that the 'information light cone' can only reach a finite distance even when the effect of overall decay is removed.

Self-introduction: After receiving my B.S. in physics from Peking University in 2014, I am a PhD student in the department of physics at Caltech. My research interests lie in the intersection of condensed matter physics and quantum information science. More specifically, I am interested in studying the thermalization, quantum entanglement, and information propagation in quantum many-body systems.