Pizza will be served for IQSE members at 11:00 am. The talk will start around 11:30 am.

Shenglong Xu
(Texas A&M University)

Probing the Frontiers of Quantum Many-Body Dynamics with Random Circuits

ABOUT THE SPEAKER: Shenglong Xu is an assistant professor at Texas A&M University. He obtained his PhD in 2017 from the University of California, San Diego. Before joining TAMU in 2020, he worked as a postdoc in the condensed matter theory center at the University of Maryland. His research interests include non-equilibrium phenomena in quantum many-body systems, quantum information and entanglement dynamics, and developing algorithms for classical and quantum simulation.

EVENT DETAILS: Recent advances in developing quantum simulators and cross-disciplinary dialogues have significantly expanded the frontiers of quantum many-body systems. Specifically, random quantum circuits, which employ sequences of randomly selected unitary gates to evolve quantum states, have become a playground for both experimentalists and theorists to study the universal features of quantum dynamics far from equilibrium, especially quantum information dynamics that go beyond conventional correlation functions. Random quantum circuits have also become an experimental platform to test quantum advantages over classical simulation. In this talk, I will discuss the theoretical methods developed in recent years to analyze these random circuits, with a particular emphasis on the mapping between the quantum dynamics they generate and statistical models. Such mappings allow for applying tools conventionally reserved for equilibrium and classical physics to quantum dynamics, thereby revealing universal features of experimental interest. I will also discuss some challenges in studying random quantum circuits and outline ideas to overcome them.

ZOOM information:
https://tamu.zoom.us/j/98156251523?pwd=QVdSdGxtL1UyY0g1L083SU5QR0QrUT09

Meeting ID: 981 5625 1523
Passcode: 297578

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