Racah Lecture - 21/6/21 4 pm Subir Sachdev (Harvard)

Title: Quantum entanglement at all distances

Abstract: Many modern materials feature a “strange metal”: a phase of electronic quantum matter without particle-like excitations. I will describe recent progress in the theory of strange metals by drawing upon insights from the solvable Sachdev-Ye-Kitaev model. This model features all-to-all entanglement of electrons, and chaos and thermalization in the shortest possible time, which is of order (Planck’s constant)/(absolute temperature). Insights from the SYK model have also led to many exciting advances in the quantum theory of black holes, which also thermalize in a time of order (Planck’s constant)/(black hole Hawking temperature). I will describe an example: the universal, leading, low temperature correction to the Bekenstein-Hawking entropy of charged black holes in Einstein’s theory of general relativity.

Meeting ID: 823 6166 4742

Passcode: 165995