

Theoriekolloquium

Feb. 11, 2021 at 4 p.m.
usually Newton-Raum, Staudinger Weg 9, 01-122

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Why SYK?

From physics journals to campaign rallies, in this talk I'll try to explain what drives the remarkable popularity of the Sachdev-Ye-Kitaev model. In the first part I'll survey the evolution of this system from its origins as a solvable toy model of strongly interacting electrons to its current fame as a toy model of a quantum black hole. The latter came with Kitaev's discovery that, like a black hole, the low temperature dynamics of this model saturates the quantum bound on chaos. In the second part of the talk I will discuss how the model can be liberated from its status as a toy model by generalizing the physics from zero spatial dimensions to a genuine higher dimensional field theory. Time permitting I will discuss a specific application of such a field theory to describe unconventional quantum criticality in correlated electron systems.