Contribution ID: **24** Type: **not specified**

Julian Sonner - Quantum simulating holographic duality

Friday 17 January 2025 10:00 (45 minutes)

Holographic duality posits that quantum gravity under the assumption of certain boundary conditions is described by strongly interacting quantum matter. In the context of a theory-experiment consortium (Lausanne-Geneva-Trento-Zürich), we aim to quantum simulate the arguably simplest instance of such a holographic many-body phase by using ultra cold Fermions in a high-finesse optical cavity. In this talk I will describe our recent work, which aims to synthetically realise quenched disorder quantum many-body systems, including the so-called Dirac-SYK (Sachdev-Ye-Kitaev) class of models in single-mode optical cavities.

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