

# Entanglement in, Field Theory and Gravity workshop Talk Schedule

Events for:  
Monday, December 5th - Wednesday, December 7th

## Monday, December 5th

9:30am **Guifre Vidal - SCGP 102**

**Title:** Conformal field theory on the lattice: tensor networks at work

10:00am **Beni Yoshida**

**Title:** Chaos and Complexity by Design

10:30am **Coffee - SCGP Cafe**

11:00am **Xiaoliang Qi**

**Title:** Boundary butterfly velocity and bulk causal structure

11:30am **Jamie Sully**

**Title:** Dynamics in Kinematic Space

12:00pm **Lunch - SCGP Cafe**

2:15pm **Stephen Jordan**

**Title:** High complexity at low energy

2:45pm **Shira Chapman**

**Title:** Complexity of Formation in Holography

3:15pm **Tea - SCGP Lobby**

4:00pm **Daniel Harlow**

**Title:** Symmetries in quantum field theory and quantum gravity

4:30pm **Hiroshi Ooguri**

**Tuesday, December 6th**

9:30am **Erik Tonni**

**Title:** Entanglement hamiltonians in 2D CFT

**Abstract:** We enumerate the cases in 2d conformal field theory where the logarithm of the reduced density matrix (the entanglement hamiltonian) may be written as an integral over the energy-momentum tensor times a local weight. These include some known time-independent cases and also new examples corresponding to the time-dependent scenarios of a global and local quench.

10:00am **Michael Walter**

**Title:** Multipartite entanglement in toy models of holography

10:30am **Coffee - SCGP Cafe**

11:00am **Brian Swingle**

**Title:** Entanglement from Topology in Chern-Simons Theory

11:30am **Onkar Parrikar**

**Title:** Multi-Boundary Entanglement in Chern-Simons theory & Link Invariants

12:00pm **Lunch - SCGP Cafe**

2:15pm **Sandip Trivedi - SCGP 103**

**Title:** Entanglement in Gauge Theories

2:45pm **Tom Faulkner**

**Title:** Shape dependence of entanglement and the ANEC

3:15pm **Tea - SCGP Lobby**

4:15pm **SCGP-Physics colloquium Mark Van Raamsdonk - SCGP 103**

**Speaker:** Mark Van Raamsdonk

**Title:** Gravity and Entanglement

**Abstract:** The AdS/CFT correspondence from string theory provides a quantum theory of gravity in which spacetime and gravitational physics emerge from an ordinary non-gravitational quantum system with many degrees of freedom. In this talk, I will explain how quantum entanglement between these degrees of freedom is crucial for the emergence of a classical spacetime, and describe progress in understanding how spacetime dynamics (gravitation) arises from the physics of quantum entanglement.

**Wednesday, December 7th**

9:30am **Aitor Lewkowycz**

**Title:** Bulk locality from modular flow

10:00am **Netta Engelhardt**

**Title:** Into the Bulk: A Covariant Approach

10:30am **Coffee - SCGP Cafe**

11:00am **Nima Lashkari**

**Title:** Eigen-state thermalization in Conformal Field Theories

11:30am **Henry Maxfield**

**Title:** A conformal block Farey tail

12:00pm **Lunch - SCGP Cafe**

1:30pm **Physics Seminar: Douglas Stanford - SCGP 102**

**Speaker:** Douglas Stanford

**Title:** Aspects of the Sachdev-Ye-Kitaev model

**Abstract:** The SYK model is a strongly interacting but solvable quantum mechanics of  $N$  fermions. The low-energy theory includes a sector that is equivalent to an AdS<sub>2</sub> dilaton gravity theory. I will introduce the model and discuss some recent developments.

2:30pm **Aron Wall**

**Title:** How to make a traversable wormhole

3:00pm **Tea - SCGP Lobby**

5:00pm **WS banquet - scgp cafe**