

Speaker: Daniel Roberts (MIT)

Title: Complexity by Design II: Holographic clocks and higher-point out-of-time-order correlators

Abstract: We discuss higher-point out-of-time-order correlators and their role in diagnosing chaos. We explain how these correlation functions can be computed holographically by Shenker/Stanford geometries (long wormholes created by multiple shock wave perturbations in AdS) and explain their relationship to computational complexity in the boundary theory. In particular, we show that these correlators are field-theoretic "clocks" that continue to tick long past the fast scrambling time of Sekino and Susskind. Our goals are both a precise meaning of complexity for systems that evolve continuously in time and a direct connection between scrambling and the growth of computational complexity. (Work in progress with Beni Yoshida.)