Speaker: Sean Hartnoll

Title: Emergent area laws from entangled matrices

Abstract: Locality is hardwired into quantum field theoretic descriptions of nature. However, in holographic duality, local interactions on a dynamical spacetime emerge from large N matrices where no locality need be manifest in the microscopic Hamiltonian. The emergence of locality from matrix theories is well-established but not well-understood. In recent years it has been appreciated that locally is closely tied up with so-called “area law” entanglement of the microscopic degrees of freedom. I will discuss a particularly robust notion of entanglement in matrix theories that is rooted in an underlying SU(N) Gauss law constraint and show how simple models of matrix, or ‘fuzzy' geometry contain area law entanglement.