

Tuesday, November 12th @ 2pm
Schwinger Lounge

“Generalized entropy of gravitational fluctuations”

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Abstract: Quantum corrections to holographic entanglement entropy are well-established for ordinary quantum matter coupled to classical gravity. These famously lead to a unitary Page curve for an evaporating black hole in AdS (coupled to a bath). However, it is a longstanding problem how to properly treat quantum fluctuations of the metric, namely gravitons. I will provide a gauge-invariant prescription for the generalized entropy of gravitons in AdS in terms of areas and bulk entanglement entropy. An explicit check of this prescription will then be given. First, I will compute the vacuum-subtracted entanglement entropy for stress-tensor excited states for highly symmetric subregions in any conformal field theory in any dimension $d > 2$, satisfying the holographic conditions of large N and large Δ_{gap} . Then I will canonically quantize the graviton in AdS and compute its vacuum-subtracted generalized entropy using our prescription, finding exact agreement with the CFT result. Based on work to appear soon with Guanda Lin and Geoff Penington.