Alex Buchel

Abstract: Recently it was argued that extremal horizons (and associated emergent quantum criticality of the corresponding holographic models) receive strong quantum corrections at very low temperatures. We point out that when such models are embedded in top-down holography, extremal horizons suffer classical instabilities way before quantum effects become important. Specifically, we show that (contrary to beliefs since 2009) quantum criticality of baryonic black branes is perturbatively unstable at classical temperatures.

Elliott Gesteau

Abstract: Which many-body quantum systems describe some properties of holographic spacetime in their large N limit? In this talk, I will introduce the theory of von Neumann algebras as a natural language to explore this question. In particular, I will explain how these algebras allow to draw a precise connection between the emergence of a holographic causal structure and the ergodic properties of a many-body quantum system.

Anastasios Petkou

Abstract: I will describe a recently uncovered relationship between thermal one-point functions of massive free complex scalars and conformal four-point ladder integrals. The correspondence maps the dimension d of the thermal theory to the loop order L of the integrals as $d=2L+1$. It also maps a "spin weight" k of the thermal one-point functions to the dimension D of the integrals as $D=2k+2$. We construct the web of conformal ladder graphs in all dimensions and to all loops starting from a model of two harmonic oscillators. Finally, we show that thermal one-point functions of operators with higher spin are determined, through the free e.o.m. , to one-point functions of scalars and spin-1 operators in higher dimensional thermal theories.

David Vegh

In two-dimensional flat space, the oscillatory motion of a closed folded string—
or equivalently, two massless particles connected by a string—can be quantized using the 't Hooft equation. In this talk, I will present an alternative approach to quantizing the folded string in anti-de Sitter space. By introducing variables inspired by integrability and setting the AdS_2 radius squared to a specific, p-dependent *imaginary* value, we obtain a spectrum that exactly matches that of fermion bilinear operators in the disorder-averaged Sachdev-Ye-Kitaev (SYK) model with p-fermion interactions. I will discuss the interpretation of this result and some generalizations.