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Trans-IR Flows to Black Hole Singularities

We study analytic continuations of holographic renormalization group (RG) flows beyond the infrared (IR) fixed point. Such "trans-IR" flows are a natural framework for describing physics inside of black holes. First, we construct an *a*-function which, in holographic setups, satisfies a monotonicity theorem even along trans-IR flows. Using this function, we argue that the degrees of freedom "thin out" and vanish when flowing to a trans-IR endpoint, represented by a black hole singularity. We then recast well-studied quantum information probes in the language of trans-IR flows. In particular, 2-point correlations and complexity from action probe the trans-IR fully, generally in a complementary manner controlled by a critical boundary time on the order of the thermal scale.

Type of contribution

Contributed Talk or Poster

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