

Forming and Evaporating Black Holes from Strongly Coupled Matter

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Holography has provided valuable insights into the time evolution of strongly coupled gauge theories in a fixed spacetime. However, this framework is insufficient if this spacetime is dynamical. We present a scheme to evolve a four-dimensional, strongly interacting gauge theory coupled to four-dimensional dynamical gravity in the semiclassical regime. We apply this framework to the description of the gravitational collapse and the subsequent formation of a black hole at the boundary. In the bulk, this corresponds to the formation of a black funnel. We will discuss how black hole evaporation may also be seen in this framework. If time permits, we will peek behind the horizon and study the so-called BKL dynamics near the singularity.

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