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Black brane evaporation through D-brane bubble nucleation

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Gravitational solutions describing black branes in asymptotically anti-de Sitter spacetimes, holographically dual to field theory states at finite temperature and density, can exhibit an instability due to brane nucleation. This allows the black brane to evaporate by emitting D-branes. Working in the setting of D3-branes on the conifold, we construct static Euclidean solutions describing this nucleation to leading order, i.e. D3-branes bubbling off the horizon. Furthermore, we analyze the late-time dynamics of such a D3-brane bubble as it expands and find a steady-state solution including the wall profile and its speed.

Primary author: HENRIKSSON, Oscar (University of Helsinki)

Presenter: HENRIKSSON, Oscar (University of Helsinki)