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# Weak cosmic censorship and the rotating quantum BTZ black hole

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Tests of the weak cosmic censorship conjecture examine the possibility of a breakdown of predictivity of the gravitational theory considered, by checking if curvature singularities are cloaked behind an event horizon at all times, during the time-evolution of an initial regular configuration. The conjecture has been a subject of intense scrutiny, but no convincing counter-example has been found yet for classical theories of gravity.

A natural question to ask, therefore, is what is the impact (if any) of quantum gravity effects on the conjecture. In this talk, we will address this problem by focusing on an extremal, rotating, quantum version of the BTZ black hole. This has been holographically constructed some years ago starting from a solution for a black hole localized on a brane in anti de Sitter space in four dimensions, and it has recently been reconsidered and re-analyzed in details. The holographically-dual three-dimensional metric encodes the exact backreaction from strongly coupled quantum conformal fields. Our analysis reveals that, despite the inclusion of quantum effects and akin to the classical scenario, these attempts to destroy the black hole are doomed to be unsuccessful. Particles carrying the maximum angular momentum and still falling into an extremal quantum BTZ black hole can, at most, leave it extremal. We found numerical evidence that large backreaction of the quantum fields tends to disfavor violations of cosmic censorship.

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