

Strong Cosmic Censorship in charged black-hole spacetimes

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Abstract

The fate of Cauchy horizons, such as those found inside charged black holes, is intrinsically connected to the decay of small perturbations exterior to the event horizon. As such, the validity of the Strong Cosmic Censorship conjecture is tied to how effectively the exterior damps fluctuations. By studying scalar and fermionic fields in the exterior of Reissner-Nordström-de Sitter black holes we identify three families of modes: one directly linked to the photon sphere, another family whose existence and timescale is closely related to the de Sitter horizon and, finally, a third family which dominates for near-extremally-charged black holes. We give a detailed description of scalar and fermionic perturbations of such black holes, and conjecture that Strong Cosmic Censorship is violated in the near extremal regime.