

Dynamical spacetimes in low-energy string theory and cosmic censorship

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ABSTRACT

Stationary black holes in low-energy string theory have been investigated for decades but little is known about their non-stationary counterparts. I will discuss spherically symmetric — but time-dependent — solutions of the Einstein-Maxwell-axion-dilaton system, which arises as its low-energy effective description. Two new classes of exact radiating spacetimes with constant electric and magnetic charges will be presented, and their intricate causal structure is clarified. An even larger class of dynamical spacetimes describing the accretion (or radiation) of null dust is also obtained. It is shown that, within this family of solutions, a black hole cannot turn into a naked singularity if the null dust satisfies standard energy conditions. This result supports the cosmic censorship conjecture in the context of effective string theory.