

Cosmic censorship violation in black hole collisions in higher dimensions

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Abstract

The cosmic censorship conjecture raises the question of whether classical gravitational dynamics can drive a low-energy configuration into an accessible regime of quantum gravity, with Planck-scale curvatures and energy densities visible by distant observers. We present evidence that cosmic censorship is violated in the quintessential phenomenon of General Relativity: the collision and merger of two black holes. It only requires a sufficient total angular momentum in a collision in high enough number of dimensions. Nevertheless, we will argue that even if cosmic censorship is violated in this and in some other known instances, its spirit remains unchallenged: classical relativity describes the physics seen by observers outside the black holes accurately, with only minimal quantum input that does not entail macroscopic disruptions.

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