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Strong cosmic censorship conjecture at the dust black hole collapse

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Abstract

The cosmic censorship conjecture proposed by Penrose states that the singularity of a black hole is covered by the event horizon and is not naked. The first examples of violation of this conjecture are from the models of the spherical collapse of the perfect fluid black hole in the dust state. In this article, we examine an important class of LTB spherical dust collapse models in which there is a naked singularity. We will first show that the singularity of a black hole will be spacelike. We then show that the event horizon will be outside the singularity. We will also show that if the energy condition is met, the famous category of these models will not have a naked singularity. We will conclude that the strong cosmic censorship conjecture will be held

Keywords: gravitational collapse, dust black hole, apparent horizon, cosmic censorship conjecture energy condition.

For full article, refer to the Persian section