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Exploring Quasinormal Modes and Strong Cosmic Censorship in 2D Black Hole Models

We study linear scalar perturbations of black holes in two-dimensional (2D) gravity models with a particular emphasis on Jackiw-Teitelboim (JT) gravity. We obtain an exact expression of the quasinormal mode frequencies for single horizon black holes in JT gravity and then verify it numerically using the Horowitz-Hubeny method. We shall also consider the dimensionally reduced Bañados-Teitelboim-Zanelli (BTZ) black hole and obtain the exterior and interior quasinormal modes. The dynamics of a scalar field near the Cauchy horizon mimics the behavior of the same for the usual BTZ black hole, indicating a possible violation of the strong cosmic censorship conjecture in the near-extreme limit. However, quantum effects seem to rescue strong cosmic censorship.

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