

Abstract Submitted
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Critical Collapse of a Massless Scalar Field in 3+1D General Relativity¹ NILS DEPPE, Cornell University — We present results from the first study of critical behavior in 3-d gravitational collapse. The source of the gravitational field is a massless scalar field. This is a well-studied case for spherically symmetric gravitational collapse, allowing us to understand the reliability and accuracy of the simulations. We study both supercritical and subcritical evolutions to see if one provides more accurate results than the other. Specifically, we address the open question of whether or not the spherical mode dominates in the gravitational collapse of generic 3-d initial data. In addition to observing the expected critical behavior, we are able to observe fine structure that has not been well studied beyond spherical symmetry.

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