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STRUCTURE OF INITIAL DATA IN AN INHOMOGENEOUS DUST COLLPSE

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Abstract

We examine the relevance of the initial state of a collapsing dust cloud towards determining its final fate in the course of continuing gravitational collapse. It is shown that given an arbitrary C^{1} - energy function f(r) (with some conditions), there exist infinitely many C^{1} -mass functions F(r) such that the initial data f(r) and F(r) lead the collapse to a strong curvature naked singularity, and thus a set of energy functions can also be regarded as true initial data leading to a naked singularity. We further prove that the occurrence of such naked singularities is stable but non-generic in C^{1} -topology with respect to such energy functions.

Key Words : Gravitational collapse, Cosmic censorship, Naked singularity.

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