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## On the Nature of Singularities in Cosmological Solutions of Einstein's Equations<sup>1</sup> JAMES ISENBERG, University of Oregon

The Hawking-Penrose theorems tell us that cosmological solutions of Einstein's equations are generally singular, in the sense of the incompleteness of causal geodesics (the paths of physical observers). These singularities might be marked by the blowup of curvature and therefore crushing tidal forces, or by the breakdown of physical determinism. Penrose has conjectured (in his "Strong Cosmic Censorship Conjecture") that it is generically unbounded curvature that causes singularities, rather than causal breakdown. The verification that BKL behavior (marked by the domination of time derivatives over space derivatives) is generically present in a family of solutions has proven to be a useful tool for studying Strong Cosmic Censorship in that family. We discuss what is known about BKL behavior and Strong Cosmic Censorship in families of solutions defined by varying degrees of isometry, and discuss new results which we believe will extend this knowledge and provide new support for Strong Cosmic Censorship.

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