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Singularity Theorems and the Stability of Extra Dimensions

Friday, 25 January 2019 15:00 (30 minutes)

New singularity theorems are derived for generic warped-product spacetimes of any dimension. The main purpose is to analyze the stability of (compact or large) extra dimensions, such as those arising in string theory, against dynamical perturbations. To that end, the base of the warped product is assumed to be our visible 4-dimensional world, while the extra dimensions define the fibers. Explicit conditions on the warping function that lead to geodesic incompleteness are given. These conditions can be appropriately rewritten, given a warping function, as restrictions on the intrinsic geometry of the extra-dimensional space. A brief discussion of such conditions will be presented.

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