

IDEAL characterization of cosmological and black hole spacetimes

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Abstract: On a (pseudo-)Riemannian manifold (M, g) , an IDEAL characterization of a reference geometry (M_0, g_0) consists of a list of tensors $\{T_i[g]\}$ locally and covariantly constructed from the metric g , such that $T_i[g] = 0$ iff (M, g) is locally isometric to (M_0, g_0) . Unfortunately, to date only a few IDEAL characterizations are known for interesting geometries. But if known, they have interesting applications to analysis and geometry on the reference background (M_0, g_0) . I will discuss how such characterizations were recently obtained for a class of FLRW and higher dimensional Schwarzschild-Tangherlini spacetimes.