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An almost-no-hair theorem for static spacetimes

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The simplicity of black holes, as characterized by no-hair theorems, is one of the most important mathematical results in the framework of general relativity. Are these theorems unique to black hole spacetimes, or do they also constrain the geometry around regions of spacetime with arbitrarily large (although finite) redshift? In this talk I will discuss the answer to this question, showing how to extend Israel's theorem to static spacetimes without event horizons that contain small deviations from spherical symmetry. This provides a first extension of no-hair theorems to ultracompact stars, wormholes, and other exotic objects, and paves the way for the construction of similar results for stationary spacetimes describing rotating objects.

Summary

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