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No hair conjecture: a review of recent results

Abstract

According to the conventional picture, black holes are extremely constrained objects, determined only by a few global charges. Such simplicity of black holes became immortalized in John Wheeler's mantra *"black holes have no hair"*. In this talk, we shall start by reviewing a number of classic results which support this conjecture, as well as some well known counterexamples. Two novel mechanisms that allow black holes to have *'hair'* and challenge the standard paradigm will also be discussed.