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The Stability of Black Hole Spacetimes

Abstract

I will introduce the stability problem for black holes in general relativity and review some of the recent mathematical progress that has been obtained in the past 15-20 years focussing on recent work with Dafermos, Rodnianski and Taylor establishing the non-linear stability of the Schwarzschild family of black holes. Emphasis will be put on explaining the interplay between geometry and analysis. Time permitting, stability problems for spacetimes with negative cosmological constant will also be briefly discussed.