The Riemannian Penrose Inequality with Charge for Multiple Black Holes

Abstract:

In the 1960’s, Roger Penrose noted that the Cosmic Censorship Conjecture for solutions of the Einstein equations, or more specifically the standard picture of gravitational collapse, heuristically imply lower bounds on the total energy of initial data in terms of geometric quantities such as the area of the outermost horizon. Any counter-example would strongly suggest that the conjecture fails, while proofs of the inequality, or any extensions, lend indirect support to the conjecture. The time symmetric case was established, first for a single black hole by Huisken-Ilmanen, then for multiple black holes, by Bray. In this talk, I will discuss the extension of these results to include charge and other matter models.