

# The Penrose inequality for perturbations of Schwarzschild spacetime

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## Abstract

The Penrose inequality is a remarkable geometric inequality that relates the mass of a black hole spacetime to the total area of its black holes. Penrose suggested the inequality on physical grounds in the 1960s, but a rigorous mathematical proof in the general case is still lacking. We present some new ideas towards a proof for the special case of perturbations of Schwarzschild spacetime using an elliptic PDE called the Jang equation.

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