

The area-angular momentum-charge inequality for black holes with positive cosmological constant.

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Remarkably, there is an analogy between thermodynamics on the one hand, and the physical properties of black holes on the other. With this analogy in mind, there is an important question to ask: "what is the temperature of a black hole?".

On an even more basic level, we should ask ourselves if the temperature of a black hole must be nonnegative, since all we are currently working with is an analogy. This is a hard question to answer directly, so instead it is attacked from a different angle. That is, it is relatively easy to show that if a black hole has nonnegative temperature, then it must satisfy certain geometric inequalities. Therefore, instead of trying to prove directly that a black hole has nonnegative temperature, we can establish that a black hole satisfies the geometric inequalities consistent with having a nonnegative temperature.

In particular, in this talk we will establish the area-angular momentum-charge inequality for black holes inside of a spacetime with positive cosmological constant.