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## The black hole entropies

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One of the surprising properties of black holes is that they can be assigned an entropy proportional to the area of the horizon. With this assignment, black holes obey the laws of thermodynamics.

Over the last decade, a new type of black hole entropy formula was developed which is believed to give the von Neumann or fine grained entropy of the black hole. It is also a formula involving an area, the area of a certain minimal surface, which can be in the black hole interior. We will review this formula, as well as its quantum corrections. We will briefly mention an application to black hole evaporation, a topic which will be covered more extensively in Ahmed Almheiri's talk.

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