

## Entropy Correction for Kerr Black Hole

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**Abstract:** In this paper, we discuss leading-order corrections to the entropy of Kerr black hole due to thermal fluctuations in the finite cavity. Then temperature is constant, the solution of the black hole is obtained within a cavity, that is, the solution of the spacetime after considering the radiation of the black hole. Therefore, we derive that the location of the black hole horizon and specific heat are the functions of temperature and the radius of the cavity. Corrections to entropy also are related to the radius of the cavity. Through calculation, we obtain conditions of taking the value of the cavity's radius. We provide a new way for studying the corrections of complicated spacetimes.

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Key words: entropy correction, entropy of Kerr black hole, ellipsoid surface

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