

Black hole thermodynamics in the canonical ensemble and higher dimensions

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Using the Gibbons-Hawking-York boundary term for the compactified spacetime's action, we work out the thermodynamics of Schwarzschild-Tangherlini black holes enclosed in a cavity at fixed temperature. This allows for, at most, two different black hole solutions inside the cavity, even in higher dimensions. However, in increasing the number of dimensions, some differences arise in the thermal stability analysis. We discuss how this might translate into the Gross-Perry-Yaffe black hole nucleation rate from hot flat space.

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