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## Holographic entanglement entropy at finite temperature

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We determine the expression for the entanglement entropy at finite temperature for disk regions in conformal field theories that are dual to black holes in Einstein gravity and Gauss-Bonnet gravity, in the context of the AdS/CFT correspondence. We use the Ryu-Takayanagi formula and its generalization for higher-curvature gravities, respectively. We compute the low temperature expansion of the holographic entanglement entropy relative to the vacuum state, up to second order. The results are expressed in terms of the thermal entropy charge and the central charge in the correlator of two stress-energy tensors, applying the AdS/CFT dictionary. In Einstein gravity, the expansion coefficients are fixed. In Gauss-Bonnet gravity, the first order coefficient adopts a simple form in terms the thermal entropy charge, suggesting a possible universal character for this coefficient.

### Abstract

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