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Spin-Statistics for Black Hole Microstates

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The gravitational path integral can be used to compute the number of black hole states for a given energy, or the free energy in a fixed temperature ensemble. We explain how to use this approach to estimate the number of bosonic and fermionic black hole microstates. We do this by comparing the partition function with and without the insertion of (-1)ˆF. We study this problem for black holes in asymptotically flat space and in AdS, putting constraints on the high energy spectrum of holographic CFTs (not necessarily supersymmetric). Finally, we analyze wormhole contributions to related quantities.

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