



## Thermodynamic properties of an Aharonov-Bohm quantum ring

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In this work, we investigate the thermodynamic properties of an Aharonov-Bohm (AB) quantum ring in a heat bath for both the relativistic and non-relativistic cases. For accomplishing this, we use the partition function obtained by the Euler-Maclaurin formula. In particular, we determined the energy spectrum as well as the behavior of the main thermodynamic functions of the canonical ensemble, namely, the Helmholtz free energy, the mean energy, the entropy, and the heat capacity. We noticed that in the low-energy regime the relativistic thermodynamic functions are reduced to the non-relativistic, and the Dulong-Petit law was verified as well.