

QED at the precision frontier: accounting for cavity shifts to $(g - 2)_e$

Saturday 8 November 2025 16:00 (15 minutes)

The anomalous magnetic dipole moment $(g-2)$ of the electron is one of the most precisely measured quantities in the world. Experimentally, an electron is trapped in a cylindrical cavity, and the measured value of $g - 2$ receives a correction due to the cavity boundary that must be subtracted off. We calculate the cavity correction using a quantum mechanical formulation and demonstrate that it not only precisely matches the classical solution for a perfect cylinder but can also be generalized to allow for cavity imperfections.

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