

# New measurement of the electron magnetic moment

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A single isolated electron in a Penning trap yields a new measurement of the electron magnetic moment  $g/2 = 1.001\,159\,652\,180\,59(13)$ .

A comparison of the measured  $g$ -factor and the predicted  $g$ -factor using an independent measurement of the fine structure constant provides the most stringent test of the Standard Model.

The newly constructed system used for this measurement which resulted in increased stability and a better understanding of systematic errors, along with efforts towards a further improved measurement using new techniques, will be discussed.

A new limit on dark photon dark matter at 0.6 meV is also obtained using the same system.

The single trapped electron is used as a background-free detector at 0.6 meV.

The search demonstrates the sensitivity of the single electron to the dark photon in the 0.1–1 meV range.

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