

g-2 from lattice QCD: the most recent result

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For fifty years, the standard model of particle physics has been hugely successful in describing subatomic phenomena. Recently, this statement appeared to be contradicted by the strong disagreement between the recent measurement of the anomalous magnetic moment of the muon, a_μ , and the reference standard-model prediction for that quantity. Such a large discrepancy should signal the discovery of interactions or particles not present in the standard model. Here we present a new first-principle lattice calculation of the most uncertain contribution to a_μ . We reduce uncertainties compared to earlier computations. Combined with the extensive calculations of other standard model contributions, our result leads to a prediction that differs from the measurement of a_μ by only 0.9 standard deviations. This provides an extremely precise validation of the standard model to 0.38 ppm.

Alternate track

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