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The leading order hadronic contribution of the anomalous magnetic moment of the muon with $O(a)$ -improved Wilson fermions with Pade approximants from fits and time moments

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We present results of our lattice QCD study of the hadronic vacuum polarization (HVP) function with $O(a)$ -improved $N_f = 2$ Wilson fermions with twisted boundary conditions. We discuss the extraction of the leading order hadronic contribution to the anomalous magnetic moment of the muon (a_μ^{HLO}) via the hybrid method involving two steps: (i) To describe the low Q^2 range, we construct Pade approximants obtained either from correlated fits to the HVP or from time moments, which we obtain from derivatives of the current-current correlator. (ii) For the large Q^2 range we use a numerical integration. We estimate systematic uncertainties of the continuum and chiral extrapolations with the extended frequentist method. Preliminary results for u , d , s and c valence quarks at the physical point for a_μ^{HLO} will be presented.

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