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Divide and conquer the sea of quarks: an application to the HVP short-distance window

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The standing tension between experimental and theoretical results regarding the hadronic vacuum polarization (HVP) contribution to the anomalous magnetic moment of the muon motivates the development of novel methods to enhance theoretical estimates. We present a Lattice QCD study aimed at estimating the short-distance window to the HVP using an improved continuum extrapolation without the need of perturbative input. We combine a quenched continuum extrapolation using 18 lattice spacings ($a^2 \approx 0.001 - 0.016\,\mathrm{fm}^2$) with a separate continuum extrapolation of the sea quark effects. This method allows the computationally expensive correction to be estimated using only a few ensembles at coarser lattice spacings, while largely isolating the logarithmic dependency of the continuum extrapolation in the quenched component.

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