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A precise first-principles computation of the hadronic vacuum polarization contribution to the muon anomalous magnetic moment ($15' + 5'$)

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The leading-order hadronic vacuum polarization contribution dominates the uncertainty of the standard model prediction for the muon anomalous magnetic moment. Significant recent advances in lattice QCD methodology make a precise first-principles computation of this contribution with uncertainties comparable to the Fermilab E989 target precision realistic in the next few years. I will review recent breakthroughs, including our precise computation of the quark-disconnected contribution, and outline the necessary steps to complete the computation with sub-percent accuracy.

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