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Exclusive Channel Study of the Muon HVP

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The Hadronic Vacuum Polarization (HVP) is a dominant contribution to the theoretical uncertainty of the muon anomalous magnetic moment. The uncertainty in lattice QCD calculations of the HVP are dominated by the long-distance contribution to the vector correlation function. With explicit studies of the exclusive channels of the HVP diagram, it is possible to reconstruct the long-distance behavior of the correlation function. This has the effect of replacing the large statistical uncertainty of the correlation function with a significantly smaller uncertainty from the reconstruction. In this talk, I will present preliminary results of an exclusive study of the vector-vector correlation function using the distillation technique. The computation is performed on 2+1 flavor Mobius Domain Wall Fermion ensembles with physical pion mass. Reconstruction of the long-distance correlation function will enable lattice-only calculations of the HVP to achieve precision similar to estimates of the HVP from the R-ratio method on the timescale of the new experimental measurements of the muon anomalous magnetic moment.

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