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Neutron Electric Dipole Moment from Isovector Quark Chromo-Electric Dipole Moment

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We present results from our lattice QCD study of the contribution of the isovector quark chromo-electric dipole moment (qcEDM) operator to the nucleon electric dipole moments (nEDM). The calculation was carried out on four 2+1+1-flavor of highly improved staggered quark (HISQ) ensembles using Wilson-clover quarks to construct correlation functions. We use the non-singlet axial Ward identity including corrections up to O(a) to show how to control the power-divergent mixing of the isovector qcEDM operator with the lower dimensional pseudoscalar operator. Results for the nEDM are presented after conversion to the MSbar scheme at the leading-log order.

Topical area

Particle Physics Beyond the Standard Model

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