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Gravitational form factors of the pion and the nucleon

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The gravitational form factors (GFFs) of hadrons are related to the second Mellin moments of their generalized parton distributions. They can be extracted from matrix elements of the energy-momentum tensor of QCD. We present the gluon and quark flavor contributions to the GFFs of the pion and the nucleon in the kinematic region $0 \leq -t \leq 2$ GeV^2 on a clover improved ensemble with $a = 0.091$ fm, $N_f = 2 + 1$, and $m_\pi = 170$ MeV. The results are renormalized non-perturbatively via the RI-MOM scheme. We obtain estimates for the energy and mechanical distributions, and for the forward limit momentum fraction, spin, and D-term flavor decompositions.

Topical area

Structure of Hadrons and Nuclei

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