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Updates on Pion and Kaon Valence-Quark and Gluon Distributions from $N_f = 2 + 1 + 1$ QCD

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We present recent updates on the lattice calculations of the valence-quark GPDs of the pion, the pion and kaon gluon PDF, and their first gluon moment in the physical-continuum limit. All these calculations are done on ensembles with $N_f = 2 + 1 + 1$ highly improved staggered quarks (HISQ), generated by the MILC Collaboration. The valence-quark GPD of the pion is done at lattice spacing 0.09-fm with physical pion masses and boosted pion momentum around 1.7-GeV with four additional nonzero transfer momenta in the Breit frame, using LaMET method with next-to-next-to-leading order perturbative matching. We update MSULat's previous meson gluon PDF calculations using pseudo-PDFs with a third lattice spacing at 0.09-fm with 310-Mev pion mass. We also present the first pion and kaon gluon moments at the continuum-physical limit with 3 pion masses and 3 lattice spacings.

Topical area

Structure of Hadrons and Nuclei

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