

Unpolarized Gluon PDF from Lattice QCD

Saturday, 10 October 2026 16:45 (20)

We report a state-of-the-art lattice QCD calculation of the nucleon unpolarized gluon parton distribution function employing large-momentum effective theory. The calculation is carried out on the 2+1 flavor CLQCD ensembles with five lattice spacings $a = \{0.105, 0.0897, 0.0775, 0.0688, 0.0519\}$ fm and various pion masses ranging from 136 MeV to 317 MeV, covering nucleon momenta up to 3 GeV. Distillation technique is applied to improve the signal of two-point correlators. We then apply the state-of-the-art hybrid renormalization and one-loop perturbative matching, and extrapolate the result to the continuum limit, infinite momentum limit and physical pion mass.

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Session Classification : Section 10