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Unpolarized and Helicity Isovector Nucleon Parton Distribution Functions on Superfine Lattice

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We present new lattice QCD calculations for unpolarized and helicity isovector parton distribution functions of nucleons. Lattice QCD calculations were carried out within the framework of large momentum effective theory (LaMET), using a superfine lattice spacing 0.042 fm and boosted nucleons with momenta up to 2.31 GeV. We compare our QCD-based results with those obtained from global fits, and test ranges of applicability of the LaMET approach in realistic lattice QCD calculations.

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