

2022 Meeting on Lattice Parton Physics from Large Momentum Effective Theory (LaMET2022)



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Lattice Calculation of Nucleon Transversity Distribution

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Nucleon transversity distribution is an essential quantity that reveals the nucleon's transverse spin structure. It also provides crucial inputs for understanding high-energy collision experiments involving transversely polarized nucleons. As a chiral-odd quantity, it's difficult to measure experimentally. Thus, ab initio lattice QCD calculations play an important complementary role. We report a state-of-the-art lattice calculation of nucleon isovector quark transversity distribution using large-momentum effective theory. The calculation is done with high statistics on six different lattice ensembles. This is the first result extrapolated reliably to the continuum, physical pion mass and infinite momentum limit. It provides guidance for future measurements of nucleon transversity distribution.

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