

Nucleon TMDs from Lattice QCD

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We summarize the calculation of the Sivers, Boer-Mulders, generalized transversity and worm-gear shifts using two ensembles of gauge configurations with different discretization of the fermion Dirac actions. We discuss factorization and renormalization of the operators and present estimates of lattice discretization artifacts. For these TMD observables, we find that the results are consistent between the two ensembles at sufficiently large separation of the quark fields within the operator, whereas deviations are observed in the local limit and in the case of a straight link gauge connection, which is relevant to the studies of parton distribution functions. Lastly, we provide a connection between the lattice data and phenomenological estimates extracted from experimental data.

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