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Factorization of qTMD @ next-to-leading power

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The theory and phenomenology of transverse-momentum dependent parton distributions (TMDs) have seen increasing activity in the past years. Factorization theorems for both leading-power (LP) and next-to-leading power (NLP) scenario has been discussed in the context of experimental processes such as Drell-Yan (DY) or SIDIS.

However, experimental determination of all TMD distributions is an extremely challenging problem. Therefore, lattice simulations of QCD can help bringing complementary information and guiding the phenomenological parametrizations. On the lattice, since one cannot access directly the TMD correlator, one resorts to study an equal-time ‘quasi’-TMD correlator. However, the relation between the quasi-TMDs and the TMDs is non-trivial. In fact, the quasi-TMD correlator can be interpreted as the counterpart of the hadronic tensor in DY or SIDIS.

In this talk, I will present our results for the quasi-TMD correlator both at LP and NLP at one-loop accuracy. I will show how the quasi-TMD correlator can be factorized into the actual TMD distribution and an unknown function.

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