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Relating TMDs & collinear twist-3 functions in the CSS formalism

Wednesday 10 April 2019 10:45 (17 minutes)

In this talk I will present our work on an improved implementation of the Collins Soper Sterman formalism for combining transverse-momentum-dependent (TMD) factorization and collinear factorization in semi-inclusive DIS (SIDIS). I will focus on our recent extension to the case of polarized observables; in particular the Sivers contribution to the transversely polarized target cross section. We demonstrate how one recovers the expected leading-order collinear twist-3 result from a (weighted) q_T-integral of the differential cross section. We are also able to re-derive at leading order the well-known relation between the TMD Sivers function and the (collinear twist-3) Qiu-Sterman function within this framework. This relation allows for the interpretation that the first moment of the Sivers function describes the average transverse momentum of unpolarized quarks in a transversely polarized spin-1/2 target.

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