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The perturbative tail of the TMD shape function in SIDIS

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Quarkonia are very "handy" objects for the spin-physics community because they can be used to fill up the lack of information on gluon transverse momentum dependent distributions (TMDs) at energies Q $lesssim$100 GeV. In particular, among the different kinds of quarkonia, the J/ψ is definitely the one that attracts the most attention. Nonetheless, its theoretical description is still under debate. Only recently, it has been understood that a correct factorization at small-q_T requires the introduction of novel quantities: the so-called TMD shape functions, which include smearing effects. Within the non-relativistic QCD approach, they can be thought of as a TMD extension of the long-distance matrix elements that are valid at high-q_T (collinear description). Although the TMD shape functions have been initially introduced for hadronic processes, recently their perturbative tails in semi-inclusive deep-inelastic scattering have been determined via a matching procedure.
In this talk I will present such derivation, also including subleading (but non-negligible) terms. I will then discuss the implications of the result, and in particular the presence of a process-induced dependence that spoils the TMD shape function universality. The phenomenological studies presented in this talk could be performed at the future Electron-Ion Collider.

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