

On the extraction of the non-perturbative transverse momentum dependence of parton distribution and fragmentation functions from data

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Transverse single spin asymmetries for hadron production in polarized semi-inclusive deeply inelastic scattering (SIDIS) are nowadays one of the main source of information on transversity, the quark Sivers distributions and the Collins fragmentation function, and on their transverse momentum dependence. However, in SIDIS the transverse momentum of the final hadron, that is the quantity actually measured, originates, in a strongly correlated way, from intrinsic transverse momentum dependences in both the distribution and the fragmentation sectors. As a consequence, a reliable separated extraction of the average transverse momentum for the two sectors is difficult.

In this contribution we analyze this problem in a simple kinematical Gaussian configuration and study its implications on predictions for the Sivers asymmetry in Drell-Yan processes and for the Collins asymmetry in e^+e^- annihilations.

We find that in some cases these effects can be relevant and must be carefully taken into account.

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