

# The resolution to the problem of consistent large transverse momentum in TMDs

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Parametrizing TMD parton densities and fragmentation functions in ways that consistently match their large transverse momentum behavior in standard collinear factorization has remained notoriously difficult. We show how the problem is solved using a recently introduced set of steps for combining perturbative and nonperturbative transverse momentum in TMD factorization. In this “hadron structure oriented” approach (HSO), models for intrinsic transverse momentum effects are constrained by integral relations and by the large- $k_T$  behavior predicted by pQCD. We will show an application to semi-inclusive deep inelastic scattering (SIDIS), where we will illustrate how the HSO approach enables the smooth interpolation between the cross section in the TMD region and the large- $q_T$  regime, calculable in collinear factorization.

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