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Leading-Twist Flavor Singlet Quark TMDs at Small- x

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We study the small- x asymptotics of the flavor singlet, leading-twist quark transverse-momentum-dependent parton distribution functions (TMDs) via the eikonal expansion of quark propagator and the gauge link, expressing the TMD operator definitions at small- x in terms of polarized dipole amplitudes, which involve an insertion of appropriate spin-dependent parton-exchange vertices into the eikonal, unpolarized Wilson line. The small- x evolution equations for polarized dipole amplitudes are constructed via the recently developed light-cone operator treatment (LCOT) method, and subsequently solved in the large- N_c , linearized, double-logarithmic approximation (DLA), for the high-rapidity asymptotic behavior of the polarized dipole amplitudes. These results yield the small- x asymptotics of all the remaining leading-twist, flavor-singlet quark TMDs.

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