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Threshold Improved Transverse momentum dependent distribution functions

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We introduce a new type of transverse momentum dependent (TMD) distribution function at the threshold limit in the Drell-Yan process as well as semi-inclusive deep-inelastic scattering and double-inclusive leptonic annihilation. We apply Soft-Collinear Effective Theory (SCET) and renormalization group methods to obtain QCD evolution equations for both threshold-TMD Parton distribution functions and fragmentation functions. In the end, we present the numerical predictions for different experiments (including LHC, RHIC, COMPASS, Belle etc).

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