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Transverse Momentum Dependent Parton Distribution Functions From Large Momentum Effective Theory YIZHUANG LIU, University of Regensburg — We show that the transverse momentum dependent parton distribution functions (TMDPDFs), important for understanding 3D hadron structure and describing high-energy experiments, can be formulated in the framework of the large-momentum effective theory(LaMET). We show that the quasi-TMDPDFs, calculable on lattice, factorize at large momentum limit into physical-TMDPDFs and reduced soft functions. We show that the reduced soft function can be realized as a form-factor and can be extracted by combining lattice calculable quasi-light-front wave functions and light-meson form-factors at large momentum transfer. This paves the wave for first-principle determination of TMDPDFs and Drell-Yan cross sections.

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