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Angular distributions of Drell-Yan leptons in the TMD factorization approach

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We present a comprehensive study of the angular structure functions for Drell-Yan leptons in Z/γ-boson production within the framework of the transverse momentum dependent (TMD) factorization theorem, including kinematic power corrections (KPCs). We find good agreement with the data in the applicability region of the TMD factorization theorem. The inclusion of KPCs allows us to describe all angular coefficients in a frame-independent manner using only the leading-twist TMD distributions: the unpolarized and the Boer-Mulders functions. The value of the Boer-Mulders function is determined using the ATLAS measurement of the A_2 angular coefficient. The analysis is performed at N^{4}LL perturbative order. Additionally, we discuss the technical implementation and impact of KPCs on the phenomenology of TMD distributions.

Abstract

Primary author(s) : PILOÑETA, Sara; Dr. VLADIMIROV, Alexey (Complutense University of Madrid)

Presenter(s) : PILOÑETA, Sara

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