

XXVIII International Workshop on Deep-Inelastic Scattering and Related Subjects



Contribution ID: 613

Type: **Contributed Talk**

QCD resummation on single hadron transverse momentum distribution with the thrust axis

Thursday, 15 April 2021 10:36 (18 minutes)

We derive the transverse momentum dependent factorization and resummation formula of the unpolarized transverse momentum distribution for the single hadron production with the thrust axis in an electron-positron collision. Two different kinematic regions are considered, including small transverse momentum limit and joint transverse momentum and threshold limit. Using effective theory methods, we resum large logarithms to all orders. In the end, we present the differential cross sections and Gaussian widths calculated for the inclusive charged pion production and find that our results are consistent with the measurements reported by the Belle collaboration. Furthermore, we find that our formalism can also be extended to describe transverse Lambda polarization at the Belle.

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Session Classification: Spin Physics

Track Classification: Spin Physics