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Collins-Soper kernel at large b from Chiral Perturbation Theory

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Abstract

We construct the effective operator for transverse momentum distributions in Chiral Perturbation Theory. The operator constructed from pion and nucleon fields possesses all main properties of the QCD operator, including multiplicatively renormalizable rapidity divergences. Extracting the leading rapidity divergence, we find the expression for the Collins-Soper kernel at large b and at the low-energy normalization point. In this regime, the Collins-Soper kernel has a universal nearly constant shape accompanied by an isospin-dependent constant.

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