

Beyond NNLL' q_T resummation with CuTe

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Abstract content

Transverse momentum spectra of massive bosons at hadron colliders provide important tests of the Standard Model. In the crucial region, where the boson's invariant mass M is much smaller than its transverse momentum q_T , the spectra are very sensitive to initial state radiation. Applying soft-collinear effective theory, a universal framework for its description has been established and the relevant perturbative operators have been extracted up to next-to-next-to leading order (NNLO). For any heavy color neutral final state, these results enable us to resum logarithms of q_T/M beyond next-to-next-to leading logarithmic (NNLL) accuracy and to consistently match to the corresponding NNLO fixed order result. For Drell-Yan, Z, W and H production we implemented this in the program CuTe. As two important examples, we present the q_T spectra of Z and H production to NNLO+NN(N)LL accuracy and confront these results with LHC data.

Summary

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