

Merging NLO QED corrections at hadron colliders: Z and Z+photon production using the MiNLO' method

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In order to match the increasing precision of modern particle colliders, it is essential to have accurate theoretical predictions for the cross sections of physical processes and their associated distributions. These predictions are often obtained via Monte Carlo event generators which combine the fixed-order calculation, computed as a perturbative expansion in the coupling constants, with a parton shower and further hadronization. Using the Multi-Scale Improved NLO (MiNLO') prescription, it is possible to resum to all orders the logarithms arising from kinematic configurations that involve different scales in such a way that the resulting distribution is NLO accurate both for fully inclusive and 1-jet predictions. The MiNLO' method was introduced specifically for QCD radiation and it has already provided remarkable results. In this talk, I will present the abelianization of the MiNLO' method in the context of QED radiation for the neutral current Drell-Yan. More specifically, I will discuss the behaviour of the Sudakov form factor when we switch from QCD to QED and the challenges that such Sudakov form factor poses in its actual computation.

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