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Towards a more accurate prediction of W+b jet production with an automatized approach to one-loop calculations

Thursday 10 May 2012 15:30 (30 minutes)

We present results for the O(alpha_s) virtual corrections to qg ->W b bbar q' obtained with a new automatized approach to the evaluation of one-loop amplitudes in terms of Feynman diagrams. Together with the O(alpha_s) corrections to q qbar' -> W b bbar g, which can be obtained from our results by crossing symmetry, this represents the bulk of the next-to-leading order virtual QCD corrections to W b bbar + j and W b + j hadronic production, calculated in a fixed-flavor scheme with four light flavors. Furthermore, these corrections represent a well defined and independent subset of the 1-loop amplitudes needed for the NNLO calculation of W b bbar. Our approach was tested against several
existing results for NLO amplitudes including selected O(alpha_s) one-loop corrections to W + 3j hadronic production. We discuss the efficiency of our method both with respect to evaluation time and numerical stability.

Summary

We present results for the O(alpha_s) virtual
corrections to qg ->W b bbar q' obtained with a
new automatized approach to the evaluation of one-loop
amplitudes in terms of Feynman diagrams. Together with
the O(alpha_s) corrections to q qbar' -> W b bbar g, which
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