

Next-to-leading order corrections for $gg \rightarrow ZH$ with top quark mass dependence

Saturday, August 28, 2021 11:40 AM (20 minutes)

Recently, we present for the first time a calculation of the complete next-to-leading order corrections to the $gg \rightarrow ZH$ process. We use the method of small mass expansion to tackle the most challenging two-loop virtual amplitude, in which the top quark mass dependence is retained throughout the calculations. We show that our method provides reliable numeric results in all kinematic regions, and present phenomenological predictions for the total and differential cross sections at the Large Hadron Collider and its future upgrades. Our results are necessary ingredients towards reducing the theoretical uncertainties of the $pp \rightarrow ZH$ cross sections down to the percent-level, and provide important theoretical inputs for future precision experimental collider programs. In this talk, I will start with a brief introduction to the small mass expansion and then show our new results for the ZH production at the LHC.

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