

Associated ZH production in gluon fusion at NLO QCD

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The associated production of a Higgs boson and one of the weak gauge bosons W or Z at hadron colliders can be understood mainly as the Drell-Yan production of a virtual vector boson, which subsequently radiates a Higgs. QCD corrections affect only the Drell-Yan part and are known through NNLO (α_S^2), leading to a small remaining dependence on the renormalization and factorization scale for the case of WH. For ZH however, another important contribution comes into play at this order, namely from diagrams with gluons in the initial state. Since α_S^2 corresponds only to the leading order for this channel, it increases the scale uncertainties for the ZH cross section. In this work, NLO corrections to gg to ZH are obtained by calculating the K factor in the limit of infinite top quark mass. We find large corrections and reduced scale uncertainties. This allows for a more reliable prediction of the ZH production cross section.

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