

Electroweak Corrections to Higgs boson production and decay

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I present the calculation of complete next-to-leading order electroweak corrections to the Higgs boson production in $gg \rightarrow gH$ channel as well as its rare decay.

We apply the method of differential equations combined with the selection of optimized master integrals to accomplish the calculation of master integrals. We consider three distinct renormalization schemes.

At leading order, the differential distributions and the total cross section show a strong dependence on the renormalization scheme. However, these discrepancies are considerably suppressed once electroweak corrections are taken into account. For G_μ scheme, the electroweak correction amounts to approximately 4.3% of the total cross section. Importantly, we find that the EW corrections exhibit a strong dependence on Higgs transverse momentum.

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