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Electroweak corrections to $g+g \rightarrow H$ and $H \rightarrow \gamma+\gamma$ in the singlet extended Standard Model

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One of the simplest extensions of the Standard Model (SM) Higgs sector is the Higgs singlet extension in which one adds a singlet to the particle content of the SM. Such models are being studied at the LHC. In the simplest realization of this model, in which the singlet is real, there are two Higgs bosons and only three new parameters, two mixing angles and the mass of the additional Higgs boson. For both Higgs bosons we present results of the NLO (two-loop) electroweak corrections to the main production mechanism through gluon fusion as well as to their decay into two photons for different values of the three parameters. In all cases we discuss the importance of the electroweak corrections.

Summary

Primary authors: SUMM, Benjamin; Dr STURM, Christian; Dr UCCIRATI, Sandro

Presenter: SUMM, Benjamin

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