Combining NLO corrections to production and decay in the WH process

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Abstract

Electroweak fits and recent exclusion limits set by CMS and ATLAS seem to favour a light Higgs boson, which makes its discovery challenging because of overwhelming dijet background. This problem can be overcome by restricting searches into the region where the Higgs is highly boosted so that its decay products fall into the same jet. We therefore study the Higgsstrahlung process $pp \to W^+H$ with the decay $H \to b\bar{b}$. We study the stability of a boosted object search strategy upon addition of next-to-leading order QCD corrections to both production and decay. The study is performed using a fixed order Monte-Carlo generator.