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On the interference of ggH and $c\bar{c}H$ Higgs production mechanisms and the determination of charm Yukawa coupling at the LHC

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Higgs boson production in association with a charm-quark jet proceeds through two different mechanisms –one that involves the charm Yukawa coupling and the other one that involves direct Higgs coupling to gluons. The interference of the two contributions requires a helicity flip and, therefore, cannot be computed with massless charm quarks. In this talk, I will discuss how the NLO QCD corrections to this interference can be computed starting from charm-gluon collisions with massive charm quarks and then taking, carefully, the massless limit. I will discuss how one can resum large logarithms of the charm mass from initial states collinear emissions. Then, I will mention that the necessity of a helicity flip implies unconventional behavior of the QCD cross sections in singular limits. Finally, some results will be presented.

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