

Measurement of $t\bar{t}H$ Production Rate in the H to $b\bar{b}$ Decay Channel at CMS

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Associated production of the Higgs boson with a top quark-antiquark pair ($t\bar{t}H$) provides the best direct probe of the top-Higgs Yukawa coupling at tree-level. Measurement of this coupling is important not only to confirm the predictions made by the Standard Model but also to search for indications of new physics. In this talk, I will present an analysis of $t\bar{t}H$ production with the Higgs boson decaying to a $b\bar{b}$ pair which has the largest branching fraction. Latest results obtained using pp collision data at the CERN LHC recorded by the CMS experiment at $\sqrt{s} = 13$ TeV between 2016 and 2018 corresponding to an integrated luminosity of 138 fb^{-1} will be shown. One particularly challenging background limiting the precision of this measurement arises from direct $t\bar{t}b\bar{b}$ production. Measurements of both the overall $t\bar{t}H$ production rate and in intervals of Higgs boson transverse momentum are performed and will be presented.

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