Update of the STXS-based measurements of Higgs boson to bottom quark coupling in the associated vector boson production mode of the Higgs boson where the vector boson decays leptonically

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In 2012, the ATLAS and CMS Collaborations announced the discovery of a new state with a mass around 125 GeV[1][2][3], compatible with the Standard Model Higgs boson.

In 2018, the Higgs boson to bottom quark coupling was observed with a significance of 5.6 sigma using the full Run 1 and Run 2 data by the CMS collaboration[4].

Further precision measurements of the coupling of the Higgs boson to bottom quark are currently being studied. This talk mainly focuses on the latest update of the Simplified Template Cross Section measurements of the Higgs boson to bottom quark coupling in the associated vector boson production mode of the Higgs boson using the full Run 2 dataset where the vector boson decays leptonically and the Higgs boson decays to a pair of bottom quarks.

References

[1] The ATLAS Collaboration. Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS detector at the LHC. *Physics Letters B*, 716(1):1–29, Sep 2012.

[2] The CMS Collaboration. Observation of a new boson at a mass of 125 GeV with the CMS experiment at the LHC. *Physics Letters B*, 716(1):30–61, Sep 2012.

[3] The CMS Collaboration. Observation of a new boson with mass near 125 GeV in pp collisions at $\sqrt{s} = 7$ and 8 TeV. *Journal of High Energy Physics*, 2013(6), Jun 2013.

[4] The CMS Collaboration. Observation of Higgs Boson Decay to Bottom Quarks. *Physical Review Letters*, 121(12), Sep 2018.