## Phenomenology 2018 Symposium



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## ttH production studies with CMS

Tuesday 8 May 2018 14:00 (15 minutes)

The search for associated production of Higgs bosons and top quark-antiquark pairs is reported, based on a dataset of 35.9 fb<sup>-</sup>1 collected by the CMS experiment in 2016 in proton-proton collisions at a center-of-mass energy of  $\sqrt{(s)} = 13$  TeV at the CERN LHC. The search expoits statistically independent analysis targeting different Higgs boson and top quark-anitquark pair decay modes, employing final states with leptons, photons, jets and hadronically decaying  $\tau$  leptons. The results from this search are combined with the dataset collected in 2011 and 2012 in proton-proton collisions at a center-of-mass energy of sqrt(s) = 7 and 8 TeV. An excess of events is observed, with a significance of 5.2 standard deviations over the background-only hypotesis, where the corresponding expected significace for a standard model Higgs boson of 125.09 GeV of mass is 4.2 standard deviations. The combined best fit signal strength normalized to the standard model prediction is  $1.26^{+0.31}_{-0.26}$ .

Summary

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