

Abstract Submitted  
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**Measuring the top-Higgs coupling at CMS** EVAN WOLFE, CHRIS NEU, University of Virginia, CMS COLLABORATION — With the discovery of the scalar boson in 2012 and measurements corresponding thus far to the standard model prediction of the Higgs, the future of experimental particle physics has become much more broad with respect to the search for new physics. Observations of the interaction between the Higgs boson and top quark are also needed to clearly identify the new boson's properties and allow its full classification in the standard model. Theory predicts the Higgs to couple strongest to the top quark, allowing an excellent probe into the current understanding of the standard model by measuring  $t\bar{t}H$  production at the CMS detector. Measuring  $t\bar{t}H$  production is the only direct method for measuring the top-Higgs coupling which could provide both a reach into new physics and constrain extensions to the standard model such as Little Higgs, composite Higgs and Extra Dimensions. The direct probe of the top-Higgs coupling through  $t\bar{t}H$  will be able to shed light on extensions to the SM by comparisons to theoretical cross-sections and the method of electroweak symmetry breaking with the most massive fermion found to date. In this talk I'll present results from Runs I and II and our current outlook as the LHC now moves into higher luminosities.

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