

# Search for Higgs boson production in association with a top quark pair at CMS

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Tuesday, March 4 ♦ 4:00 P.M.  
Room 415 Nieuwland Science Hall

“A” Higgs Boson has been found at the LHC. One follow-up question is whether it is “THE” standard model (SM) Higgs boson. A key component of addressing this question will be to determine whether the observed couplings between this new particle and the rest of the SM particles match with the predictions for a SM Higgs boson. Our search for Higgs boson production in association with a top quark pair--where the Higgs Boson decays to bottom quark pair or tau lepton pairs and the top quark pair decays to either lepton plus jets or dileptons--provides the first direct probe of the coupling between the Higgs boson and the top quark. Any deviation from expectations could indicate new physics beyond the SM.