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Search for production of a Higgs boson and a single top quark

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We present recent results from searches for the production of a Higgs boson in association with a single top quark (tHq), using data samples collected by the CMS detector in pp collisions at center-of-mass energy of 13 TeV, using data samples with integrated luminosity of up to 35.9 fb-1. The searches exploit a variety of top quark and Higgs boson decay modes resulting in final states with photons, bottom quarks, or multileptons, and employ a variety of multivariate techniques to maximize the sensitivity to the signal. Due to interference between the two main leading-order diagrams, the tHq process is sensitive to the relative sign of the couplings of the Higgs to the top quark and the vector bosons, and thus provides unique information on Higgs boson properties.

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