

Search for the top squark pair production with two-body decays to a charm quark and a neutralino in proton-proton collisions at $s = \sqrt{13}$ TeV

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The hadronic products that result from proton-proton collisions at the Large Hadron Collider (LHC) can give rise to jet formation that can be detected by the Compact Muon Solenoid (CMS) detector. The new algorithm is developed to identify charm quark jets while rejecting bottom and light flavor jets called c-tagger. The c-tagger is integrated into the CMS software (CMSSW). It can be used in supersymmetry (SUSY) searches for new particles such as stop, the SUSY partner of standard model (SM) top, that may subsequently decay to a charm quark and the lightest supersymmetric particle (LSP) or neutralino.

This talk presents a search for direct production of top squark pairs in proton-proton collisions at a center-of-mass energy of $s = \sqrt{13}$ TeV collected by the CMS experiment at the LHC in 2016. The data used correspond to an integrated luminosity of 36 fb^{-1} . No statistically significant excess of events is found beyond the expected contribution from standard model processes. Exclusion limits are set in the context of simplified models of top-squark pair production. Top squarks with masses below 510 GeV are excluded if the mass difference to the lightest neutralino is small.

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