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Search for heavy resonances coupling to third generation quarks at CMS

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Many models of physics beyond the Standard Model (SM) contain enhanced couplings to third generation quarks. We present an overview of searches for new physics containing top and bottom quarks in the final state, using proton- proton collision data collected with the CMS detector at the CERN LHC at a center-of--mass energy of 13 TeV. These results cover non-SUSY based extensions of the SM, including heavy gauge bosons or excited third generation quarks. Decay channels to vector-like top partner quarks, such as T, are also considered. This results in a top-pair-like final state, as the T decays to a W boson and bottom quark; however the reconstructed mass of the T can be used to further signal discrimination. We explore the use of jet substructure techniques to reconstruct the highly boosted objects in events, enhancing the sensitivity of these searches.

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