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Searches for new resonances decaying to at least one top quark in pp collisions at a center-of-mass energy of 13 TeV.

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Many physics models beyond the Standard Model predict heavy new particles preferentially decaying to at least one top quark. Three searches for a heavy resonance decaying into at least one top quark in pp collision at a center-of-mass energy of 13 TeV at the LHC will be presented in the talk. These searches include: The search for a heavy resonance decaying to a top quark and a W boson in the fully hadronic final state as well as in the lepton+jets final state, and the search for W' bosons decaying to a top and a bottom quark in the all-hadronic final state. The three searches use the data collected by the CMS experiment between 2016 and 2018, corresponding to an integrated luminosity of 137 fb−1. Novel machine learning techniques and reconstruction techniques are used to optimize discrimination of top quarks with high Lorentz boosts, which requires the use of non isolated leptons and jet substructure techniques, as well as allowing for a significant improvement of the analysis sensitivity compared with earlier results. No significant excess of events relative to the expected yield from standard model processes is observed. The most stringent limits to date are obtained from these searches.

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No

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