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Search for resonant $t\bar{t}$ production in proton-proton collisions at 13 TeV

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A search for a heavy resonance decaying into a top quark and antiquark pair is performed using proton-proton collisions at 13 TeV. The search uses the dataset collected with the CMS detector in 2016, which corresponds to an integrated luminosity of 35.9 1/fb. The analysis is split into three exclusive final states and uses reconstruction techniques that are optimized for top quarks with high Lorentz boosts, which requires the use of non-isolated leptons and jet substructure techniques. No significant excess of events relative to the expected yield from standard model processes is observed. Upper limits on the production cross section of heavy resonances decaying to a tt pair are calculated. Limits are derived for a leptophobic topcolor Z' and for Kaluza–Klein excitations of the gluon in the Randall–Sundrum model.

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