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Search for Top-Antitop Quark Resonances in Boosted Semileptonic Final States in 13 TeV pp Collisions

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A search for new heavy resonances decaying into top-antitop quark pairs is performed using proton-proton collisions at a center of mass energy of 13 TeV. The full dataset recorded in 2016 with the CMS detector corresponds to an integrated luminosity of 35.9 fb^{-1} . We consider only events containing one muon or one electron, at least two jets in the final state, and missing transverse energy. The analysis is optimized for events where the top quarks have a large Lorentz-boost resulting in highly collimated final state objects. The sensitivity of the search is improved by identifying jets originating from the top quark decay using jet substructure variables and by employing an MVA approach to reduce W +jets background.

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