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Searches for top-antitop quark resonances at $\sqrt{s} = 13$ TeV with the ATLAS detector

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A search for resonances produced in 13 TeV proton-proton collisions and decaying into top-quark pairs is described. In this talk events where the top-quark decay produces a single isolated charged lepton, missing transverse momentum and jet activity compatible with a hadronic top-quark decay recorded with the ATLAS detector at the Large Hadron Collider are considered. We investigate the observed invariant mass spectrum in a model-independent approach to seek for any significant deviation from the Standard Model (SM) background expectation. Matrix Method was used to estimate the QCD multi-jet background, which has large statistical and systematic uncertainties when modelled using Monte Carlo techniques. To quantify sensitivity results are interpreted in terms of specific benchmark models such as Z' bosons, Kaluza–Klein gluons and Kaluza–Klein gravitons that decay into top-quark pairs. Within the scope of the uncertainties, the results are in line with the expectations according to SM. A synopsis of the results followed by an explanation of key findings will be presented.

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