

## Searches for heavy BSM particles resulting in boosted final states at CMS

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We present results from searches for resonances with enhanced couplings to third generation quarks, based on proton-proton collision data at a centre-of-mass energy of 13 TeV recorded by CMS. The signatures include single and pair production of vector-like quarks and heavy resonances decaying to third generation quarks. A wide range of final states, from multi-leptonic to entirely hadronic is covered. Jet substructure techniques are employed to identify highly-boosted heavy SM particles in their hadronic decay modes.

Furthermore, we present a search for a heavy resonance that decays in cascade through a radion and a boson into three bosons using proton-proton collision data collected with the CMS detector at the CERN LHC at a center-of-mass energy of 13 TeV. The final states analysed contain leptons and massive jets, where the latter contain the decay products of one or two Lorentz-boosted boson(s). The jet substructure observed in these final states is uncommon and therefore requires dedicated calibration methods, which are discussed in this talk. We set limits on the production of a massive excited Kaluza-Klein gauge boson.

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