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Search for vector-like quarks in events with two oppositely charged leptons and jets in proton-proton collisions at root s=13TeV

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Abstract

A search for the pair production of heavy vector-like partners T and B of the top and bottom quarks has been performed by the CMS experiment at the CERN LHC using proton-proton collisions at $\sqrt{s} = 13$ TeV. The data sample was collected in 2016 and corresponds to an integrated luminosity of 35.9 fb⁻¹. Production include those where one of the T quarks decays via TtZ and the other via TbW, tZ, or tH, where H is a Higgs boson. For the BB case, final states include those where one of the B quarks decays via BbZ and the other BtW, bZ, or bH. Events with two oppositely charged electrons or muons, consistent with coming from the decay of a Z boson, and jets are investigated. The number of observed events is consistent with standard model background estimations. Lower limits at 95% confidence level are placed on the masses of the T and B quarks for a range of branching fractions. Assuming 100% branching fractions for TtZ, and BbZ, T and B quark mass values below 1280 and 1130 respectively, are excluded.

Keywords

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