Search for high-mass resonances in final states with a lepton and missing transverse momentum at root s=13 TeV

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Abstract

A search for new high-mass resonances in proton-proton collisions having final states with an electron or muon and missing transverse momentum is presented. The analysis uses proton-proton collision data collected in 2016 with the CMS detector at the LHC at a center-of-mass energy of 13TeV, corresponding to an integrated luminosity of 35.9 fb(-1). The transverse mass distribution of the charged lepton-neutrino system is used as the discriminating variable. No significant deviation from the standard model prediction is found. The best limit, from the combination of electron and muon channels, is 5.2TeV at 95% confidence level for the mass of a W' boson with the same couplings as those of the standard model Wboson. Exclusion limits of 2.9TeV are set on the inverse radius of the extra dimension in the framework of split universal extra dimensions. In addition, model-independent limits are set on the production cross section and coupling strength of W' bosons decaying into this final state. An interpretation is also made in the context of an R parity violating supersymmetric model with a slepton as a mediator and flavor violating decay.

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