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Search for supersymmetry in the multijet and missing transverse momentum channel in pp collisions at 13 TeV: Hadronic tau background

AHMAD BORZOU, Baylor Univ, CMS COLLABORATION — An all hadronic supersymmetry search with the focus on large missing energy and multiple jets is presented where data is explored in terms of missing transverse momentum, the scalar sum of jet transverse momenta, bottom quark multiplicity, and jet multiplicity. The data is collected by the CMS detector at the Large Hadron Collider (LHC) at $\sqrt{s} = 13$ TeV and corresponds to an integrated luminosity of 2.3 fb^{-1} . We will show that the data is consistent with the standard model and no excess in the observed number of events is seen. Exclusion limits, therefore, are presented for a few simplified supersymmetric models in which gluinos decay to a pair of quarks and a stable super particle that leaves the detector undetected. We show that if the stable super particle has a light mass, gluinos with mass below the range of 1.4 TeV to 1.6 TeV, depending on the model, are excluded. The involved SM backgrounds in the presented search are lost leptons, hadronically decaying taus, Z bosons that decay to neutrinos, and QCD jets. In this talk we mainly focus on the hadronically decaying taus.

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