

Abstract Submitted
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A Search for Fully Hadronic Mode Vector-Like Quark Pair Production in 13 TeV pp Collisions using CMS Data AMAR VENUGOPAL, Rutgers Univ, CMS COLLABORATION — We describe a search for the production of a pair of vector-like quarks (VLQ's) with masses greater than 1000 GeV/c² decaying into a b quark and a Higgs Boson using 13 TeV center-of-mass, proton-proton collision data from the CMS Experiment. Since the predominant decay mode of the Higgs Boson is to a $b\bar{b}$ pair, the analysis focuses on a final state consisting of jets resulting from the $b(\bar{b})$ quarks produced in the VLQ decays. We use a χ^2 procedure based on the Higgs masses and the equality of the two VLQ masses to select the correct combinations of jets. Requiring that the jets are consistent with the production of a pair of Higgs and that the reconstructed VLQ's have equal masses greatly reduces the background from Standard Model processes. Since for highly boosted Higgs, the two jets resulting from the daughter $b(\bar{b})$ quarks might merge into a single jet, we present three independent analyses depending on the number of observed jets and the number of high invariant-mass jets. We present expected exclusion limits using 81 fb⁻¹ of integrated luminosity collected at CMS in 2016 and 2017.

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