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A Search for Di-Leptonic Final State Vector-Like Quark Pair Production in 13 TeV pp Collisions Using CMS Data[1] PAMELA PAJARILLO, Rutgers, The State University of New Jersey, CMS COLLABORATION — We describe a search for the production of a pair of Bottom-type ($B\bar{B}$) vector-like quarks (VLQs) with masses greater than 900 GeV in a di-lepton final state using data from proton-proton collisions at a center-of-mass energy of 13 TeV recorded by the CMS Experiment. The analysis is based on the detection of a di-lepton pair from the decay of a Z boson and is sensitive to events in which one VLQ decays to a b quark and a Z boson and the other to a b quark and either a Z or a Higgs boson. Requiring that the event kinematics are consistent with a di-leptonic Z decay, with either a Z or Higgs decaying to jets and that the reconstructed VLQs have equal masses greatly reduces the background from Standard Model processes. We use a modified-χ^2 procedure based on the Higgs or Z mass and the equality of the two VLQ masses to select the correct combinations of jets. Since for a highly boosted Higgs or Z, the two jets resulting from the daughter quarks might be merged to a single jet, we carry out two independent analyses depending on the number of observed jets. We present the expected exclusion limits from the combined analyses corresponding to 137 fb^{-1} of integrated luminosity collected by CMS during 2016, 2017, and 2018 run period.

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