

Abstract Submitted  
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**A Search for Di-Leptonic Final State Vector-Like Quark Pair Production in 13 TeV  $pp$  Collisions Using CMS Data**<sup>1</sup> PAM PAJARILLO, Rutgers University, New Brunswick, 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-leptonic final state in 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  $\chi^2$  metric 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, we carry out independent analyses depending on the number of observed jets. We present the expected exclusion limits using  $137 \text{ fb}^{-1}$  of integrated luminosity collected by CMS during 2016, 2017 and 2018 run periods.

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