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Search for pair production of vector-like quarks that decay to a Z boson and a third-generation quark in trilepton final states in pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector YOU ZHOU[1], ELLIOTT CHEU[2], University of Arizona — A search is outlined for the pair production of vector-like quarks that decay to a Z boson and a third-generation Standard Model quark. In the case of a charge $+2/3$ vector-like quark (T), the decay targeted is $T \to Zt$, while the decay targeted for a charge $-1/3$ vector-like quark (B) is $B \to Zb$. Selected events contain a high transverse momentum Z boson candidate reconstructed from a pair of oppositely charged same-flavor leptons (electrons or muons), and are analyzed in the final states defined by the presence of a third lepton. Hadronic jets, in particular those with properties consistent with the decay of a b-hadron, are also required to be present in selected events. The agreement between the simulated data and observed data is examined in various control regions defined by the absence of b-tagged jets and Z boson candidates with low transverse momentum. The expected lower limits are derived on the mass of vector-like T and B quarks considering only the statistical uncertainties under various branching ratio hypotheses.

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