

Search for pair production of new heavy quarks that decay to a Z boson and a third generation quark in pp collisions at $\sqrt{s} = 8$ TeV with the ATLAS detector at the LHC

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We search for the pair production of a new heavy quark, assuming the new quark has a significant branching ratio to decay into a Z boson and a Standard Model top (t) or bottom (b) quark.

For a new bottom-like quark B, we focus on the decay channel $B \rightarrow Zb$; for a new top-like quark T, we target the decay channel $T \rightarrow Zt$. The search uses a dataset corresponding to 14.3 fb^{-1} of pp collisions at $\sqrt{s} = 8$ TeV recorded

in 2012 with the ATLAS detector at the CERN Large Hadron Collider.

The signature is a high transverse momentum Z boson, decaying to light leptons, at least two jets possessing properties consistent with the hadronization of a b quark, and a large total transverse momentum of all central jets in the event. The results of the search are interpreted in the context of models with vector-like quarks (VLQ), where both chiralities have the same transformation properties under the electroweak gauge group.

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