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Search for First-Generation Leptoquarks in CMS

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Abstract

We present the results of a search for pair production of first-generation scalar leptoquarks (LQ) in the final state arising from $L\bar{Q}L\bar{Q} \rightarrow e\bar{e}e\bar{e}$ using 1.1 pb^{-1} of pp collisions at $\sqrt{s} = 7 \text{ TeV}$ collected with the CMS detector at the CERN LHC. The number of observed events is in good agreement with the predictions for standard model background processes, and we consequently set an upper limit on the LQ cross section times β^2 as a function of the LQ mass, where β is the branching fraction of $L\bar{Q} \rightarrow e\bar{q}$. We set a 95% C.L. lower limit on the mass of a first-generation scalar LQ at $220 \text{ GeV}/c^2$ for $\beta = 1$.

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