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Search for new physics in events with same-sign dileptons and b jets in pp collisions at $\sqrt{s} = 8$ TeV



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ABSTRACT: A search for new physics is performed using events with isolated same-sign leptons and at least two bottom-quark jets in the final state. Results are based on a sample of proton-proton collisions collected at a center-of-mass energy of 8 TeV with the CMS detector and corresponding to an integrated luminosity of 10.5 fb^{-1} . No excess above the standard model background is observed. Upper limits are set on the number of events from non-standard-model sources and are used to constrain a number of new physics models. Information on acceptance and efficiencies is also provided so that the results can be used to confront an even broader class of new physics models.

KEYWORDS: Hadron-Hadron Scattering

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section $\sigma(\text{pp} \rightarrow \text{tt} + \overline{\text{tt}}) < 0.87 \text{ pb}$ and $\sigma(\text{pp} \rightarrow \text{tt}) < 0.30 \text{ pb}$ at the 95% confidence level.

We also exclude gluinos with masses up to approximately 1 TeV if they decay exclusively into top or bottom squarks, and we place a lower limit on the bottom-squark mass of 450 GeV. Our results assume that the top and bottom squarks decay as $\tilde{\text{t}}_1 \rightarrow \text{t}\tilde{\chi}_1^0$ and $\tilde{\text{b}}_1 \rightarrow \text{t}\tilde{\chi}_1^-$, respectively. In the latter case we have also assumed $\tilde{\chi}_1^- \rightarrow \text{W}^- \tilde{\chi}_1^0$.

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