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# Search for new physics in events with same-sign dileptons and b-tagged jets in pp collisions at $\sqrt{s} = 7$ TeV

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**The CMS collaboration**

**ABSTRACT:** A search for new physics is performed using isolated same-sign dileptons with at least two b-quark jets in the final state. Results are based on a  $4.98 \text{ fb}^{-1}$  sample of proton-proton collisions at a centre-of-mass energy of 7 TeV collected by the CMS detector. No excess above the standard model background is observed. Upper limits at 95% confidence level are set on the number of events from non-standard-model sources. These limits are used to set constraints on a number of new physics models. Information on acceptance and efficiencies are also provided so that the results can be used to confront additional models in an approximate way.

**KEYWORDS:** Hadron-Hadron Scattering

## 9 Conclusions

We have presented results of a search for same-sign dileptons with b jets using the CMS detector at the LHC based on a  $4.98\text{ fb}^{-1}$  data sample of pp collisions at  $\sqrt{s} = 7\text{ TeV}$ . No significant deviations from the SM expectations are observed.

The data are used to set 95% CL upper limits on the number of new physics events for a number of plausible signal regions defined in terms of requirements in  $E_{\text{T}}^{\text{miss}}$  and  $H_{\text{T}}$ , the number of b-tagged jets (2 or 3), and also the sign of the leptons (only positive dileptons or both positive and negative dileptons).

We use these results to set a limit  $\sigma(\text{pp} \rightarrow \text{tt}) < 0.61\text{ pb}$  at 95% CL, and to put bounds on the parameter space of two models of same-sign top pair production. We also set limits on two models of gluino decay into on-shell or off-shell top squarks, a model of sbottom pair production, and a model of sbottom production from gluino decay. In addition, we provide information to interpret our limits in other models of new physics.

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