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LHC phenomenology of supersymmetric models with a $U(1)_R$ baryon number

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We study the phenomenology of a supersymmetric extension of the Standard Model with an R -symmetry under which R -charges correspond to the baryon number. This identification allows for the presence in the superpotential of the R -parity violating term $\lambda'' U^c D^c D^c$ without breaking baryon number, which loosens several bounds on this operator while changing considerably the phenomenology. However, the R -symmetry cannot remain exact as it is at least broken by anomaly mediation. Under these conditions, we investigate the constraints coming from recent ATLAS and CMS experimental searches and use these to place limits on the parameter space of the model. This is done for both stop production, which now features both pair and resonant production, and pair production of the first two generations of squarks.

Summary

Primary author: EARL, Kevin (Carleton University)

Presenter: EARL, Kevin (Carleton University)

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