



Contribution ID: 49

Type: **not specified**

Search for pair production of top squarks decaying to a top quark and light-flavor jets

Monday, 20 July 2020 09:15 (15 minutes)

Traditional searches for supersymmetry at LHC collider experiments have returned null results thus far. The expected, characteristic signature of high missing energy (MET) final states has not been observed. Motivated by this, our analysis searches for “stealthier” SUSY where high MET signatures would not manifest. Two models considered here are Stealth and R-parity violating SUSY and evidence for said models is searched for through top squark pair production at the CMS experiment. Here the top squark decay leaves a final state that contains two top quarks and many light-flavored jets with no additional missing energy. The analysis uses a neural network employing gradient reversal in order to help discriminate signal events from background. The full Run2 data set is utilized and results are interpreted in the context of the above models.

Summary

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Session Classification: Monday Morning 1