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Boosted Tops from Gluino Decays

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Abstract:

In SUSY models with light third generation squarks, gluino pair-production is typically the dominant SUSY production process at the LHC, and it often leads to final states with multiple top quarks. Some of these top quarks may be relativistic in the lab frame, in which case their hadronic decays may produce "top jets". We propose that the recently developed techniques for tagging top jets can be used to boost sensitivity of the LHC searches for this scenario. For example, within the simplified model used for this study, we estimate that a search with 2 top-tagged jets can probe gluino masses of up to about 1 TeV at the 7 TeV LHC with 30 inverse fb integrated luminosity.

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