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Soft gluon resummation for associated gluino-gaugino production at the LHC

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We present a threshold resummation calculation for the associated production of gluinos and gauginos at the LHC to the next-to-leading logarithmic accuracy. Analytical results are presented for the process-dependent soft anomalous dimension and the hard function. The resummed results are matched to a full next-to-leading order calculation, for which we have generalised the previously known results to the case of supersymmetric scenarios featuring non-universal squark masses. Numerically, the next-to-leading logarithmic contributions increase the total next-to-leading order cross section by 7 to 20% for central scale choices and gluino masses of 3 to 6 TeV, respectively, and reduce its scale dependence typically from up to $\pm 12\%$ to below $\pm 3\%$.

Experimental Collaboration

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