

Resummation effects in weak SUSY processes

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Updated results for electroweak production of SUSY particles at the LHC Run-II are given with NLO+NLL (next-to-leading-order plus next-to-leading-logarithmic) accuracy, consistently computed with novel PDFs with resummation-improved matrix elements.

A factorisation method is applied to exploit the smaller PDF uncertainty of the global PDF sets and to avoid complications arising in the refitting of threshold-resummation improved PDF replicas in Mellin space. The reduction of the scale uncertainty due to the resummation is, however, explicitly taken into account. As expected, the resummation contributions in the PDF fits partially compensate the cross section enhancements induced by those in the partonic matrix elements.

Results are given for neutralino and chargino pair production in their mostly higgsino or gaugino configuration, and for left-handed selectron/smuon, right-handed and maximally mixed stau pair production.

For the case of slepton pair production further improved results with next-to-next-to-leading logarithmic (NNLL) accuracy, matched to approximate next-to-next-to-leading order (aNNLO) QCD corrections are presented, showing a further significant reduction of the factorisation and renormalisation scale dependence that stabilises the predictions to the permil level.

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