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Pair production of electroweak superpartners at the LHC in NLO+NLL with resummation-improved parton densities

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We make use of recently released parton density functions (PDFs) with threshold-resummation improvement to consistently calculate theoretical predictions for neutralino-chargino and slepton pair production at next-to-leading order and next-to-leading logarithmic accuracy. The updated cross sections have been computed for experimentally relevant higgsino/gaugino and slepton search channels at the ongoing Run II of the LHC. 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.

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