

Threshold resummation for squark-and gluino hadroproduction

The production of SUSY particles (sparticles) at the LHC is dominated by processes involving coloured sparticles in the final state. Since these processes are of great importance for SUSY searches at the LHC, precise theoretical predictions are needed. Higher-order QCD corrections are dominated by large logarithmic terms due to the emission of soft gluons from initial and final state particles. A systematic treatment of these logarithms to all orders in perturbation theory is provided by resummation methods. In this talk we will present predictions for total cross sections for the LHC which include next-to-leading order supersymmetric QCD corrections and the resummation of soft gluon emission at next-to-leading-logarithmic (NLL) accuracy.

We discuss the impact of these higher-order corrections on total cross sections, and provide an estimate of the theoretical uncertainty due to scale variation and the parton distribution functions. Furthermore we present results at next-to-next-to-leading-logarithmic (NNLL) accuracy for the production of a squark-antisquark pair.

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