

Precision calculations for squark and gluino production at threshold

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In light of the recent upgrade of the Large Hadron Collider (LHC), precise calculations for the production of supersymmetric particles are required to test new physics models. The all-order resummation of soft and Coulomb gluons deals with potentially large terms endangering the perturbative series and can enhance the production cross sections in certain kinematical regions.

In this talk, state-of-the-art results on squark and gluino production will be presented, including the resummation of soft gluons in Mellin-moment space up to next-to-next-to-leading logarithmic accuracy and Coulomb corrections using a next-to-leading order Coulomb potential. Furthermore, the contributions from higher-order hard interactions will be considered, as well as boundstate corrections, arising from the behaviour of the Coulomb corrections below the production threshold. A particular emphasis will be placed on the production of stops, the superpartners of the heavy top quarks.

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