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Squark pair production and decay at NLO matched with parton showers

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The pair production of squarks is one of the main search channels for supersymmetry at the LHC. For the interpretation of experimental data precise theoretical predictions are crucial. The work presented in the talk contributes to this effort by providing a fully differential calculation of the NLO SUSY-QCD corrections to the on-shell production of squark pairs supplemented by the decay of the squarks to the lightest neutralino and a quark in the MSSM.
However, for precise simulations at the level of the actually measured experimental observables a combination of these fixed-order NLO calculations and parton showers is mandatory. To this end, the process was implemented in the Powheg-Box framework and interfaced with different parton shower programs. We study the impact of the NLO corrections on the differential scale dependence and K-factors and investigate the parton shower effects.

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