



Tuesday, 13 May 2014 at 14:00 c.t.
Seminar room 0815, 8th floor, physics highrise

Squark production and decay at NLO matched with parton showers

Eva Popena

PAUL SCHERRER INSTITUT

Abstract

The production of squarks is among 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 fully differential calculations of the NLO SUSY-QCD corrections to the on-shell production of squarks supplemented by the decay of the squarks to the lightest neutralino and a quark in the MSSM. In contrast to old calculations no assumptions regarding the squark masses is made and the different subchannels are treated independently. The subtraction of on-shell intermediate gluinos is performed with a new approach and compared to several methods proposed in the literature. For realistic predictions a combination of these fixed-order NLO calculations and parton showers is mandatory. To this end, the processes have been implemented in the Powheg-Box framework and interfaced with different parton shower programs. We study the impact of the NLO corrections on K-factors, the differential scale dependence and total rates and investigate the parton shower effects.