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NLO corrections to dark matter annihilation with light scalar quarks

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We will present the current results of our analyses of SUSY-QCD corrections to dark matter annihilation cross-section in pMSSM scenarios with a light scalar quark of the third generation. Such scenarios are extremely appealing as they have not yet been ruled out by LHC searches and at the same time the lightest Higgs mass in these scenarios is predicted to be consistent with the measured value of 125 GeV. In case the light scalar quark is almost degenerate with the dark matter candidate, the neutralino, the dark matter annihilation cross-section is dominated by co-annihilations of the neutralino and the scalar quark as well as the annihilations of scalar quarks.

The focus of our analysis are the annihilations of scalar quarks into heavy quarks. The SUSY-QCD corrections to these processes have been implemented in our analysis code DM@NLO and a thorough analysis of typical pMSSM scenarios will be presented.

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