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Four-jet DPS production in pp and pA collisions within the Pythia's framework

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In spite of the recent progress in both theoretical and experimental studies many aspects of *multiple parton interactions* (MPI) still require a detail investigation. In particular, *double parton scattering* (DPS) processes can play a dominant role for some specific kinematic regions of multi-jet production, especially in *proton-nucleus* (pA) collisions where the total DPS cross section is approximately 3A times bigger as the corresponding total DPS cross section in *proton-proton* (pp) collisions.

In this talk I will present results I have got during the work on my MCNet short-term project, in particular I will consider two different ways to model *double parton distribution functions*, namely double DGLAP evolution equations and MPI formalism of the Pythia event generator, present a quantitative study of differences and similarities between both approaches and discuss their impact on various DPS sensitive differential distributions. Additionally I will compare predictions of a Pythia's built-in model of pA collisions (Angantyr) against theoretical computations currently available in the literature and show that it demonstrates a correct dependence of a total DPS cross section on a total number of nucleons.

Summary

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