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Dijet azimuthal correlations in multijet production at high energy in k_T-factorization

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A new method of consistent merging of jet calculations in k_T-factorization with higher-order matrix elements is proposed. We study azimuthal correlations between leading and subleading jets in large$-p_T$ multijet production with two, three and four jets in final state within the parton Reggeization approach (PRA). PRA is based on k_T-factorization of hard processes in the multi-Regge
kinematics, Kimber-Martin-Ryskin unPDFs and Lipatov's effective theory of Reggeized gluons and quarks. Last one allows to treat initial-state radiation in a gauge invariant way. As it was shown earlier in [1] and [2], Reggeized amplitudes in PRA totally agree with off-shell amplitudes from the AVHLIB [3] and calculations of hard cross sections use MC generator KaTie [4] with KMR unPDFS [5] should coincide with direct calculations in PRA. We have checked this statement for production of two and three jets. The final calculations have been done with KaTie MC event generator. We have obtained a good agreement with CMS data [6] for azimuthal correlations between leading and subleading jets for events with more than two, three and four jets.

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