

Four jet production in single and double parton interaction in high energy factorization

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I would like to report on first study of 4-jet production in a complete high-energy factorization (HEF) framework. The results include contributions from both single-parton scattering (SPS) and double-parton scattering (DPS). The calculations are performed for kinematical situations relevant for two experimental measurements (ATLAS and CMS) at the LHC. We compare our results to those reported by the ATLAS and CMS collaborations for different sets of kinematical cuts. The results of the HEF approach are compared with their counterparts for collinear factorization. For symmetric cuts the DPS HEF result is considerably smaller than the one obtained with collinear factorization. The mechanism leading to this difference is of kinematical nature. We conclude that an analysis of inclusive 4-jet production with asymmetric p_T -cuts below 50 GeV would be useful to enhance the DPS contribution relative to the SPS contribution. In contrast to the collinear approach, the HEF approach nicely describes the distribution of the ΔS variable, which involves all four jets and their angular correlations.

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