



Contribution ID: 257

Type: Parallel Talk

Forward production of charm and bottom dijets with off-shell partons

Friday, 8 July 2022 18:00 (15 minutes)

We report on calculations of differential cross sections for $c\bar{c}$ - and $b\bar{b}$ -dijet production in pp -scattering at $\sqrt{s} = 13$ TeV in the k_T -factorization and hybrid-factorization approaches with different unintegrated parton distribution functions (uPDFs). We present distributions in transverse momentum and pseudorapidity of the leading jet, rapidity difference between the jets and the dijet invariant mass. Our results are compared to recent LHCb data on forward production of heavy flavour dijets, measured for the first time individually for both, charm and bottom flavours. We found that an agreement between the predictions and the data within the full k_T -factorization is strongly related to the modelling of the large- x behaviour of the gluon uPDFs which is usually not well constrained. The problem may be avoided following the hybrid factorization approach. Then a good description of the measured distributions is obtained with the Parton-Branching, the Kimber-Martin-Ryskin, the Kutak-Sapeta and the Jung setA0 CCFM gluon uPDFs. We calculate also differential distributions for the ratio of $c\bar{c}$ and $b\bar{b}$ cross sections. In all cases we obtain the ratio close to 1 which is caused by the minimal condition on jet transverse momenta ($p_T^{\text{jet}} > 20$ GeV) introduced in the experiment, that makes the heavy quark mass almost negligible. The LHCb experimental ratio seems a bit larger. We discuss potentially important for the ratio effect of c - or b -quark gluon radiative corrections. The found effect seems rather small. More details can be found in our original paper [1].

[1] R. Maciula, R. Pasechnik and A. Szczurek, "Production of forward heavy-flavour dijets at the LHCb within k_T -factorization approach", arXiv:2202.07585 [hep-ph].

In-person participation

Yes

Primary authors: SZCZUREK, Antoni; MACIULA, Rafal (Institute of Nuclear Physics PAN)

Presenter: SZCZUREK, Antoni

Session Classification: Strong interactions and Hadron Physics

Track Classification: Strong interactions and Hadron Physics