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State of the art calculation for Z+jet production at LHC within kT-factorization

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We perform calculations of Z+jet cross-section taking into account the transverse momenta of the initial partons. Transverse Momentum Dependent (TMD) parton densities obtained with the Parton Branching method are used and higher order corrections are included via TMD parton showers in the initial state. The predictions are compared to measurements of forward Z+jet production of the LHCb collaboration at $\sqrt{s} = 7$ TeV. We show that the results obtained in kT-factorization are in good agreement with results obtained from a NLO calculation matched with traditional parton showers. We also demonstrate that in the forward rapidity region, kT-factorization and hybrid factorization predictions agree with each other.

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