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Forward di-jet production in p+Pb collisions in the small-x improved TMD factorization framework

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I am going to report on study the production of forward di-jets in proton-lead and proton-proton collisions at the Large Hadron Collider. Such configurations, with both jets produced in the forward direction, impose a dilute-dense asymmetry which allows to probe the gluon density of the lead or proton target at small longitudinal momentum fractions. Even though the jet momenta are always much bigger than the saturation scale of the target, Qs, the transverse momentum imbalance of the di-jet system may be either also much larger than Qs, or of the order Qs, implying that the small-x QCD dynamics involved is either linear or non-linear, respectively. The small-x improved TMD factorization framework deals with both situation in the same formalism. In the latter case, which corresponds to nearly back-to-back jets, we find that saturation effects induce a significant suppression of the forward di-jet azimuthal correlations in proton-lead versus proton-proton collisions.

Relevant topics

forward physics

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