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# Implementing the exact kinematical constraint in the saturation formalism

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It is fairly well established by now that the single inclusive $pA \to h + X$ cross section, when calculated in the saturation model up to next-to-leading order, becomes negative at high $p_\perp$. We improve this calculation by incorporating the exact kinematical constraint in the dipole splitting functions, obtaining two additional terms which help offset the negativity. In doing so, we are able to extend the applicability of the saturation formalism to higher $p_\perp$, where it can be more accurately matched with the collinear factorization result. Furthermore, with an enhanced numerical implementation, we are able to present a comparison to single inclusive hadron production measurements from both RHIC and, for the first time, the LHC. We find excellent agreement with the data throughout the range of validity of our calculation.

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