

DIS2023: XXX International Workshop on Deep-Inelastic Scattering and Related Subjects



Contribution ID: 121

Type: **Parallel talk**

Single inclusive particle production in pA collisions at forward rapidities: beyond the hybrid model

Tuesday, 28 March 2023 12:10 (20 minutes)

During the last ten years, a key problem in our understanding of particle production at small x has been the fact that single inclusive particle spectra computed at NLO in pA collisions at forward rapidities using the hybrid model become negative at large transverse momenta. Different solutions have been proposed in the literature in the last years, including Sudakov and threshold resummation and sophisticated scale choices. Here we re-examine the negativity problem that is the result of an oversubtraction of logarithmic contributions. We show that the proper framework for resummation is not the collinear factorization as has been assumed heretofore, but rather TMD factorization. We find that all the logarithmically enhanced contributions can be resummed into perturbative evolution of transverse momentum dependent parton densities and fragmentation functions, allowing for a transparent physical interpretation. The resulting cross section is positive as it should be.

Submitted on behalf of a Collaboration?

No

Participate in poster competition?

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Session Classification: WG2

Track Classification: WG2: Small- x , Diffraction and Vector Mesons