Contribution ID: **384**   Type: **Parallel talk**

Nonlinear evolution in the next-to-leading order approach vs experimental HERA data.

Tuesday 3 May 2022 10:00 (20 minutes)

We present our theoretical results of the next-to-leading order approach (NLO) of [Eur. Phys. J. C 80, 1029 (2020)] in contrast with the experimental HERA data. This approach includes the re-summed NLO corrections to the kernel of the evolution equation, the correct asymptotic behavior in the NLO at $\tau = r^2 Q_S^2 \gg 1$; the impact parameter dependence of the saturation scale in accord with the Froissart theorem as well as the nonlinear corrections. We successfully describe the experimental data with the quality, than in the leading order fits with larger number of the phenomenological parameters. It is demonstrated, that the data could be described, taking into account both the diffusion on $\ln(k_T)$, which stems from perturbative QCD, and the Gribov's diffusion in impact parameters. It is shown our first ability to describe the data at rather large values of $\bar{\alpha}_S$.

Submitted on behalf of a Collaboration?

No

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

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