



Contribution ID: 12

Type: **Oral**

Structure Functions from the BK evolution

Monday, 25 November 2024 17:30 (20 minutes)

We fit the structure function F_2 data from HERA using the Balitsky-Kovchegov (BK) equation. The non-linear equation for the unintegrated gluon density is solved, also incorporating resummations due to the DGLAP evolution and kinematical constraints. Parallel computation on GPUs is employed to handle the intensive calculations, achieving a good fit to the structure function with $\chi^2 \sim 1.5$. Notably, we extend the range of integration in the BK equation to a minimum $k^2 = 10^{-3} \text{ GeV}^2$, successfully capturing a part of the soft contribution that was previously modeled with collinear approximation in earlier approaches.

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Session Classification: Parallel-2