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AAMQS: a non-linear QCD description of new HERA data at small-x

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Recent developments in the computation of the NLO improvement for non-linear QCD evolution equations has allowed, for the first time, for the consistent description of experimental data using a first principle approach. In particular, the Balitsky-Kovchegov equation including running coupling effects (rcBK) has been shown to provide an excellent global description of inclusive DIS data.
I will present a global analysis of available data on inclusive structure functions measured in electron-proton scattering at small values of Bjorken-x, including the latest data from the combined HERA analysis on reduced cross sections. The resulting parametrizations allow for the reliable computation of physical observables in a kinematical region (relevant for both p-p and A-A programmes at the LHC) where the standard DGLAP based techniques are expected to fail. Also, the inclusion of the heavy quark contribution has resulted in a good description of the experimental data for the charm component of the proton structure function.
Further, I will discuss the kinematical domain where significant deviations from NLO-DGLAP should be expected and a strategy to interface this approach, reliant on k_t factorization, with the commonly used collinearly factorized parton distribution functions. Also preliminary extensions for nuclei will be discussed.

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