

Modification of partonic structure in a bound nucleon and global QCD analyses.

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We report the results of a new global QCD analysis which includes deep-inelastic e/μ scattering (DIS) data off proton and deuterium, as well as lepton pair production in Drell-Yan process in pp and pD collisions and W^\pm/Z boson production data from pp and $p\bar{p}$ collisions at LHC and Tevatron. We address nuclear corrections in DIS in terms of a nuclear convolution model with bound (off-shell) nucleons, in which the off-shell correction is responsible for modification of parton distributions in bound nucleons [1,2]. The relevant off-shell function is determined in our analysis along with proton PDFs. Results are compared with the ones previously obtained by different studies using DIS data from both the deuterium [3,4] and heavy nuclei [1,2]. A number of systematic studies have been performed aiming to estimate the uncertainties arising from the use of various deuterium data sets, from the model of high twist contributions to the structure functions, from the treatment of target mass corrections, as well as from the nuclear corrections in the deuteron. We provide our predictions for the ratios of structure functions F_2^D/F_2^p and F_2^n/F_2^p , and for the d/u ratio of the quark distributions, focusing at the region of high Bjorken x , and compare them with the ones obtained by other QCD analyses, as well as with recent data from the MARATHON experiment [5].

References:

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