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Combined QCD and electroweak analysis of HERA data

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A simultaneous fit of parton distribution functions (PDFs) and electroweak parameters to HERA data on deep inelastic scattering is presented. The input data are the neutral current and charged current inclusive cross sections which were previously used in the QCD analysis leading to the HERAPDF2.0 PDFs. In addition, the polarisation of the electron beam was taken into account for the ZEUS data recorded between 2004 and 2007. Results on the vector and axial-vector couplings of the Z boson to u- and d-type quarks, on the value of the electroweak mixing angle and the mass of the W boson are presented. The values obtained for the electroweak parameters are in agreement with Standard Model predictions. The resulting sets of PDFs, ZEUS-EW, are in agreement with HERAPDF2.0 and give a good description of ZEUS data with polarisation taken into account.

Experimental Collaboration

ZEUS

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