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Combination of Measurements of Inclusive Deep Inelastic ep Scattering Cross Sections and QCD Analysis of HERA data

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A combination is presented of all inclusive deep inelastic cross sections previously published by the H1 and ZEUS collaborations at HERA for neutral and charged current ep scattering for zero beam polarisation. The data correspond to an integrated luminosity of about 1 fb^-1 and span six orders of magnitude in negative four-momentum-transfer squared, Q2, and Bjorken x. The correlations of the systematic uncertainties were evaluated and taken into account for the combination. The combined cross sections were input to QCD analyses at LO, NLO and at NNLO, providing a new set of parton distribution functions, HERAPDF2.0. The analysis was extended by including HERA data on charm and jet production. The inclusion of jet-production cross sections made a simultaneous determination of these parton distributions and the strong coupling constant possible. An extraction of xF_3(gamma Z) and results on electroweak unification and scaling violations are also presented.

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