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Measurement of High-Q2 Neutral Current Deep Inelastic e- Scattering Cross Sections with a Longitudinally Polarised Electron Beam at HERA

Content :

Measurements of the neutral current cross sections for deep inelastic scattering in e-p collisions at HERA with a longitudinally polarised electron beam are presented. The single-differential cross-sections dsigma/dQ^2, dsigma/dx and dsigma/dy and the double-differential cross sections in Q2 and x are measured in the kinematic region y < 0.9 and Q^2 > 185 GeV^2 for both positively and negatively polarised electron beams and for each polarisation state separately. The measurements are based on an integrated luminosity of 169.9 pb^-1 taken with the ZEUS detector in 2005 and 2006 at a centre-of-mass energy of 318 GeV. The structure functions xF_3 and xF_3^{\gamma Z} are determined by combining the e-p results presented in this paper with previously measured e+p neutral current data. The asymmetry parameter A- is used to demonstrate the parity violating effects of electroweak interactions at large spacelike photon virtuality. The measurements agree well with the predictions of the Standard Model.

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