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Measurement of high-Q2 charged current deep inelastic scattering cross sections with a longitudinally polarised positron beam at HERA

Content :

Measurements of the cross sections for charged current deep inelastic scattering in e+p collisions with a longitudinally polarised positron beam are presented. The measurements are based on a data sample with an integrated luminosity of 132 pb-1 collected with the ZEUS detector at HERA in 2006 and 2007 at a centre-of-mass energy of 318 GeV. The total cross section is presented at positive and negative values of the longitudinal polarisation of the positron beams. The single-differential cross sections dsigma/dQ2, dsigma/dx and dsigma/dy are presented for Q2 > 200 GeV2. The reduced double-differential cross section is presented in the kinematic range 280 < Q2 < 30 000 GeV2 and 0.0078 < x < 0.42. The cross section measurements agree well with the predictions of the Standard Model. In addition, a linear fit is applied to the total cross section as a function of polarisation. The fit is extrapolated to determine the upper limit on the cross section for a fully left-handed positron beam. The lower limit on the mass of a hypothetical W boson which couples to right-handed particles is then extracted.

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These results are presented on behalf of the ZEUS Collaboration