EPS-HEP99
Abstract # 000
Parallel sessions: 2,6
Plenary sessions: 3,6

Measurement of Neutral and Charged Current Cross-Sections in Positron-Proton Collisions at Large Momentum Transfer

H1 Collaboration,
DESY, Notkestr.85, D-22607 Hamburg, Germany

The inclusive single and double differential cross-sections for neutral and charged current processes with four-momentum transfer squared Q^2 between 150 and 30000 GeV^2 are measured in e^+p collisions with the H1 detector at HERA using the data taken in 1994−1997. The data, which correspond to an integrated luminosity of 35.6 pb^{-1}, amount to an increase in statistics by an order of magnitude with respect to the previously published results in this Q^2 domain. Substantial extension in the kinematic range towards high Q^2 and x has been achieved, together with a reduction by a factor of more than two of the systematic error of the measurements. The proton structure function $F_2(x, Q^2)$ is extracted and the Q^2 evolution of the parton densities predicted by QCD is tested at x-Bjorken values between 0.0032 and 0.65. The u and d valence quark distributions are extracted at high x No significant deviation from the Standard Model has been found. Predictions of the electroweak theory are confronted with the data, and their consistency is expressed by the observed mass of the W boson obtained