

Extraction of $F_2^c(x, Q^2)$ from D^* cross sections at H1

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The charm contribution to the proton structure, $F_2^c(x, Q^2)$, is determined using the inclusive cross sections of D^+ - (2010) meson production in deep-inelastic scattering at HERA. $F_2^c(x, Q^2)$ is extracted from the visible D^+ -cross sections in the range $5 < Q^2 < 1000 \text{ GeV}^2$, $0.02 < y < 0.7$, $p_T(D) > 1.5 \text{ GeV}$ and $|\eta(D)| < 1.5$ which were measured with the H1 experiment in the HERA-II running period corresponding to an integrated luminosity of 347 pb^{-1} . The charm contribution to the proton structure, $F_2^c(x, Q^2)$, is determined by extrapolating the visible charm cross section to the full phase space using a Next-to-Leading order QCD calculation based on DGLAP evolution and a Leading order Monte-Carlo program including parton showers based on CCFM evolution. The extrapolation uncertainties are studied varying the theory parameters like charm mass, renormalisation and factorisation scales as well as the fragmentation model.

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