ID de Contribution: **980** Type: **Parallel session talk**

Heavy flavour production at HERA with H1

jeudi 21 juillet 2011 18:00 (15 minutes)

Measurements of cross sections for events with charm and beauty jets in deep inelastic scattering with the H1 detector at HERA are presented. The numbers of charm and beauty jets are determined using variables reconstructed using the H1 vertex detector with which the impact parameters of the tracks to the primary vertex and the position of secondary vertices are measured. The measurements are compared with QCD predictions and with previous measurements where heavy flavours are identified using muons. The cross section of b bar{b} photoproduction in ep collisions is also measured. Events containing b-quarks are identified through detection of two low momentum electrons in the final state. The differential b-quark production cross section is measured as a function of the transverse b-quark momentum and extends the previously experimentally accessible phase space towards the b-quark production threshold.

The inclusive production of D*(2010) mesons in deep-inelastic ep scattering is measured in the kinematic region of photon virtuality 100 < Q2 < 1000 GeV2 and inelasticity 0.02 < y < 0.7. The charm contribution, F_2^{ccbar}, to the proton structure function F_2 is determined. Photoproduction of events containing a D* meson and two jets are investigated with the H1 detector using the HERA-II data sample. The D*mesons are reconstructed in the golden decay channel D* -> K pi pi_s. Differential cross sections are measured in different variables and compared to QCD calculations. Inclusive production of D*mesons in deep-inelastic scattering at HERA is studied in the range 5 < Q2 < 100 GeV2 of the photon virtuality and 0.02 < y < 0.7 of the inelasticity of the scattering process. The visible range for the D* meson is p_T(D*) > 1.25 GeV and |eta(D*)| < 1.8. Single and double differential cross sections are measured. The results are compared to QCD predictions.

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Classification de Session: QCD