

# Combination and QCD analysis of beauty and charm production cross section measurements in deep inelastic ep scattering at HERA

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Measurements of open charm and beauty production cross sections in deep inelastic  $ep$  scattering at HERA from the H1 and ZEUS Collaborations are combined. Reduced cross sections are obtained in the kinematic range of negative four-momentum transfer squared of the photon  $2.5 \text{ GeV}^2 \leq Q^2 \leq 2000 \text{ GeV}^2$  and Bjorken scaling variable  $3 \cdot 10^{-5} \leq x_{\text{Bj}} \leq 5 \cdot 10^{-2}$ . The combination method accounts for the correlations of the statistical and systematic uncertainties among the different datasets. Perturbative QCD calculations are compared to the combined data. A next-to-leading order QCD analysis is performed using these data together with the combined inclusive deep inelastic scattering cross sections from HERA. The running charm- and beauty-quark masses are determined as  $m_c(m_c) = 1.290_{-0.041}^{+0.046}(\text{exp/fit})_{-0.014}^{+0.062}(\text{model})_{-0.031}^{+0.003}(\text{parameterisation}) \text{ GeV}$  and  $m_b(m_b) = 4.049_{-0.109}^{+0.104}(\text{exp/fit})_{-0.032}^{+0.090}(\text{model})_{-0.031}^{+0.001}(\text{parameterisation}) \text{ GeV}$ .

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