

***D*^{*} Meson Production in diffractive DIS at HERA**

H1 Collaboration

Abstract

Measurements of open charm production are presented in diffractive deep inelastic scattering ($5 < Q^2 < 100 \text{ GeV}^2$), based on HERA data recorded at $\sqrt{s} = 318 \text{ GeV}$ with an integrated luminosity of 281 pb^{-1} . The event topology is given by $ep \rightarrow eXY$, where the system X , containing at least one $D^*(2010)$ meson, is separated from a leading low-mass proton dissociative system Y by a large rapidity gap. The D^* candidates are reconstructed fully in the $D^{*+} \rightarrow D^0\pi^+ \rightarrow (K^-\pi^+)\pi^+$ (+C.C.) decay channel. The measured differential cross sections are compared at the level of stable hadrons with next-to-leading order QCD predictions obtained in the massive scheme, where the charm quark is produced via the boson-gluon fusion, using diffractive parton densities previously obtained by H1 from fits of the inclusive diffractive cross sections.

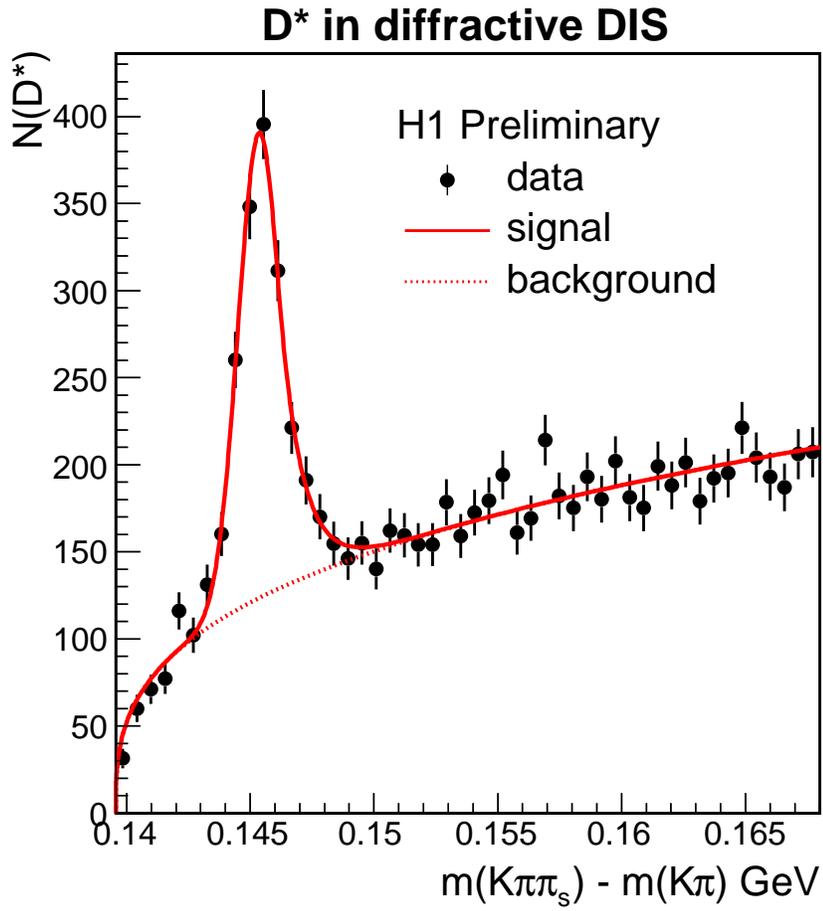


Figure 1: distribution of the mass difference of the reconstructed D^* and D^0 systems for the diffractive events selected in this analysis. Fits to the signal and background are shown.

D* in diffractive DIS

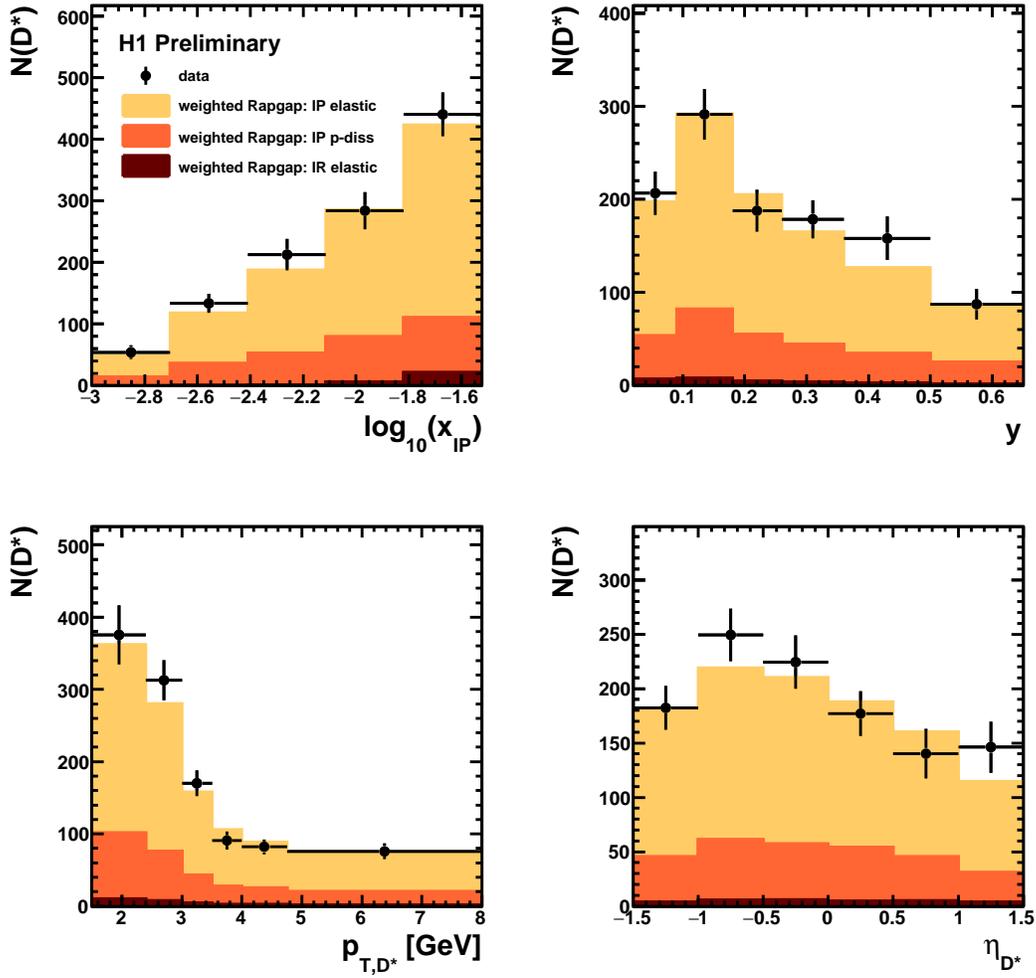


Figure 2: control plots of the number of D^* mesons obtained from fits as a function of the momentum fraction x_{IP} , the inelasticity y , the D^* transverse momentum p_{T,D^*} and the D^* pseudorapidity η_{D^*} .

D* in diffractive DIS

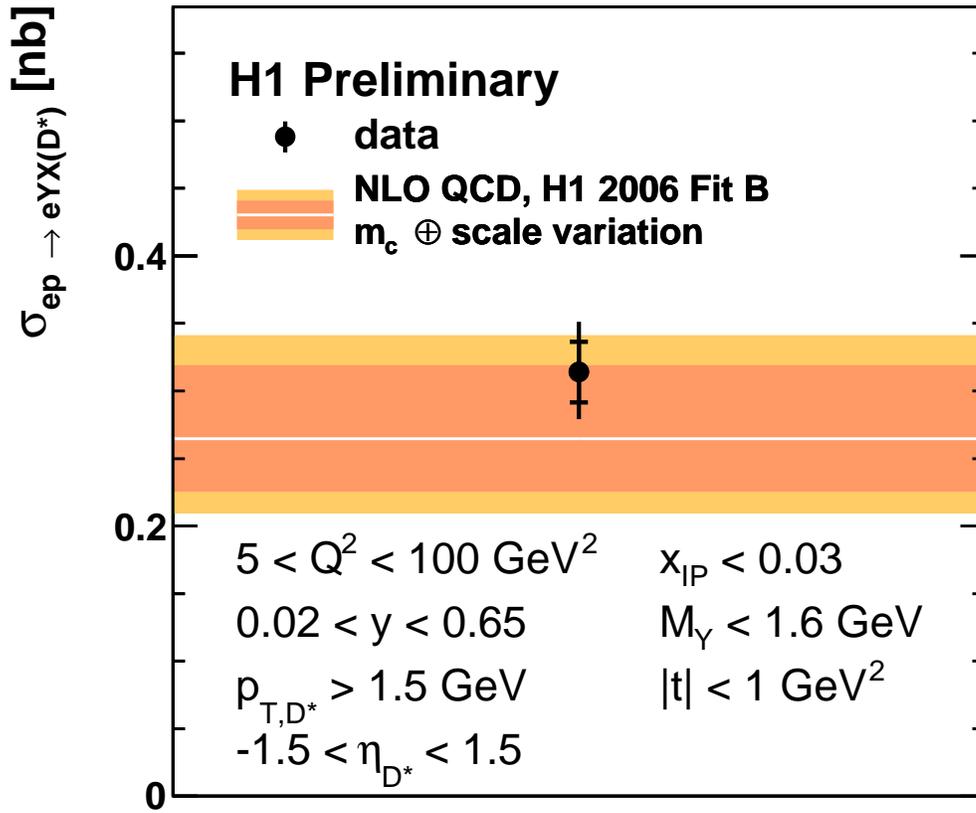


Figure 3: integrated D^* meson cross section in diffractive DIS, compared to a NLO QCD prediction.

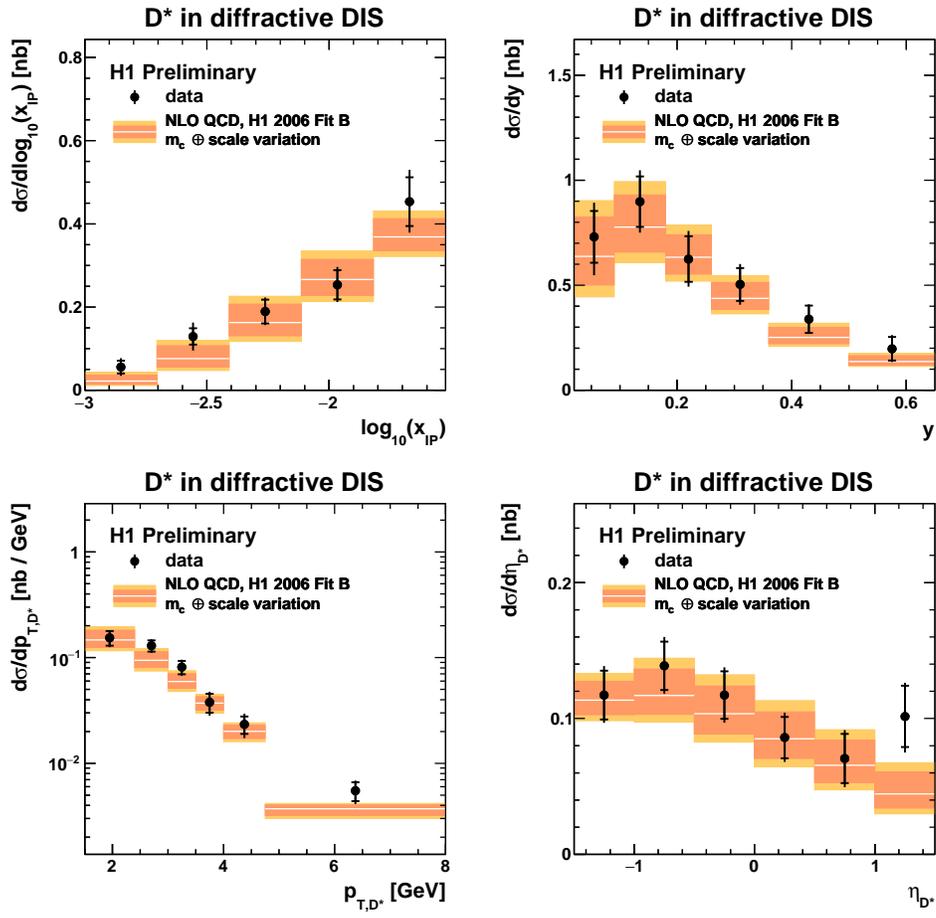


Figure 4: D^* meson cross sections as a function of the momentum fraction x_{IP} , the inelasticity y , the D^* transverse momentum p_{T,D^*} and the D^* pseudorapidity η_{D^*} , compared to a NLO QCD prediction.