H1prelim-05-073

Photoproduction of $D^{*\pm}$ Mesons Associated with a Jet at HERA

H1 Collaboration

to be presented at

XIIIth International Workshop on
Deep Inelastic Scattering, DIS 2005
April, 2005, Madison

Abstract

A measurement of cross sections for photoproduction of $D^{*\pm}$ mesons associated with a jet is presented. The data are taken with the H1 detector at HERA during the years 1999 and 2000. Photoproduction is selected by detecting the scattered electron at small angles. The cross sections are determined in the kinematic region $171 < W < 256$ GeV, $Q^2 < 0.01$ GeV^2, $p_t(D^*) > 2.0$ GeV and $|\eta(D^*)| < 1.5$, where W is the photon-proton centre-of-mass energy, Q^2 is the photon virtuality and p_t and η denote transverse momentum and pseudorapidity, respectively. Jets are defined by the inclusive k_t algorithm. The jet with the highest transverse momentum $p_t(jet) > 3$ GeV that does *not* contain the D^* meson is taken. Differential cross sections are shown in $p_t(jet)$, $p_t(D^*)$, $\eta(jet)$, $\eta(D^*)$ and the azimuthal differences between the D^* and the jet, $\Delta\phi(D^*, \text{jet})$. The results are compared with QCD predictions in collinear and k_t-factorisation.

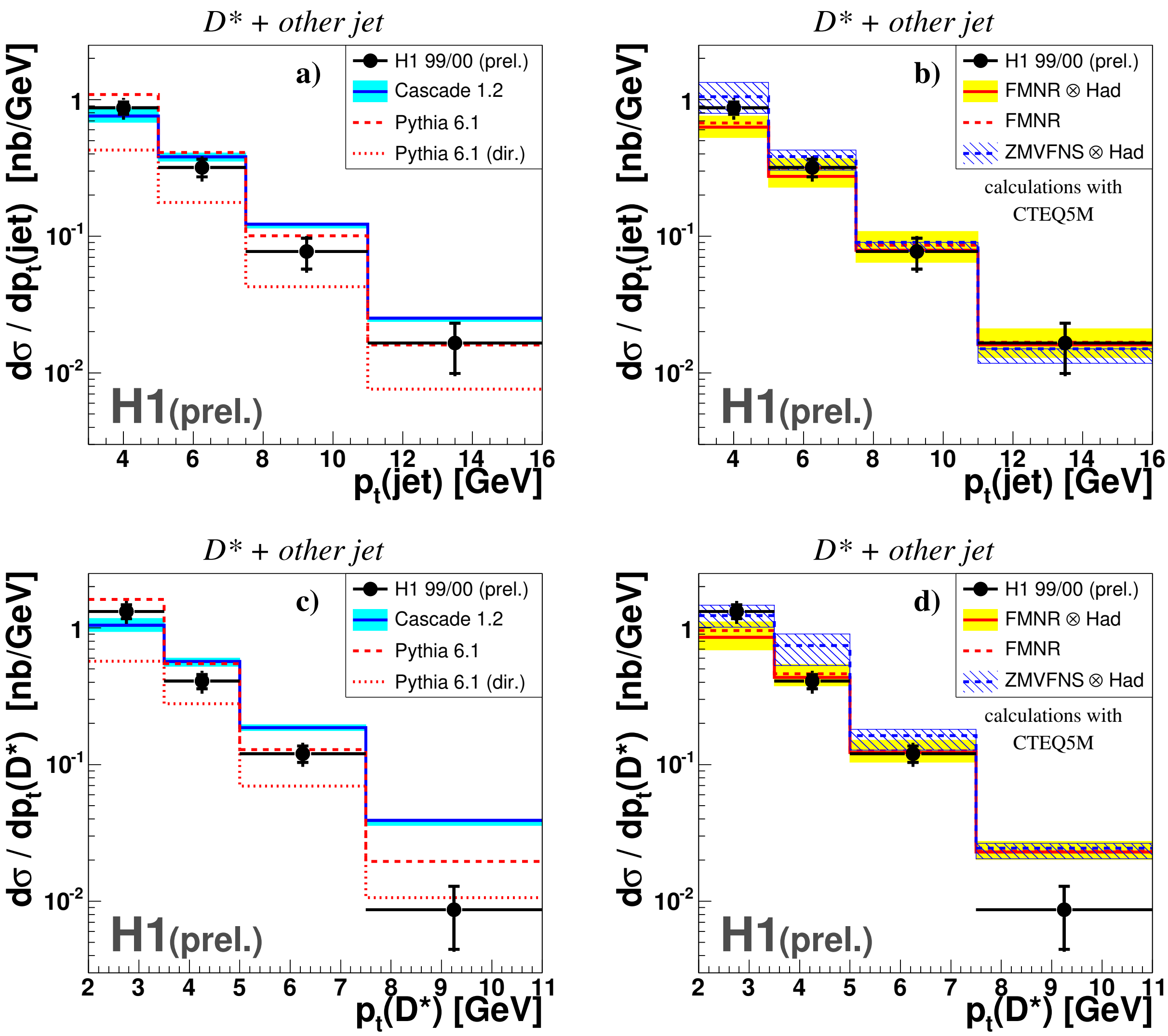

Figure 1: *D^*+jet cross sections in bins of the transverse momentum of the jet and the D^* compared with the predictions of PYTHIA and CASCADE (a,c) and of next-to-leading order calculations (b,d). FMNR is a* massive *and ZMVFNS a* massless *calculation. For PYTHIA the direct contribution of the prediction is shown separately and labelled as* "dir.".

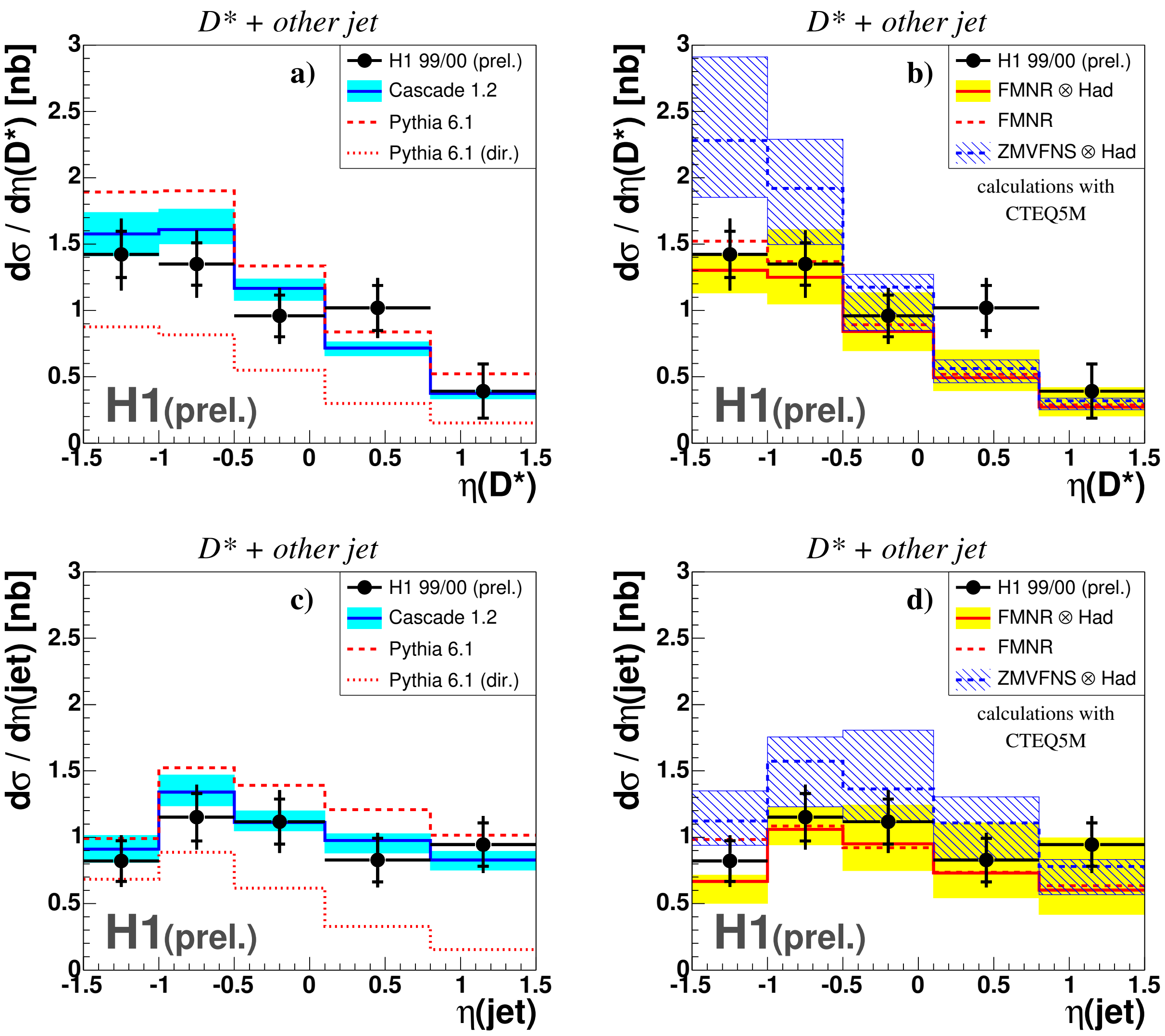

Figure 2: *D^*+jet cross sections in bins of $\eta(D^*)$ (a,b) and $\eta(jet)$ (c,d) compared with the predictions of PYTHIA and CASCADE on the left and of next-to-leading order calculations on the right. FMNR is a* massive *and ZMVFNS a* massless *calculation. For PYTHIA the direct contribution of the prediction is shown separately and labelled as* "dir.".

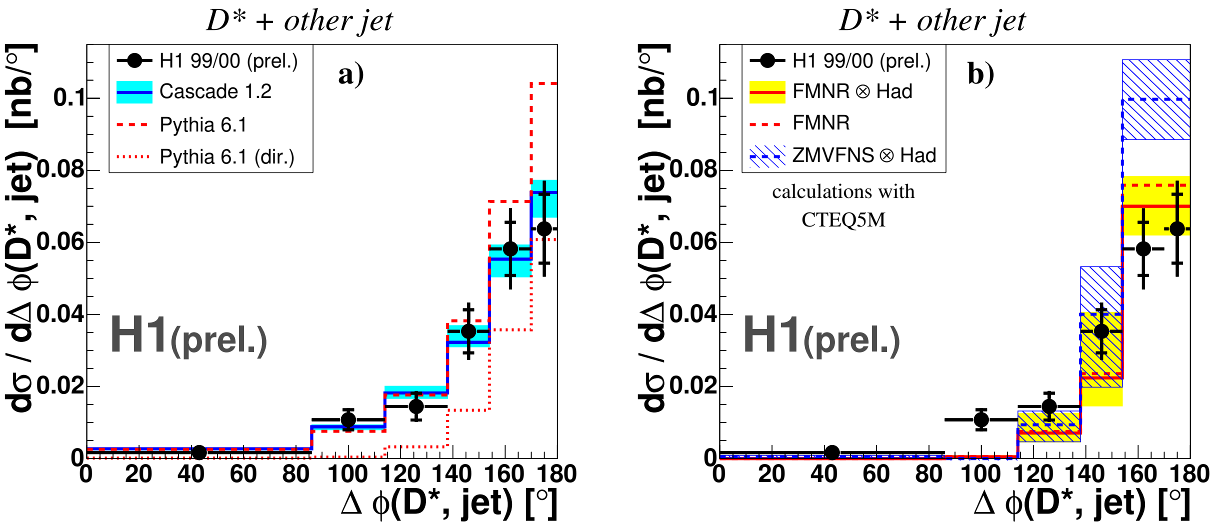

Figure 3: *D^*+jet cross sections in bins of $\Delta\phi(D^*, jet)$ compared with the predictions of PYTHIA and CASCADE on the left and of next-to-leading order calculations on the right. FMNR is a* massive *and ZMVFNS a* massless *calculation. For PYTHIA the direct contribution of the prediction is shown separately and labelled as* "dir.".