

# Exclusive processes at HERA

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The ratio of the exclusive electroproduction of  $\psi(2S)$  and  $J/\psi$  mesons has been measured at HERA. The results are sensitive to the wave functions of the vector mesons and are compared to predictions of QCD-inspired models of vector-meson production. Exclusive dijet production in diffractive deep inelastic scattering has been measured at HERA. Cross sections are presented as a function of  $\beta$ , the Bjorken variable defined with respect to the diffractive exchange and, in bins of  $\beta$ , as a function of  $\phi$ , the angle between the  $\gamma$ -dijet plane and the  $\gamma$ -e plane in the rest frame of the dijet final state. The results are compared to predictions from models which are based on different assumptions about the nature of the diffractive exchange.

The first measurement of exclusive photoproduction of  $\rho$  mesons associated with leading neutrons with the H1 detector at HERA is also presented. The data are interpreted in terms of two dominant contributions: diffractive proton dissociation channel and elastic production via virtual pion exchange.

Measurements of normalised cross sections for the production of photons and neutrons at very small angles with respect to the proton beam direction in deep inelastic scattering are presented as a function of the Feynman variable  $x_F$  and of the centre-of-mass energy of the virtual photon-proton system,  $W$ . Predictions of deep inelastic scattering models and of models for hadronic interactions of high energy cosmic rays are compared to the measured cross sections.

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