



Contribution ID : 139

Type : Oral presentation

Exclusive diffraction at HERA

Friday, 4 July 2014 16:30 (15)

The exclusive reaction $\gamma p \rightarrow \psi(2S) p$ has been studied in both deep inelastic electroproduction and in photoproduction with the ZEUS detector in ep collisions at HERA using an integrated luminosity of 350 pb^{-1} . The $\psi(2S)$ mesons were identified via their decay chain: $\psi(2S) \rightarrow J/\psi \pi^+ \pi^-$ with $J/\psi \rightarrow \mu^+ \mu^-$. The ratio of the production cross sections $R = \sigma(\psi(2S)) / \sigma(J/\psi)$ was measured as a function of the kinematic variables, in particular the photon-proton centre-of-mass energy, W , and compared to predictions of perturbative QCD. The exclusive production of dijets in diffractive deep inelastic lepton-proton scattering has also been measured. Jets have been reconstructed in the photon-Pomeron ($\gamma\text{-}IP$) centre-of-mass system frame using the exclusive k_T algorithm. The cross section for the exclusive production of dijets is given as a function of the angle between the plane defined by exchanged photon and dijet system and the plane defined by the incoming and scattered lepton momenta in the $\gamma\text{-}IP$ rest frame. It is compared to theoretical predictions of models based on boson-gluon fusion and two-gluon exchange processes. The first measurement of exclusive photoproduction of rho mesons associated with leading neutrons with the H1 detector at HERA is also presented. The data correspond to an integrated luminosity of 1.12 pb^{-1} . The rho meson is identified by its decay pions reconstructed in the central tracking chamber, while the leading neutron carrying a large fraction of the incoming proton momentum, $x_L > 0.3$, is detected in the Forward Neutron Calorimeter. The cross section of the reaction $\gamma p \rightarrow \rho + n + Y$, where Y is a small mass system escaping undetected in the proton direction, is measured as a function of the neutron energy, the invariant mass of the $\pi^+ \pi^-$ system and p_T^2 of the rho meson. The data are interpreted in terms of two dominant contributions: diffractive proton dissociation channel and elastic production via virtual pion exchange.

Summary

Primary author(s) : DAUM, Karin (DESY); SCHMITT, Stefan (DESY)

Presenter(s) : Dr. PAUL, Ewald (physikalisches Institut Bonn)

Session Classification : Strong Interactions and Hadron Physics

Track Classification : Strong Interactions and Hadron Physics