

HERA DVCS Results

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Deeply Virtual Compton Scattering is the simplest interaction that allows access to Generalised Parton Distributions, a theoretical framework that can be used to describe the nucleon structure. The strong interest in GPDs results from the fact that they offer access to the total angular momentum of quarks inside the nucleon and to a 3-dimensional picture of nucleon structure. The measurement of the DVCS process is complicated by a competing interaction known as Bethe Heitler which has the same final state. GPDs sensitive to asymmetries from the interference term of these two processes are accessed.

A measurement of elastic DVCS collision data recorded with the H1 detector since 2003 is presented. The cross section is measured as a function of the virtuality of the exchanged photon and the centre-of-mass energy W of the γ^*p system in the kinematic domain $6.5 < Q^2 < 80 \text{ GeV}^2$ $30 < W < 140 \text{ GeV}$ and $|t| < 1 \text{ GeV}^2$ where t denotes the squared momentum transfer at the proton vertex. A beam charge asymmetry is extracted for the first time in the low $x \approx Q^2/W^2$ kinematic domain.

Released results from HERMES of beam charge, beam spin and target asymmetries on both unpolarised and polarised hydrogen and deuterium targets are presented. The extracted asymmetries are presented over the range of HERMES kinematic acceptance, the dependence on kinematic variables t , x_B and Q^2 is also shown. The results are compared with asymmetries from a phenomenological model of GPDs based on double distributions from Vanderhaeghen, Guidal and Guichon.

DVCS, have also been measured with the ZEUS detector. Cross sections are presented as a function of Q^2 and W , for a wide region of the phase space, $Q^2 > 1.5 \text{ GeV}^2$ and $40 < W < 170 \text{ GeV}$. A subsample of events in which the scattered proton is measured in the leading proton spectrometer is used for the first direct measurement of the differential cross section as a function of t .

Primary author: Mr BURNS, Jonathan (HEMRES)

Presenter: Mr BURNS, Jonathan (HEMRES)

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