Generalized Parton Distributions and Hard Exclusive Processes

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A short overview will be given on how generalized parton distributions (GPDs) contain new information on the structure of hadrons [1,2]. These GPDs enter in a variety of hard exclusive processes such as deeply virtual Compton scattering (DVCS) and hard meson electroproduction reactions on the nucleon, which are at present under experimental investigation at different facilities (HERMES, H1/ZEUS, JLab and Compass).
The talk will present a general parametrization of GPDs and emphasize their physics content, as well as highlight some key observables which are sensitive to the various hadron structure aspects of the GPDs. In particular, some new developments will be addressed such as the application of soft-pion theorems to the DVCS process with an associated soft pion produced. Also the extension of deeply virtual Compton scattering for the $N \to N^*, \Delta^*$ transition will be exposed. This latter process gives the prospect to access quark distributions for nucleon resonances.
Finally, the present experimental status of the field of hard exclusive reactions will be briefly reviewed and future plans highlighted.

References

[1] P.A.M. Guichon, and M. Vanderhaeghen, Prog. Part. Nucl. Phys. **41** (1998) 125-190.
[2] K. Goeke, M.V. Polyakov, and M. Vanderhaeghen, Prog. Part. Nucl. Phys. **47** (2001) 401-515.