

## Exclusive pion cross section and asymmetry at HERMES

*Saturday, July 18, 2009 9:50 AM (20 minutes)*

Exclusive production of  $\pi^+$  mesons was studied with the HERMES spectrometer at the DESY laboratory by scattering 27.6 GeV positrons and electrons off a transversely nuclear-polarised hydrogen target. The spin-averaged cross section was measured for values of the virtuality of the exchanged photon  $Q^2 > 1 \text{ GeV}^2$  and the invariant mass of the photon-nucleon system  $W^2 > 10 \text{ GeV}^2$ . The first measurement was carried out of the single-spin azimuthal asymmetry. The precision of the results was limited by the lack of detection of the recoiling neutron in the process  $ep \rightarrow en\pi^+$  and the infeasibility of taking data at different beam energies. The leading contribution to the asymmetry was found to be consistent with zero and with a recent model calculation, while one subleading contribution was found to be large. The cross section results are compared to model calculations based on the Regge formalism and on generalised parton distributions. These distributions give a three-dimensional representation of the hadron structure at the partonic level.

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**Session Classification:** VI. QCD in Hadronic Physics

**Track Classification:** QCD in hadronic physics