

Joint International Workshop on Hadron Structure and Spectroscopy
(IWHSS 2025) and the QCD Structure of the Nucleon (QCD-N'25)



Contribution ID: 93

Type: **not specified**

Spin-transfer to Lambda hyperons in DIS

Thursday 4 September 2025 12:35 (15 minutes)

The HERMES experiment has collected a wealth of data using the 27.6 GeV longitudinally polarized HERA lepton beam and various polarized and unpolarized gaseous targets. This allows for a series of unique measurements of observables sensitive to the multidimensional (spin) structure of the nucleon, in particular semi-inclusive deep-inelastic scattering (SIDIS) measurements, for which the HERMES dual-radiator ring-imaging Cherenkov counter provided final-hadron identification between 2 GeV to 15 GeV for pions, kaons, and (anti)protons.

Lambda hyperons in the final state give us the unique opportunity to study spin dependent effects through its polarization measurements using its weak decay channel. In this contribution, the longitudinal and transverse component of the spin transfer coefficient from the longitudinally polarized electron/positron beam to the lambda or antilambda hyperon alongside with kinematical dependences on Feynman- and Bjorken- x as well as the hyperon's transverse momentum will be presented. These spin-transfer coefficients provide access to several spin-dependent fragmentation functions, which have been related to the inner structure of Λ hyperons. The results are also compared to similar measurements at the COMPASS and NOMAD experiments.

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Session Classification: Thursday