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Measurement of the Polarization of the Strange-quark Sea in the Proton[1] AHMED EL ALALOUI, Argonne National Laboratory, HERMES COLLABORATION — The polarization of the strange quarks in the proton is of particular interest in understanding the origin of its spin. An explanation of the small net contribution to the proton spin from the quark spins observed experimentally, under the assumption of SU(3) symmetry, implies a significant negative value for this quantity. Such a value would explain the violation of the Ellis-Jaffe sum rule in inclusive deep-inelastic scattering (DIS). The total strange quark helicity density $\Delta S \equiv [\Delta s(x) + \Delta \bar{s}(x)]$ carries no isospin. It can extracted from measurements of scattering from deuterium alone, an isoscalar target. Measurements of the inclusive double spin asymmetries probe the helicity density of the non-strange sea. Using semi-inclusive asymmetries for charged kaons as the second data set it is possible to extract ΔS directly. By measuring the charged kaon multiplicities at HERMES kinematics, the fragmentation functions needed for the extraction can be obtained without resort to other experiments. The only symmetry assumed is charge-conjugation invariance. Results of a direct leading-order extraction of ΔS using this approach with DIS data from the HERMES experiment at the HERA accelerator will be presented.

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