

Abstract Submitted  
for the APR08 Meeting of  
The American Physical Society

**Latest Results on the Flavor-Separated Parton Distribution Functions of the Nucleon at HERMES** JOSHUA RUBIN, University of Illinois Urbana-Champaign, HERMES COLLABORATION — Through semi-inclusive deep-inelastic scattering (DIS), the HERMES collaboration has accessed many features of the structure of the nucleon. By taking into account the identity of final-state hadrons and their correlation with particular struck-quark flavors in the DIS process, the individual quark contributions to the nucleon structure functions have been unraveled. New results on the quark helicity distributions,  $\Delta q(x)$ , extracted from double-spin inclusive and hadron asymmetries, will be presented. Previously overlooked data have been included and improved analysis methods, which better leverage the full statistical power of the data, are utilized. Additionally, an improved method for estimating the fragmentation model contribution to the systematic uncertainties of the result has been included. This new analysis significantly reduces previously published systematic and statistical uncertainties and explores previously uninvestigated features of the quark polarizations. In addition, other new HERMES results related to the extraction of parton distribution functions will be presented.

Joshua Rubin  
University of Illinois Urbana-Champaign

Date submitted: 12 Jan 2008

Electronic form version 1.4