

Abstract Submitted
for the DNP07 Meeting of
The American Physical Society

HERMES Measurement of the Collins and Sivers Asymmetries from a Transversely Polarized Hydrogen Target EDWARD KINNEY, University of Colorado, HERMES COLLABORATION — In 2005 the HERMES collaboration published first evidence for azimuthal single-spin asymmetries in semi-inclusive production of charged pions on a transversely polarised hydrogen target. The measured asymmetries are caused by both the Collins and the Sivers mechanisms. Their distinctive Fourier components provide signals to previously unmeasured quantities: the transversity quark distribution in conjunction with the Collins fragmentation function (Collins mechanism/asymmetry) and the Sivers parton distribution (Sivers mechanism/asymmetry). The transversity distribution will provide new insight into the relativistic nature of the quarks inside the nucleon while the Collins fragmentation function describes spin-orbit correlations in the hadron formation process. The Sivers function is related to the orbital motion of the quarks within the proton and its correlation with the proton's spin direction. New results will be presented for the Collins and Sivers asymmetries for charged pion, neutral pion, and charged kaon production. The new measurements include the entire HERMES data set collected from the transversely polarized hydrogen target.

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Date submitted: 02 Jul 2007

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