

Measurement of the Collins asymmetries for kaons and pions in e^+e^- annihilation at BABAR

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Inclusive hadron production cross sections and angular distributions in e^+e^- collisions shed light on fundamental questions of hadronization and fragmentation processes. We present measurements of the Collins azimuthal asymmetries in inclusive production of hadron pairs, in the $e^+e^- \rightarrow h_1 h_2 X$ annihilation process, where the hadrons (either kaons or pions) are produced in opposite hemispheres. The data collected by the BABAR detector allow the determination of the Collins fragmentation function as a function of hadron fractional energies and transverse momenta for the up, down and strange quarks. These data can be combined with semi-inclusive deep-inelastic-scattering data to extract the transversity distribution function, which is the least known leading-twist component of the QCD description of the partonic structure of the nucleon.

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