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Measurement of 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 so-called

Collins azimuthal asymmetries in inclusive production of hadron pairs, in the $e^+e^- \rightarrow h_1 h_2 X$ annihilation process, where the two hadrons (either kaons or pions) are produced in opposite hemispheres.

The data collected by the BABAR detector allows the determination of the Collins fragmentation function as a function of hadron fractional energies and transverse momenta for the up, down and strange quarks, and 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.

Oral or Poster Presentation

Oral

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