Contribution ID: **165** Type: **not specified**

Transversity signals in two-hadron production in COMPASS

Thursday 19 April 2007 11:30 (20 minutes)

An important missing piece in our understanding of the spin structure of the nucleon is the transversity distribution function Delta_Tq(x). It is only one of the three leading-twist quark distribution functions q(x), Delta q(x) and Delta_Tq(x) that so-far remains unmeasured. The function Delta_Tq(x) describes the distribution of transversely polarized quarks in a transversely polarized nucleon. It is difficult to measure Delta_Tq(x), since it is a chiral-odd function which can only be probed in combination with another chiral-odd function. One suggested probe to access transversity is the measurement of two-hadron production in semi-inclusive deep-inelastic scattering on a transversely polarized target. In this case, transversity is accessible via the chiral-odd two-hadron interference fragmentation function H_1^\sphericalangle(z,M_h^2). The COMPASS experiment has measured target single-spin asymmetries in semi-inclusive production of hadron pairs. The data presented have been taken scattering a 160 GeV muon beam off a transversely polarized deuterium target. The scattered hadrons have been identified as pions and kaons using the information of a ring imaging Cherenkov detector. The azimuthal asymmetries are presented as a function of the invariant mass of the hadron pairs and in dependence of the kinematic variables x_{Bj} and z.

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Session Classification: Spin Physics

Track Classification: Spin Physics