

Transversity Signals In Two Hadron Correlation At COMPASS

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To fully specify the quark structure of the nucleon at the twist-two level, three quark distribution functions have to be taken into account: the spin averaged distribution $q(x)$, the helicity distribution $\Delta q(x)$ and the transverse spin distribution $\Delta_T q(x)$. This last function, referred to as transversity, is chiral-odd and can only be measured in combination with another chiral-odd function. At COMPASS, $\Delta_T q(x)$ can be measured in semi-inclusive deep-inelastic scattering (SIDIS), requiring the detection of hadronic products. One way to access transversity is in convolution with the chiral-odd Collins fragmentation-function $\Delta_T^0 D_q^h$ in single hadron production.

This presentation, however, covers an alternative approach to transversity. The measurement of two hadron production, introducing the chiral odd interference fragmentation function H_1^\perp , is considered a new probe of the transverse spin distribution $\Delta_T q(x)$. Here, an asymmetry is expected in the azimuthal angle of the hadron plane which depends on $\varphi_R - \varphi_{S'}$, where φ_R is the angle of the hadron plane with respect to the lepton scattering plane.

COMPASS is a fixed target experiment on the SPS M2 beamline at CERN. Its target can be polarised both longitudinally and transversely with respect to the polarised 160 GeV/c μ^+ beam. In 2002, 2003, and 2004, 20% of the beam-time was spent in the transverse configuration on a ^6LiD target, allowing the measurement of transversity effects. Results of the analysis of two hadron production will be reported based on the full COMPASS statistics on the deuterium target.