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Measurement of A_{LU} in semi-inclusive production of π^+K^-, $K^+\pi^-$, and K^+K^- pairs in deep inelastic scattering with CLAS12

Friday 4 October 2024 10:50 (15 minutes)

Semi-inclusive deep inelastic scattering (SIDIS) measurements provide crucial experimental insight into the three-dimensional momentum structure and spin structure of nucleons. The additional degree of freedom when observing two hadrons in the semi-inclusive final state allows for access to correlations between quark polarization and the angular momentum of final state hadrons through Dihadron Fragmentation Functions (DiFFs). This talk will report on the measurement of the longitudinal beam-spin asymmetry A_{LU} in the production of π^+K^-, $K^+\pi^-$, and K^+K^- pairs using electron-proton scattering data collected with the CEBAF Large Acceptance Spectrometer (CLAS12). The magnitudes of azimuthal modulations of A_{LU} each correspond to combinations of PDFs and angular momentum states of DiFFs. The measurement of these modulations in the production of dihadrons including kaons, when compared to existing results in charged-pion production, provide insight into the impact of strange quarks and intermediary vector mesons such as ϕ and K^* in hadronization. Additionally, we will report on the measurement of A_{LU} in $\pi^0\pi^{+/-}$ production using the same dataset, providing further information on channel-dependence in hadronization.

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