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HIGH ENERGY PHYSICS COLLOQUIA

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QUASI-REAL PHOTON EXCHANGE AND TRANSVERSE SINGLE-SPIN ASYMMETRIES IN $lp^\uparrow \rightarrow hX$

Abstract

We present an updated phenomenological analysis on transverse single-spin asymmetries (SSAs) for inclusive hadron production from lepton proton scattering. Adopting a transverse momentum dependent approach, we focus on the role of quasi-real (Weizsäcker-Williams) photon exchange, showing its relative contribution to SSA for $lp^\uparrow \rightarrow hX$ processes. We present new predictions and comparison with data adopting the Siverson and transversity distributions and the Collins fragmentation function extracted from fits to the azimuthal asymmetries measured in semi-inclusive deep inelastic scattering and e^+e^- annihilation processes. The description of the data shows a general improvement with respect to a previous leading order analysis. We also give predictions for unpolarized cross sections and SSAs for ongoing and future experiments.

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