

Title: Spin observables in twist-3 approach

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Abstract:

Discovery of large transverse single spin asymmetries (SSA) in pp and ep collisions has led to an extension of the frameworks for hard inclusive processes beyond the conventional parton model and perturbative QCD. For the particle production with large transverse momentum, SSAs can be described as a twist-3 effect in the collinear factorization, while SSAs for small transverse momentum production are described by the transverse-momentum-dependent distribution and fragmentation functions. I will discuss SSAs and other twist-3 spin observables from the former perspective. Since the twist-3 effects originate from multi-parton correlations in a hadron or in a fragmentation process, they provide a new information on the hadron structure and the QCD dynamics. In addition, description of twist-3 asymmetries will become an important test for the new formalism. In this talk, I will present an overview on the recent development of the collinear twist-3 approaches to various spin asymmetries. In particular, I will discuss fundamental aspects of the twist-3 calculations, characteristic features of the twist-3 cross sections, and phenomenological studies on the twist-3 spin asymmetries.