The Scalar Generalized Transverse Momentum Distributions

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We present a calculation of the scalar twist-3 Generalized Transverse Momentum Distributions (GTMDs) in the diquark model. Their TMD limit, e(x), can be accessed through the combined analysis of data for the $\sin \phi$ -moment of the beam-spin asymmetry for di-hadron Semi-Inclusive DIS at Jefferson Lab, and from the semi-inclusive production of two hadron pairs in back-to-back jets in $e^+ e^-$ annihilation at Belle. The scalar GTMDs, while allowing us to access quark-gluon correlations, are important because of their connection through integration with the pion-nucleon σ term, giving the order parameter of spontaneous chiral symmetry breaking in the nucleon.

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