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Probing Spin Dependent Quark and Gluon Distributions Through Azimuthal and Polarization Asymmetries

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Spin and transverse momentum dependent parton distributions - Generalized Parton Distributions, Transverse Momentum Distributions and related distributions - are at the interface between the QCD structure of the hadrons and observable quantities. The distributions are contained as linear superpositions within helicity amplitudes that factorize into universal forms at leading or next to leading order. These amplitudes are probed in high energy lepton production processes through angular dependent cross sections and polarization asymmetries. The phenomenological extraction of the amplitudes and the distributions is a challenging task. We will present some models for the distributions in lepton production processes, as well as the observables that connect with the quark-nucleon helicity amplitudes for different Deeply Virtual production possibilities.

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