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Transverse Momentum Effects in Unpolarized Semi-Inclusive DIS at COMPASS

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The azimuthal angle (ϕ_h) and transverse momentum squared (P_T^2) distributions of charged hadrons produced in semi-inclusive deep inelastic scattering (SIDIS) provide valuable access to the transverse momentum structure of the nucleon. These observables are sensitive to transverse momentum-dependent parton distribution functions (TMD-PDFs) and fragmentation functions (FFs), offering insight into the dynamics of partons inside the nucleon.

The COMPASS Collaboration at CERN collected a high-statistics SIDIS data set in 2016 and 2017 using a longitudinally polarized 160 GeV/c muon beam scattering off a liquid hydrogen target. Measurements of azimuthal asymmetries and P_T^2-distributions have been performed using a subset of this data. QED radiative corrections have been applied using the DJANGOH Monte Carlo generator. The impact of these corrections on the unpolarized SIDIS results will be discussed.

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