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Parton level calculations vs. detector level jets: incorporating STAR inclusive jet A_{LL} measurements into global parton analyses MICHAEL MILLER, MIT, STAR COLLABORATION COLLABORATION — Measurements from RHIC of longitudinal spin asymmetries A_{LL} are now available in various reaction channels with increasing statistical precision and are beginning to constrain the integral of the gluon helicity distribution ΔG. In order to extract the maximal information from these measurements, they must ultimately be incorporated into global parton analyses in which theoretical calculations under various assumptions are compared to the world's data from both fixed target deep inelastic scattering and polarized p+p collisions. Using the STAR inclusive jet A_{LL} and cross section measurements as an example, we study how both measurement bias (finite efficiency and transverse momentum resolution) and non-perturbative processes (underlying event and hadronization) affect the comparison of data and theory. While these phenomena may not represent the largest source of uncertainty in global analyses, e.g. compared to uncertainties in functional form of ΔG(x), it is imperative they be quantified. We study the reduced χ^2 distributions when these effects are (i) neglected, (ii) incorporated as systematic uncertainties on the measurement and (iii) used to modify the theoretical prediction via an analytic folding procedure. The latter provides a natural mechanism to account for these effects via a straightforward subroutine call in a global fit.

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