THE QCD ANALYSIS OF THE WORLD DATA ON STRUCTURE FUNCTIONS $g_1^{p,d,n}$ FOR PROTON, DEUTERON AND NEUTRON

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On behalf of the COMPASS Collaboration

The QCD NLO fits of all existing data on g_1, including the new COMPASS measurements of g_1^d, have been performed using two different programs. One of the program works in (x, Q^2) space, the other one in the space of moments. Both programs give consistent values of fitted parton distribution functions (PDF), values of $xg_1(x)$ and chi-square probabilities. They yield two solutions, one with $\Delta G > 0$, the other with $\Delta G < 0$, where ΔG is the first moment of the polarized gluon distribution. The fitted values of xg_1^d are in good agreement with new COMPASS data.

The results of the fits are discussed in details and compared with other fits performed earlier. In conclusion, the precision of existing inclusive data is still unsufficient to allow a definite determination of the $\Delta G(x)$ shape from QCD fits. The COMPASS data on $\Delta G(x)/G(x)$ from open charm production are in better agreement with the value expected from QCD fits for $\Delta G > 0$.