

Constraining gluon polarization in the proton

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We perform the first simultaneous global QCD analysis of spin-averaged and spin-dependent parton distribution functions (PDFs), including single jet production data from unpolarized and polarized hadron collisions. We critically assess the impact of SU(3) flavor symmetry and PDF positivity assumptions on the quark and gluon helicity PDFs, and find strong bias from these, particularly on the gluon polarization. The simultaneous analysis allows for the first time extraction of individual helicity-aligned and antialigned PDFs with a consistent treatment of uncertainties.

Summary

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