

Total Gluon Helicity from Lattice

We use the ensemble C24P29 provided by the CLQCD collaboration, insert the topological current using the proton external state of the momentum smear under the Coulomb gauge of the 5-HYP smear, extract the matrix elements to calculate the gluon helicity under lattice QCD, and the calculation proves that different components of the topological currents (K^z and K^t) can be used to give consistent results within the error range. In addition, we use the RI/MOM renormalization scheme, consider the mixing of gluon and quark helicity, and extract the renormalization constant to give the gluon helicity result under $\overline{\text{MS}}$ scheme.

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