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Exploring the Proton Spin with Di-jets at a Future EIC

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Since the famous results from the EMC collaboration nearly thirty years ago showed that the valence quark contribution to the spin of the proton was consistent with zero, the question of how the proton spin arises from the intrinsic and orbital angular momenta of its constituents has vexed the scientific community. Despite significant experimental (and theoretical) progress, it is clear that current facilities lack the precision and kinematic range needed to fully address this question. A proposed high-luminosity Electron-Ion Collider (EIC) with polarized electron and proton beams will have the capability to pin down the intrinsic quark and gluon contributions as well as address the orbital angular momentum. Measurements of the g_1 structure function and its scaling violation will be the golden channel for probing the quark and gluon spins, however, the gluon can also be accessed by tagging photon-gluon fusion events using di-jet final states. This talk will give an overview of the di-jet measurement as well as discuss general issues in jet finding at an EIC.

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