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Gluon Collins-Soper kernel from lattice QCD

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We will present the first lattice QCD calculation of the gluon Collins-Soper kernel, which governs the rapidity evolution of transverse-momentum-dependent gluon distributions. The calculation is performed at a near-physical pion-mass m_\pi = 172(3) MeV with lattice spacing a = 0.15 fm, using next-to-next-to-leading logarithmic matching in Large Momentum Effective Theory, covering transverse separations up to b_T = 0.60 fm. These results represent the first step toward a controlled determination of the gluon Collins-Soper kernel in QCD, with eventual phenomenological import and relevance to present and future experiments sensitive to the gluon structure of hadronic matter.

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