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Lattice extraction of the Collins-Soper kernel using the auxiliary field representation of the Wilson line

Friday 7 November 2025 17:00 (20 minutes)

The Collins-Soper (CS) kernel may be obtained through the TMD soft function by formulating the Wilson line in terms of 1-dimensional auxiliary fermion fields on the lattice. Our computation takes place in the region of the lattice that corresponds to the "spacelike"region in Minkowski space, i.e., Collins' scheme. We explore two methods for obtaining the CS kernel. The "ratio method"; which would allow us to obtain the soft function as well as the CS kernel. And the "double ratio"; which allows us to achieve a high degree of statistical precision, but only produces the CS kernel.The matching of our result to Minkowski space is achieved through the mapping of the auxiliary field directional vector to the Wilson line rapidity. I present a preliminary extraction of the CS kernel using the "double ratio", and discuss the methodology employed.

Parallel Session (for talks only)

Structure of hadrons and nuclei

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