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The Collins-Soper kernel from lattice QCD via quasi TMDPDFs

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I will describe recent lattice QCD determinations of the nonperturbative Collins-Soper kernel, which describes the rapidity evolution of quark transverse-momentum-dependent parton distribution functions. It is found that different approaches to extract the Collins-Soper kernel from the same underlying lattice QCD matrix elements yield significantly different results and uncertainty estimates, revealing that power corrections, such as those associated with higher-twist effects, and perturbative matching between quasi and light-cone beam functions, cannot be neglected. I will discuss the implications of these observations for future controlled calculations of this quantity, and what will be required to achieve them.

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