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Measurement of the TMD soft function on the lattice using the auxiliary field representation of the Wilson line

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The TMD soft function may be obtained by formulating the Wilson line in terms of auxiliary 1-dimensional fermion fields on the lattice. We take inspiration from heavy quark effective theory (HQET) in order to define the auxiliary field. Our computation takes place in the region of the lattice that corresponds to the "spacelike" region in Minkowski space in order to obtain the Collins soft function. The matching of our result to the Collins soft function is achieved through the mapping of the auxiliary field directional vector to the Wilson line rapidity. I present some exploratory numerical results of our lattice calculation, and discuss the methodology employed.

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