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Parton distribution functions from Lattice QCD

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In this talk, I will discuss the computation of collinear PDFs in the framework of Lattice QCD, using the so-called quasi-PDF approach introduced by Xiangdong Ji in 2013 and intensively developed thereafter. We employed twisted mass fermions with light quark mass set to its physical value. The relevant matrix elements obtained on the lattice were non-perturbatively renormalized and converted to the $\overline{MS}$ scheme at the scale of 2 GeV. A matching process was applied together with nucleon mass corrections, leading to the reconstruction of light-cone PDFs. We observe a similar behavior between the lattice and phenomenological data, and for both types of polarized PDFs a nice overlap for a range of Bjorken-x values. This presents a major success for the emerging field of direct calculations of quark distributions using Lattice QCD.

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