Parton Distributions and Lattice Calculations (PDFLattice 2024)



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Flexible global parametrization of generalized parton distributions from deep inelastic scattering data and lattice QCD moments

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Generalized parton distibutions (GPDs) are a key construct for understanding the spatial distribution of quarks and gluons inside nucleons. These distributions are accessed through deeply virtual exclusive processes, the cross sections of which are parameterized using a class of observables known as Compton Form Factors (CFFs). We present a spectator model-based parameterization of twist 2 GPDs in the quark, anti-quark, and the gluon sectors. Our model parameters are constrained using high precision electron-nucleon elastic scattering data, deep inelastic scattering data, and recent lattice QCD moment data. The errors on the parameters are determined using Markov chain Monte Carlo methods. Using these generalized parton distributions, various CFFs are presented in the kinematic regimes for both fixed target and electron ion collider settings.

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