

PDF and GPDs

Thursday, 26 February 2026 10:30 (30 minutes)

We present a lattice QCD analysis of unpolarised generalised parton distributions (GPDs) of the proton. Our calculations are done on the B64 ensemble, with $N_f = 2 + 1 + 1$ (degenerate light quarks, strange and charm quarks) twisted mass fermions at physical mass with a clover improvement and lattice spacing $a = 0.08$ fm. We use Large Momentum Effective Theory (LaMET) to analyse and match the quasi-GPDs to their light-cone distributions in the asymmetric kinematic frame. Our analysis has been performed with several values of the momentum transfer $-t$, from 0 to 1.2 at zero-skewness and boost up until 1.7 GeV, with Bayesian-Fourier transform employed to extract the x -dependence. We use the quasi-GPDs to define the pseudo-GPDs in order to extract the Mellin moments.

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Session Classification: Session