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x-dependent proton GPDs in lattice QCD[1] MARTHA CONSTANTINOU, Temple University, CONSTANTIA ALEXANDROU, University of Cyprus, KRZYSZTOF CICHY, Adam Mickiewicz University, KYRIAKOS HADJIYIANNAKOU, University of Cyprus, KARL JANSEN, NIC, DESY, AURORA SCAPELLATO, Adam Mickiewicz University, FERNANDA STEFFENS, Institute for Strahlen and Kernphysik, Rheinische, Friedrich-Wilhelms-University at Bonn — We present a novel calculation of the proton chiral-even unpolarized and helicity quark generalized parton distributions (GPDs), as extracted from numerical simulations of lattice QCD. We use the quasi-distribution method, which relies on matrix elements of fast-moving hadrons, and non-local operators. This method was developed for parton distribution functions (PDFs) and was recently extended for the study of GPDs. We obtain results for nucleon momentum up to 1.67 GeV, and momentum-transfer squared up to 1 GeV^2. The calculation is performed on one ensemble of two degenerate light, a strange and a charm quark ($N_f = 2+1+1$) of maximally twisted mass fermions with a clover term, reproducing a pion mass of 260 MeV. The renormalized quasi-GPDs are given in the $\overline{\text{MS}}$ scheme, evolved at a scale of 2 GeV, and are matched to light-cone GPDs using one-loop perturbation theory within Large Momentum Effective Theory.

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