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Pion GPD moments from nonlocal lattice correlators in LaMET

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We present lattice QCD calculations of the odd Mellin moments of pion valence-quark generalized parton distribution (GPD) up to fifth order, $\langle x^4 \rangle$, and for the skewness range $[-0.33, 0]$ using operator product expansion of bilocal quark-bilinear operators. The calculations are performed on an ensemble with lattice spacing $a = 0.04$ fm and valence pion mass 300 MeV, employing boosted pion states with momenta up to 2.428~GeV and momentum transfers reaching 2.748~GeV^2. We employ ratio-scheme renormalization and next-to-leading-logarithmic resummed perturbative matching. At zero skewness, our results are consistent with previous lattice studies. By combining matrix elements at multiple values of skewness and momentum transfer, skewness-dependent moments are obtained through simultaneous polynomiality-constrained fits.

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