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GPDs of sea quarks in the proton from nonlocal chiral effective theory

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We calculate the spin-averaged generalized parton distributions (GPDs) of sea quarks in the proton at zero skewness from nonlocal covariant chiral effective theory, including one-loop contributions from intermediate states with pseudoscalar mesons and octet and decuplet baryons. A relativistic regulator is generated from the nonlocal Lagrangian where a gauge link is introduced to guarantee local gauge invariance, with additional diagrams from the expansion of the gauge link ensuring conservation of electric charge and strangeness. Flavor asymmetries for sea quarks at zero and finite momentum transfer, as well as strange form factors, are obtained from the calculated GPDs, and results compared with phenomenological extractions and lattice QCD.

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