

Abstract Submitted
for the SES21 Meeting of
The American Physical Society

Coordinate Space Representation of Quark and Gluon Generalized Parton Distribution Functions¹ ZAKI PANJSHEERI, PHILIP VELIE, University of Virginia, BRANDON KRIESTEN², Center for Nuclear Femtography, SIMONETTA LIUTI, University of Virginia — Two-dimensional Fourier transforms of generalized parton distributions (GPDs) provide insight into matter, charge, and radial distributions of the quarks and gluons inside the nucleon. We present an explicit calculation of such transforms in a spectator model framework using parametric analytic forms of GPDs, originally constrained using deeply virtual Compton scattering and lattice QCD data. Calculations were performed for several values of the momentum fraction X and evolved using perturbative QCD from the initial scale Q_0 to the scale of the data. We studied the effect of evolution, the difference between matter and charge density in both the proton and the neutron, and the location of the gluon distribution relative to the valence quarks.

¹This work was funded by SURA Grant C2021-FEMT-006-05, DOE Grant SC0016286, and the Center for Nuclear Femtography.

²Center for Nuclear Femtography 1201 New York Ave. NW, Washington DC 20005 USA

Zaki Panjsheeri
University of Virginia

Date submitted: 30 Sep 2021

Electronic form version 1.4