Abstract Submitted
for the DNP13 Meeting of
The American Physical Society

Electron GPDs from Basis Light Front Quantization Approach
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— The Basis Light Front Quantization (BLFQ) approach is a first-principles nonperturbative numerical framework for solving quantum field theory. Based on the light front Hamiltonian formalism, it yields the lightfront wavefunctions for mass eigenstates of the chosen system. Therefore, it provides an ideal framework for evaluating observables defined on the lightcone, such as the generalized parton distributions (GPDs). Being experimentally accessible through exclusive processes like deeply virtual Compton scattering or deeply virtual vector meson production, the GPDs encode nonperturbative information about the spatial, as well as the spin and angular momentum structure of the system. In this work, we apply this method to Quantum Electrodynamics (QED) and specifically study a physical electron dressed by the virtual photon cloud. Based on the resulting lightfront wavefunction, we compute the electron GPDs and make comparison with results from perturbation theory.

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Date submitted: 28 Jun 2013 Electronic form version 1.4