Contribution ID: **36** Type: **Parallel contribution**

Proton GPDs from Lattice QCD: Fast and Accurate

Lattice QCD computations of generalized parton distributions (GPDs) have been traditionally done in the Breit frame, where the transferred momenta is symmetrically distributed between the incoming and outgoing hadron. This set up demands a separate calculation for each momentum transfer value. This talk will outline a Lorentz covariant formalism to carry out lattice QCD computation of GPDs with non-symmetric momentum transfer between the incoming and outgoing hadron. The formalism enables GPD computations at multiple values of momentum transfer within a single calculation and eliminates frame dependent power corrections to the lattice matrix elements, leading to an accurate light-cone GPD at a reduced computational cost. The talk will also demonstrate the efficacy of the formalism through lattice QCD calculations of proton H and E GPDs.

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Track Classification: Structure of hadrons