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A novel approach for calculating GPDs from asymmetric frames

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Recently, significant progress has been made in improving the efficiency and computational speed of lattice QCD calculations associated with Generalized Parton Distributions (GPDs). These advancements are a result of employing asymmetric frames, which differ from the commonly used symmetric frames, and introducing flexibility in the distribution of transferred momentum. A key element of our approach involves utilizing a Lorentz covariant parameterization for the matrix elements in terms of Lorentz-invariant amplitudes. This enables us to establish connections between matrix elements in different frames. Furthermore, we utilize the amplitude-based approach to propose an alternative definition of quasi-GPDs. This alternative definition not only maintains frame independence but also holds the potential for reduced power corrections when matching with light-cone GPDs. We thoroughly explore the interpretations of these new definitions, carefully examining the intricacies involved, and addressing the important issue of uniqueness/non-uniqueness in their formulation. In this presentation, we discuss these theoretical advancements, focusing specifically on the axial-vector GPDs $\widetilde{H}$ and $\widetilde{E}$.

Authors: BHATTACHARYA, Shohini; CICHY, Krzysztof; Prof. CONSTANTINOU, Martha; GAO, Xiang (Argonne National Lab); METZ, Andreas; MILLER, Joshua (Temple University); MUKHERJEE, Swagato; STEFFENS, Fernanda; ZHAO, Yong

Presenter: BHATTACHARYA, Shohini