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GPDs in non-symmetric frames

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It is often taken for granted that Generalized Parton Distributions (GPDs) are defined in the “symmetric” frame, where the transferred momentum is symmetrically distributed between the incoming/outgoing hadrons. However, such frames pose more computational challenges for the lattice QCD practitioners. In this talk, we lay the foundation for lattice QCD calculations of GPDs in non-symmetric frames, where the transferred momentum is not symmetrically distributed between the incoming/outgoing hadrons. The novelty of our approach relies on the parameterization of the matrix elements in terms of the so-called Generalized Ioffe-time Distributions (ITD), which helps in not only isolating but also reducing part of the higher-twist contaminations as a byproduct. This work opens possibilities for faster and more effective computations of GPDs.

Primary authors: METZ, Andreas (Temple University); SCAPELLATO, Aurora (Temple University); STEFFENS, Fernanda (Helmholtz-Institut für Strahlen- und Kernphysik); DODSON, Jack (Temple University); CI-CHY, Krzysztof (Faculty of Physics, Adam Mickiewicz University); CONSTANTINOU, Martha (Temple University); BHATTACHARYA, Shohini (BNL); MUKHERJEE, Swagato (BNL); GAO, Xiang; ZHAO, Yong (ANL)

Presenter: BHATTACHARYA, Shohini (BNL)

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