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Going off the light-cone - a model study of quasi-GPDs

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Studying light-cone PDFs through Euclidean correlators is currently an active field of research. In particular, the concept of quasi parton distributions (quasi-PDFs) is at the forefront of numerical calculation of partonic structure of strongly interacting systems on lattice using QCD. Quasi-PDFs converge to their respective standard distributions if the hadron momentum goes to infinity. We investigate this quasi-distribution approach for twist-2 generalized parton distributions (GPDs) in the widely-used diquark spectator model. We illustrate analytical and numerical results of quasi-GPDs and of quasi-PDFs. Our focus is to test how well the quasi-distributions agree with their standard counterparts for finite hadron momenta. Furthermore, we explore higher-twist effects associated with the parton momentum and the longitudinal momentum transfer to the target. By discussing the sensitivity of our results to model parameters, we highlight robust features of the quasi-GPDs and quasi-PDFs that one may extract from this model study. We also elaborate on a model-independent analysis of moments of quasi-distributions including relation to Ji's spin-sum rule. The moment analysis suggests a preferred definition of several quasi-distributions.

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