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Studying twist-2 GPDs through quasi-distributions in a scalar diquark model

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Studying light-cone (standard) parton distribution functions (PDFs) through Euclidean correlators in lattice QCD is currently a very active field of research. In particular, the quasi-distributions (quasi-PDFs) suggested by Ji have attracted a lot of attention. Quasi-PDFs converge to their respective standard distributions if the hadron momentum goes to infinity. We explore the quasi-distribution approach for twist-2 generalized parton distributions (GPDs) in a frequently used diquark spectator model. Our analytical expressions of the quasi-GPDs reduce to their corresponding standard ones in the large-momentum limit, substantiating them to be practical tools to predict features of standard GPDs. We illustrate 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. 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 discuss moments of quasi-distributions which recently attracted a lot of attention. Our contribution is based on published work and new results.

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