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Pion GPDs: Constraints, modelling, and experimental access

Describing hadronic structure in terms of its constituent partonic degrees of freedom remains an open subject. On the theoretical side, GPDs and TMDs are expected to play a central role drawing three-dimensional images of hadrons. Thus high priority is being given to experiments that can yield data which may be interpretable in terms of these quantities. Among all possibilities, that of DVCS has a specially clean realisation in terms of the former: GPDs. In this work we focus on the study of pions which, as Nambu-Goldstone bosons of QCD chiral symmetry breaking, provide the clearest windows onto the phenomenon of emergent hadronic mass (EHM). Herein we present a novel class of models for pion off-forward parton distributions: the so called positivity-saturated GPDs, which benefit from a direct interpretation in terms of QCD degrees of freedom. Their covariant extension onto the ERBL region allows for the development of reliable GPD models fulfilling all required theoretical properties of GPDs. Exploiting them we aim at answering the question whether or not the 3D structure of the pion could be probed through the Sullivan process at EIC.

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