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Accessing pion GPDs through the Sullivan process: is it feasible?

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The description of hadronic structure in terms of quark and gluon degrees of freedom is an open subject in physics. Great efforts are being devoted to this subject on both the theoretical and experimental sides. Triggered by existing plans to build new experimental facilities such as the EIC (BNL), and the need to properly interpret the data that are to come, the theoretical interest into the zoology of parton distribution functions is increasing. Among them, GPDs, which are known to parametrize the soft-physics taking place in DVCS, are expected to play a central role drawing three-dimensional images of hadrons. In this work we focus on the study of pions which, as Nambu-Goldstone bosons of QCD chiral symmetry breaking, provide one of the clearest windows onto the phenomenon of emergent hadronic mass (EHM). Herein we present a novel class of pion off-forward parton distributions: the so called postitivity-saturated GPDs, which relying on the covariant-extension fulfill all of the theoretical constraints required by QCD and benefit from a direct interpretation in terms of fundamental degrees of freedom: quarks and gluons. Exploiting them we are capable to obtain predictions for DVCS on pions to be probed through the Sullivan process at the EIC. We will show that a measurable asymmetry on the channel arise, therefore pushing optimism about probing pion structure at future electron-ion colliders.

Primary author: MORGADO CHÁVEZ, Jose Manuel (Universidad de Huelva)

Co-authors: Dr MEZRAG, Cédric (DPhN/IRFU/CEA-Saclay); Dr DE SOTO, Feliciano (Universidad Pablo de Olavide); Dr MOUTARDE, Hervé (DPhN/IRFU/CEA-Saclay); Dr SEGOVIA, Jorge (Universidad Pablo de Olavide); Dr RODRÍGUEZ QUINTERO, José (Universidad de Huelva); Dr DEFURNE, Maxime (DPhN/IRFU/CEA-Saclay)

Presenter: MORGADO CHÁVEZ, Jose Manuel (Universidad de Huelva)

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