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Particle Physics at LPTHE

Vendredi 15 Mars 2024, 14 :00
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Domaines : hep-ph

Titre : *Using the exclusive photoproduction of a photon-meson pair in collinear factorisation to extract generalised parton distributions*

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Résumé : *Various 2 to 3 exclusive processes in the collinear factorisation framework have been studied. Such processes give access to enhanced x-dependence of generalised parton distributions (GPDs), beyond the moment-type information that is accessed in well-studied 2 to 2 exclusive processes such as Deeply Virtual Compton Scattering. It was recently proved that a wide range of 2 to 3 exclusive processes factorise. Moreover, through the exclusive photoproduction of a photon-meson pair with large invariant mass, which falls in the latter category and which will be the focus of my talk, chiral-odd GPDs can be probed at the leading twist. The first part of my talk will be dedicated to our results from 2212.00655 and 2302.12026 on the subject, performed at leading order and leading twist, for a charged pion and rho meson of any charge and polarisation. Our results indicate that the statistics are very promising for performing an experimental study at various experiments, such as COMPASS, future EIC, LHC in ultraperipheral collisions, and especially at JLab. For the second part, I will discuss our recent results from 2311.09146, on an unexpected case of the breakdown of collinear factorisation in the exclusive photoproduction of a photon-pi0 pair, that is, when the outgoing meson is a neutral pion. This is due to the existence of the so-called Glauber pinch in this process, which happens due to the presence of the gluon GPD channel here. I stress that such factorisation breaking effects are absent for the processes that we have previously considered, where the outgoing meson is a charged pion or a rho meson, since they are sensitive to quark GPDs only.*