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Generalized Parton Distributions from charged current meson production

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We suggest that generalized parton distributions can be probed in charged current meson production process, like $ep \rightarrow e\pi^-p$ and $ep \rightarrow e\rho^-p$. In contrast to pion photoproduction, this process is sensitive to the unpolarized GPDs H , E , and for this reason has a very small contamination by higher twist and Bethe-Heitler type contributions. We prove that the simultaneous study of both ρ^- and π^- meson production by charged currents in Bjorken kinematics allows for a very clean extraction of the leading twist Generalized Parton Distributions of the target, with inherent control of the contribution of higher-twist corrections. Also, it might provide target-independent constraints on the distribution amplitudes of the produced mesons. We expect that such processes might be studied either in neutrino-induced or in electron-induced processes. According to our numerical estimates, the cross-sections of these processes are within the reach of JLab and EIC experiments.

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