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Meson structures through collinear and transverse momentum dependent distributions

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Pions and kaons play an important role in QCD, as they are the pseudo-Goldstone bosons of chiral symmetry breaking while also being confined systems of quarks and gluons. Recent works on pion structures through the JAM framework introduce both Drell-Yan (DY) and leading neutron (LN) electroproduction observables to constrain parton distribution functions (PDFs) in the pion. By making use of the transverse momentum dependent (TMD) factorization, additional transverse momentum dependent DY observables led to the first simultaneous determination of both the collinear and TMD PDF in the pion. Through the knowledge of the pion PDFs, we introduce observables from the NA3 experiment which are ratios of kaon-induced DY cross sections to pion-induced DY cross sections in order to constrain kaon PDFs. We look forward to future experiments from the potential JLab 22 GeV upgrade, EIC, and COMPASS and AMBER at CERN.

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