

Tomography of pions and protons via transverse momentum dependent distributions

Wednesday, 21 June 2023 11:30 (30 minutes)

I will present our work, <https://inspirehep.net/literature/2628962>, on the first simultaneous extraction of parton collinear and transverse degrees of freedom from low-energy fixed-target Drell-Yan data in order to compare the transverse momentum dependent (TMD) parton distribution functions (PDFs) of the pion and proton. We demonstrate that the transverse separation of the quark field encoded in TMDs of the pion is more than $\sim 5\sigma$ smaller than that of the proton. We also consider the nuclear modification of TMDs, we find clear evidence for a transverse EMC effect. We comment on possible explanations for these intriguing behaviors, which call for a deeper examination of tomography in a variety of strongly interacting quark-gluon systems.

Primary authors: GAMBERG, Leonard (Penn State); BARRY, Patrick (Jefferson Lab); MELNITCHOUK, Wally (Jefferson Lab); MOFFAT, Eric (Argonne National Lab); PITONYAK, Daniel (Lebanon Valley College); PROKUDIN, Alexey (avp5627@psu.edu); SATO, Nobuo (Jefferson Lab)

Presenter: GAMBERG, Leonard (Penn State)

Session Classification: Session II