Contribution ID: **36** Type: **not specified**

Unpolarized cross section and transverse single spin asymmetry of Z^0 in 500/510 GeV p+p collisions

Monday 26 September 2022 10:00 (20 minutes)

We present the preliminary results of unpolarized cross section and transverse single spin asymmetry (TSSA) of Z^0 measured by the STAR experiment. The cross section results combine 500/510 GeV p+p data from 2011, 2012, 2013 and 2017, corresponding to a total luminosity of 700 pb^{-1}. The differential Z^0 cross section, measured as a function of the boson's transverse momentum, provides important constraints on the energy dependence of the transverse momentum dependent parton distribution functions (TMDs). The TSSA of Z^0 is measured using 510 GeV $p^{\uparrow}$+p data from 2017 with the integrated luminosity of 350 pb^{-1}. This observable is sensitive to one of the TMDs, the Sivers function, which is predicted to have the opposite sign in $p + p \rightarrow W/Z + X$ from that observed in semi-inclusive deep inelastic scatterings. Our data aim to investigate the non-universality of the Sivers function.

Author: FAZIO, Salvatore (Universita della Calabria e INFN (IT))

Co-author: CHU, Xiaoxuan

Presenters: FAZIO, Salvatore (Universita della Calabria e INFN (IT)); CHU, Xiaoxuan

Session Classification: Spin physics

Track Classification: Spin physics