

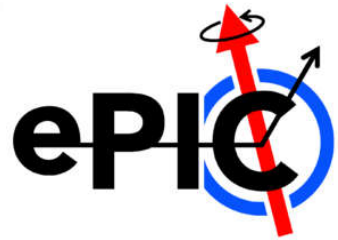
ePIC Analysis Coordination April 12, 2024



Conveners: Charlotte Van Hulse (U Alcala),
Stefan Diehl (JLU Giessen and UConn)

Wiki of the SIDIS PWG: <https://wiki.bnl.gov/EPIC/index.php?title=SIDIS>

PWG meetings: Tuesday 2.30 pm (~ every 2 weeks)



SIDIS Working Group

SIDIS WG meeting

Tuesday Apr 2, 2024, 8:30 AM → 10:00 AM US/Eastern

Description <https://cern.zoom.us/j/62859255670?pwd=ZGR6bm1NbDNoaDExYWxkMmF4MUxIUT09>



Ralf Seidel presented his studies on radiative corrections.

Hide

- Based on unpolarized Djangoh simulation at 18 x 275 GeV

- Djangoh has ISR and FSR correctly included

- Effects are overall moderate (at the percent level) but can get significant for some kinematic regions

- At moderate Q^2 , ISR events can populate higher x values
- Effects get stronger for higher Q^2 values
- Effects especially visible in the y distribution and at high P_T .

- Next step: Test impact on azimuthal asymmetries.

4/11/24, 5:51 AM Stefan Diehl

8:30 AM → 8:40 AM **Announcements**

10m

Speakers: Charlotte Van Hulse, Stefan Diehl (JLU Giessen and UCONN)

8:40 AM → 9:00 AM **ISR/FSR effects on SIDIS variables**

20m

Speaker: Ralf Seidl (RIKEN)

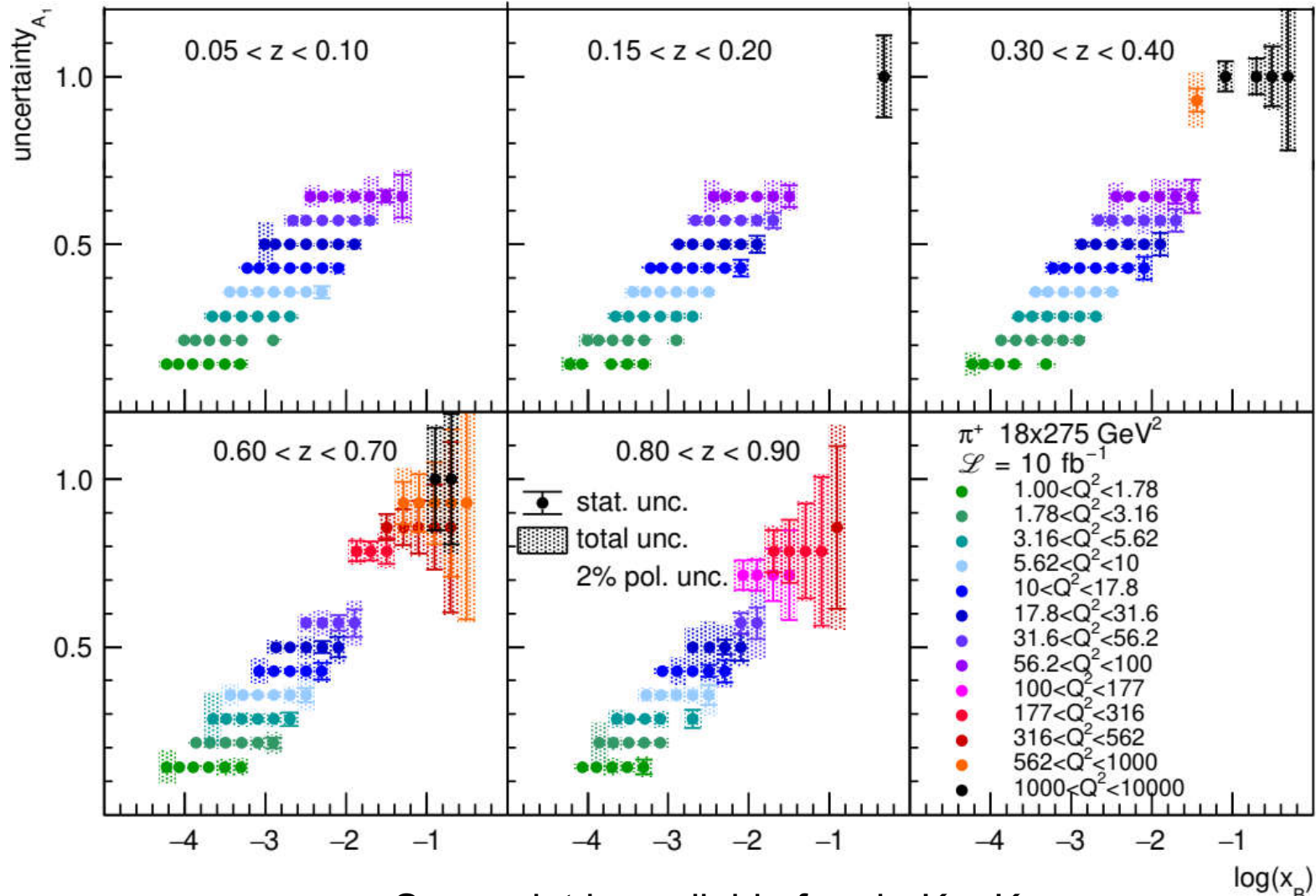
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Plot 1: Statistical and total uncertainty of A_{LL} of π^+ for helicity PDFs

plot by: Charlotte van Hulse

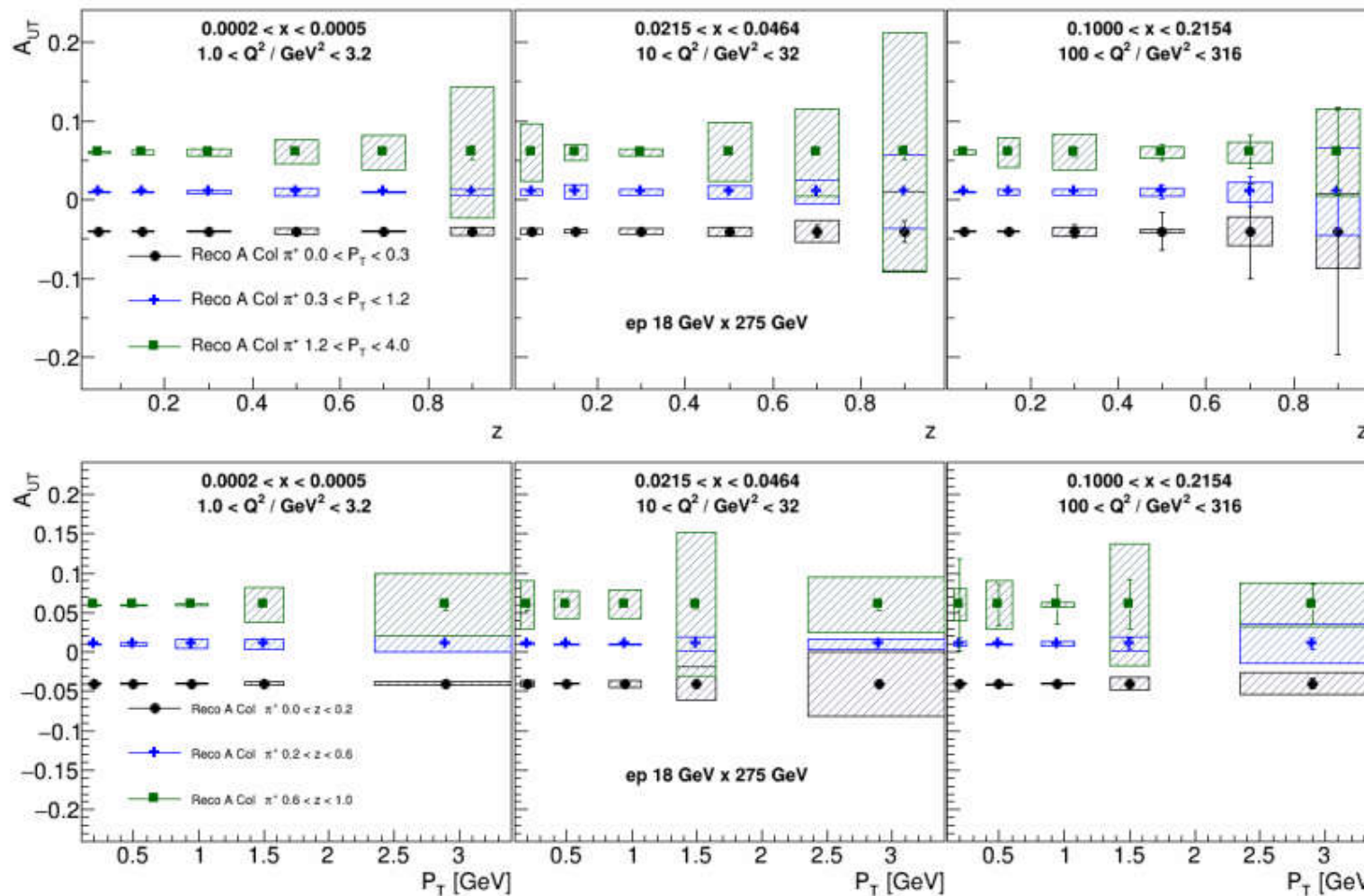


based on PYTHIA6

• Same plot is available for π^- , K^+ , K^-

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Plot 2: A_{UT} of π^+ for polarised TMD PDFs plot based on ECCE by: Ralf Seidl



Also available for the
Sivers
asymmetry

Figure 9: Projected π^+ Collins asymmetry statistical and systematic uncertainties as a function of either z (top panel) in bins of P_T or as a function of P_T in bins of z (bottom panel) for three select x and Q^2 bins. The asymmetries are shown at arbitrary values for better visibility. The statistical uncertainties are extrapolated to an accumulated luminosity of 10 fb^{-1} for the 18 GeV x 275 GeV energy option. For better visibility either 4 bins in P_T and 2 bins in z were combined or vice versa.

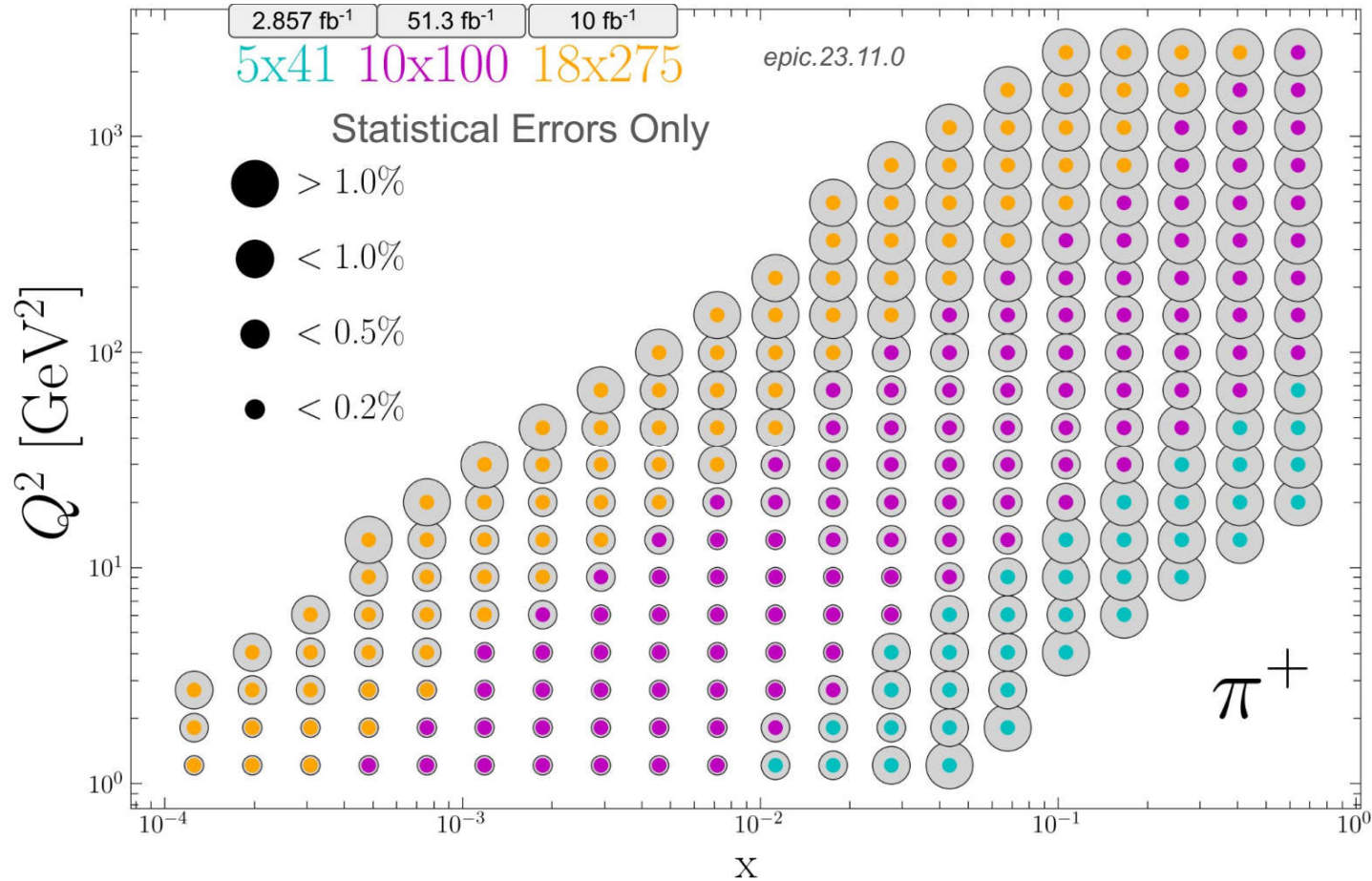
based on
PYTHIA6



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Plot 3: Expected statistical uncertainty of Unpolarized TMD PDFs

plot by: Gregory Matousek in cooperation with theorists



The plot shows the expected statistical uncertainties and the coverage from the different beam energies for the extraction of unpolarized TMD PDFs

based on PYTHIA6