SIDIS WG Status

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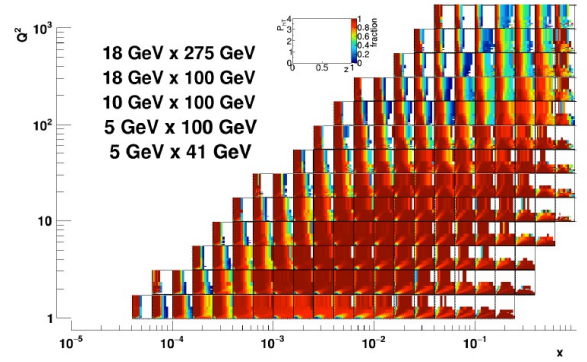
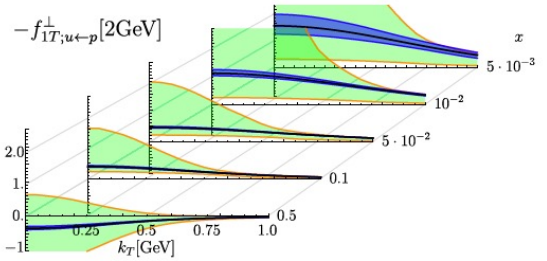
Impact Plots Candidates

- SIDIS coverage → Emphasize unexplored phase space
- Sivers & TMD Evolution → Golden Channel, high impact of Athena data
- Transversity →Silver measurement
- Sea quark helicities → Golden measurements, highlight PID
- Suppression in eA →Golden channel, highlight acceptance

- (Λ program)





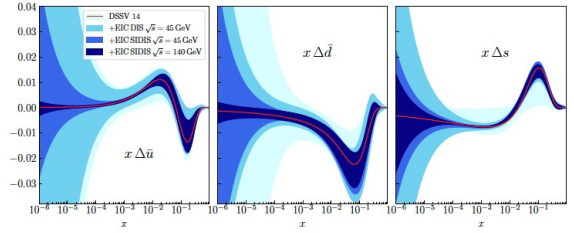


Figure 7.19: Impact of SIDIS measurements at the EIC on the sea quark helicities $x\Delta\bar{u}$, $x\Delta\bar{d}$ and $x\Delta s$ as a function of x at $Q^2 = 10\,\mathrm{GeV}^2$.

Progress so far

- Fruitful discussions with PID and tracking groups

- Impact plots/theory support
  - Sivers/TMD evolution: Pavia extraction
  - Sea quarks: JAM (Filippo Delcarro) and Borsa et al
  - Nuclear suppression: Liang Zheng & Bowen Xiao

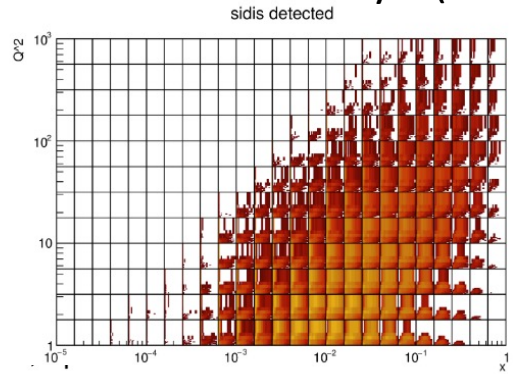
- Fast simulations:
  - First fast simulations (with beam effects) performed
  - Studied reconstruction performance of SIDIS variables with hadronic final state

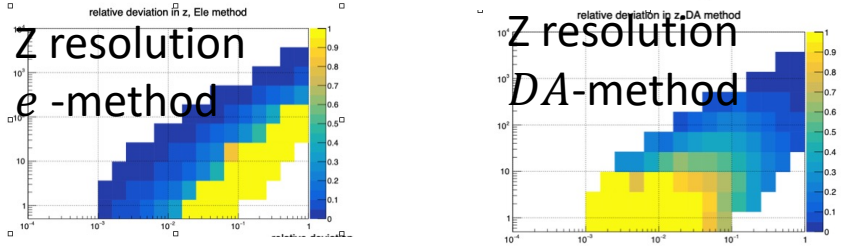
- Full Simulation:
  - First studies of full simulations underway
  - Focus on tracking and PID performance
  - Tracking group did zero-order evaluation of tracking with far replaced vertices

Marco Radici (INFN Pavia)

Parameters \ Energies	$\sqrt{s} = 28$	$\sqrt{s} = 44$	$\sqrt{s} = 63$	$\sqrt{s} = 84$	$\sqrt{s} = 140$
g_2 nonperturbative evolution	6.45	8.33	9.26	9.52	10.36
N_1 mid-x TMD width	5.94	6.52	6.96	6.80	6.73
σ low-x TMD width	5.05	6.85	8.00	8.55	10.00

Duane Byer(Duke)





Z resolution
e -method

Z resolution
DA-method

Connor Pecar (Duke)

Near Term Plans

- Full simulations
  - Focus for the next few weeks to validate our first fast simulations results (as full simulation becomes available)
  - Follow up on Λ performance studies
- Fast Simulations
  - Generate pseudo-data for azimuthal asymmetries and A_{LL}
  - Study smearing/PID
- Systematics
  - Azimuthal asymmetries: smearing, PID →Unfolding? Difference between smeared, non-smeared?
  - A_{LL}: detector performance, lumi.. →take HERA systematics?
  - Saturation studies tbd
  - Meeting with our ECCE counterparts 7/13 9:15
- First iteration of Impact plots (from fast simulations?)