Lambda, di-hadrons, misc

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EIC YR – 1/27/2020

Workforce

- From Jlab EIC meeting
  - Haiyan Gao's group at Duke:
    - Xiaqing Li, senior grad student: 50% over 1 year to work on SIDIS
  - SBU:
    - Jinlong Zhang: Interested in Lambdas -->met with AV, Chris Dilks to discuss next steps
  - Theory at Jlab
    - Andrea Signori, Filippo Delcarro: offered help e.g. with TMD parametrization

Lambda

- One of the main 'forgotton' physics topics in white paper
- Some interesting measurments
  - Spin transfer (long, trans)
  - Polarizing FF
  - Spin correlation in double lambda production in same jet (mentioned by Jinlong…)
- Main challenges/questions (based on our experience from Belle and CLAS12)
  - Acceptance, in particular of soft pion
  - PID? Vertexing?
  - (assume p-pi channel)
  - Rate of anti lambda? (→control systematics)
  - →concentrate studies first on reconstructing lambdas using Pythia
    - Identified workforce: Chris, AV, Jinlong

Di-hadron Fragmentation

- Dependent on (z,M,P_h,θ): Still need to map out full dependency
- Physics topics
  - Boer-Mulders, transversity (silver)
  - Sivers?→golden but advantage unclear
- Roadmap:
  - Use TMDGen to estimate BM, transversity signals (→money plots?)
  - Use pythia to estimate resolution in each variable
    - For M and θ, correlations between spatial regions
- Challenges
  - θ dependence mainly unknown. Will EIC acceptance allow much better constrains?
  - Upol part (in particular θ dependence) leads to significant systematic effect.
- Identified workforce
  - AV, Chris Dilks, additional Duke grad student starting in summer (likely), +?

Other measurments

- Jet mass observables? (transversity in DIS)
  - ”QCD Higgs effect”-->interesting since novel. Observable?