



CLAS collaboration meeting, Nov 13 – 16 2018, JLAB

Thursday, November 15, 2018

**Outlook and Perspectives:
SIDIS Pion Beam Spin
Asymmetries with CLAS12
at 10.6 GeV**



JUSTUS-LIEBIG-



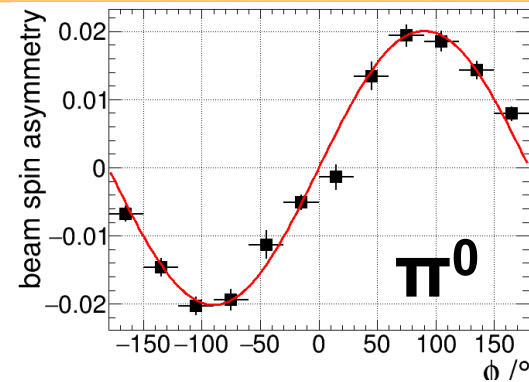
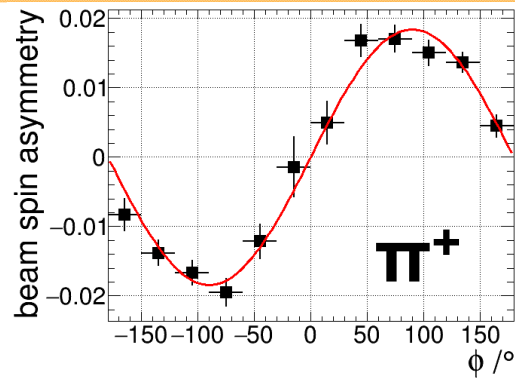
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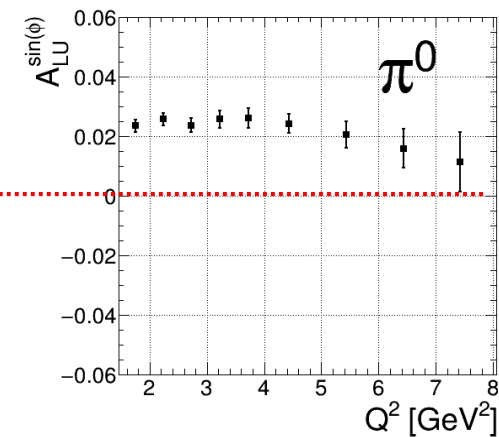
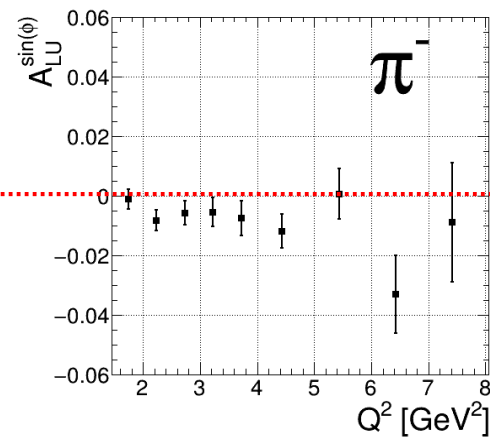
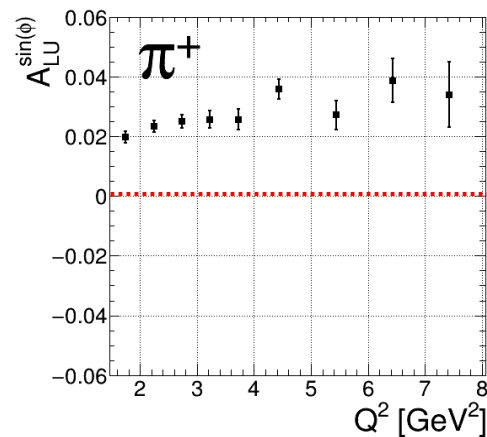
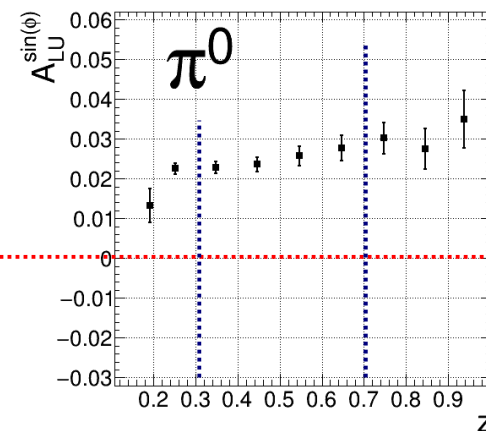
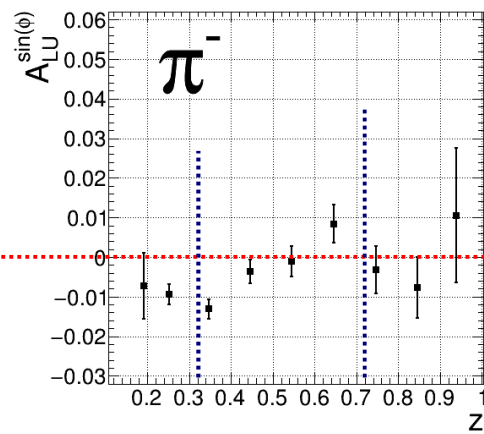
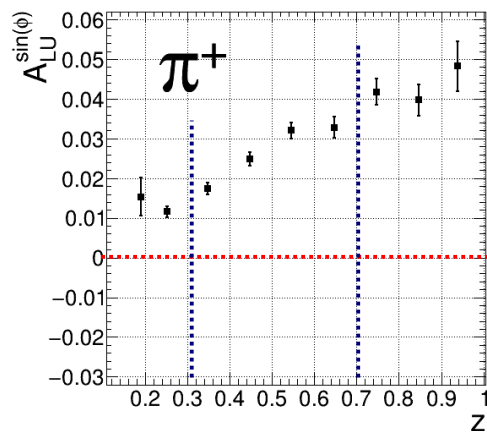
²Jefferson Laboratory

Present Status



$$BSA_i = \frac{1}{P_e} \cdot \frac{N_i^+ - N_i^-}{N_i^+ + N_i^-}$$

$$A_{LU}^{\sin \phi} \sin \phi$$



Outlook and Perspectives

- The presented results are based on only close to 2 % of the approved RG-A beamtime / 10% of the spring run
- **Next steps:**
 - The behaviour at large Q^2 and p_T values will be studied
 - All 3 moments will be extracted
 - A multidimensional analysis will be performed
 - Systematic effects will be investigated
- **Requirements:**
 - Full spring run dataset cooked for multidimensional binning and reasonable statistical errors at high Q^2 and p_T
 - FTOF calibrations and corrections for particle ID of charged pions
 - PCAL / ECAL calibration (time + energy) for neutral pions
 - Correct kinematics for the determination of the kinematic variables (resolution is less critical)
 - SIDIS MC for acceptance studies etc.

Additional requirements from Anselm for the di-hadron BSA analysis

- Di-hadron BSA shows \sim quadratic dependence on tracking efficiency and sample purities
 - improved tracking at lower angles and lower momenta is very important.

analysis tools: 2D fits and 2D histograms with uncertainties in the java framework

MC production: ‘as much as possible’

- contamination studies and closure studies need multiples of what is available in data
- phase space we want to cover with the MC has to be defined