

CFNS Workshop on Beam Polarization and Polarimetry at EIC Recap

July 7, 2020

Electron Polarimetry Related Talks

- What is planned at ILC (Jenny List, DESY)
- Polarization Upgrade and Polarimetry at the SuperKEKB Facility (Wouter Deconinck, Manitoba)
- HERA Polarimetry (Stefan Schmitt DESY)
- Lepton polarimetry at JLab (Kent Paschke, UVa)
- Compton Polarimeter laser options (Ciprian Gal, Stony Brook)
- Precision Mott Polarimetry (T. Gay, Nebraska)
- Low-energy polarimetry (K. Aulenbacher, Mainz)

Electron Polarimetry: Topics of interest

- ILC uses position sensitive detector in integrating mode (Cerenkov) → EIC requires higher detector segmentation (strip detectors). Can we use such a detector in integrating mode? Would decrease measurement time
- Lots of progress in precision low energy polarimetry (few MeV to few hundred MeV). Application at EIC?
- Key lesson from JLab: Multiple devices (and techniques) improved overall precision. Current EIC plans rely primarily on one polarimeter/technique
- SuperKEKB and EIC have similar requirements. Collaborative efforts would benefit both groups

Hadron Polarimetry Related Talks

- Experience from RHIC leading the way to EIC (Bill Schmidke, BNL)
- Experience from COSY (Frank Rathmann, Forschungszentrum Jülich)
- Elastic e-D scattering for deuteron polarimetry (Barak Schmookler, Stony Brook)
- Absolute polarization measurement of the 200 MeV proton beam at Linac (Andrei Poblaguev, BNL)
- Development of absolute polarimeter for the low energy $^3\text{He}^{++}$ ion beam (Grigor Atoian, BNL)
- Can absolute polarization of the ^3He beams at EIC be precisely measured by HJET? (Andrei Poblaguev, BNL)
- Light Ion Polarimetry at the EIC (Ana Sofia Nunes, BNL)
- Polarimetry based on forward neutrons in pA scattering (Bill Schmidke, BNL)

Hadron Polarimetry: Topics of Interest

- Proton polarimetry: Transport of RHIC polarimeters to EIC faces several challenges due to increased total beam current and higher bunch crossing frequency. Most seriously carbon targets do not seem viable.
- Light ion polarimetry: Promising ideas for measurements in injector chain. Absolute measurement may be possible with Hjet; simulation studies of RHIC type polarimeters for light ions proceeding. Tests in RHIC the next years are possible.
- Other ideas: Polarimetry based on forward neutrons in pA scattering may be viable. Model calculations are needed to confirm and develop method.