

EIC Detector R&D Progress Report

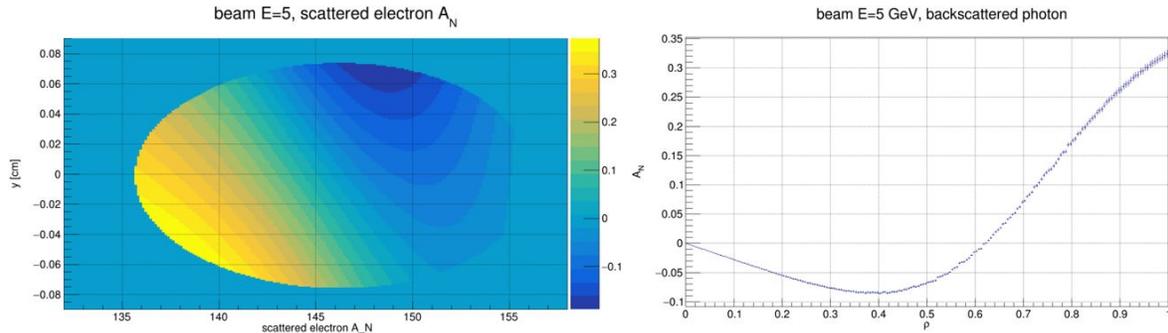
eRD26 Summary

Project members

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Since the start of this funding period we have received the funds allocated for the first year of the project, identified the needed components, and expect to be able to meet our commitments by the end of the funding cycle. The construction of the variable frequency pulse, low power system will be the first step in establishing the laser needed for Compton polarimetry at the EIC.

We have updated our simulations to the new IR6 location and expect to have an estimate of the sync light background by the time of the next report. Due to the difference in polarization direction at the two locations the analysis from IP12 cannot be directly ported to this new location. While the IP12 location required a high precision measurement of the transverse polarization component and a cross check of the longitudinal components, the IR6 location requires precision in both components due to a mix of longitudinal and transverse components. The figure below shows the analyzing power (on the color axis) for the scattered electron (left) and the analyzing power as a function of the maximum photon energy (right) for the backscattered photons for a beam



energy of 5 GeV. As can be seen even with a 98% longitudinal polarization, the transverse component continues to present itself in the UD asymmetry in the left plot. For the other energies (10 and 18 GeV) we expect to have 91 and 71% longitudinal polarization respectively.

We hope that with a full evaluation of the rates and backgrounds we will be able to determine the best detector technologies that will be needed to achieve the required 1% precision. We plan to collaborate with interested parties to estimate the performance of different detector systems.