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Analysis of Backgrounds and Kinematic Factors for PREX-2 and CREX[1] DEVI ADHIKARI, Idaho State University, PREX/CREX AND JLAB HALL A COLLABORATION — PREX-2 and CREX took place in Hall A at Jefferson Lab in 2019/2020 and measured the parity-violating asymmetry (A_{pv}) in ^{208}Pb and ^{48}Ca, respectively, using an electroweak interaction probe. The measurements are statistics limited and require extreme control over systematic uncertainties. Some of the major systematics include: contamination from rescattering, inelastic backgrounds, and sensitivity of finite acceptance in Q^2 normalization. The High-Resolution Spectrometers (HRSs) of the Hall A allow precise alignment of the detectors within the kinematic acceptance – minimizing contamination from inelastic events, which have largely unknown asymmetries. There are also some possibilities for the inelastically scattered electrons, and the electrons in the radiative tail, to reach the integrating detectors by rescattering off the spectrometer walls. Finally, the measured asymmetry is averaged over a range of Q^2 across the finite acceptance of the HRSs, which needs to be accounted for to make an accurate theoretical interpretation of the asymmetry. In this talk, we will discuss the corrections to A_{pv} and the systematic error contributions due to these sources.

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