

Abstract Submitted
for the DNP20 Meeting of
The American Physical Society

Integrating Quartz Cerenkov Detectors for PREX-II/CREX¹

DEVI ADHIKARI, Idaho State University, PREX/CREX AND JLAB HALL A COLLABORATION — PREX-II and CREX are recently completed high precision, statistics-limited measurements of the parity-violating asymmetry (A_{pv}) in elastic electron scattering in Hall A at JLab. The ppm-level, measured asymmetries access neutron distributions of complex nuclei, ^{208}Pb and ^{48}Ca , using an electro-weak interaction probe. In order to achieve high precision in a relatively short time, the experiment's main integrating detectors counted scattered electron flux at very high rates. For this reason, the integrating detectors utilized radiation-hard, high-purity Spectrosil-2000 fused-silica as the active Cerenkov-radiator medium. Each detector consisted of a 5 mm thick, highly-polished quartz tile dry-butted directly against a pmt window. The integrating quartz detector package also included two auxiliary detectors in each spectrometer, which monitored potential false asymmetry backgrounds from any residual transverse beam polarization or other sources. Additionally, PREX-II and CREX used two generations of Small Angle Monitors (SAMs), previously known as Hall A LUMIs. This talk will highlight the key features of the PREX-II/CREX integrating quartz detectors and their performance during the experiments.

¹NSF Award No.'s 1615146 and 1941371

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Date submitted: 26 Jun 2020

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