Abstract Submitted
for the DNP20 Meeting of
The American Physical Society

High-Performance Counting-Mode DAQ for the Hall A Compton Polarimeter at Jefferson Lab IRIS HALILOVIC, Univ of Manitoba, PREX-II COLLABORATION, CREX COLLABORATION — The Hall A Compton polarimeter can continuously measure the longitudinally polarized electron beam to high precision meeting the strict requirements of the JLab parity-violation program. There are two data acquisition systems employed: an integrating-mode DAQ for the photon detector and a counting-mode DAQ for the silicon microstrip tracking electron detector. Recently the counting-mode DAQ has been revived and upgraded with two novel electronics boards developed by the JLab Fast Electronics Group. The VETROC is a VXS-based electron trigger readout card. It is a high-rate (4 Gbps) pipelining TDC with 20 ps timing resolution. The VTP is a switch card module with greater FPGA trigger logic capabilities than past CTP and GTP designs used at JLab. In this VXS crate the VTP participates as the global-trigger and was programed as a VETROC and trigger scaler. This novel high-performance DAQ, capable of handling a trigger rate up to 200 MHz with a trigger deadtime of $< 10\%$ achieved, was employed in the recent CREX experiment and is a precursor for the needs of the future JLab high-precision SoLID and MOLLER programs. I will report on the performance of this counting-mode DAQ and the electron detector. I will also show the preliminary results of the Compton electron asymmetry for CREX.

Iris Halilovic
Univ of Manitoba

Date submitted: 25 Jun 2020 Electronic form version 1.4