Abstract Submitted
for the APR16 Meeting of
The American Physical Society

Quartz Detector Development for PVeS Experiments CARLOS BULA VILLARREAL, Idaho State University — The high luminosity requirements of Parity Violating electron Scattering (PVeS) experiments, such as Jefferson Lab's PREX, CREX and MOLLER, create several challenges for detector design. The main "integrating" detectors for these experiments must intercept and precisely count scattered electron fluxes at GHz rates over prolonged periods of time. The detector's active (Cherenkov) medium has been chosen to be high-purity, fused silica (Spectrosil 2000) quartz–which is known to maintain deep UV transparency during extreme radiation doses. Several detector prototypes have been built at Idaho State University and tested using the 850 MeV electron test-beam at the Mainz Microtron (MAMI). To aid in prototype development, an optical G4 Monte Carlo has been developed and now benchmarked using the real MAMI data. This talk will present some physics motivations, the PREX/CREX prototype detector designs, and their test-beam performance with comparisons to simulation.

Carlos Bula VIllarreal
Idaho State University

Date submitted: 07 Jan 2016 Electronic form version 1.4