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Adaptation of Crystal Ball and TAPS Detectors for Efficient Data Acquisition at MAMI JOSEPH ASERCION, George Washington University, A2 COLLABORATION — To prepare the experimental apparatus at MAMI for the next set real photon experiments, the Crystal Ball and Two Armed Photon Spectrometer (TAPS) detector systems needed to be optimized for better performance. The Crystal Ball and TAPS particle detectors at MAMI employs object-oriented data acquisition architecture based on the C++ language as well as CERN's ROOT library. This system, utilized by the A2 collaboration at the institute, has been adequate for past experiments; however, it has recently proven to be more and more unstable. To alleviate this problem, the data acquisition software was rewritten as a more cohesive architecture, allowing for greater flexibility in experimental parameters and a decrease in instability. In addition to restructuring the software system, new Gas Electron Multipliers (GEMs) were investigated for use with the Crystal Ball as signal amplification devices using generated voltage signals to test feedback efficiency. These modifications are necessary to provide improved signal detection and data acquisition in future experiments.

Joseph Asercion
George Washington University

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