

Abstract Submitted
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Measuring the after pulsing of photomultiplier tubes. ERIC MOELLER, GABRIEL NICULESCU, James Madison University — A number of crucial experiments exploring the intricate tomography of protons and neutrons will be carried out in Hall A at Jefferson Lab using the SuperBigBite Spectrometer (SBS), a large acceptance magnetic spectrometer sporting 0.5% momentum and 0.5 mr angular resolution. As part of the standard SBS detector package the electromagnetic calorimeter ECAL will detect electrons and photons in the 5 GeV energy range. ECAL's readout will be carried out by ~3,000 28 mm FEU84 photomultiplier (PMT) tubes. In order to characterize these tubes the PMT gain and relative quantum efficiency were measured as a function of high voltage in the 1100-1500 V range, as was the afterpulsing probability. A test stand and a set of complex computer algorithms that almost completely automate the testing procedure and (Root/C++-based) data analysis were developed. In high counting rate experiments the after pulsing of PMTs can play an unwanted, important role. As part of the extensive testing of SBS ECAL PMTs carried out at JMU the after pulsing probability was measured. These results will be discussed here.

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