

Abstract Submitted
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Study of Energy Resolution of Lead Glass Calorimeter¹ DANIEL LOMBARDO, University of California Los Angeles — In the proposed experiment at Jefferson Lab, Gep(5), the structure of the proton will be studied by measuring the proton elastic form factors. In order to ensure that the scattering events are elastic, the proton angle and energy will be measured with a magnetic spectrometer and the electron angle and energy will be measured with a lead glass calorimeter, called BigCal. An aluminum sheet, 20cm thick, is typically placed in front of BigCal to shield the calorimeter from unwanted radiation, but this causes a loss of resolution in the measured energy. A simulation was carried out to determine whether replacing the shield with radiation hardened lead glass would significantly improve the resolution of the calorimeter. The simulation was run with the aluminum shield in place, and then again with the new radiation hard lead glass shield. Comparing the measured energies between the two different shields it was found that the resolution improved by a factor of 2 with the lead glass shield at an electron energy of 4.6 GeV. The resolution continued to increase at lower values of the electron energy. This improvement in resolution will be useful in isolating elastic scattering events in the trigger for BigCal.

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