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SiPM integration testing for FACET-II pair spectrometer

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A pair spectrometer, designed to capture single-shot gamma spectra over a range extending from 10 MeV through 10 GeV, is being developed at UCLA for installation at SLAC's FACET-II facility. Gammas are converted to electrons and positrons via pair production in a beryllium target and are then subsequently magnetically analyzed. These charged particles are then recorded in an array of quartz Cherenkov cells attached to silicon photomultipliers (SiPMs). As the background environment is challenging, both in terms of ionizing radiation and electromagnetic pulse radiation, extensive beamline testing is warranted. To this end, we present the results of our tests, correlated with electromagnetic finite-element and Geant4 Monte Carlo studies.

Footnotes

Funding Agency

Paper preparation format

LaTeX

Region represented

North America

Primary author: PHILLIPS, Jack (Particle Beam Physics Lab (PBPL))

Co-authors: NARANJO, Brian (University of California, Los Angeles); Dr YADAV, Monika (University of California, Los Angeles); ROSENZWEIG, James (University of California, Los Angeles)

Presenter: PHILLIPS, Jack (Particle Beam Physics Lab (PBPL))

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