



Contribution ID: **2296** Contribution code: **SUPG054**

Type: **Student Poster Presentation**

SiPM integration testing for FACET-II pair spectrometer

Sunday, 19 May 2024 14:00 (4 hours)

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 positions 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 Geant4 Monte Carlo studies, assembly of the SiPMs, and future testing plans.

Footnotes

Funding Agency

US Department of Energy, Division of High Energy Physics, under Contract No. DE-SC0009914, DE-SC0017648, NSF PHY-1549132 Center for Bright Beams, DARPA under Contract N.HR001120C007

Paper preparation format

LaTeX

Region represented

North America

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Session Classification: Student Poster Session

Track Classification: MC6: Beam Instrumentation, Controls, Feedback, and Operational Aspects: MC6.T03 Beam Diagnostics and Instrumentation