

Abstract Submitted
for the SES12 Meeting of
The American Physical Society

Studies of Silicon Photomultipliers for their use in the Mu2e Experiment at Fermilab ALYSSA HENDERSON, University of Virginia, CRAIG GROUP, YURI OKSUZIAN, University of Virginia and Fermilab, PAUL RUBINOV, Fermilab — Silicon Photomultipliers (SiPMs), a relatively novel technology, are able to detect single photons and convert them into electrical signals when used within a proper voltage range. In order to learn more about SiPMs for their use in the Mu2e experiment, we find a few characteristics of the SiPM at the Silicon Detector facility at Fermilab. We connected several SiPMs, one at a time, to a Keithley 2400 Sourcemeter that was programmed to vary the voltage automatically. In this way, we were able to apply our desired voltage range and the sourcemeter provided the corresponding current. We also conducted these experiments with the SiPMs in a dark chamber, which we used to control the temperature of the environment. We applied a voltage and measured the corresponding current at four temperatures and measured three characteristics: breakdown voltage, the operating voltage range, and the resistor value at each, as well as how they vary with temperature, time, and between two brands.

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Date submitted: 11 Sep 2012

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