SILICON PHOTOMULTIPLIER TEMPERATURE DEPENDENCY. Anran, Zhao, Dept. of Physics, Univ. of Va. Silicon Photomultipliers (SiPMs) are solid-state photodetectors used in a wide range of applications, including medical imaging, high energy physics, and astrophysics. SiPMs are composed of numerous single-photon avalanche diodes (SPADs) that generate rapid current growth upon reaching their breakdown voltage, enabling precise photon arrival timing. We are investigating the temperature dependence of Hamamatsu SiPM breakdown voltages within a temperature-controlled chamber, where the SiPMs are exposed to an external LED flasher. Our approach involves a variety of current vs. Voltage (IV) plotting techniques to identify the optimal method for determining breakdown voltages. We also utilize another method: the gain method identifies the breakdown voltage by determining the voltage where single-photoelectron production stops. Our findings are then compared against the Hamamatsu value of 54 mV/°C to assess systematic variations. It appeared that the gain method provided conclusive evidence of a higher temperature coefficient of 55 mV/°C, but the IV curves yielded inconclusive results. (Supported by: Mitchell Summer Scholarship, Univ. of Va.) Author contact: nrb6yu@virginia.edu