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Characteristics of SiPM Photo Sensors for GlueX YI QIANG, ELTON SMITH, IVAN TOLSTUKHIN, Jefferson Lab, WILL BROOKS, HAYK HAKOBYAN, SERGEY KULESHOV, ORLANDO SOTO, ALAM TORO, Universidad Tecnica Federico Santa Maria, GEORGE LOLOS, ZISIS PAPANDREOU, ANDREY SEMENOV, University of Regina — The barrel calorimeter of the GlueX detector in Hall D at Jefferson Lab will be instrumented with 3840 large-area (1.2×1.2 cm^2) custom silicon photomultiplier (SiPM) arrays manufactured by Hamamatsu Corporation [1]. These photon sensors have properties similar to vacuum photomultipliers, but are unaffected by high magnetic fields. In our experiment, they will operate in magnetic fields exceeding 1 T. A series of measurements have been carried out by several groups to characterize these SiPMs including the photon detection efficiency (PDE), gain, dark rate, cross talk and after-pulsing at different bias voltages and temperatures. A special study was performed for the first time to separate the cross talk and after pulsing by analyzing ADC spectra with different gate widths. These measurements allow a unique extraction of after-pulsing parameters. We will present a summary of these measurements and the plan for use of these sensors in the GlueX experiment.

[1] F. Barbosa *et al.,* NIM A695 (2012) 100.

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