

Abstract Submitted  
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**Optimization of Performance Parameters for Large Area Silicon Photomultipliers** KATHRYN JANZEN, University of Regina — The goal of the GlueX experiment is to search for exotic hybrid mesons as evidence of gluonic excitations in an effort to better understand confinement. A key component of the GlueX detector is the electromagnetic barrel calorimeter (BCAL) located immediately inside a superconducting solenoid of approximately 2.5T. Because of this arrangement, traditional vacuum photomultiplier tubes (PMTs) which are affected significantly by magnetic fields cannot be used on the BCAL. The use of Silicon photomultipliers (SiPMs) as front-end detectors has been proposed. While the largest SiPMs that have been previously employed by other experiments are  $1 \times 1 \text{ mm}^2$ , GlueX proposes to use large area SiPMs each composed of 16 -  $3 \times 3 \text{ mm}^2$  cells in a  $4 \times 4$  array. This puts the GlueX collaboration in the unique position of driving the technology for larger area sensors. In this talk I will discuss tests done in Regina regarding performance parameters of prototype SiPM arrays delivered by SensL, a photonics research and development company based in Ireland, as well as sample  $1 \times 1 \text{ mm}^2$  and  $3 \times 3 \text{ mm}^2$  SiPMs.

Kathryn Janzen  
University of Regina

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