

Abstract Submitted
for the HAW09 Meeting of
The American Physical Society

Large-area silicon photomultipliers as readout candidates for the GlueX experiment¹ ZISIS PAPANDREOU, KATHRYN JANZEN, GEORGE LOLLIS, ANDREI SEMENOV, University of Regina, CARL ZORN, Jefferson Laboratory, GLUEX COLLABORATION — The core mission of the GlueX experiment involves a search for exotic hybrid mesons as evidence of gluonic excitations in an effort to understand confinement in QCD. A key subsystem of the GlueX detector is the electromagnetic barrel calorimeter (BCAL) located inside a 2.5 Tesla superconducting solenoid. Due to this arrangement, light sensors are required that can operate in the high magnetic field environment. Among these, Silicon photomultipliers (SiPMs) are very promising candidates as front-end detectors. To date, routine use of SiPMs has been limited to those with an active area of a few mm². GlueX will require 2300 large-area SiPMs, each composed of sixteen 3×3 mm² cells arranged in a 4×4 array for a total area of ~ 144 mm² per array. This has placed the GlueX collaboration in the unique position of driving the technology for such larger-area sensors. In this talk I will present tests carried out at Regina and Jefferson Lab regarding performance parameters of prototype SiPM arrays and their micro subcomponents.

¹This work is being supported by NSERC and Jefferson Lab/DOE.

Zisis Papandreou
University of Regina

Date submitted: 30 Jun 2009

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