

Abstract Submitted  
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**Initial studies of GaInP based Geiger mode APD arrays** VICTORIA KOVALCHUK, Univ of Virginia — High density Geiger-mode APD (GAPD) arrays, typically manufactured using silicon substrates are widely used in for applications requiring fast and highly efficient detection of photons. Generically called silicon photomultipliers (SiPMs), these are now widely available and offer excellent detection properties, signal to noise, and single photon counting resolution. Wide band gap semiconductors such as GaInP have the potential to survive and maintain performance characteristics over many orders of magnitude larger radiation doses compared to silicon. There is a strong demand for electronics capable of surviving environments with particle fluence for applications in particle physics experiments. New GAPD arrays based on GaInP have been produced by LightSpin Technologies and tested at UVa. We introduce the properties expected of functional GAPD arrays and present results from studies of these new prototype devices including measurements of DC characteristics, noise, single photon response, and a preliminary review of radiation damage studies.

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