

Abstract Submitted  
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**Photomultiplier Tubes at Cryogenic Temperatures** NATHAN SAUNDERS, Univ of South Dakota — Liquid noble gas scintillators are widely used in experiments searching for physics beyond the Standard Model. Photomultiplier Tubes (PMTs) working at cryogenic temperatures have been developed as the primary light readout device in those experiments. Three PMTs from Hamamatsu Photonics K.K. (R6041, R11065, and R8520) have been systematically characterized at liquid nitrogen temperature. The high voltage dividing circuits for two of the PMTs were custom-built to make sure there is similar performance at both room and liquid nitrogen temperatures. Their dark count rates at both temperatures were measured. Also measured were their single photoelectron responses at both temperatures using 300, 340, 370, and 420 nm LEDs. The intention is to couple these PMTs directly with inorganic scintillators at liquid nitrogen temperature to achieve high light yields for rare-event searches.

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