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Systematic Characterization of the QUPID Photodetector[1]
KEVIN LUNG, XENON100 COLLABORATION, UCLA DARK MATTER GROUP TEAM, HAMAMATSU CORPORATION TEAM — The discovery potential of future direct detection dark matter experiments relies heavily upon achieving a background-free environment in the sensitive volume. Current generation noble liquid detectors are limited by the radioactivity of the external materials, mostly from the photomultiplier tubes. A collaborative effort between UCLA and Hamamatsu has resulted in the development of a low radioactive Quartz Photon Intensifying Detector (QUPID) based upon hybrid APD technology. In the UCLA photosensor testing facility, characterizations of both the QUPID and a 3-inch conventional Hamamatsu R11065 photomultiplier tube have been made using identical systems. The properties examined include the single photoelectron gain, gain versus high voltage, linearity, uniformity, and dark count rate. This talk demonstrates the results of tests performed on the QUPID and R11065.

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