

Abstract Submitted  
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**Characterization of QUPID Photodectors Under Liquid Xenon<sup>1</sup>**

ARTIN TEYMOURIAN, UCLA, XENON100 COLLABORATION, UCLA DARK MATTER GROUP TEAM, HAMAMATSU CORPORATION TEAM — The sensitivity of the current generation of Noble Liquid Dark Matter detectors is limited by background events originating from radioactivity in the detector materials. A major source of this radioactivity is the Photomultiplier Tubes used to detect scintillation light from the noble liquid. In this talk, I will present a novel concept for a new style of photodetector based on the design of Hybrid APDs. The Quartz Photon Intensifying Detector (QUPID) is made nearly entirely out of radiopure quartz, thereby decreasing the radioactivity by at least an order of magnitude over conventional phototubes. The Hybrid APD design, which focuses accelerated electrons onto an APD, also allows for very high linearity. By using QUPIDs, future noble liquid detectors will have drastically lower background levels, corresponding to much better sensitivities for dark matter detection. I will discuss the development and testing of the QUPID, specifically operation of the QUPID under Liquid Xenon and the detection of scintillation light from the xenon.

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