

Amorphous Selenium based VUV Photodetector for use in Noble Element Detectors

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Large scale noble element time projection chambers (TPC's) play a central role in many HEP experiments. Future planned experimental programs using noble element TPC's aim to construct very large detectors, up to the multi-kiloton scale. Pixel based 3D readout offers the opportunity to realize such robust large scale noble element TPC's by recording the information from ionization events in a natively 3D way, however offer a new set of challenges in detection of the scintillation light. In particular, searching for photoconductive materials which are capable of converting VUV light to charge could open the doorway to a potentially game changing solution of an integrated charge and light (Q+L) sensor for large area pixel based noble element detectors. In this presentation we will explore a novel photodetector design based on single layer graphene and amorphous selenium (aSe) as a potential integrated Q+L sensor and show some preliminary results from the first manufactured devices.

Alternate track

1. Neutrino Physics

I read the instructions above

Yes

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Session Classification: Detectors for Future Facilities, R&D, Novel Techniques

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