Amorphous Selenium based VUV Photodetector for use in Noble Element Detectors

Thursday 18 July 2024 11:02 (17 minutes)

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 an 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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