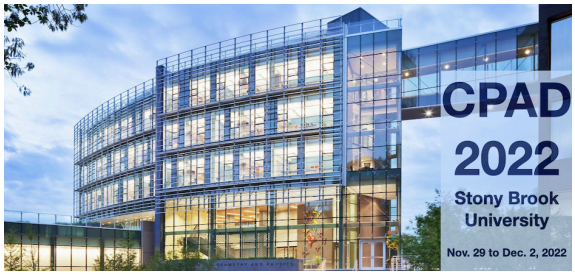

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Delayed Electron Emission in DarkSide-50

Thursday, 1 December 2022 08:50 (20 minutes)

Dual-phase noble gas Time Projection Chambers (TPCs) suffer from spurious electron background events in the lowest detectable energy region. This background has also been reported in liquid xenon TPCs, and some of the causes are discussed in the literature. Understanding its origin is of paramount importance, as this background sets the analysis threshold and affects the most sensitive part of the region of interest for low mass dark matter searches. We present preliminary results of a study of the spurious electron events observed in the liquid argon TPC in the DarkSide-50 experiment. Our analysis indicates a significant fraction of spurious electron events are related to impurities in the TPC. While a full understanding of spurious electron emissions will require dedicated R&D, possible mechanisms and mitigation strategies are discussed, in light of what we know from observations in DarkSide-50. Differences from spurious electron emission in liquid xenon TPCs are also discussed.

Primary author: BERZIN, Elizabeth

Presenter: BERZIN, Elizabeth

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