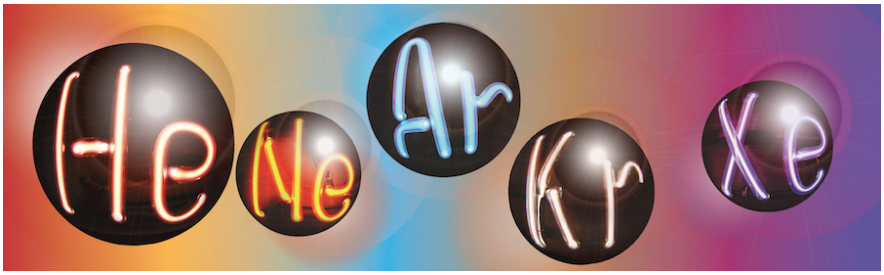

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Update on Delayed Electron Emission in DarkSide-50

Wednesday, 21 September 2022 16:15 (15 minutes)

Dual-phase noble gas Time Projection Chambers (TPCs) suffer from spurious electron background events at the lowest detectable energy region. This background is 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 an update of the study of the spurious electron events observed in the liquid argon TPC in the DarkSide-50 experiment. Our analysis indicates a significant fraction of the spurious electron events is related to the 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. The differences from the spurious electron emission in the liquid xenon TPCs are discussed.

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