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The Capabilities of the Liquid Xenon Proportional Scintillator Counter for Low-energy Event Detection

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The Liquid Xenon Proportional Scintillation Counter (LXePSC) is a single-phase liquid xenon detector capable of producing electroluminescence directly in the liquid phase. In doing so, we are able to disregard the extraction efficiency, as seen in dual phase LXeTPCs, and simplify the detector design and operation by not needing to maintain a liquid-gas interface. In this talk, we will present our recently published results, which include the detection of low-energy electronic recoils down to ~ 1 keV, as well as evidence of single-electron signals from photo-induced electron emission of cathode surfaces. Furthermore, we will present preliminary results of our recent run, which includes a potential for nuclear and electronic recoil discrimination using the LXePSC, and an improved energy calibration using activated xenon lines.

Early Career

Yes

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