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## **(G\*) (POS-2) A Xe-127 calibration source for liquid Xe experiments**

*Tuesday 20 June 2023 17:30 (2 minutes)*

The Light-only Liquid Xenon (LoLX) experiment is designed to study the properties of light emission and transport in liquid xenon (LXe) using silicon photomultipliers (SiPMs). A particular focus of LoLX is to measure and study Cherenkov and scintillation light emission in LXe. LoLX is currently being upgraded to investigate the long-term behaviour and performance of Hamamatsu VUV4 and FBK VUV-HD3 SiPMs. Both models are currently being considered for application in the neutrinoless double beta decay experiment nEXO.

A proposed method to monitor the long-term stability and performance of the aforementioned SiPMs in LXe is to augment the xenon with radioactive  $^{127}\text{Xe}$  (an electron capture source with a half-life of 36.3 days and a Q-value of 662.3 keV). This allows for an *in-situ* calibration and performance characterization while the detector is operational. This poster will introduce the concept and focus on the neutron activation estimates of  $^{127}\text{Xe}$  from  $^{\text{nat}}\text{Xe}$ , as well as the methodology for deploying it in LoLX.

### **Keyword-1**

Liquid Xe calibration source

### **Keyword-2**

Neutrinoless double beta decay

### **Keyword-3**

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