

Workshop on Xenon Detector $0\nu\beta\beta$ Searches: Steps Towards the Kilotonne Scale

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Type: **Lightning talk**

MeV-scale internal calibration sources for large LXe detectors

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By design, large-scale liquid xenon TPCs enjoy powerful self-shielding; gamma rays that would create backgrounds are strongly attenuated by the liquid at the edges of the detector. This, however, presents a challenge for calibrations: calibration sources placed outside the detector will only rarely penetrate to the center of the TPC, making the most sensitive region of the experiment also the most difficult to characterize. Radioisotopes that can dissolve directly into liquid xenon can address this problem. While many such sources are already in use, they are generally either a) alpha sources, which have dramatically different light and charge response, b) continuous-spectrum beta sources, or c) they deposit energies far below the $0\nu\beta\beta$ Q-value of ^{136}Xe . I will discuss some possibilities for dissolvable radioisotopes that would provide O(MeV) gamma ray lines, which could be used for energy scale calibrations of large LXe detectors.

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