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Internal Calibration Source Injection in Liquid Xenon Time Projection Chambers

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Self-shielding in ton-scale liquid xenon (LXe) time projection chambers (TPCs) presents a unique challenge for calibrating detector response to interactions in the TPCs innermost LXe volume. Calibration isotopes must be injected directly into the LXe to reach the central volume of the TPC, where they must either decay away with a short half life, or be purified out. I present a summary of the hardware effort at UMass Amherst, which is designed to refine techniques for the injection and removal of precise activities of various calibration isotopes that are useful in LXe TPC experiments such as LUX-ZEPLIN.

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