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**A Proposal to Use MiX for a Low Energy Nuclear Recoil Calibration** YI LIU , CHAMI AMARASINGHE, DONGQING HUANG, University of Michigan, Ann Arbor — Dual-phase xenon time projection chamber (TPC) detectors are leading the weakly interacting massive particle (WIMP) dark matter searches. A better understanding of the low energy nuclear recoil (NR) response in liquid xenon (LXe) will allow experiments to be increasingly sensitive to light dark matter and coherent neutrino-nucleus scattering. The Michigan Xenon detector (MiX) is a small dual-phase TPC (140 g active volume) with 3D position sensitivity. MiX possesses light gains of (0.2390.012) pe/photon and charge signal gains of (16.10.6) pe/electron, and therefore provides a great opportunity to calibrate LXe response to lower energies than previously achieved. We will discuss recent studies to use the MiX detector to perform a low energy NR calibration using thermal neutron capture in LXe with a pulsed deuterium-deuterium (D-D) neutron source.

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