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R&D Toward Future Liquid Xe Double Beta Detectors

TIM DANIELS, JOSHUA BONATT, KRISHNA KUMAR, MARK LODATO, CAMERON MACKEEN, KELLY MALONE, ANDREA POCAR, DAVID WRIGHT, University of Massachusetts Amherst — We report on several R&D projects aimed at possible future ton-scale Xe detectors for $0\nu\text{BB}$ searches. A liquid Xe cell is being developed to measure material reflectivity for Xe scintillation light in liquid Xe, knowledge of which will be important for detector design and optimization. A vacuum test chamber, equipped with cryogenic cooling and sources of VUV light, is being commissioned for candidate scintillation detectors. Finally, ^{136}Cs , produced by $^{136}\text{Xe}(p,n)$ at an accelerator, is being pursued as a source of Ba^+ ions useful to ongoing R&D toward extraction and identification of the double beta decay daughter in ^{136}Xe .

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