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Double beta decay daughter ion detection in a solid xenon matrix for EXO[1] BRIAN MONG, SHON COOK, WILLIAM FAIRBANK, Colorado State University, ENRICHED XENON OBSERVATORY COLLABORATION — $0\nu\beta\beta$ experiments are the possibly the most sensitive means available to measure the absolute mass of the neutrino as long as backgrounds can be sufficiently suppressed. The Enriched Xenon Observatory (EXO) experiment may be able to eliminate all backgrounds by detecting the daughter of the $0\nu\beta\beta$ ($^{136}Xe \rightarrow^{136} Ba + 2e^{-}$) through optical fluorescence. We propose to grab the ion in the detector by freezing it in xenon ice on a cold probe, possibly an optical fiber, and then detecting it in the ice. We present progress in the detection of barium ions generated by an ion beam, and detected in a solid xenon matrix using CW laser excitation and efficient fluorescence detection.

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