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Development of a Cryoprobe for single Ba atom Extraction and Identification from a liquid 136Xe double beta decay experiment[1]
ADAM CRAYCRAFT, ALEC IVERSON, DAVID FAIRBANK, STEVE VECCHIO, WILLIAM FAIRBANK, Colorado State University, NEXO COLLABORATION — Barium tagging is under development for the planned nEXO experiment to reduce backgrounds for the neutrinoless double beta decay search in Xe^{136}. One concept for barium tagging involves dipping into, freezing, and extracting xenon on a cryoprobe from the liquid xenon time projection chamber. The development of the cryoprobe and extraction procedure are underway. A possible procedure for extraction on a probe cooled by high pressure argon gas expanding through a Joule Thompson nozzle has been demonstrated. Solid xenon has been frozen on a cryoprobe and has been transported to a laser spectroscopy region. Results of this investigation and examples of possible procedures for extraction are shown.

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