Abstract Submitted
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Ba-Tagging for EXO DANIEL FUDENBERG, Stanford University, EXO COLLABORATION — In order to perform a background-free measurement of neutrinoless double-beta decay in ^{136}Xe, the EXO collaboration is developing techniques to recover and identify the decay daughter, ^{136}Ba, from both liquid and gas phase detectors. For a gas phase TPC detector, an apparatus is under development to extract Ba ions using a radio-frequency funnel. The extraction of ions from high-pressure Xe to vacuum was demonstrated to be consistent with simulations. A next step is a charge-to-mass selective detection upgrade, ultimately to be replaced by optical spectroscopic identification. For use in a liquid phase TPC detector, Ba ion capture on a metallic probe and identification utilizing Resonance Ionization Spectroscopy has been demonstrated in vacuum. This achieves Ba identification through both optical and mass spectroscopy. In a next step, Ba ion capture will be implemented in liquid Xe.

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