

Abstract Submitted
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Barium Tagging in Liquid Xenon for the nEXO Experiment

SCOTT KRAVITZ, Stanford Univ, NEXO COLLABORATION — nEXO is a next-generation experiment designed to search for neutrinoless double beta decay of xenon-136 in a liquid xenon time projection chamber. Positive observation of this decay would determine the neutrino to be a Majorana particle, as well as measure the absolute neutrino mass scale. In order to greatly reduce background contributions to this search, the collaboration is developing several “barium tagging” techniques to recover and identify the decay daughter, barium-136. Barium tagging may be available for a second phase of nEXO operation, allowing for neutrino mass sensitivity beyond the inverted mass hierarchy. Tagging methods for this phase include barium-ion capture on a probe with identification by resonance ionization laser spectroscopy. Inclusion of an argon ion gun in this system allows for improved cleaning and preparation of the barium deposition substrate, with recent results reported in this presentation.

Scott Kravitz
Stanford Univ

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