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Barium Tagging in Solid Xenon for the nEXO Experiment

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The proposed nEXO experiment utilizes a tonne-scale liquid xenon time projection chamber to search for neutrinoless double beta decay in xenon-136. A critical concern for any rare decay search is reducing or eliminating backgrounds that cannot be distinguished from signal. A powerful background discrimination technique is positive identification of the daughter atom of the decay, in this case barium. We are developing a scheme to capture the barium daughter in solid xenon with a cryogenic probe and detect the barium by laser-induced fluorescence. This presentation reports results on imaging of small numbers of barium atoms frozen in a solid xenon matrix.

Oral or Poster Presentation

Oral

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