

Abstract Submitted  
for the DNP15 Meeting of  
The American Physical Society

**Progress in Barium Tagging on a Cryogenic Probe for the nEXO Neutrinoless Double Beta Decay Experiment** ADAM CRAYCRAFT, TIMOTHY WALTON, CHRISTOPHER CHAMBERS, WILLIAM FAIRBANK, Colorado State University, NEXO COLLABORATION — nEXO is a next-generation experiment designed to search for neutrinoless double beta decay of the isotope Xe-136 in a liquid xenon time projection chamber. Positive observation of this decay would determine the nature of the neutrino to be a Majorana particle. Detecting the presence of the daughter Ba-136 at a decay site (called “barium tagging”) provides strong rejection of backgrounds. Barium tagging may be available for a second phase of nEXO operation, allowing neutrino mass sensitivity beyond the inverted mass hierarchy. Here we present progress on a barium tagging method that involves trapping the barium ion/atom in solid xenon (SXe) at the end of a cold probe, and then detecting the ion/atom by its fluorescence in the SXe. Recent results on imaging small numbers of Ba atoms in SXe on a sapphire window, and progress toward capture of Ba atoms/ions on a cold probe and extraction from LXe, will be presented.

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Date submitted: 09 Jul 2015

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