

Abstract Submitted
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Construction of a Variable Degradar for Optimization of ^8Li in Beta-Neutrino Correlation Experiments J. BOULDING, K.S. SHARMA, Manitoba, R.E. SEGEL, Northwestern, N.D. SCIELZO, Livermore, G. LI, F. BUCHINGER, McGill, J.A. CLARK, G. SAVARD, Argonne, CPT COLLABORATION — Information about neutrinos is difficult to attain due to their very low interaction rate with matter. However, we can reverse engineer this information using kinematical reconstruction of the decay process. Using an 18 MeV ^7Li beam striking a ^2H gas target, a product beam of ^8Li is created. A beam stop stops the primary ^7Li beam and the ^8Li beam travels through a variable degrader and a large solenoid into a helium gas catcher. Lithium hydroxide is extracted and moved down the beamline into a 2.5 T Isobar separator magnet. Applied radiofrequency fields break the LiOH to ^8Li , which is then delivered to the Beta-decay Paul Trap. Double sided silicon strip detectors are used to detect the beta and double alpha decays inside the trap. Info about the direction and energy of the alpha and beta particle can be used to determine the direction and momentum of the ^8Li atom and the neutrino released during the decay. Previous experiments were designed to optimize the yield of ^8L and resulted in a beta-alpha-alpha coincidence rate of 1 per second. The addition of the variable degrader to the experimental setup increased yields by approximately 30%. Supported by: NSERC, Argonne National Lab and the University of Manitoba.

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