

Abstract Submitted
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Radon removal from xenon via cryogenic distillation SEBASTIAN BRUNHART, Drexel University, NEXO COLLABORATION — The nEXO experiment will utilize ultrahigh purity liquid xenon to search for neutrinoless double beta decay. Of particular concern for radioactive background control is radon-222, which will outgas into the xenon from all materials that are in contact with the xenon. To address this, cryogenic distillation is investigated as one of the options. Previous experiments have indicated that the xenon and radon can be separated in this fashion. A pilot still is currently being constructed at SLAC as further proof of concept for application in nEXO. This pilot will allow for the modeling of a high throughput column for the tonne-scale experiment. Analyses have been performed using the McCabe-Thiele method to predict the reduction factor of radon in the depleted distillate stream relative to the column feed flow rate, reflux ratio, and operating pressure. The results will be determined by measuring the activity of residual radon in a liquid xenon cell in a closed loop with the column.

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