

Abstract Submitted  
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**Electrostatic Mitigation of Radon Daughters Present in Boil-off Gases and Surface Activity Screening of Charged Samples** JOSEPHINE KIMBROUGH, None — Radon, being a source of natural radiation, decays and emits, gamma, alpha, and beta rays, including charged daughter particles that mimic dark matter particles in the detector. It is important to mitigate the amount of these radon particles and their daughters that account for background noise in the detection of dark matter. As we can screen materials in the XIA, an alpha particle counter, more carefully with lower background noise, the goal of this experiment is to eliminate as many radon daughters from the screening gas as possible. To do this, I have utilized an electric field to mitigate charged radon daughters from gas. Data collected from these experiments have indicated that with the implementation of an electric field we were able to see an increase in the radon reduction rate beyond the natural rate even when accounting for leakage from the exposure chamber once the electric field was turned on. Though it was impossible to completely eliminate leakage from the exposure chamber, we were able to account for it by isolating the leakage rate to find the rate of natural decay. With the rate of natural decay we graphed the amount of radon we expected to be detected by the Rad7 and compared it to the amount actually detected. The results indicated that there was less radon detected in the chamber with the electric field than when the field was off. We have also done a runs with the XIA in order to better understand the instrument. We compare the effects of running the Th230 sample on differently charged points on a piece of polyethylene to compare the resulting data to a grounded copper control. Though a direct correlation between charge and run results has not yet been quantified we have found a significant deviation in the runs over differently charged locations.

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None

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