



Contribution ID: 46

Type: **Poster**

Radon burden and Xe purification performance of the LZ hot zirconium getter

Wednesday, June 15, 2022 3:31 PM (1 minute)

Experiments employing Xe and Ar as particle detectors often make use of heated zirconium getters to remove electronegative impurities from the gaseous phase. For low background experiments, a key design consideration is to choose a purifier model which is large enough to achieve adequate electronegative removal, but no larger than necessary to avoid excess radon emanation from the getter pills. Good heat exchange is another important factor, because high rate gas flow may cool the getter pills below the design temperature, particularly in the case of Xe. To inform the design of future experiments, we present data on the purification performance and radon burden of the purifier used by the LZ dark matter experiment (SAES Megatorr model PS5-MGT50-R-535). Xe gas flow rates up to 600 standard liters per minute have been probed, and the temperature of the getter bed and its pre-heater have been recorded. We also present measurements of the achieved electron lifetime in the LZ TPC, the radon burden of similar purifiers, and HPGe gamma screening measurements of getter progenitor materials.

Primary author: HALL, Carter (University of Maryland)

Presenter: HALL, Carter (University of Maryland)

Session Classification: LRT 2022 - poster session

Track Classification: Liquid and Gas Purification, incl Rn