

Radon Mitigation for the SuperCDMS SNOLAB Dark Matter Experiment

Thursday, May 25, 2017 11:00 AM (20 minutes)

A potential background for the SuperCDMS SNOLAB dark matter experiment is from radon daughters that have plated out onto detector surfaces. To reach background requirements, understanding plate-out rates during detector fabrication as well as mitigating radon in surrounding air is critical. A radon mitigated cleanroom planned at SNOLAB builds upon a system commissioned at the South Dakota School of Mines & Technology (SD Mines). The ultra-low radon cleanroom at SD Mines has air supplied by an optimized vacuum-swing-adsorption radon mitigation system that has achieved $> 1000\times$ reduction for a cleanroom activity consistent with zero and $< 0.067 \text{ Bq/m}^3$ at 90% confidence. Our simulation of this system, validated against calibration data, provides opportunity for increased understanding and optimization for this and future systems.

Primary author: Mr STREET, Joseph (SD Mines)

Co-authors: Ms HJELMFELT, Christine (SD Mines); Mr DUNAGEN, Colter (SD Mines); Mr TRONSTAD, Daniel (SD Mines); Dr MILLER, Eric (SD Mines); Dr BUNKER, Raymond (PNNL); Prof. SCHNEE, Richard (SD Mines); Mr LOOSE, Xavier (SD Mines)

Presenter: Mr STREET, Joseph (SD Mines)

Session Classification: Session 4