

Abstract Submitted  
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**Radon as a Source of External Background at Homestake Mine**<sup>1</sup> KEENAN THOMAS, DONGMING MEI, CHAO ZHANG, University of South Dakota, FRED GRAY, Regis University, RICHARD GAITSKELL, SIMON FIORUCCI, Brown University — External sources of radioactivity are important concerns for experiments planned for DUSEL at the Homestake Mine in Lead, South Dakota. Radon emanation and deposition is a major threat to the targeted sensitivity of low background experimentation such as double beta decay detection and dark matter searches. Methods to reduce and mitigate these measured levels will need to be developed to prevent experimental signals from contamination through airborne radon decays as well as the deposition of radon daughters. Radon levels were measured at various depths at the Homestake Mine in December of 2008, January and March of 2009. These measurements will be useful in the development of an underground ventilation system to dilute radon concentrations in the air and subsequent systems to provide radon-free air to clean rooms, as well as preparing researchers for the hazards they pose to their experiments. In addition, the measured radon level will be used to understand the radon emanation from different types of rock.

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