

Abstract Submitted  
for the DNP11 Meeting of  
The American Physical Society

**Radon Monitoring and Emanation Studies at the Sanford Underground Laboratory at Homestake**<sup>1</sup> KEENAN THOMAS, The University of South Dakota, DONGMING MEI, USD, JARET HEISE, Sanford Lab, DAN DURBEN, BHSU, HOMESTAKE BACKGROUND CHAR. TEAM — In anticipation of low-background nuclear and particle astrophysics experiments to be situated underground at the Sanford Underground Laboratory at Homestake our group has been researching factors relevant to radon underground at the Homestake Mine in Lead, SD. Continuous airborne monitoring of radon concentrations have been performed along the primary ventilation routes underground. Such measurements are useful for understanding the behavior of radon underground with respect to various ventilation conditions and will be of use in the design of experiments and underground laboratory infrastructure. In addition, iron oxide has been found to enhance the emanation of radon due to the co-precipitation of radium in the oxide layer. After decommissioning in 2003, the lower levels of the mine were allowed to fill with water, which prompted the formation of iron oxide upon submerged rock surfaces. A series of measurements including radon emanation tests have been performed upon rock and iron oxide samples to demonstrate this effect upon the airborne radon underground at Homestake.

<sup>1</sup>Supported by NSF PHY-0758120 and 0919278.

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Date submitted: 05 Jul 2011

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