

Measurements of Radon Concentration in SNOLAB air

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Underground at SNOLAB, there are many ongoing experiments, such as SNO+, REPAIR, SuperCDMS etc, that monitor and are extremely sensitive to background radiation. One of the unwanted sources of background radiation that is present at SNOLAB is the naturally occurring radioactive gas, radon-222. Radon decays from Uranium which is found in small amounts in all rocks, and as it further decays into Polonium-218 and Bismuth-214 it emits alpha and beta particles. These particles are unwanted sources of background radiation that contribute noise and clutter the results of these detectors. Therefore, it is important to monitor the radon concentration levels underground at SNOLAB in order to account for this background radiation. One of the detectors used to monitor radon concentrations underground is the RAD7 detector. Through the analysis of the RAD7 data, it was discovered that fluctuations in the mine ventilation underground correlated to changes in the detected radon concentration, however, the mine ventilation data is not readily available and accessible for analysis. Therefore, I analyzed the radon concentration data and compared it to other variables that are constantly being monitored underground (pressure, drift flow rate, temperature etc.), in hopes of finding a correlation/explanation for the fluctuating radon concentration levels detected underground at SNOLAB. This analysis will be presented in this talk.

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