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(POS-71) Radon Content in Cover-Gas Systems at SNOLAB

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SNOLAB is one of the world's deepest underground research facilities that specializes in Particle Physics research such as Neutrino Physics and Dark Matter Physics. These sensitive experiments are looking for physics signals that are extremely rare, one of the main concerns for these rare event experiments is the presence of backgrounds, which could mask the signals of interest. The ^{222}Rn , one of the most common background, has elevated levels in the lab air as compared to the surface. Radon decays into daughter nuclei where the energies lie within the region of interest for all the experiments. SNOLAB has an in-built liquid nitrogen plant that provides cover-gas capability to all the experiments which prevents any radon ingress from mine air into their respective detector volumes. A radon assay is a technique that was developed for the original SNO experiment to keep track of the radon content within the cover-gas systems. The Assay system itself is well calibrated using mine air and with low backgrounds. Assays are performed frequently at different positions of the cover-gas to monitor the radon levels and determine the radon reduction factor which allows to determine the effectiveness of radon shielding at SNOLAB

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