

Measurement of Background Gamma Flux in the Davis Cavern for the LZ Experiment

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The LUX-ZEPLIN (LZ) experiment will search for dark matter particle interactions with a liquid xenon TPC in the Davis cavern at the Sanford Underground Research Facility, Lead, South Dakota, 4850 feet below the surface. The underground environment reduces the cosmic ray flux by a factor of 10^6 , but there remains a potential background from γ -rays emitted from the decays of ^{40}K , ^{238}U and ^{232}Th naturally occurring in the rock surrounding the laboratory. In-situ γ -ray measurements were taken with a sodium iodide detector in several locations within the cavern, yielding average radioactivity levels. We will present the radioactivity levels determined with these measurements, and a first attempt at mapping suspected non-uniformities in the γ -flux due to differences in rock composition.

Authors: Mr KORLEY, Luke; Dr SHAW, Sally (University of California, Santa Barbara)

Co-author: Prof. PENNING, Bjoern (Brandeis University)

Presenter: Mr KORLEY, Luke