

The Background Model and radio-assays for the LZ experiment

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The LZ dark matter experiment will require an unprecedented low background rate within its fiducial volume, defining strict constraints on radioactivity from construction materials. The radioactive background is further mitigated through the combination of powerful self-shielding from liquid xenon, 3D event vertex reconstruction, and external veto detector systems. An aggressive screening campaign with cutting-edge instrumentation including underground gamma spectroscopy, mass spectrometry, radon emanation measurements, and neutron activation is underway to measure the trace levels of radioisotopes in materials to ensure the experiment reaches a sensitivity to spin-independent WIMP-nucleon scattering below $3 \times 10^{-48} \text{ cm}^2$. These assays, together with measurements of exposure to airborne contaminants during experiment construction, inform the high-precision LZ Background Model against which the statistical significance of any potential signal will be evaluated. This talk will present the status of the assay facilities, our radio-purity campaign, and the experiment's Background Model.

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