

Bias Mitigation for the LUX-ZEPLIN (LZ) Experiment

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LUX-ZEPLIN (LZ) is a dark matter experiment located at the Sanford Underground Research Facility (SURF) in South Dakota. LZ is expected to explore new regimes of experimental sensitivity to a variety of dark matter candidates, notably Weakly Interacting Massive Particles (WIMPs). In pursuing new physics, it is important to ensure results are not influenced by biases towards achieving a predetermined outcome. Several techniques for avoiding biases have been employed in scientific experiments over the years including blinding and using hidden parameters. LZ will use a method known as salting, in which fake signal events are constructed from calibration data and covertly injected into the raw data stream during the dark matter search. These fake events are subsequently removed, but only after the data analysis is finalized. In this talk, I will discuss the motivations for this type of bias mitigation in a low-background experiment, as well as the process and tools that LZ uses to salt its data.

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