

Dark Matter search results from the LUX-ZEPLIN (LZ) Experiment

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LUX-ZEPLIN (LZ) is a direct dark matter detection experiment currently being operated at the Sanford Underground Research Facility (SURF) in Lead, South Dakota. LZ is an instrument that is superlative in many ways. It utilizes 7 tonnes of liquid xenon in a dual phase time projection chamber, surrounded by an instrumented xenon “skin” region and gadolinium-loaded liquid scintillator outer detector all contained within an ultra-pure water tank. The experiment looks for dark matter in the form of Weakly Interacting Massive Particles (WIMPs), as well as a broad range of other novel physics signals. In 2022, LZ released its first WIMP search results with an exposure of 60 live days using a fiducial mass of 5.5 tonnes. These results set new limits on spin-independent and spin-dependent WIMP-nucleon cross-sections for WIMP masses above $9 \text{ GeV}/c^2$. This talk will give an overview of the LZ detector, a description of the first results, and a brief outlook of the diverse science program which will be enabled by the experiment.

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