

Abstract Submitted
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The LZ Dark Matter Experiment VICTOR M. GEHMAN, Lawrence Berkeley National Laboratory, LZ COLLABORATION — One of the most important open questions in physics is the fundamental nature of the dark matter. The direct detection of a dark matter particle in a terrestrial experiment would dramatically impact cosmology and particle physics, and would open a window on a new type of observational astrophysics. The LZ collaboration has proposed to construct a 7-ton liquid xenon dark matter detector at the 4850 level of the Sanford Underground Research Facility (SURF) in Lead, South Dakota. The LZ detector will be based upon the well-established liquid xenon TPC technology, and will capitalize upon the existing infrastructure of the LUX experiment to allow for a rapid turnaround after the conclusion of LUX data taking. With a nuclear mass of more than 5 tons, the experiment will probe WIMP-nucleon cross sections down to 2×10^{-48} cm² in 3 years of operation. This represents an improvement of approximately 5000 times over current results, covering a substantial range of theoretically-motivated particle dark matter candidates.

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