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Dark matter searches with LUX-ZEPLIN (LZ)

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Abstract content

LUX-ZEPLIN (LZ) is a second-generation dark matter experiment currently under construction. It will follow LUX in the 1480-m deep Sanford Underground Research Facility in South Dakota, with a projected sensitivity for the spin-independent cross section of 1.6×10^{-48} cm^2 for a 40 GeV/c^2 mass Weakly Interacting Massive Particle (WIMP) after 1000 live-days exposure of a 5.6-tonne fiducial mass. Inside an ultra-low background titanium cryostat, a central liquid xenon time projection chamber contains a total active mass of 7 tonnes surrounded by a 2-tonne xenon skin detector. A gadolinium-loaded liquid scintillator and an instrumented water tank complete the detector setup. Extensive campaigns have been undertaken to ensure the experiment achieves its background goals by minimization of its radioactivity and optimization of its performance. An overview, the current project status and the experimental timeline will be presented.

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