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Direct WIMP searches with the LUX-ZEPLIN experiment

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One of the major challenges of modern physics is to discover the nature of dark matter, an invisible and dominant mass component of the observable universe that is indirectly revealed through its gravitational effects on ordinary matter. Assuming that dark matter is made of new elementary particles, a well-motivated and generic class of dark matter candidates are weakly interacting massive particles (WIMPs), which arise naturally in several extensions to the Standard Model. WIMPs could be directly detected via their scattering off atomic nuclei in underground, ultra low-background detectors. In this report, an overview of the dark matter direct detection LZ experiment is given, which originates from the merging of the successful ZEPLIN experiments in the UK and LUX experiment in the US. With its 7 tonnes of active liquid xenon, it is expected that the LZ experiment will probe WIMP interactions practically as far as it is allowed by new backgrounds from astrophysical neutrinos.

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