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Dark matter and neutrino search with the LZ experiment

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The LZ dark matter detector is currently under construction at the 4850 level of the Sanford Underground Research Facility (SURF) in Lead, SD. The experiment will contain 7 tonnes of pure xenon in a dual-phase Time Project Chamber (TPC) –a technology that has demonstrated very high sensitivities to hypothetical dark matter interactions. LZ is projected to reach unprecedented sensitivities for WIMP dark matter masses of GeV/c² to TeV/c² range. In addition, LZ will also be sensitive to Coherent Elastic Neutrino Nucleus Scattering (CEvNS) from solar neutrinos and supernovae neutrinos as the interactions produce similar nuclear recoil signatures to that of WIMPs. The presence of CEvNS signals in the experiment both provides a direct proof of the detector's sensitivity and poses an irreducible background in WIMP dark matter searches. I will present an overview of the LZ experiment and its potential in observing CEvNS from high energy neutrino sources.

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