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Towards a Kilotonne-Year Exposure in Liquid Xenon

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Liquid Xenon Time Projection Chambers have dominated the search for dark matter in the form of Weakly Interacting Massive Particles. The current generation (LZ, XENONnT, and PandaX) are becoming sensitive to coherent elastic neutrino-nucleus scatters from the Boron-8 solar neutrino component of the neutrino fog. However, current limits from these detectors are still two orders of magnitude above the main limitations of the neutrino fog, which would be reachable with a kilotonne-year exposure. Work is ongoing to realize such a Liquid Xenon Observatory, with significant developments underway for DARWIN, and within the XLZD consortium. In this talk, I present the requirements and status of the liquid xenon time projection technology for a kilotonne-year exposure regarding backgrounds and detector subsystems.

Mini Symposia (Invited Talks Only)

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