

Workshop on Xenon Detector $0\nu\beta\beta$ Searches: Steps Towards the Kilotonne Scale

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Dark Matter and $0\nu\beta\beta$ physics programs of XLZD

Thursday, October 26, 2023 9:50 AM (25 minutes)

The dual-phase xenon time-projection chamber (TPC) has risen in recent decades as one of the best technologies to hunt for dark matter in the form of weakly interacting massive particles (WIMPs). This xenon TPC has many advantages, including self-shielding against backgrounds, low threshold, good energy resolution, potential scalability for future larger detectors which could probe the WIMP parameter space down to the neutrino fog. Beyond this sensitivity to WIMPs, larger xenon TPCs also present competitive sensitivity to neutrinoless double beta decay ($0\nu\beta\beta$) and a broad science program. A consortium was recently formed by XENON, LUX-ZEPLIN(LZ) and DARWIN collaborations to build the next generation of LXe-TPC that will serve as a multi-purpose observatory for dark matter and neutrino physics. This talk will focus on discussing this consortium, XLZD, and its science program with an emphasis on dark matter and $0\nu\beta\beta$.

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