

## Dual-phase Liquid Xenon Detector Development at UCLA

The current leading experiments of direct dark matter detection use liquid xenon as the detecting medium. The strongly motivated dark matter candidates Weakly Interacting Massive Particles (WIMPs) are expected to create nuclear recoils in the liquid xenon. During the long measurement period, the detectors face a great challenge of an overwhelming radioactive background in the form of electronic recoils.

Therefore, a comprehensive understanding of the liquid xenon responses to both nuclear and electronic recoils is of great interests to the dark matter detection with liquid xenon, especially in the low energy region where the liquid xenon is more sensitive to dark matter while current knowledge is severely constrained.

A dual-phase liquid xenon detector as an R&D effort is developing at UCLA, aiming to map the parameters of liquid xenon responses to both nuclear and electronic recoils. This measurement will be of a great help in interpreting the dark matter detection results from liquid xenon detectors such as XENON and LUX.

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