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Signal Yields in Liquid Xenon with the LUX Experiment VETRI VELAN, Univ of California - Berkeley, LUX COLLABORATION — Two-phase xenon time projection chambers are a leading strategy for dark matter direct detection experiments. Some of the leading limits in the field are from the Large Underground Xenon experiment (LUX), XENON1T, and PANDAX-II. These experiments operate by measuring the scintillation and ionization of xenon when an incident particle, potentially a WIMP, interacts in the detector medium. As a result, it is crucial to calibrate these detectors and understand the light and charge yields from nuclear recoils and electron recoils. This is complicated by the fact that when xenon atoms are ionized, the positive ions and liberated electrons can recombine to form more scintillation light, and the recombination fraction depends on factors such as energy deposited, electric field, and particle type. I will present work done on the second science search (WS2014-16) of LUX to explain how recombination is a function of both the electric drift field and the energy deposited by electron recoils. Specifically, I will focus on the isotopes Kr83m and Xe131m, as they provide excellent mono-energetic calibrations of our detector.

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