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Measurement of Yields and Fluctuations using Background and Calibration Data from the LUX Detector[1] EVAN PEASE, Yale University, LUX COLLABORATION — The Large Underground Xenon (LUX) detector is a 350-kg liquid xenon (LXe) time-projection chamber designed for the direct detection of weakly-interacting massive particles (WIMPs), a leading dark matter candidate. LUX operates on the 4850-foot level of the Sanford Underground Research Facility in Lead, SD. Monoenergetic electronic recoil (ER) peaks in the WIMP search and calibration data from the first underground science run of the LUX detector have been used to measure ER light and charge yields in LXe between 5.2 keV and 662 keV. The energy resolution of the LUX detector at these energies will also be presented. Recombination fluctuations are observed to follow a linear dependence on the number of ions for the energies in this study, and this dependence is consistent with low-energy measurements made with a tritium beta source in the LUX detector. Using these results and additional measurements of the recoil bands from tritium and D-D neutron calibrations, I will compare recombination fluctuations in LXe response to electronic and nuclear recoils.

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