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Ultra-low Energy Calibration of LUX detector using 127Xe Electron Capture DONGQING HUANG, Brown University, LARGE UNDERGROUND XENON (LUX) COLLABORATION — The LUX dark matter search experiment is a 350 kg two-phase liquid/gas xenon time projection chamber located at the 4850 ft level of the Sanford Underground Research Facility in Lead, SD. We present an absolute calibration of the liquid xenon electron recoil (ER) charge yield and fluctuations over an energy range 190 eVee to 33.2 keVee using low energy ^{127}Xe electron capture decay events from the LUX 85-day first WIMP search dataset. The sequence of gamma and X-ray cascade associated with ^{127}I produce clearly identified 2-vertex events in the LUX detector. We observe the K (33.2 keVee), L (5.2 keVee), M (1.1 keVee), and N (190 eVee) shell cascade events and verifiy the relative ratio of observed events for each shell. We extract both the mean and sigma of the charge signal yields (Q_y) associated with the K, L, M, and N shell events. The N shell cascade analysis includes single extracted electron events, and represents the lowest energy ER in-situ measurements that have been explored in Xe.

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