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Production and high voltage testing of the LZ detector grids

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The LZ (LUX-ZEPLIN) dark matter search experiment is a liquid xenon time projection chamber (TPC) with a 7 tonne active xenon volume currently under construction. Four wire mesh grids of 1.5 m diameter establish electric fields in the detector to drift ionization electrons across the volume and extract them from the liquid surface. This presentation will discuss the design, construction, surface treatment, mitigation of radon exposure, and high voltage performance of the LZ grids. The high voltage testing characterizes the electron and photon emission rates of the grids at high electric fields. Three detectors contribute to the high voltage testing program including a small-scale gaseous xenon detector, a small-scale liquid xenon TPC detector to study electron extraction, and a large gaseous xenon detector to test the final LZ grids.

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