

A Study of Grid Electron Emission in LZ using a Gaseous Xenon Test Vessel at SLAC

Saturday, 1 December 2018 14:50 (10 minutes)

To observe signals from low-energy nuclear recoils, including WIMP-xenon scatters, the LZ dark matter detector must maintain strong drift and extraction fields within its dual-phase xenon Time Projection Chamber (TPC). We will accomplish this with a set of four stainless steel wire mesh high voltage grids placed at various heights in the TPC. Because the grid wires are regions where electric fields may be as large as 50 kV/cm on a cathodic surface, it is important for LZ to understand backgrounds due to spurious electron emission from these wire surfaces. The Phase 2 System Test detector, built at SLAC, is a gaseous xenon test stand used to study high voltage behavior of some full-scale prototypes of LZ's grids, as well as the final LZ grids themselves. This talk will discuss preliminary results from this test stand and comment on the strategies being used to understand the electron emission background from the grids.

Session

Lightning Round (5+3 min)

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Session Classification: Lightning Talks