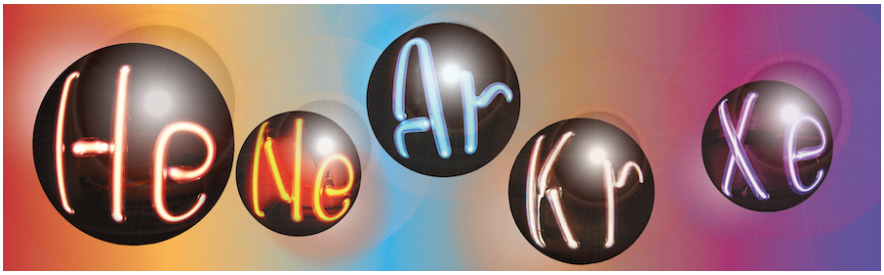

Contribution ID: **56** Type: **not specified**

Understanding the impact of high voltage electrodes on low-energy dark matter searches with the LZ dual phase xenon TPC

Thursday, 16 September 2021 08:00 (15 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). These fields are established by a set of four stainless steel wire mesh high voltage electrode grids that span the full width of the TPC. During operation at their design voltages, these grids will achieve wire surface fields well above 20 kV/cm. These high fields can produce spurious charge signals and signals from real radioactive decays with atypical light-to-charge ratios, both of which can lead to low-energy backgrounds in LZ science data. This talk will present studies of possible grid contributions to electron backgrounds in the low-energy regime, with a focus on two specific sources: field-induced emission and radiogenic emission.

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Session Classification: Detector Techniques (3A)

Track Classification: Detector techniques (HV, purification, cryogenics, calibration etc.)