



Contribution ID: 89

Type: **Poster**

## Electrode Design & Characterisation for the XLZD Observatory

Wednesday, October 16, 2024 5:37 PM (2 minutes)

The newly established XLZD (XENON, LZ, DARWIN) collaboration aims to construct and operate the ultimate multi-tonne xenon-based direct detection astroparticle observatory. Hosting a time projection chamber (TPC) with more than 60 tonnes of liquid xenon at its core, with a keV-range threshold and an ultra-low radioactive background it will aim to probe the entire parameter space for WIMP dark matter down to the so-called neutrino fog. The scientific research program also includes searches for solar axions, axion-like particles, as well as measurements of the solar neutrino flux and a probe of the Majorana nature of neutrinos. High-voltage electrodes, spanning three meters in diameter, will lie at the heart of the XLZD TPC, playing multiple key roles in signal generation and reconstruction; hence, their performance is of paramount importance. The electrodes need to be feasible to produce, mechanically robust, sufficiently transparent to light propagation and have minimal spurious electron and light emission from their surface. A large-scale R&D program at KIT aims to tackle these challenges. Here, we will present our recent work on the design, simulation, production, assembly and subsequent testing of high-voltage electrodes.

### Summary

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**Session Classification:** Poster session leading into social dinner buffet