



### Abstract

LUX-ZEPLIN (LZ) will be the world's most sensitive dark matter the veto system.



- The TPC is surrounded by a veto system which includes:
- Instrumented Xe Skin to veto γ-rays.
- Outer Detector (OD) to veto neutrons and muons.
- A WIMP scattering in the LXe TPC will not deposit energy in the surrounding sub-detectors.
- The addition of the veto system increases the sensitivity by almost 2.
- The ability to characterise backgrounds will be paramount to confirm a WIMP discovery.

# Overview of the Outer Detector of LUX-ZEPLIN

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**Optical Calibration System** 

## - The Outer Detector will utilise an LED driven system to calibrate the OD PMTs. - 35 injection points are situated around the Outer Detector [5].

References [1] A Liquid Scintillation Detector for Radioassay of Gadolinium-Loaded Liquid Scintillator for the LZ Outer Detector. arXiv: 1808.05595 [2] Projected WIMP sensitivity of the LUX-ZEPLIN (LZ) dark matter experiment. arXiv:1802.06039 [3] The LUX-ZEPLIN (LZ) Experiment. arXiv:1910.09124

[4] LUX-ZEPLIN (LZ) Technical Design Report. arXiv:1703.09144 [5] Optical Calibration System for the LUX-ZEPLIN (LZ) Outer Detector. arXiv: 2102.06281

## Summary

- matter searches.
- backgrounds and thus reach its projected sensitivity.
- Exciting times ahead!

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- Characterisation and identification of backgrounds is crucial in rare event dark

- The Outer Detector and veto system allows LZ to reduce the impact of - Construction of the Outer Detector is complete. First physics data this year.