

Validating the LZ design with SUE: Phase I of the LZ System Test platform at SLAC

LZ is a next generation dark matter search experiment designed to significantly extend our sensitivity to WIMP dark matter candidates. At the core of LZ is a dual-phase Xe time projection chamber (TPC) with a 7 ton active volume. A cryogenic test platform with ~100 kg of liquid Xe, including a 50 cm tall TPC, has been constructed at SLAC to test multiple subsystems at scales approaching or comparable to LZ. The platform focuses on high voltage performance of the TPC and on the Xe circulation and purification system, and also provides an opportunity to test the integration of other subsystems. An overview of the test platform will be presented with a particular focus on new solutions to previously observed problems with unexpectedly high signal rates in the detector and instabilities discovered in the Xe flow path - both of which have prompted design changes in LZ.

Session

Works in Progress (15+5 min)

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