Contribution ID: **68** Type: **Presentation**

The LUX-ZEPLIN Dark Matter Experiment

Tuesday 21 June 2016 12:50 (25 minutes)

The LUX-ZEPLIN (LZ) is an experiment to search for weakly-interacting dark matter particles (WIMPs) with unprecedented sensitivity. It will probe spin-independent WIMP nucleon cross sections down to 2×10−48 cm2 at 50 GeV/c2 within 3 years of operation, covering a wide range of theoretically-motivated dark matter candidates. The core of the LZ experiment is a two-phase xenon (Xe) time projection chamber (TPC) containing 7 active tonnes of liquid Xe (LXe). The central cryostat vessels that contain the TPC will be surrounded by a liquid organic scintillator outer detector and mounted inside the water tank that has been used by LUX, at Sanford Underground Research Facility (SURF), SD, USA. An overview of the design of LZ will be presented, along with its expected backgrounds and projected sensitivity.

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