



Contribution ID: 143

Type: **Talk**

Jim Dobson (CERN): Projected WIMP sensitivity of the LUX-ZEPLIN dark matter experiment

Friday, 23 February 2018 17:45 (15 minutes)

The LUX-ZEPLIN (LZ) experiment is a Generation 2 multi-tonne dark matter direct detection experiment that will operate 4850 feet underground at the Sanford Underground Research Facility in Lead, South Dakota. It will use a liquid xenon TPC with an active mass of 7 tonnes to search for the low energy signatures from interactions with WIMP dark matter in our galactic halo and other rare physics processes. LZ builds upon the demonstrated response to keV nuclear recoils and the excellent self-shielding properties of liquid xenon and scales the TPC design beyond all existing experiments. In addition, an optically separated and instrumented xenon skin layer (between the inner TPC and the walls of the cryostat) and a surrounding external liquid scintillator detector provide powerful rejection of gamma-rays and neutrons from internal sources. Materials screening and in-house purification of the liquid xenon then ensure that LZ meets the strict radioactivity constraints needed to achieve world leading WIMP search sensitivity. In this talk I will give an overview of LZ and present the latest projected WIMP sensitivity based on updated background estimates and both an updated TPC optical model and veto detector response.

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Session Classification: Session 17