Contribution ID: **285** Type: **Talk**

Sensitivity of the LUX-ZEPLIN experiment to rare Xenon decays

Wednesday 8 September 2021 15:10 (20 minutes)

LUX-ZEPLIN (LZ) is a direct dark matter experiment with a projected sensitivity to WIMP-nucleon interactions that is more than an order of magnitude better than the current best limits. The design of LZ features a dual-phase time projection chamber (TPC) containing 7 active tonnes of liquid xenon and 5.6 tonnes fiducial, and it has additional instrumented detectors encompassing the TPC for improved background reduction and active shielding. The ultra-low background required for dark matter searches allows LZ to be potentially sensitive to other rare events, such as some not yet observed decays of xenon isotopes. This talk will focus on the latest sensitivity studies of LZ to the decays of 134Xe and 136Xe, considering a total exposure time of 1000 live-days. The projected sensitivity of LZ to the half-life of the neutrinoless double beta decay of 136Xe is 1.06×10^26 years at 90% CL without isotopic enrichment, a result comparable to the current best experimental limit from KamLAND-Zen. The projected sensitivities of LZ to the half-lives of the two-neutrino and neutrinoless double beta decay modes of 134Xe are currently the best in literature, being 1.7×10^24 years and 7.3×10^24 years, respectively, at 90% CL.

Primary author: BRAZ, Paulo (LIP)

Presenter: BRAZ, Paulo (LIP)

Session Classification: Nuclear and particle astrophysics

Track Classification: Nuclear and particle astrophysics