Contribution ID: **41** Type: **Parallel talk**

Electron capture decays in the LUX-ZEPLIN (LZ) experiment

Tuesday 8 April 2025 13:45 (15 minutes)

Electron capture (EC) decays of Xe-125 and Xe-127 constitute a known background in dark matter searches with dual phase xenon time projection chambers (TPCs) such as the LUX-ZEPLIN (LZ) experiment. The signals produced by these processes present a lower charge-to-light ratio compared to β-particle interactions of the same energy, which is attributed to enhanced recombination at the EC site as a consequence of denser ionisation tracks created by the Auger effect. Double electron capture (DEC) decays of Xe-124 are the rarest radioisotope decays ever measured, and they present additional ionisation suppression in LXe TPCs from even more complex decay-site topologies. In this talk I will present the measurements of ionisation yield attenuation in Xe-125 and Xe-127 EC decays in LZ and how these were used to infer DEC charge yields used to constrain the Xe-124 LL- and LM-capture decays observed in the recent WIMP search.

Author: VALENTINO, Olivia

Presenter: VALENTINO, Olivia

Session Classification: Terrestrial Dark Matter Searches

Track Classification: Terrestrial Dark Matter Searches