Contribution ID: **45** Type: **Parallel talk**

DD Reflector Neutrons as a Probe of Low Energy Xenon Microphysics

Tuesday 8 April 2025 14:45 (15 minutes)

While the microphysics of Xenon in dual-phase TPCs is generally well understood, fully characterising the behaviour of nuclear recoils at very small (keV-scale) energies presents a series of challenges that contribute to many uncertainties in this regime. Thanks to its unique ability to calibrate in-situ using low energy deuterium-deuterium (DD) reflector neutrons, LUX-ZEPLIN is well positioned to provide valuable insight to our models. In this talk, I will present on the development of data quality cuts applicable to these datasets. Furthermore, I will demonstrate how this data can be used in a new procedure to constrain microphysical parameters such as the mean charge yield and its fluctuations.

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Session Classification: Terrestrial Dark Matter Searches

Track Classification: Analysis and Reconstruction Methods