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XLZD: the Next-Generation Liquid Xenon Rare-Event Observatory

Wednesday 9 April 2025 12:00 (15 minutes)

The future XLZD collaboration, which combines the LZ, XENONnT, and DARWIN experiments, aims to fully cover the WIMP parameter space down to the neutrino fog limit, becoming the ultimate dark matter effort in the search for WIMPs. XLZD will utilise a 60-80 ton liquid xenon time projection chamber, providing the immense exposure required for this challenging endeavour. Additionally, this future detector will also present excellent sensitivity to ^{136}Xe neutrinoless double beta decay and astrophysical neutrinos from the atmosphere, the Sun, and galactic supernovae. The location of the experiment is yet to be determined, however; the Boulby Underground Laboratory is one of the lead candidates to host it. In this talk, I will mainly discuss the broad physics opportunities enabled by this future rare-event observatory.

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