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Summary of the R&D Results from Recent Analyses of LUX Xe TPC Data

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LUX operated at Sanford Lab from 2013 to 2016 with a primary mission to search for dark matter using a dual-phase xenon TPC with a 250 kg target mass. It produced world-leading search results. Its data continues to be used for other rare event physics searches and to improve our understanding of the detailed behavior of Xe TPCs. Ongoing LUX analyses have significantly furthered the understanding of signal yields and signal detection in xenon and also identified competing radiogenic backgrounds. In this talk, I will detail recent results including pulse shape discrimination, results from the many new calibration techniques that were successfully exploited, and also summarize the improvements in the understanding of radiogenic backgrounds and efforts to extend the background model. These LUX analyses are being also being used to inform the upcoming LUX-ZEPLIN experiment.

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