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The Real-Time Data Workflow of LZ Dark Matter Experiment at NERSC

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LUX-ZEPLIN (LZ) is a dark matter direct detection experiment using a dual-phase xenon time projection chamber with a 7-ton active volume. In 2022, LZ collaboration published a world leading limit on WIMP dark matter interactions with nucleons. The success of the LZ experiment hinges both on the resilient design of its hardware and software infrastructures. This talk will give an overview of the offline software infrastructure of the LZ experiment, which includes the automated movement of the data and real time processing at NERSC, using its foremost HPC machine, Perlmutter. Additionally, I will talk about the monitoring tools and web services that enable the management, and operation of LZ's data workflow and cataloging.

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