Contribution ID: 46

Type: Oral

## Application of machine learning to find anomalous events in LZ data

Thursday, May 12, 2022 4:20 PM (20 minutes)

The LUX-ZEPLIN (LZ) experiment is a WIMP direct detection experiment using a dual-phase xenon time projection chamber with a 7 ton active volume, expecting science results in 2022. In a rare-event experiment such as LZ, it is important to identify events stemming from unexpected backgrounds, errors in reconstruction, and abnormalities in detector function. General-purpose, unsupervised anomaly finders operating on high-dimensional data can help in quickly finding these events that may otherwise be difficult to characterize. Further, anomaly finders can also increase the efficiency of identifying known but rare backgrounds with unusual topologies. In this presentation, I will discuss two approaches to anomaly finding that have been used to identify outliers in simulations and early LZ data.

**Primary author:** AMARASINGHE, Chami (University of Michigan)

**Co-authors:** KRAVITZ, Scott (Lawrence Berkeley National Lab); ARTHURS, Maris (University of Michigan)

Presenter: AMARASINGHE, Chami (University of Michigan)

Session Classification: Advanced Data Analysis - Parallel

Track Classification: Advanced Data Analysis