Clustering Beta-decay Waveforms using Machine Learning
MICAH CRUZ, University of Tennessee, Knoxville — Many experiments record data as digitized waveforms and then apply filters to the waveforms to extract various information. Prior to full analysis of the collected data, it is useful to apply various diagnostic tools for identifying spurious or corrupt data. One current method of diagnosing this data is via clustering, which is a machine learning procedure. Clustering methods work by grouping similar data based on some given parameters, such as euclidean distances. Applying the clustering routines to waveform data then provides a way to visualize waveform archetypes in the form of representative cluster centers. This talk will feature a comparison between k-means clustering and density-based clustering methods, in particular the DBSCAN and OPTICS algorithms, when applied to real Ca-45 beta decay data.

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