

Machine learning-based waveform analysis for pile-up events

Wednesday, May 15, 2024 4:20 PM (25 minutes)

Machine learning (ML) techniques are increasingly being used in the analysis of data in particle physics as well as in neutrinoless double-decay experiments. ML approach is often suitable to discriminate between signal and background events in cases where signal and background spectrum are well-known and when the spectra can be fed into ML algorithms for training. Also, various ML-based pulse shape discrimination techniques can also be used for event classification. In this study, we use the ML technique, specifically using the Recurrent Neural Networks to distinguish between single and pileup waveforms of physical events. We also discuss the regression analysis that can be used to find the signature of isomeric transitions during the gamma cascade following the decay of the nucleus.

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Session Classification: Advanced Data Analysis

Track Classification: Advanced Data Analysis