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Machine learning application to event reconstruction from single-ended PMT readout XIAOBIN LU, University of Tennessee, Knoxville, PROSPECT COLLABORATION — Machine learning (ML) has quickly found applications in high energy physics due to its potential to efficiently deal with large amount of event data and complex physics reconstruction modeling. This work explores the potential of ML for PROSPECT, the Precision Reactor Oscillation and SPECTrum experiment. PROSPECT is designed to perform a model-independent search for eV-scale sterile neutrino oscillation and measure the electron anti-neutrino spectrum from the High Flux Isotope Reactor (HFIR) located at Oak Ridge National Laboratory with high precision. The detector is filled with ~ 4 ton ^{6}Li-loaded liquid scintillator and highly segmented with double PMT readout on both ends of each segment. Neutrino events via the Inverse Beta Decay(IBD) interaction are reconstructed based on information including relative timing and individual light collection from both PMTs. In this talk, I will discuss the possibility of using machine learning techniques to reconstruct IBD events in segments with single functional PMT and improve cosmogenic background rejection capability in PROSPECT.

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