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Machine learning-based waveform reconstruction at JUNO

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PMT waveform analysis is essential for high precision measurement of position and energy of incident particles in liquid scintillator (LS) detectors. JUNO is a next generation high precision neutrino experiment with a designed energy resolution of $3\% @ 1\text{MeV}$. The accuracy of the reconstruction of number of photo-electron (nPE) is one important key of achieving the best energy resolution. This poster introduces the machine learning-based nPE estimation methods. The calibration parameters of LS responses and PMT responses are used to generate training waveforms for supervised learning. Weakly supervised learning is applied to handle simulation errors. The photon counting performances of different methods will be presented.

Submitted on behalf of a Collaboration?

Yes

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