

Accurate and Robust PMT Waveform Analysis

Tuesday, 17 August 2021 14:32 (2 minutes)

Photomultiplier tube (PMT) voltage waveforms are the raw data of many neutrino and dark matter experiments. Waveform analysis is usually the first critical step of data processing. Targeting precise timing and charge extraction of photoelectrons, we evaluate several waveform analysis methods, among which direct demodulation, convolutional neural networks and fast Bayesian matching pursuits are the most promising. Time and energy event reconstruction can be improved upon the traditional thresholding methods, most significantly with high energy events when photoelectrons pile up in waveforms.

Primary author: XU, Dacheng (Tsinghua University)

Co-authors: XU, Benda (Tsinghua University); BAO, Erjin (National Institute of Informatics); ZHANG, Geliang (Southwestern University of Finance and Economics); WU, Yiyang (Tsinghua University); XU, Yu (IKP2 FZJ)

Presenter: XU, Dacheng (Tsinghua University)

Session Classification: Poster Session

Track Classification: 5. 粒子物理实验技术