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Creation of Pseudo-data Synthetic Waveforms for the BL2 Experiment¹ SCARLETT WILSON, LARA BLOKLAND , DI'ARRA MOSTELLA , NADIA FOMIN, GEOFFREY GREENE , University of Tennessee — The BL2 experiment at the NIST Center for Neutron Research aims to measure the neutron lifetime through the beam method by counting decay protons. Once neutrons decay, protons are trapped by the Pseudo-Penning Trap and a magnetic field. The signals in the detector can have multiple defects as protons arrive from the trap. Pseudo-data is produced to mimic these known defects which results in the creation of synthetic waveforms for various types of waveform analysis. Files with 100,000+ waveforms were produced with realistic event probabilities. In addition to files with pseudo-data containing realistic probabilities, data files were created for each type of defect exclusively to differentiate between waveform events (without realistic event probabilities) and to finetune waveform analysis for each event. I will present the results of creating pseudo-data synthetic waveforms that help improve the accuracy of the various waveform analysis techniques.

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