

Abstract Submitted
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Waveform Analysis for a Precision Pion Decay Measurement ANTHONY PALLADINO, University of Virginia, PEN COLLABORATION — The PEN experiment aims to measure the $\pi^+ \rightarrow e^+\nu(\gamma)$ (π_{e2} decay) branching ratio at PSI, with an uncertainty of $\Delta B/B \simeq 5 \times 10^{-4}$, or better, using a large-angle detector system featuring a pure CsI calorimeter. A critical element of the data analysis requires distinguishing $\pi \rightarrow e\nu$ events from the $\pi \rightarrow \mu \rightarrow e$ decay chain. A digitized waveform for a large subset of pion decay events must be reliably sorted into one of the two categories in order to reveal the low-energy “tail” of the calorimeter response to the π_{e2} 69 MeV e^+ 's, otherwise masked by the muon decay positrons. Most events contain pulses which overlap. An analysis program was designed to distinguish between the different decay types with a high resolution extraction of closely spaced peaks. The peak to peak (or overlapping pulse) separation methods and their relative merits will be discussed.

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