Abstract Submitted
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Maximum Likelihood Analysis in the PEN Experiment[1] MARTIN LEHMAN, University of Virginia — The experimental determination of the $\pi^+ \to e^+\nu(\gamma)$ decay branching ratio currently provides the most accurate test of lepton universality. The PEN experiment at PSI, Switzerland, aims to improve the present world average experimental precision of 3.3×10^{-3} to 5×10^{-4} using a stopped beam approach. During runs in 2008-10, PEN has acquired over 2×10^7 π_{e2} events. The experiment includes active beam detectors (degrader, mini TPC, target), central MWPC tracking with plastic scintillator hodoscopes, and a spherical pure CsI electromagnetic shower calorimeter. The final branching ratio will be calculated using a maximum likelihood analysis. This analysis assigns each event a probability for 5 processes ($\pi^+ \to e^+\nu$, $\pi^+ \to \mu^+\nu$, decay-in-flight, pile-up, and hadronic events) using Monte Carlo verified probability distribution functions of our observables (energies, times, etc). A progress report on the PEN maximum likelihood analysis will be presented.

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