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Central Particle Tracking Detectors in the PEN Experiment[1]
EMIL FRLEZ, University of Virginia, PEN COLLABORATION — The PEN Collaboration is conducting a new measurement of the $\pi^+ \to e^+\nu(\gamma)$ (π_{e2} decay) branching ratio at the Paul Scherrer Institute, with the goal uncertainty of $\Delta B/B \simeq 5 \times 10^{-4}$ or lower. At present, the combined accuracy of all published π_{e2} decay measurements lags behind the theoretical calculation by a factor of 40. In this contribution we describe the redesigned central region tracking detectors of the PEN detector. The design and performance of a pair of two-piece wedge degraders for simultaneous horizontal and vertical tracking of the π^+ beam particles are presented in detail. After passing through the tracking degrader, the π^+ beam is stopped in the center of an active target scintillator. The positrons from π^+ and μ^+ decays are tracked in a pair of cylindrical MWPC's, and detected in a thin plastic scintillator hodoscope and a pure CsI electromagnetic calorimeter.

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