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Redesign of the PIBETA Beam Detectors for a New π_{2e} Experiment at PSI EMIL FRLEZ, University of Virginia, PEN COLLABORATION — PEN, a new experiment aiming to measure the $\pi^+ \to e^+\nu$ (π_{2e}) decay branching ratio with a relative uncertainty of $\sim 5 \cdot 10^{-4}$ has begun this year at the Paul Scherrer Institute ring accelerator. A development run with an upgraded PIBETA detector was conducted during the summer of 2006. In this contribution we discuss the design and performance of the new beam detectors: the upstream beam counter, and the active collimator, degrader and target using low-momentum 72-80 MeV/c π^+ beams. All beam detector waveforms were digitized with a 2 GHz/10 bit Acqiris digitizer.

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