

Abstract Submitted
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Small, Fast, Gas Detector for High-Energy Electrons E. NORBECK, J.E. OLSON, Y. ONEL, University of Iowa — A Parallel Plate Avalanche Counter (PPAC) measured electromagnetic showers from π^0 s made by 120 GeV protons on 29 mm ($7 X_0$) of Ta. The largest signals resulted from π^0 s made by protons that interacted near the surface, so that most of the 29 mm was available for development of showers. Isobutane at 120 torr filled the 0.6 mm gap between 1.0 cm² plates. With 950 V between the plates the PPAC put -40 mV signals into 50 Ω coax (no electronic amplification). The 120 GeV protons were from the Meson Test Beam Facility at Fermilab. Tests of the detector in our Iowa laboratory were made by placing a 7 mCi ¹³⁷Cs source to the side of the detector. Signals from Compton scattered electrons traveling along the gap between the plates were as large as -20 mV. With most PPACs the shape of the signal from the electrons in the avalanche is dominated by the RC time constant, C is the capacity of the detector and R = 50 Ω . With our small PPAC the shape of the signal is governed by the motion of the charges between the plates. The electron signal has a width, FWHM, of about 1.4 ns.

Norbeck Edwin
University of Iowa

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