

Tests of a Digital Hadron Calorimeter with Resistive Plate Chambers

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In the context of developing a hadron calorimeter with extremely fine granularity (for the application of Particle Flow Algorithms to the measurement of jet energies at a future lepton collider), we report on extensive tests of a small scale prototype calorimeter. The calorimeter contained up to 10 layers of Resistive Plate Chambers with $2560 \times 1 \text{ cm}^2$ readout pads, interleaved with absorber plates. The tests included the response to broadband muons and to positrons and pions in the energy range of 1 to 16 GeV. Detailed measurements of the chambers efficiency as function of beam intensity have also been performed. The data are compared to simulations based on GEANT4 and to analytical calculations of the rate limitations.

The results of these tests have been published as four separate papers in JINST (see B.Bilki et al.).

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