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CALICE scintillator HCAL - response to muons and electrons

Summary

The CALICE Collaboration

The CALICE collaboration has constructed a test beam hadron calorimeter with 7608 scintillator tiles, individually read out by Silicon Photo-Multipliers, and tested it in muon, electron and hadron beams at CERN. The calibration of each cell is based on minimum ionizing particle signals and at high amplitudes has to take into account the non-linear response of the SiPM, due to its finite number of pixels. The most important validation of the detector modelling and calibration chain is the test of the calorimeter response linearity and resolution for a large range of incident beam energies. Electromagnetic showers are the most demanding test since the energy deposited per single tile in an electromagnetic shower is larger than in a hadronic shower for the same beam energy. Results of the calorimeter response to muons and electrons are discussed and compared to Monte Carlo simulation.

Primary author: Prof. WARD, David (University of Cambridge)

Presenter: Prof. WARD, David (University of Cambridge)

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