

Resistive Plate Chamber digitisation for highly granular calorimeter

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The CALICE Semi-Digital Hadron Calorimeter technological prototype that was completed in 2011 is a sampling calorimeter using Glass Resistive Plate Chamber detectors as the active medium. This technology is one of the two options proposed for the hadron calorimeter of the International Large Detector for the International Linear Collider. The prototype was exposed to beams of muons, electrons and pions of different energies at the CERN Super Proton Synchrotron.

The use of this technology for future experiments requires a reliable simulation of its response.

The prototype is simulated using GEANT4 and a custom digitisation algorithm. It describes the full path of the signal: showering, gas avalanches, charge induction and hit triggering. This simulation was tuned using muon tracks and electromagnetic showers in order to account for detector inhomogeneity and tested on hadronic showers collected in test beam.

Initial digitisation algorithm was described in JINST 11 (2016) 6 P06014. Further developments of the algorithm will be reported including additional test beam data.

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