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Resistive Plate Chamber Digitization in a Hadronic Shower Environment

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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. To be able to study the performance of such a calorimeter in future experiments it is important to ensure reliable simulation of its response. The SDHCAL prototype simulation, performed with GEANT4, and the digitization procedure will be presented. Comparisons between data and simulation on the SDHCAL response to muon tracks, electromagnetic and hadronic showers will be shown. First study using this calorimeter prototype on hadronic shower topology will be presented.

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