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Comparison of test beam data from imaging calorimeters with GEANT4 simulations

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The highly granular calorimeter prototypes of the CALICE collaboration have provided large data samples with precise three-dimensional information on hadronic showers with steel and tungsten absorbers and silicon, scintillator and gas detector readout. From these data sets, detailed measurements of the spatial structure, including longitudinal and lateral shower profiles and of the shower substructure are extracted. Dedicated experiments with scintillator and RPC active elements extend these measurements to include information on the time structure of hadronic showers. These results are confronted with GEANT4 simulations with different hadronic physics models, and present new challenges to the simulation codes and provide the possibility to validate and improve the simulation of hadronic interactions in high-energy physics detectors.

Summary

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