

Concept and test of particle flow calorimetry

As collider experiments move towards the TeV scale, the precision requirements for the reconstruction of multi-jet final states with heavy particles such as W, Z and top become more demanding. Hadron calorimetry is intrinsically limited by the large variety of physical processes in strong interactions and the different response of the detectors to them. The particle flow approach promises to achieve unprecedented jet energy precision by measuring each particle individually and thus optimally combining different sub-detectors. This requires highly granular calorimeters and sophisticated reconstruction algorithms. To confront the new ideas with experiment, the CALICE collaboration has constructed finely segmented electromagnetic and hadronic calorimeter prototypes and exposed them to test beams at DESY, CERN and FNAL. The colloquium will present the concept, the technical realization and the experimental results.