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Performance of highly granular calorimeters in test beams

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The CALICE collaboration has developed highly granular calorimeter prototypes to evaluate technologies for experiments at a future lepton collider optimized for particle flow event reconstruction. These technologies include electromagnetic calorimeters with tungsten absorbers and silicon or scintillator active elements, and hadronic calorimeters with steel and tungsten absorbers with scintillator and gaseous detector active elements, the former with analog and the latter with purely digital and with semidigital readout. We will discuss the design and the calibration of the different prototypes. Results on the performance, in particular the energy reconstruction and energy resolution, will be presented. The high granularity of the calorimeters enables reconstruction techniques such as software compensation to improve the energy resolution, which have already been successfully applied to some of the detector prototypes.

Summary

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