

The CALICE AHCAL - a highly granular SiPM-on-tile hadron calorimeter prototype

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The Analogue Hadron Calorimeter (AHCAL) of the CALICE collaboration is a technological prototype for future linear collider detectors, addressing scalability, integration and engineering challenges imposed by the experimental environment. It is based on the SiPM-on-tile technology, where the active layers of the calorimeter are formed by 3x3 cm² plastic scintillator tiles placed on top of SiPMs mounted on readout boards that also house SPIROC2E front-end ASICs. A large prototype with 22 000 channels has been constructed using techniques suitable for mass production and automatic assembly. The calorimeter took muon, electron and pion data at the CERN SPS, partially in conjunction with a silicon-instrumented structure as prototype for the CMS endcap calorimeter upgrade, which uses a similar design as the AHCAL in its scintillator section. The presentation gives an overview of the construction, commissioning, calibration and first test beam results of the AHCAL technological prototype.

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