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A highly granular, digital electromagnetic calorimeter prototype

Thursday 28 May 2020 16:00 (18 minutes)

In light of the upgrade program of the ALICE detector a forward calorimeter (FoCal) is being considered that must be able to discriminate decay photons from direct photons at high energy, requiring extremely high granularity. We are constructing a unique prototype of a digital e.m. calorimeter based on CMOS monolithic active pixel sensors (MAPS) that should fulfil this requirement.

The prototype, called mTower, uses the ALPIDE chip (developed for the ALICE ITS Upgrade). It will consist of 24 layers, each of 2 ALPIDE chips and 3 mm of W absorber. It allows to test the performance of the ALPIDE in a calorimeter application and will provide input into the final FoCal design parameters. In November 2019 a stack of 12 layers was tested in an electron beam at DESY and in February 2020 the full 24 layer mTower will be taking data at DESY.

This contribution presents results from the mTower test beam campaign, and reports on the performance of the ALPIDE chip in a calorimeter application.

Funding information

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