

# 8th Beam Telescopes and Test Beams Workshop



Contribution ID: 17

Type: **not specified**

## Beam-tests of CMS High Granularity Calorimeter prototypes at CERN

*Wednesday, 29 January 2020 13:10 (20 minutes)*

As part of the HL-LHC detector upgrade programme, the CMS experiment is developing a High Granularity Calorimeter (HGCAL) to replace the existing endcap calorimeters. The HGCAL will be realised as a sampling calorimeter, including 36 layers of silicon pads and 14 layers combining both silicon and scintillator detectors interspersed with metal absorber plates. Prototype modules based on 6-inch hexagonal silicon pad sensors with pad areas of 1.0 cm<sup>2</sup> have been constructed. Beam tests of different sampling configurations made from these modules have been conducted at the CERN SPS using beams of charged hadrons and electrons with momenta ranging from 20 to 300 GeV/c. The setup was complemented with a CALICE AHCAL prototype, a scintillator-based sampling calorimeter, mimicking the proposed design of the HGCAL scintillator part. This talk summarises the test beam measurements at CERN in 2018, including measurements of pedestal and noise, gain characterisation, calibration with single charged particles and energy reconstruction performance of electron and hadron induced showers. We also show measurements of the timing capabilities of this prototype system and the steps being taken towards electron and hadron identification.

**Primary author:** CEARD, Ludivine (National Taiwan University (TW))

**Presenter:** CEARD, Ludivine (National Taiwan University (TW))

**Session Classification:** Analysis & Simulations