



Contribution ID: 145

Type: **Talk**

## Construction and Tests of the CMS High Granularity Endcap Calorimeter for High Luminosity LHC

*Wednesday, 1 September 2021 11:00 (30 minutes)*

The CMS high granularity calorimeter (HGCAL) is a challenging detector that brings together tracking and calorimetry with silicon and scintillators, as well as meet the harsh radiation and pileup environment in the forward rapidity region during the High Luminosity LHC phase and exploit challenging signatures such as VBF/VBS production towards new physics searches. The HGCAL will be realised as a sampling calorimeter, with layers of silicon pads and layers combining silicon and scintillator detectors interspersed with metal absorber plates. The HGCAL features unprecedented transverse and longitudinal segmentation in both its electromagnetic and hadronic compartments. This information allows to resolve the fine structure of the electromagnetic and hadronic showers, playing to the strengths of particle-flow reconstruction, and allowing to enhance pileup rejection and particle identification, while still achieving good energy resolution. The electromagnetic part and a large fraction of hadronic part of the calorimeter will be based on hexagonal silicon sensors of  $0.5 - 1 \text{ cm}^2$  cell size. The remainder of the hadronic part will be based on highly-segmented scintillators read out by silicon photomultipliers. The intrinsic high-precision timing capabilities of the silicon sensors add a further measurement dimension critical in event reconstruction, especially for pileup rejection. This presentation will provide an overview of the HGCAL project covering the physics motivation, detector design, readout and trigger concepts, detector construction and tests.

### Is this abstract from experiment?

Yes

### Name of experiment and experimental site

The CMS Collaboration at CERN

### Is the speaker for that presentation defined?

Yes

### Details

Dr. Somnath Choudhury (Indian Institute of Science, Bangalore, India).

Dr. Somnath Choudhury has been selected by the CMS collaboration to present this talk.

### Internet talk

Yes

**Primary author:** CHOUDHURY, Somnath (Indian Institute of Science (IN))

**Presenter:** CHOUDHURY, Somnath (Indian Institute of Science (IN))

**Session Classification:** Mini Workshop on Instruments and Methods in HEP