

# The CMS High Granularity Calorimeter for the High Luminosity LHC

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The CMS experiment at CERN will undergo significant improvements during the so-called Phase-II Upgrade to cope with a 10-fold increase in luminosity of the High Luminosity LHC (HL-LHC) era. Especially the forward calorimetry will then suffer from very high radiation levels and intensified pile-ups in the detectors. Thus, the CMS collaboration is designing a High Granularity Calorimeter (HGCal) to replace the existing endcap calorimeters. It features unprecedented transverse and longitudinal segmentation for both electromagnetic (ECAL) and hadronic (HCAL) compartments. This will facilitate particle-flow calorimetry, where the fine structure of showers can be measured and used to enhance pileup rejection and particle identification, whilst still achieving good energy resolution. The ECAL, and a large fraction of HCAL, will be based on hexagonal silicon sensors produced from 8-inch wafers, each with several hundreds of individual cells of 0.5 - 1 cm<sup>2</sup> cell size. The remainder of the HCAL will be based on highly-segmented scintillators with SiPM readout. An overview of the HGCal project is presented in this talk with a focus on the silicon sensors; covering motivation, engineering design, expected performance and the current status of prototypes: from lab measurements to beam tests.

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