

# Evolution studies of the CMS ECAL endcap response and upgrade design options for High-Luminosity LHC

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High-Luminosity running at the LHC, which is planned for 2022 and beyond, will imply an order of magnitude increase in radiation levels and particle fluences with respect to the present LHC running conditions. The performance evolution of the CMS electromagnetic calorimeter (ECAL), comprising 75,848 scintillating lead tungstate crystals, indicates that an upgrade of its endcaps will be needed for HL-LHC running, to ensure an adequate performance. Results from LHC collision periods, beam tests and laboratory measurements of proton-irradiated crystals are combined to predict the performance of the current detector at the HL-LHC. In addition, an overview is given of various R&D studies towards a replacement of the ECAL endcaps for the HL-LHC running period.

**Primary author:** Mr PERUZZI, Marco

**Presenter:** Mr PERUZZI, Marco

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