

Status and performance of the CMS Electromagnetic Calorimeter in Run 3 of LHC

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The Electromagnetic Calorimeter (ECAL) of the CMS experiment at the LHC plays a vital role in various physics analyses, including Higgs boson studies and searches for new phenomena. Achieving accurate calibration of the detector and its individual channels is critical for optimizing the energy resolution of electrons and photons, as well as for measuring the electromagnetic components of jets and contributing to energy sums used to detect particles that do not generate a signal in the detector. To maintain consistent energy response over time, a laser monitoring system is utilized to track radiation-induced changes and compensate for them during data reconstruction. Additionally, each channel undergoes calibration using physics events. This presentation will review the methods employed for ECAL energy and time calibration and introduce a novel system developed to automate the calibration processes. The performance of the ECAL in 2024 and 2025 will also be highlighted.

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