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The CMS electromagnetic calorimeter workflow

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The CMS experiment at the LHC features the largest crystal electromagnetic calorimeter (ECAL) ever built. It consists of about 75000 scintillating lead tungstate crystals. The ECAL crystal energy response is fundamental for both triggering purposes and offline analysis. Due to the challenging LHC radiation environment, the response of both crystals and photodetectors to particles evolves with time. Therefore continuous monitoring and correction of the ageing effects plays a key role in ensuring stability of trigger efficiency and rate, as well as optimal offline physics performance. Fast, reliable and efficient workflows are set up to have the first set of corrections computed within 48 hours of data-taking, making use of dedicated data streams and processing. Such corrections, stored in relational databases (Oracle), are then accessed during the prompt offline reconstruction of CMS data. Twice a week, the calibrations used at the trigger level (hardware and software) are also updated in the database and accessed during the data-taking. Dedicated workflows for the prompt validation of the conditions are also available, together with a monitoring of the data quality. In this presentation, the design of the CMS ECAL data handling, processing, and validation is reviewed, and results from the main workflows are discussed.

Consider for promotion

Yes

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