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# Mitigation of Direct APD signals in the CMS Barrel Electromagnetic Calorimeter

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Anomalous large signals are observed in the barrel region of the CMS Electromagnetic Calorimeter (ECAL) during proton-proton collisions at the LHC. They are ascribed to direct energy deposition by particles in the Avalanche Photodiodes (APDs) used for the light readout. They must be suppressed in order to prevent the spurious triggering of CMS, and to maintain the lowest possible trigger thresholds for electrons and photons, jets, and calorimeter energy sums.

The algorithm that has been employed to reject these signals in the Level-1 trigger of CMS is described. The signals occur at a rate that is proportional to the intensity of the LHC proton beams. As a consequence, the algorithm must be retuned to preserve its efficiency for the more challenging conditions of LHC Run II. The details of this optimisation are presented, and the performance of the algorithm on CMS Run II data is shown.

## Secondary topics

## Applications

Experience with current calorimeter at the energy frontier

## Primary topic

Crystals

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