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Separation of photons and electrons in a LHCb-like EM calorimeter

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Forward photons and electrons in the LHCb experiment are detected with the inner modules of the EM calorimeter. However, the granularity of the cells makes difficult to detect precisely the shape of the showers produced by those particles. Then, photons and electrons candidates are hard to differentiate especially when nearly collinear particles hit the calorimeter. Simulations in Geant4 of the inner section of the EM calorimeter were run to create a data set of events which were used as inputs of a machine learning model of classification. This model takes the number of electrons and photons created in each cell of the modules, as well as the energy deposition to classify events of one electron, one photon and two nearly collinear photons due to a π^0 decay.

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