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## Geant4 simulations of the full-size calorimeter for muon G-2 experiment

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The aim of this report is to investigate the full size electromagnetic calorimeter for the muon G-2 experiment at Fermilab. A calorimeter module (24 are expected in the experiment) consists of a Delrin front panel for installation of the laser calibration system, 54 PbF<sub>2</sub> Cherenkov crystals wrapped by the black Millipore paper, and silicon photo-multiplier sensors. We report here on simulation of 2.0 GeV positrons passage through the calorimeter system. The simulations are carried out by using Geant4 toolkit, which provides a complete set of tools for all areas of detector simulation: geometry, tracking, detector response, run, event and track management, and visualization. We consider Cherenkov photons expansion when a positron moves down through the calorimeter at the arbitrary angles of incidence. Both spectral and angular distributions of Cherenkov optical photons in different parts of the calorimeter system have been evaluated as well as the pre-shower distributions in the panel and at the Al vacuum chamber of the storage ring.

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