

# **Geant4 simulation of optical photon transport in scintillator tile with direct readout by silicon photomultiplier**

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Active elements in the baseline design of the highly granular calorimeters proposed for future collider experiments are scintillator tiles with silicon photomultiplier readout. The direct coupling of SiPm to scintillator is considered to be the main option for such detectors. In this study, the response of scintillator-SiPm system to minimum ionizing particle was simulated using the optical photon transport functionality available in the Geant4 package. The model was tuned using a comparison with experimental results. The uniformity of response for flat and dimpled tile surfaces was estimated. Such simulation studies are important for optimization of detector elements not only for high-energy physics, but also for medical applications.

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