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A simulation tool for a Silicon Photomultiplier coupled to a scintillating fiber

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A Monte Carlo simulation, based on Geant 4, for scintillating fibers coupled to a silicon photomultipliers (SiPMs) has been implemented. The software includes the simulation of the SiPM response, taking into account the dark current, the after-pulse and the optical crosstalk effect. The software allows to study the propagation of photons through the fiber, the occupancy of the pixels on the SiPM active area and to obtain the expected distribution of the detected photoelectrons. In this poster we show the different steps of the simulation, from the geometry definition to the response of the SiPM. Finally we show the comparison with data concerning the detection of minimum ionizing and highly ionizing particles, performed with a detector based on thin scintillating fibers coupled to SiPMs.

Primary author: Dr RIPICCINI, EMANUELE (INFN Roma)

Presenter: Dr RIPICCINI, EMANUELE (INFN Roma)

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