



Contribution ID: 76

Type: **not specified**

Upgraded simulation of the CERN Gamma Irradiation Facility (GIF++)

Tuesday 10 September 2024 17:40 (20 minutes)

GIF++ irradiation facility at CERN is a unique infrastructure for performance test and long term characterization of gaseous detectors under severe gamma background conditions. Also, a muon beam line is available to ensure precise detector studies. The gamma flux is originated by a 14 TBq ^{137}Cs source and can be modulated in a wide range by means of various absorption filters which can be controlled remotely.

To understand the detector response, an evaluation of the dose and the gamma flux at the detector position is needed. To this aim we have performed a detailed GEANT 4 simulation of the area, and the ambient equivalent dose rate has been computed. The results are validated by comparison with some measurement campaigns which have been taken using fixed and portable gamma dosimeters at various distance from the source and different attenuation filter combinations

Once calibrated with experimental measurements, the simulation offer the possibility to compute the gamma flux on a given detector and therefore estimated the expected hit rate.

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Session Classification: Techniques