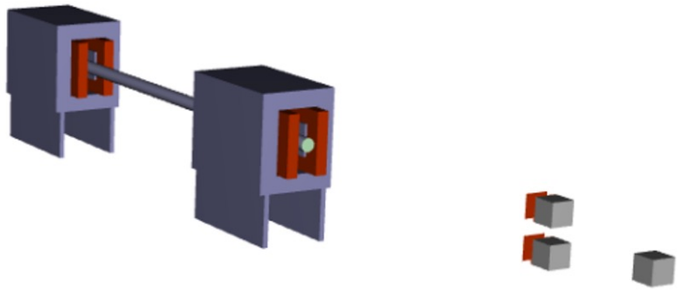
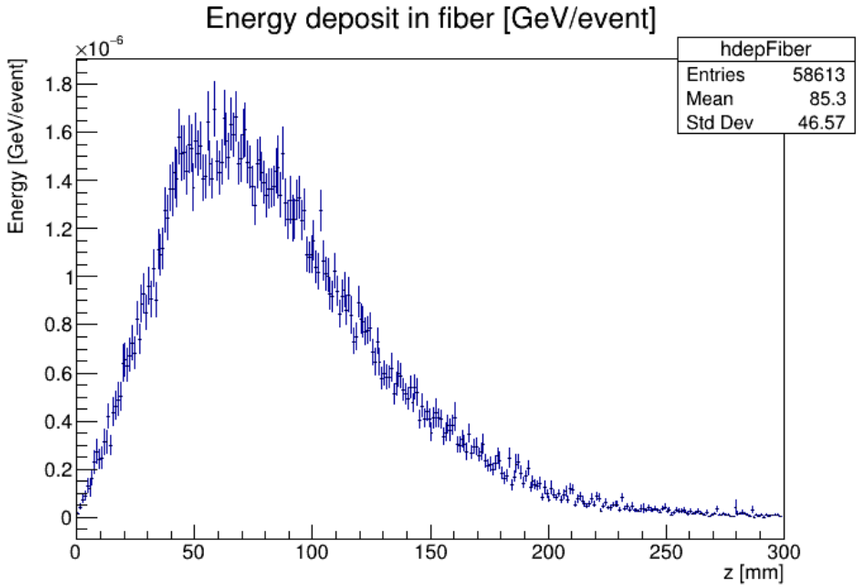
Direct photon calorimeter irradiations



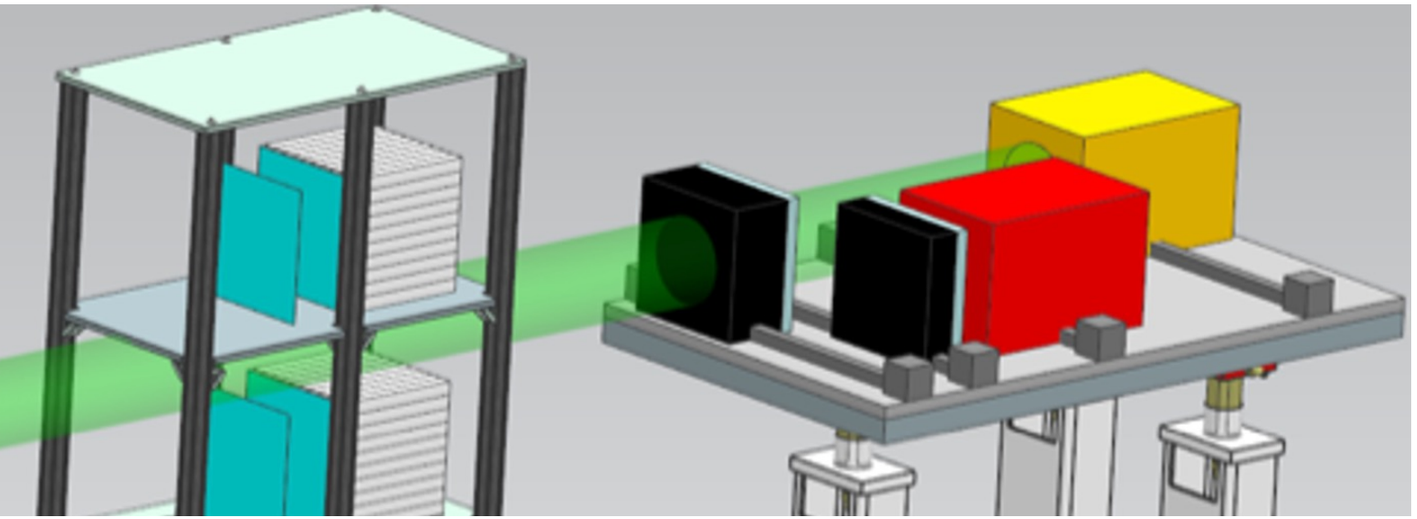


G4 simulations were performed to predict **3D distributions of doses** due to bremsstrahlung itself ⇒ maximum of annual local dose of about **7 MGy** was found, assuming 100 fb^{-1} :

- Only quartz fibers can be used then;
- Irradiation levels can be partially mitigated by changing calorimeter position from time to time ⇒ **at 10 fb^{-1}** one can use SciFi as dose < 0.1 MGy.

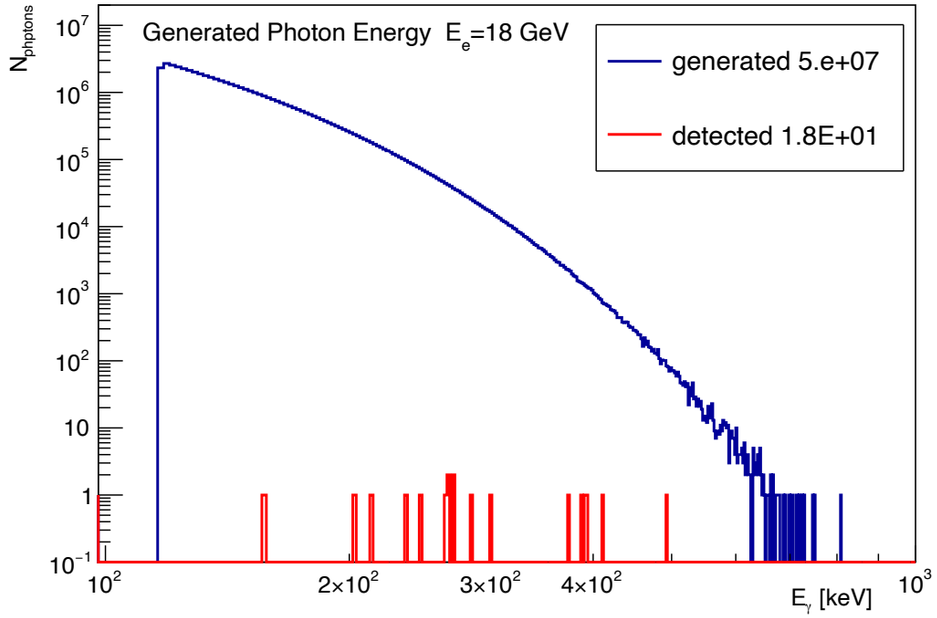
← **fiber irradiation profile** was also studied, for "spaghetti" calorimeter type, to predict fiber light output drops due to (irreducible) bremsstrahlung irradiation, and resulting calorimeter calibration changes and induced non-uniformities

SR attenuation



Special ultra-fast SR event generator was developed to simulate hard part of SR spectra ($E_\gamma > E_{cr}$) → **more than 10^8 events simulated in G4**

Only SR at 18 GeV needs significant amount of absorber – as 35 cm of graphite (which is less than 2 X_0) for example:



Paper describing in detail these findings is being drafted