0.1 Simulations

The correction factor is better estimated through a Montecarlo simulation. If we denote as E the total energy of the three photons, we randomly divided the segment $[0, E]$ into three parts E_1, E_2, E_3.

Should we say that our simulation's results are coherent with published paper?

Discarding triplets that doesn't allow momentum conservation, we obtain a uniform distribution on all the possible energy triplets. Simulating also the three detectors and triggering on the triple coincidences, the ratio of observed events results:

$$c_{3\gamma} := \frac{\text{detected events}}{\text{total events}} \sim 5 \cdot 10^{-4}$$

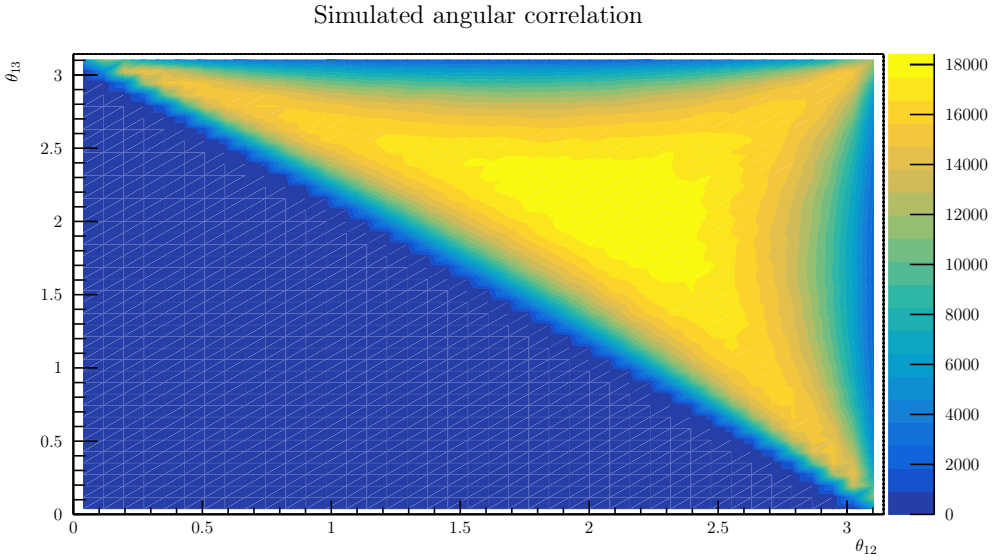

Figure 1: Correlation of the angles between first and second (x axis) and first and third (y axis) simulated photon.

With a similar calculation the ratio of observed events for the two-photons decay can be obtained:

$$c_{2\gamma} \approx 3.7 \cdot 10^{-2}$$

Therefore the correction factor results:

$$c_f = \frac{c_{2\gamma}}{c_{3\gamma}} 71 \tag{1}$$

From the simulation we can also assert that the dependence on d can be neglected in our rough results: c_f varies less than 10% for a d variation of 3%.

This lead to a ratio of about:

$$R = 387 \tag{2}$$