G4 Pi -> e nu gamma

Problem in the code was trivial:

- two variables to simulate, X and Y (effectively positron and gamma energies)

- have to sample over X and Y uniformly, within maximum and minimum allowed values and discard unphysical values (X+Y >1) . Then evaluate Matrix element and accept/discard M (x,y) < RandomNumber * M_{max}; where M_{max} is maximum value for the Matrix element

- **instead** Y was sampled, but X was sampled not over the whole region, **but only within the physical range only, making sampling in X biased.**

- it was corrected by inserting a range of Y sampling factor into the Matrix element to compensate

$$SQRT(Y^2 – 4*beta); \text{ where } beta = m_e/m_\pi$$

G4 Pi -> e nu gamma

Changes the
Energy spectrum
For pure pi-e nu gamma
Tail fraction (<52 MeV)
is ~6.6% and ~3.5%

CONSEQUENCIES:

- Recalculating normalization for radiative decay simulation In order to start Acc ratio calculation runs on WG.

- Tail estimation will need to be corrected (Tristan)

LL estimation is being redone by Shintaro. I will contact him in that regard. He has to use a new shape.