

Simulation of tagging range of pair spectrometer using “real” angle-energy distribution of positrons emitted from 500 um Al converter under irradiation by bremsstrahlung photons with end point energy 44 MeV.

It was used different version of GEANT4. The first three plots show the reproducibility of the data. The total number of gammas which hit the surface of the converter was $11.2 \cdot 10^7$.

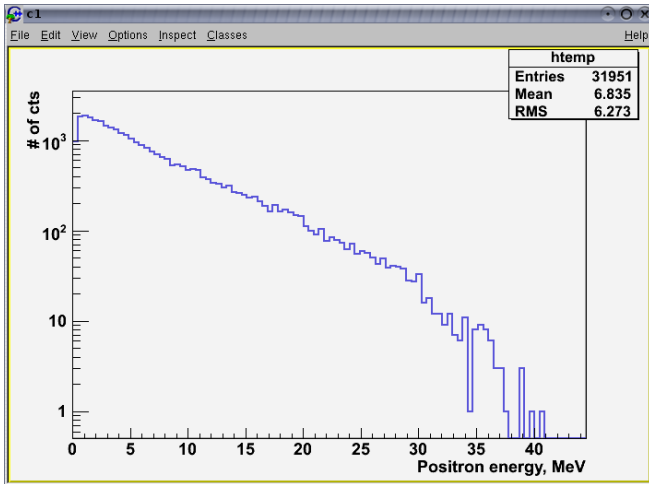


Fig. A. Total yield of positrons from 500 um Al converter.

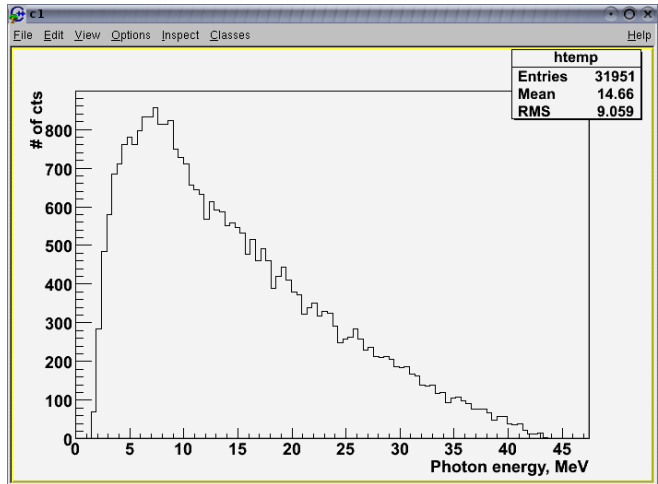


Fig. B. Energy spectrum of photons which created positrons being able to escape the converter.

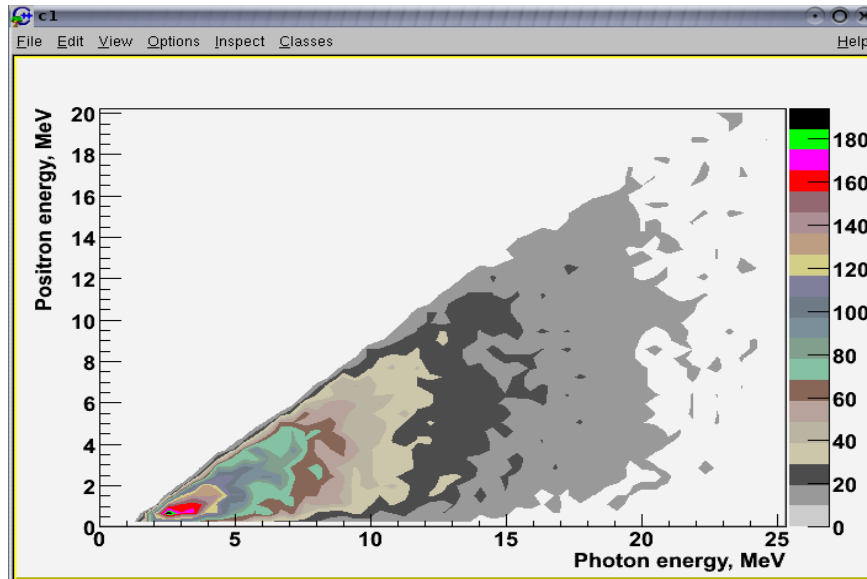


Fig. C. Positron energy VS. photon energy.

Here is what we got using pair spectrometer and detectors placed at the sides. Detectors covered the whole gap of the magnet.

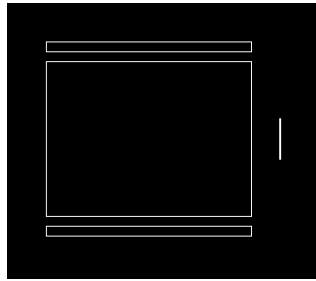


Fig. D. Top view of the experimental setup simulated. The converter is 2.83 cm away from the magnet. The detectors are 1 cm away from the magnet.

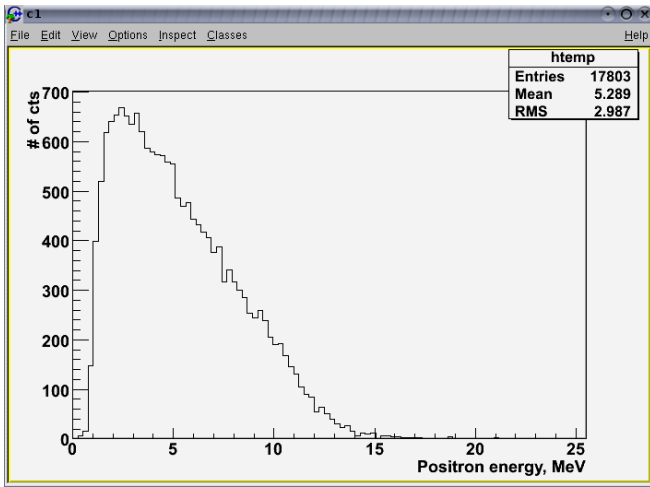


Fig. E. Positron energy spectrum detected.

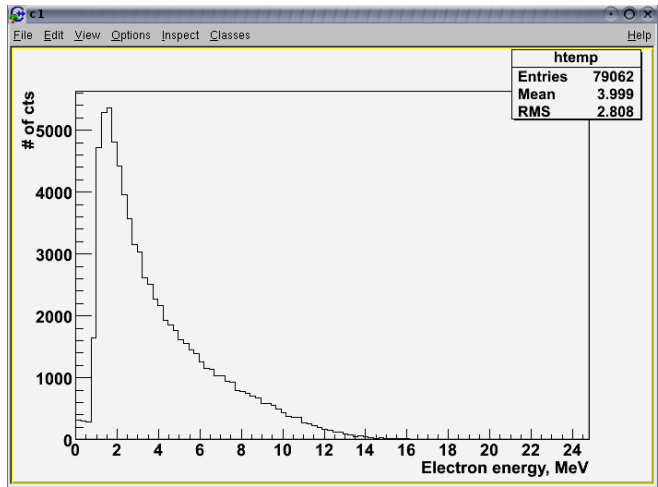


Fig. F. Electron energy spectrum detected.

The fraction of the detected positrons to the total number of positrons emitted from the converter is $17803/31951 = 55.7\%$

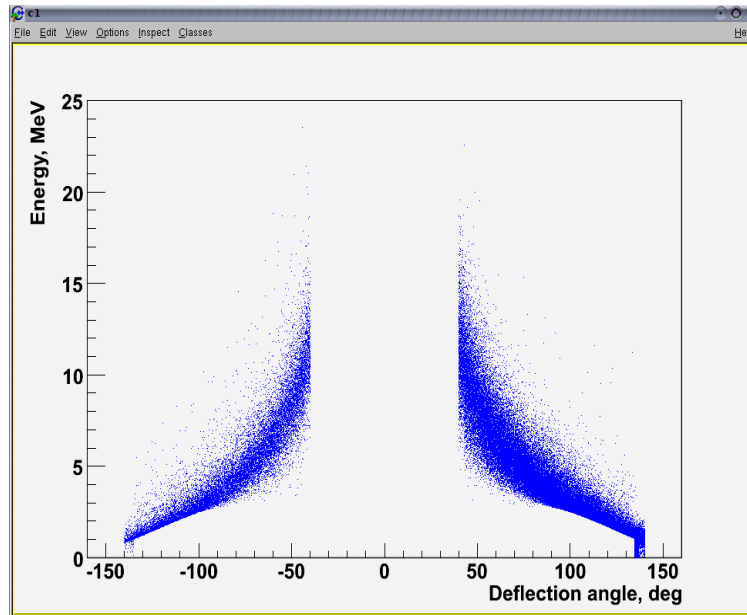


Fig. G. Tagging properties of our pair spectrometer. Left arm: e^+ , right arm: e^- .