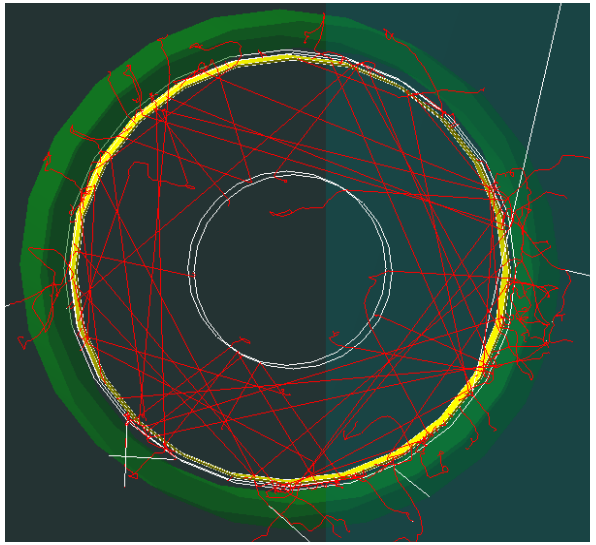
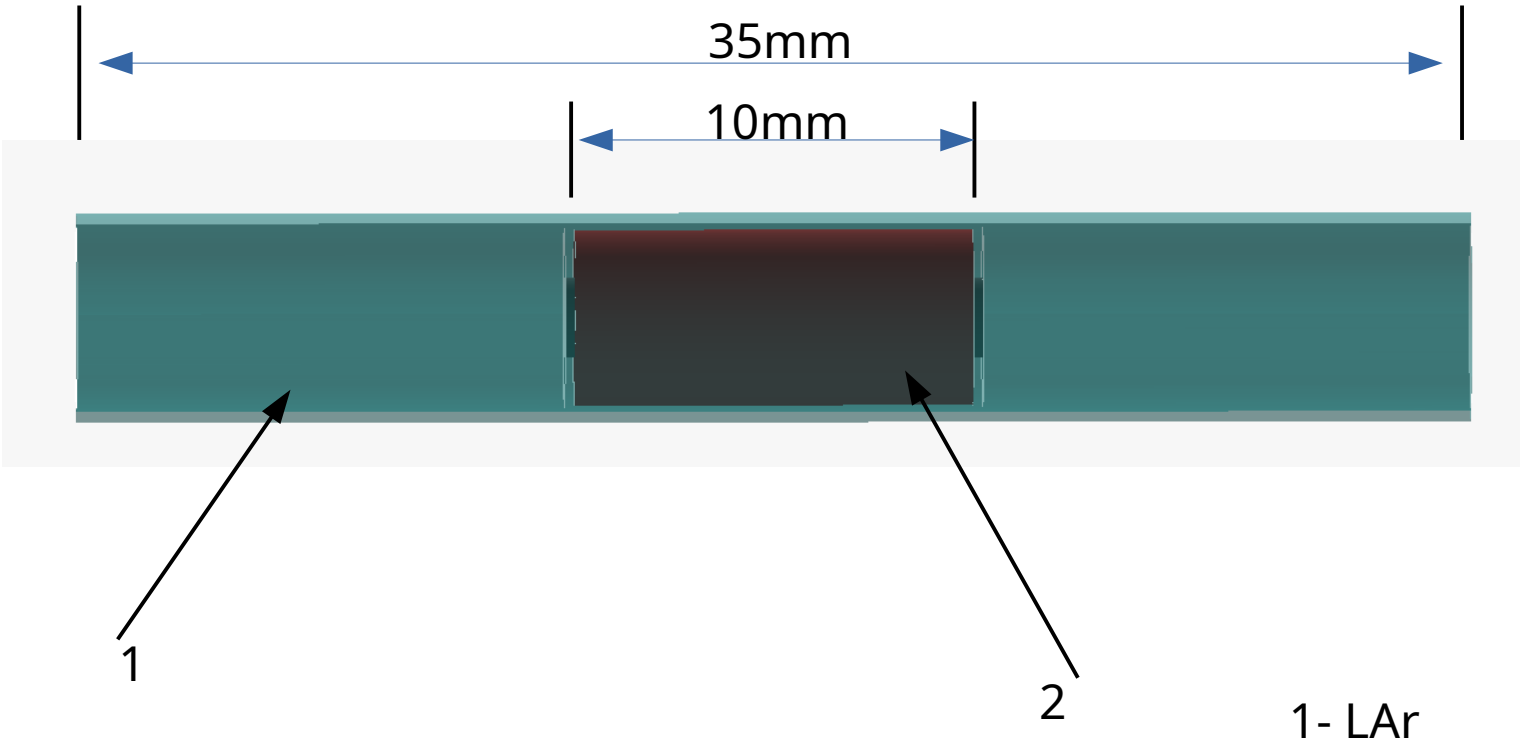


FCalPulse modeling progress report

M. Manashova

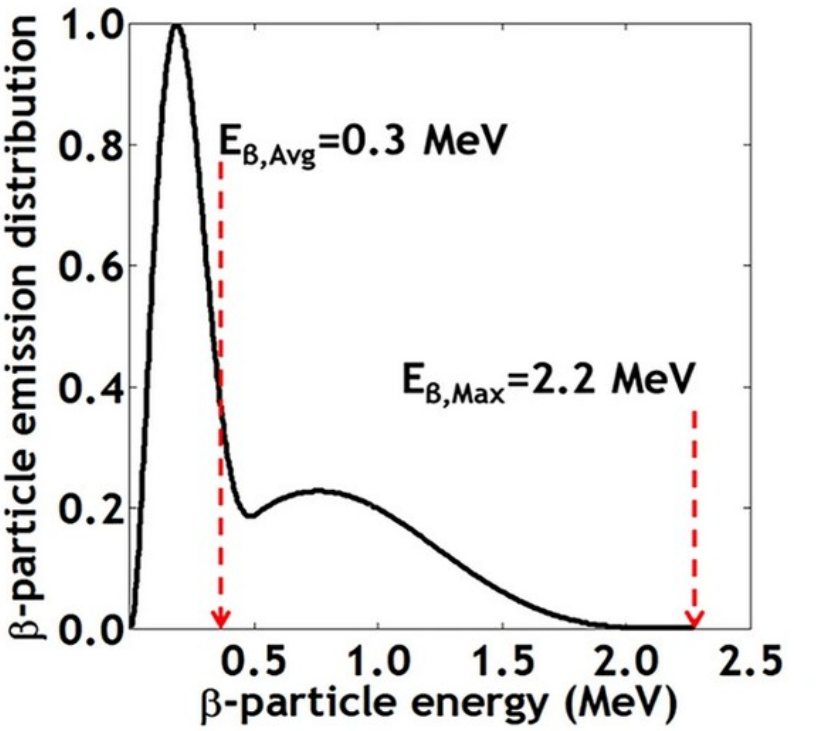
20/06/2022

Geometry of LAr and foil



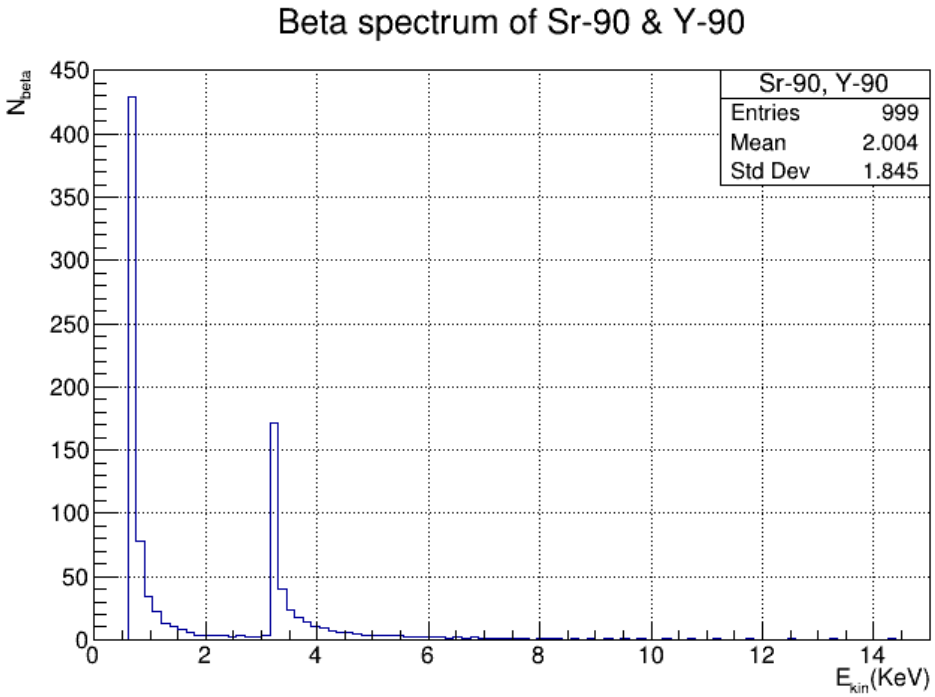
1- LAr
2- Foil

Beta spectrum of Sr-90 and Y-90



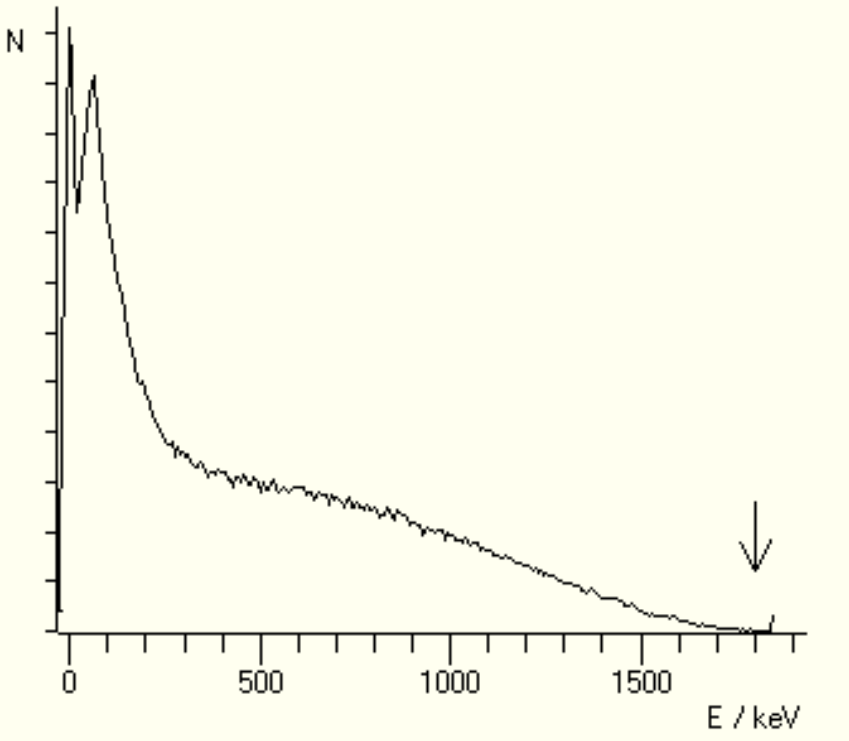
Normalized energy spectrum of β-particles emitted by the serial decay of 90Sr and 90Y

Dixon, J., Rajan, A., Bohlemann, S. et al. Evaluation of a Silicon 90Sr Betavoltaic Power Source. Sci Rep 6, 38182 (2016). https://doi.org/10.1038/srep38182



The maximum energy of the β-particle is ~2.2 MeV, which corresponds to the end-point energy of the β-decay of 90Y; the average energy of the β-particle is ~0.3 MeV.

Beta spectrum of Sr-90 and Y-90

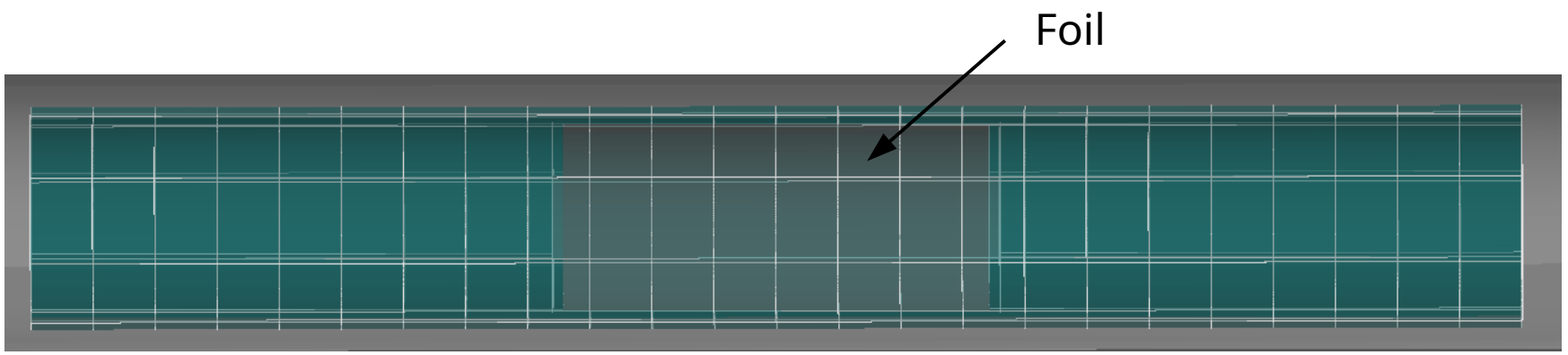


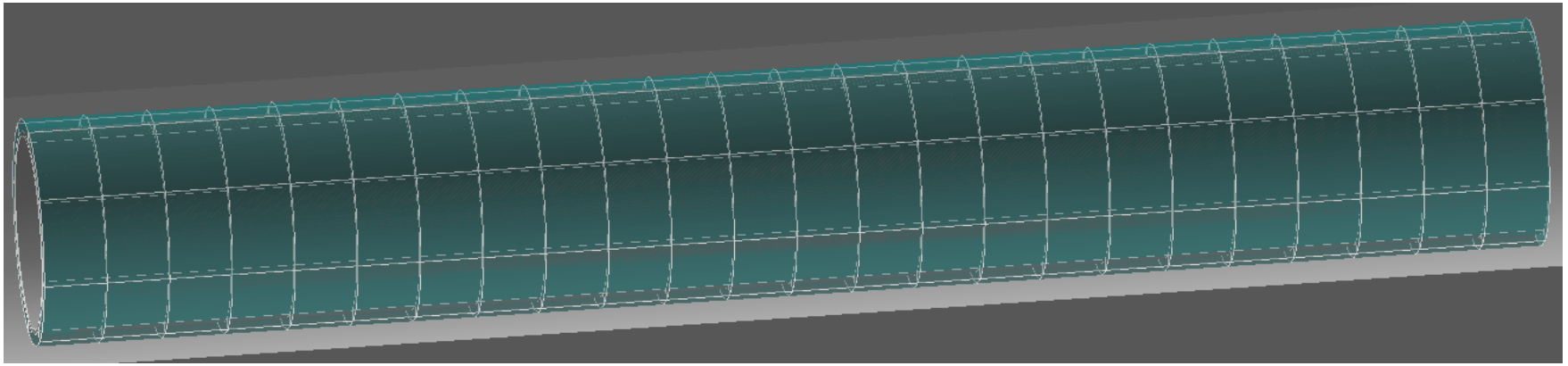
β spectrum of Sr-90 recorded with the scintillation counter.

Strontium-90 is a man-made isotope with a half-life of 28.5 years. It decays emitting an electron with a maximum energy of 546 keV (β decay)
into yttrium-90. The latter decays through β decay with a maximum energy of 2274 keV into zirconium-90 with a half-life of 64.1 hours.

The data are taken from:
The Lund/LBNL Nuclear Data Search
Version 2.0, February 1999
S.Y.F. Chu 1, L.P. Ekstroem 1,2 and R.B. Firestone 1
1 LBNL, Berkeley, USA
2 Department of Physics, Lund University, Sweden
http://www.ld-didactic.com/

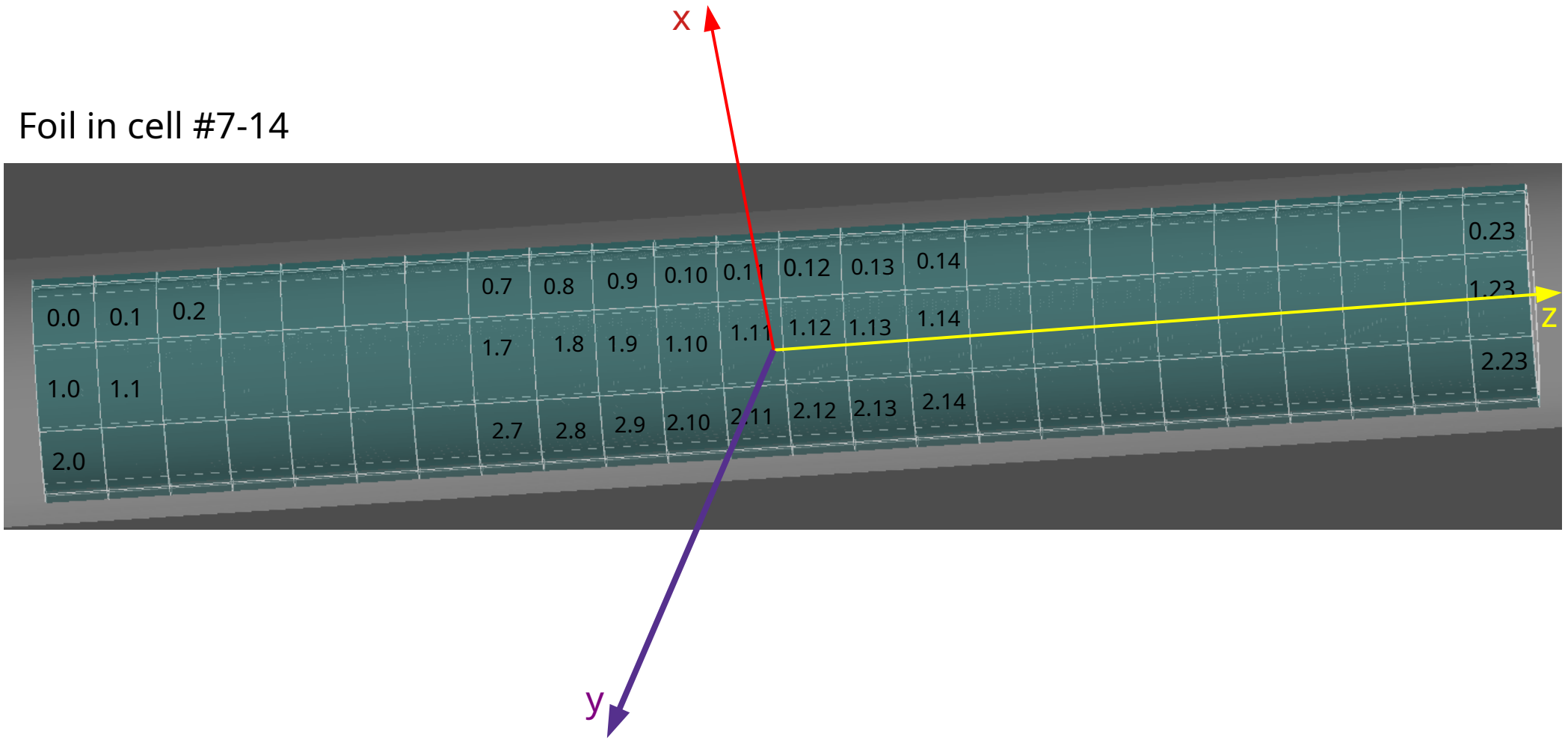
Divide LAr into phi-Z (8x24)





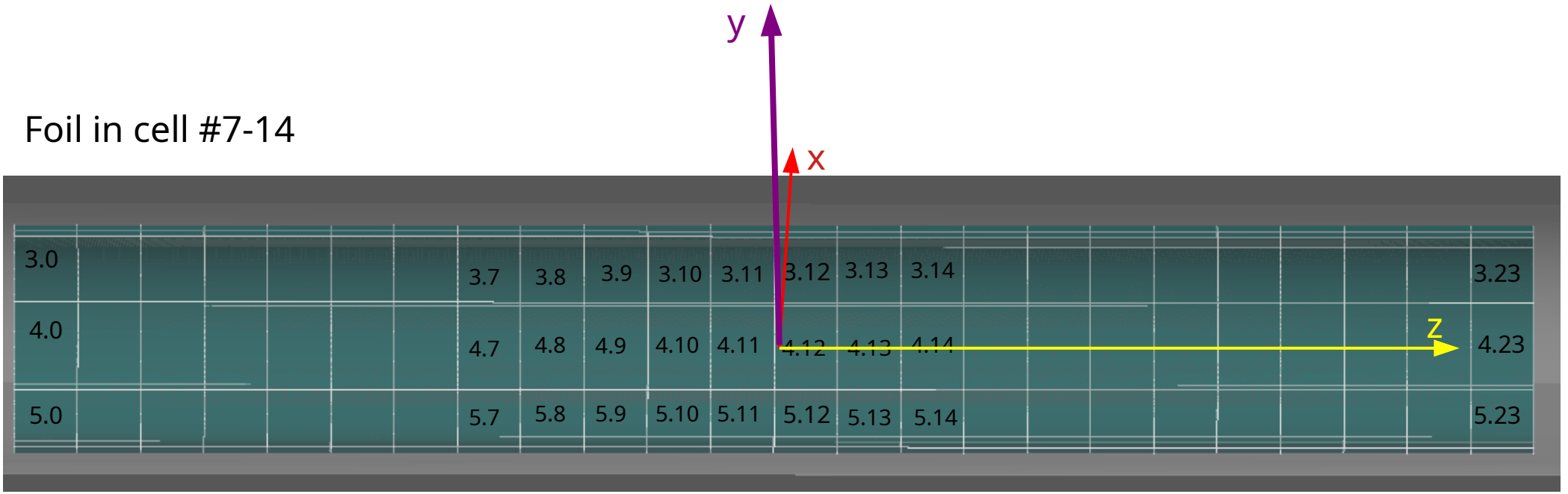
Cell visualization

Foil in cell #7-14



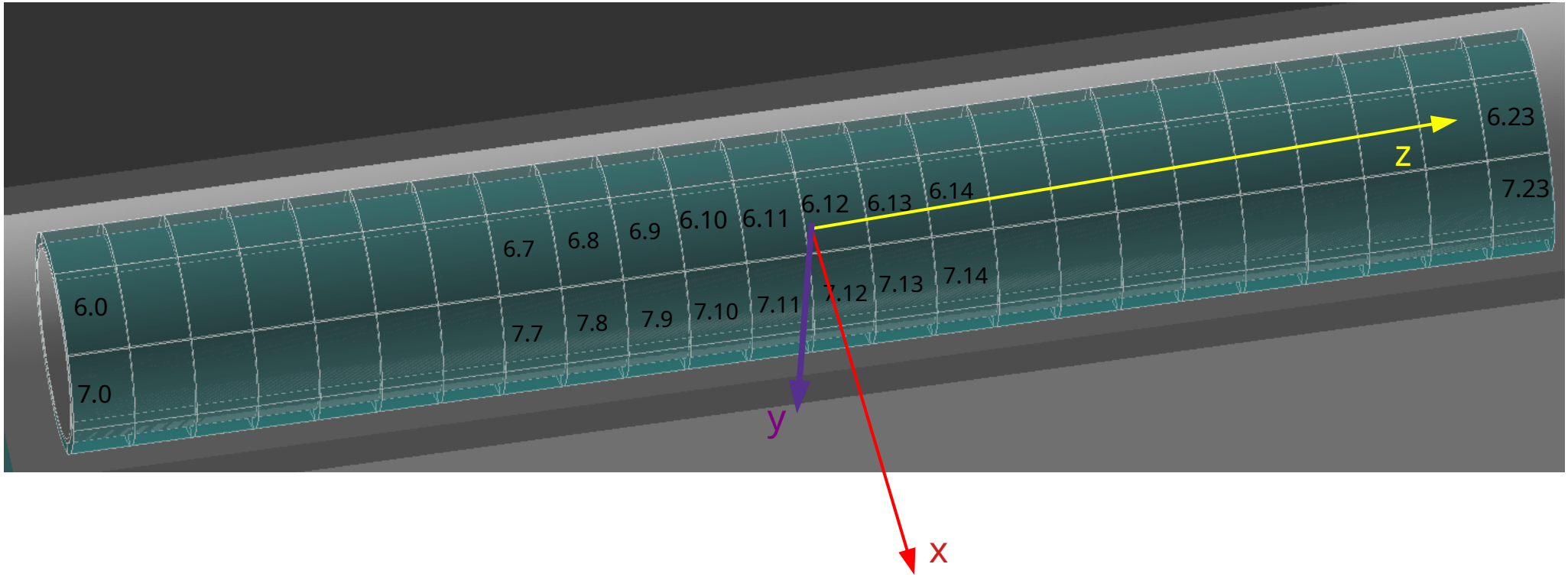
Cell visualization

Foil in cell #7-14

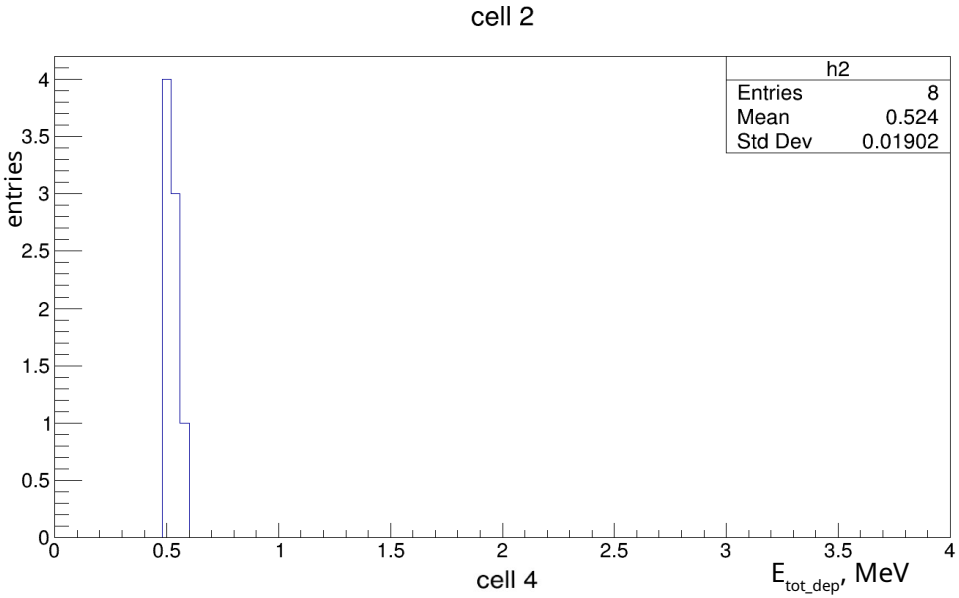


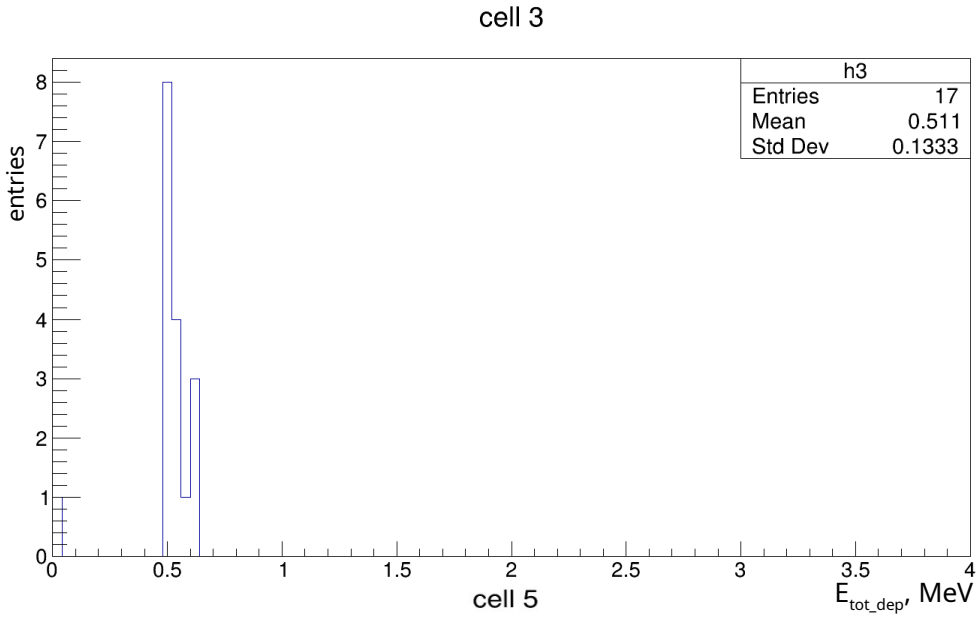
Cell visualization

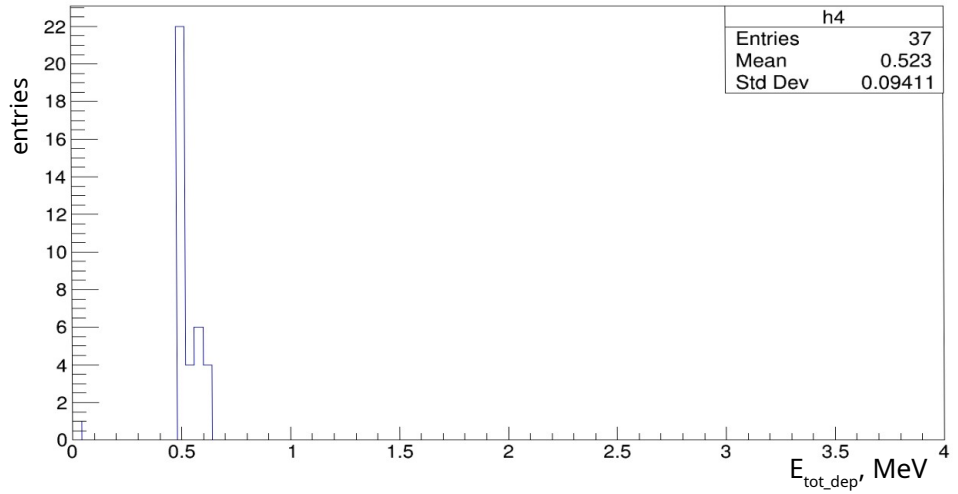
Foil in cell #7-14

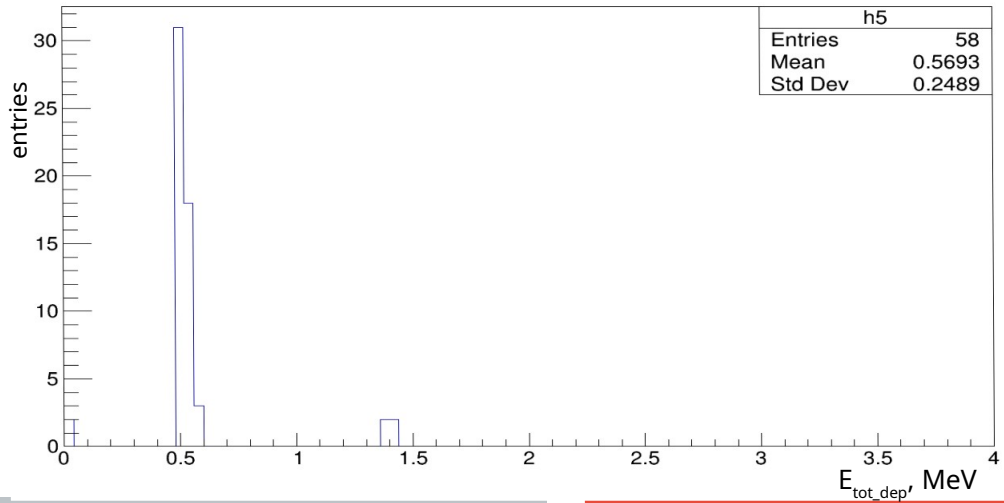


Total deposited energy distribution in cell

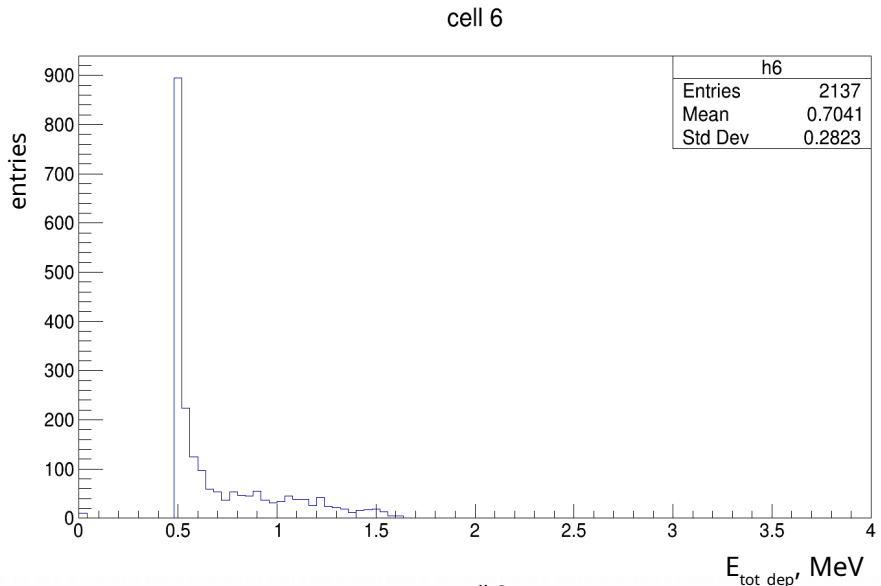


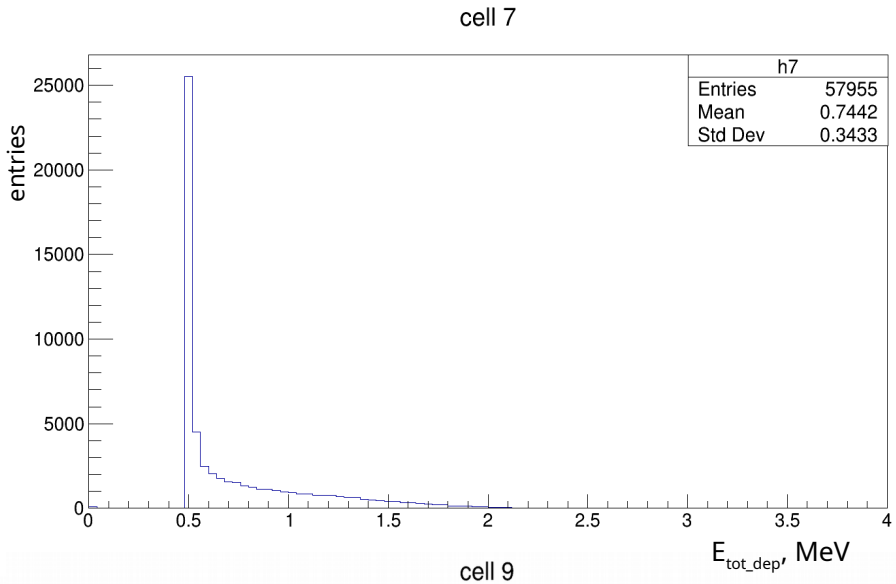


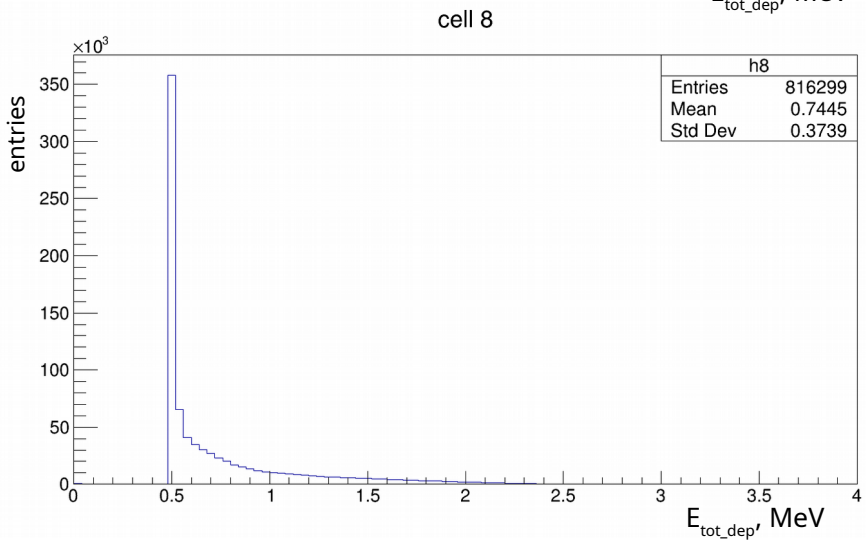


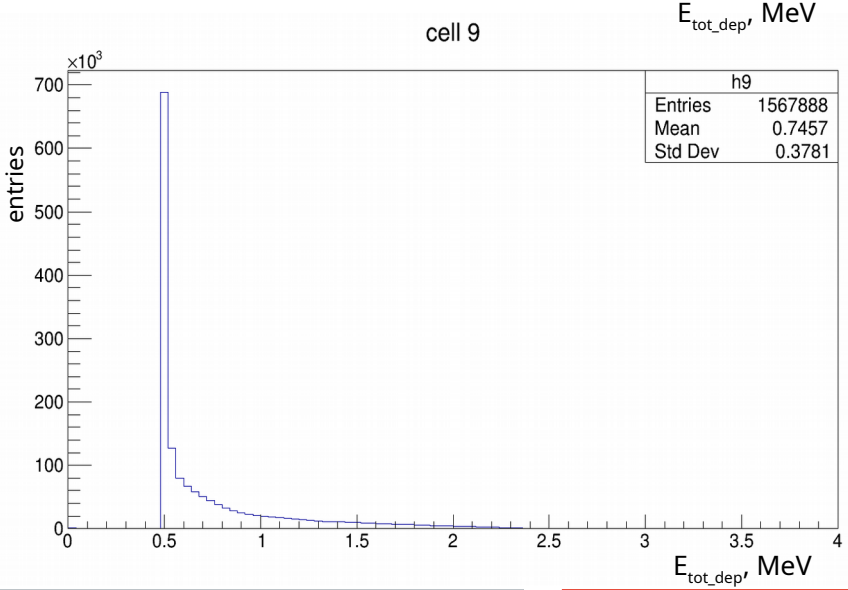


Total deposited energy distribution in cell

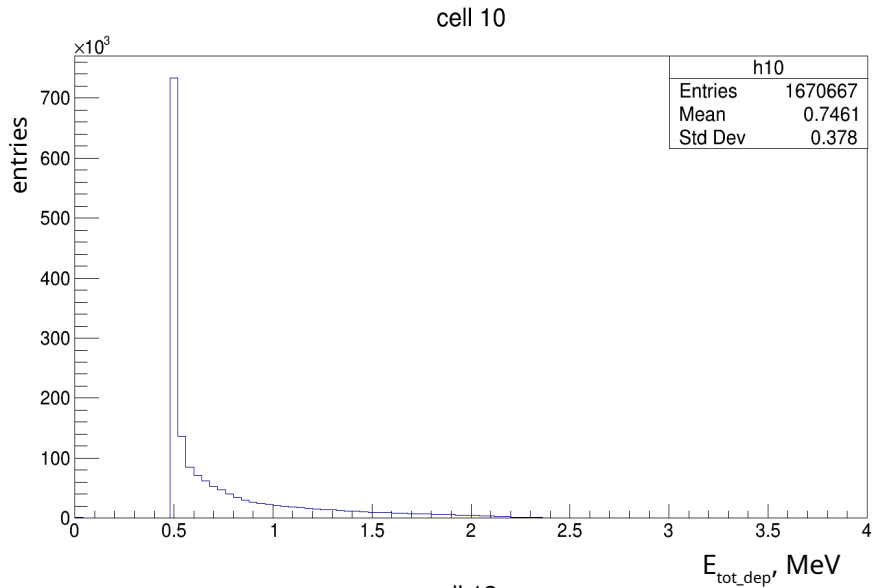


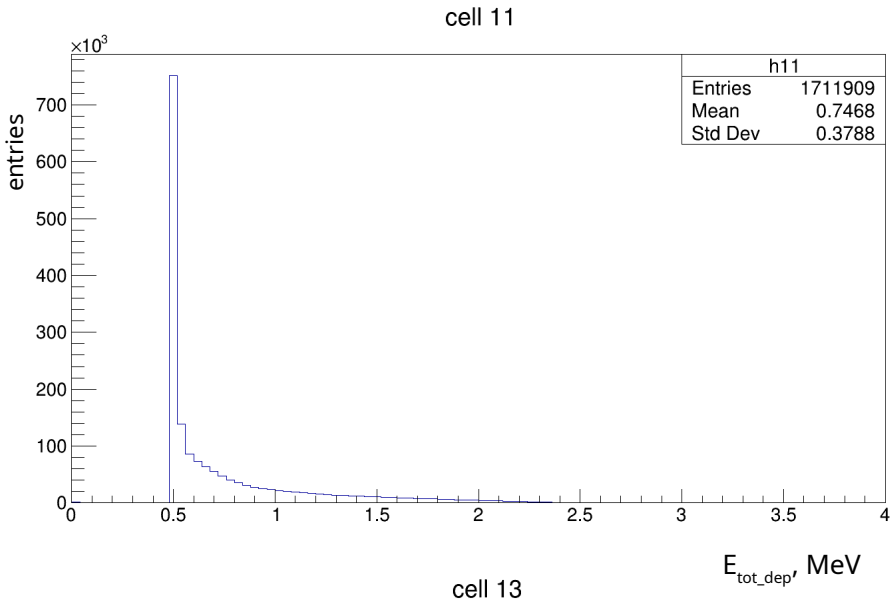


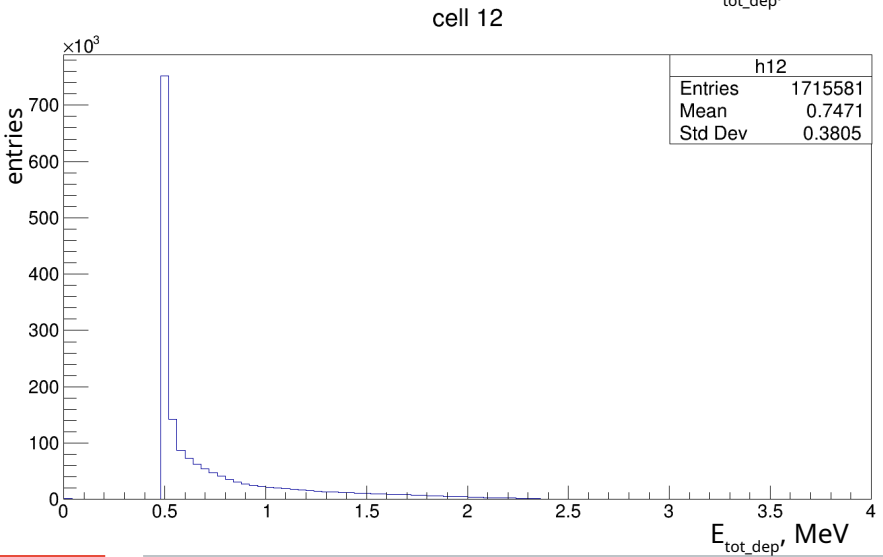


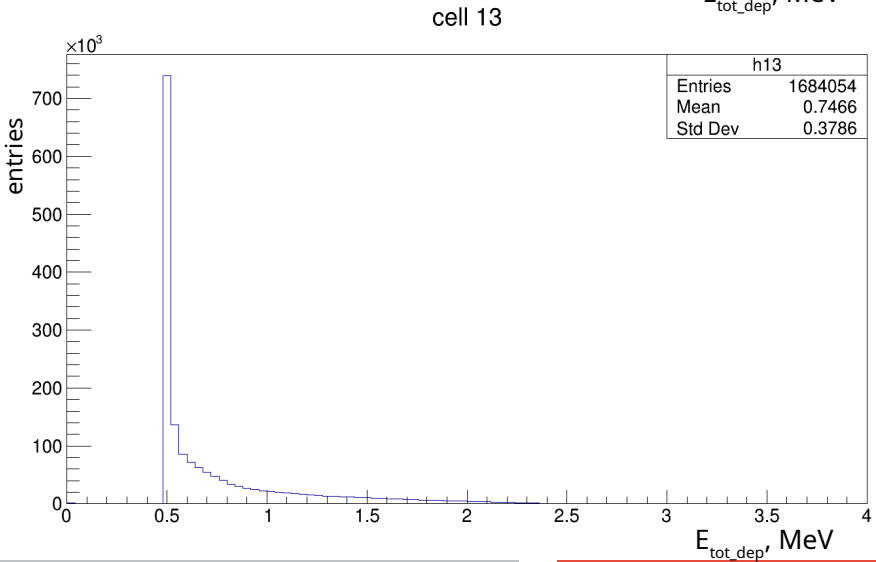


Total deposited energy distribution in cell



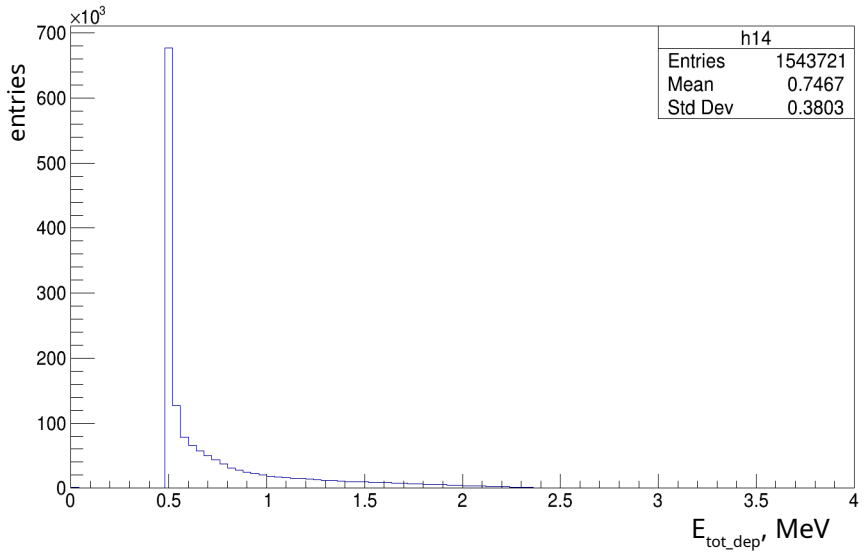




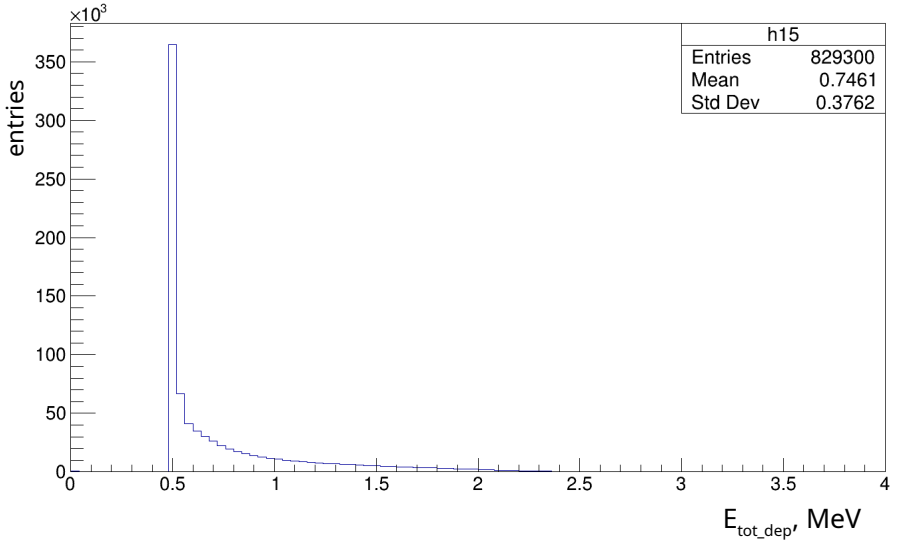


Total deposited energy distribution in cell

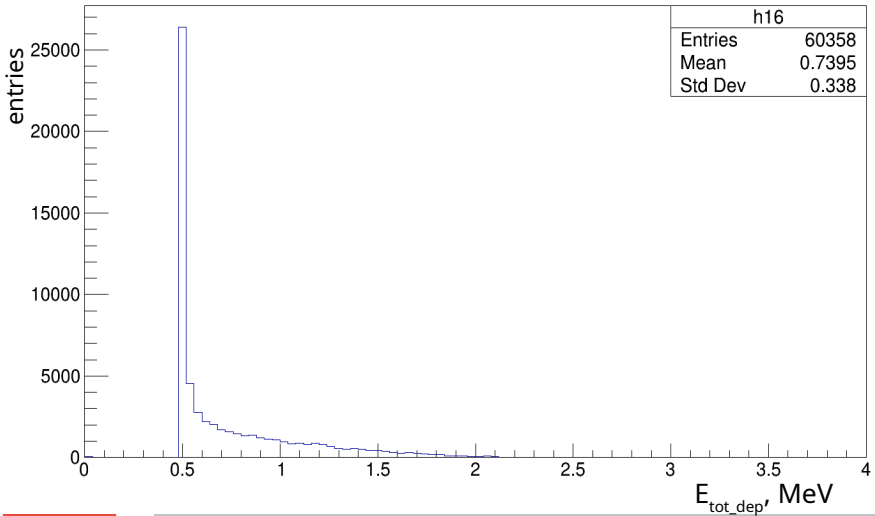
cell 14



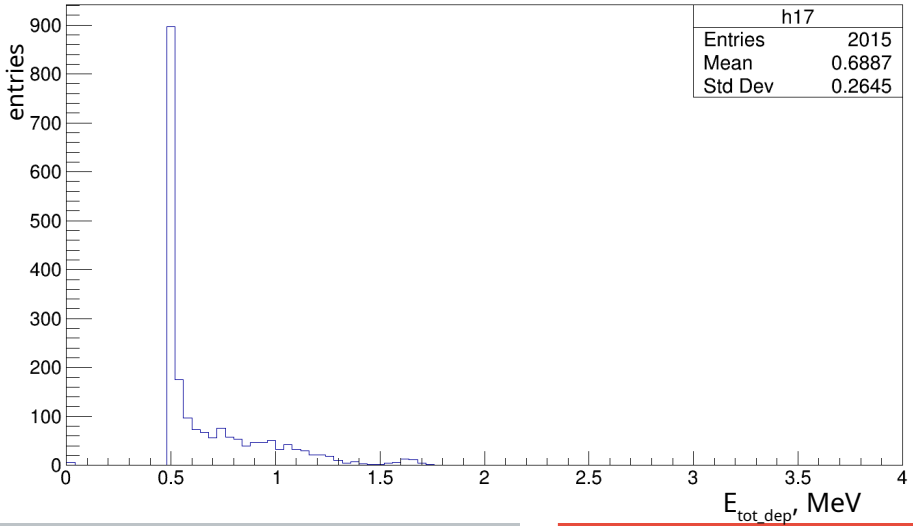
cell 15



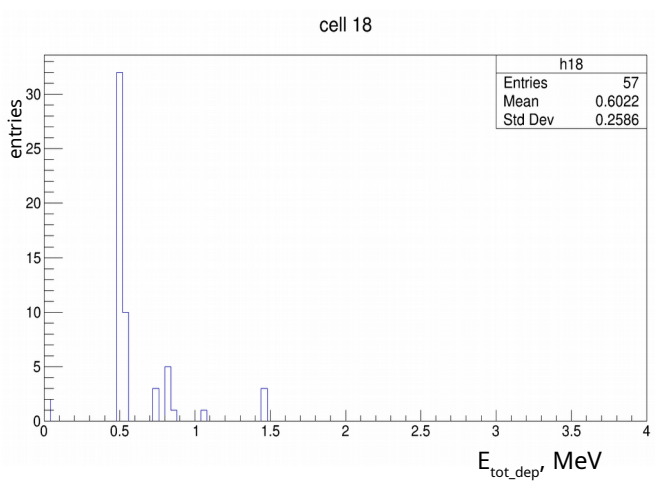
cell 16

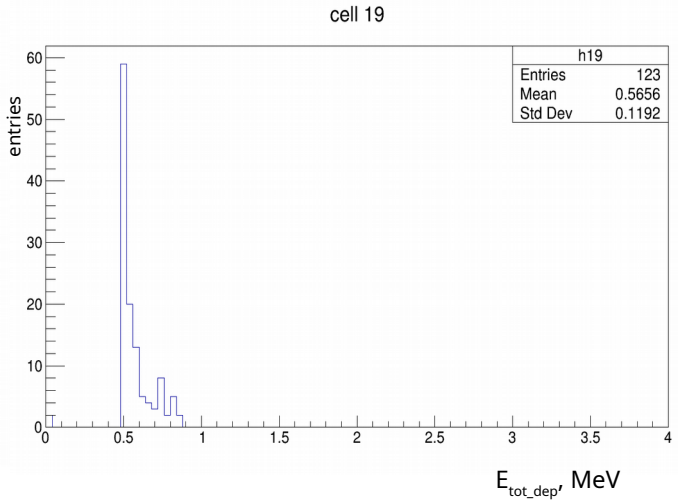


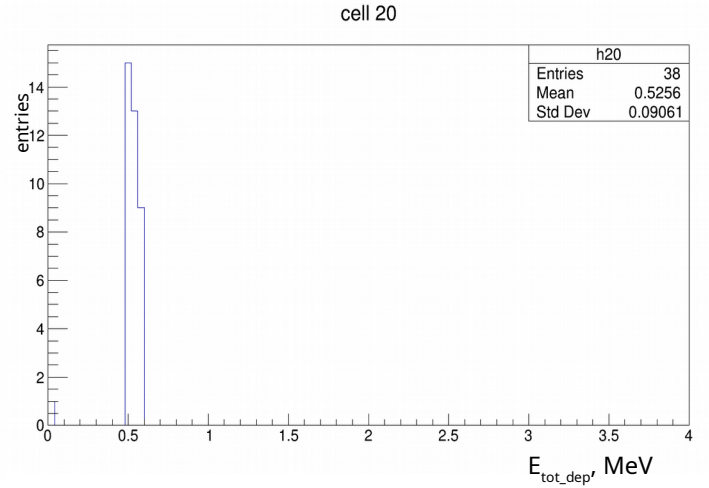
cell 17

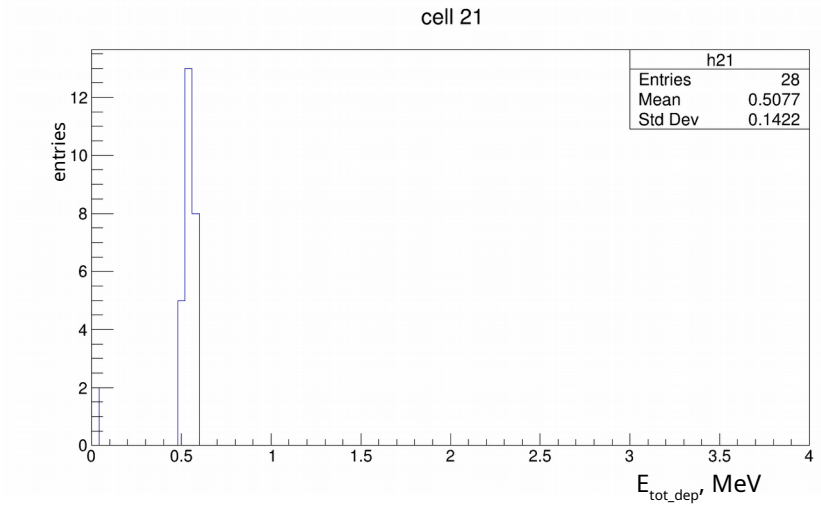


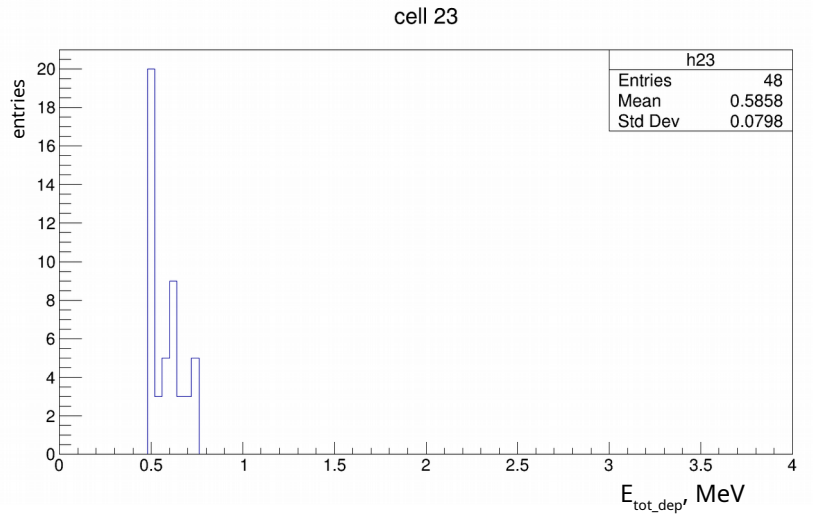
Total deposited energy distribution in cell











Total deposited energy distribution