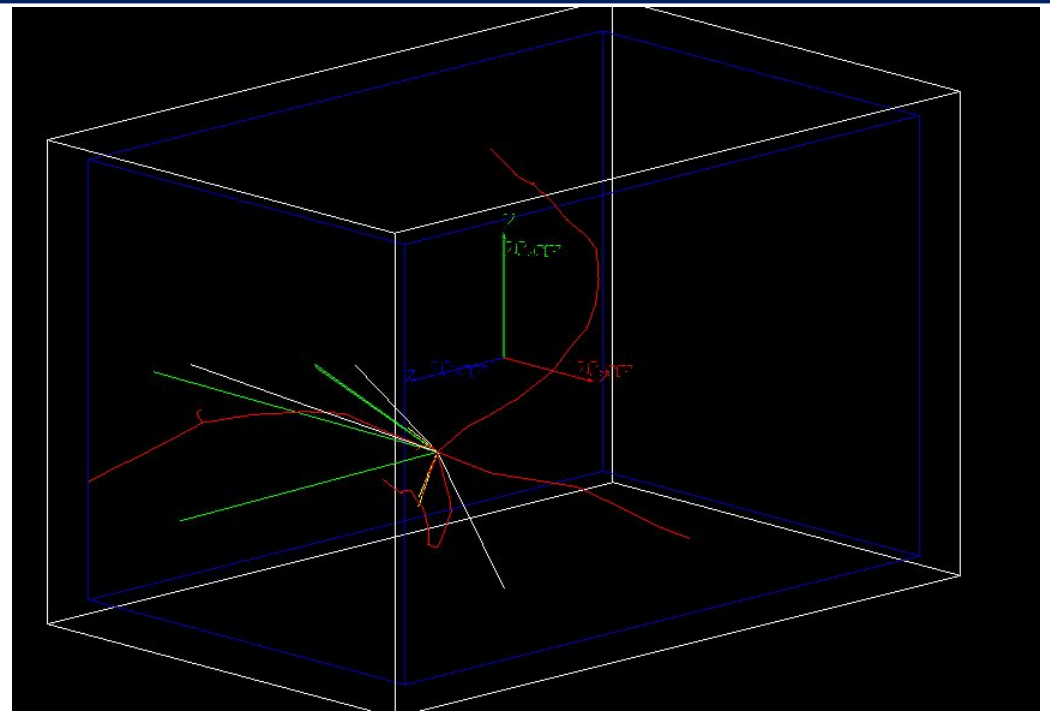
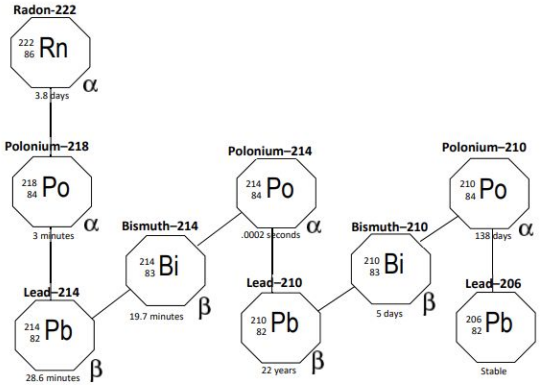
222Rn deposit in 'LIME'
0.9 atm
19/09/2024

Introduction





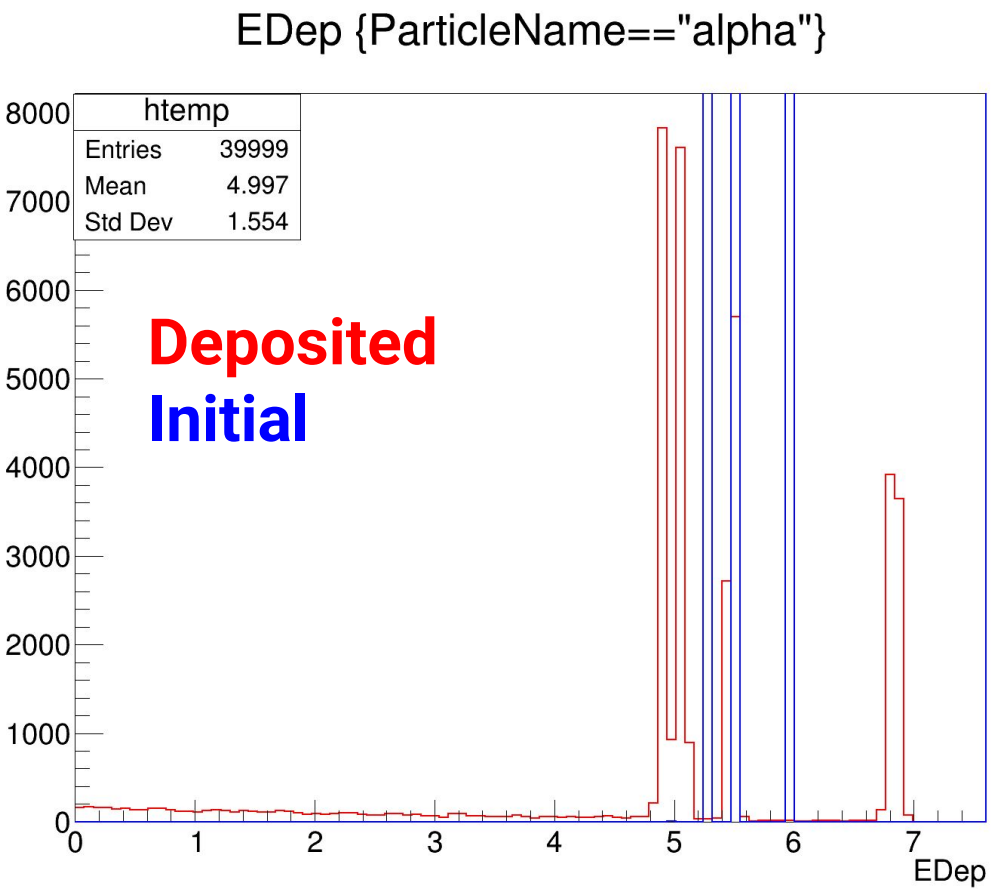
- 222Rn source is randomly generated inside the gas box **35x35x55cm**
- All the decay products are generated in that position **NO neg/pos ion dirft**
- 10k dacays
- the isotopes can be supposed in secular equilibrium **but**
  - **210Po**(138 days) maybe in equilibrium but with a concentration 36 times higher than 222Rn
  - **210Pb**(22.3 years) for sure not in equilibrium (concentration in equilibrium 2140 time larger than Rn
- In this case, **everything is supposed to be in secular equilibrium** so take it with a grain of salt

Main Differences:

- **Neglecting all decays with time constant >1y**
- **Energy is deposited by the primary no secondary is created (high secondary energy cut)**
- **Electron spectra contains photo produced e-**

Product of the decay
-ALPHA-

Energy deposit by the particles from decay processes (no secondaries) with Initial energy greater than 1keV



Loss in binding energy:

7.7-6.8 = **0.9MeV**

6-5.5 = **0.5MeV**

5.5-5.1 = **0.4MeV**

5.3-4.9 = **0.4MeV**

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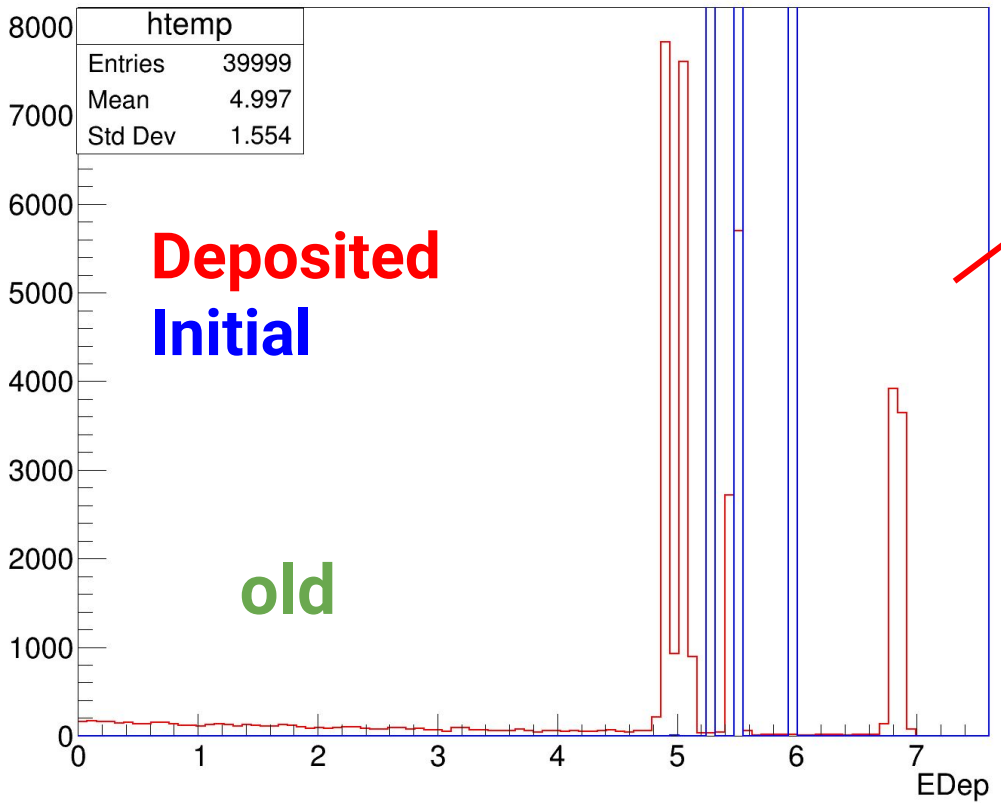

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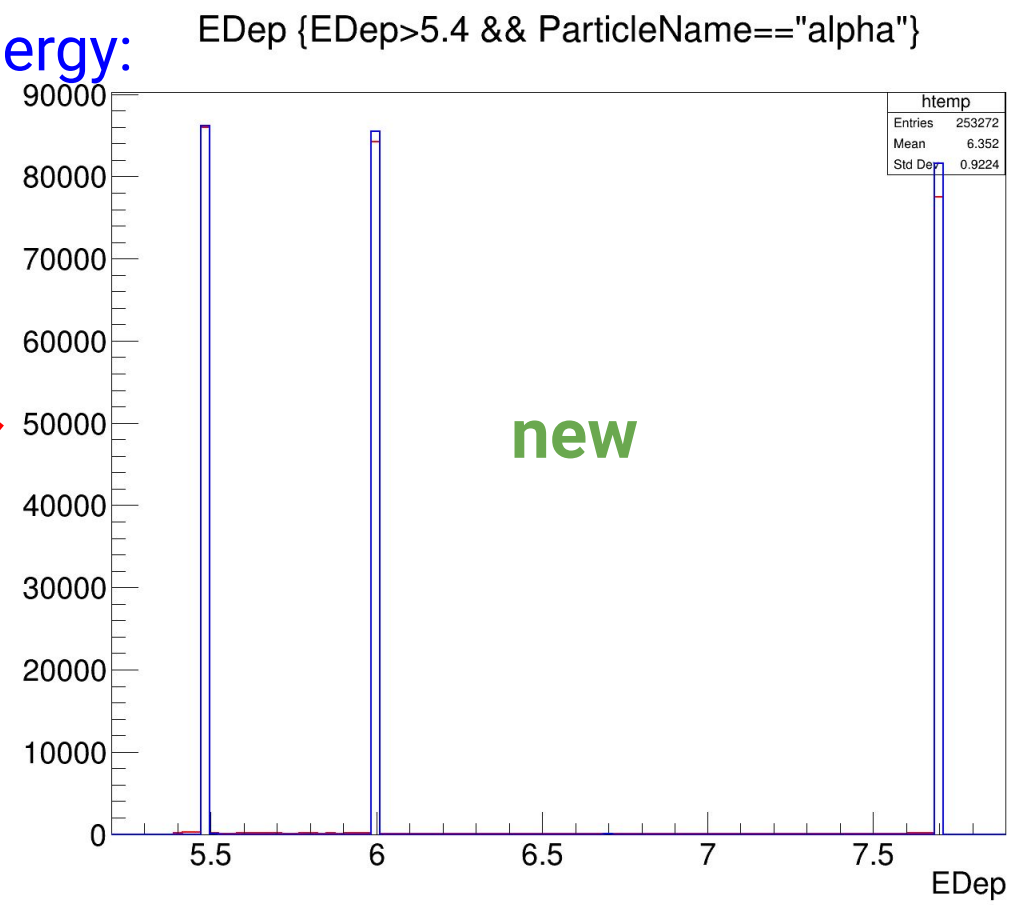
FORGET!!
not physics!



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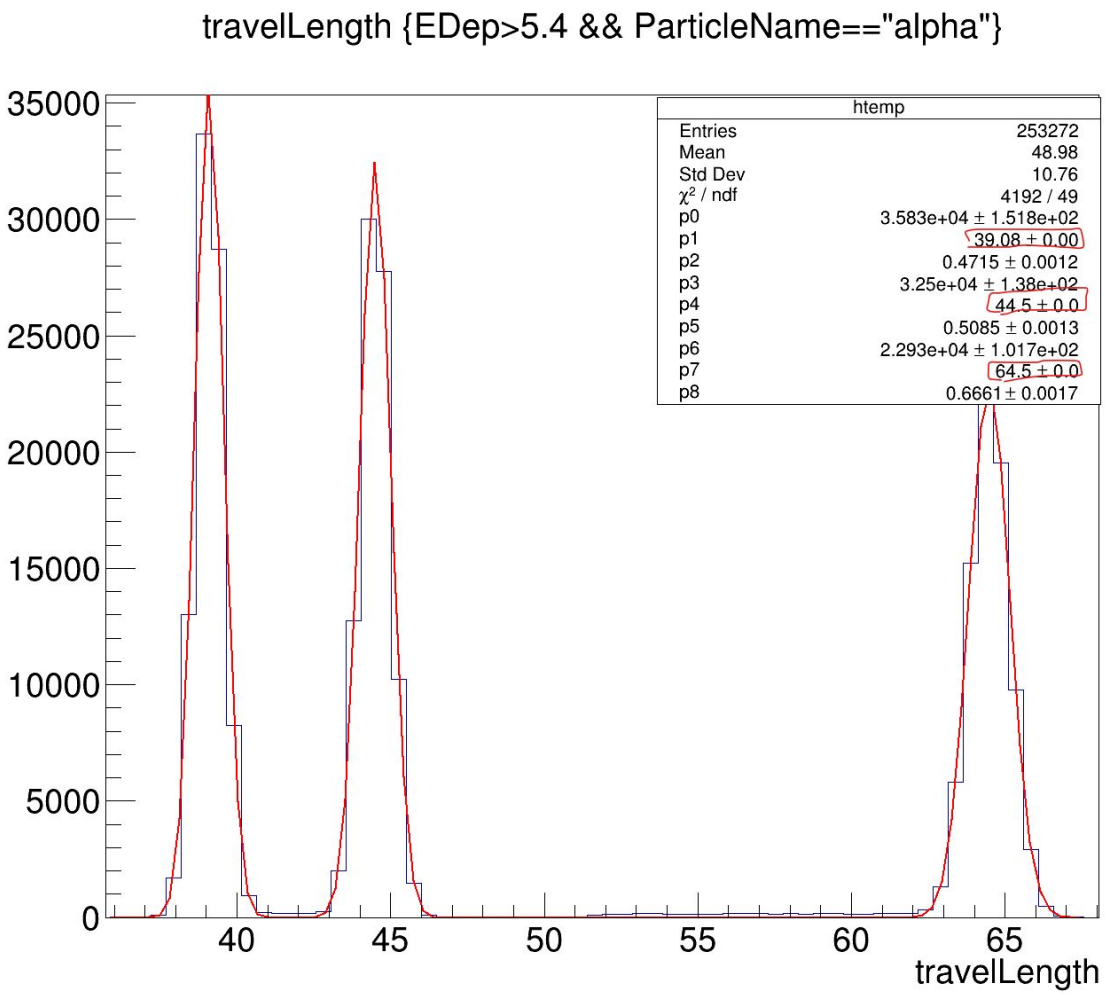
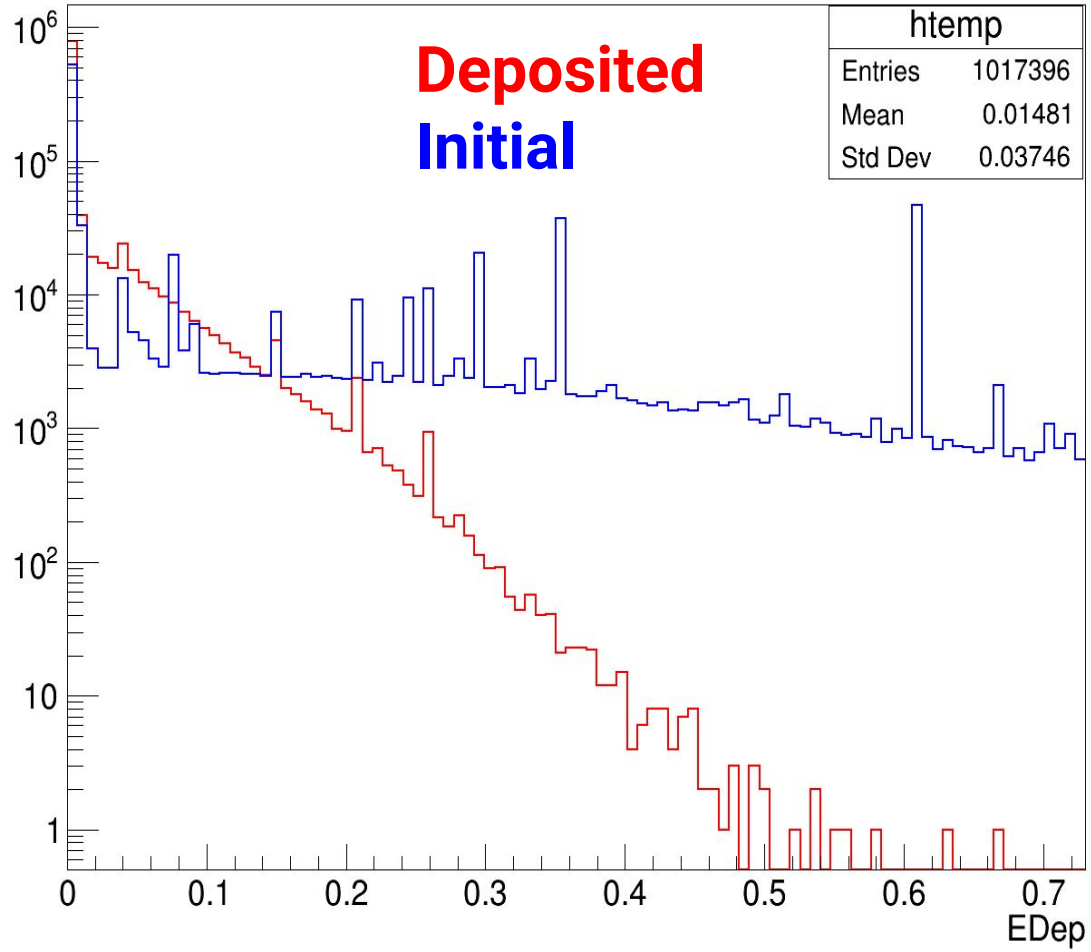


measured range in **mm**:

- 64.5
- 44.5
- 39.1

Product of the decay -electrons-

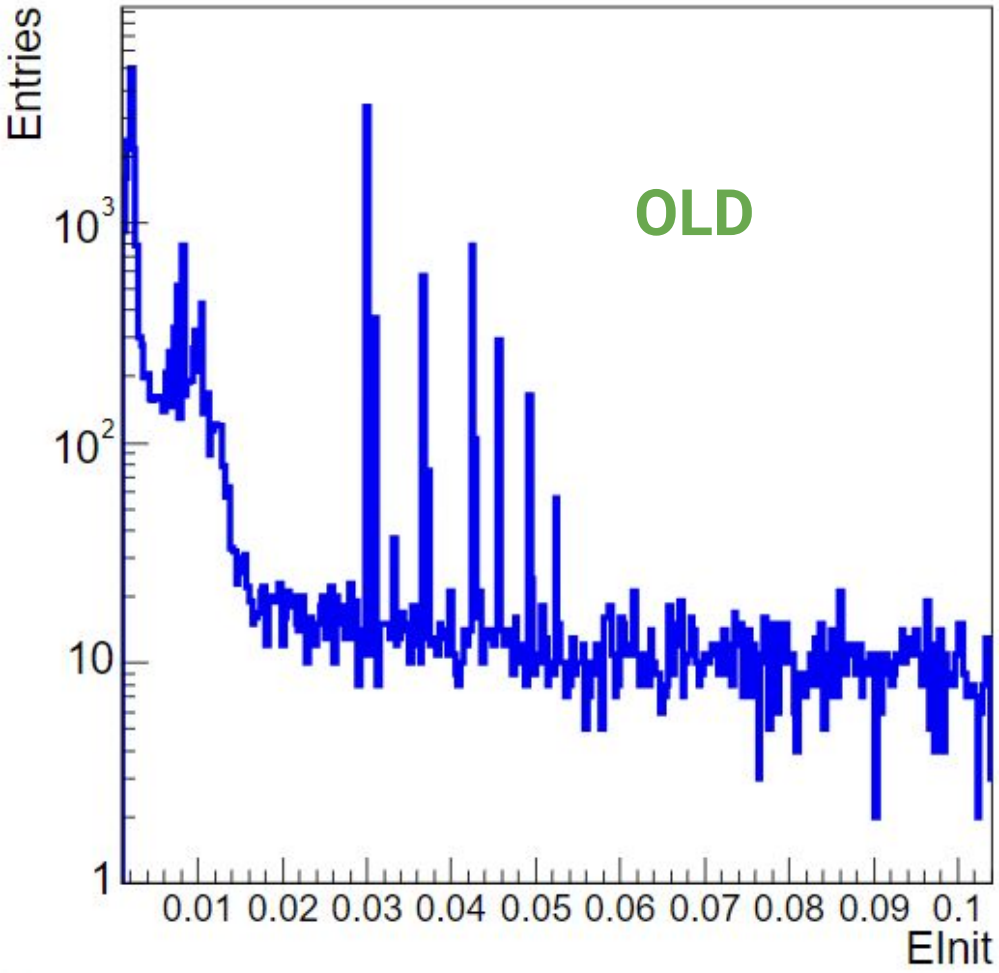
Energy deposit by the particles from decay processes (no secondaries) with Initial energy greater than 1keV

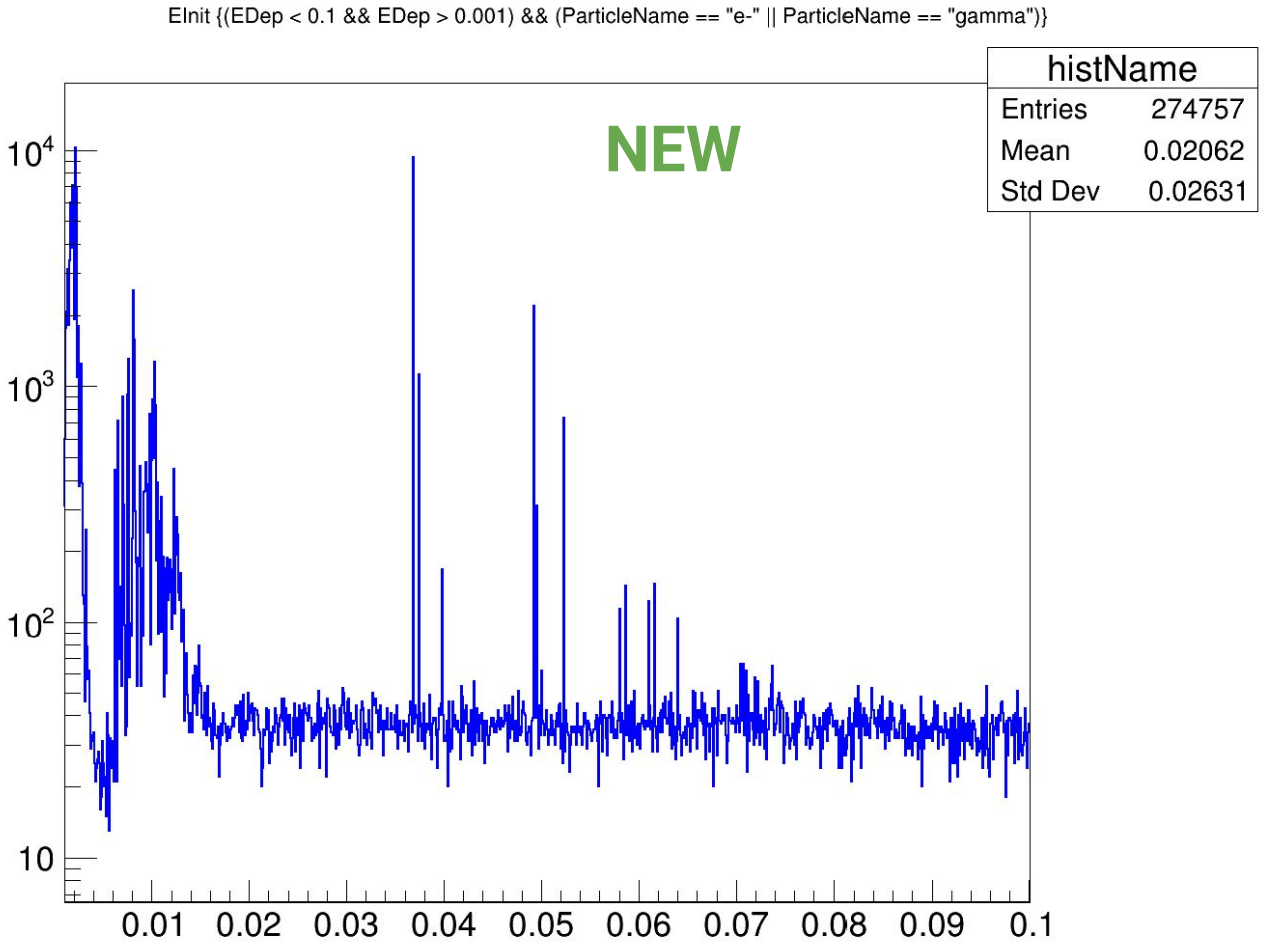


New: this contains also the e- produced by the photons

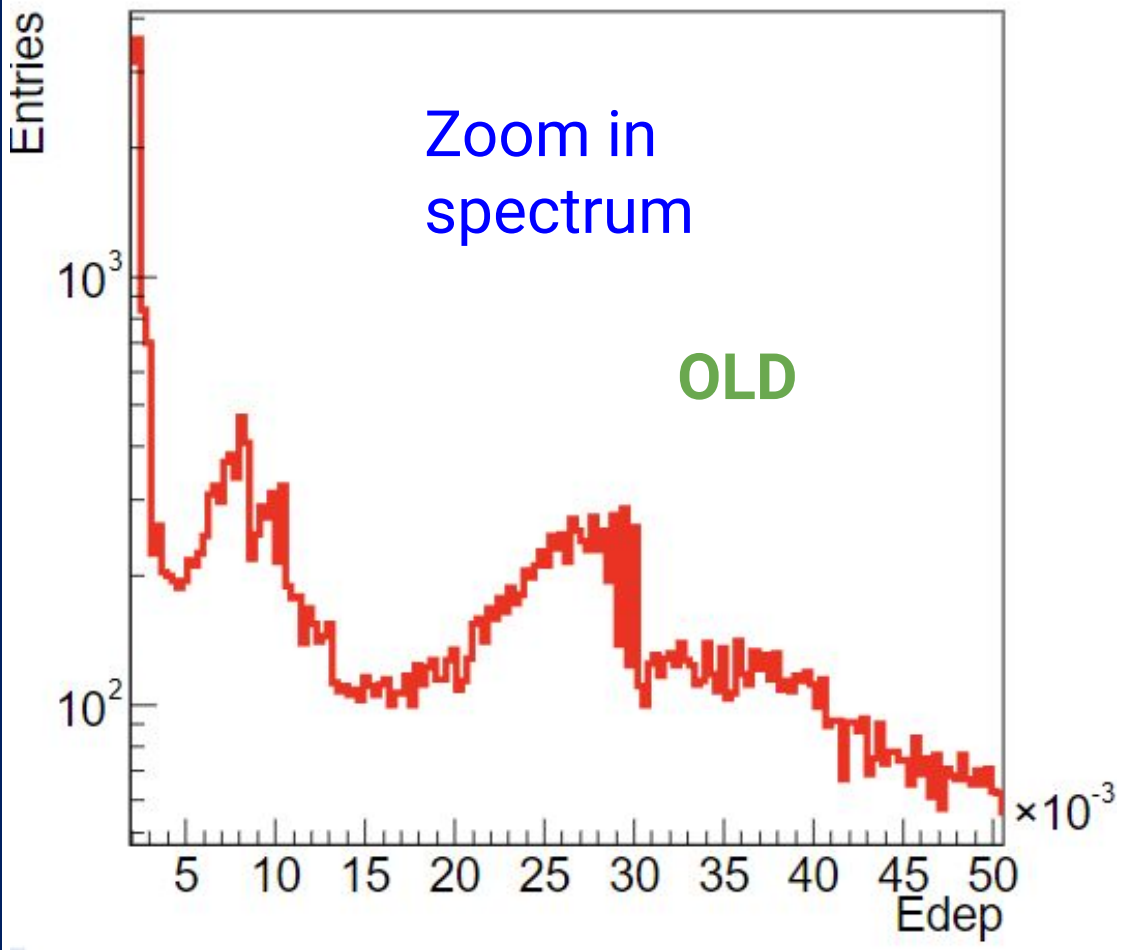
Product of the decay -electrons-

Initial energies → less lines in the 30-50keV region, peak at around 10keV stays



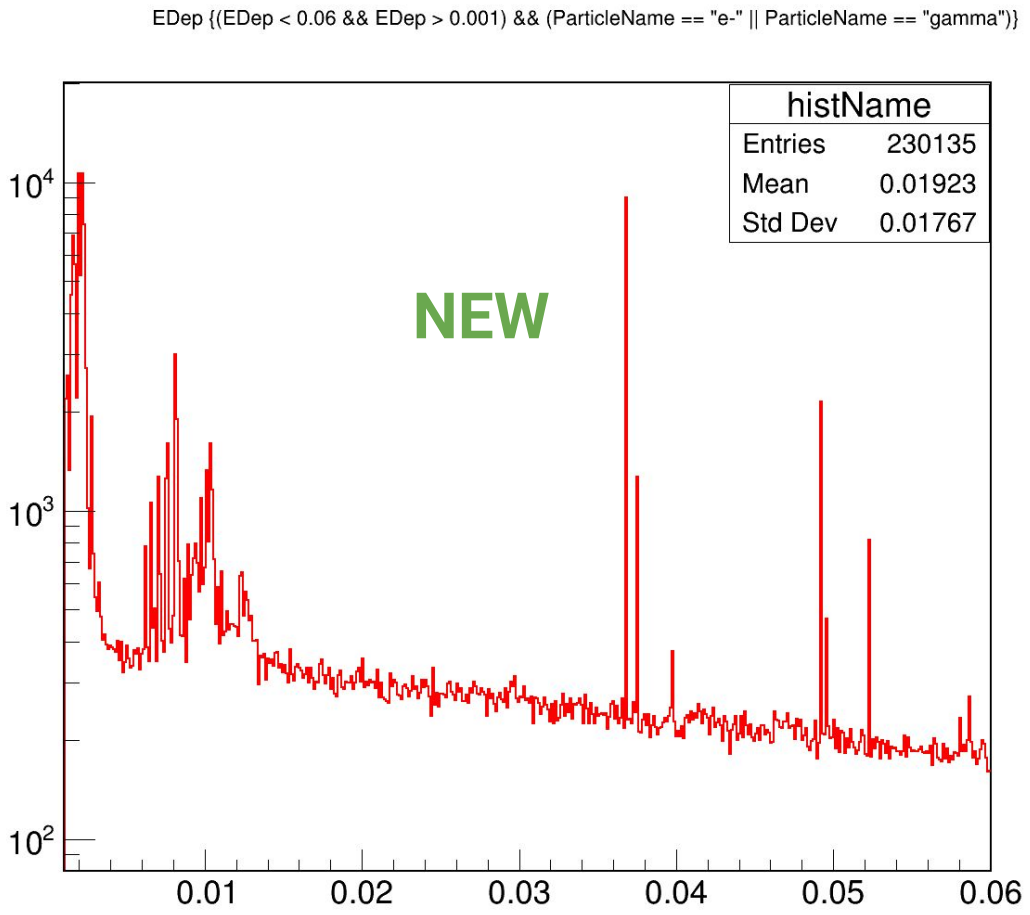


e- peak(s)



In Deposited energy 2 peaks

- ≃8keV + ≃27keV



In Deposited energy 2 peaks

- ≃10keV + lines at 35 and 50 keV