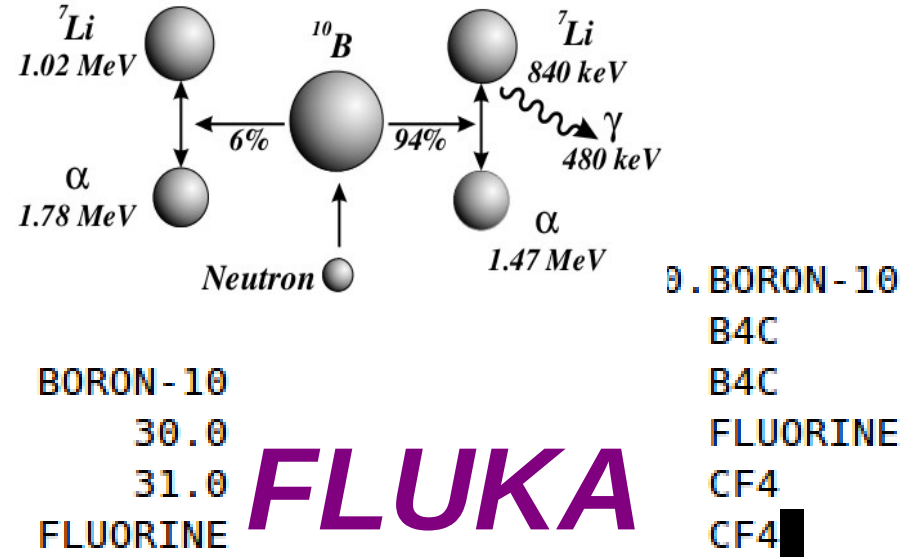


# FLUKA vs GEANT4 (materials/compounds)



**FLUKA**

Material: Borate Carbide density: 2.520 g/cm<sup>3</sup> RadL: 18.746 cm Nucl.Int.Length: 30.372 cm lmean: 77.126 eV

- > Element: Carbon (C) Z = 6.0 N = 12.0 A = 12.01 g/mole
- > Isotope: C12 Z = 6 N = 12 A = 12.00 g/mole abundance: 98.93 %
- > Isotope: C13 Z = 6 N = 13 A = 13.00 g/mole abundance: 1.07 %
- ElmMassFraction: 23.07 % ElmAbundance 20.00 %

---> Element: Boron-10 (B10) Z = 5.0 N = 10.0 A = 10.01 g/mole

- > Isotope: B10 Z = 5 N = 10 A = 10.01 g/mole abundance: 100.00 %
- ElmMassFraction: 76.93 % ElmAbundance 80.00 %

Material: TetraFluoroMethane density: 3.656 mg/cm<sup>3</sup> RadL: 95.308 m Nucl.Int.Length: 245.730 m lmean: 105.352 eV temperature: 300.00 K pressure: 1.00 atm

- > Element: Carbon (C) Z = 6.0 N = 12.0 A = 12.01 g/mole
- > Isotope: C12 Z = 6 N = 12 A = 12.00 g/mole abundance: 98.93 %
- > Isotope: C13 Z = 6 N = 13 A = 13.00 g/mole abundance: 1.07 %
- ElmMassFraction: 24.02 % ElmAbundance 33.33 %

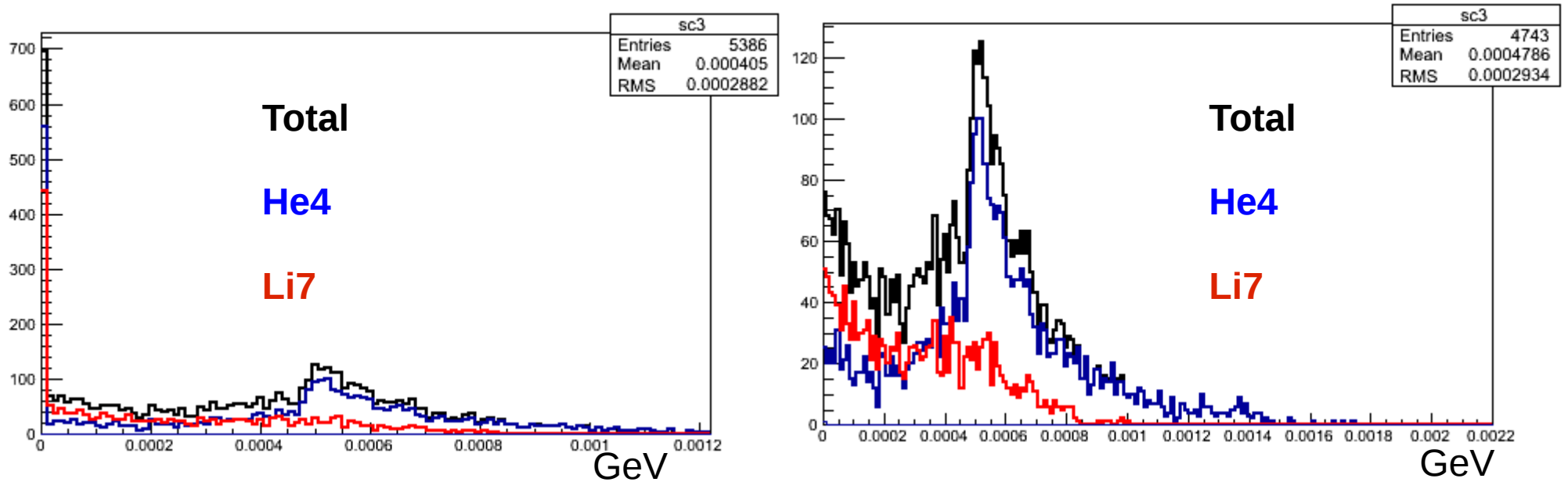
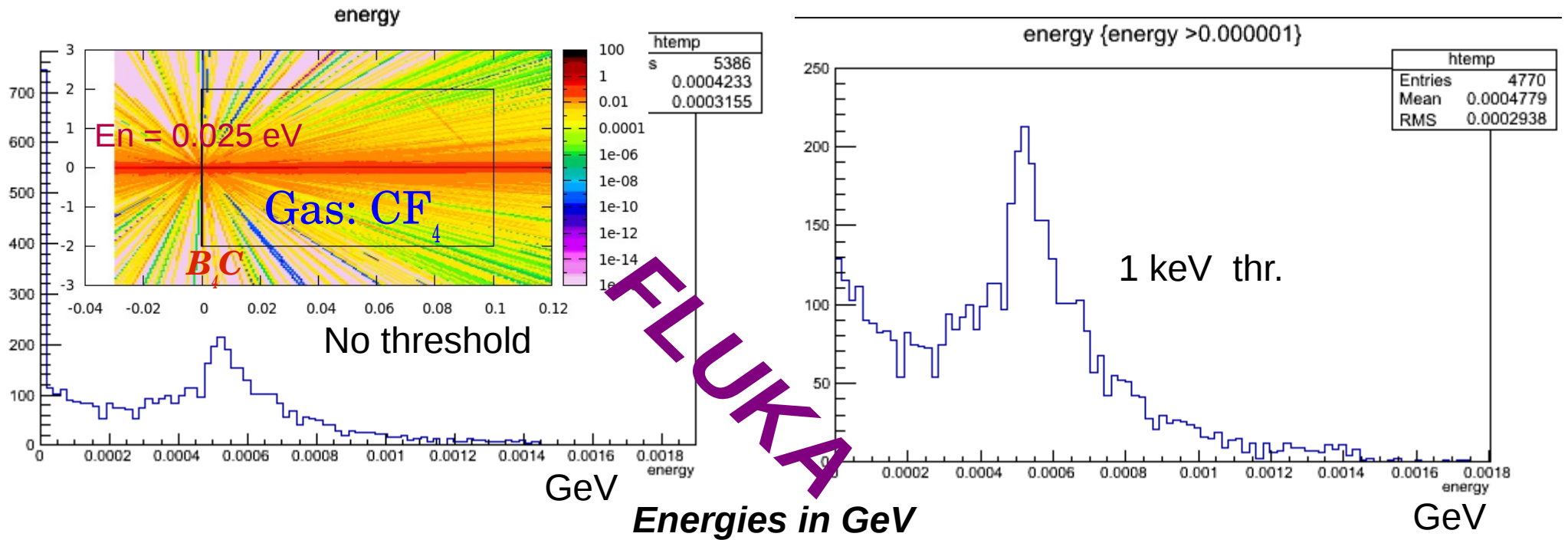
---> Element: Fluorine (F) Z = 9.0 N = 19.0 A = 19.00 g/mole

- > Isotope: F19 Z = 9 N = 19 A = 19.00 g/mole abundance: 100.00 %
- ElmMassFraction: 75.98 % ElmAbundance 66.67 %

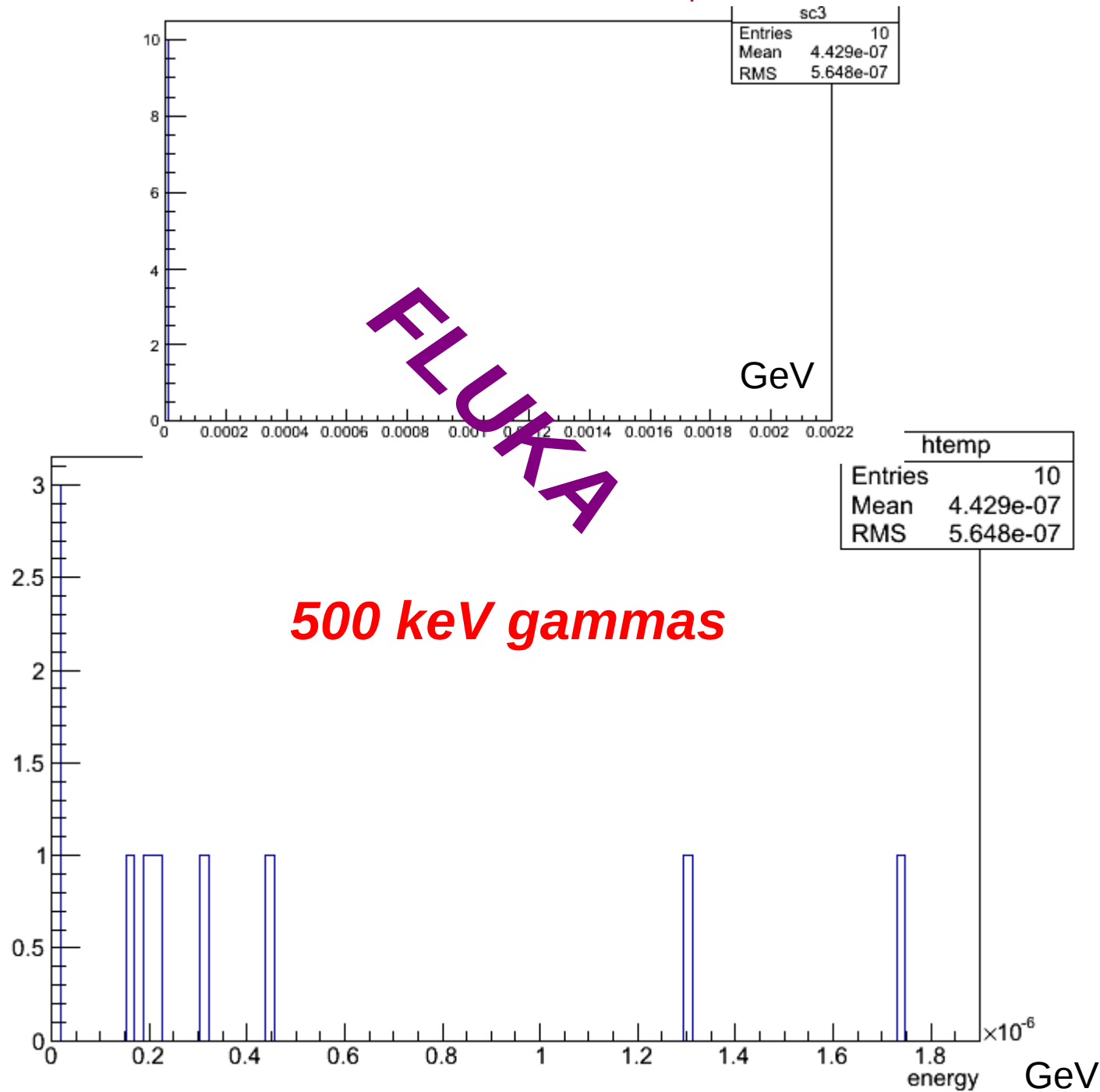
**Geant4**

G4EmLivermorePhysics

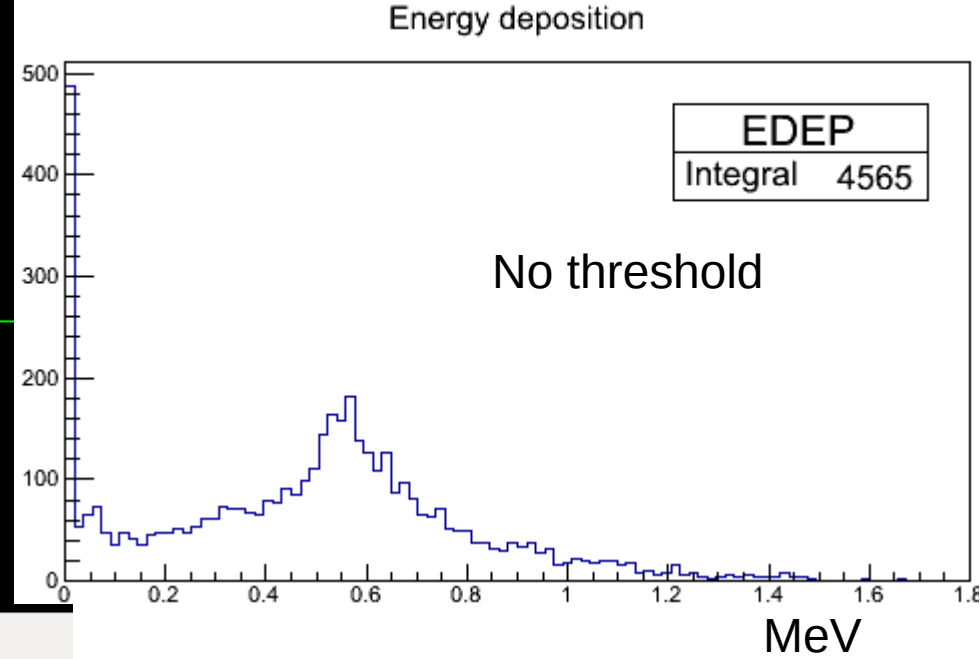
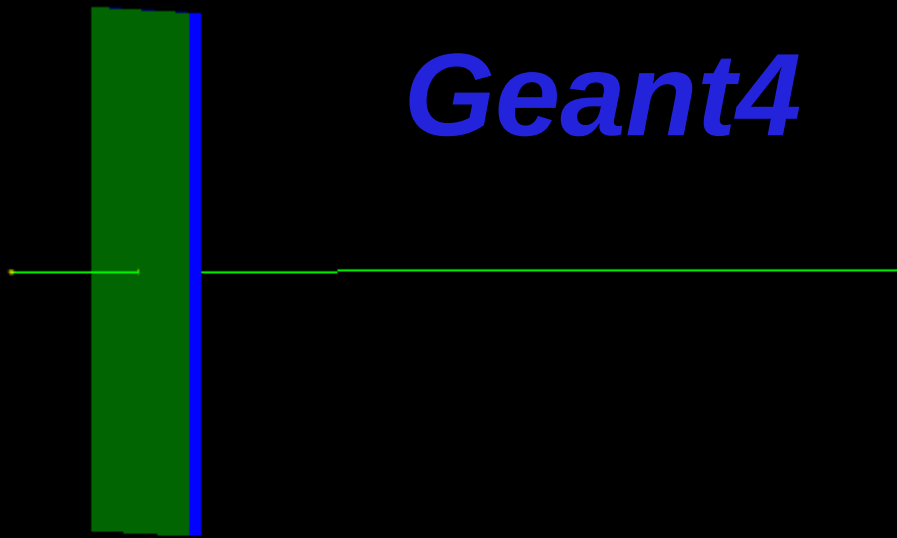
# Event-by-Event E deposition spectra: perpendicular beam with $E_n = 0.025$ eV, $2\mu\text{m B}_4\text{C}$ , $1\text{E}5$ primaries



# Event-by-Event E deposition spectra: perpendicular beam with $E_\gamma = 500$ keV, $2\mu\text{m B}_4\text{C}$ , $1\text{E}5$ primaries

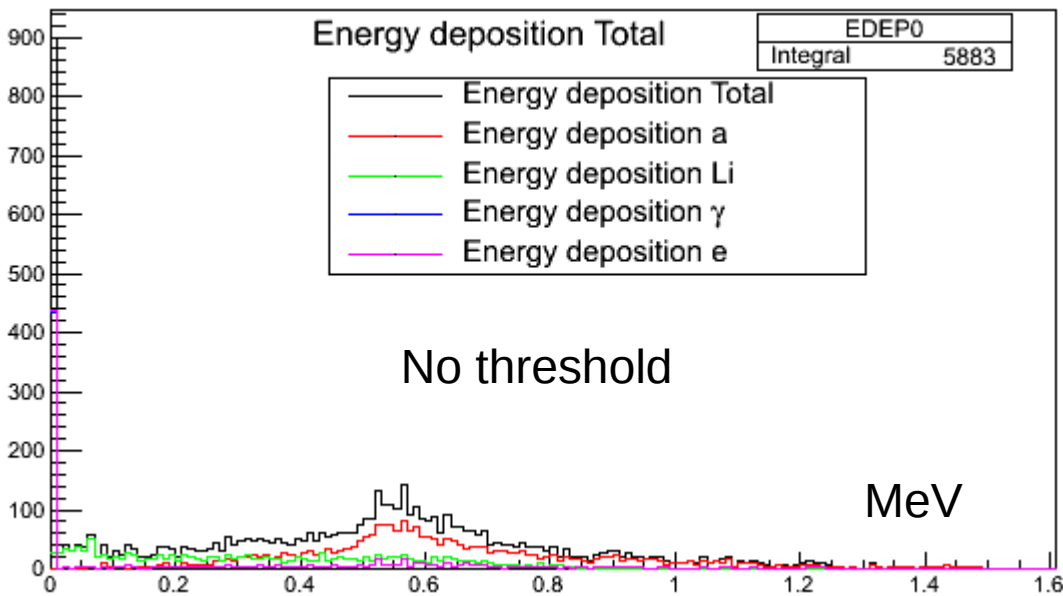
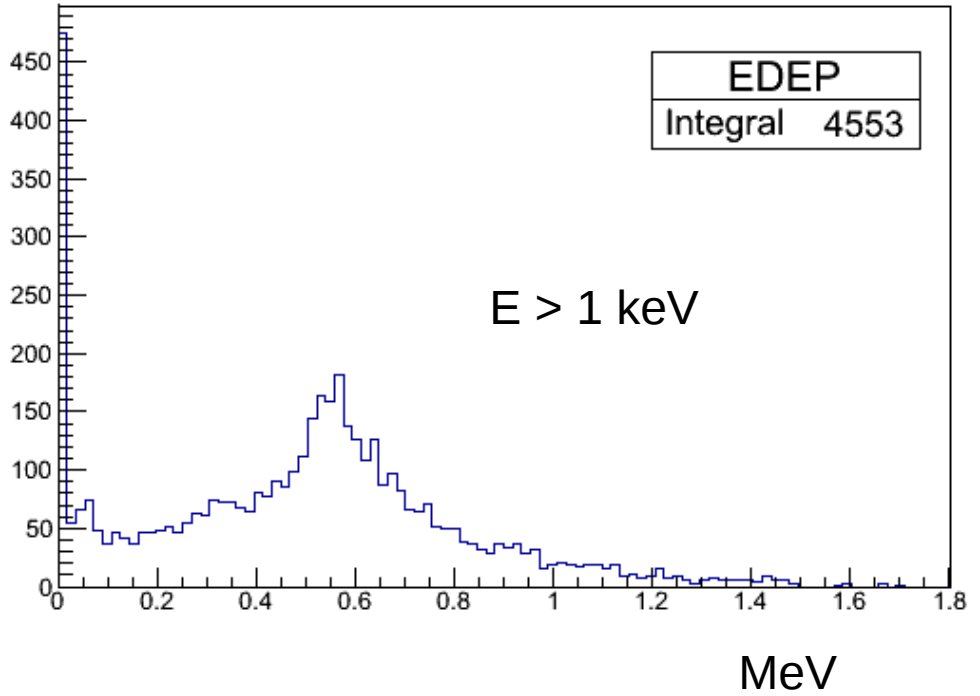


# Geant4



## Output

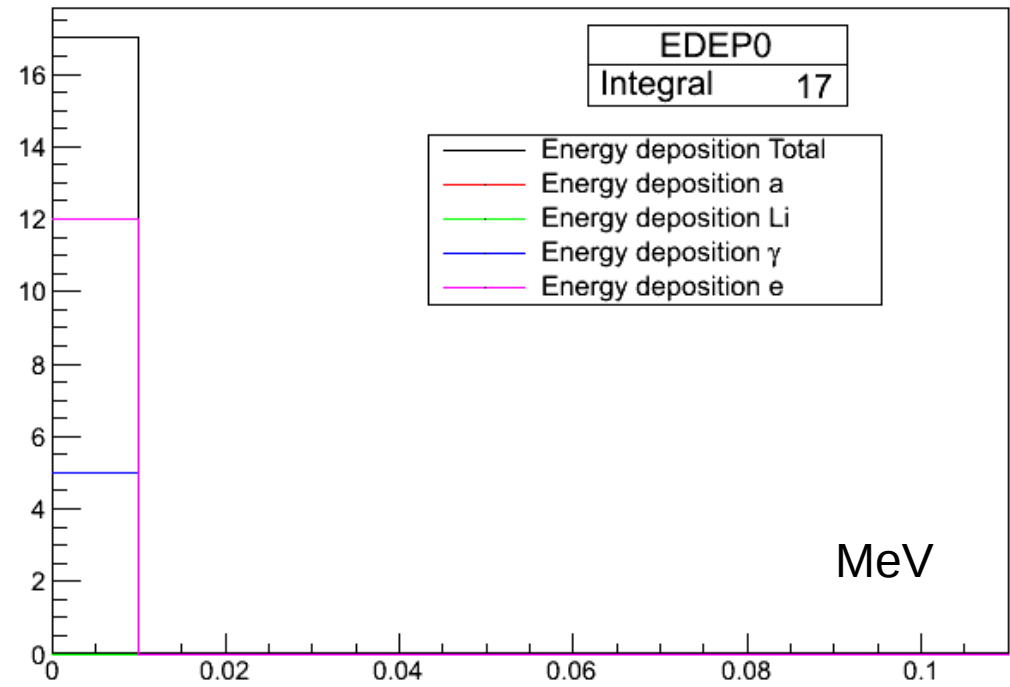
Step#	X(mm)	Y(mm)	Z(mm)	KinE(MeV)	dE(MeV)	StepLeng	TrackLeng	NextVo
0	0	0	-10	2.5e-08	0	0	0	World initStep
1	0	0	-0.002	2.5e-08	0	10	10	B4C Transportation
2	0	0	0	2.5e-08	0	0.002	10	CF4 Transportation
3	0	0	1	2.5e-08	0	1	11	World Transportation
4	0	0	2e+03	2.5e-08	0	2e+03	2.01e+03	OutOfWorld Transportation



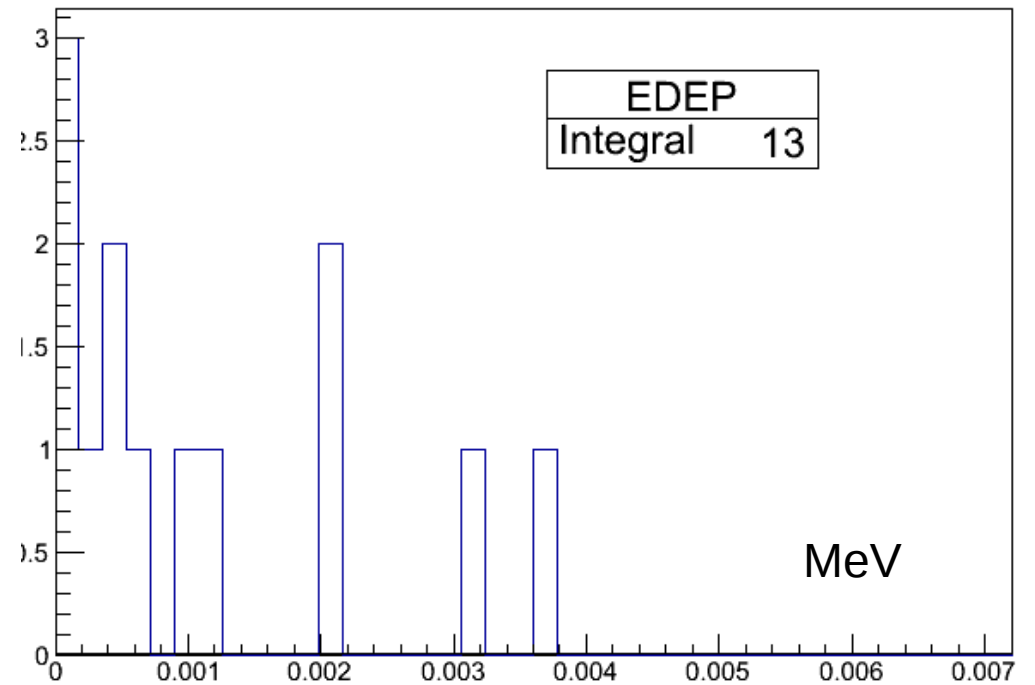
# Geant4

**500 keV gammas**

Energy deposition Total



Energy deposition



$$E_{thr} > 10 \text{ keV}$$

