LUXE

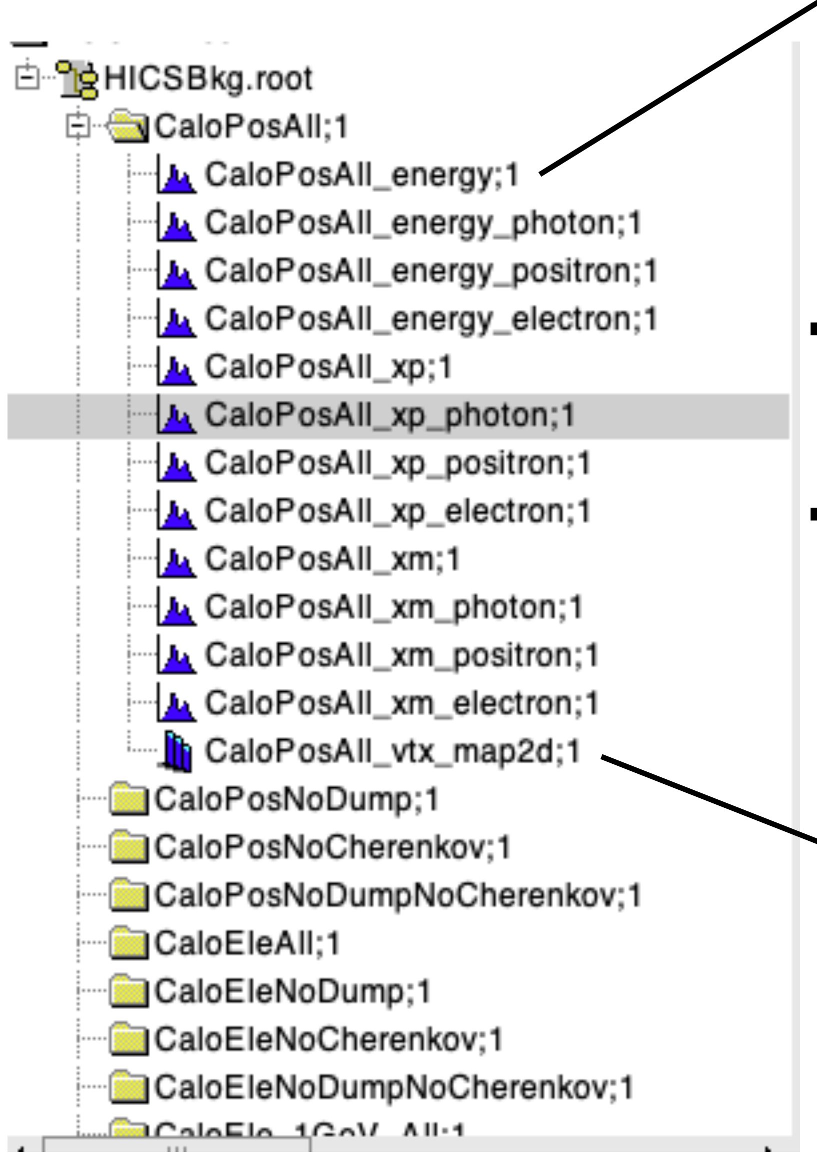
UPDATE

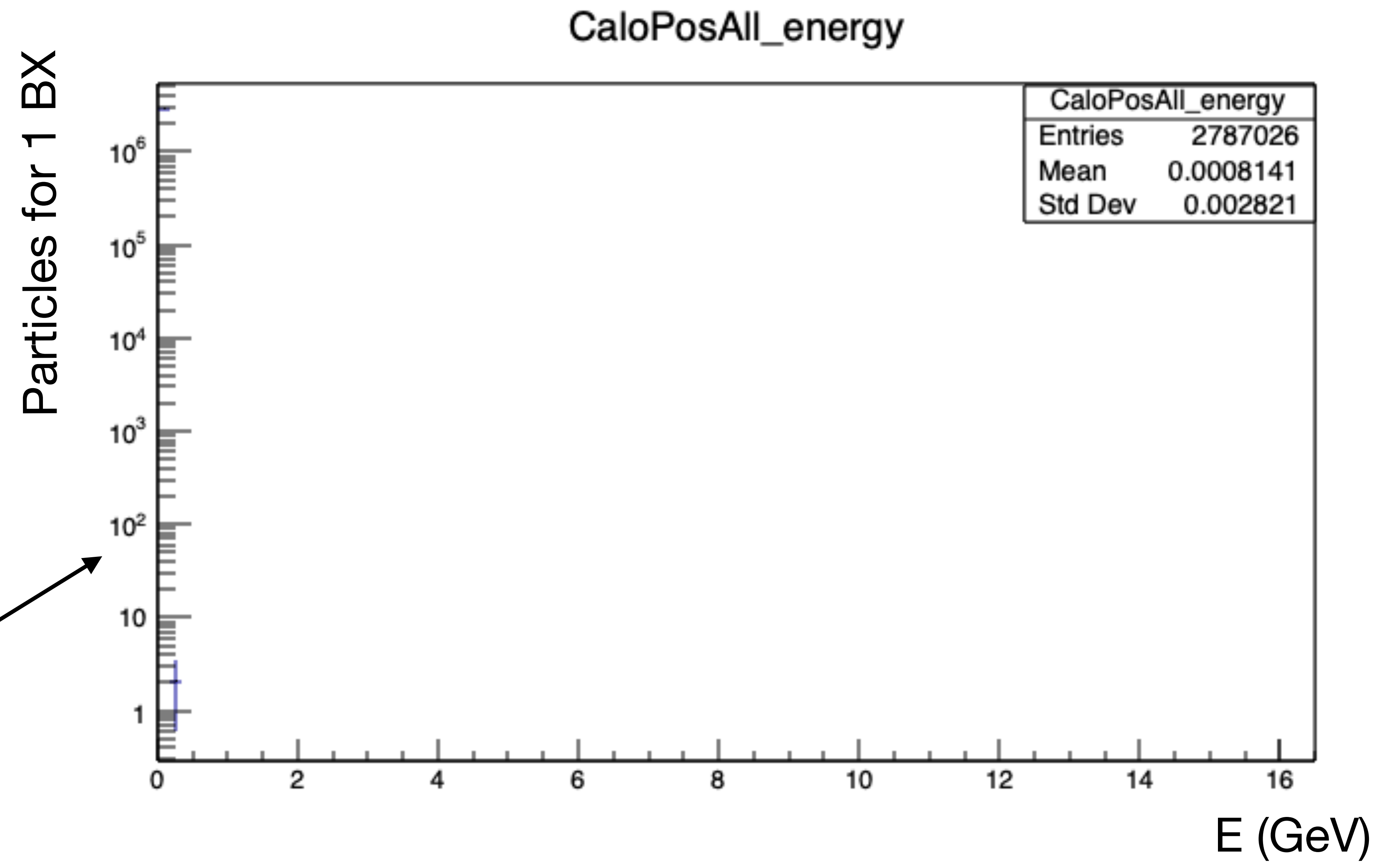
LOUIS HELARY - DESY

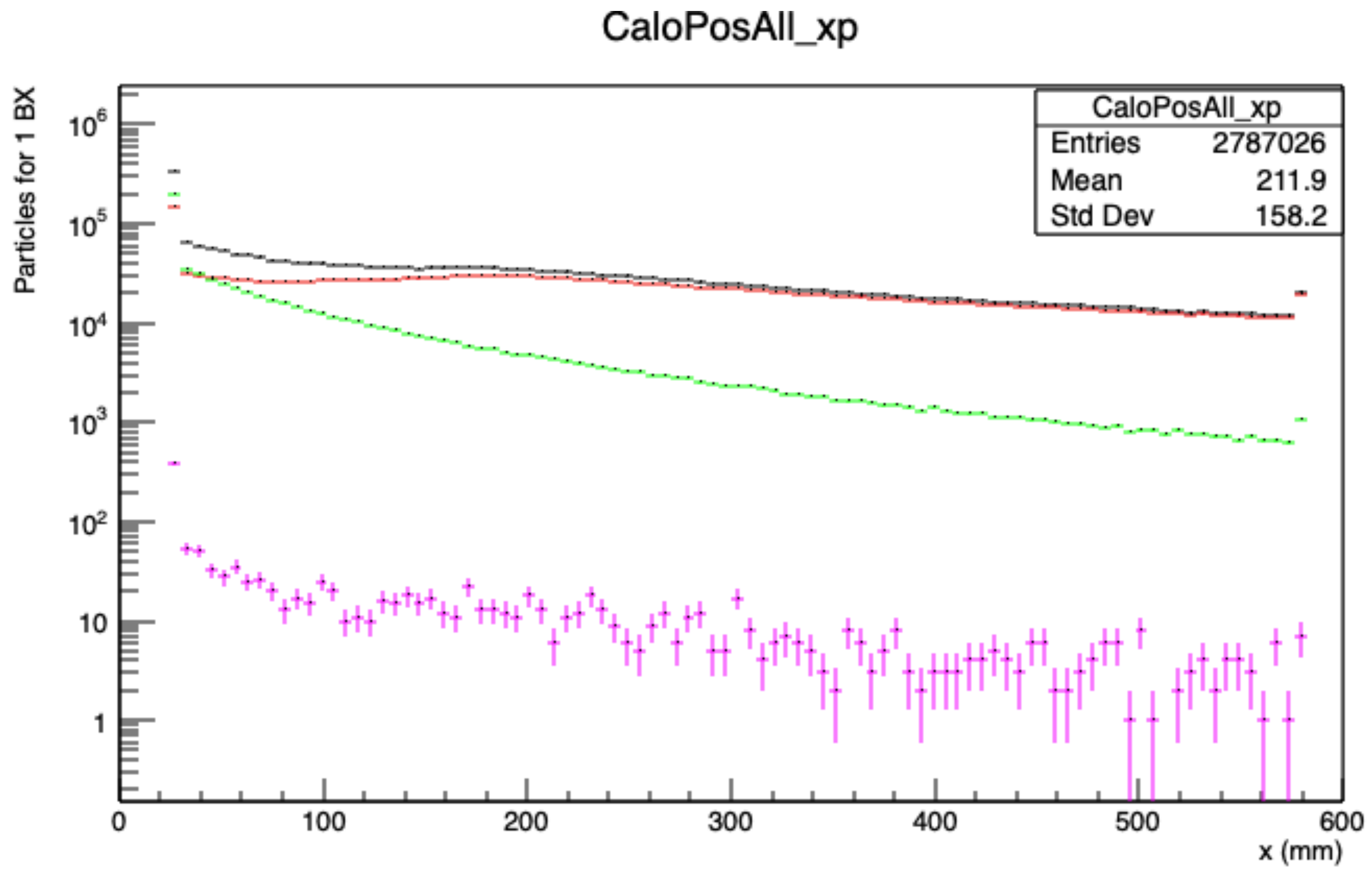
DESY.

01/12/2020

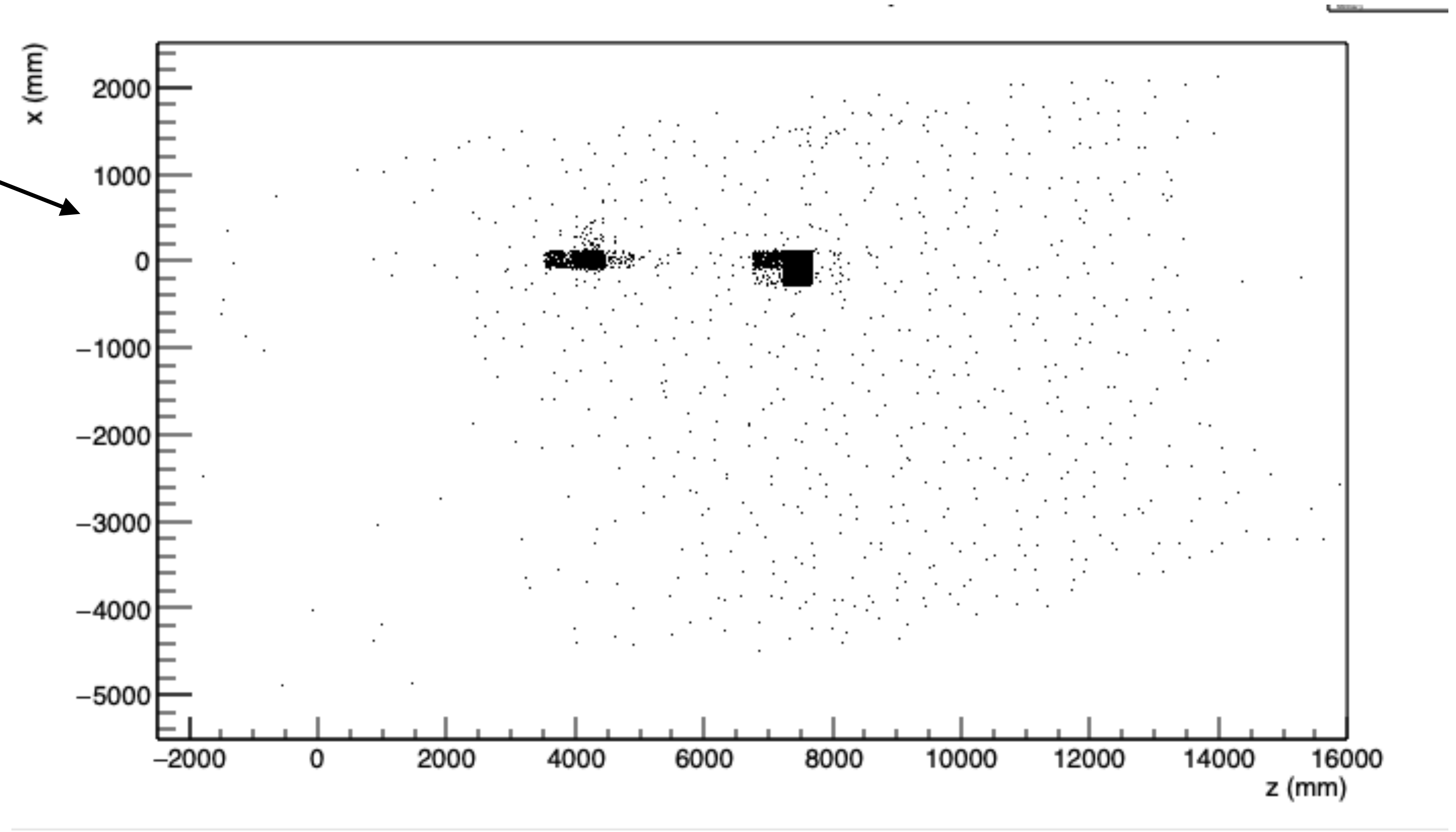
HICS setup e-bkg only





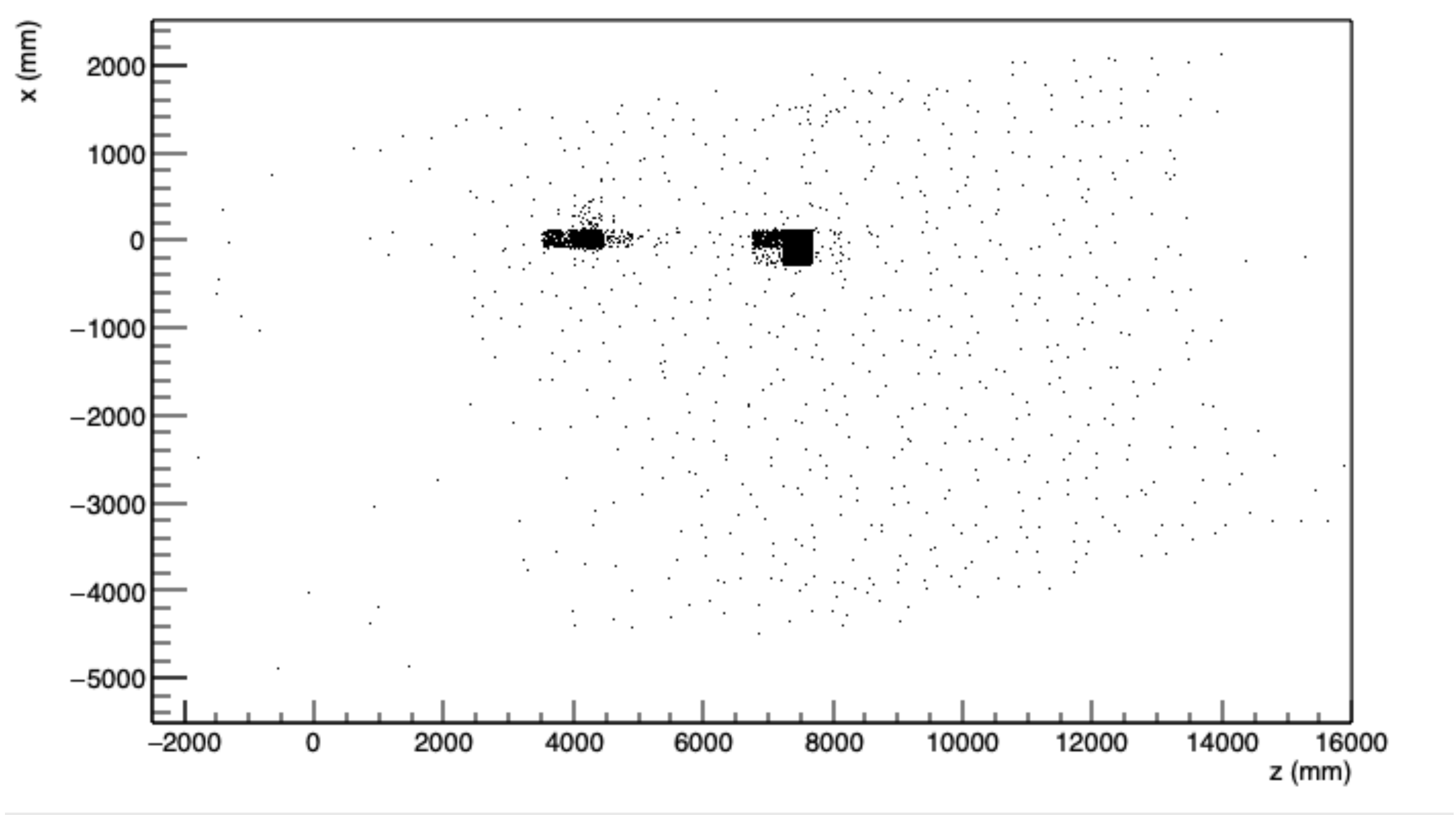


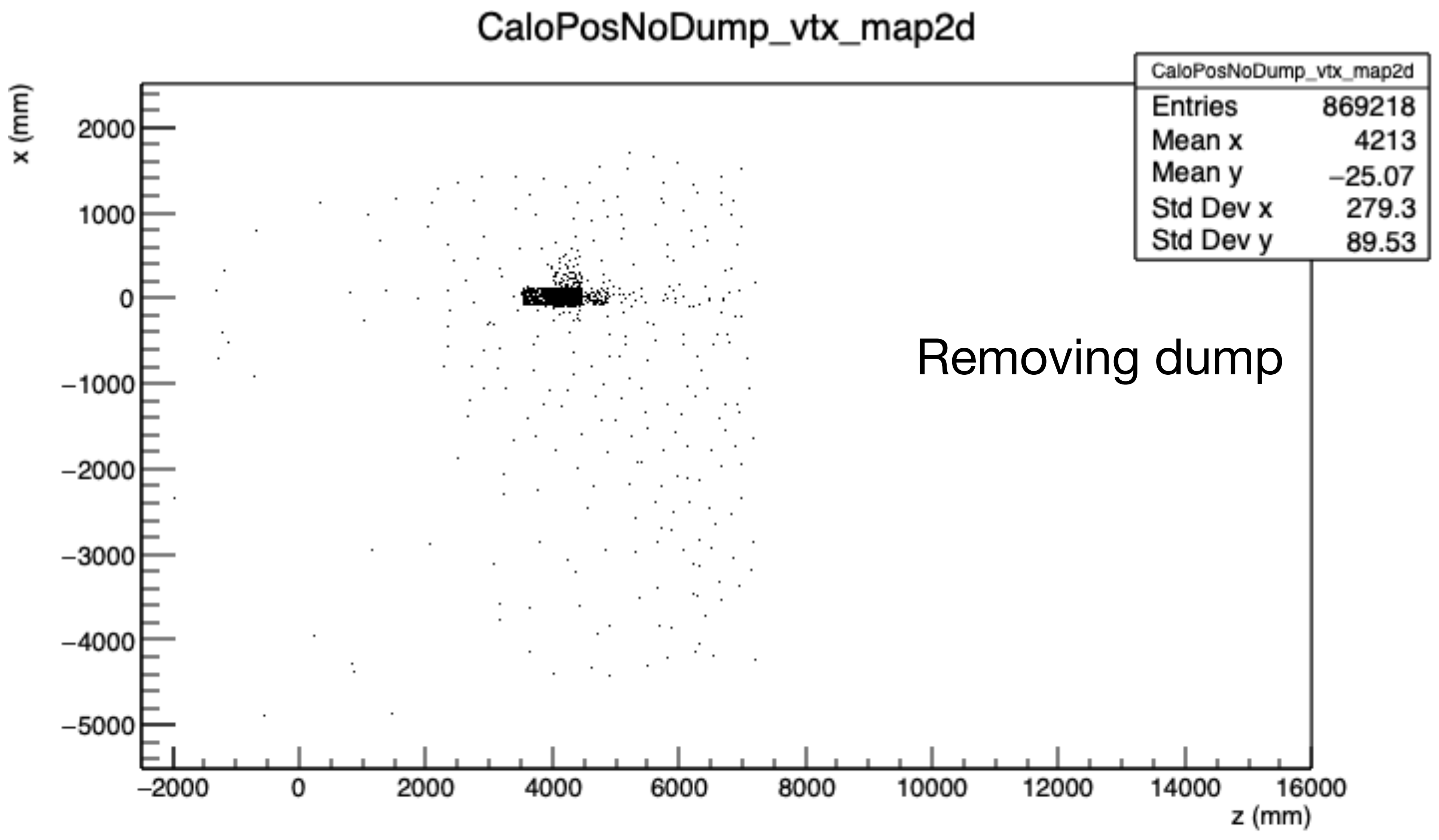
All
photons
electrons
positrons

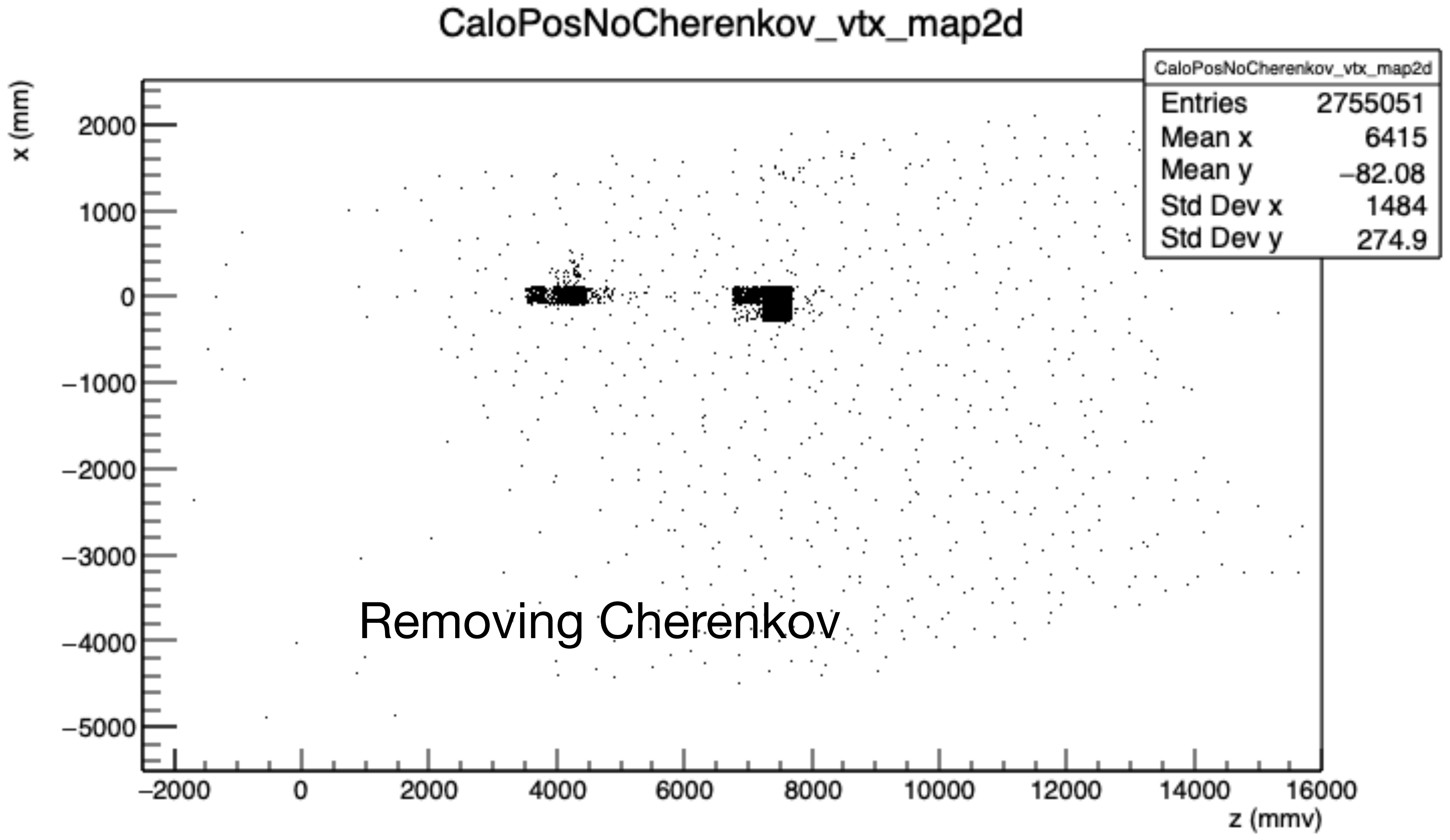


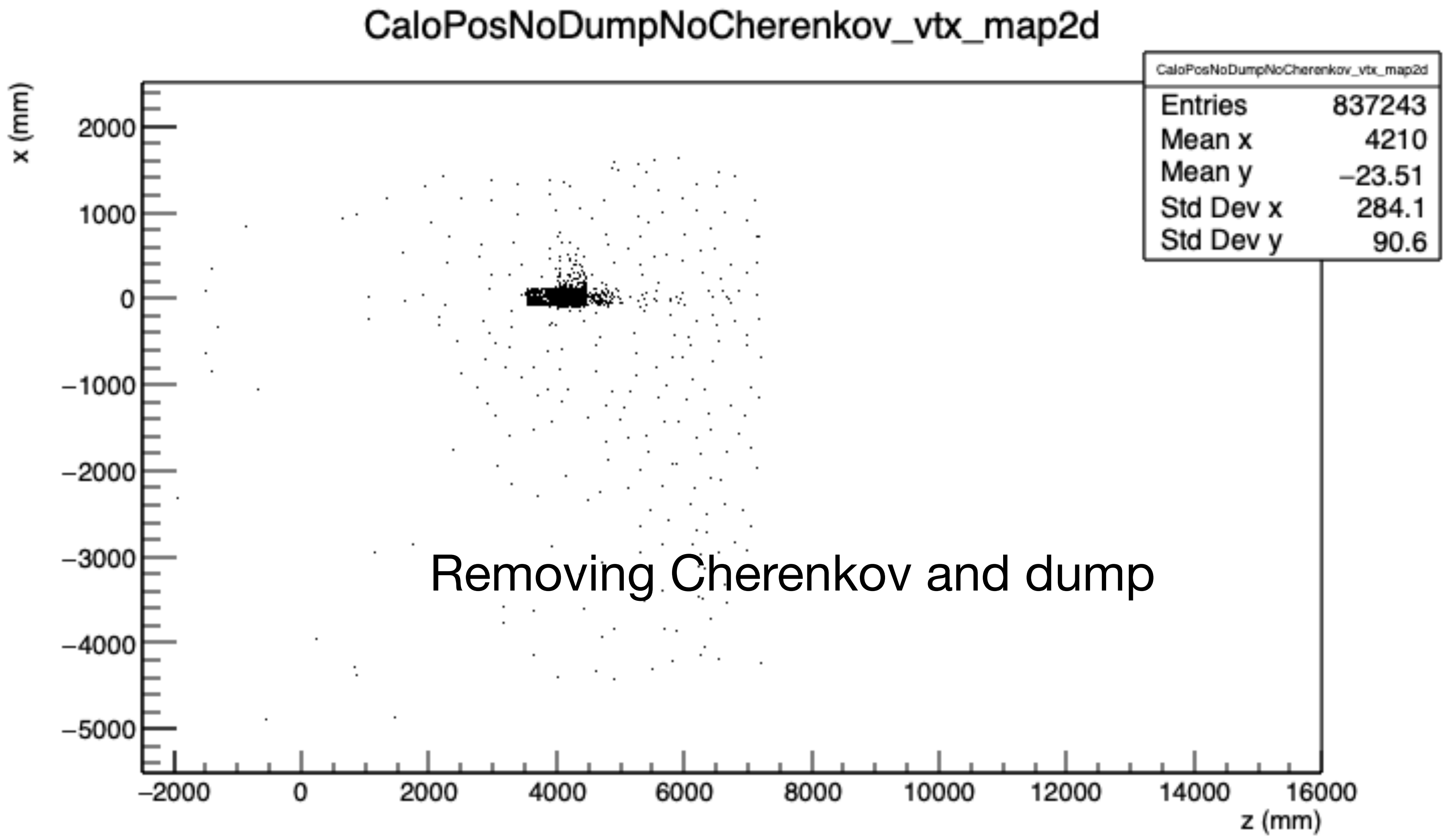
HICS setup e-bkg only

All events

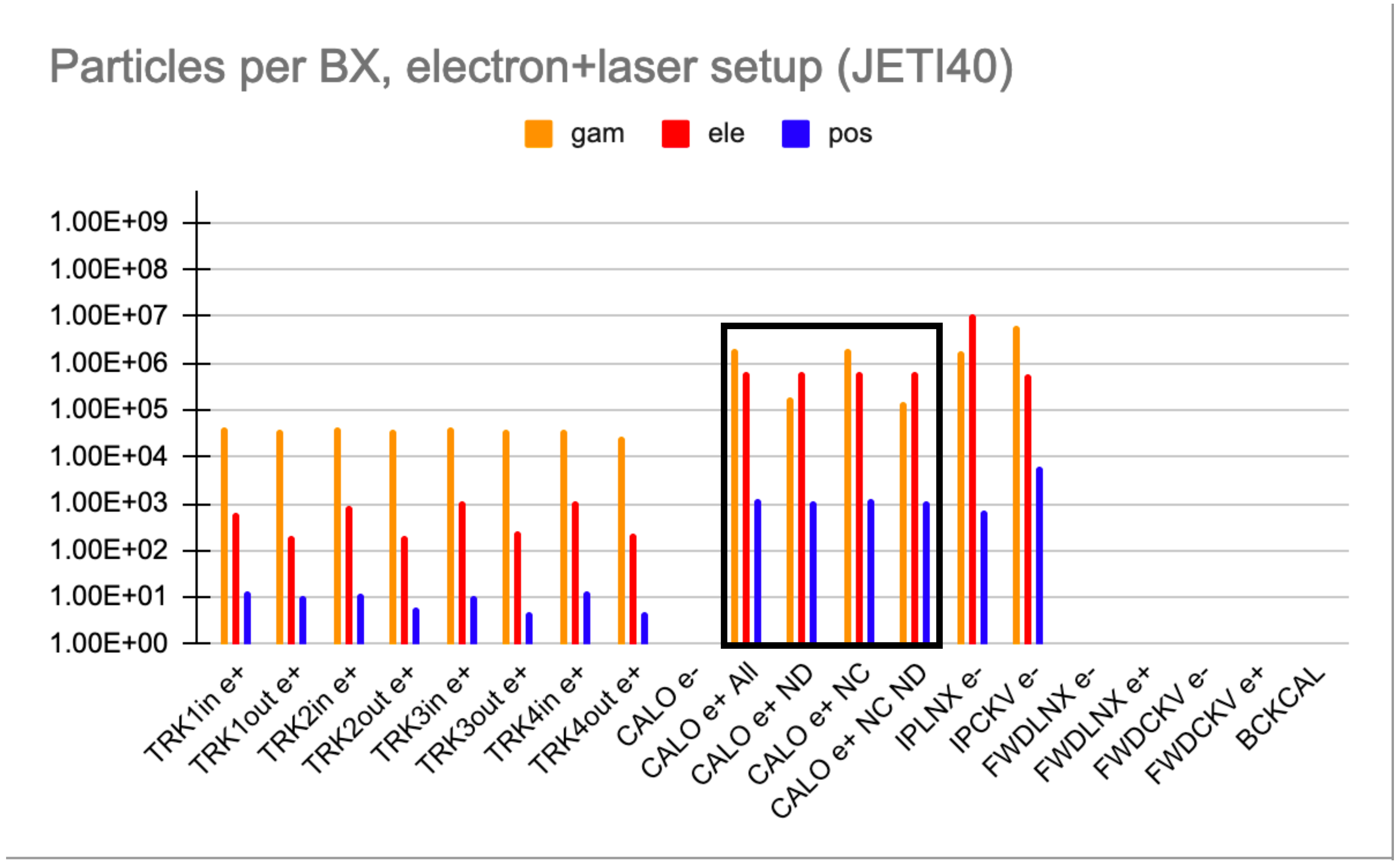


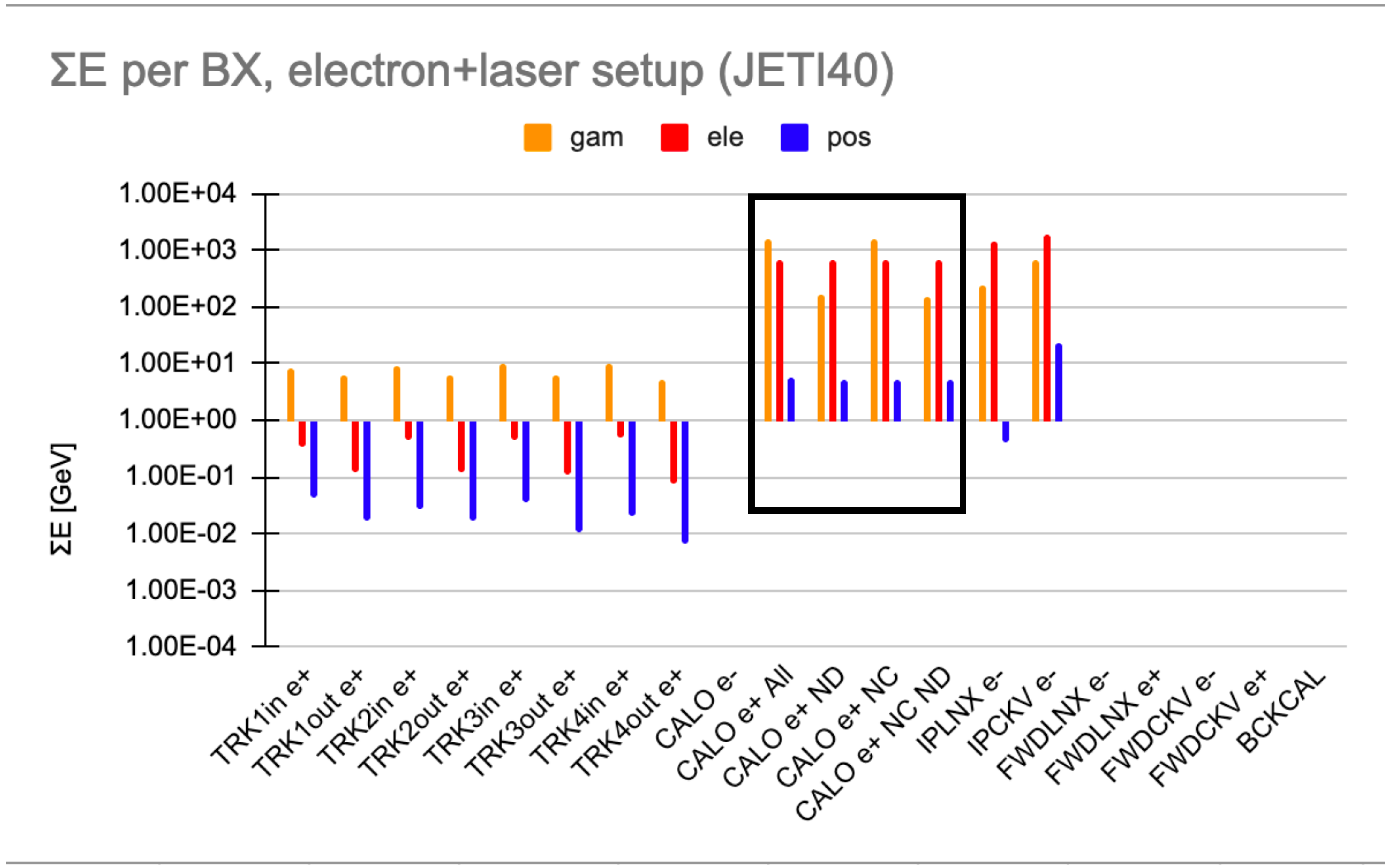






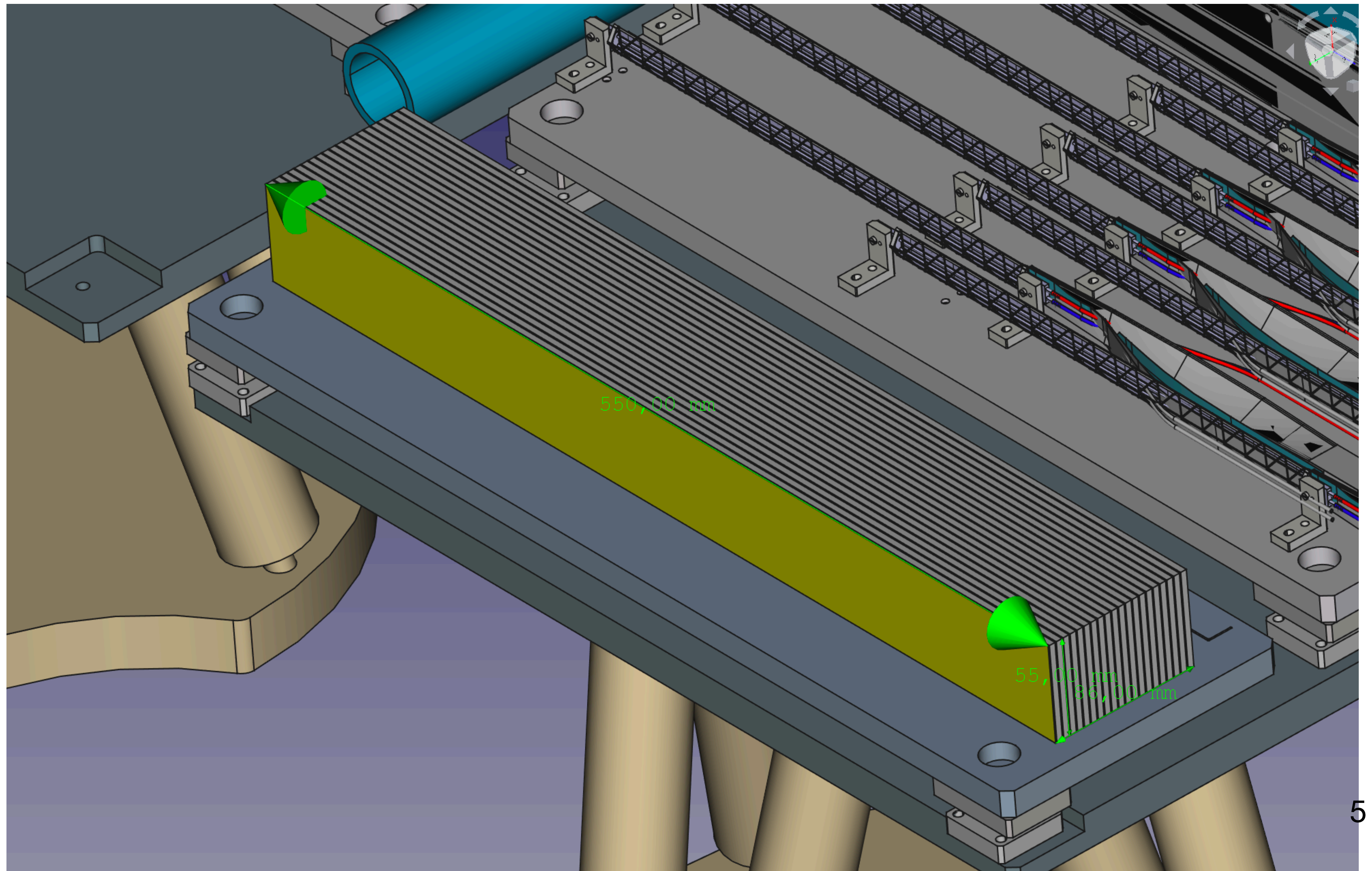
A	B	C	D	E	F	G	H	I	J	K	L	
			N(Inclusive) per BX			N(E>1 GeV) per BX			SumE(Inclusive) per BX [GeV]			
system	area [mm2]	shortname	gam	ele	pos	gam	ele	pos	gam	ele	pos	
Tracker	3709	TRK1in e+	4.35E+04	6.42E+02	1.36E+01	0.00E+00	0.00E+00	0.00E+00	8.64E+00	3.28E-01	4.40E-02	
	3709	TRK1out e+	3.88E+04	2.08E+02	1.04E+01	0.00E+00	0.00E+00	0.00E+00	6.48E+00	1.24E-01	1.65E-02	
	3709	TRK2in e+	4.32E+04	8.90E+02	1.20E+01	0.00E+00	0.00E+00	0.00E+00	8.91E+00	4.49E-01	2.70E-02	
	3709	TRK2out e+	3.74E+04	2.14E+02	6.40E+00	0.00E+00	0.00E+00	0.00E+00	6.27E+00	1.24E-01	1.71E-02	
	3709	TRK3in e+	4.35E+04	1.11E+03	1.12E+01	0.00E+00	0.00E+00	0.00E+00	9.82E+00	4.67E-01	3.57E-02	
	3709	TRK3out e+	3.67E+04	2.66E+02	4.80E+00	0.00E+00	0.00E+00	0.00E+00	6.20E+00	1.16E-01	1.10E-02	
	3709	TRK4in e+	3.83E+04	1.10E+03	1.36E+01	0.00E+00	0.00E+00	0.00E+00	1.01E+01	5.01E-01	2.00E-02	
	3709	TRK4out e+	2.87E+04	2.25E+02	4.80E+00	0.00E+00	0.00E+00	0.00E+00	5.02E+00	7.74E-02	6.71E-03	
Calo	30250	CALO e-										
		CALO e+ All	2.10E+06	6.82E+05	1.32E+03	0.00E+00	0.00E+00	0.00E+00	1.58E+03	6.84E+02	5.55E+00	No cuts
		CALO e+ ND	1.87E+05	6.82E+05	1.16E+03	0.00E+00	0.00E+00	0.00E+00	1.64E+02	6.82E+02	5.20E+00	No dump
		CALO e+ NC	2.07E+06	6.80E+05	1.24E+03	0.00E+00	1.59E+00	0.00E+00	1.57E+03	6.82E+02	5.31E+00	No Cherenkov
	30250	CALO e+ NC ND	1.58E+05	6.79E+05	1.07E+03	0.00E+00	0.00E+00	0.00E+00	1.57E+02	6.81E+02	4.96E+00	No dump no Cherenkov
IP LANEX	5000	IPLNX e-	1.92E+06	1.09E+07	7.22E+02	0.00E+00	0.00E+00	0.00E+00	2.33E+02	1.47E+03	4.10E-01	
IP Cherenkov	5026	IPCKV e-	6.31E+06	6.13E+05	5.88E+03	0.00E+00	1.59E+00	0.00E+00	6.75E+02	1.85E+03	2.32E+01	
Fwd LANEX	10000	FWDLNX e-										
	10000	FWDLNX e+										
Fwd Cherenkov	5026	FWDCKV e-										
	5026	FWDCKV e+										
Backscattering calo	11552	BCKCAL	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	



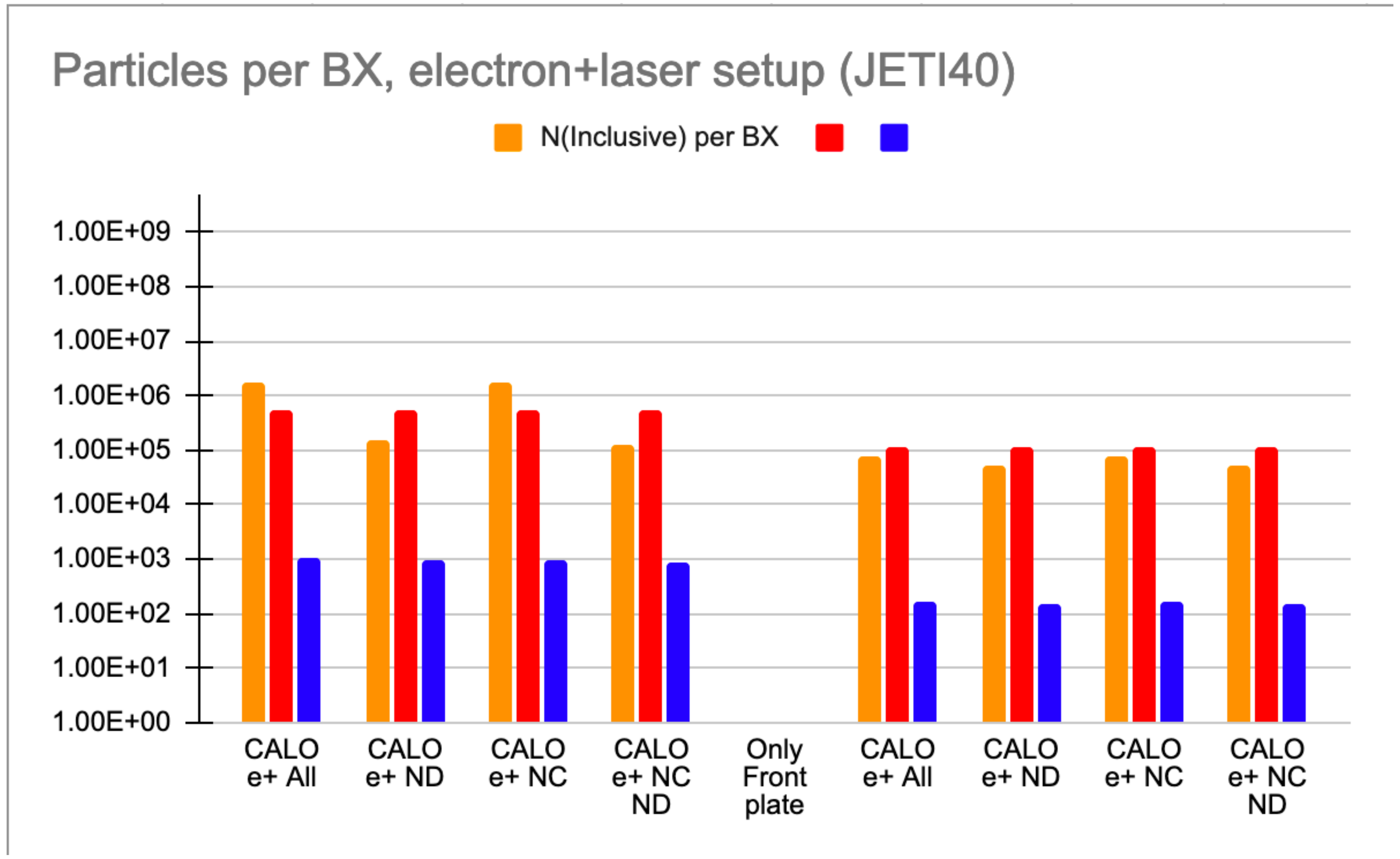


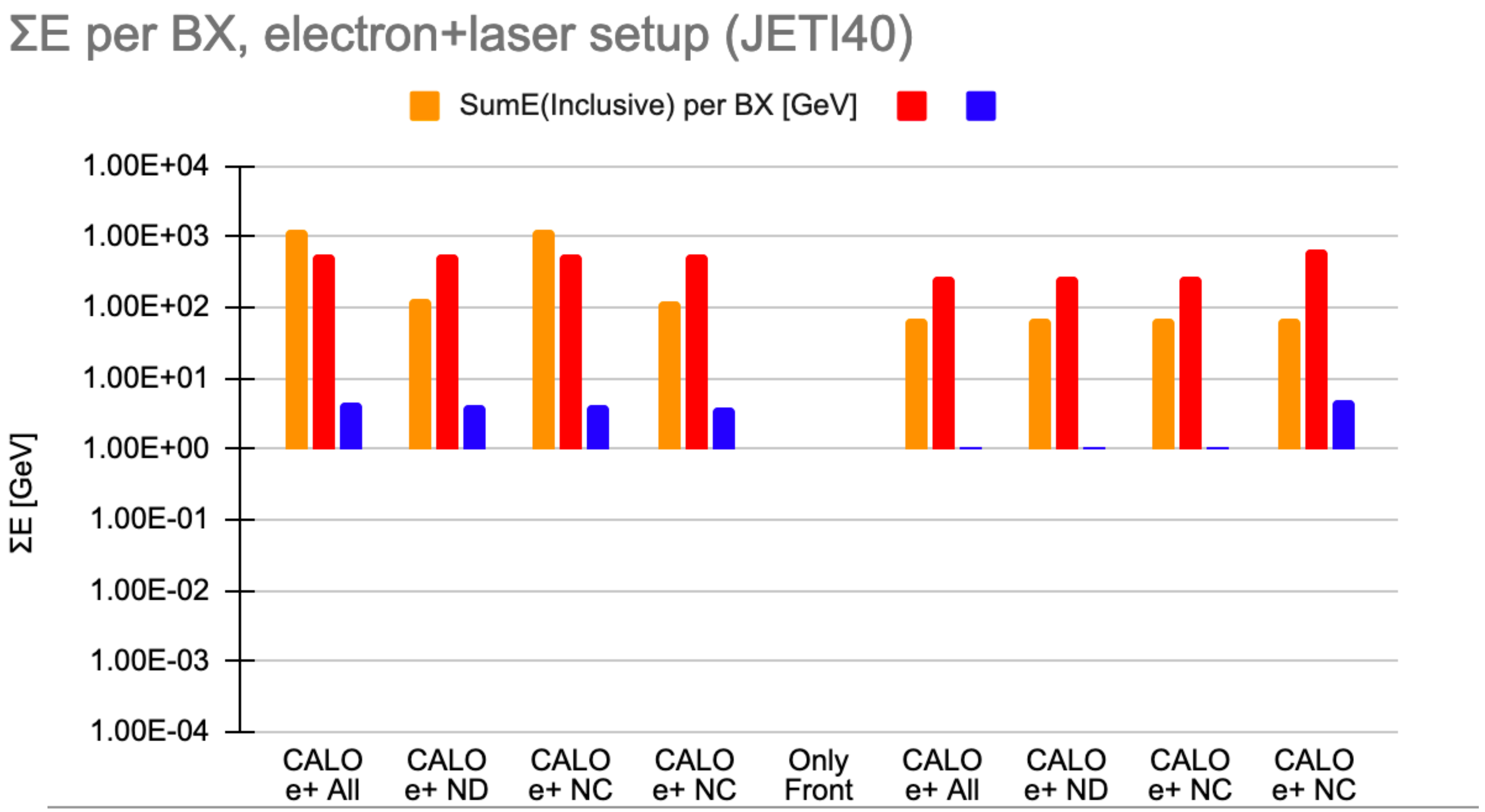
Quite some more energy and particles in the calorimeter than in the trackers, more similar to cherenkov and lanex.

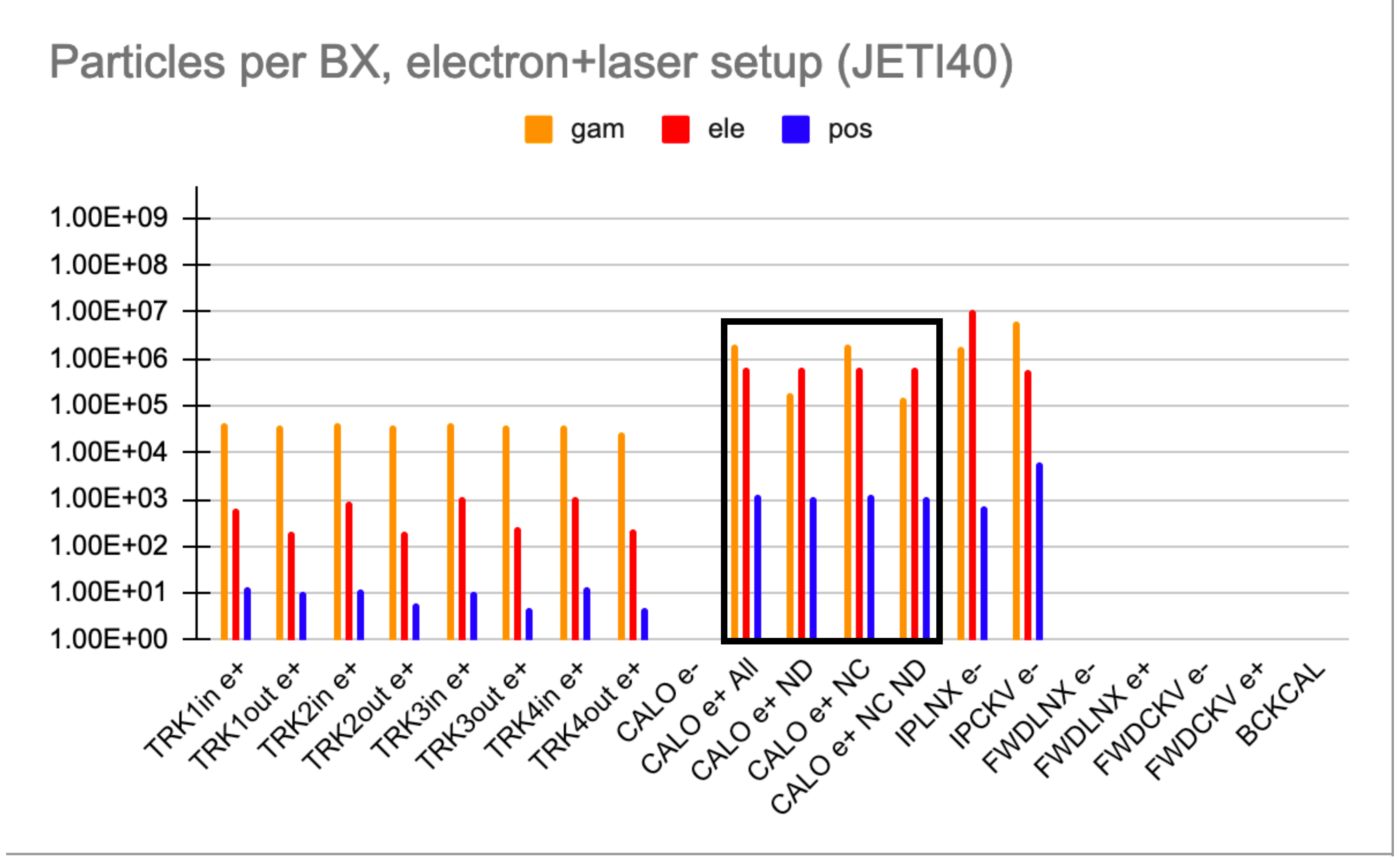
Could this be due the fact that we integrate over larger volume (so more surface available?)

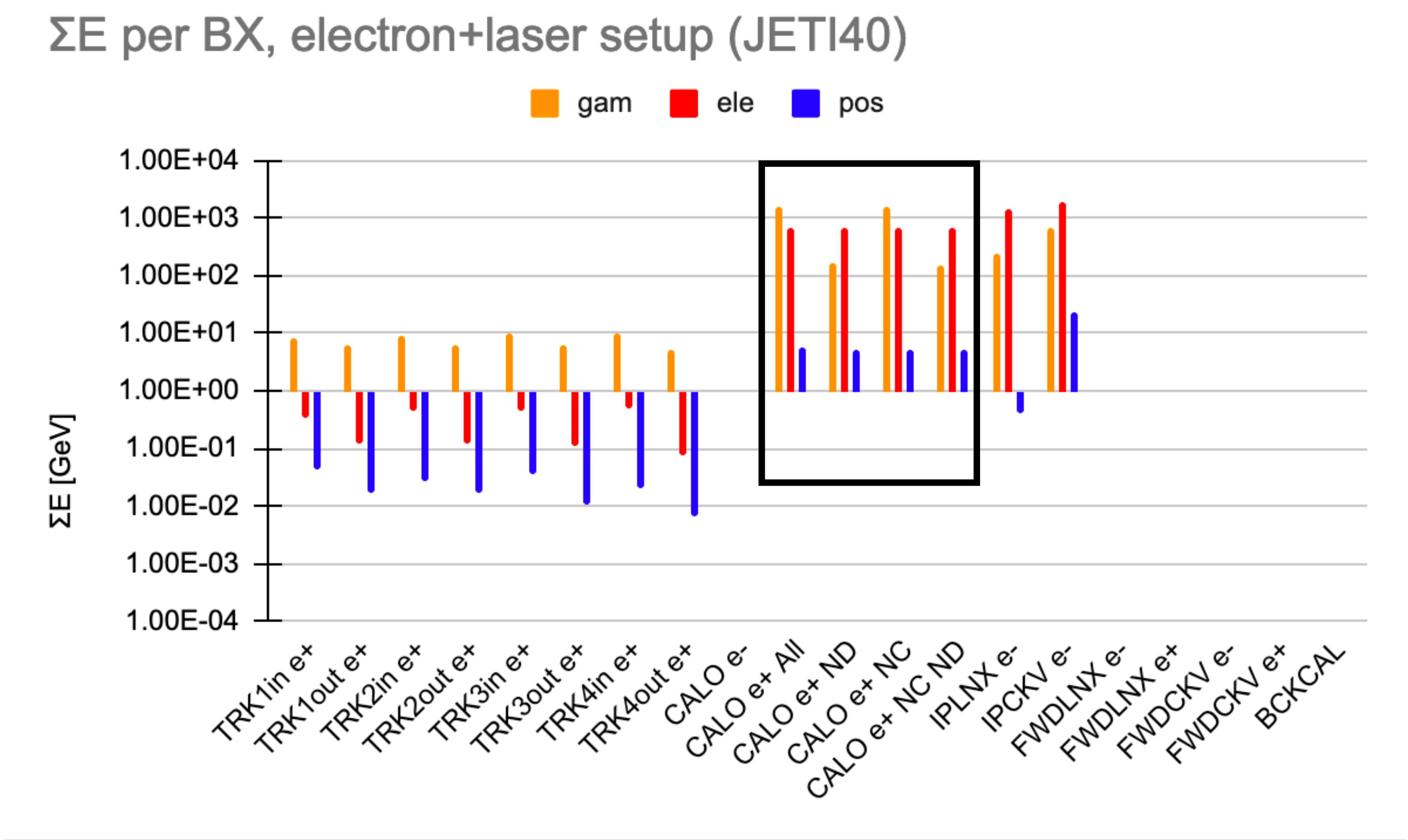


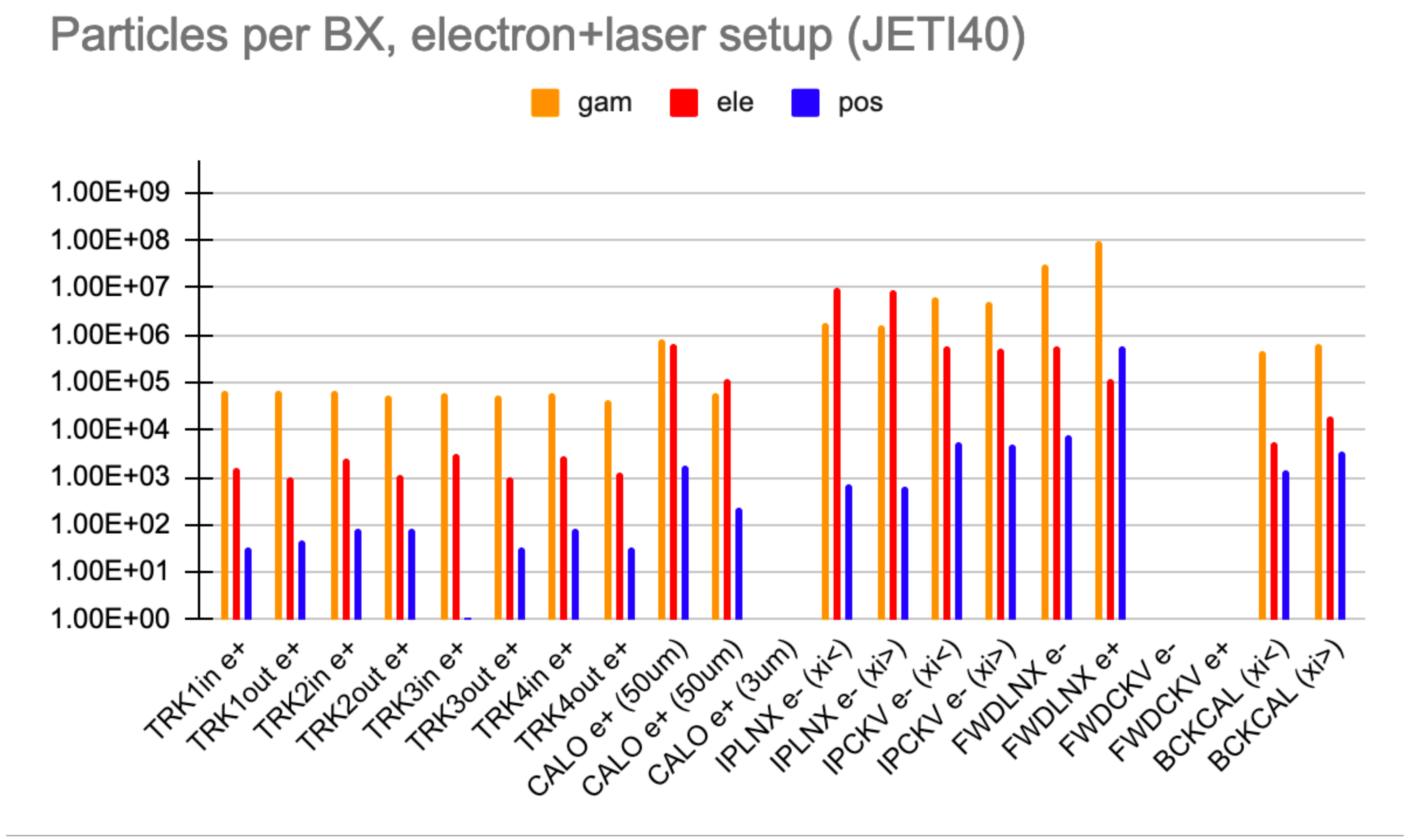
Hics e- background file

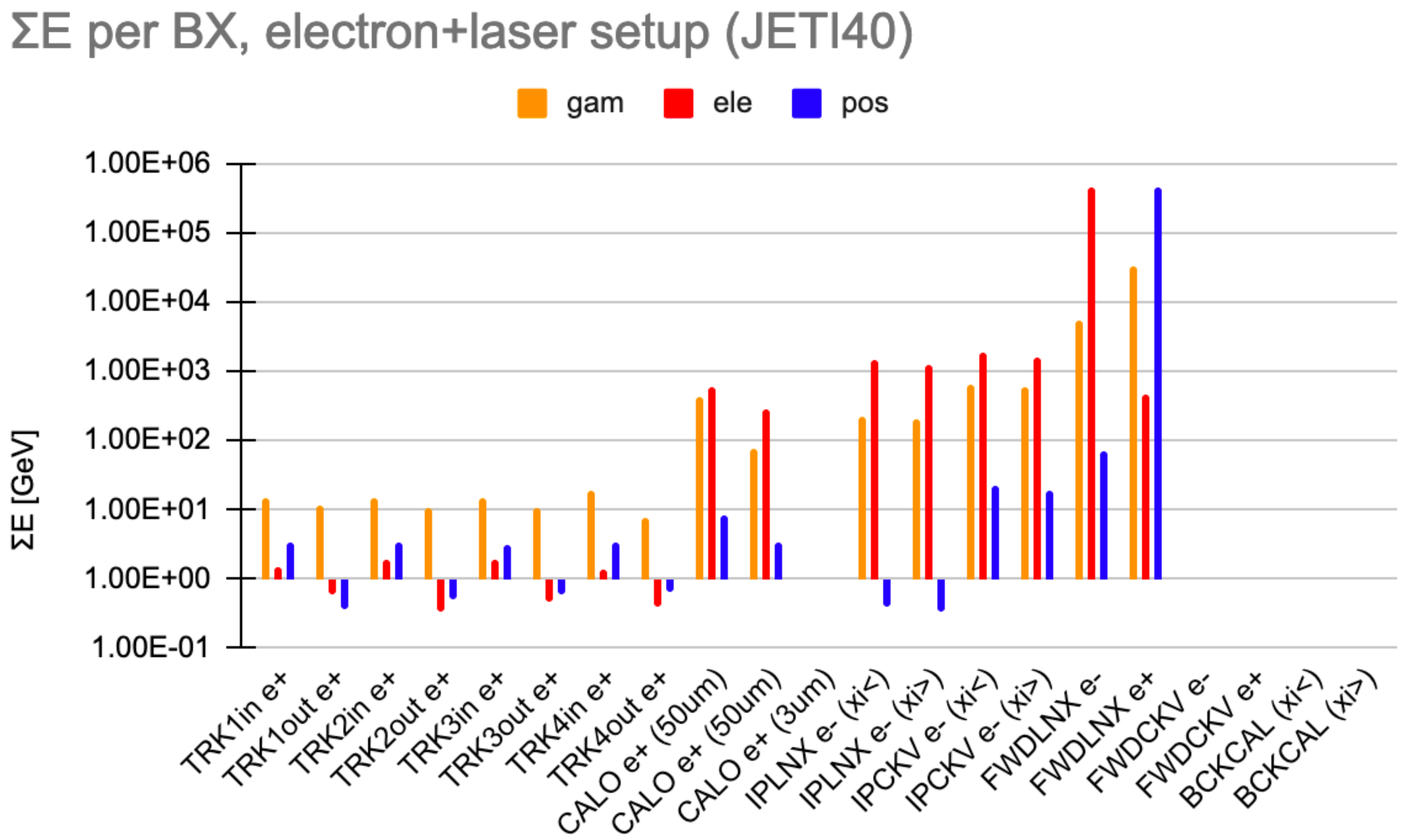












`/nfs/dust/ilc/user/oborysov/hics_list/list_root_hics_165gev_w0_50000nm.txt`

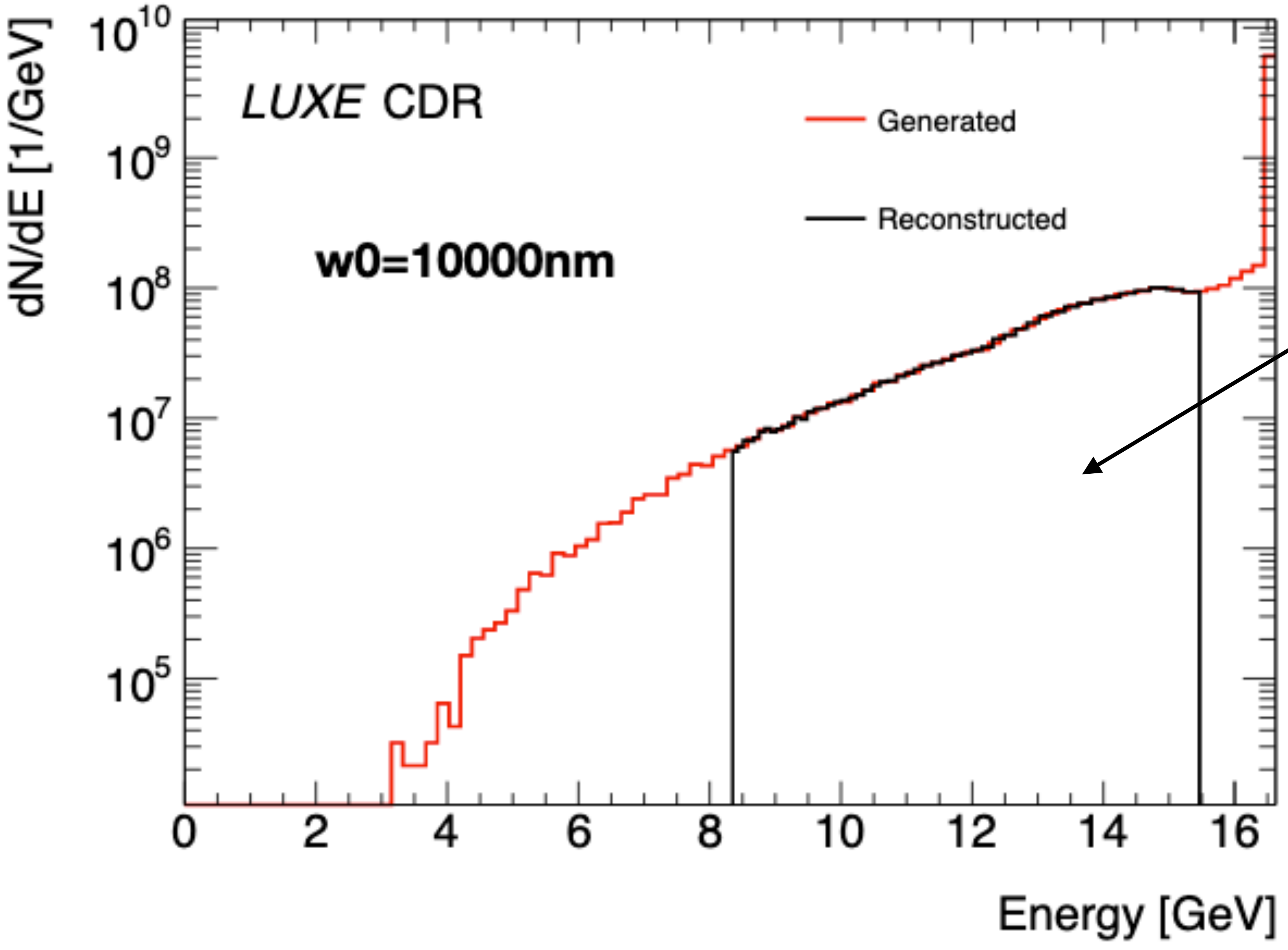
GEANT4 MC

Oleksandr Borysov posted on 13. Oct. 2020 13:40h - last edited by Oleksandr Borysov on 01. Dec. 2020 14:55h

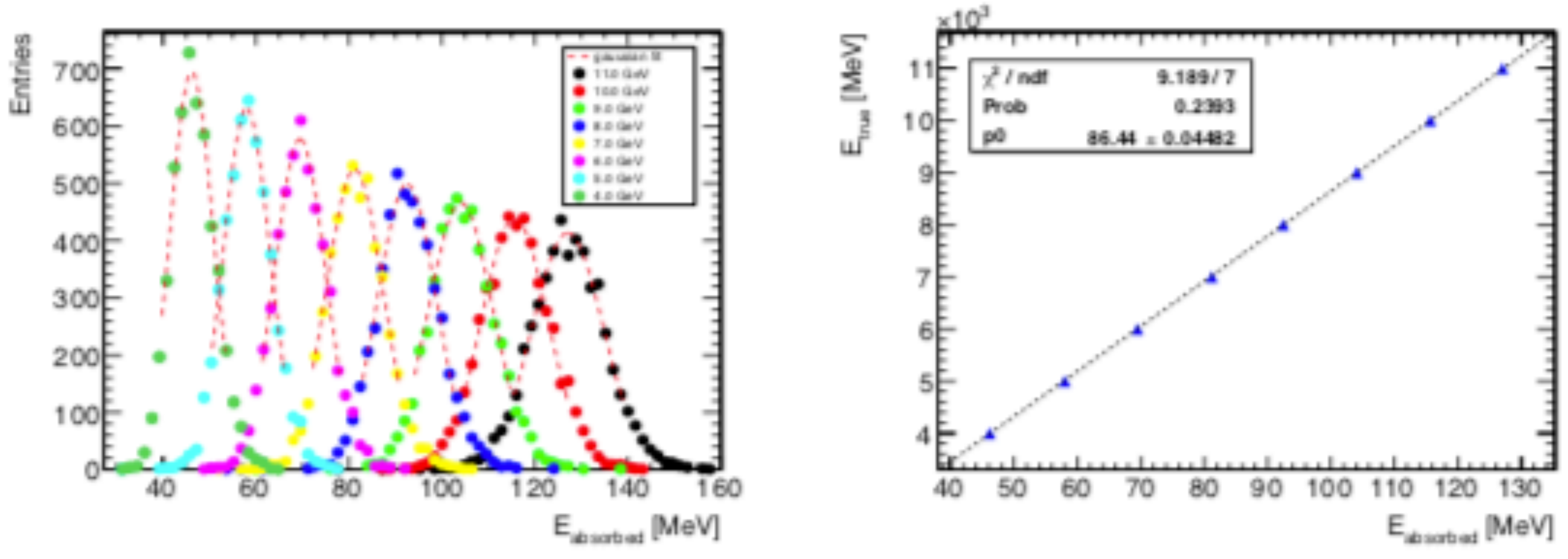
IPstrong_V1.1.00
JETI40
e_laser 16.5 GeV

MC	# MC out (BX)	Processed (BX)	Location	Notes
w0_100000nm	474	474	/nfs/dust/ilc/user/oborysov/hics_list/list_root_hics_165gev_w0_100000nm.txt	
w0_50000nm	4764	4764	/nfs/dust/ilc/user/oborysov/hics_list/list_root_hics_165gev_w0_50000nm.txt	

How to make “reco” plots?



- This is a plot from Ruth/Cherenkov detector, showing the truth energy spectrum (obtained from out(stdhep files)) compared to energy spectrum smeared using detector response function.
- We could make something similar for the calorimeter, using the positron from the outfile smeared using energy reconstruction resolution, and pointing position obtained from single particles simulation?
- How to factor in the large particle occupancy (and so the high energy density of background) in this?



(a) Absorbed energy distribution for the particles with energies in the range from 4 to 11 GeV. Every distribution corresponds to 10000 Monte Carlo events. Peaks are fitted with the Gaussian distribution within 1.5 **rms** from mean value. Gaussian function is integrated within bin ranges.

(b) Evaluating sampling fraction as a parameter of linear function $p0$. On the vertical axis there is the energy of the particle that collides in the calorimeter volume E_{true}, on the horizontal axis energy absorbed in the silicon layers is shown $E_{absorbed}$.

Figure 9: Calibration procedure based on Monte Carlo data.

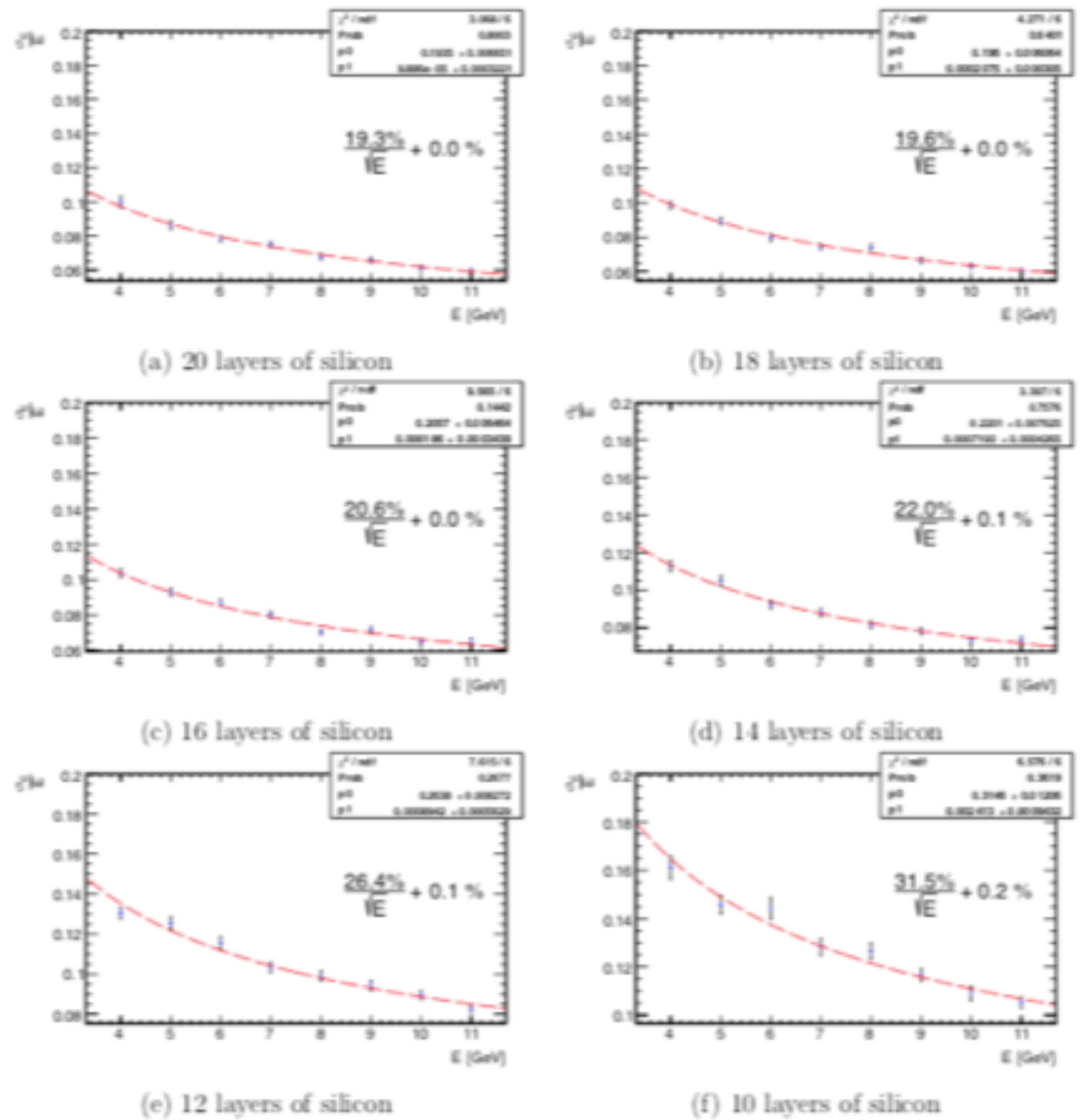
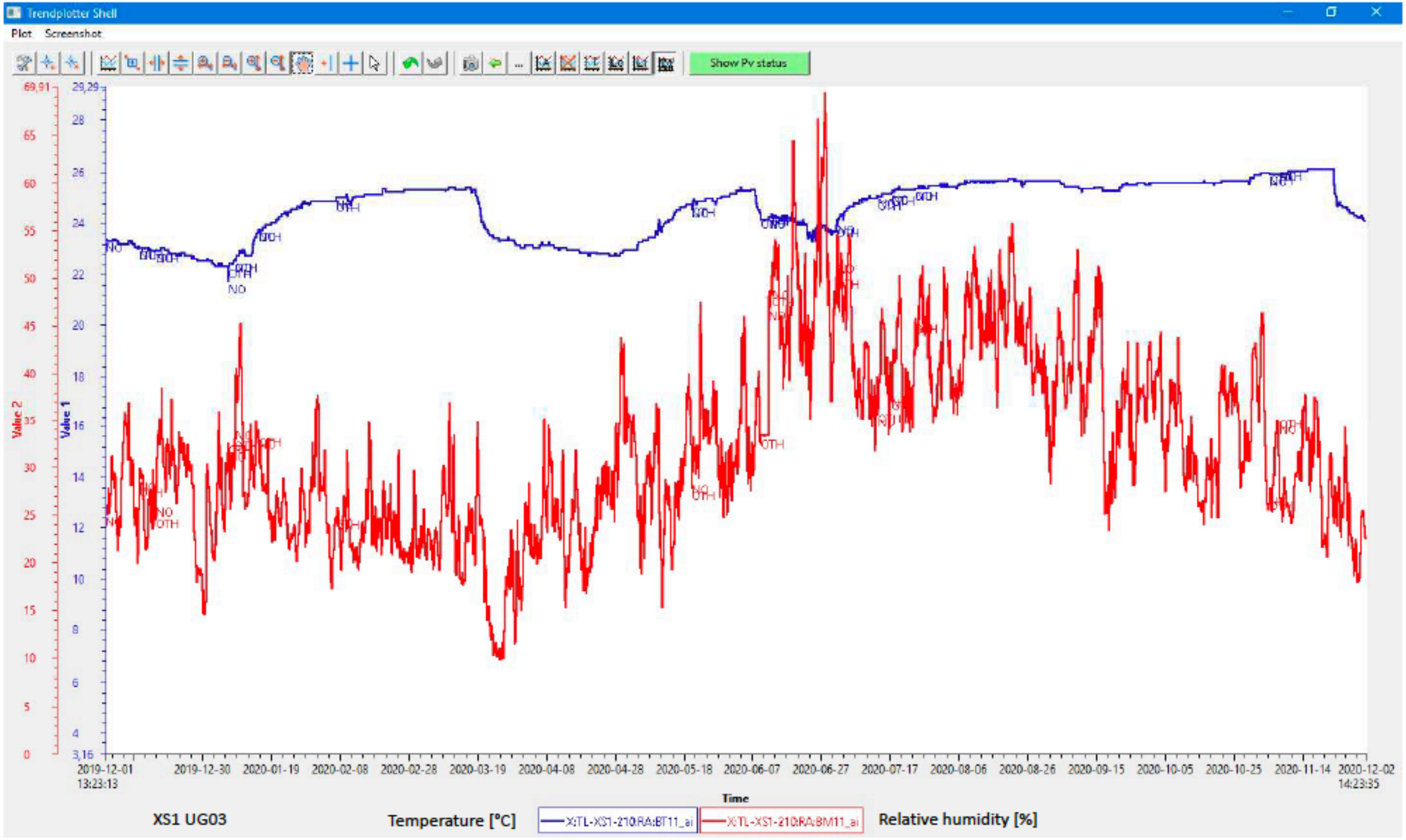
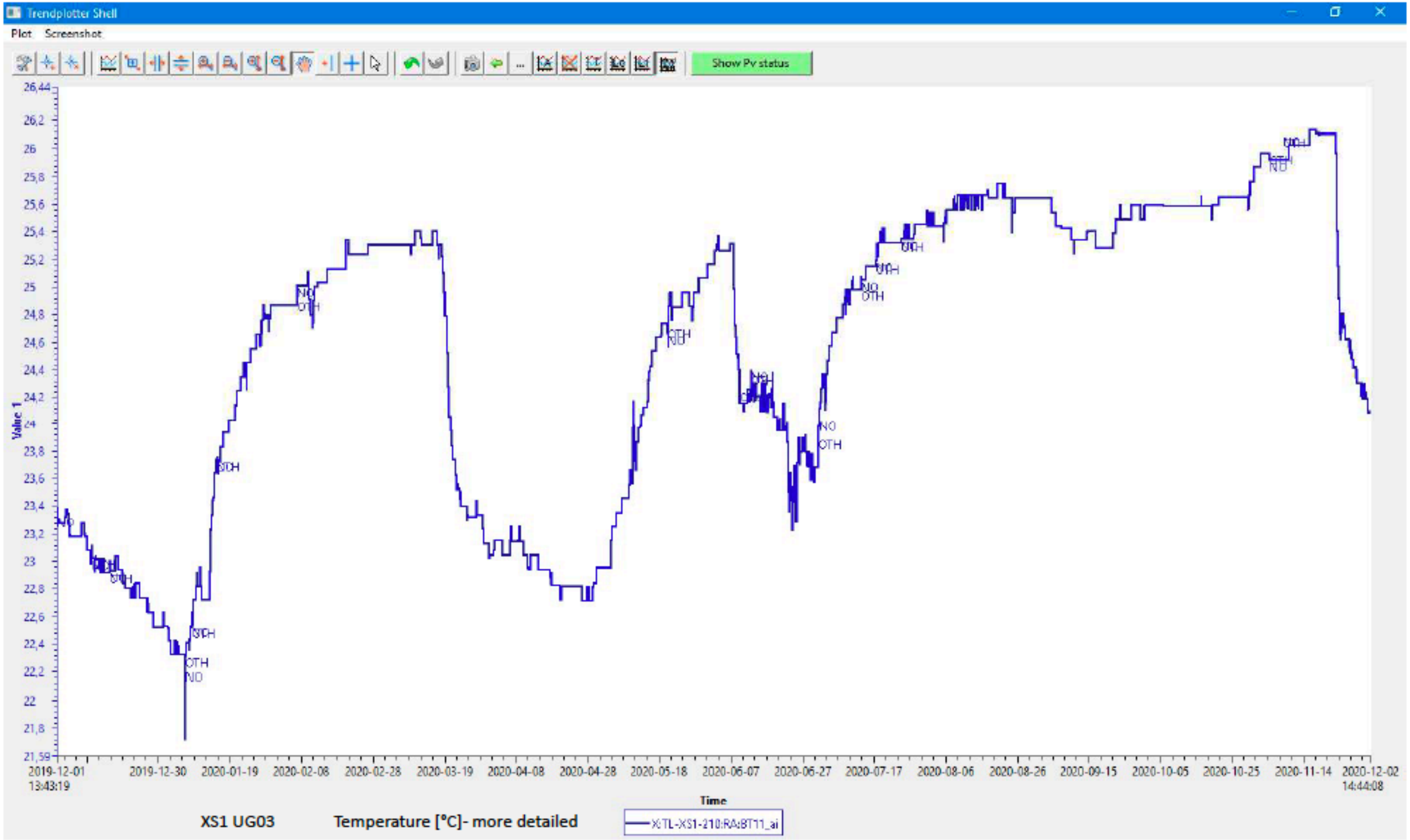


Figure 10: Energy resolution for different number of the detector silicon plates. Data generated for energies in range from 4 to 11 GeV. Each distribution is fitted with $\frac{\sigma(E)}{E} = \frac{a}{\sqrt{E}} \oplus c$ function. $p0$ corresponds to a-term and $p1$ to c-term.



Trendplotter Shell
Plot
Screenshot
Show Pv status
Value 2
Value 1
Time
2019-12-01 13:23:13
2020-12-02 14:23:35
XS1 UG03
Temperature [°C]
X:TL-XS1-210:RA:BT11_ai
X:TL-XS1-210:RA:BM11_ai
Relative humidity [%]



Trendplotter Shell
Plot Screenshot
Show Pv status
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26
25,8
25,6
25,4
25,2
25
24,8
24,6
24,4
24,2
24
23,8
23,6
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23
22,8
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22
21,8
21,59
2019-12-01 13:43:19
2019-12-30
2020-01-19
2020-02-08
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2020-03-19
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2020-04-28
2020-05-18
2020-06-07
2020-06-27
2020-07-17
2020-08-06
2020-08-26
2020-09-15
2020-10-05
2020-10-25
2020-11-14
2020-12-02 14:44:08
Time
XS1 UG03
Temperature [°C]- more detailed
X:TL-XS1-210:RA:BT11_ai