Update on Data-MC comparison with S-Plot

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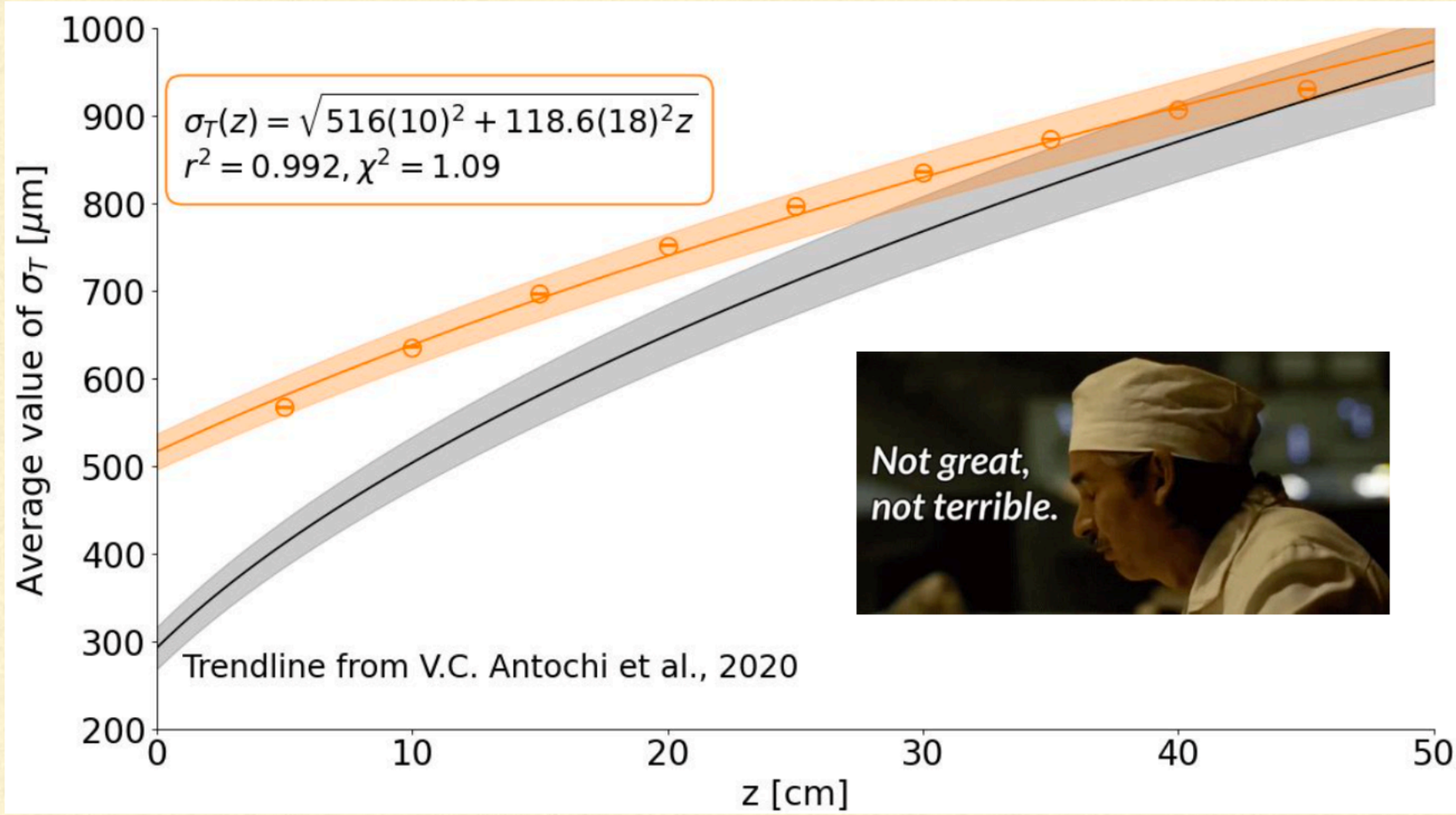
New diffusion

Tracks have been redigitized using the digitization parameters presented by Rita Roque

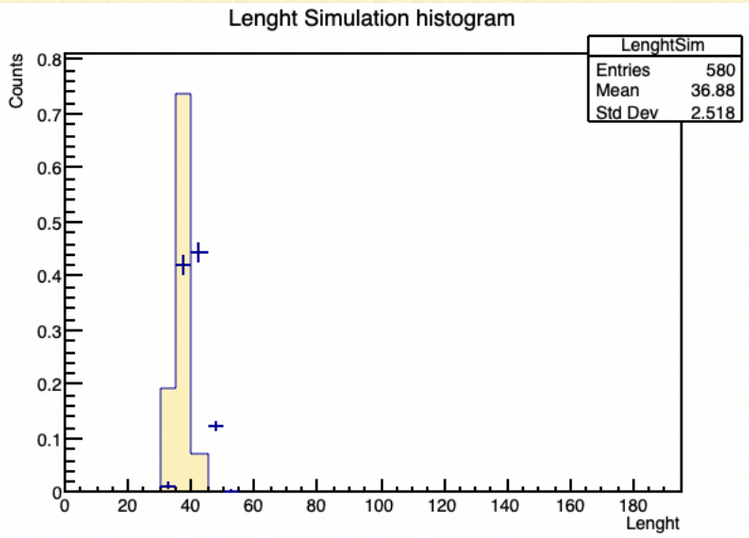
Increasing the diffusion should lower the density (that resulted to be too high in the simulation)

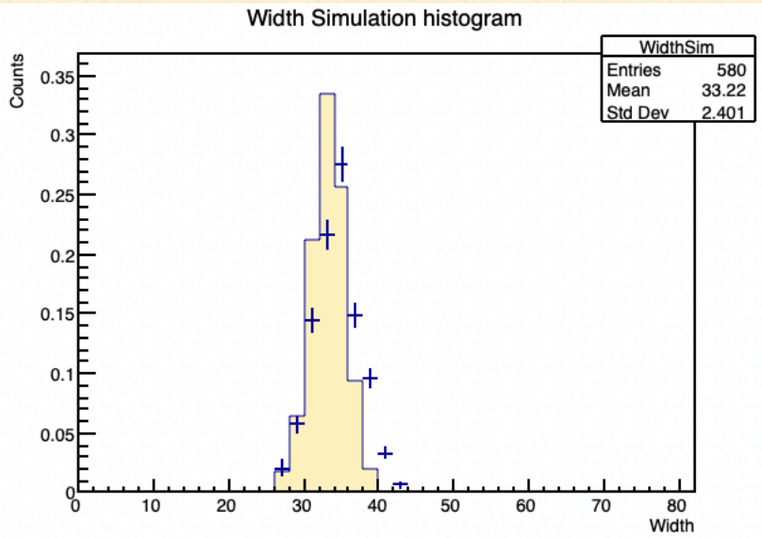


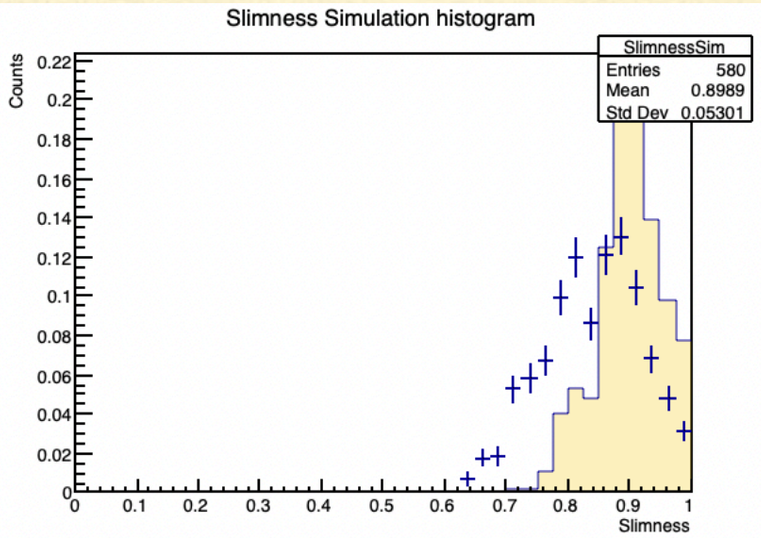
Tracks redigitized have been compared with the latest results obtained from data with sPlot.

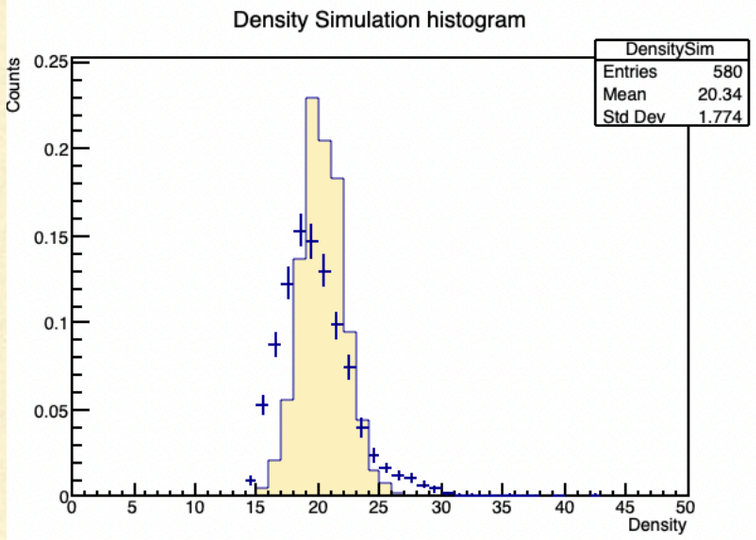
```
#'diff_const_sigma0T'    : 0.0784,     # diffusion constant [mm]^2 - Original
#'diff_coeff_T'          : 0.01232,    # diffusion parameter [mm/sqrt(cm)]^2 for 1 kV - Original

'diff_const_sigma0T'    : 0.266,     # diffusion constant [mm]^2
'diff_coeff_T'          : 0.01392,    # diffusion parameter [mm/sqrt(cm)]^2 for 1 kV
```

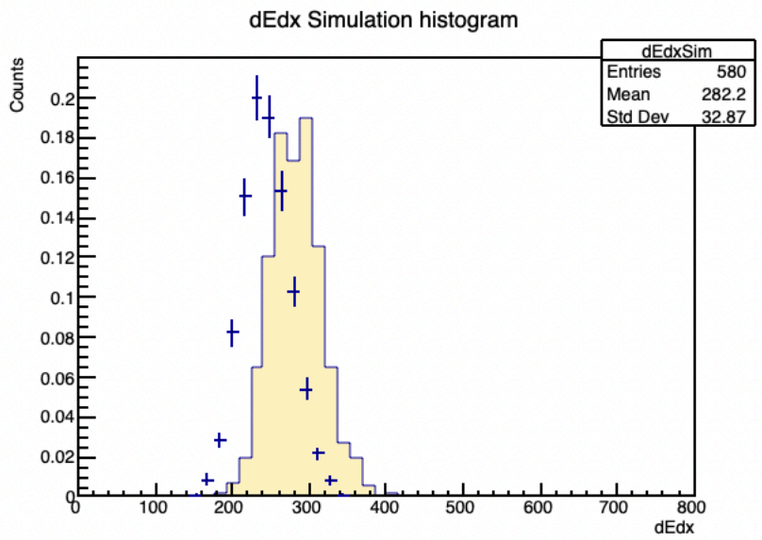
Cu

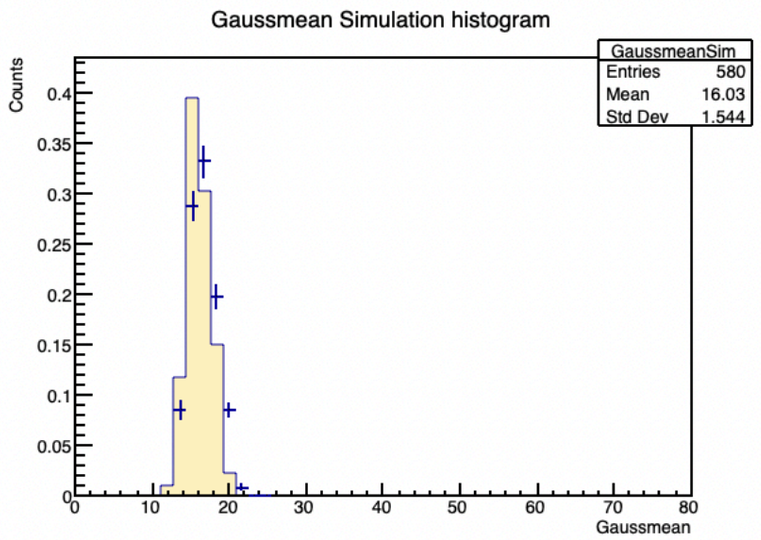

Lenght Simulation histogram
LenghtSim
Entries 580
Mean 36.88
Std Dev 2.518
Counts
Lenght

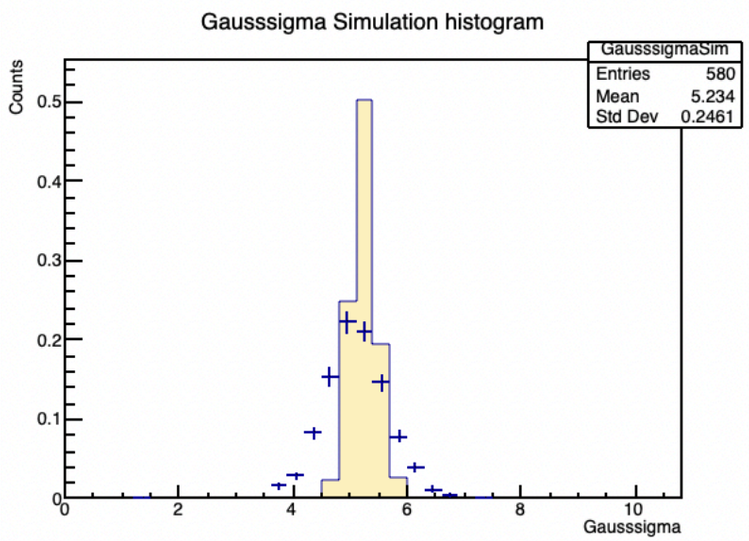

Width Simulation histogram
WidthSim
Entries 580
Mean 33.22
Std Dev 2.401
Counts
Width

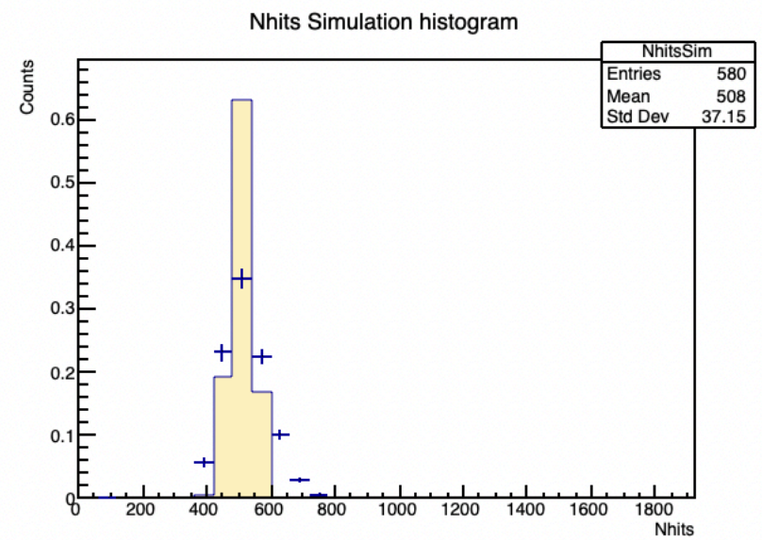

Slimness Simulation histogram
SlimnessSim
Entries 580
Mean 0.8989
Std Dev 0.05301
Counts
Slimness

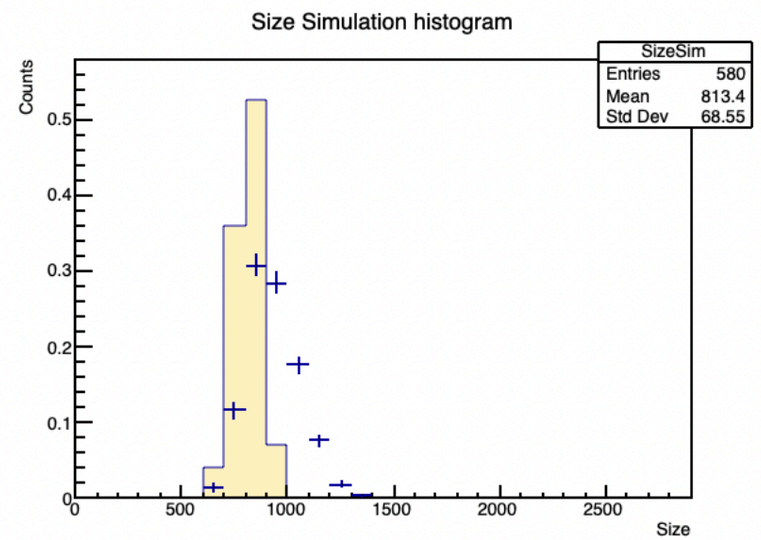

Density Simulation histogram
DensitySim
Entries 580
Mean 20.34
Std Dev 1.774
Counts
Density


dEdx Simulation histogram
dEdxSim
Entries 580
Mean 282.2
Std Dev 32.87
Counts
dEdx

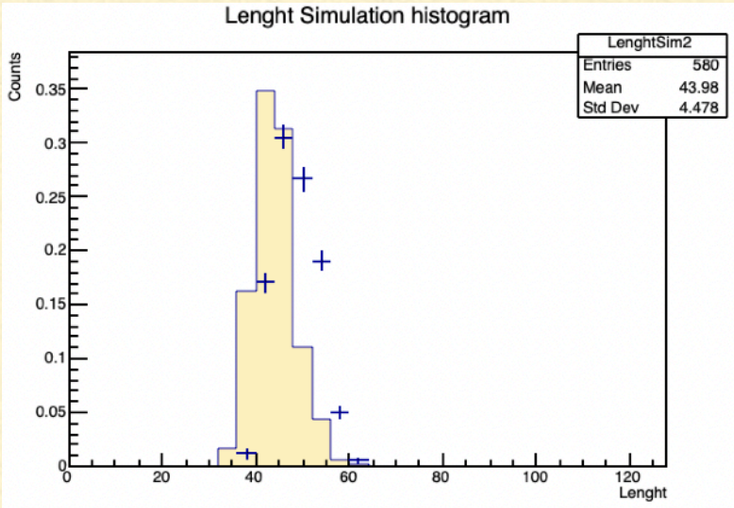

Gaussmean Simulation histogram
GaussmeanSim
Entries 580
Mean 16.03
Std Dev 1.544
Counts
Gaussmean

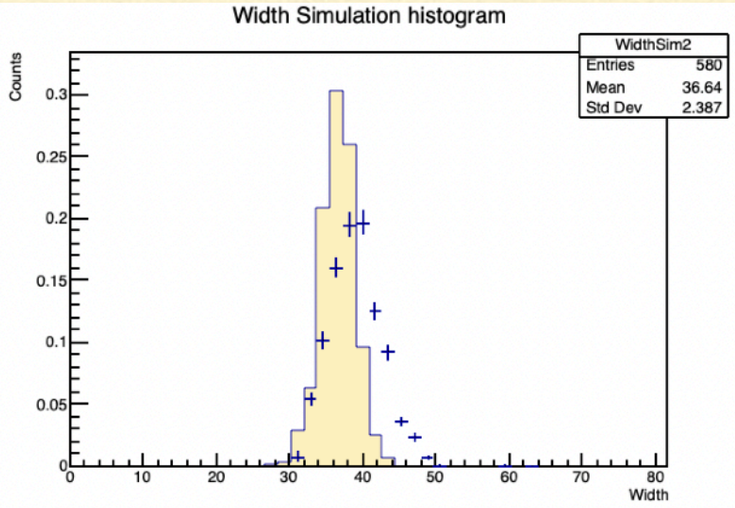

Gausssigma Simulation histogram
GausssigmaSim
Entries 580
Mean 5.234
Std Dev 0.2461
Counts
Gausssigma

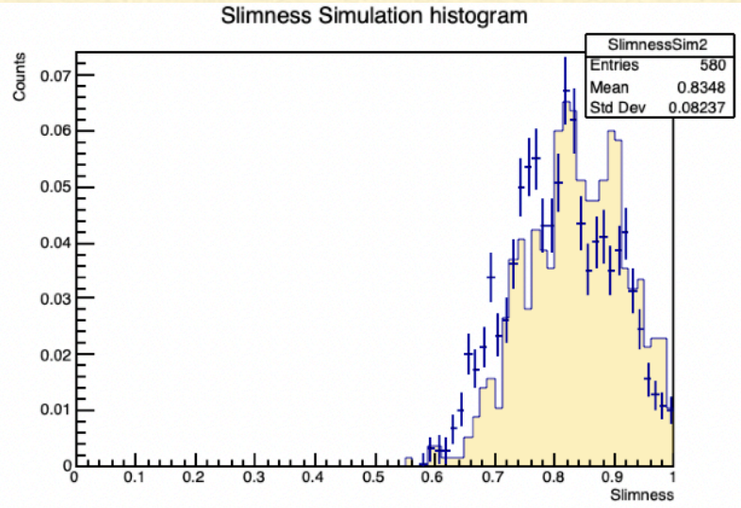

Nhits Simulation histogram
NhitsSim
Entries 580
Mean 508
Std Dev 37.15
Counts
Nhits

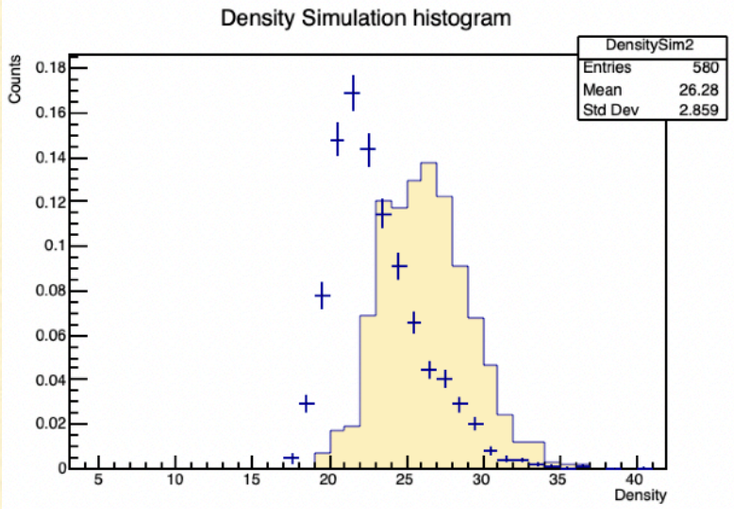

Size Simulation histogram
SizeSim
Entries 580
Mean 813.4
Std Dev 68.55
Counts
Size

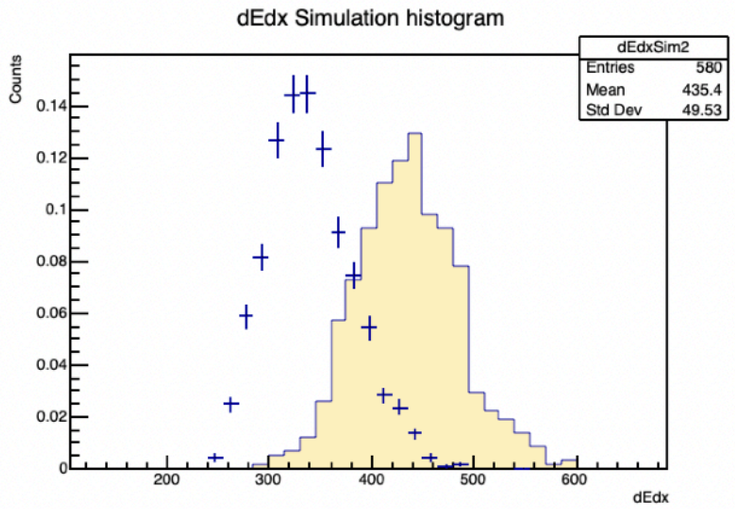
Rb

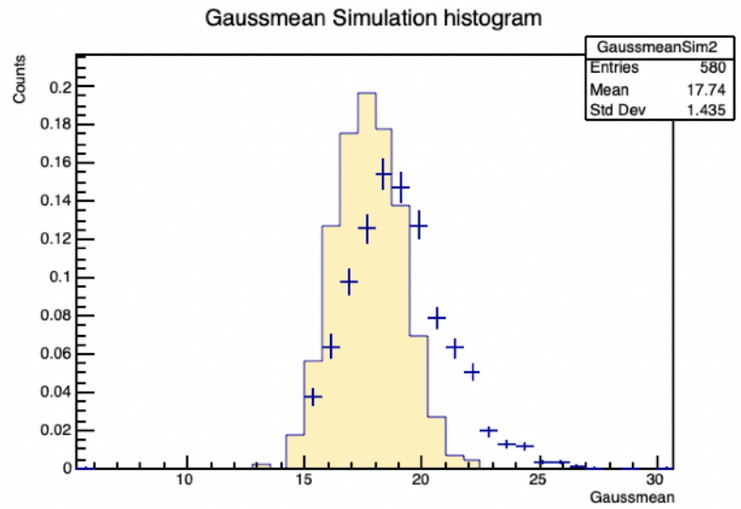

Lenght Simulation histogram
LenghtSim2
Entries 580
Mean 43.98
Std Dev 4.478
Counts
Lenght

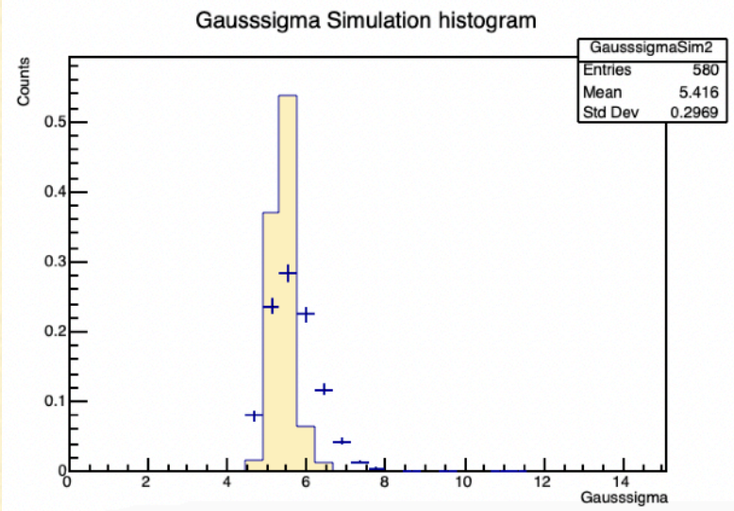

Width Simulation histogram
WidthSim2
Entries 580
Mean 36.64
Std Dev 2.387
Counts
Width

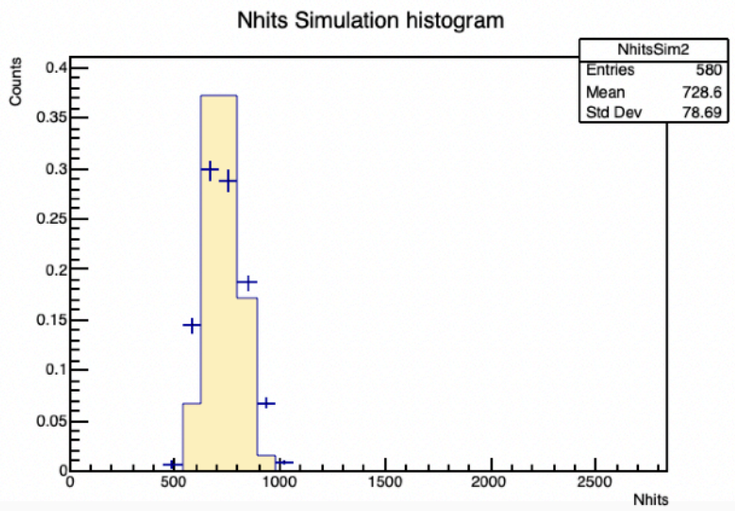

Slimness Simulation histogram
SlimnessSim2
Entries 580
Mean 0.8348
Std Dev 0.08237
Counts
Slimness

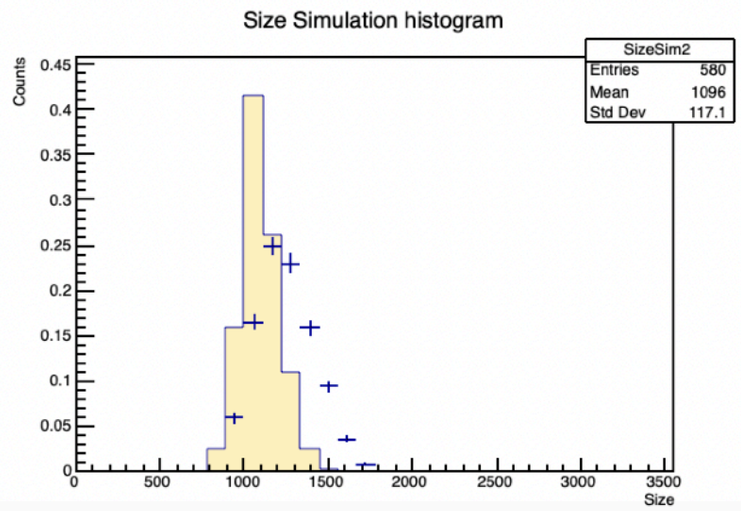

Density Simulation histogram
DensitySim2
Entries 580
Mean 26.28
Std Dev 2.859
Counts
Density


dEdx Simulation histogram
dEdxSim2
Entries 580
Mean 435.4
Std Dev 49.53
Counts
dEdx

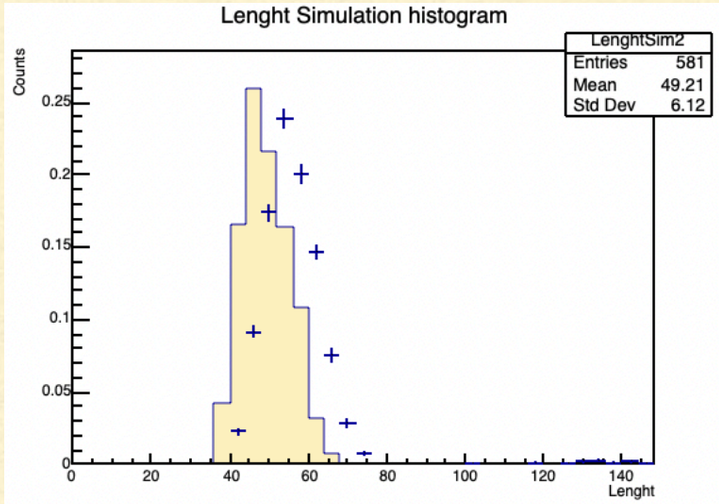

Gaussmean Simulation histogram
GaussmeanSim2
Entries 580
Mean 17.74
Std Dev 1.435
Counts
Gaussmean

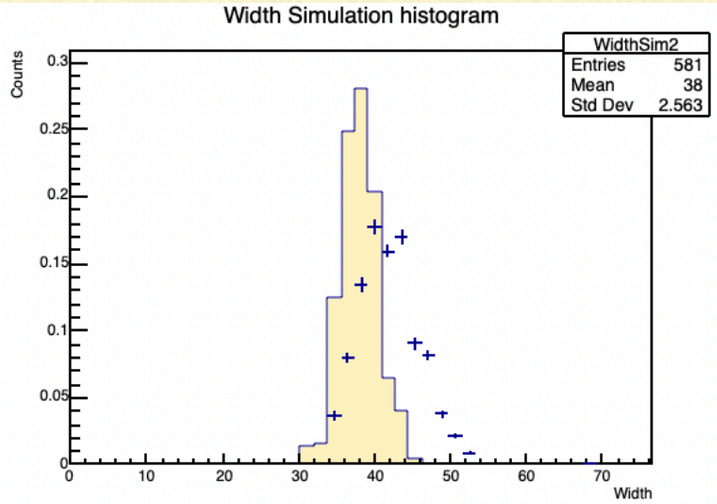

Gausssigma Simulation histogram
GausssigmaSim2
Entries 580
Mean 5.416
Std Dev 0.2969
Counts
Gausssigma

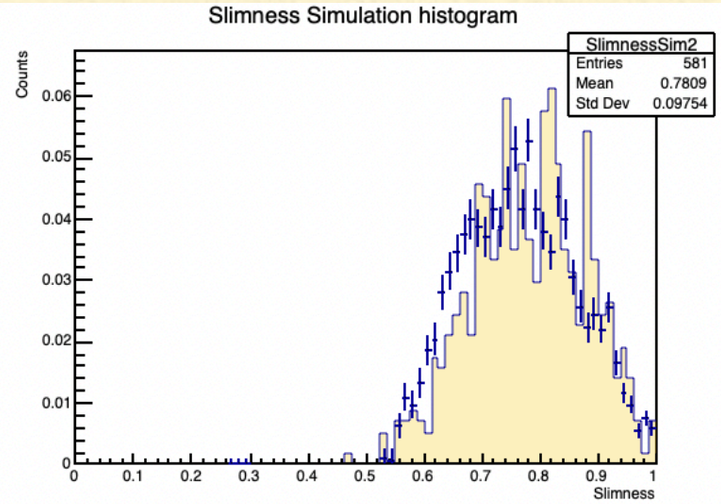

Nhits Simulation histogram
NhitsSim2
Entries 580
Mean 728.6
Std Dev 78.69
Counts
Nhits

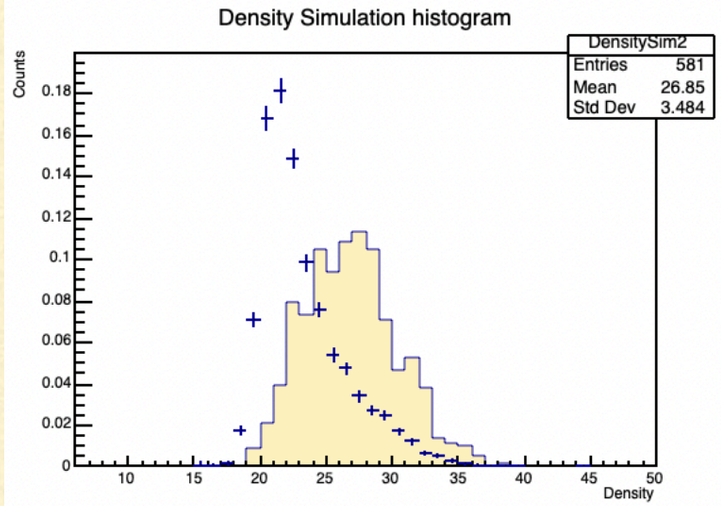

Size Simulation histogram
SizeSim2
Entries 580
Mean 1096
Std Dev 117.1
Counts
Size

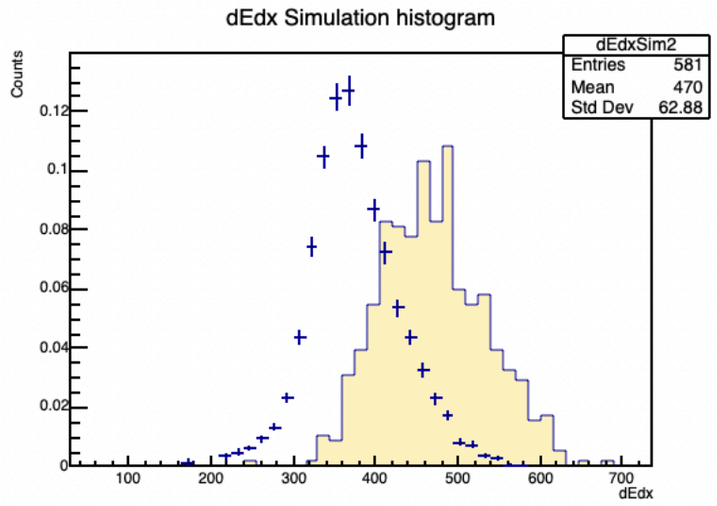
Mo

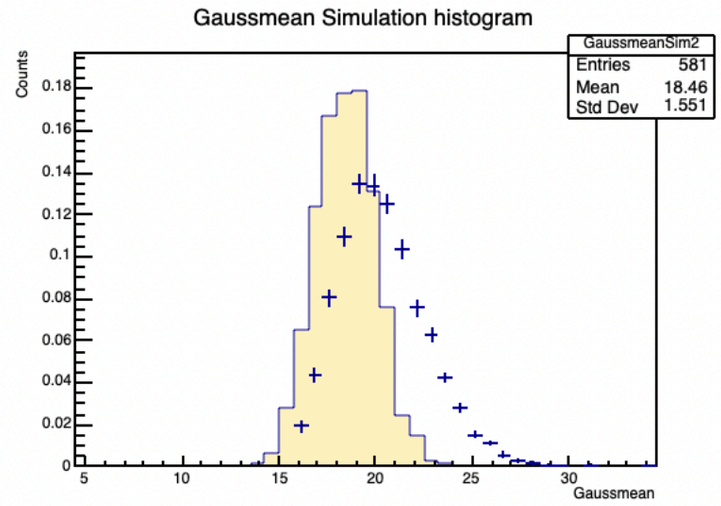

Lenght Simulation histogram
LenghtSim2
Entries 581
Mean 49.21
Std Dev 6.12
Counts
Lenght

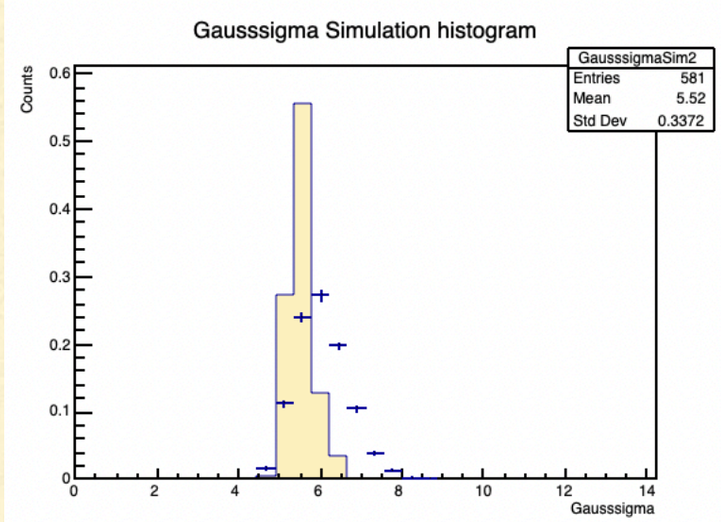

Width Simulation histogram
WidthSim2
Entries 581
Mean 38
Std Dev 2.563
Counts
Width

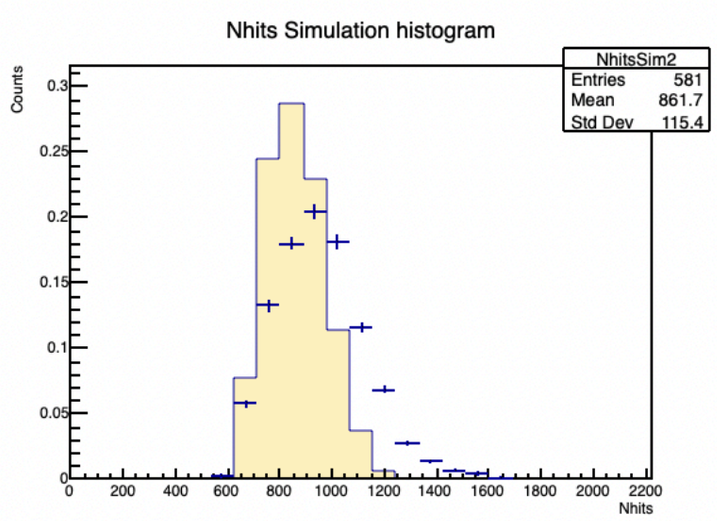

Slimness Simulation histogram
SlimnessSim2
Entries 581
Mean 0.7809
Std Dev 0.09754
Counts
Slimness

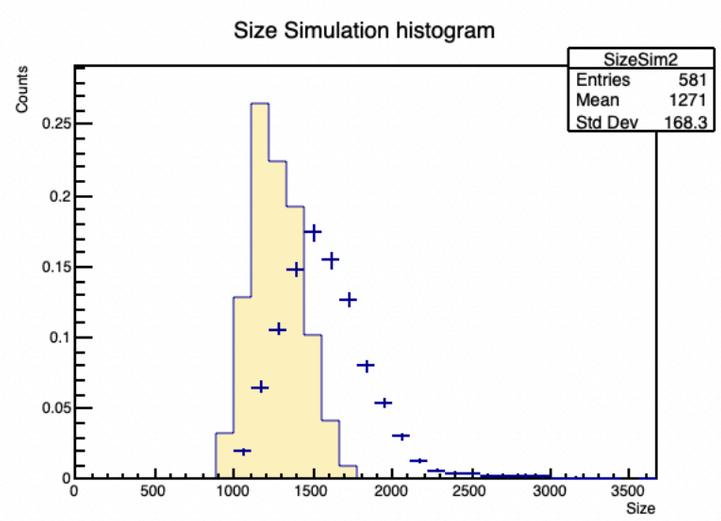

Density Simulation histogram
DensitySim2
Entries 581
Mean 26.85
Std Dev 3.484
Counts
Density


dEdx Simulation histogram
dEdxSim2
Entries 581
Mean 470
Std Dev 62.88
Counts
dEdx

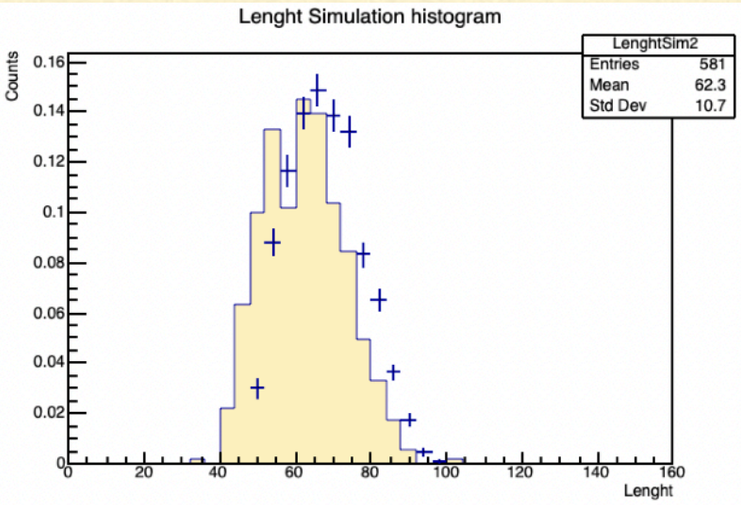

Gaussmean Simulation histogram
GaussmeanSim2
Entries 581
Mean 18.46
Std Dev 1.551
Counts
Gaussmean

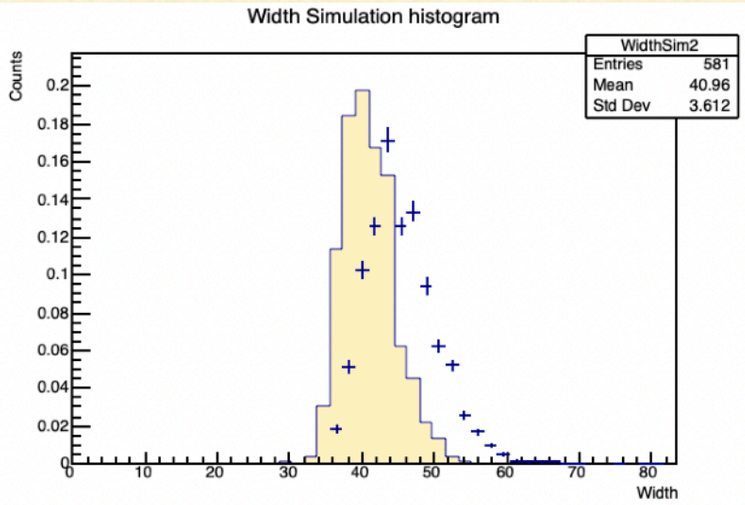

Gausssigma Simulation histogram
GausssigmaSim2
Entries 581
Mean 5.52
Std Dev 0.3372
Counts
Gausssigma

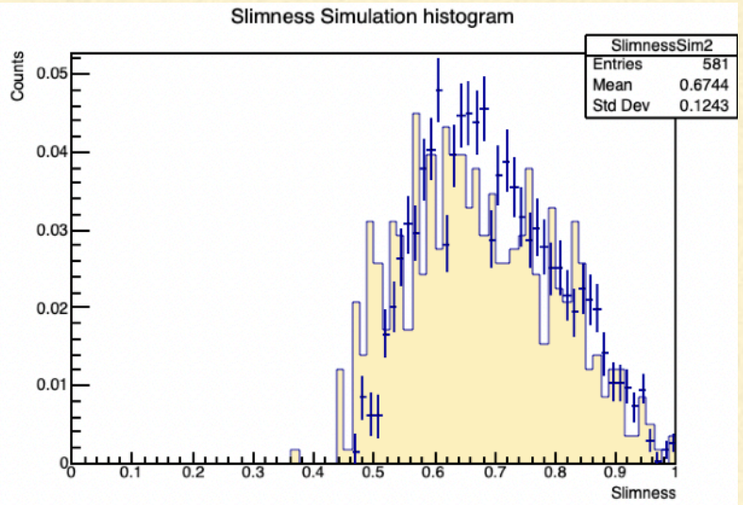

Nhits Simulation histogram
NhitsSim2
Entries 581
Mean 861.7
Std Dev 115.4
Counts
Nhits

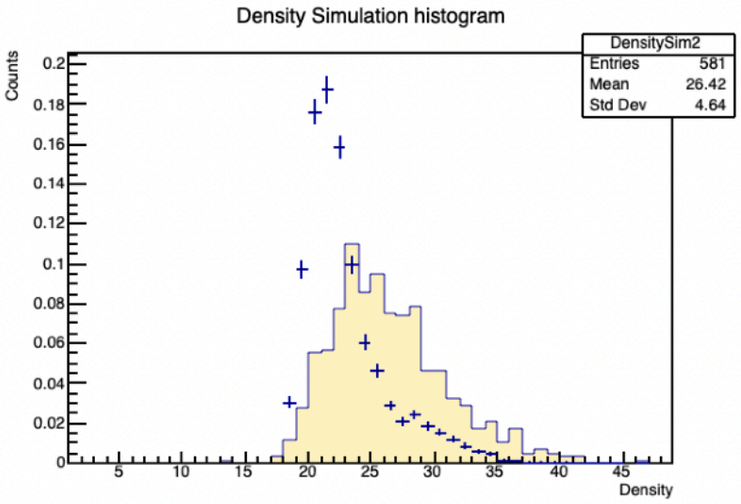

Size Simulation histogram
SizeSim2
Entries 581
Mean 1271
Std Dev 168.3
Counts
Size

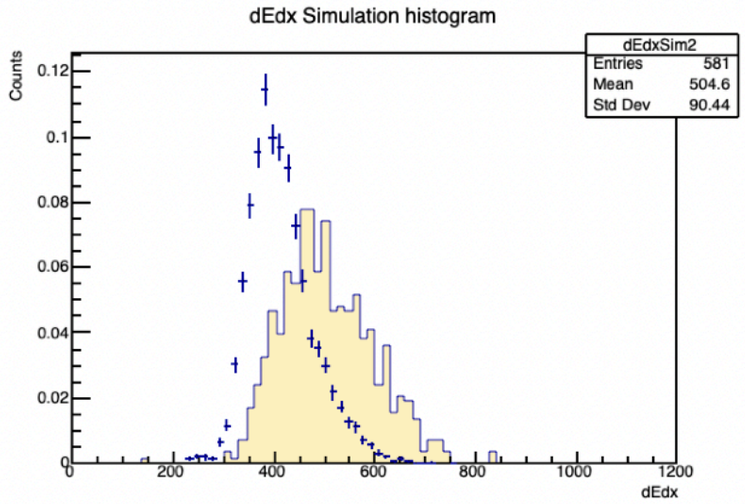
Ag

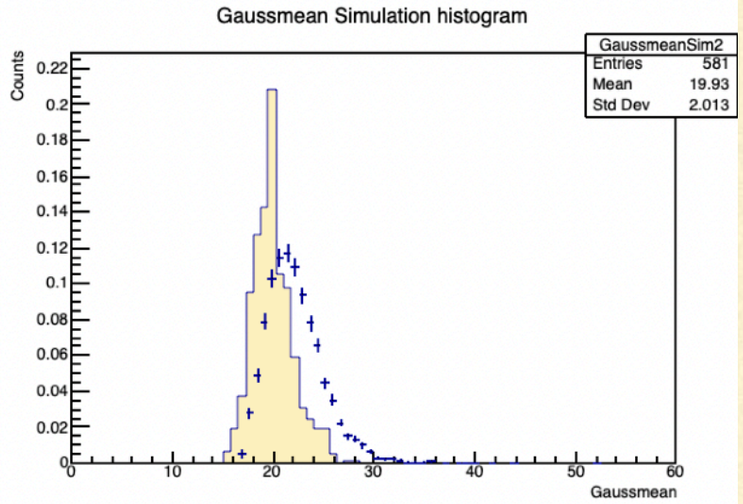

Lenght Simulation histogram
LenghtSim2
Entries 581
Mean 62.3
Std Dev 10.7
Counts
Lenght

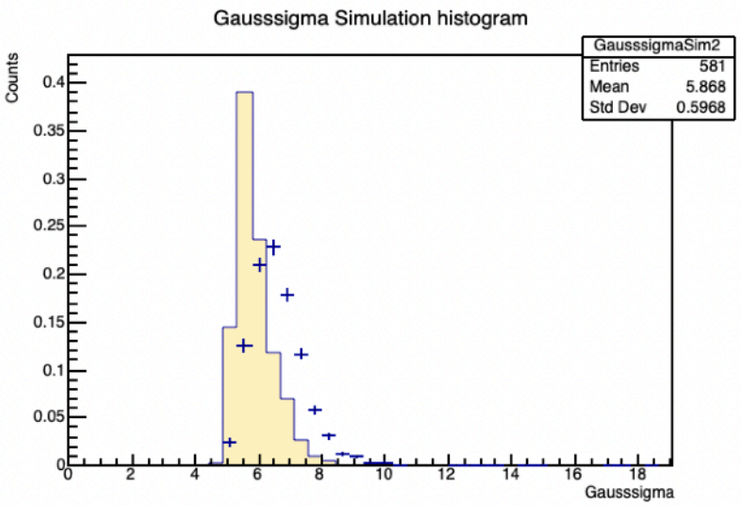

Width Simulation histogram
WidthSim2
Entries 581
Mean 40.96
Std Dev 3.612
Counts
Width

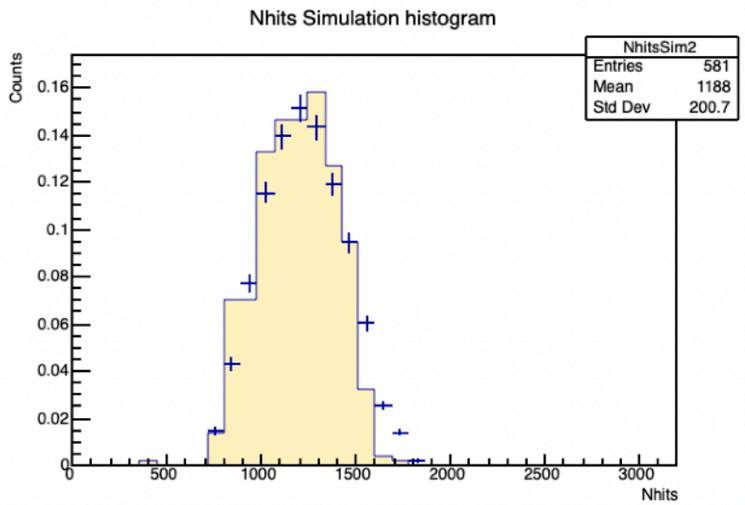

Slimness Simulation histogram
SlimnessSim2
Entries 581
Mean 0.6744
Std Dev 0.1243
Counts
Slimness

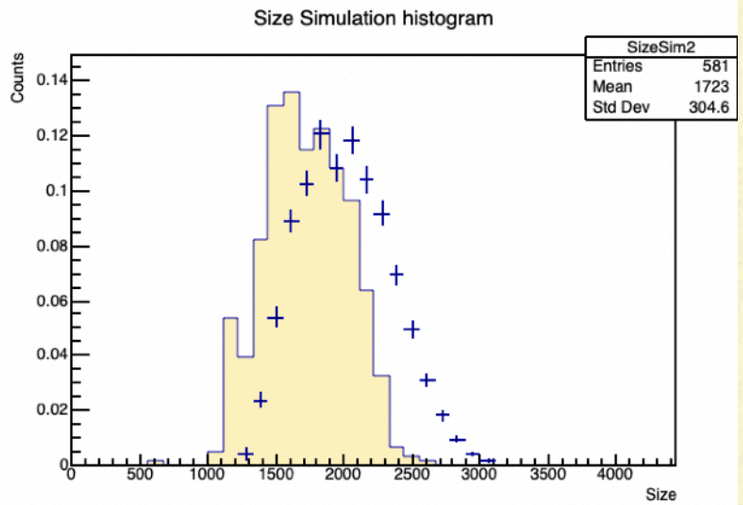

Density Simulation histogram
DensitySim2
Entries 581
Mean 26.42
Std Dev 4.64
Counts
Density


dEdx Simulation histogram
dEdxSim2
Entries 581
Mean 504.6
Std Dev 90.44
Counts
dEdx

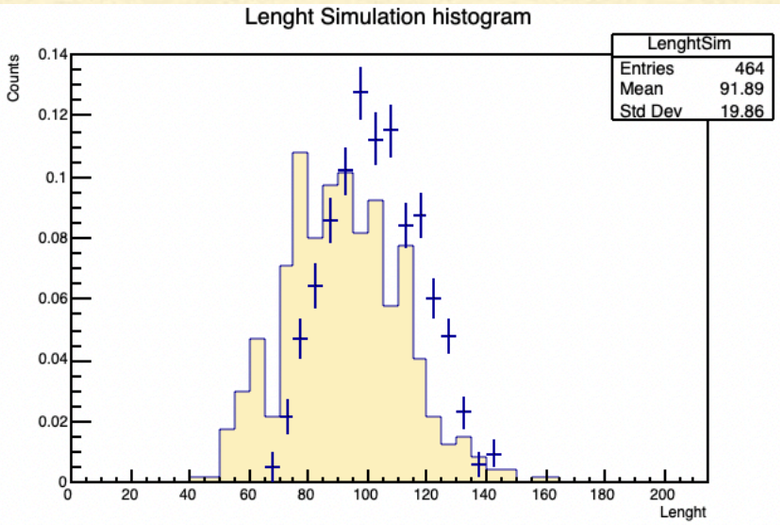

Gaussmean Simulation histogram
GaussmeanSim2
Entries 581
Mean 19.93
Std Dev 2.013
Counts
Gaussmean

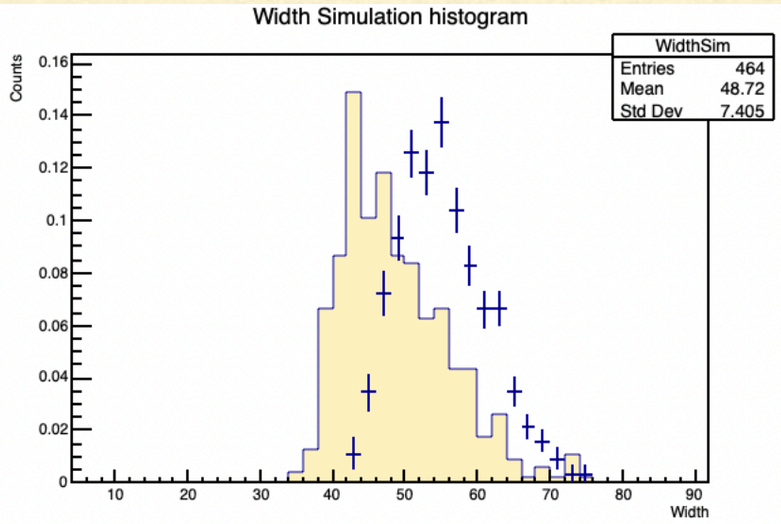

Gausssigma Simulation histogram
GausssigmaSim2
Entries 581
Mean 5.868
Std Dev 0.5968
Counts
Gausssigma

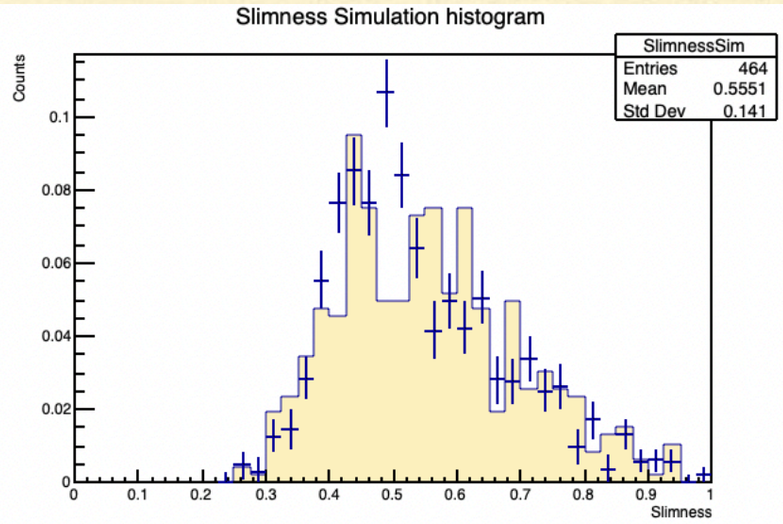

Nhits Simulation histogram
NhitsSim2
Entries 581
Mean 1188
Std Dev 200.7
Counts
Nhits

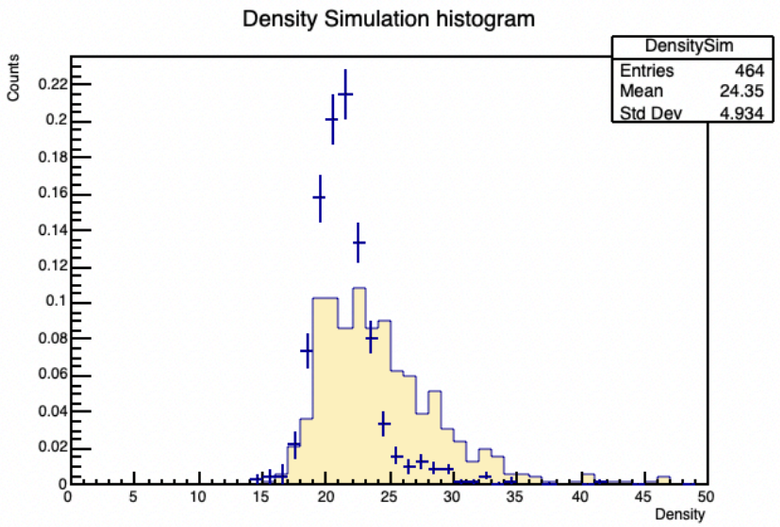

Size Simulation histogram
SizeSim2
Entries 581
Mean 1723
Std Dev 304.6
Counts
Size

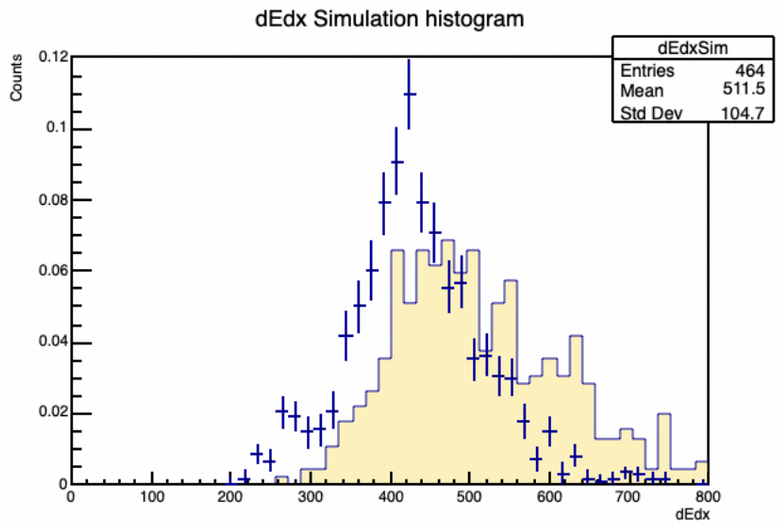
Ba

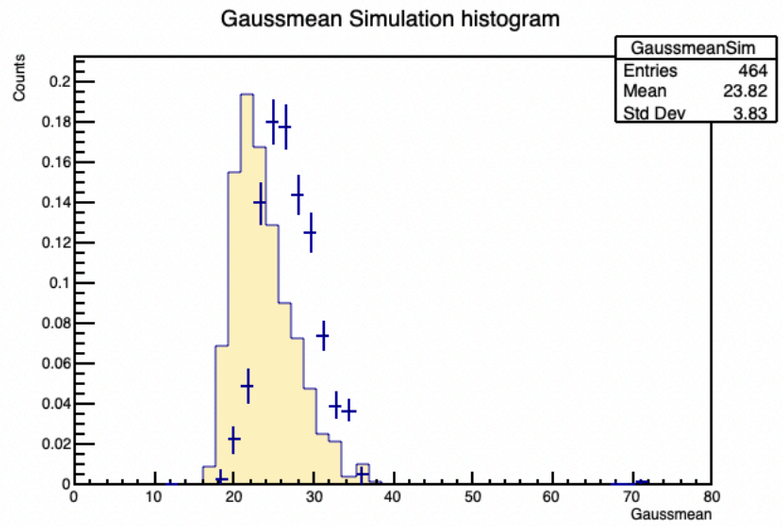

Lenght Simulation histogram
LenghtSim
Entries 464
Mean 91.89
Std Dev 19.86
Counts
Lenght

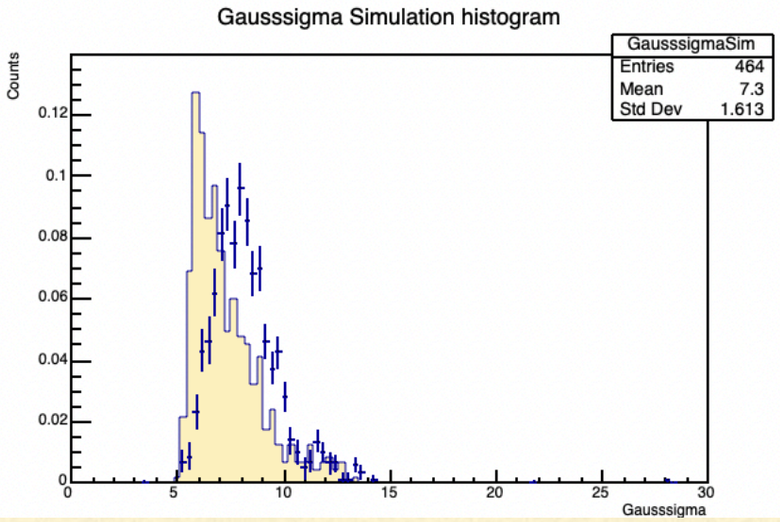

Width Simulation histogram
WidthSim
Entries 464
Mean 48.72
Std Dev 7.405
Counts
Width

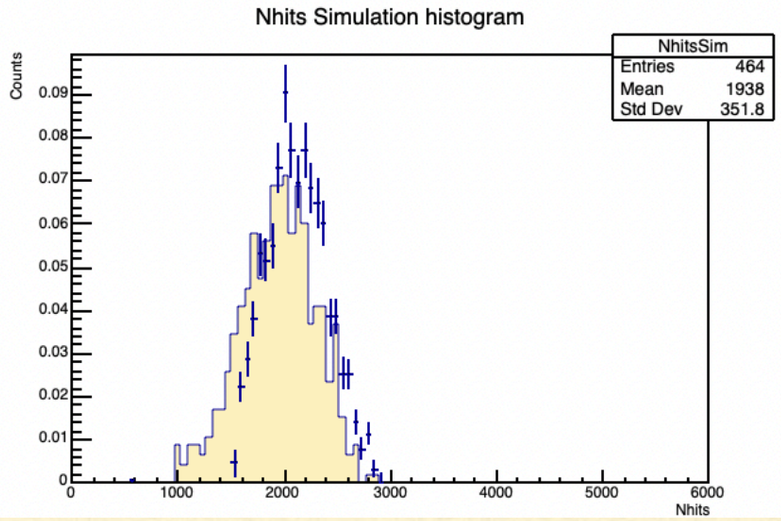

Slimness Simulation histogram
SlimnessSim
Entries 464
Mean 0.5551
Std Dev 0.141
Counts
Slimness

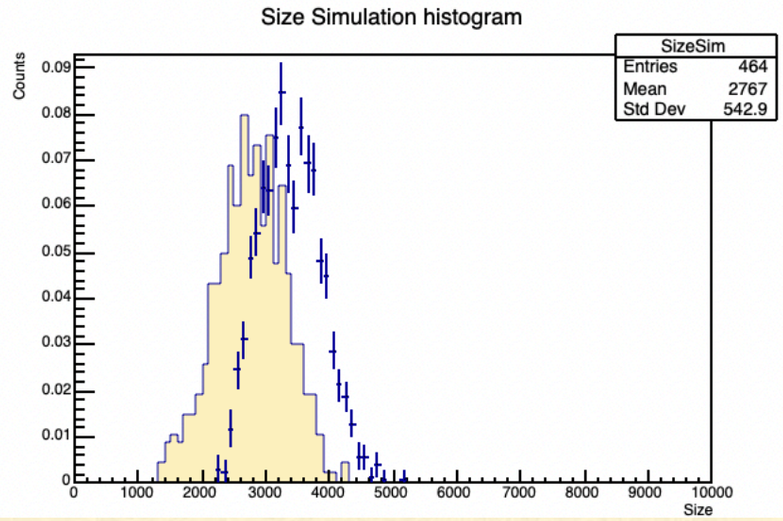

Density Simulation histogram
DensitySim
Entries 464
Mean 24.35
Std Dev 4.934
Counts
Density


dEdx Simulation histogram
dEdxSim
Entries 464
Mean 511.5
Std Dev 104.7
Counts
dEdx

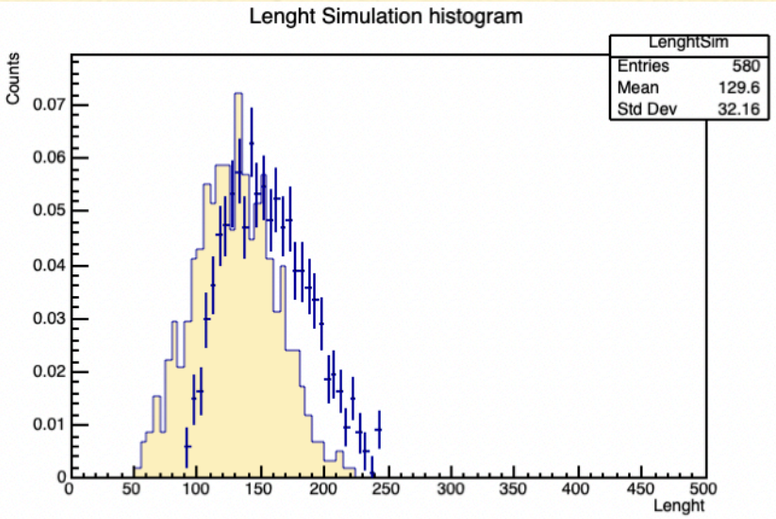

Gaussmean Simulation histogram
GaussmeanSim
Entries 464
Mean 23.82
Std Dev 3.83
Counts
Gaussmean

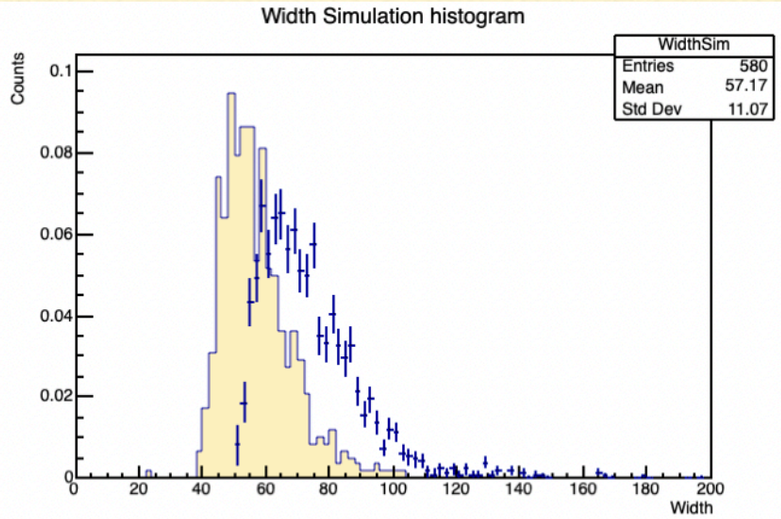

Gausssigma Simulation histogram
GausssigmaSim
Entries 464
Mean 7.3
Std Dev 1.613
Counts
Gausssigma

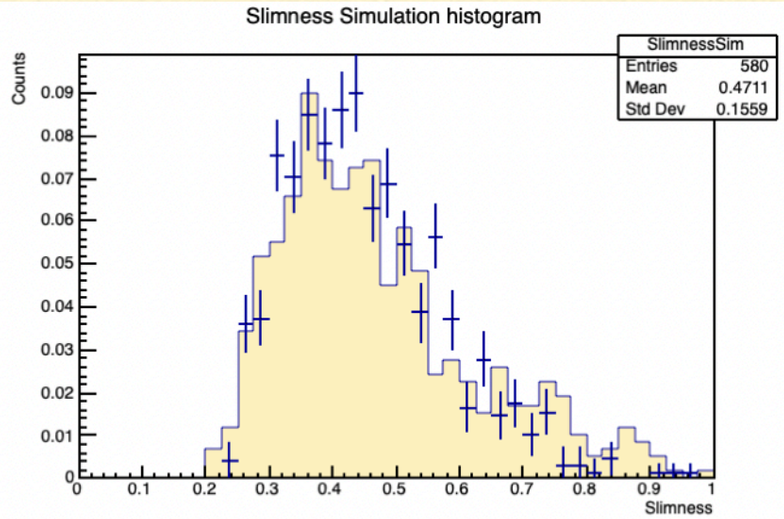

Nhits Simulation histogram
NhitsSim
Entries 464
Mean 1938
Std Dev 351.8
Counts
Nhits

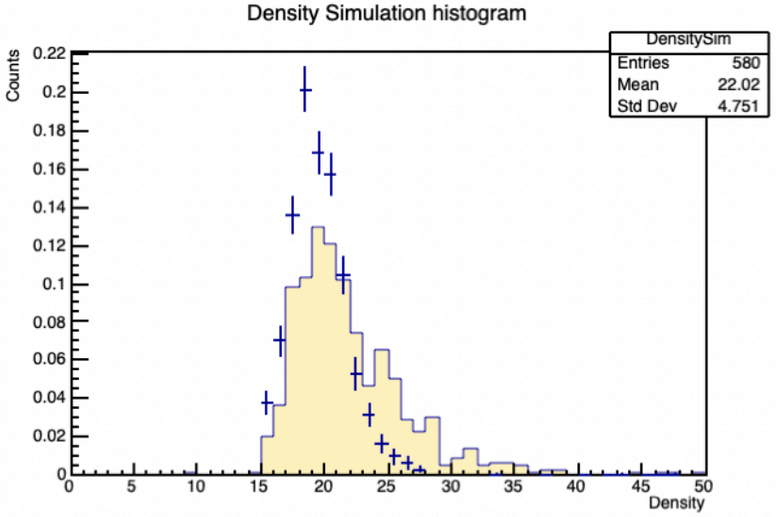

Size Simulation histogram
SizeSim
Entries 464
Mean 2767
Std Dev 542.9
Counts
Size

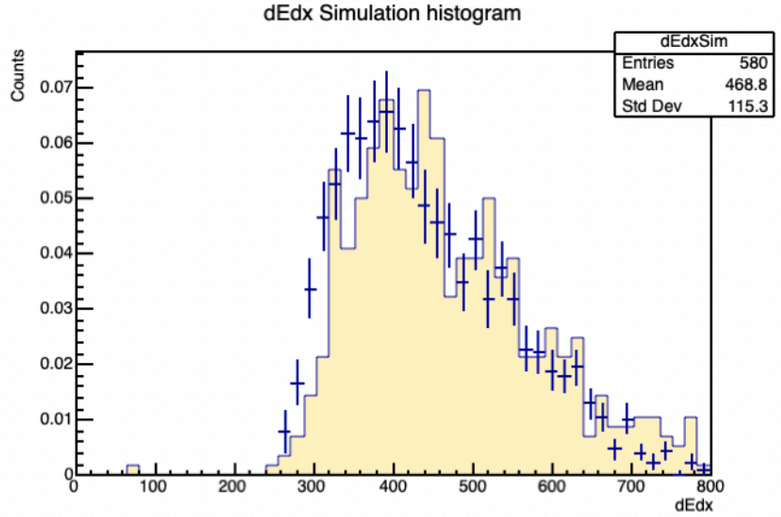
Tb

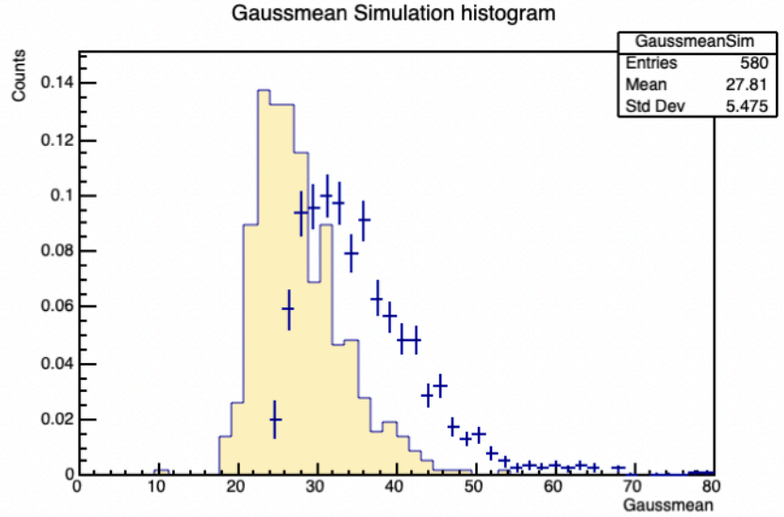

Lenght Simulation histogram
LenghtSim
Entries 580
Mean 129.6
Std Dev 32.16
Counts
Lenght

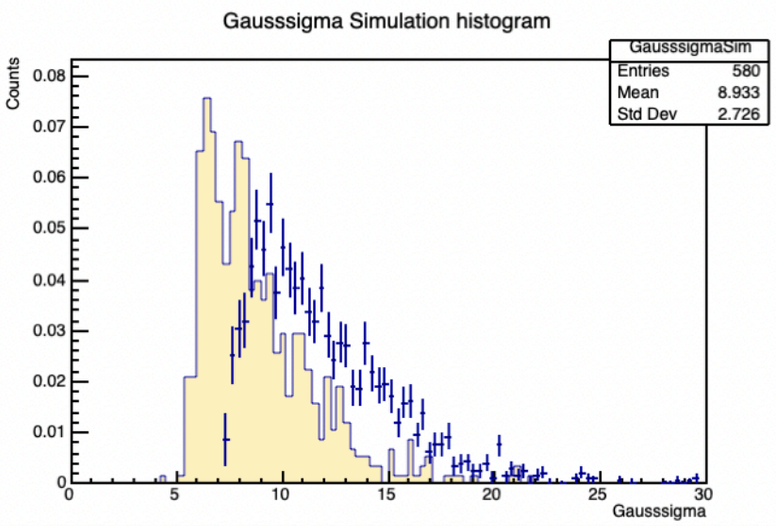

Width Simulation histogram
WidthSim
Entries 580
Mean 57.17
Std Dev 11.07
Counts
Width

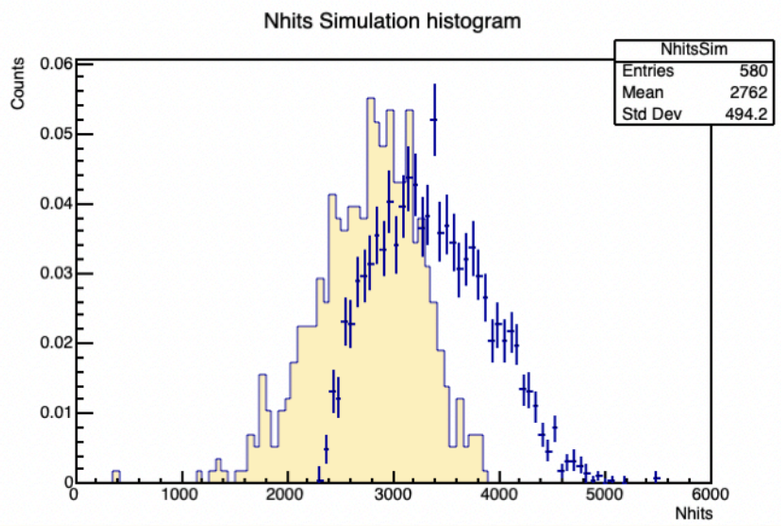

Slimness Simulation histogram
SlimnessSim
Entries 580
Mean 0.4711
Std Dev 0.1559
Counts
Slimness

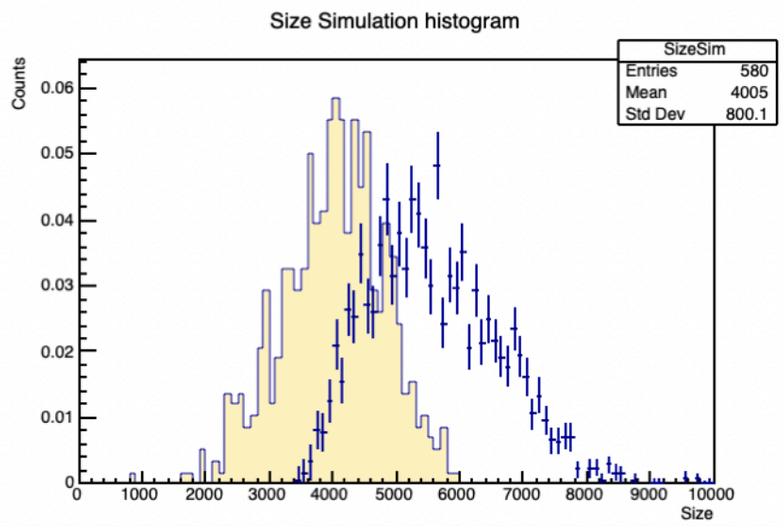

Density Simulation histogram
DensitySim
Entries 580
Mean 22.02
Std Dev 4.751
Counts
Density


dEdx Simulation histogram
dEdxSim
Entries 580
Mean 468.8
Std Dev 115.3
Counts
dEdx

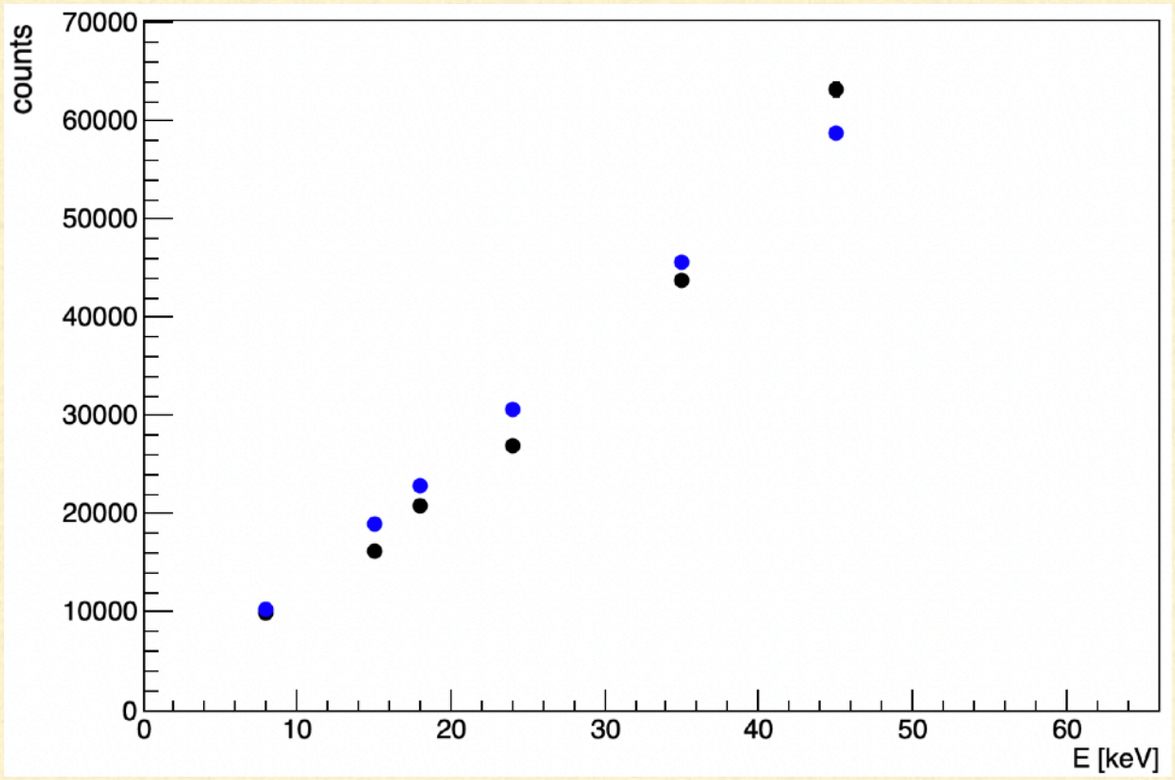

Gaussmean Simulation histogram
GaussmeanSim
Entries 580
Mean 27.81
Std Dev 5.475
Counts
Gaussmean

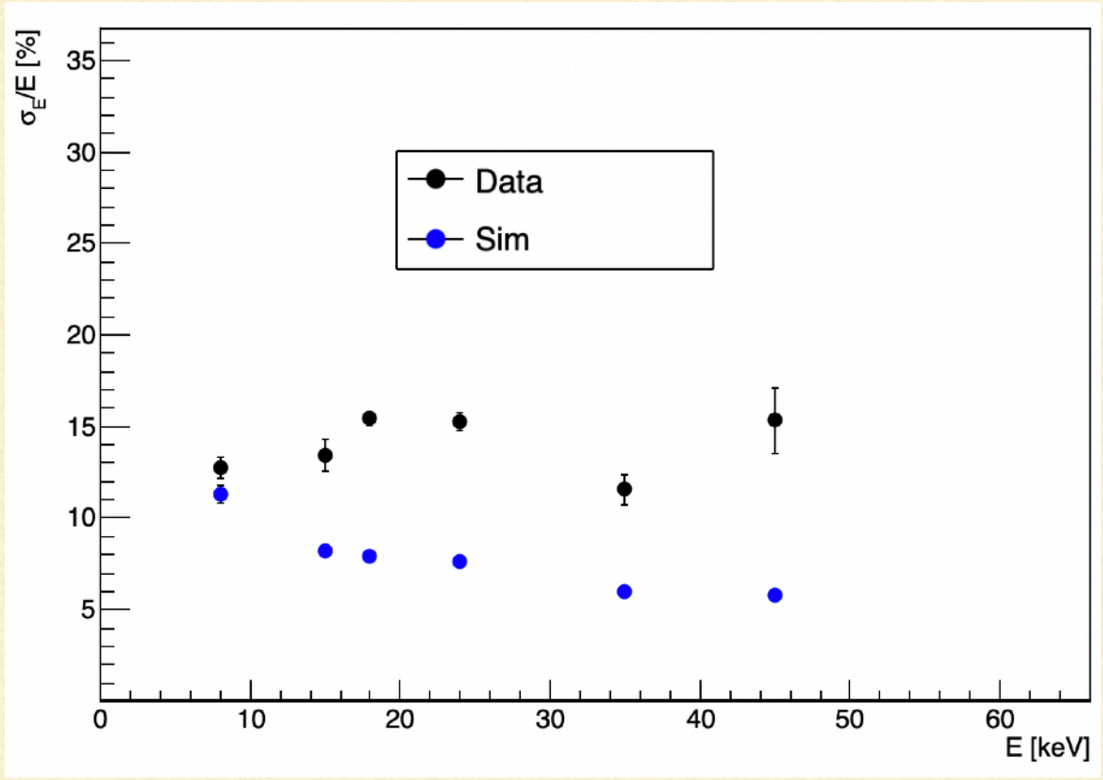

Gausssigma Simulation histogram
GausssigmaSim
Entries 580
Mean 8.933
Std Dev 2.726
Counts
Gausssigma


Nhits Simulation histogram
NhitsSim
Entries 580
Mean 2762
Std Dev 494.2
Counts
Nhits


Size Simulation histogram
SizeSim
Entries 580
Mean 4005
Std Dev 800.1
Counts
Size

Linearity and Energy resolution

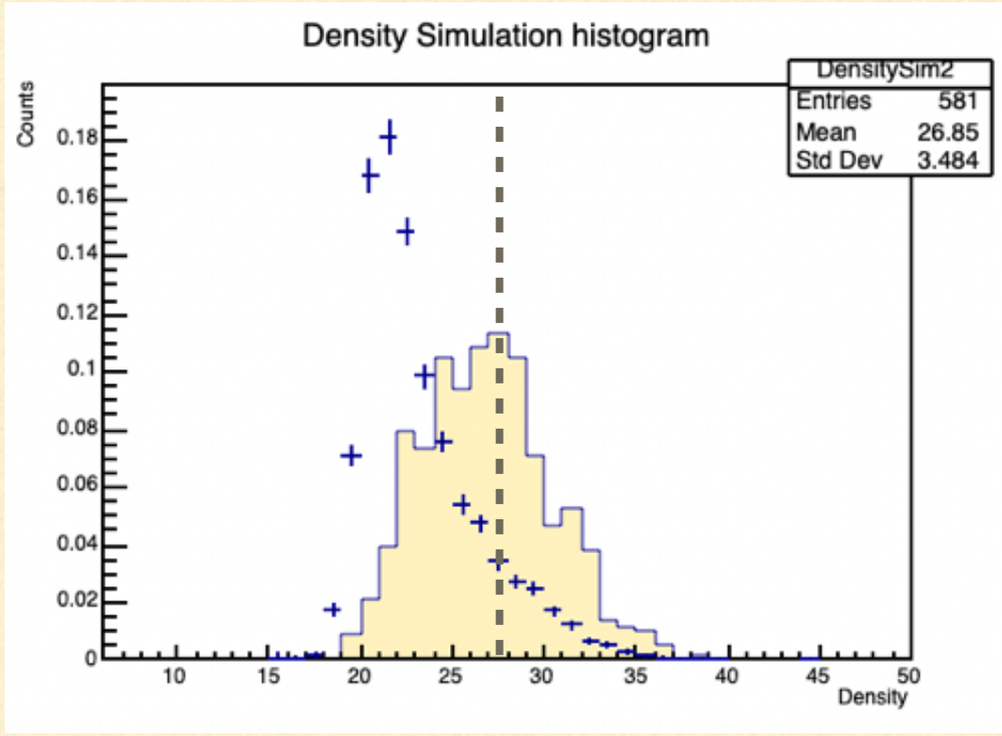


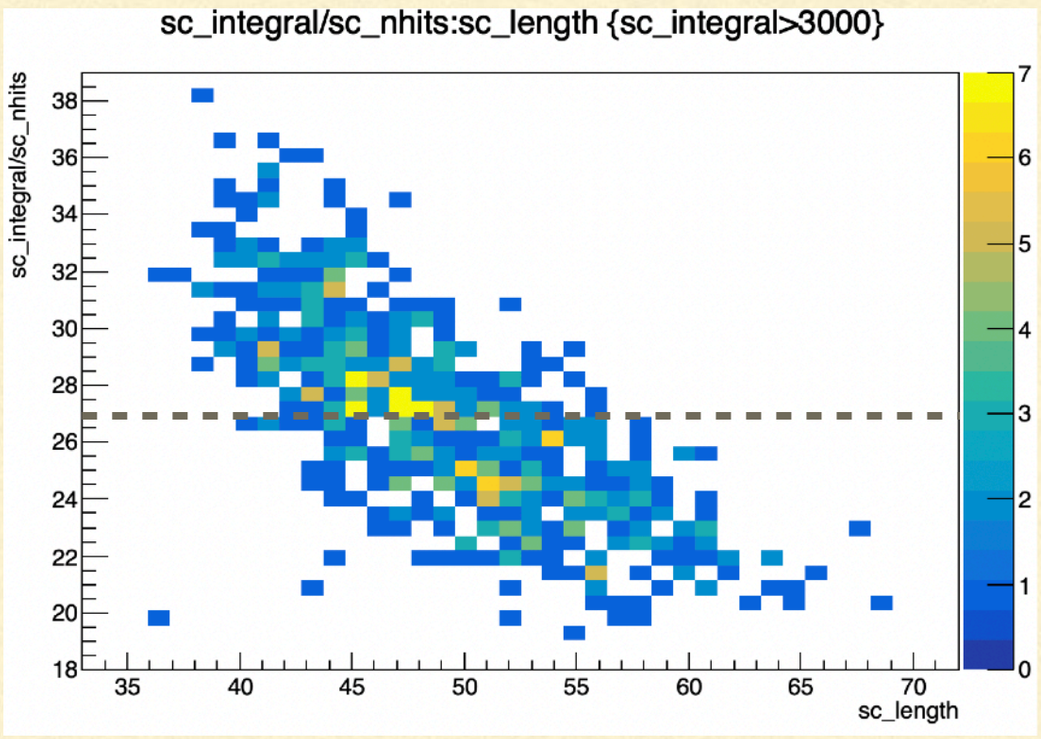


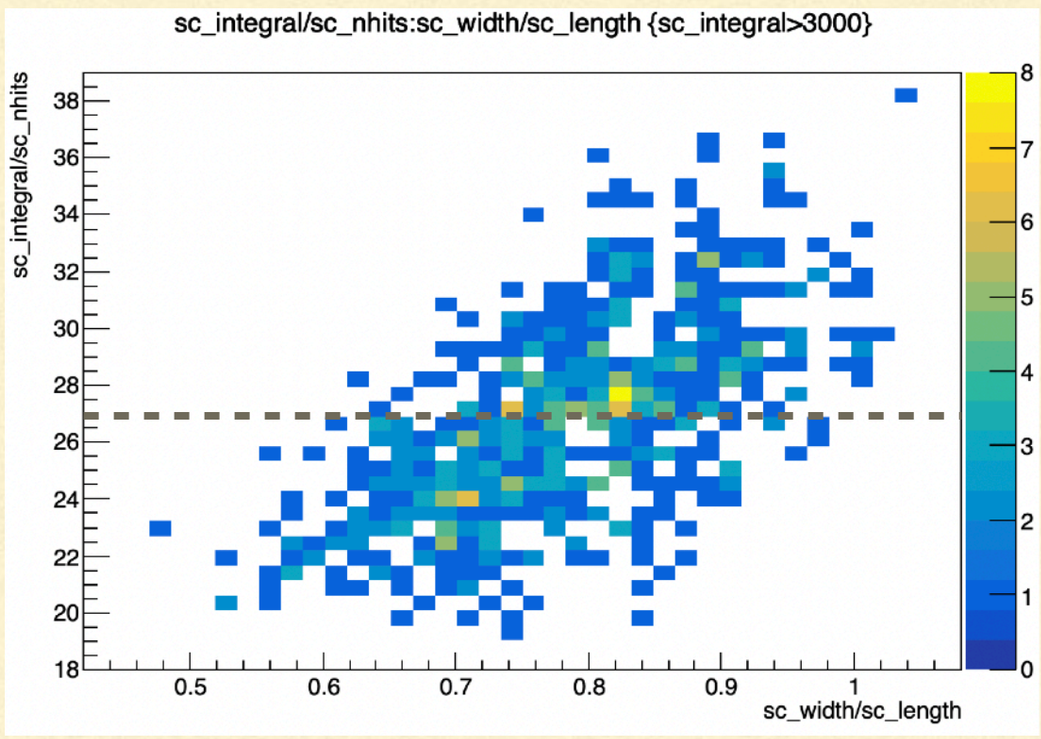
Linearity and EReso essentially unchanged

Identification of high density events

- Not a clear identification of events with higher density in the simulation







Plans for the future

- It seems that we reached a good point in therm of data-mc comparison
- A last comparison can be done by studying better the data with the sPlot
- The hight statistic sample can be produced to Study again the directionality
  - (Last results on directionality were with a factor ~4 less light)
- With the new results on directionality I can start to study the solar neutrino case