Titanium and Calcium data analysis

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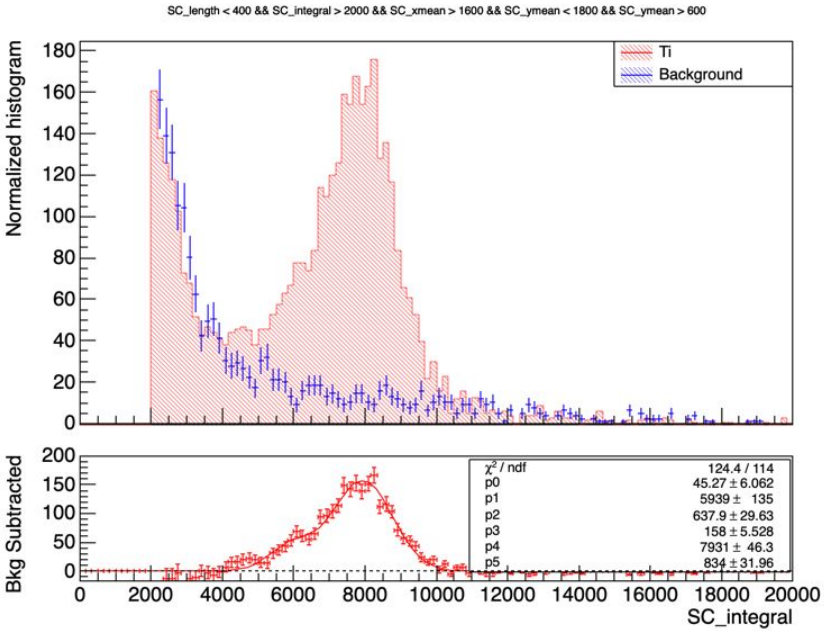
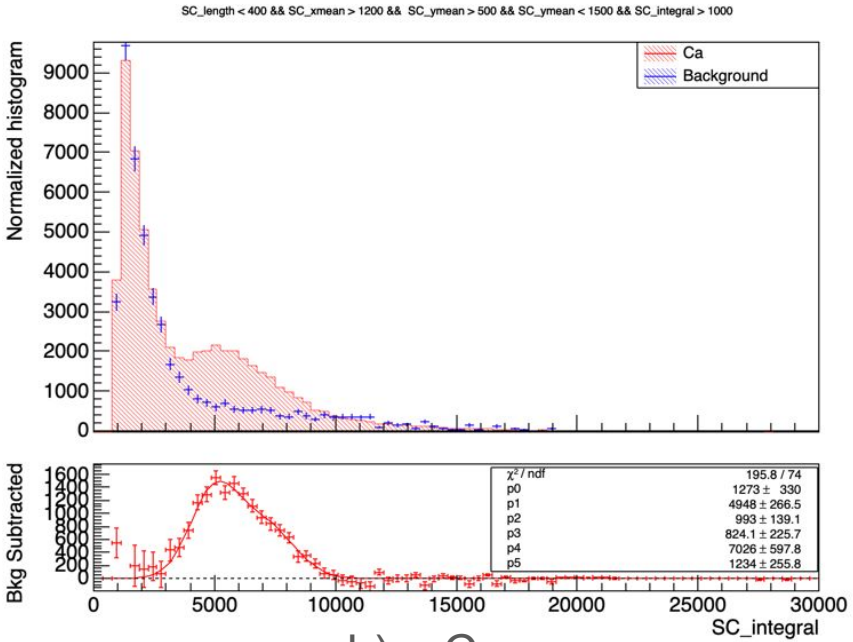
24/03/2022

Ti and Ca Integral



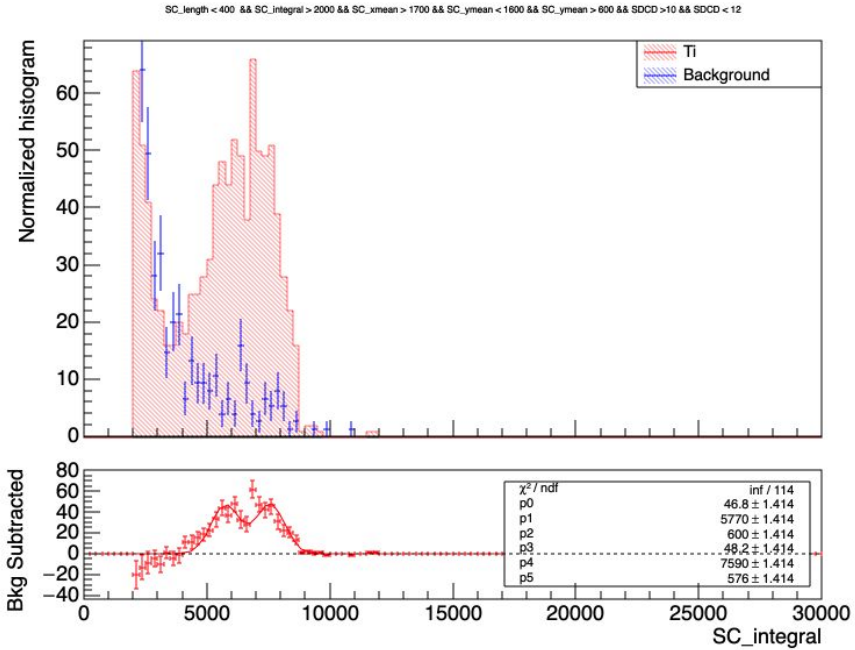
a) Ti



b) Ca

Selection for Ti : length < 400 and 600< sc_ymean <1800 and sc_xmean >1600 and sc_integral > 2000
Selection for Ca: length < 400 and 500< sc_ymean <1500 and sc_xmean >1200 and sc_integral > 1000

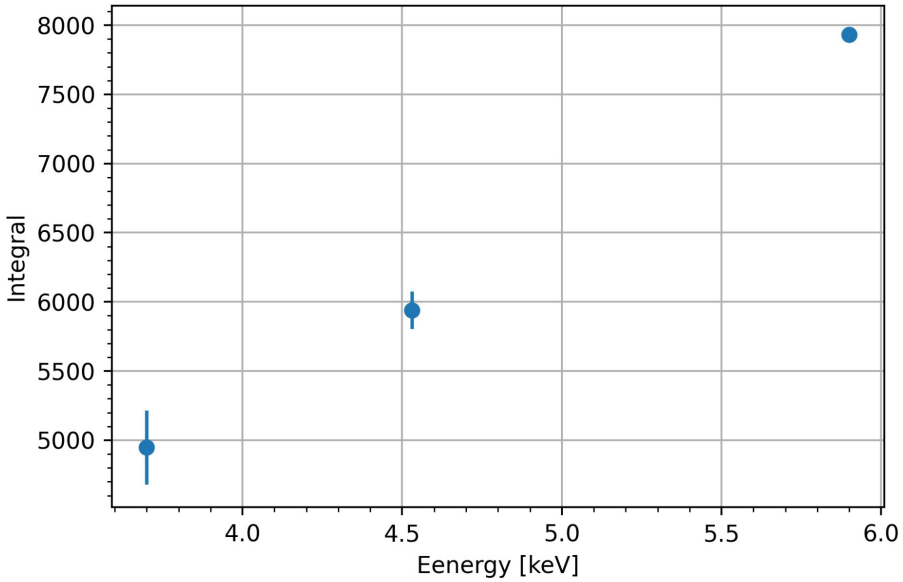
Ti Integral after applying a selection on SDCD

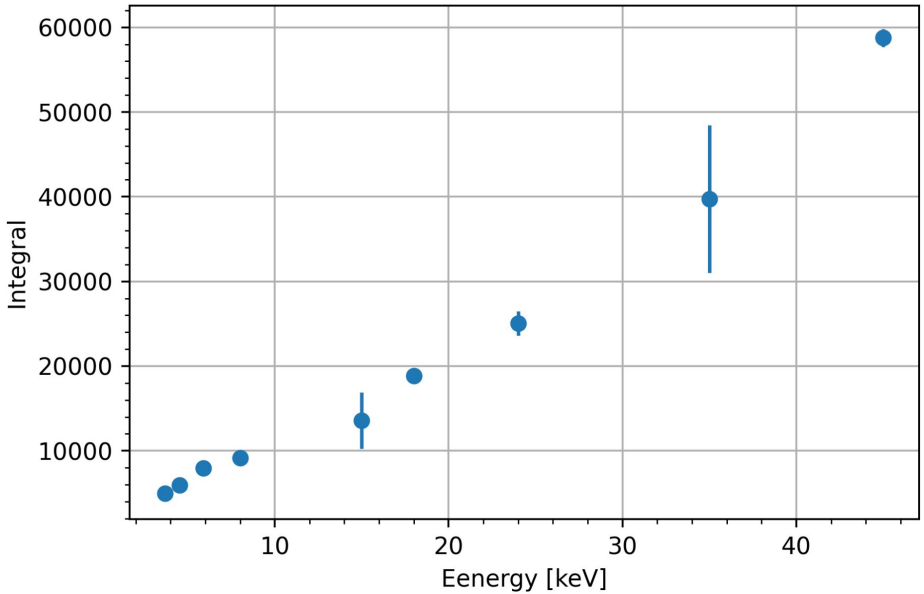


Fe peak in Ti data can be removed by applying a tighter selection on of the discriminating variables.

There seems to be a Fe peak in Ca data also as seen in the previous slide.

Integral vs Energy



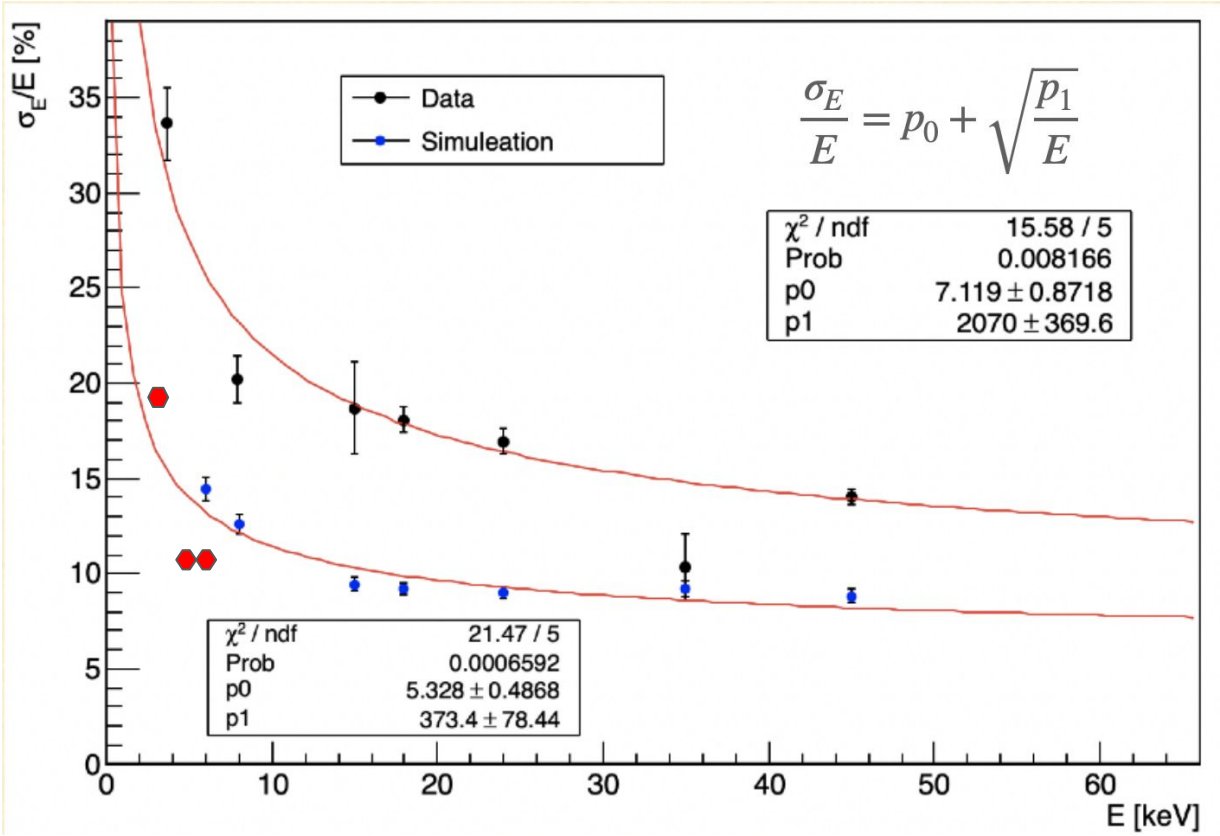


Plot 1. Points are only from Ca and Ti analysis. 3 points corresponds to Ca peak, Ti peak and Fe peak (in Ti data).

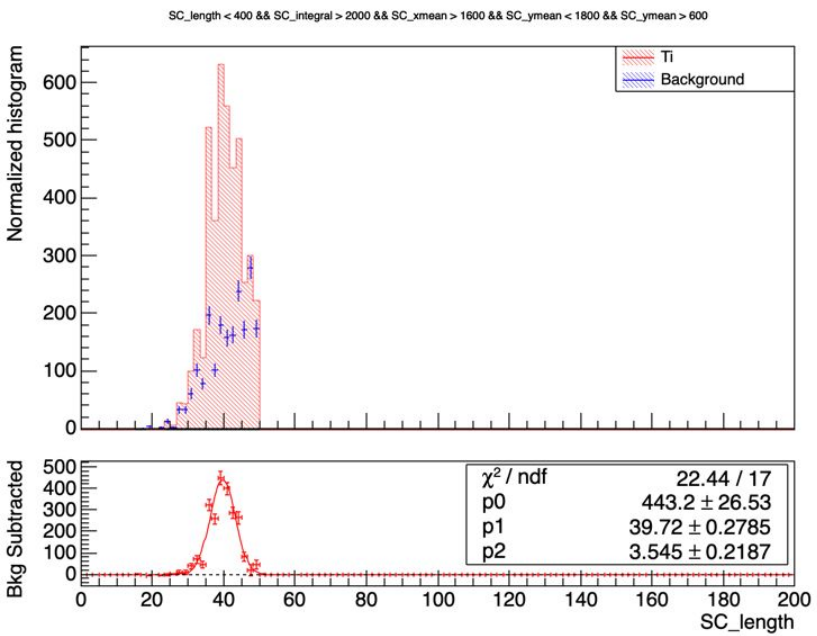
Plot 2. 3 data points from Ti and Ca analysis are plotted with the data points of Samuele's analysis.

Energy Resolution

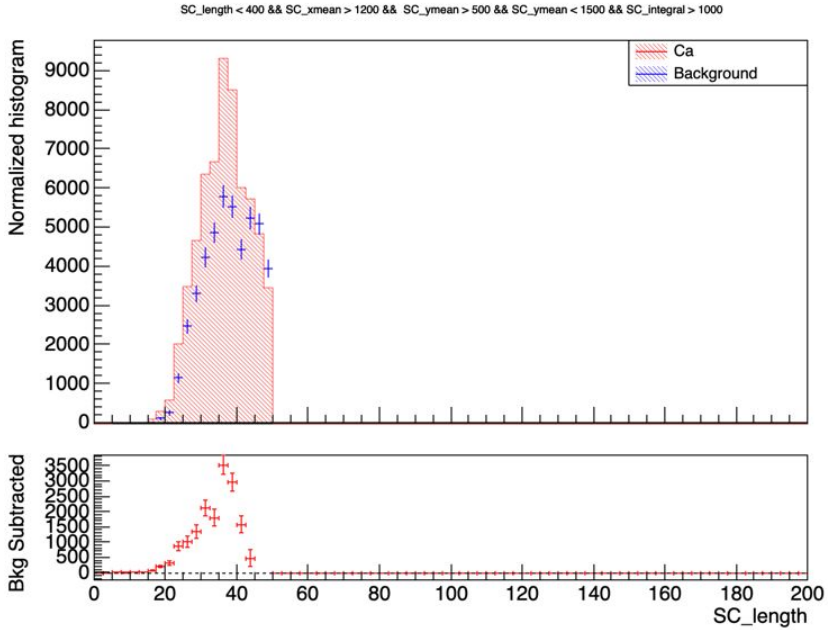
Red points are Ca , Ti and Fe data points.



Length

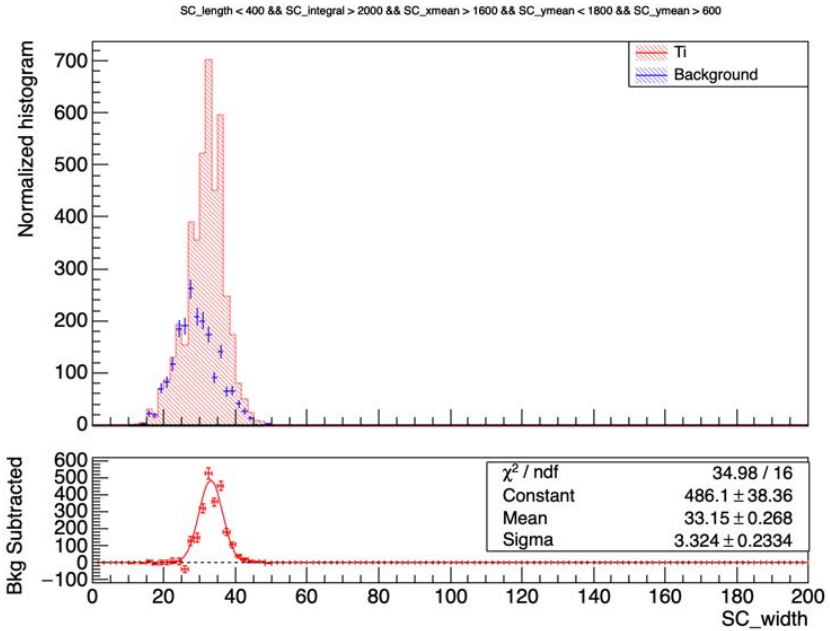


a) Ti

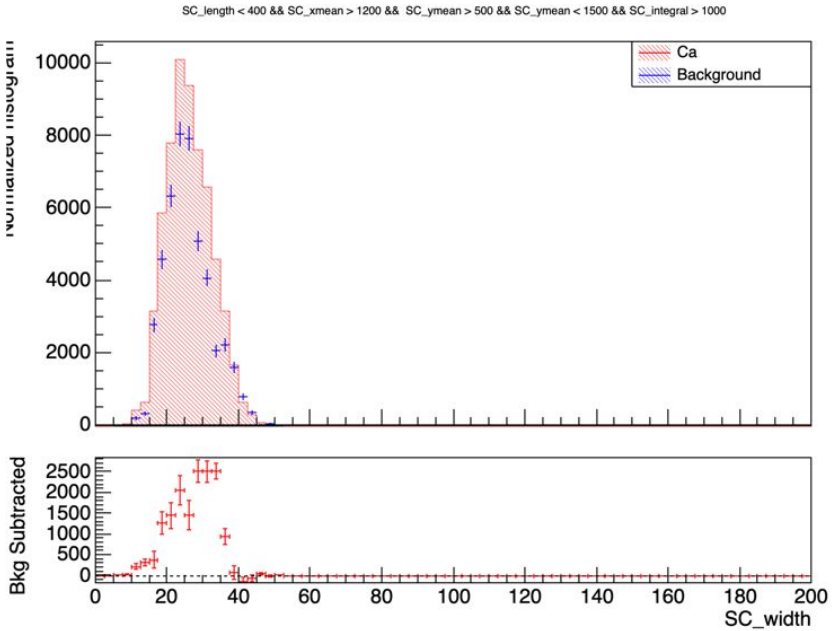


b) Ca

Width

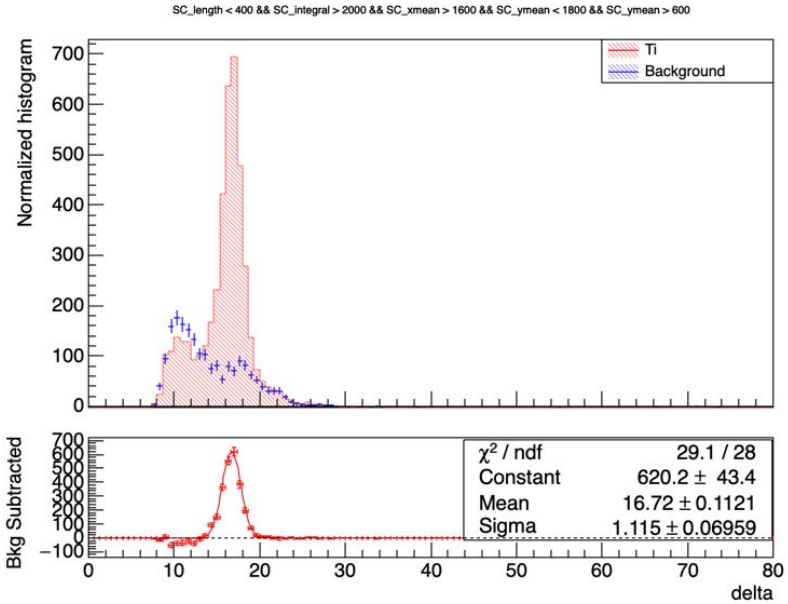


a) Ti

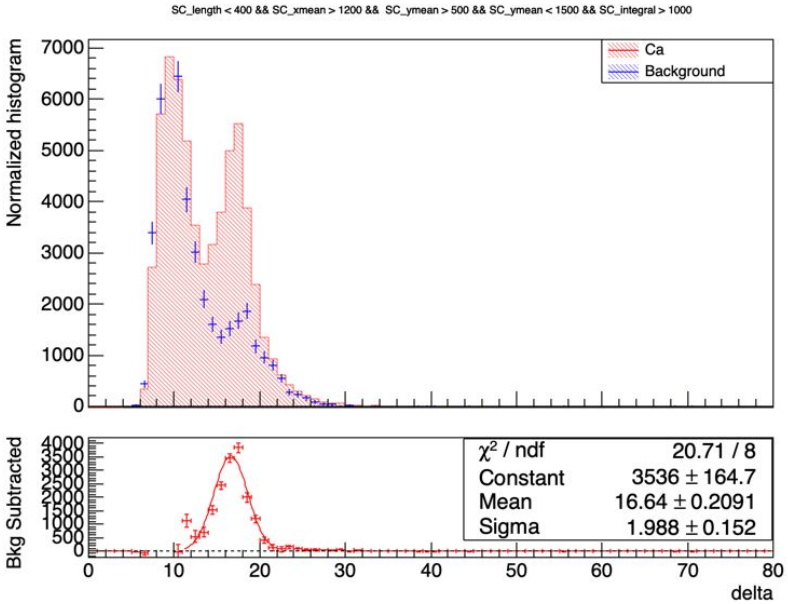


b) Ca

Delta

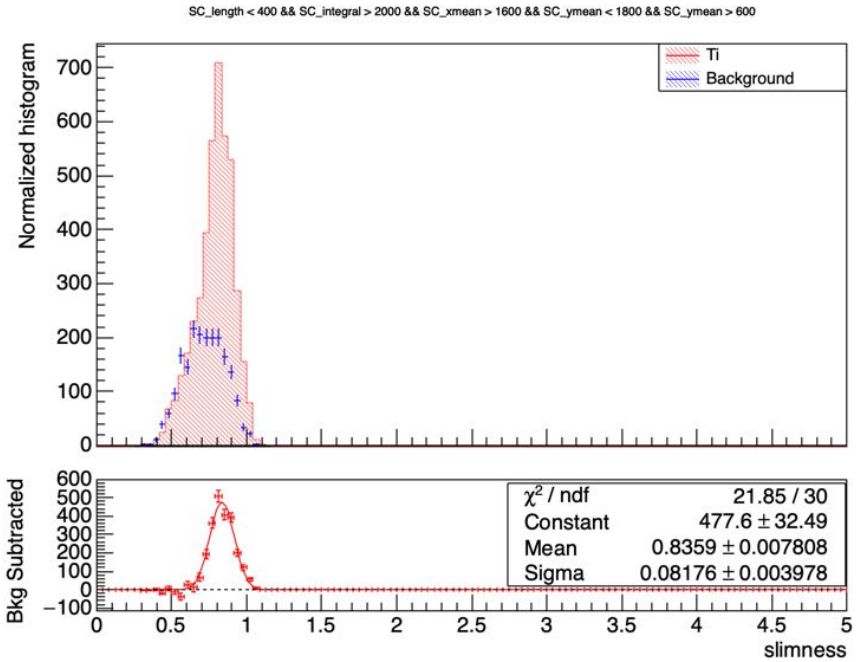


a) Ti

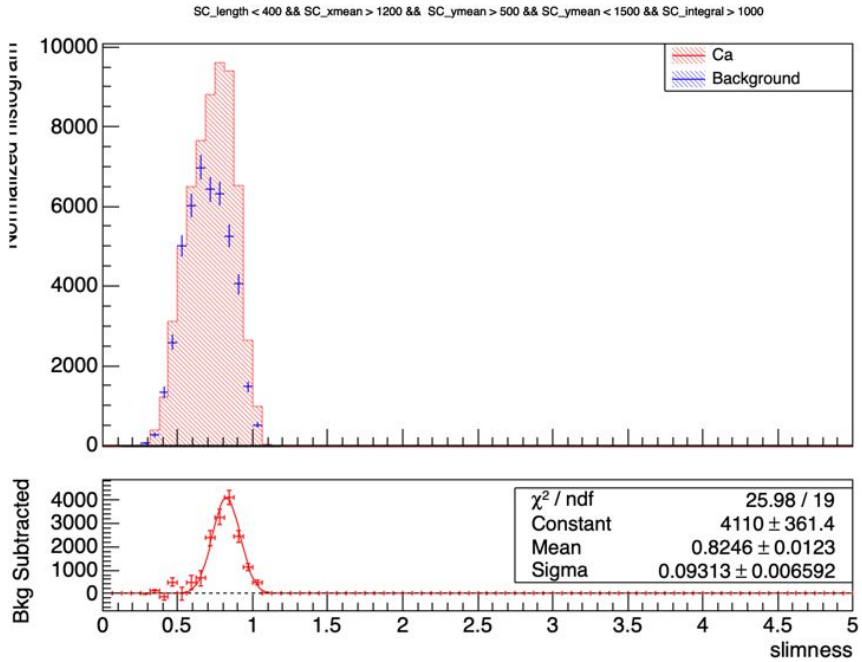


b) Ca

Slimness

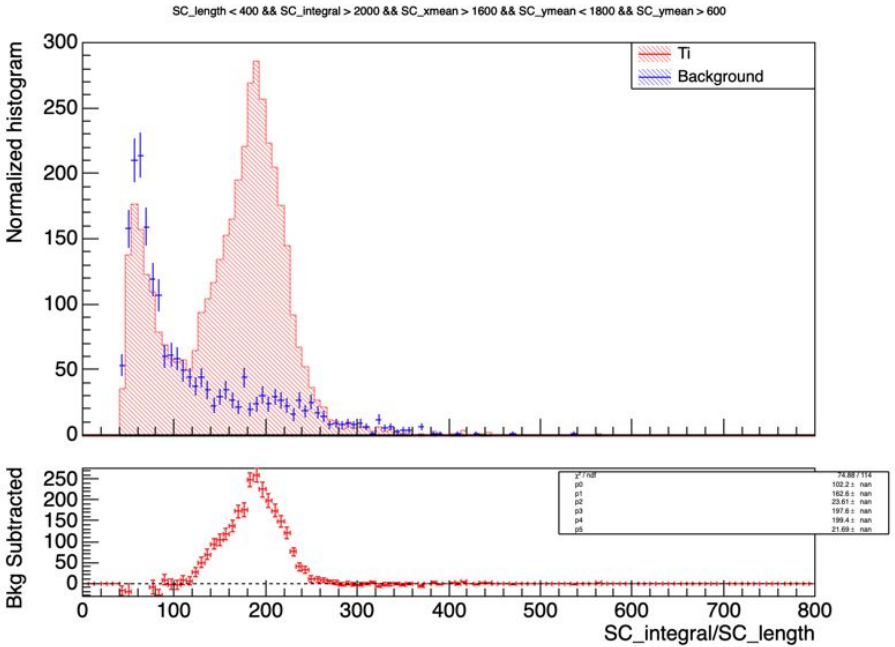


a) Ti

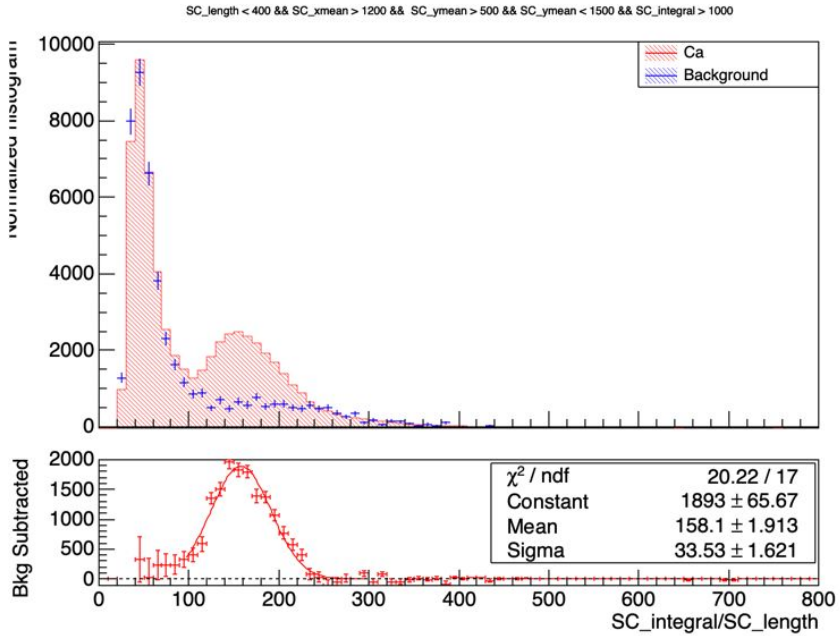


b) Ca

dE/dx

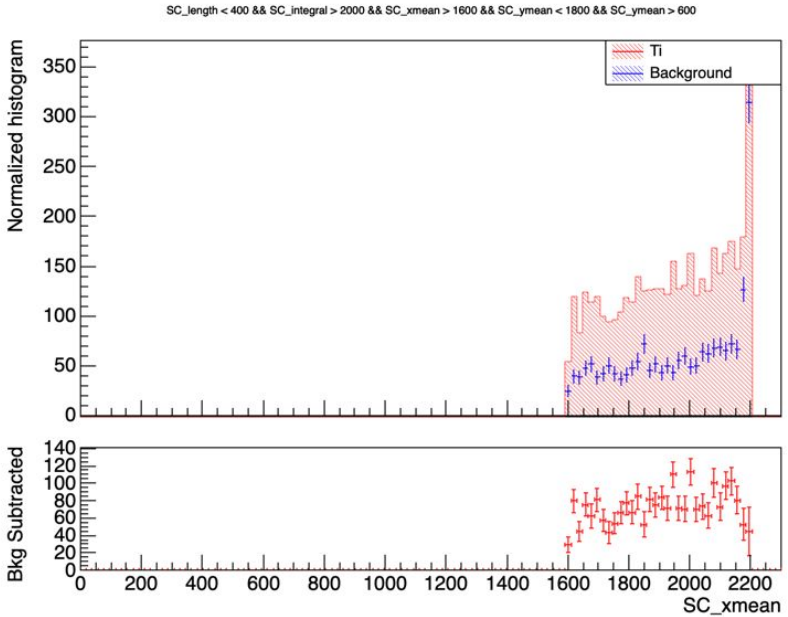

SC_length < 400 && SC_integral > 2000 && SC_xmean > 1600 && SC_ymean < 1800 && SC_ymean > 600
Ti
Background
Normalized histogram
Bkg Subtracted
SC_integral/SC_length

a) Ti

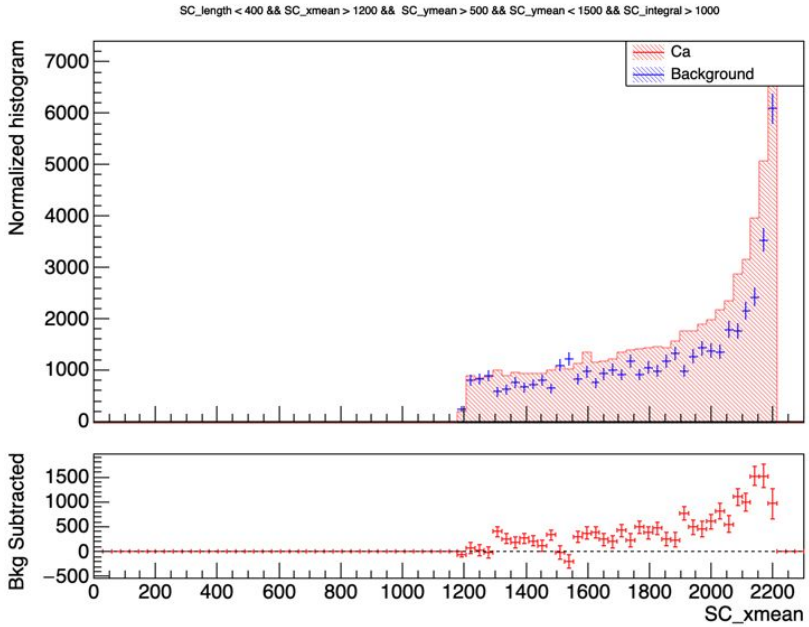

SC_length < 400 && SC_xmean > 1200 && SC_ymean > 500 && SC_ymean < 1500 && SC_integral > 1000
Ca
Background
Bkg Subtracted
χ² / ndf 20.22 / 17
Constant 1893 ± 65.67
Mean 158.1 ± 1.913
Sigma 33.53 ± 1.621
SC_integral/SC_length

b) Ca

xmean

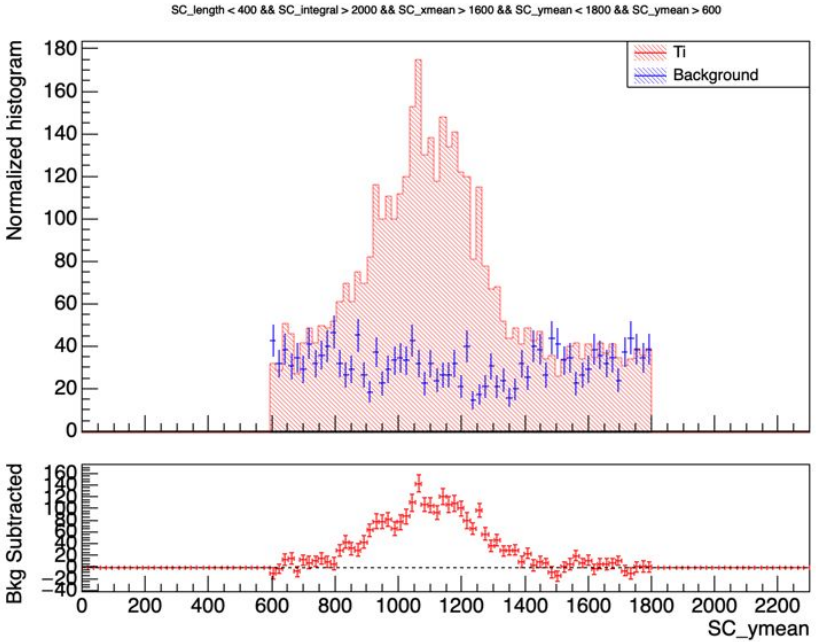


a) Ti

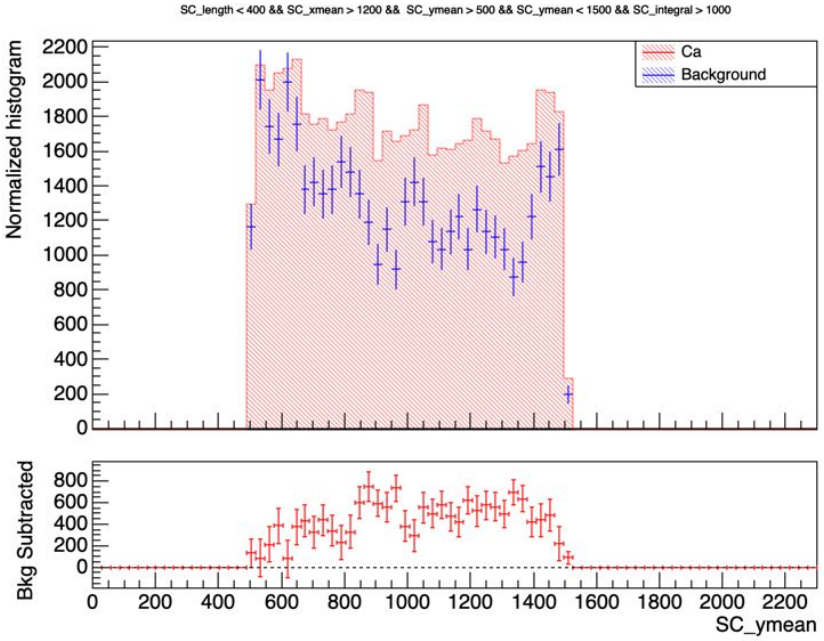


b) Ca

ymean

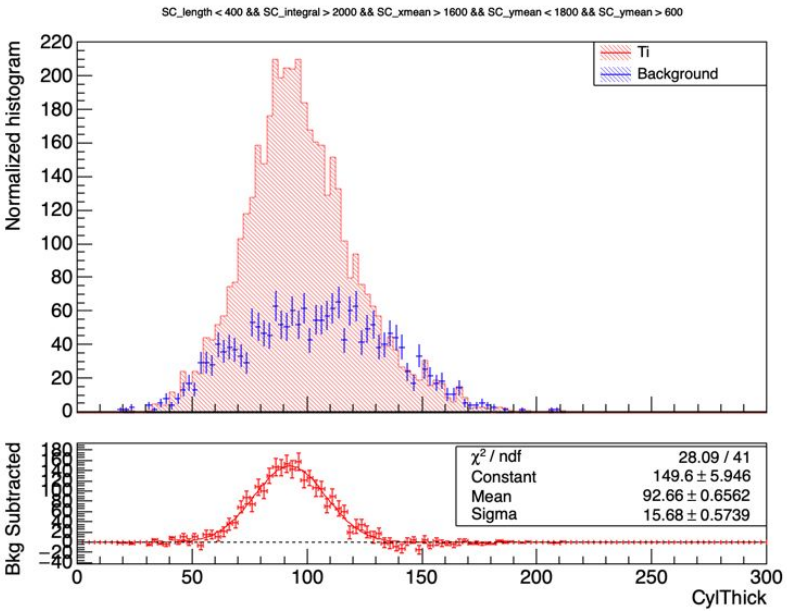


a) Ti

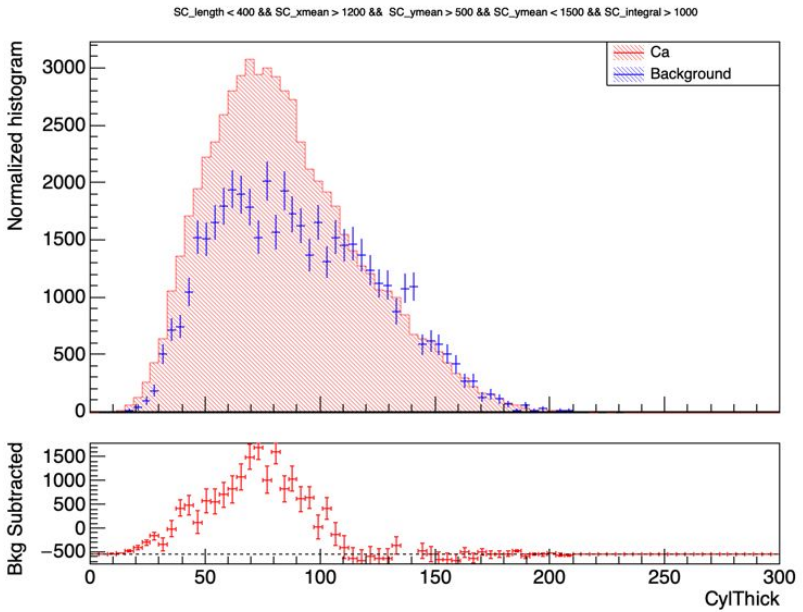


b) Ca

CylThick

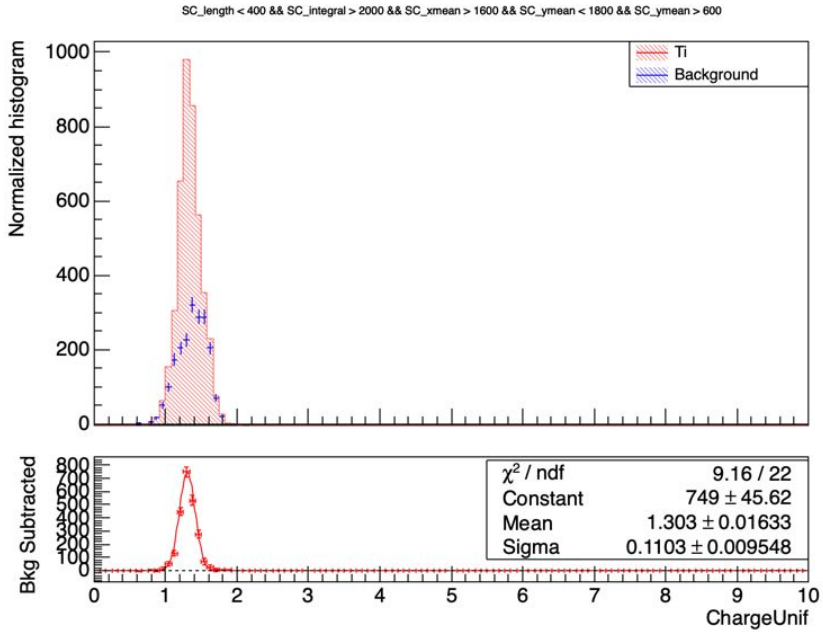


a) Ti

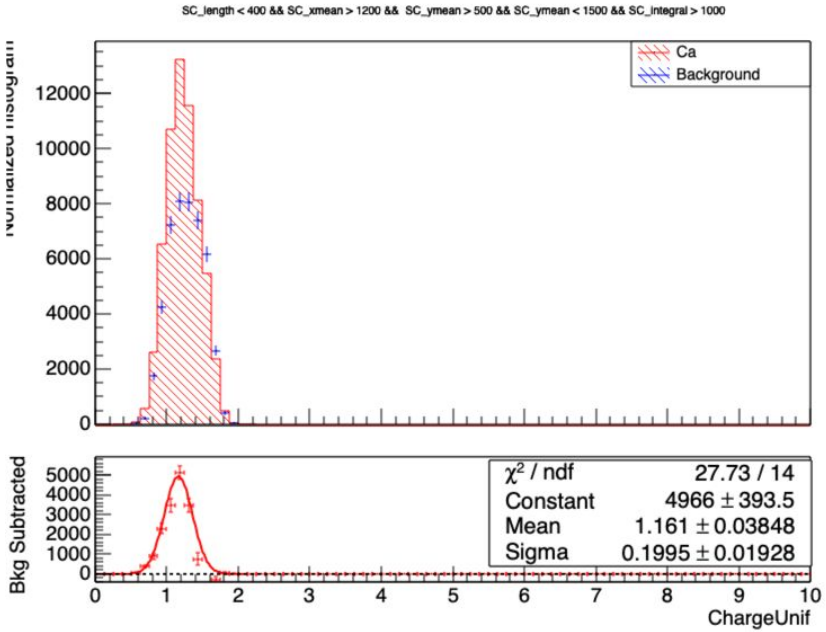


b) Ca

ChargeUnif

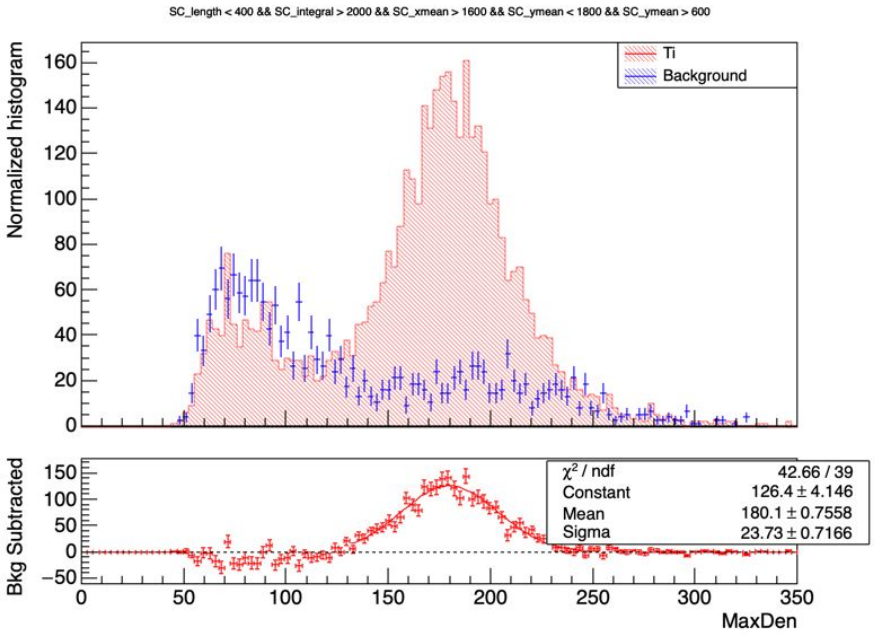


a) Ti

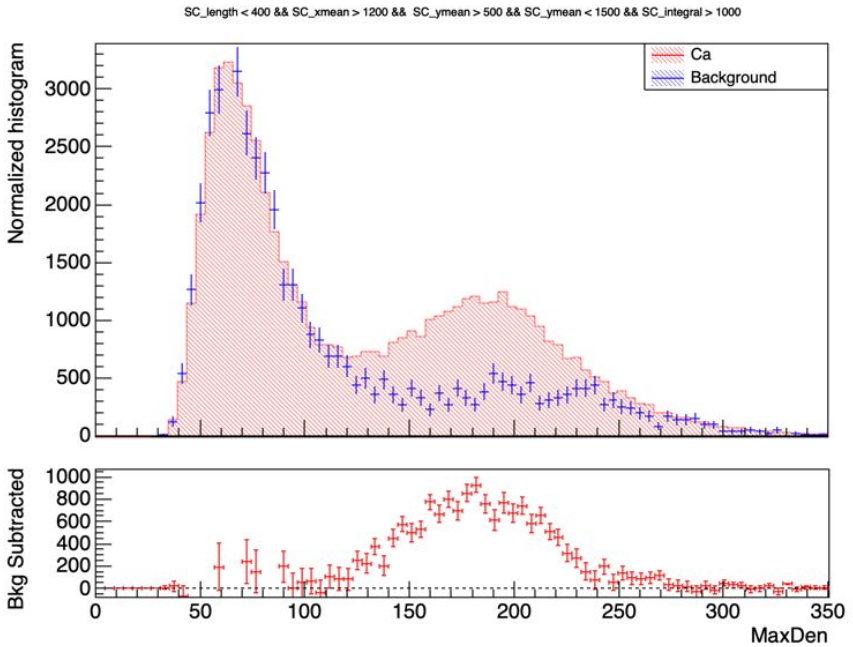


b) Ca

MaxDen

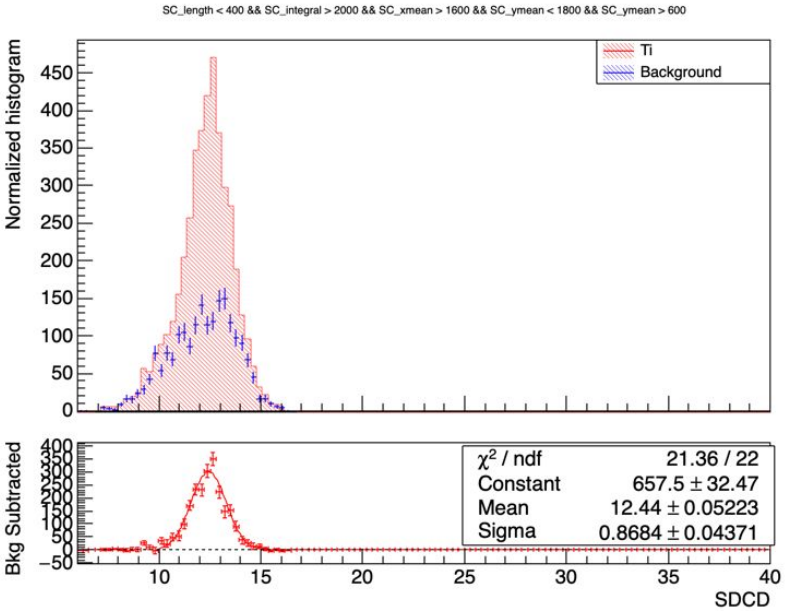


a) Ti

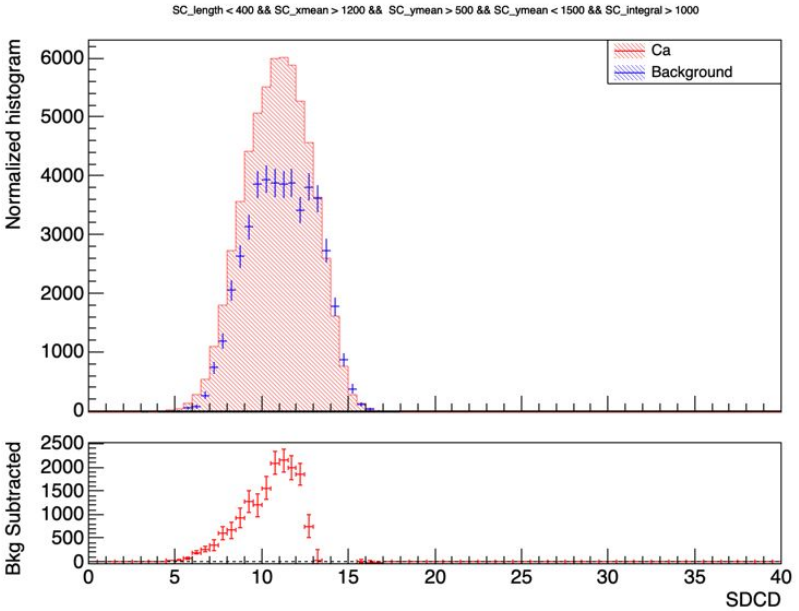


b) Ca

SDCD

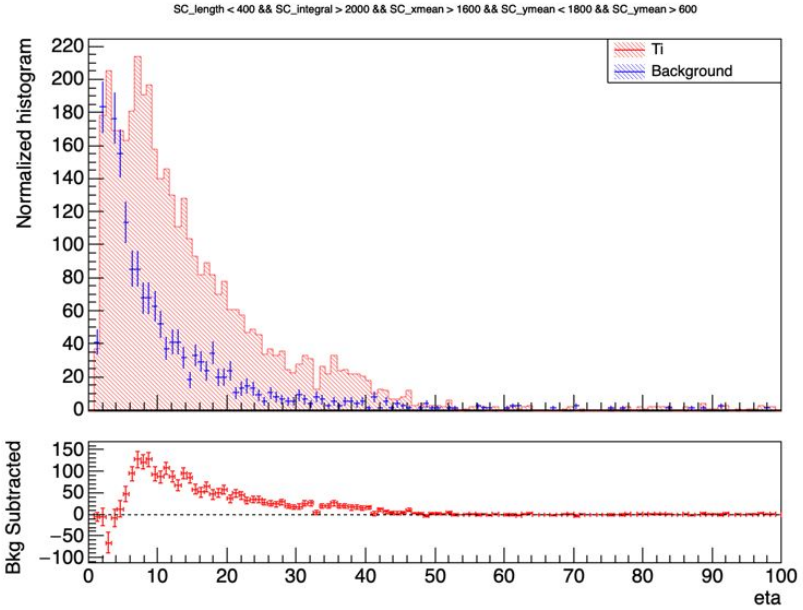

SC_length < 400 && SC_integral > 2000 && SC_xmean > 1600 && SC_ymean < 1800 && SC_ymean > 600
Normalized histogram
Ti
Background
Bkg Subtracted
χ² / ndf 21.36 / 22
Constant 657.5 ± 32.47
Mean 12.44 ± 0.05223
Sigma 0.8684 ± 0.04371
SDCD

a) Ti

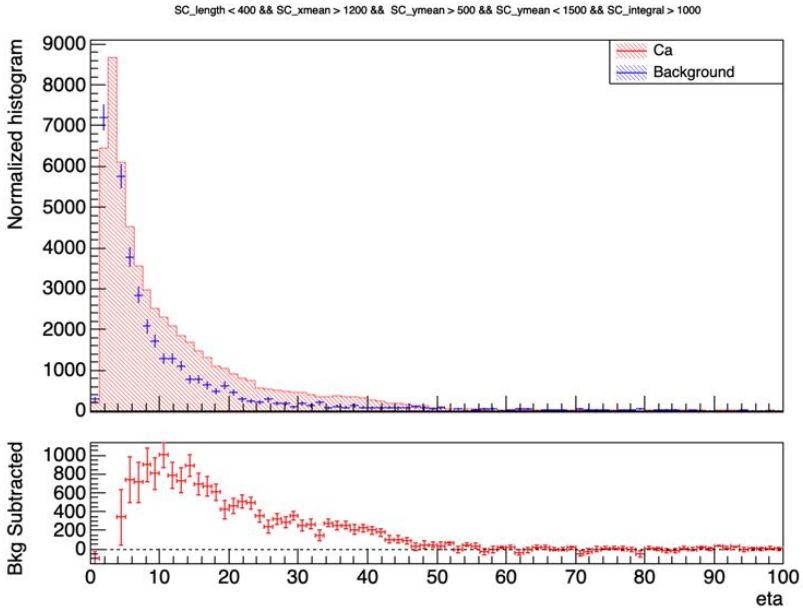

SC_length < 400 && SC_xmean > 1200 && SC_ymean > 500 && SC_ymean < 1500 && SC_integral > 1000
Normalized histogram
Ca
Background
Bkg Subtracted
SDCD

b) Ca

eta


SC_length < 400 && SC_integral > 2000 && SC_xmean > 1600 && SC_ymean < 1800 && SC_ymean > 600
Normalized histogram
Ti
Background
Bkg Subtracted
eta

a) Ti


SC_length < 400 && SC_xmean > 1200 && SC_ymean > 500 && SC_ymean < 1500 && SC_integral > 1000
Normalized histogram
Ca
Background
Bkg Subtracted
eta

b) Ca

Conclusion:

- Integral is in agreement with the expectation and Energy resolution is closer to the simulation rather than data.
- Better selection can be applied after doing a data and MC comparison.

Next Steps:

- To reconstruct the simulated Ti and Ca data for data and MC comparison