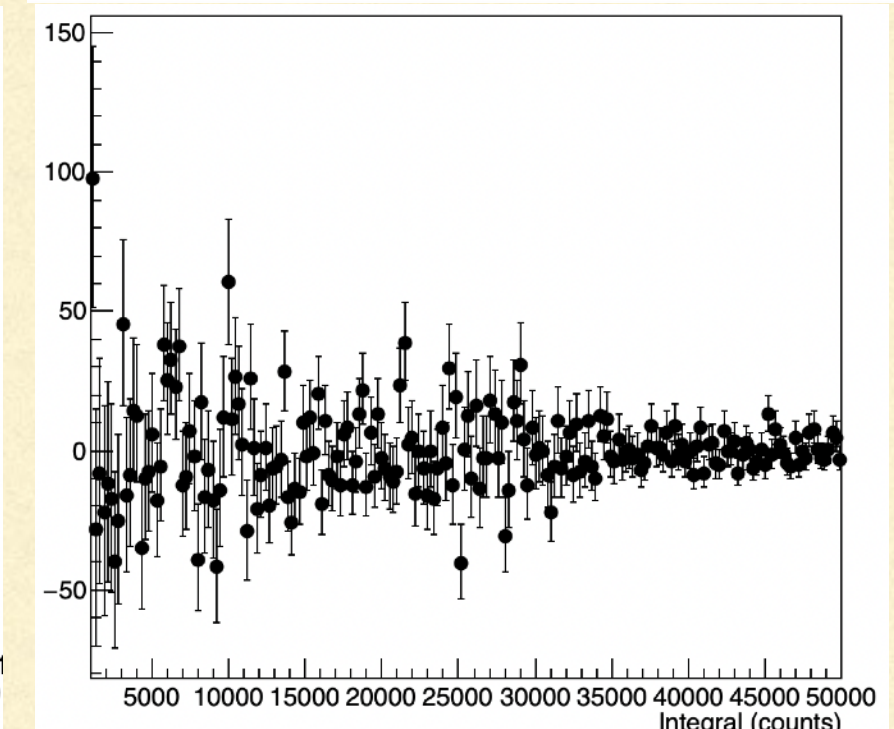
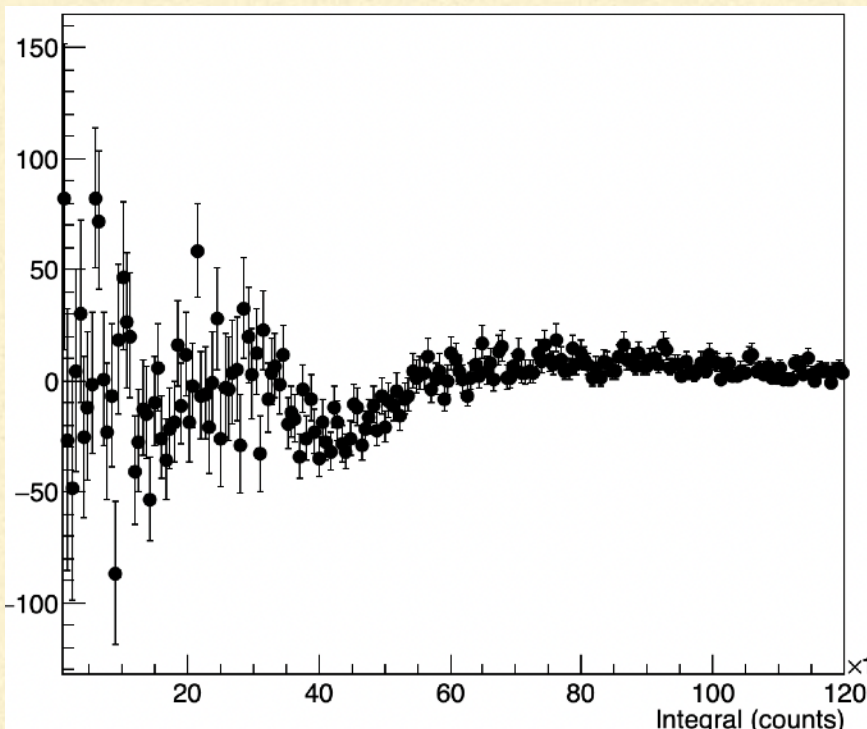
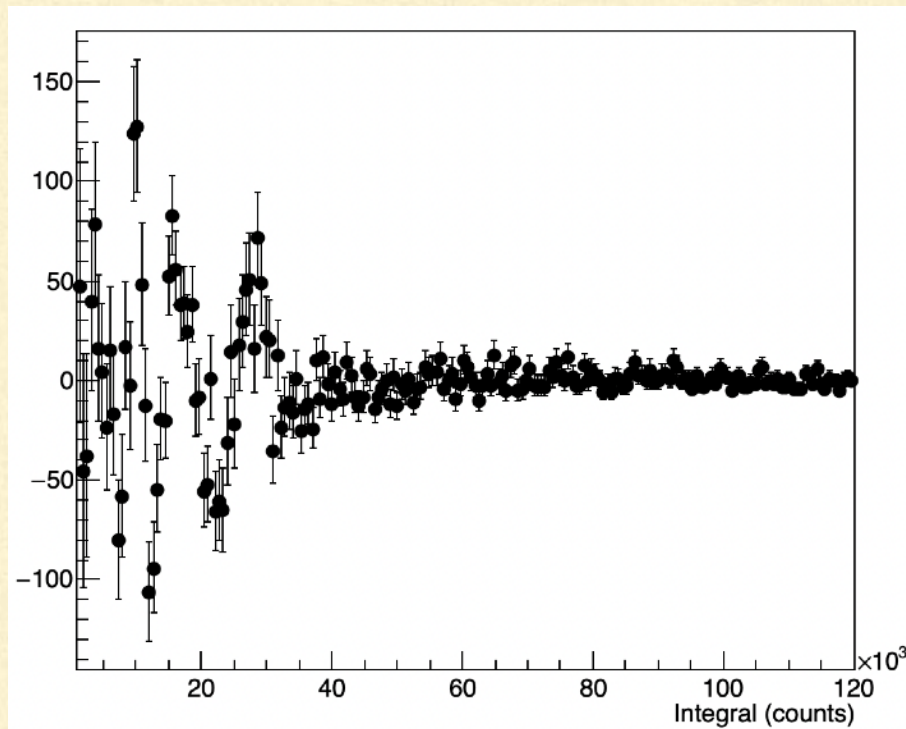
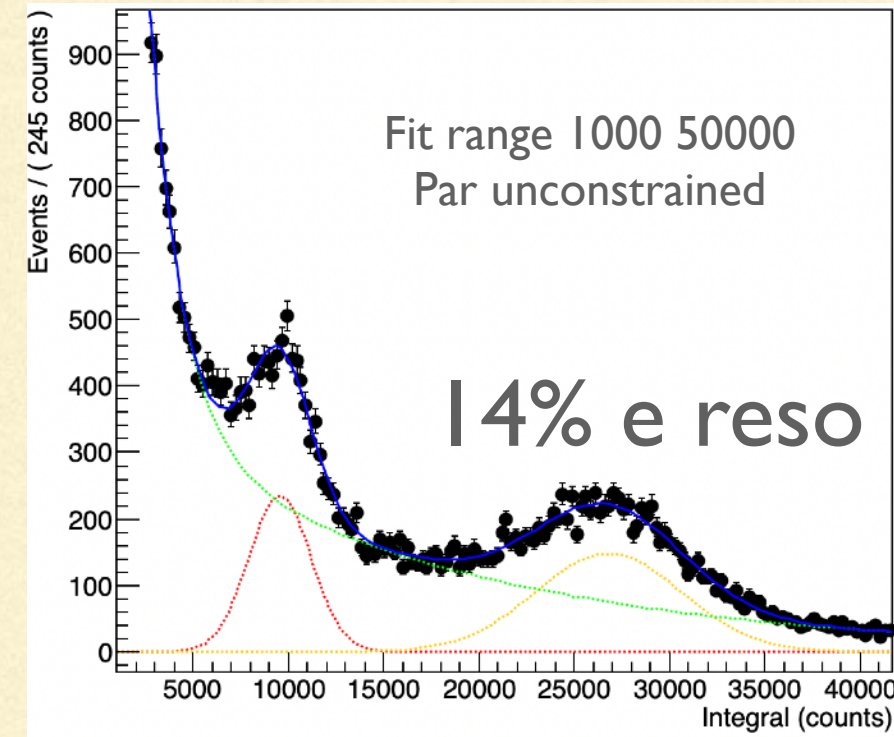
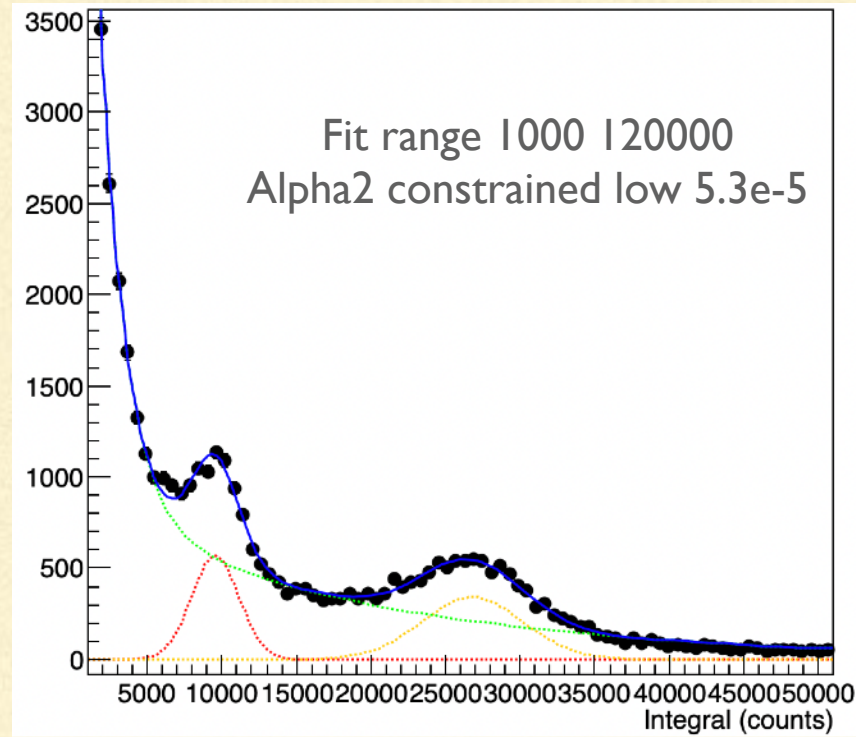
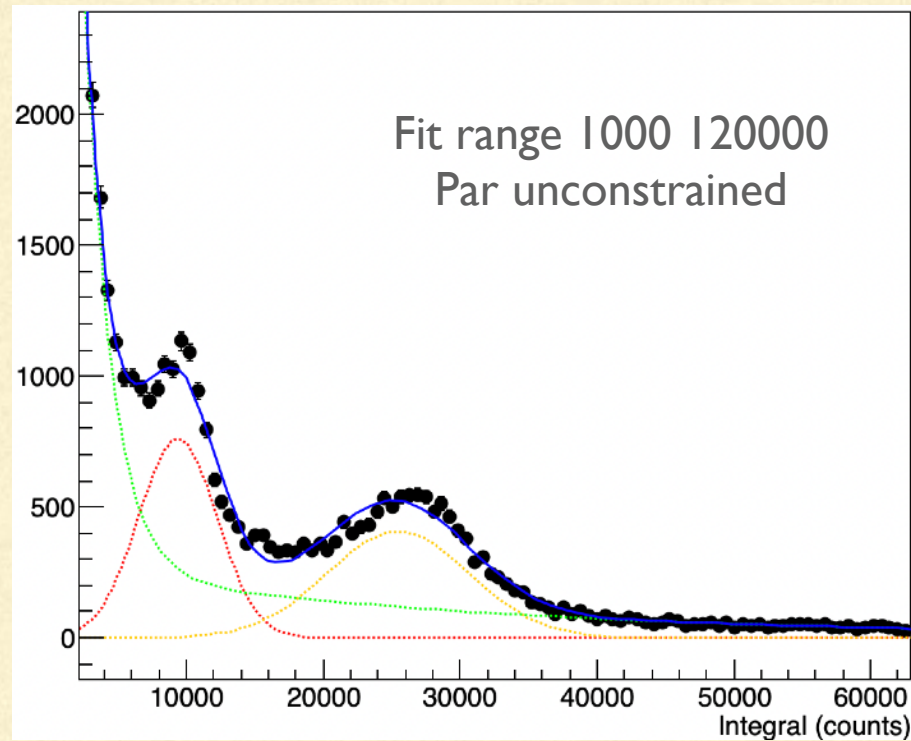

Results on regressed data and preliminary Data-MC comparison with *sPlot*

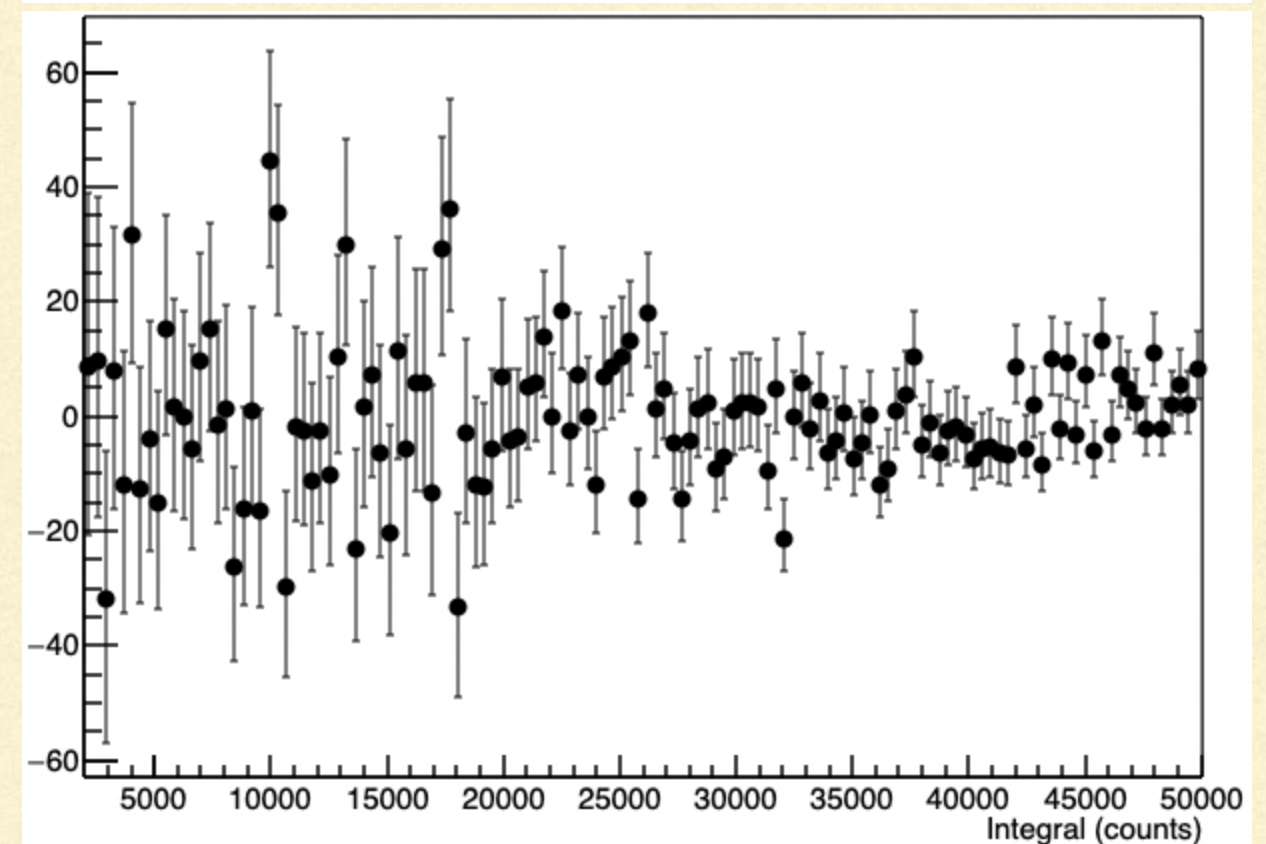
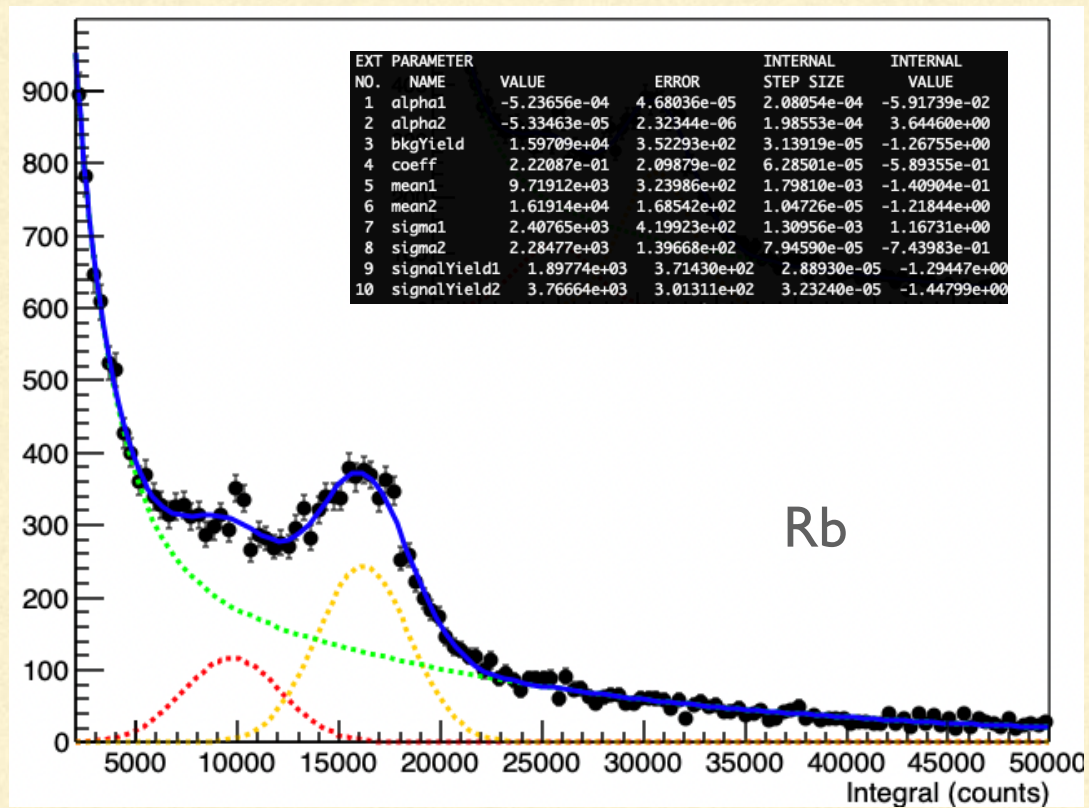
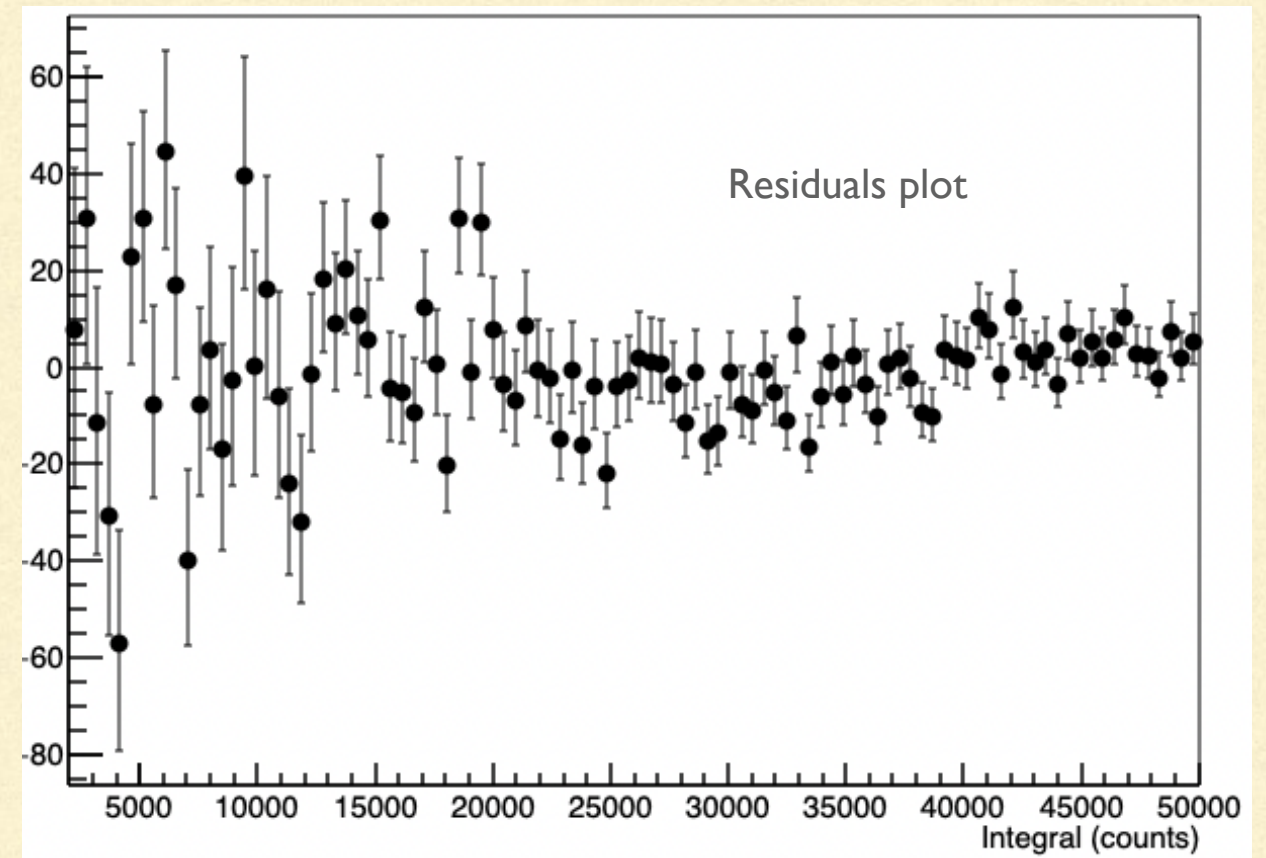
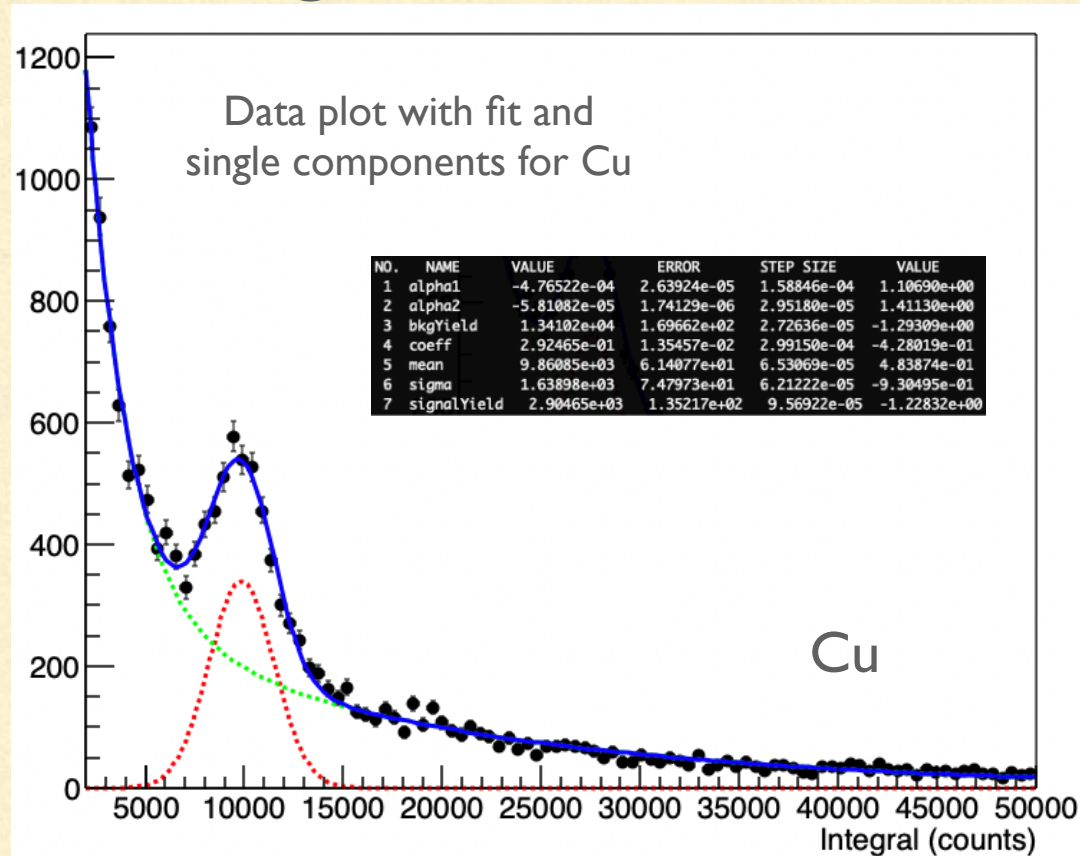
S.Torelli - E.Baracchini - E.Di Marco

Fit on regressed data

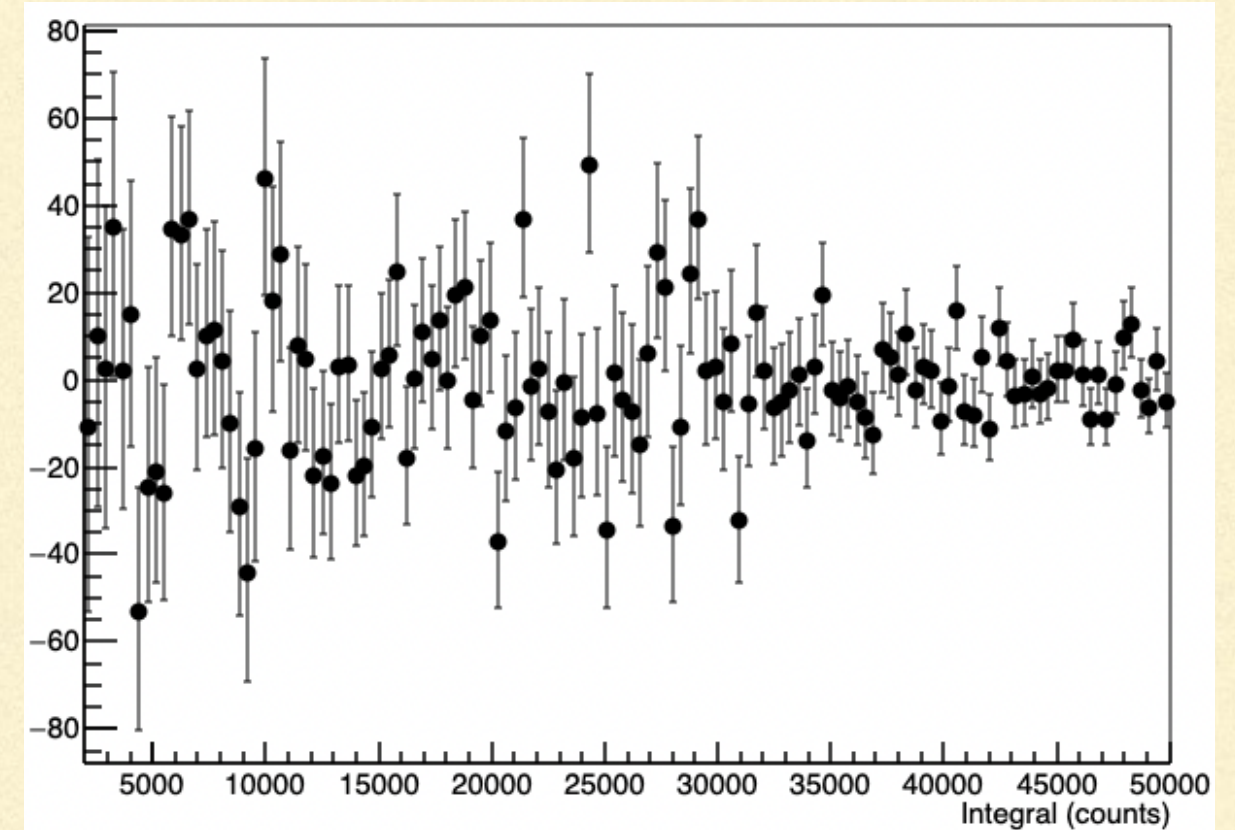
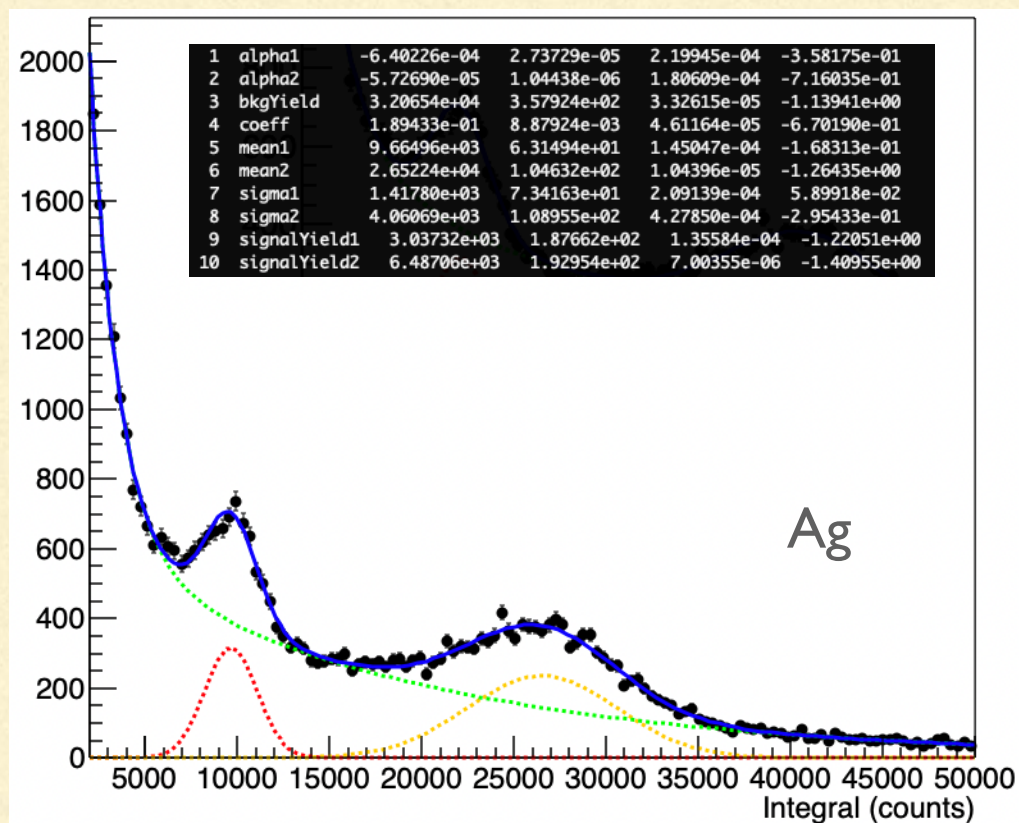
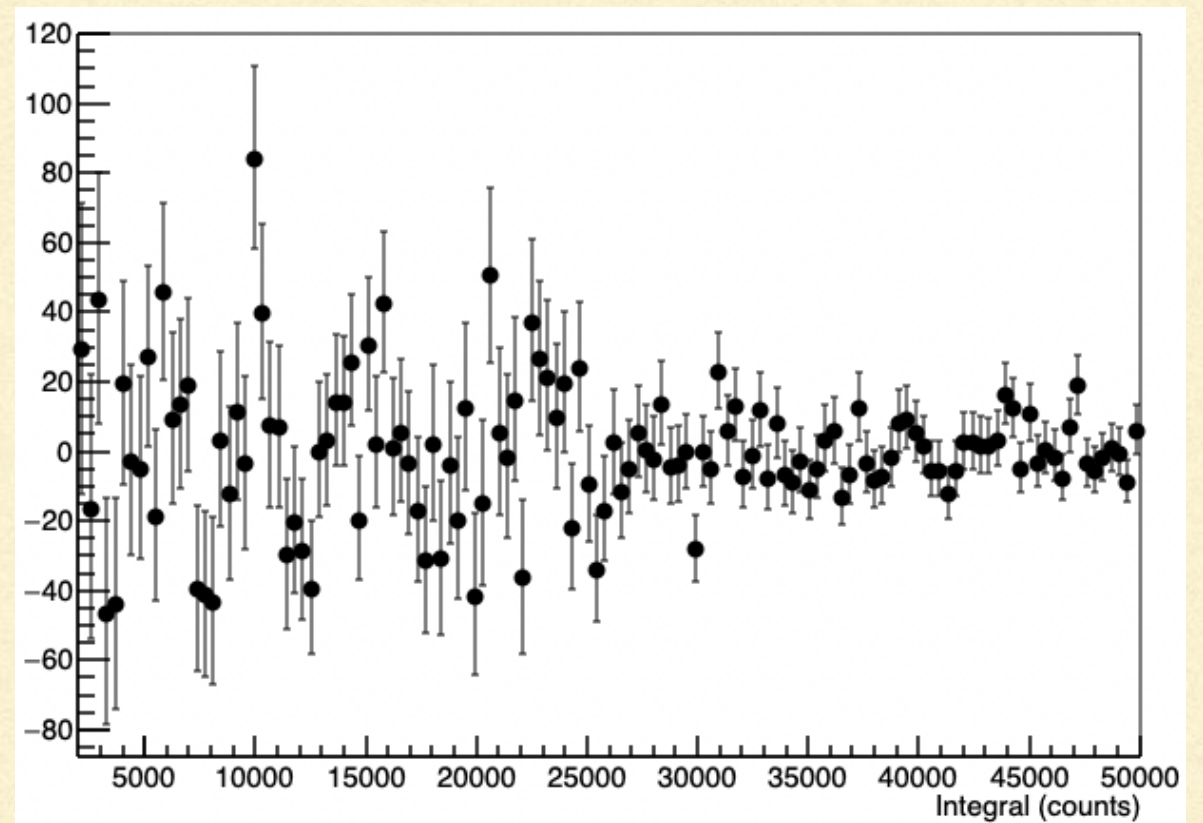
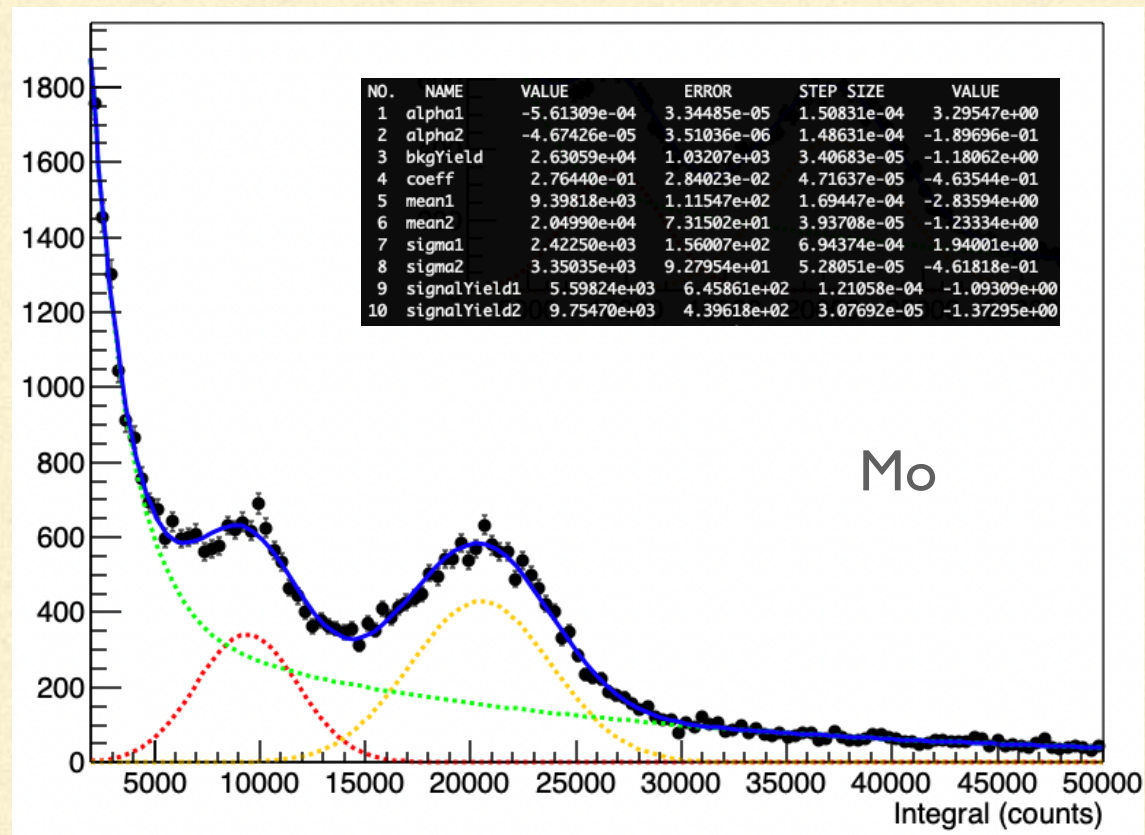
- Cuts: length < 400 && integral > 2000 and smaller fit range depending on the signal
- Fit using two exponentials to model bkg + 1/2 gaussians for signal $b(x) = By(c \cdot e^{(\alpha_1 \cdot x)} + (1 - c) \cdot e^{(\alpha_2 \cdot x)})$



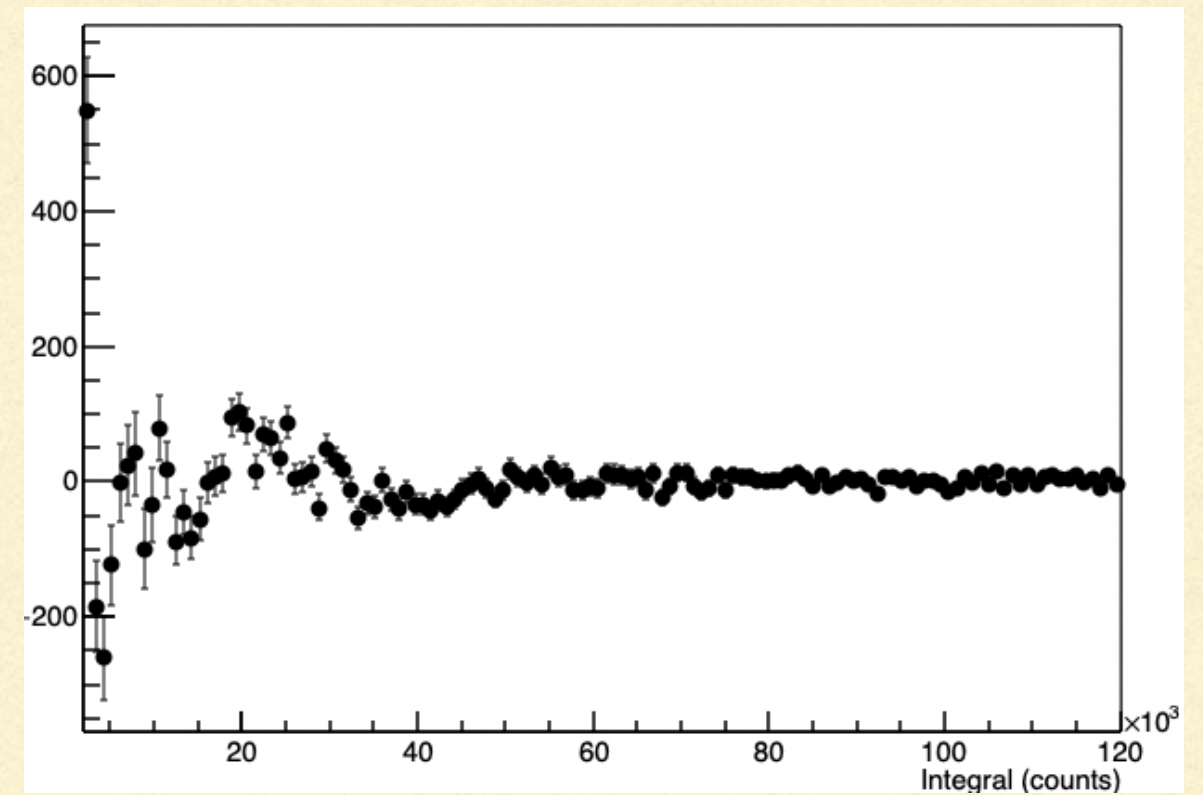
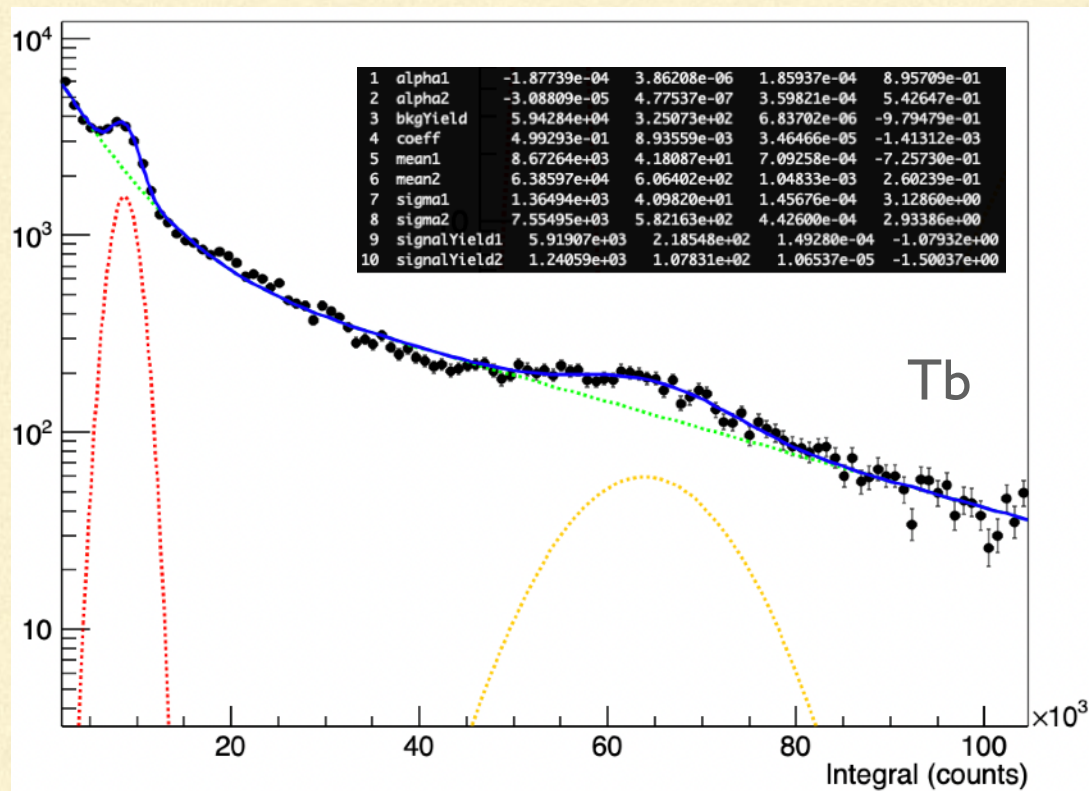
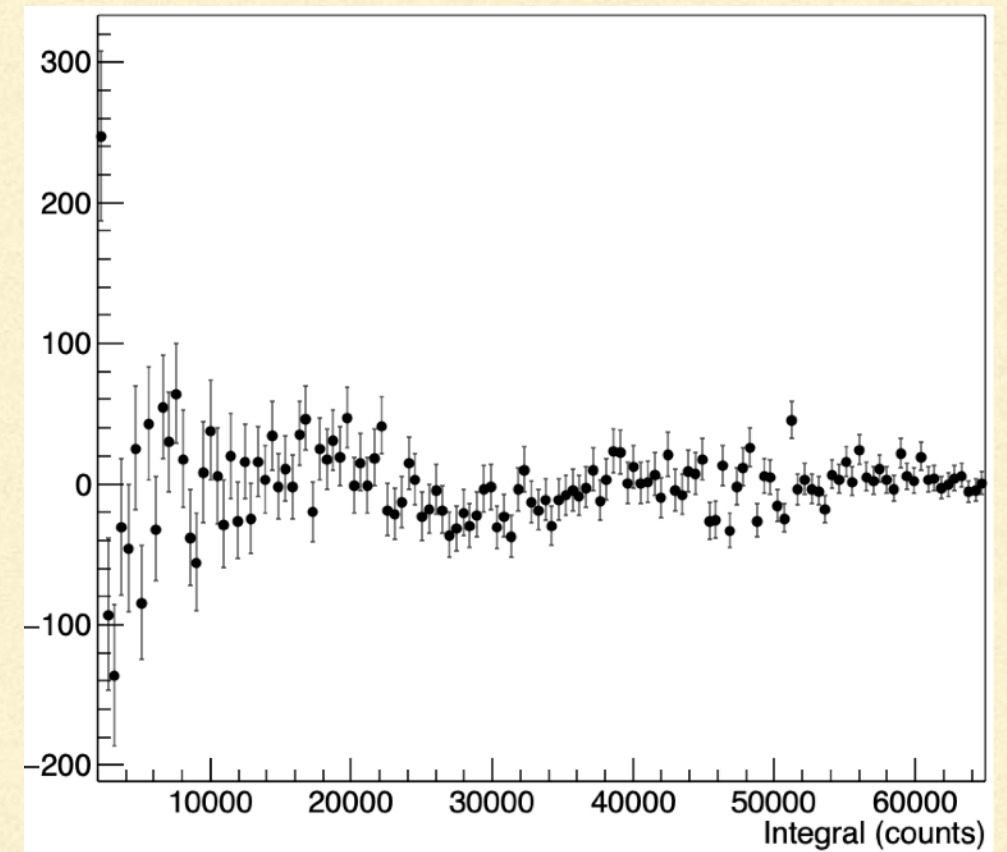
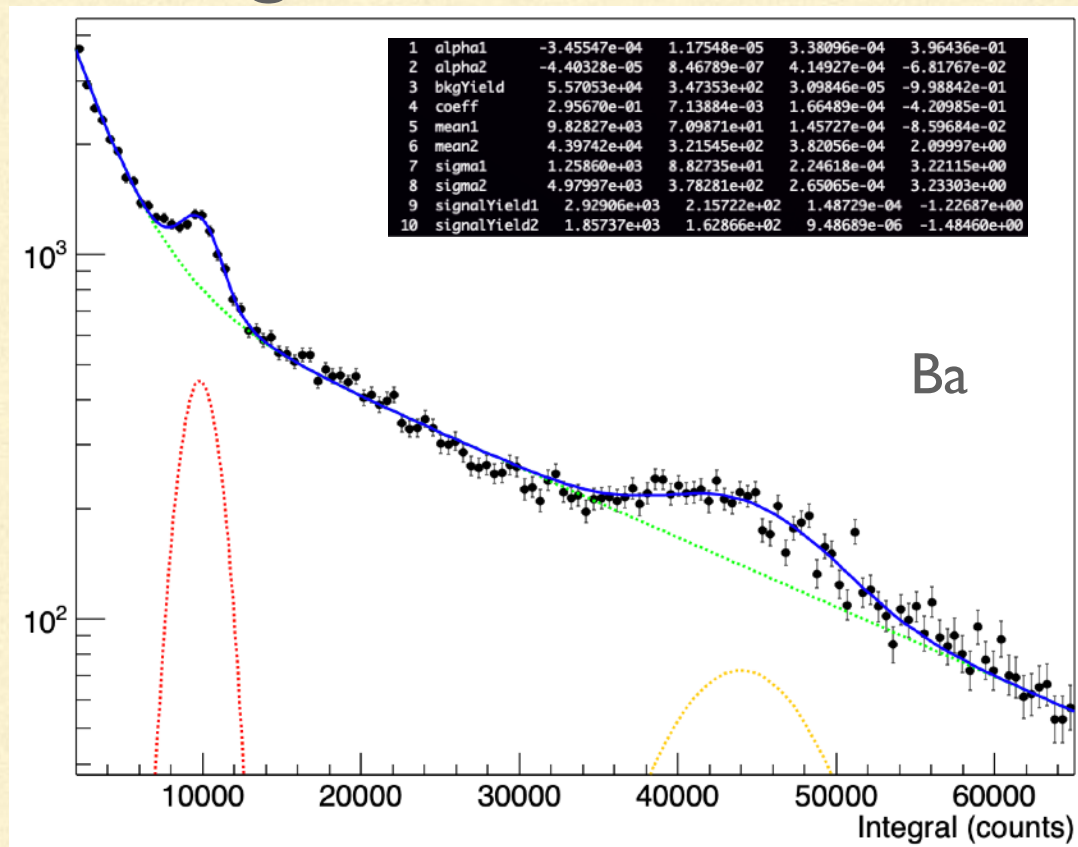
Fit on regressed data



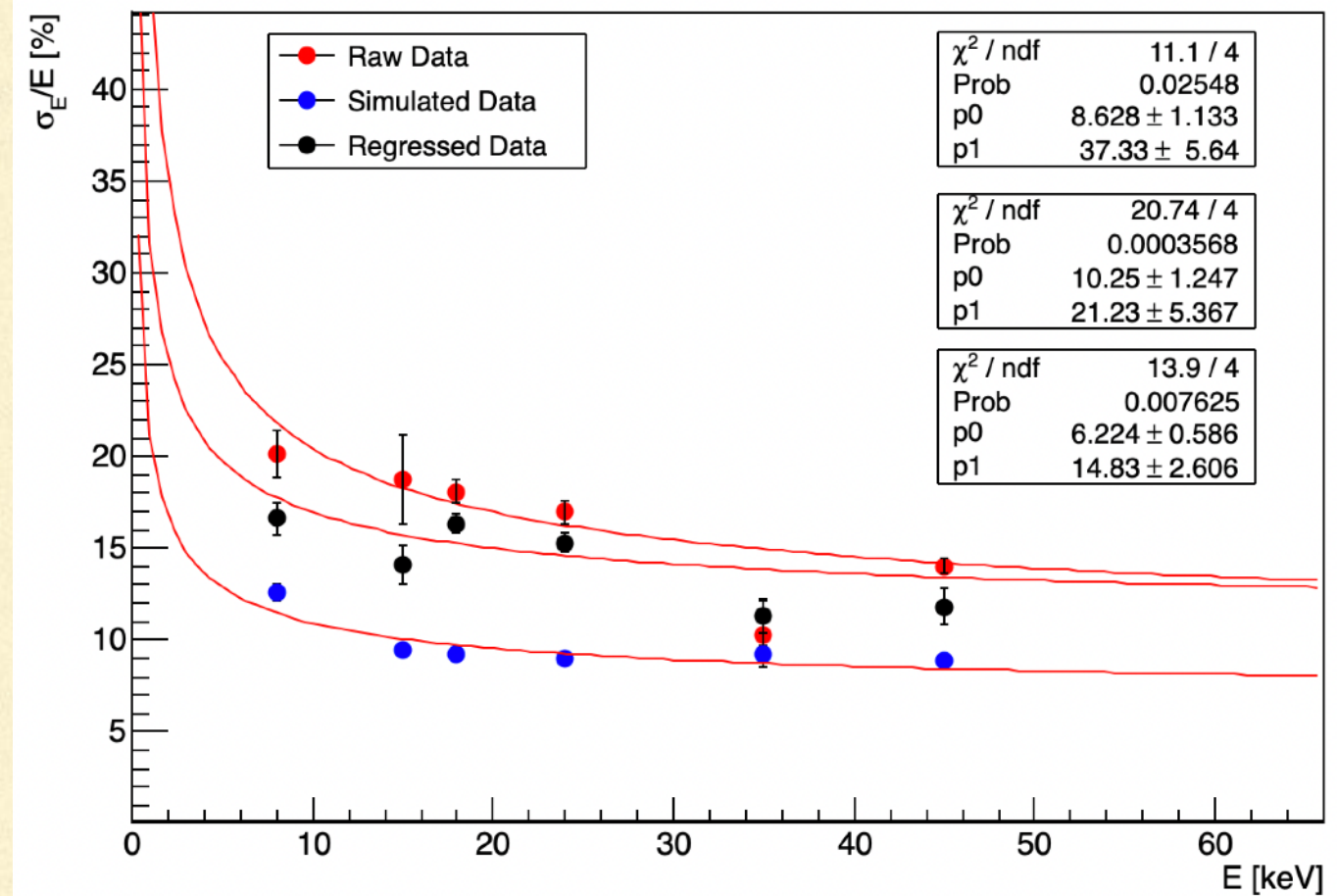
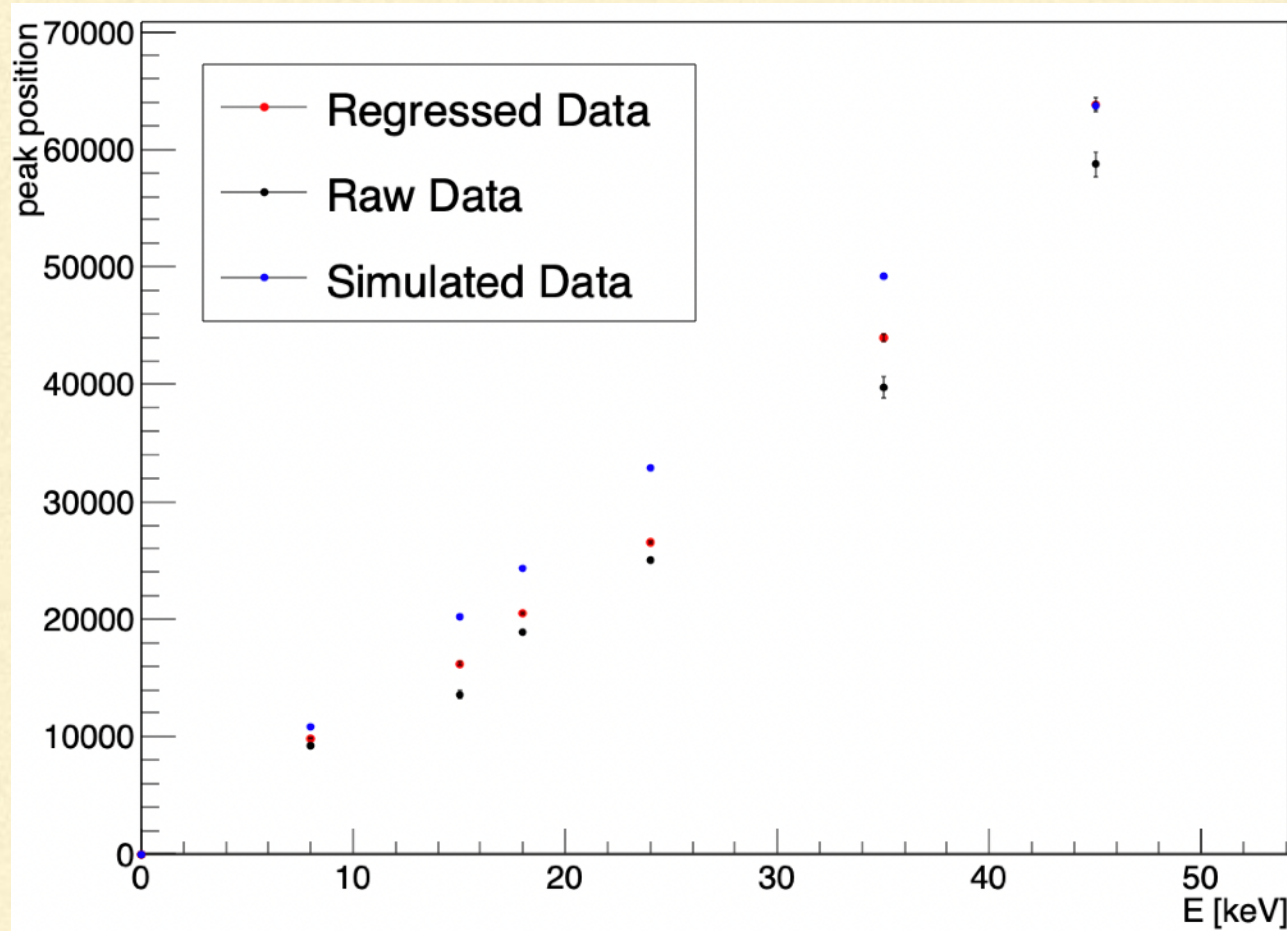
Fit on regressed data



Fit on regressed data

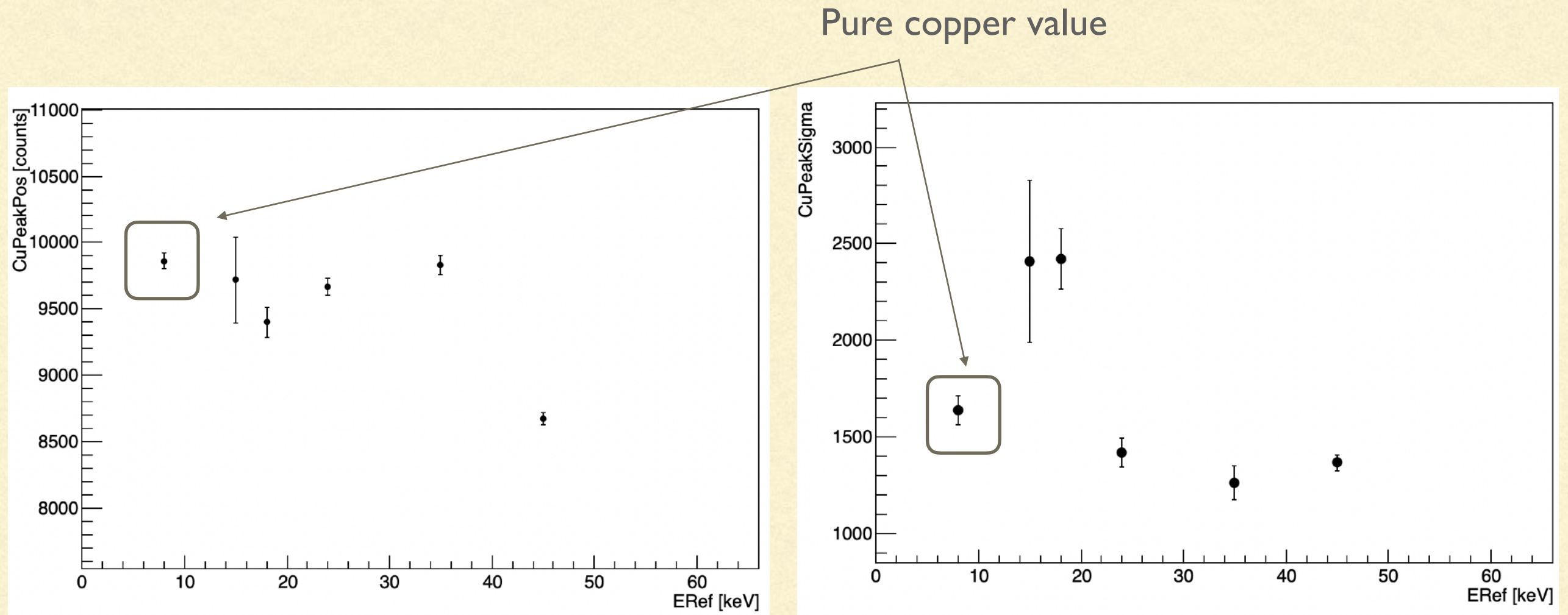


Linearity and EReso comparison



- Simulation much closer on regressed data (correction of some effect?)
- Still not linearity in data
- Better energy resolution with regression

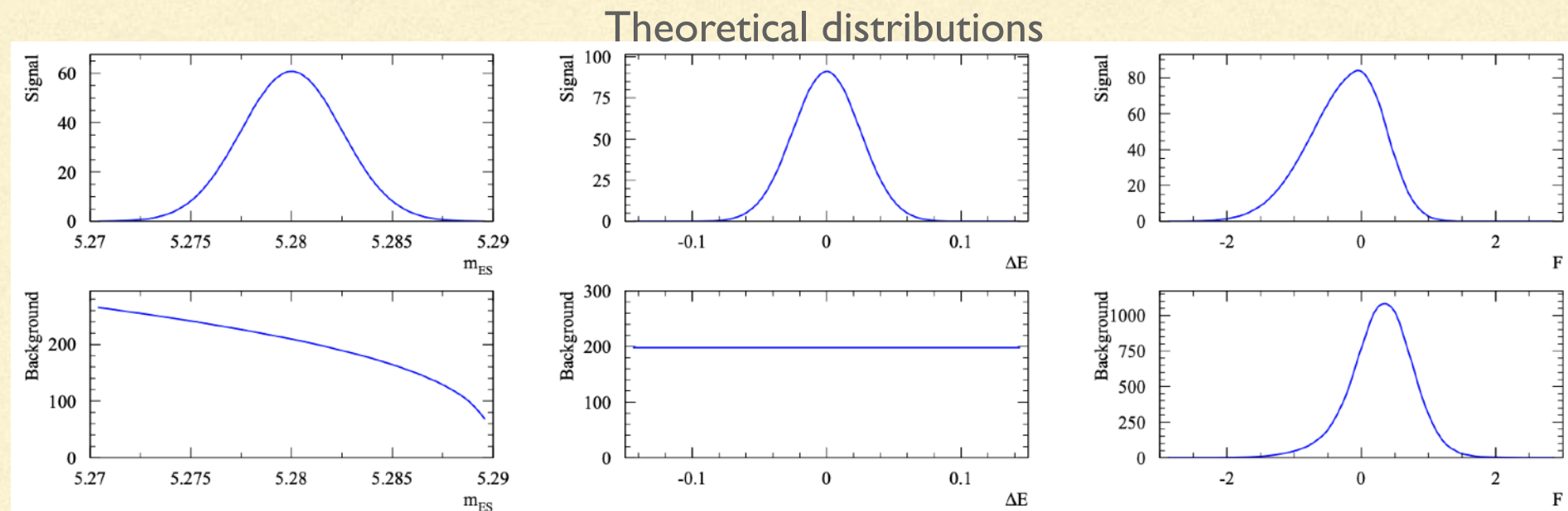
Countercheck: the copper peak



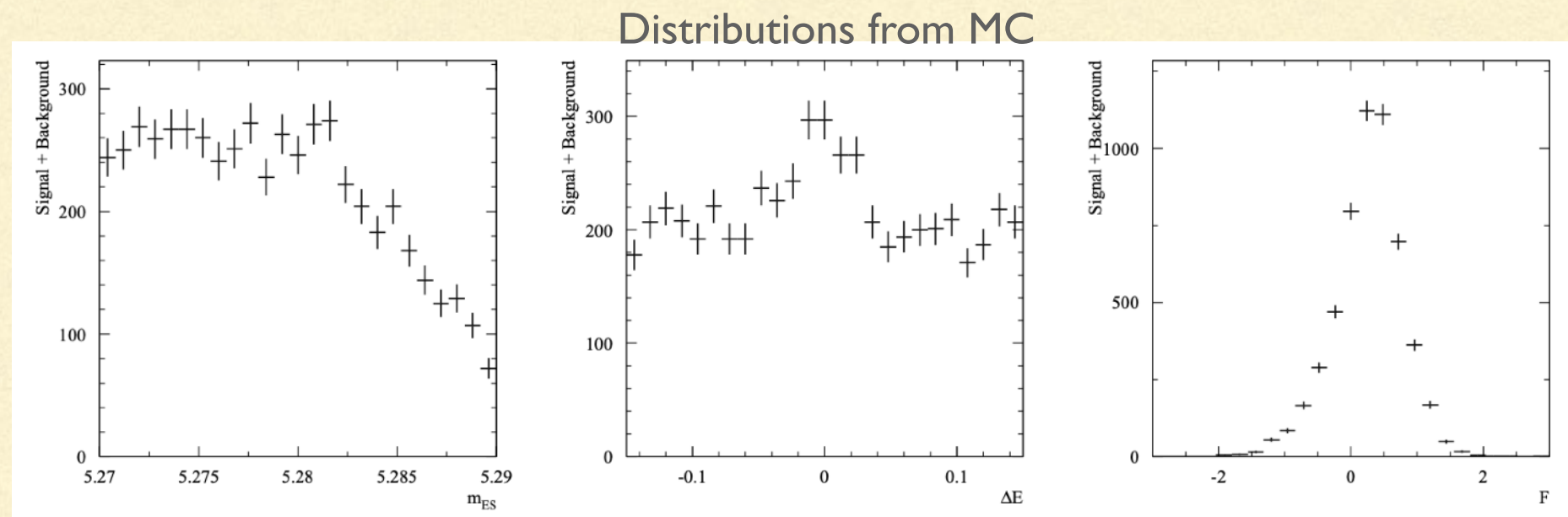
- The regressed data are better fitted and the copper peak in no-copper data is better visible
- Mean position and sigma in no-copper data in agreement with the pure copper data

sPlots: a statistical tool to unfold data distributions

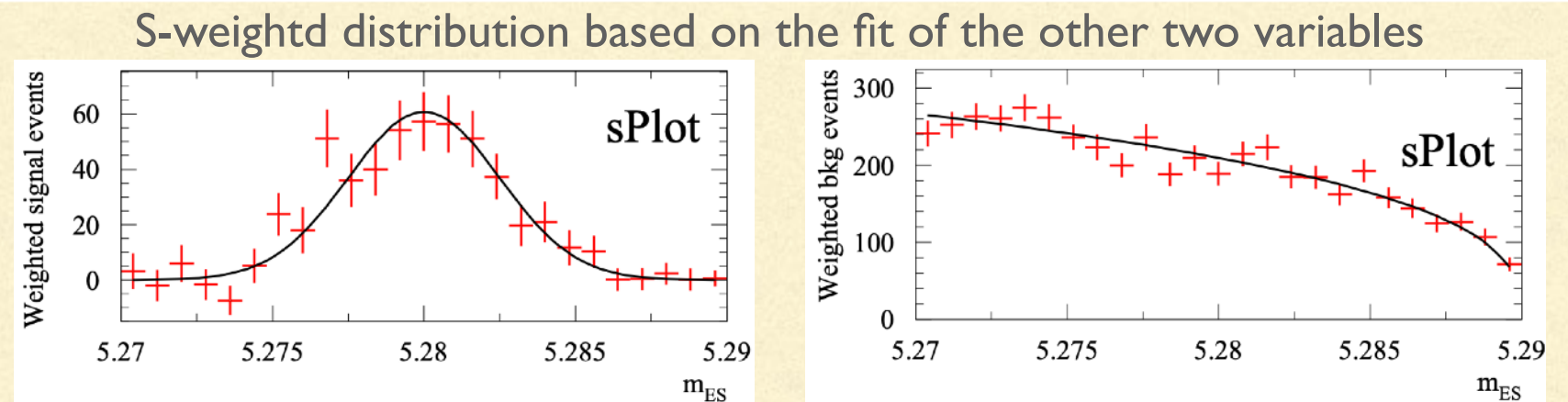
- Suppose to have a dataset containing three variables (Signal and background)



- By fitting one/two of this distribution it can be assigned at each event a weight proportional to the probability of being background or signal

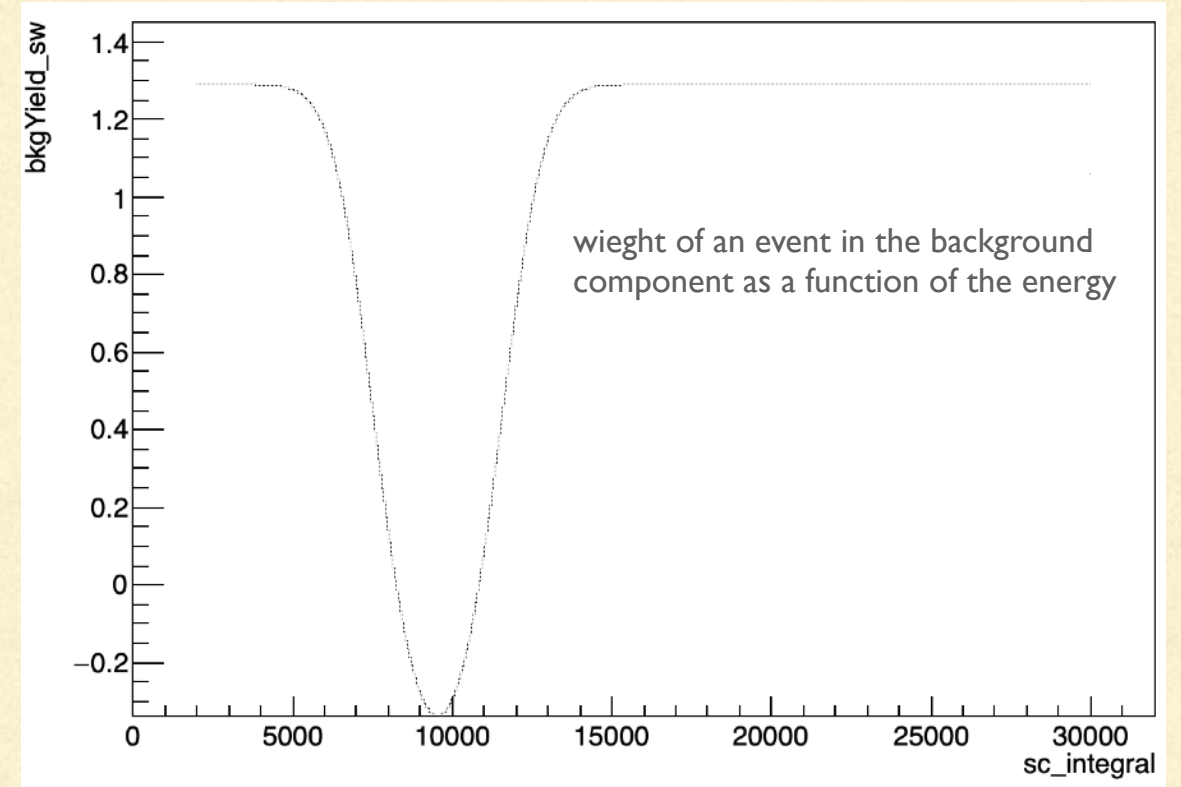
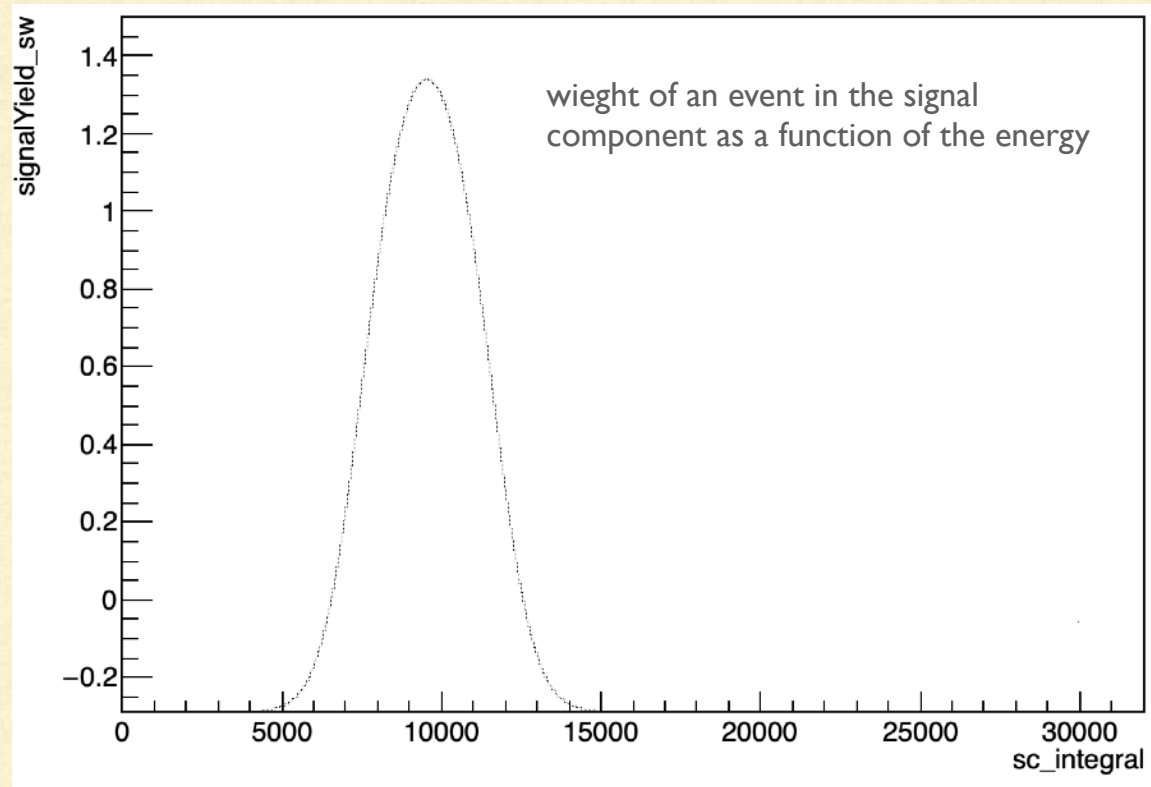
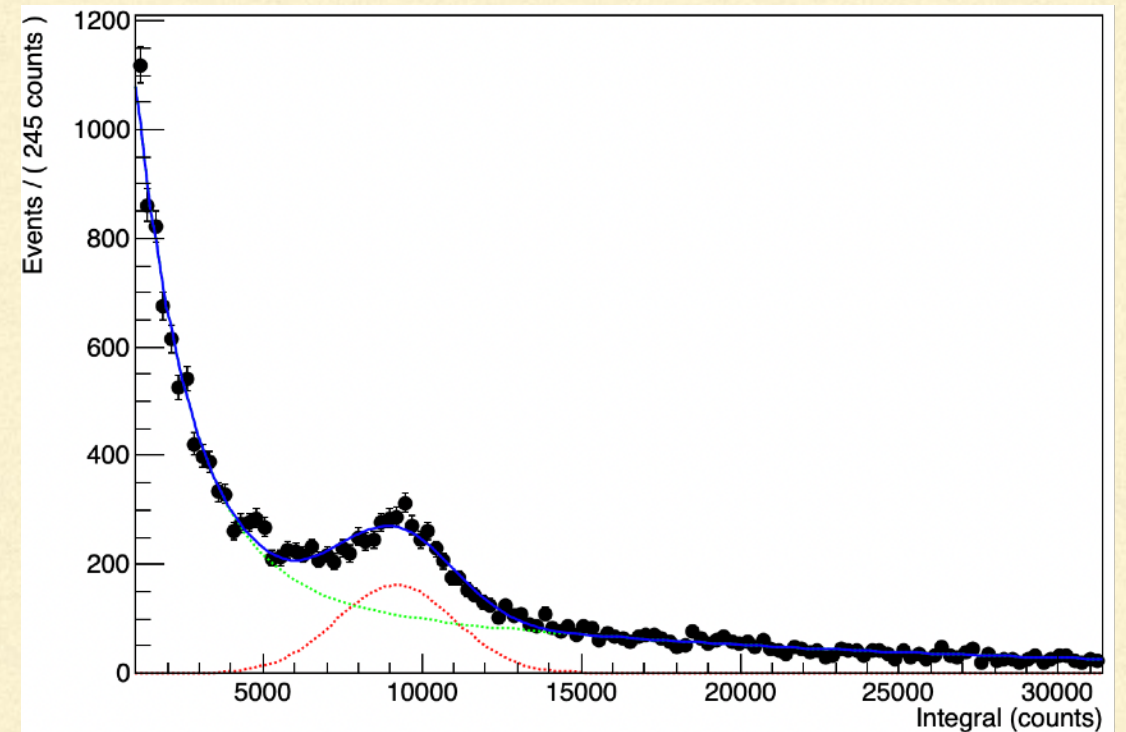


- The third can be reproduced by weighting entry with the probability that that event is signal or background



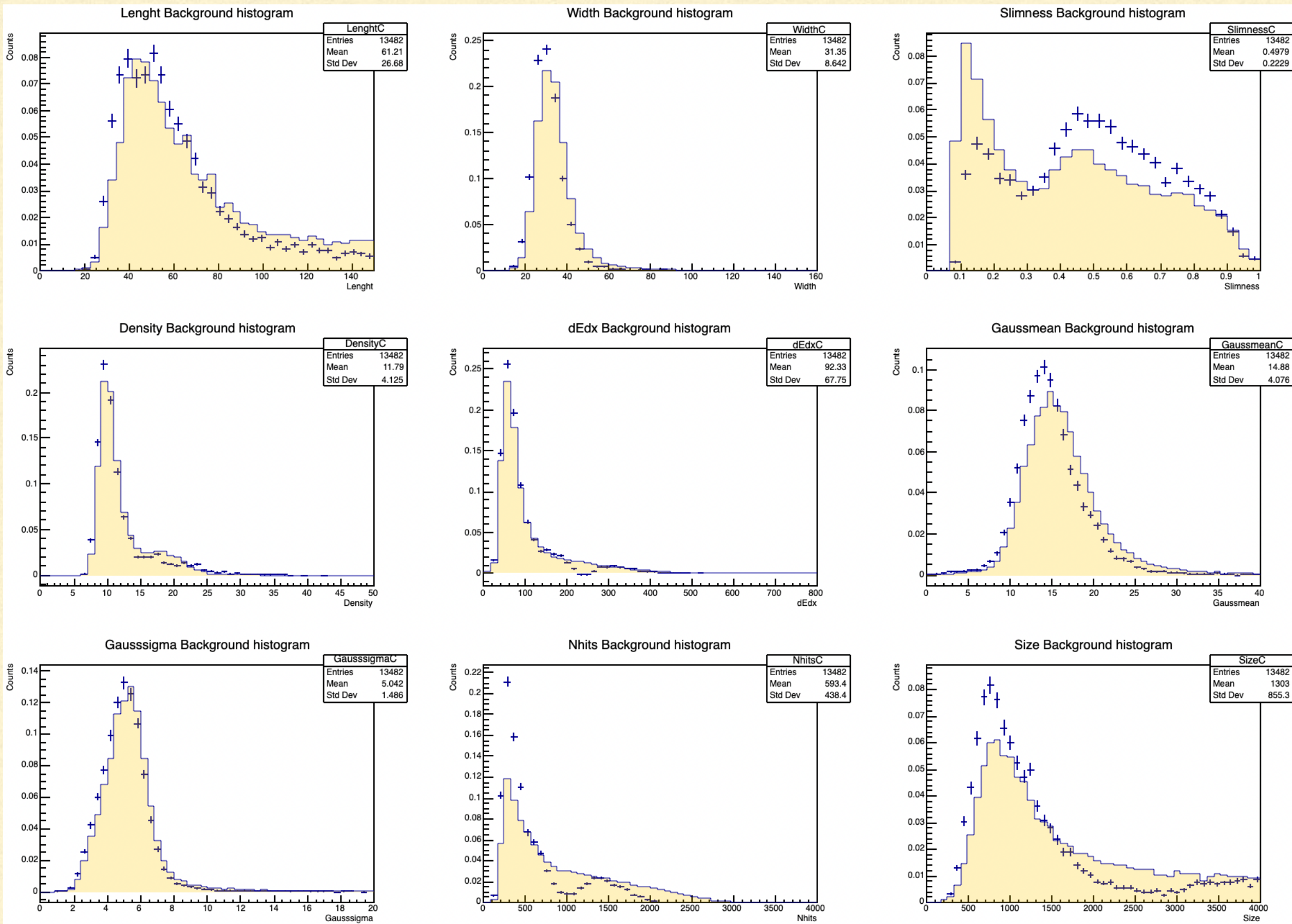
sPlots: in our case

- Using the energy as a variable and performing the fit we can assign a weight to the events
- Negative weights are present to cancel out contributions in the distribution



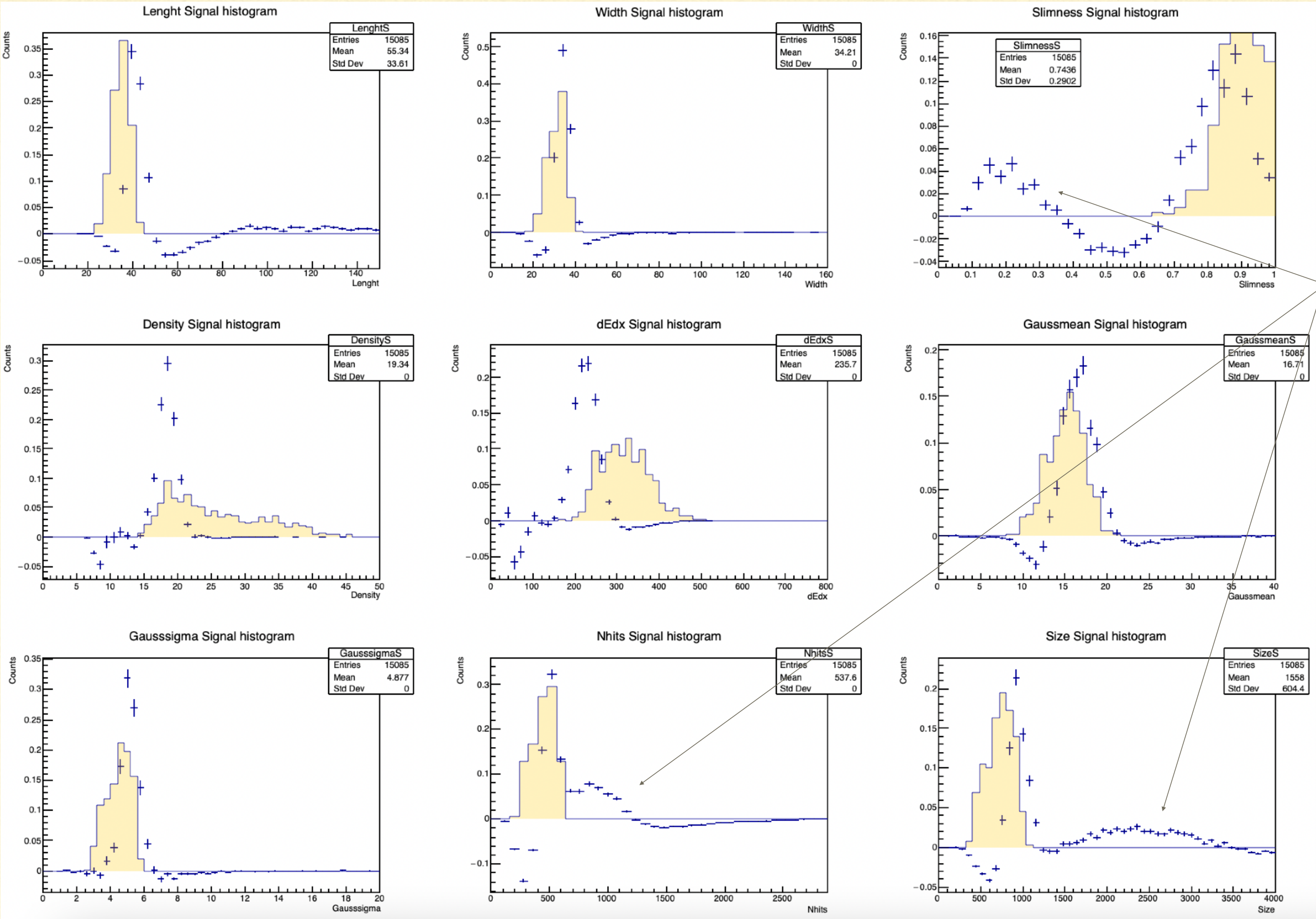
Data-MC Comparison with sPlot: Bkg

- Yellow histogram: cosmic runs
- Points: s-weightd data for bkg component



Data-MC Comparison sPlot Version: Signal

- Yellow histogram: 8 keV simulation
- Points: s-weightd data for signal component



Contamination from longer signal at Cu energy?

Negative components due to events identified as background

Data-MC Comparison sPlot Version: Signal with length<60

