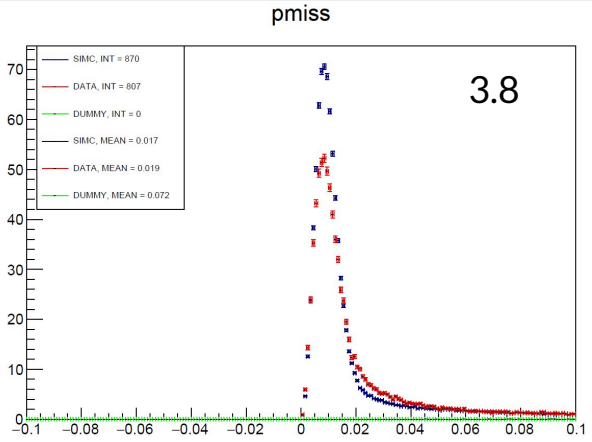
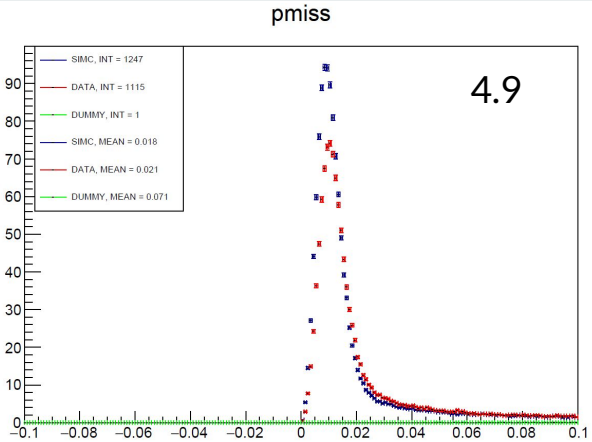
Kaon LT Status Update

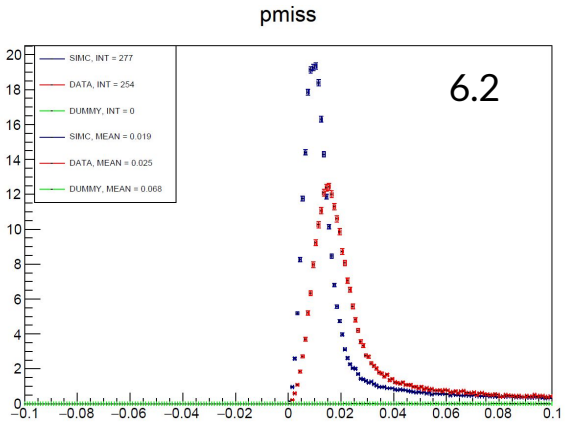
March 2nd, 2023

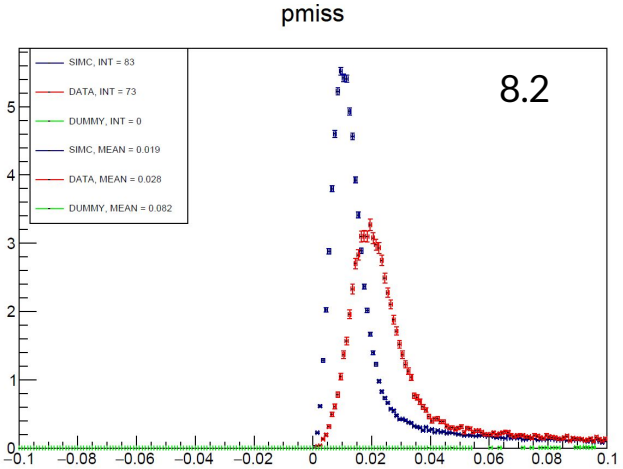
Richard Trotta

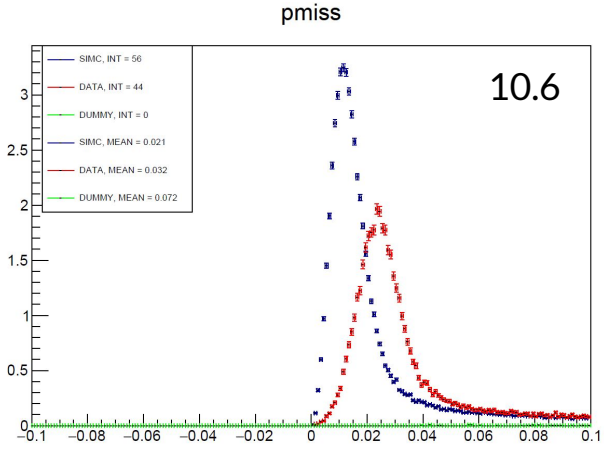
Heep, SIMC to hcana script

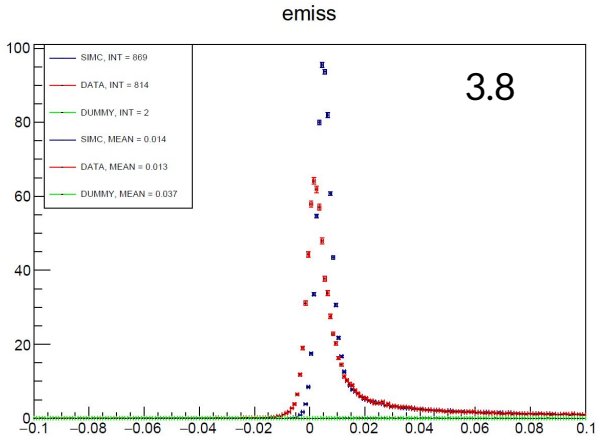

pmiss
SIMC, INT = 870
DATA, INT = 807
DUMMY, INT = 0
SIMC, MEAN = 0.017
DATA, MEAN = 0.019
DUMMY, MEAN = 0.072
3.8

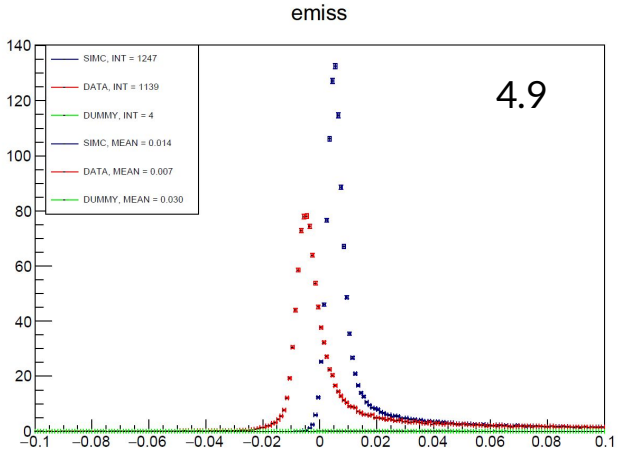

pmiss
SIMC, INT = 1247
DATA, INT = 1115
DUMMY, INT = 1
SIMC, MEAN = 0.018
DATA, MEAN = 0.021
DUMMY, MEAN = 0.071
4.9

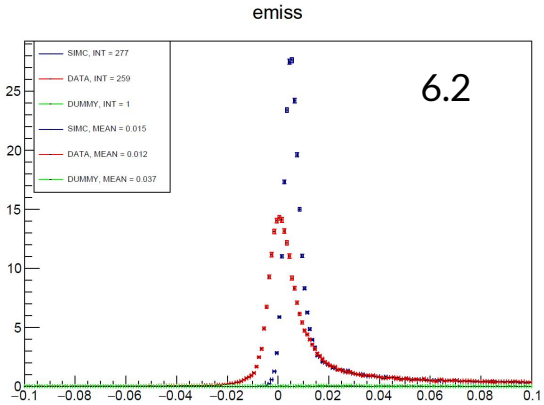

pmiss
SIMC, INT = 277
DATA, INT = 254
DUMMY, INT = 0
SIMC, MEAN = 0.019
DATA, MEAN = 0.025
DUMMY, MEAN = 0.068
6.2

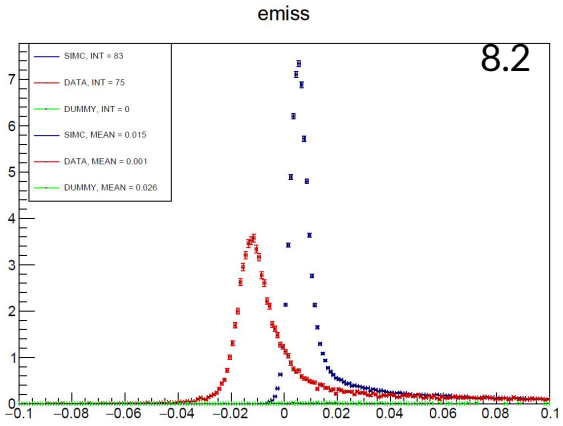

pmiss
SIMC, INT = 83
DATA, INT = 73
DUMMY, INT = 0
SIMC, MEAN = 0.019
DATA, MEAN = 0.028
DUMMY, MEAN = 0.082
8.2

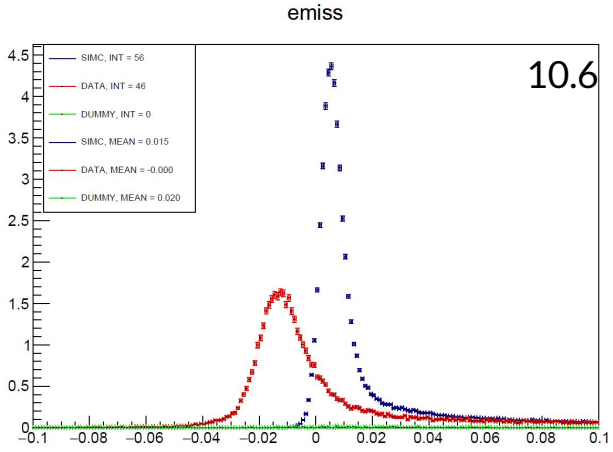

pmiss
SIMC, INT = 56
DATA, INT = 44
DUMMY, INT = 0
SIMC, MEAN = 0.021
DATA, MEAN = 0.032
DUMMY, MEAN = 0.072
10.6

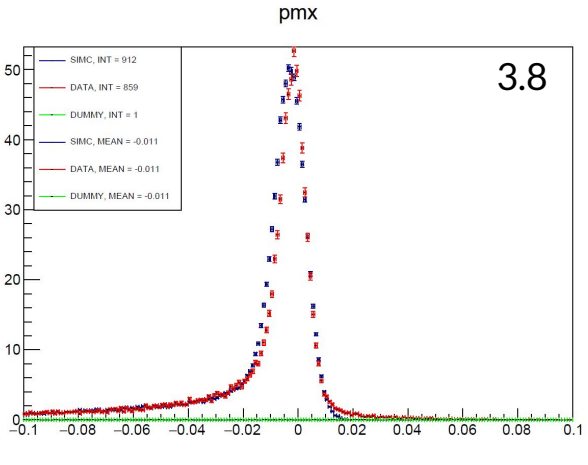

emiss
SIMC, INT = 869
DATA, INT = 814
DUMMY, INT = 2
SIMC, MEAN = 0.014
DATA, MEAN = 0.013
DUMMY, MEAN = 0.037
3.8

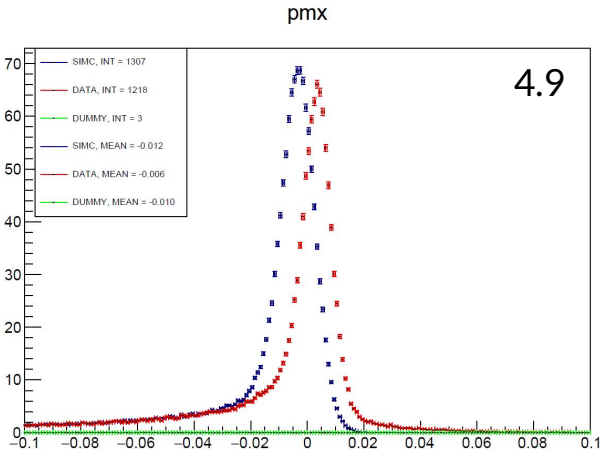

emiss
SIMC, INT = 1247
DATA, INT = 1139
DUMMY, INT = 4
SIMC, MEAN = 0.014
DATA, MEAN = 0.007
DUMMY, MEAN = 0.030
4.9

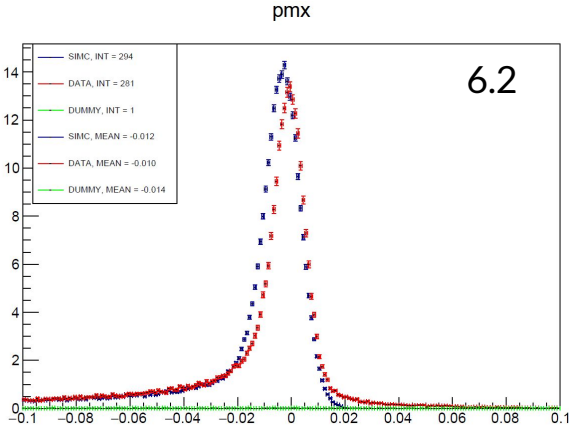

emiss
SIMC, INT = 277
DATA, INT = 259
DUMMY, INT = 1
SIMC, MEAN = 0.015
DATA, MEAN = 0.012
DUMMY, MEAN = 0.037
6.2

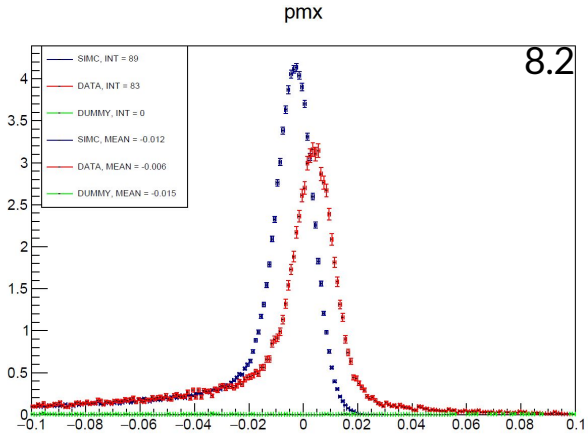

emiss
SIMC, INT = 83
DATA, INT = 75
DUMMY, INT = 0
SIMC, MEAN = 0.015
DATA, MEAN = 0.001
DUMMY, MEAN = 0.026
8.2

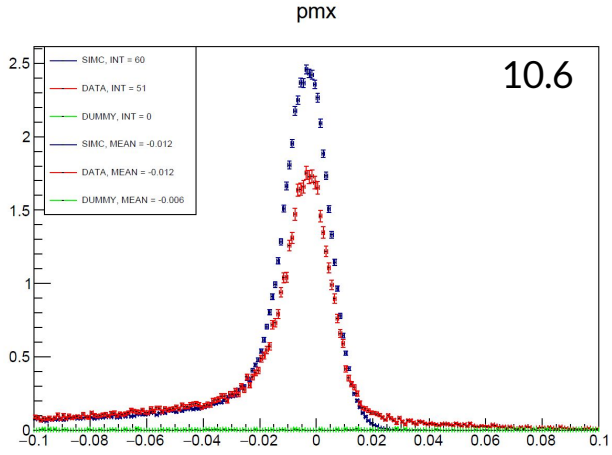

emiss
SIMC, INT = 56
DATA, INT = 46
DUMMY, INT = 0
SIMC, MEAN = 0.015
DATA, MEAN = -0.000
DUMMY, MEAN = 0.020
10.6

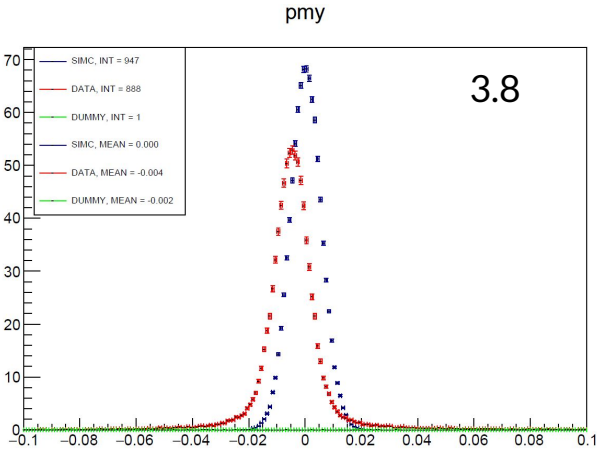

pmx
SIMC, INT = 912
DATA, INT = 859
DUMMY, INT = 1
SIMC, MEAN = -0.011
DATA, MEAN = -0.011
DUMMY, MEAN = -0.011
3.8

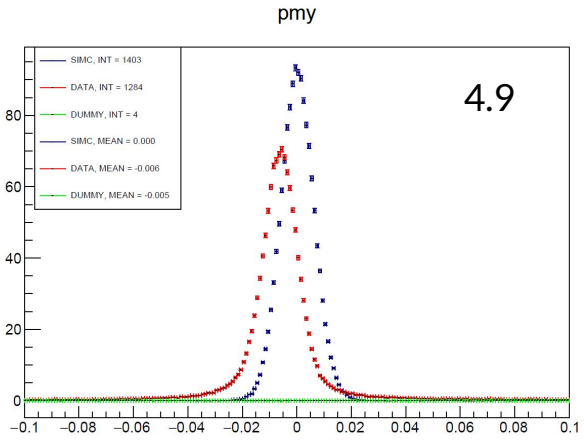

pmx
SIMC, INT = 1307
DATA, INT = 1218
DUMMY, INT = 3
SIMC, MEAN = -0.012
DATA, MEAN = -0.006
DUMMY, MEAN = -0.010
4.9

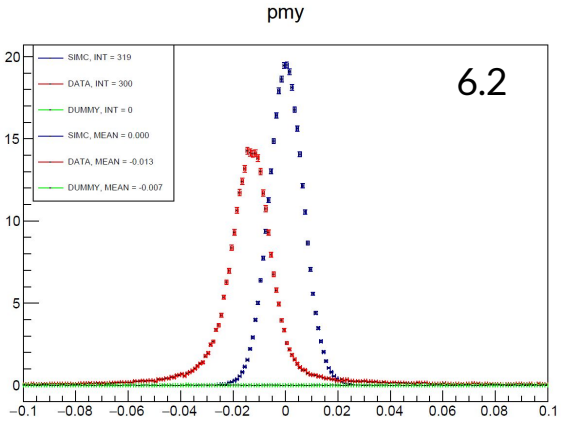

pmx
SIMC, INT = 294
DATA, INT = 281
DUMMY, INT = 1
SIMC, MEAN = -0.012
DATA, MEAN = -0.010
DUMMY, MEAN = -0.014
6.2

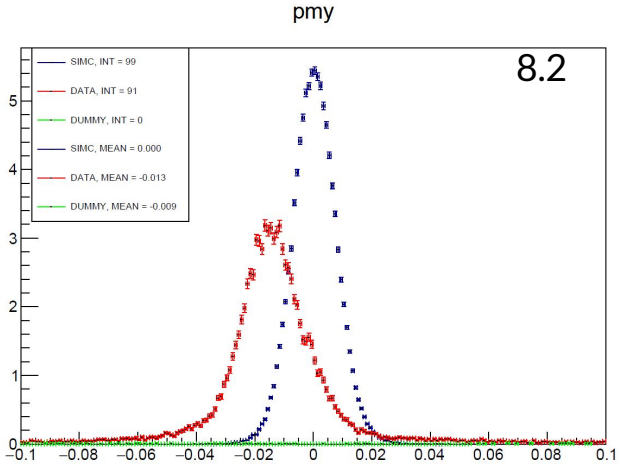

pmx
SIMC, INT = 89
DATA, INT = 83
DUMMY, INT = 0
SIMC, MEAN = -0.012
DATA, MEAN = -0.006
DUMMY, MEAN = -0.015
8.2

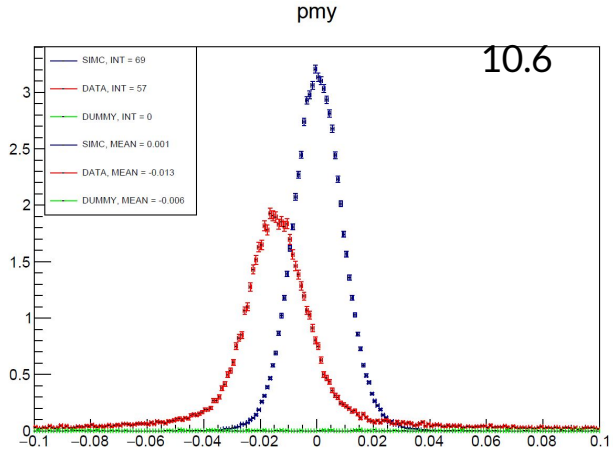

pmx
SIMC, INT = 60
DATA, INT = 51
DUMMY, INT = 0
SIMC, MEAN = -0.012
DATA, MEAN = -0.012
DUMMY, MEAN = -0.006
10.6

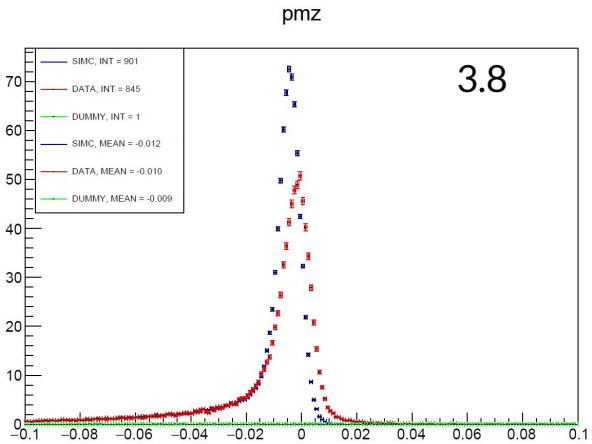

pmy
3.8
SIMC, INT = 947
DATA, INT = 888
DUMMY, INT = 1
SIMC, MEAN = 0.000
DATA, MEAN = -0.004
DUMMY, MEAN = -0.002

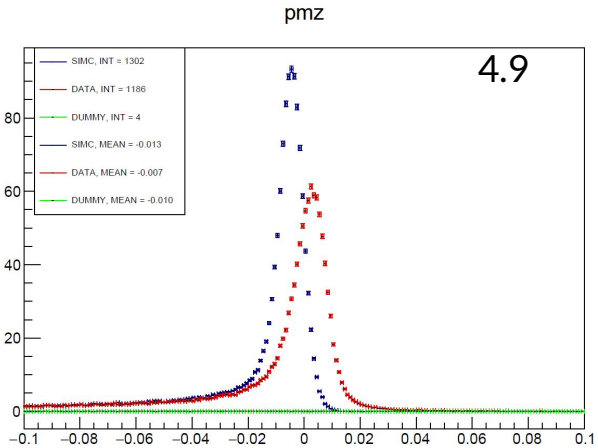

pmy
4.9
SIMC, INT = 1403
DATA, INT = 1284
DUMMY, INT = 4
SIMC, MEAN = 0.000
DATA, MEAN = -0.006
DUMMY, MEAN = -0.005

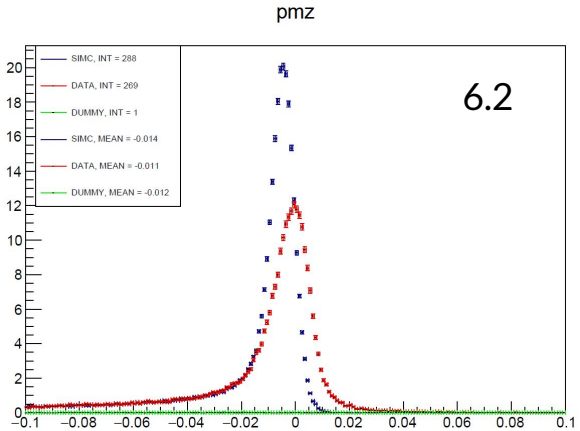

pmy
6.2
SIMC, INT = 319
DATA, INT = 300
DUMMY, INT = 0
SIMC, MEAN = 0.000
DATA, MEAN = -0.013
DUMMY, MEAN = -0.007

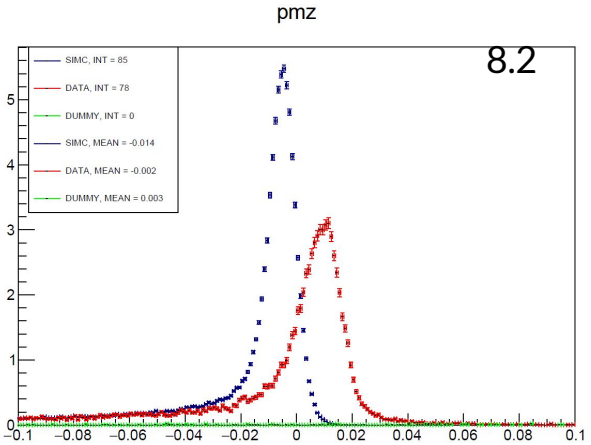

pmy
8.2
SIMC, INT = 99
DATA, INT = 91
DUMMY, INT = 0
SIMC, MEAN = 0.000
DATA, MEAN = -0.013
DUMMY, MEAN = -0.009

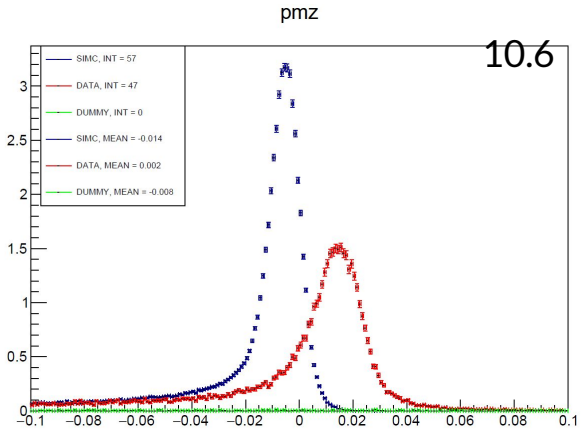

pmy
10.6
SIMC, INT = 69
DATA, INT = 57
DUMMY, INT = 0
SIMC, MEAN = 0.001
DATA, MEAN = -0.013
DUMMY, MEAN = -0.006


pmz
3.8
SIMC, INT = 901
DATA, INT = 845
DUMMY, INT = 1
SIMC, MEAN = -0.012
DATA, MEAN = -0.010
DUMMY, MEAN = -0.009


pmz
4.9
SIMC, INT = 1302
DATA, INT = 1186
DUMMY, INT = 4
SIMC, MEAN = -0.013
DATA, MEAN = -0.007
DUMMY, MEAN = -0.010

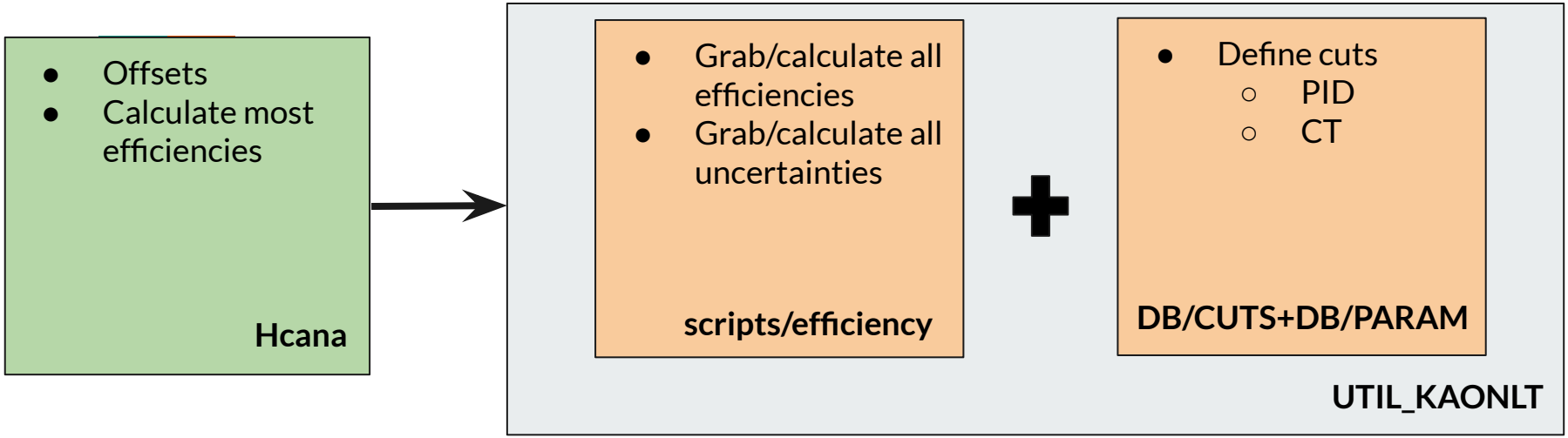

pmz
6.2
SIMC, INT = 288
DATA, INT = 269
DUMMY, INT = 1
SIMC, MEAN = -0.014
DATA, MEAN = -0.011
DUMMY, MEAN = -0.012


pmz
8.2
SIMC, INT = 85
DATA, INT = 78
DUMMY, INT = 0
SIMC, MEAN = -0.014
DATA, MEAN = -0.002
DUMMY, MEAN = 0.003


pmz
10.6
SIMC, INT = 57
DATA, INT = 47
DUMMY, INT = 0
SIMC, MEAN = -0.014
DATA, MEAN = 0.002
DUMMY, MEAN = -0.008

Fortran scripts, average kinematics and xsects

https://github.com/JeffersonLab/hallc_replay_lt/tree/LTSep_Analysis_2022
https://github.com/JeffersonLab/UTIL_KAONLT/tree/spring_2022



https://github.com/trottar/lt_analysis/tree/winter_2023

- Efficiencies
- Uncertainties
- PID cuts
- CT cuts

UTIL_KAONLT

- Apply PID cuts
- Apply CT cuts
- **Merges runs for each phi setting

Prod/Analysed_Prod.py

- Calculate effective charge per run

findEffectiveCharge.py

- Apply diamond cuts
- t-binning, phi-binning
- Generate plots for each phi setting
- Average Q2, W, t calculated
- Yield calculations

Prod/find_tBinRange.py

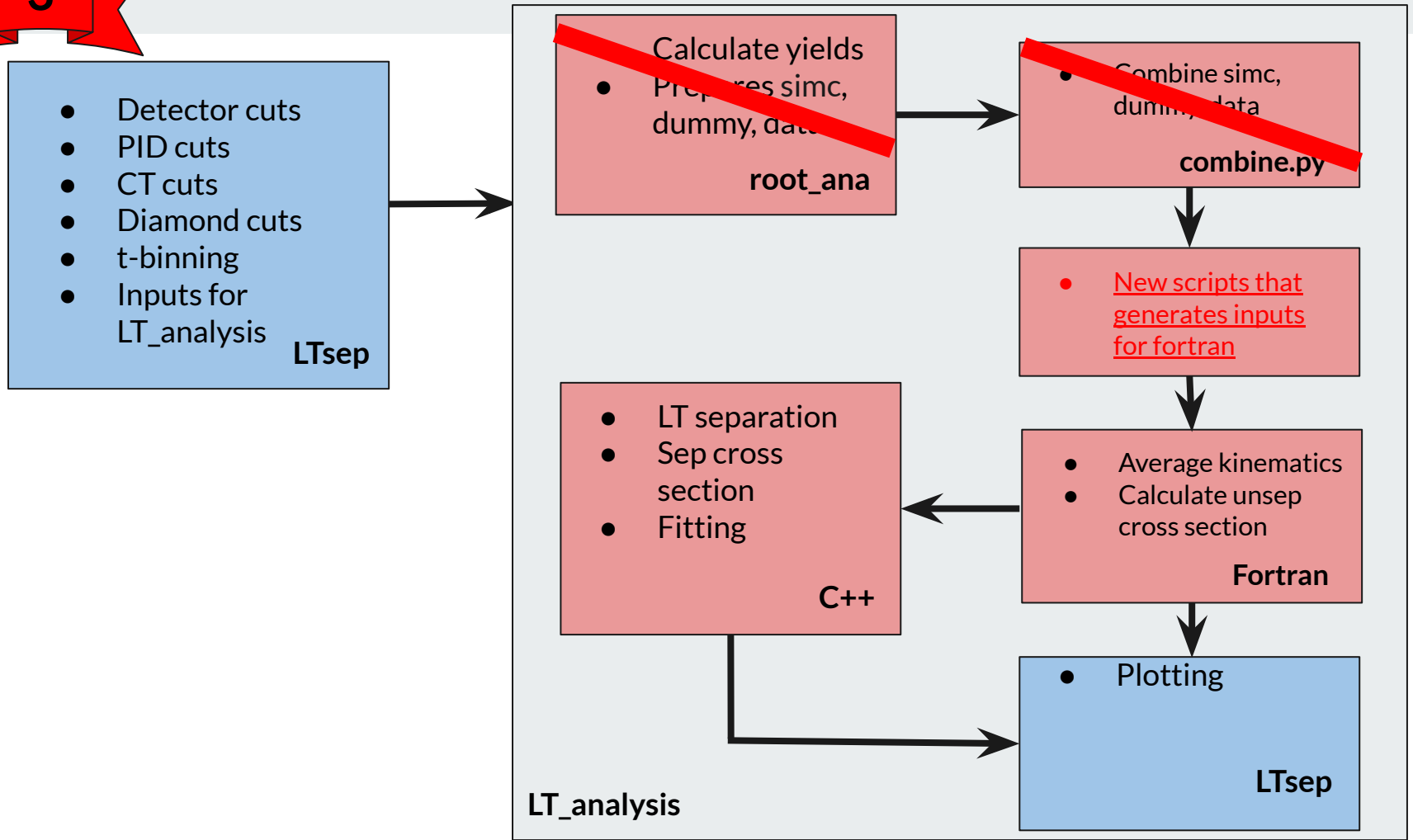
- Create inputs for LT_analysis framework
- Ratio calculation

Prod/createPhysicsList.py

LTsep+LT_analysis/scripts/

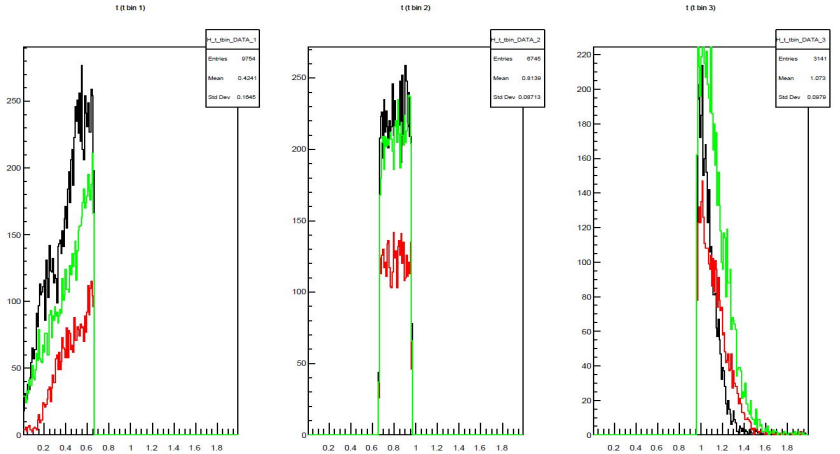
** done in bash script

https://github.com/trottar/lt_analysis/tree/winter_2023

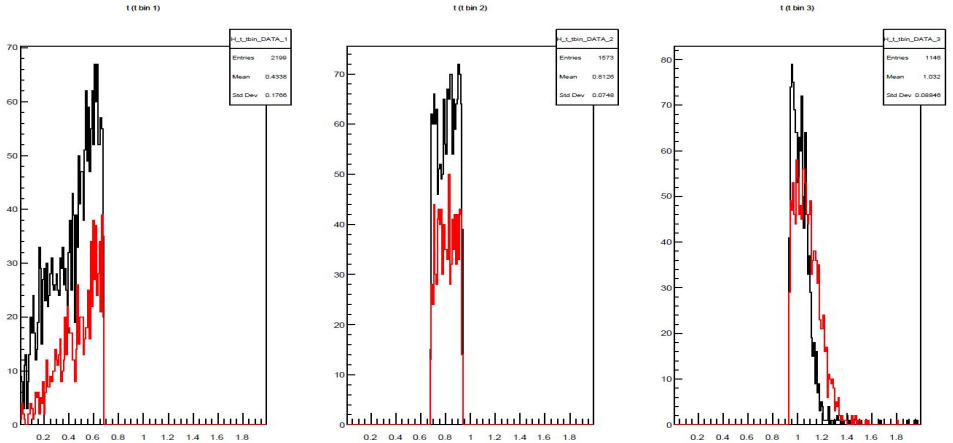


Q2=5.5, W=3.02, t=(0.01,1.99), 3 t-bins, 10 phi bins

High eps

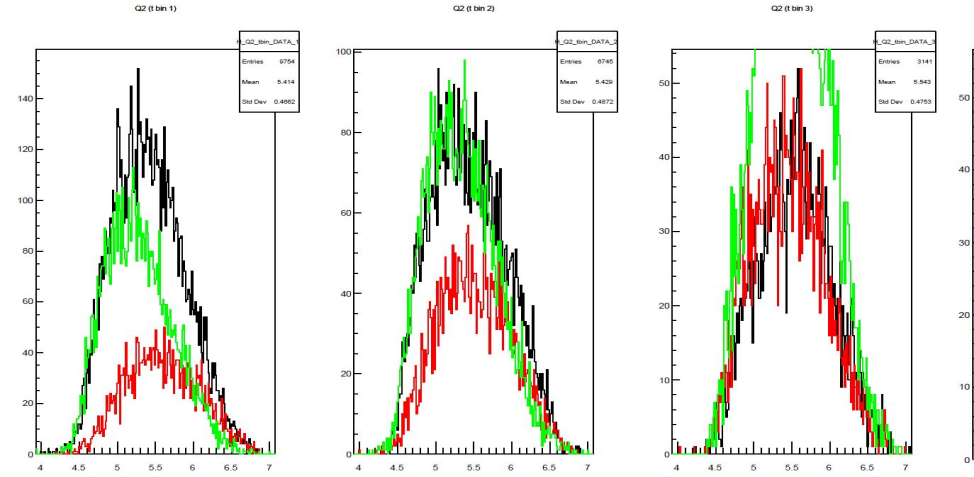


Low eps

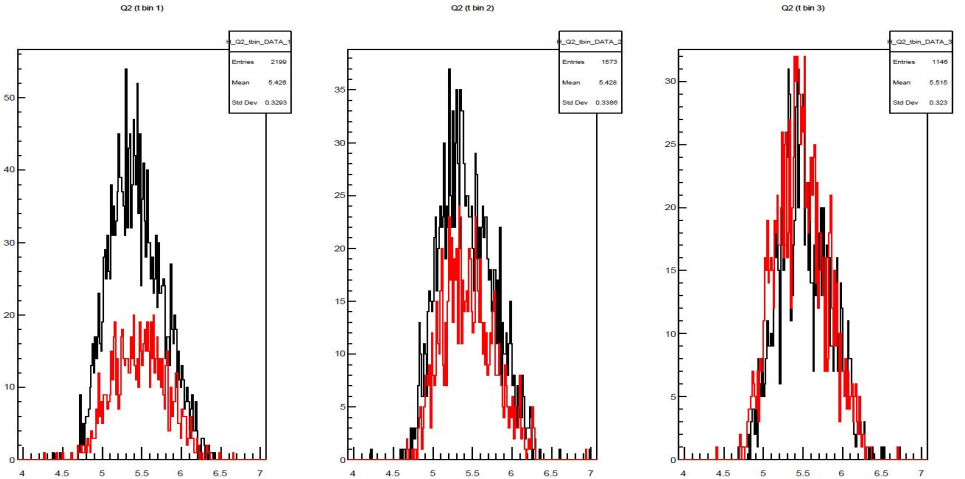


Q2=5.5, W=3.02, t=(0.01,1.99), 3 t-bins, 10 phi bins

High eps

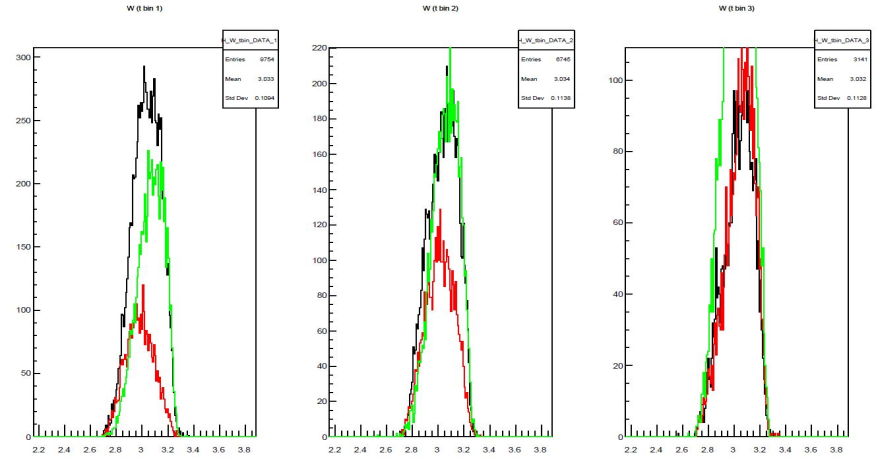


Low eps

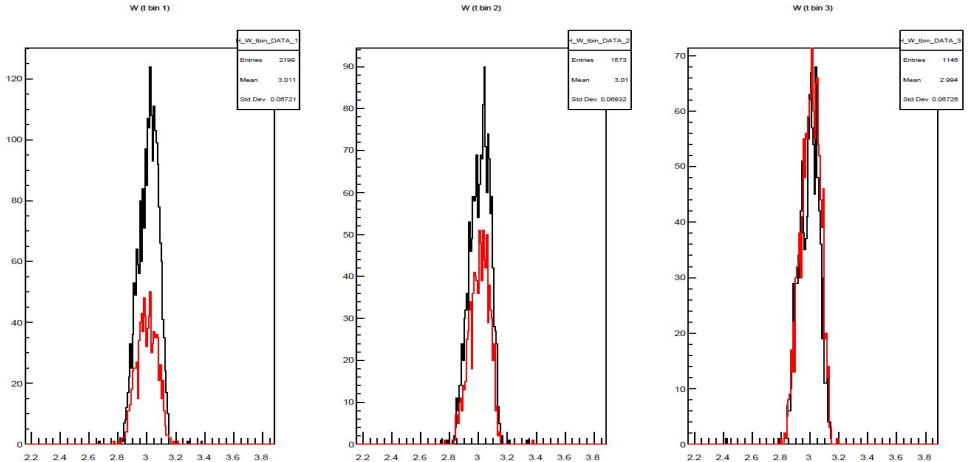


Q2=5.5, W=3.02, t=(0.01,1.99), 3 t-bins, 10 phi bins

High eps

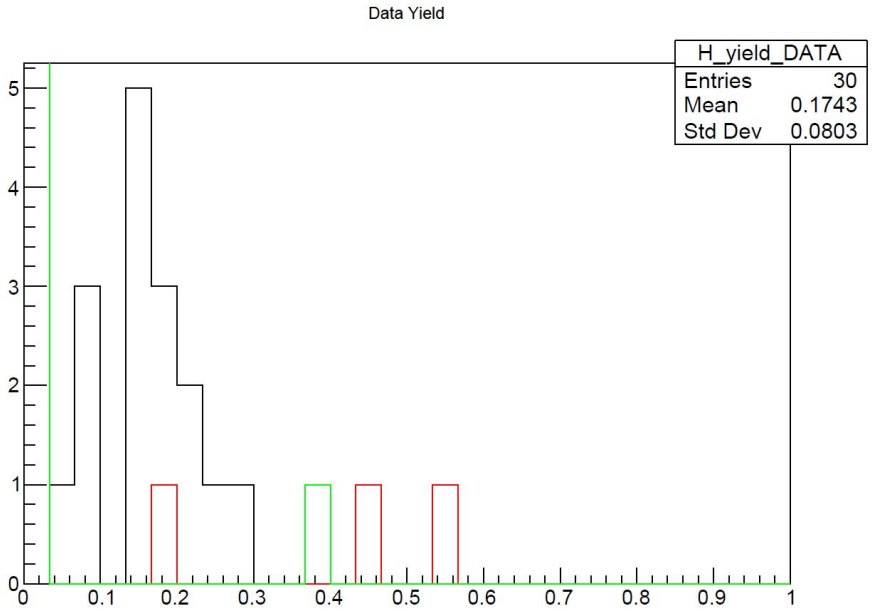


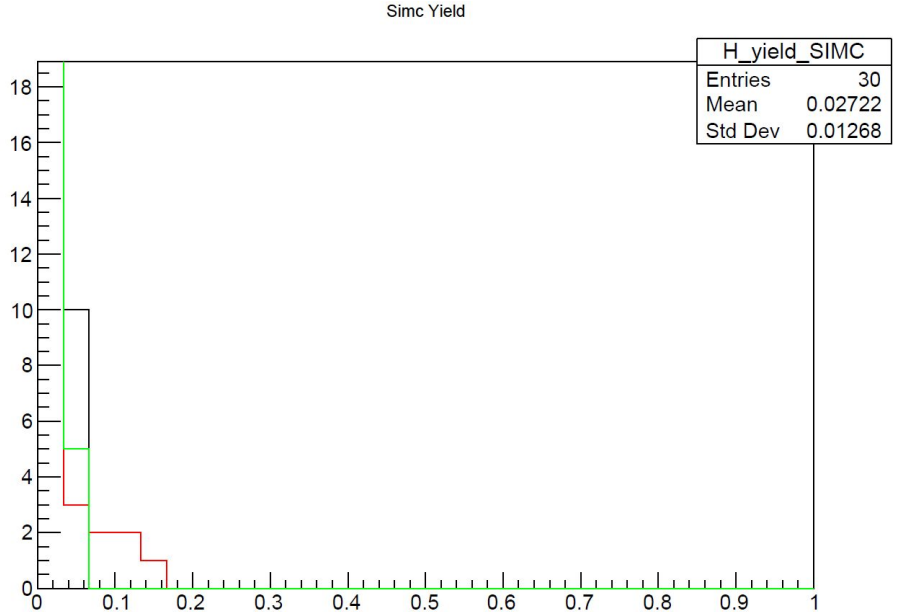
Low eps



Q2=5.5, W=3.02, t=(0.01,1.99), 3 t-bins, 10 phi bins

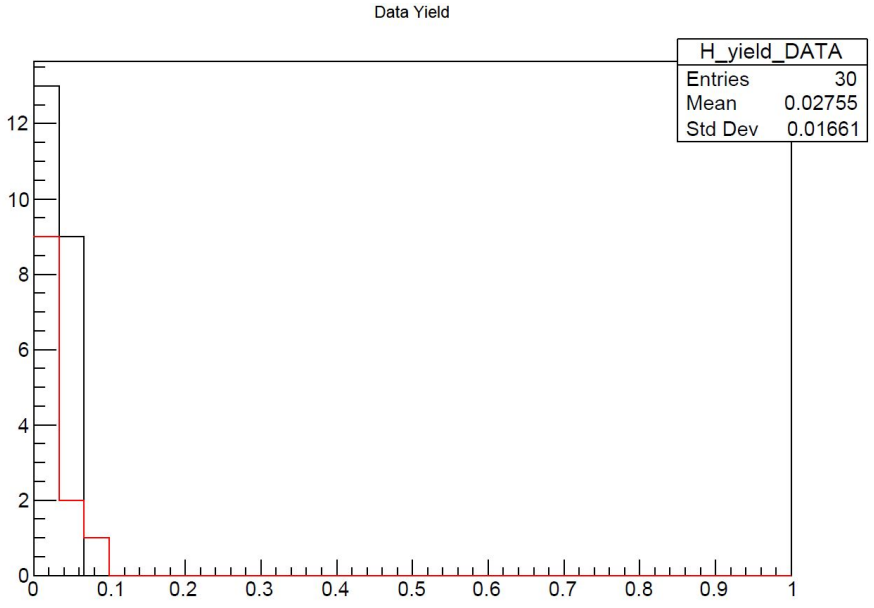
High eps

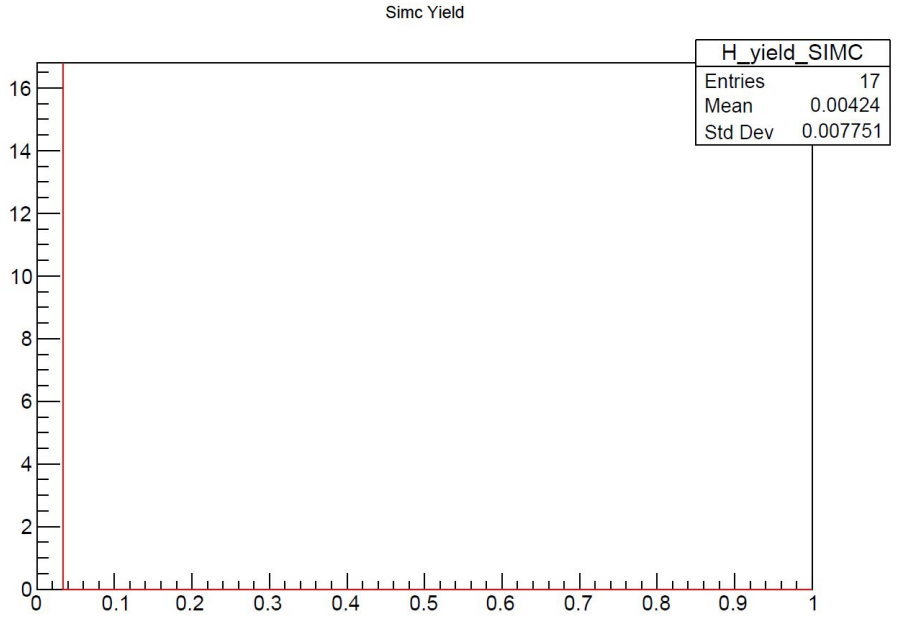


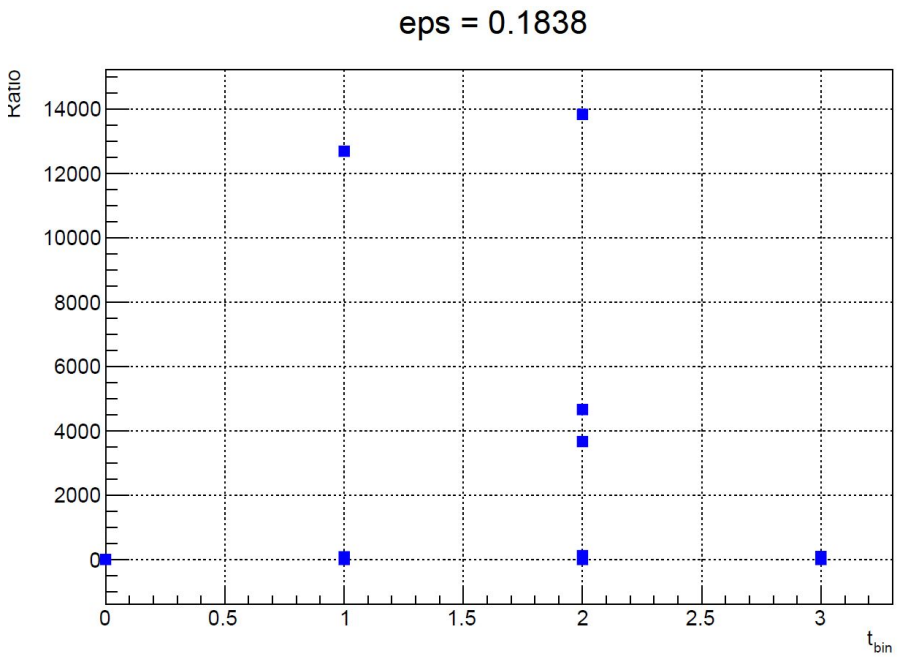
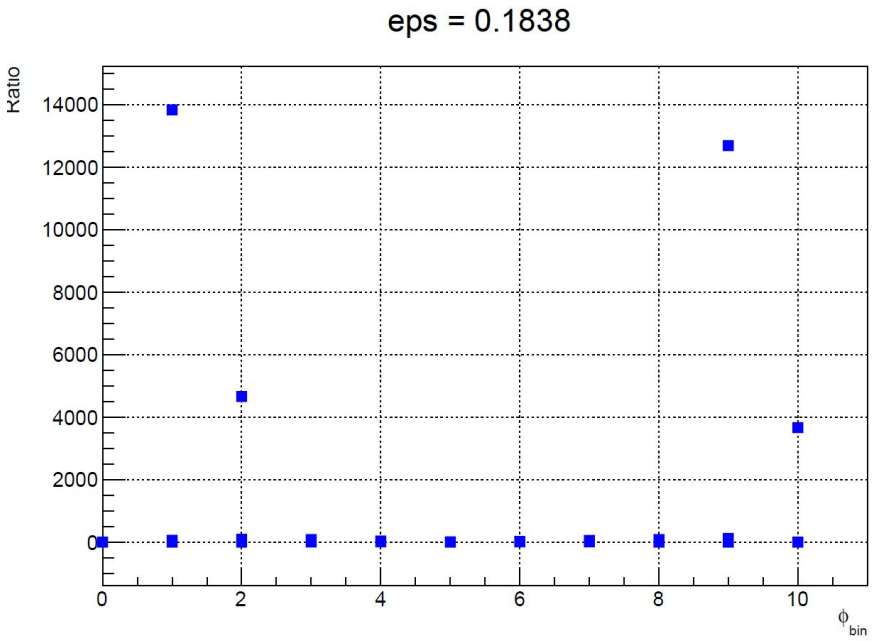


Q2=5.5, W=3.02, t=(0.01,1.99), 3 t-bins, 10 phi bins

Low eps





Q2=5.5, W=3.02, t=(0.01,1.99), 3 t-bins, 10 phi bins

Low eps