Proton Absorption

How many protons didn't form a HMS tigger?
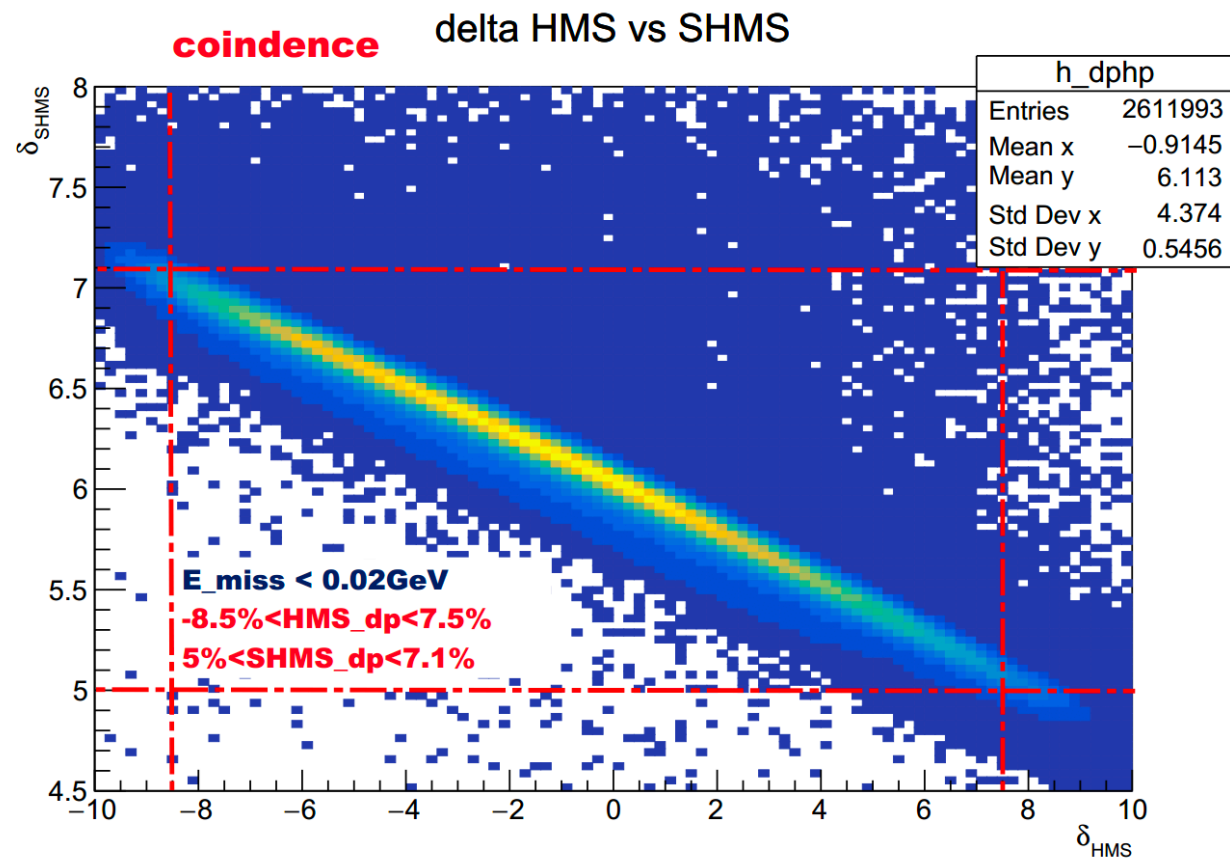
delta HMS vs SHMS

coindence

h_dphp	
Entries	2611993
Mean x	−0.9145
Mean y	6.113
Std Dev x	4.374
Std Dev y	0.5456

E_miss < 0.02GeV
-8.5%<HMS_dp<7.5%
5%<SHMS_dp<7.1%

delta HMS vs SHMS

simc

h_dphp	
Entries	335266
Mean x	−1.026
Mean y	6.096
Std Dev x	4.37
Std Dev y	0.5664
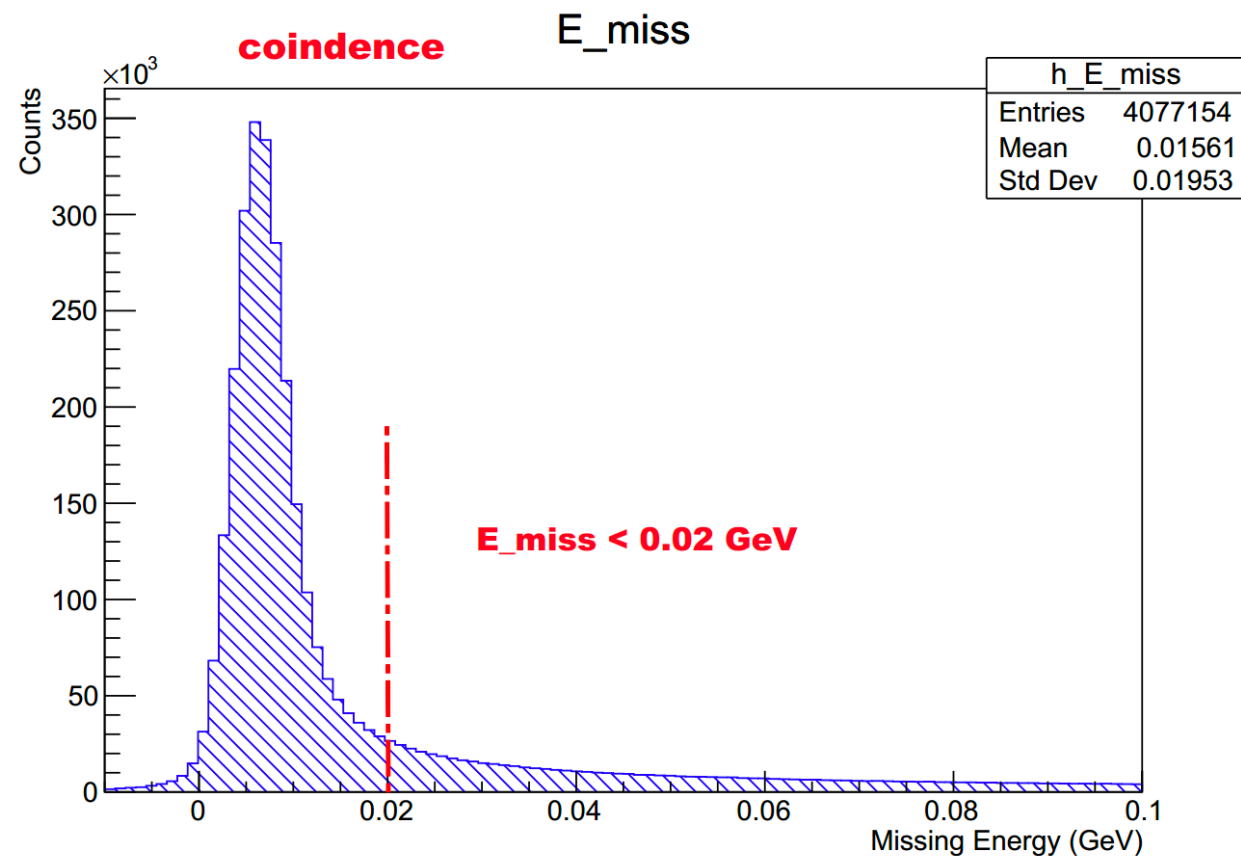
E_miss < 0.02GeV
-8.5%<HMS_dp<7.5%
5%<SHMS_dp<7.1%
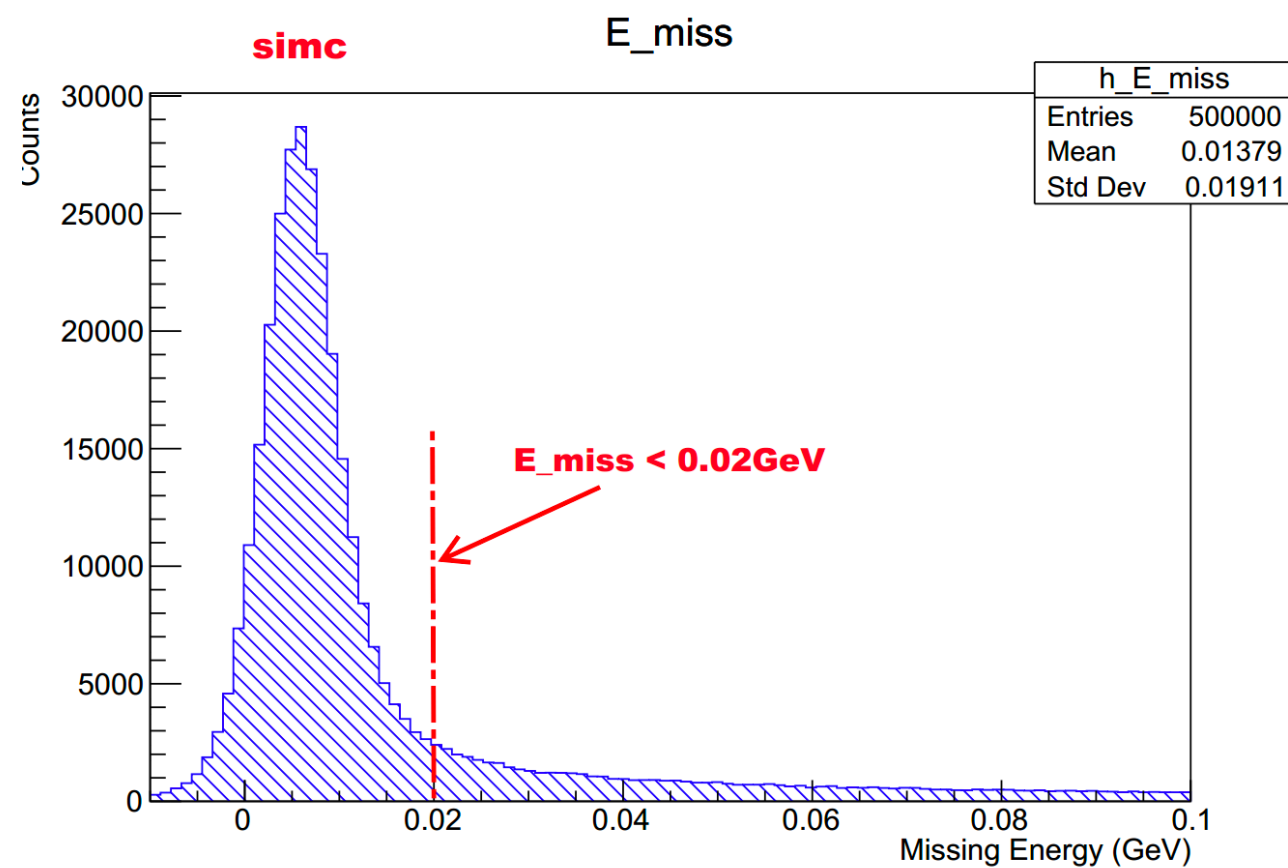
Before
|HMS_dp|<9%
4.9%<SHMS_dp<7.1%

After
-8.5%<HMS_dp<7.5%
5%<SHMS_dp<7.1%

SHMS Xtar and Ytar

coindence

h_pxytar	
Entries	2424577
Mean x	−0.002371
Mean y	−0.001086
Std Dev x	0.006763
Std Dev y	0.00739

E_miss < 0.02GeV

-8.5%<HMS_dp<7.5%

5%<SHMS_dp<7.1%

-0.011<SHMS_yptar<0.003

|SHMS_xptar|<0.011

SHMS Yptar

SHMS Xtar and Ytar

simc

h_pxytar	
Entries	309108
Mean x	−0.002349
Mean y	−6.069e−05
Std Dev x	0.006282
Std Dev y	0.00706

E_miss < 0.02GeV

-8.5%<HMS_dp<7.5%

5%<SHMS_dp<7.1%

-0.011<SHMS_yptar<0.003

|SHMS_xptar|<0.011

SHMS Yptar

Before

-0.015<SHMS_yptar<0.013

|SHMS_xptar|<0.014

After

-0.011<SHMS_yptar<0.003

|SHMS_xptar|<0.011

coindence

HMS Xtar and Ytar

h_hxytar	
Entries	2424577
Mean x	−0.002542
Mean y	−0.001718
Std Dev x	0.01688
Std Dev y	0.03926

E_miss < 0.02GeV
-8.5%<HMS_dp<7.5%
5%<SHMS_dp<7.1%

-0.025<HMS_yptar<0.02
|HMS_xptar|<0.065

simc

HMS Xtar and Ytar

h_hxytar	
Entries	309108
Mean x	−0.003578
Mean y	0.0004101
Std Dev x	0.01616
Std Dev y	0.03883

E_miss < 0.02GeV
-8.5%<HMS_dp<7.5%
5%<SHMS_dp<7.1%

-0.025<HMS_yptar<0.02
|HMS_xptar|<0.065
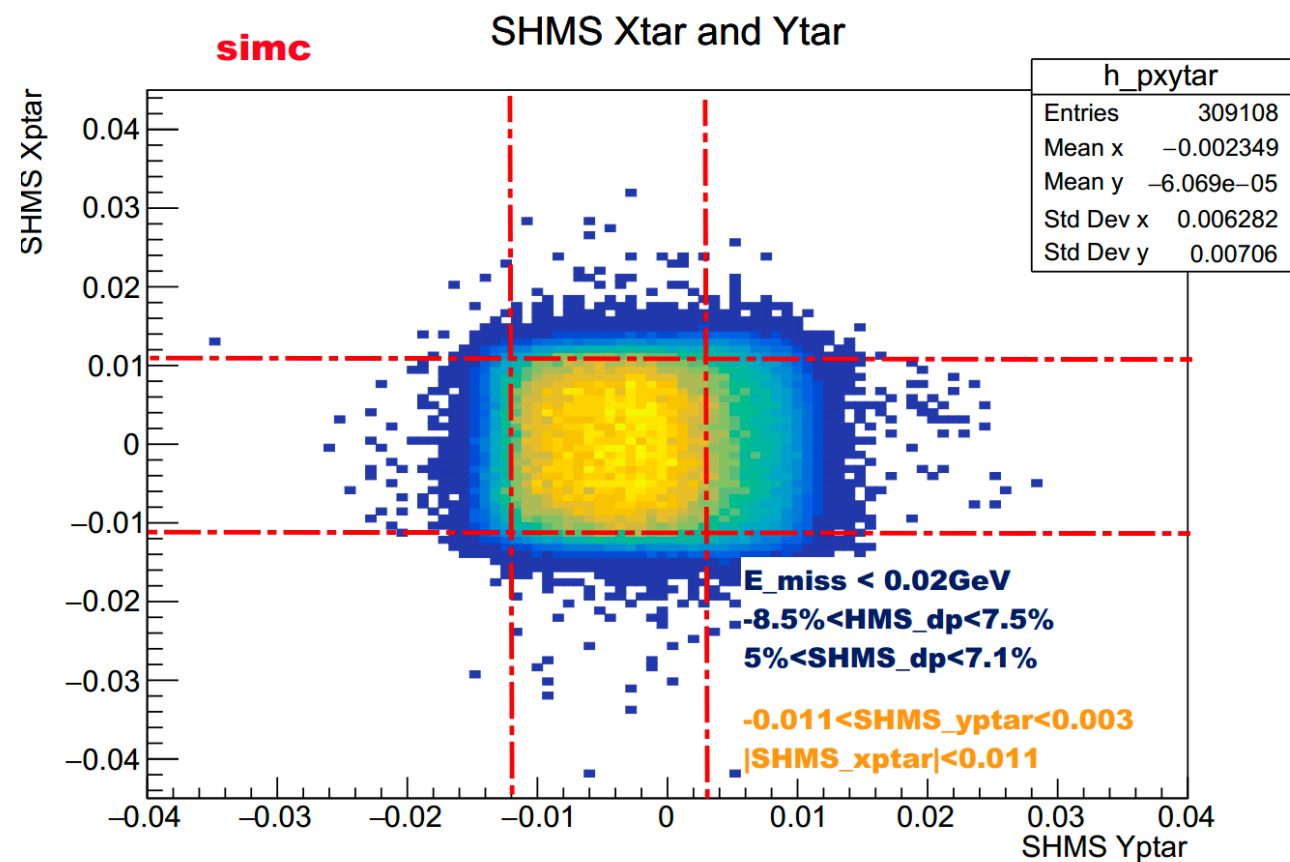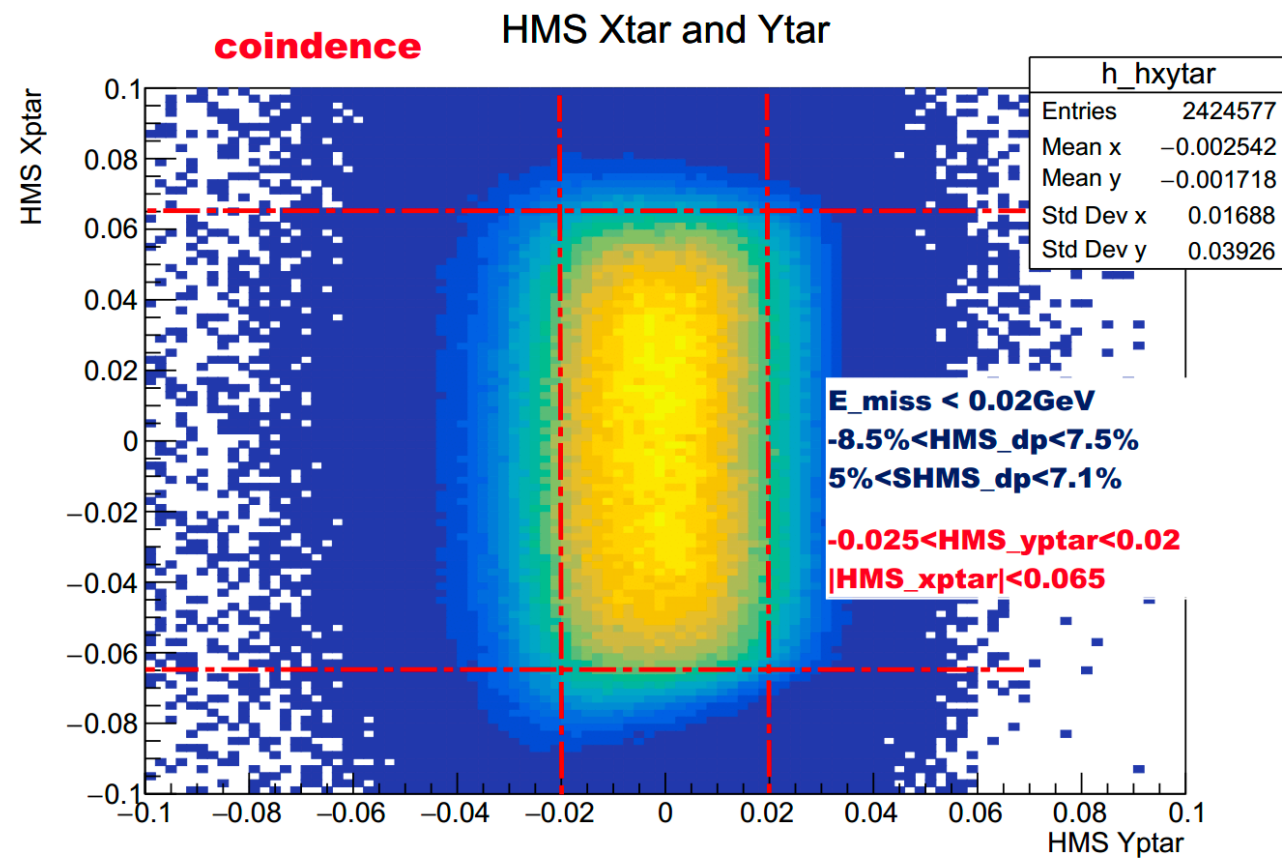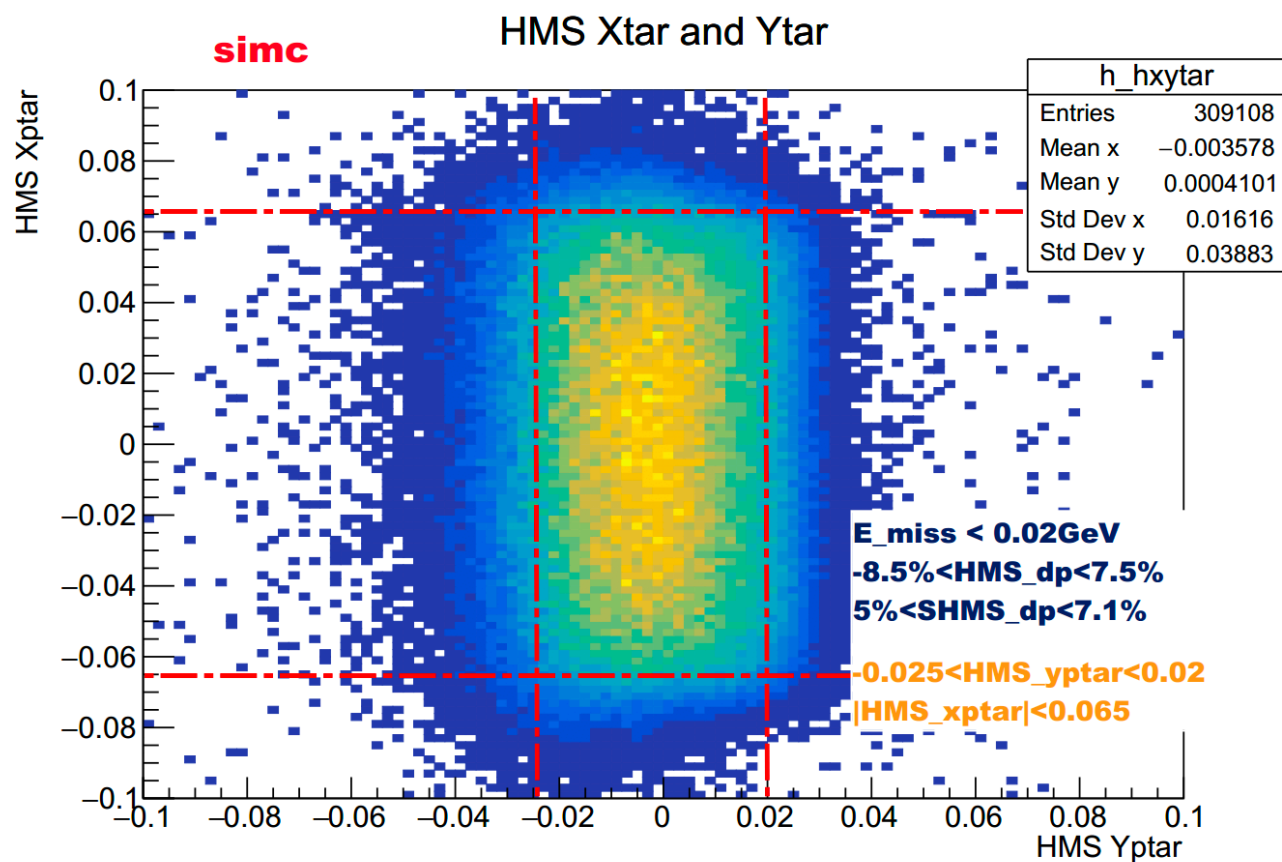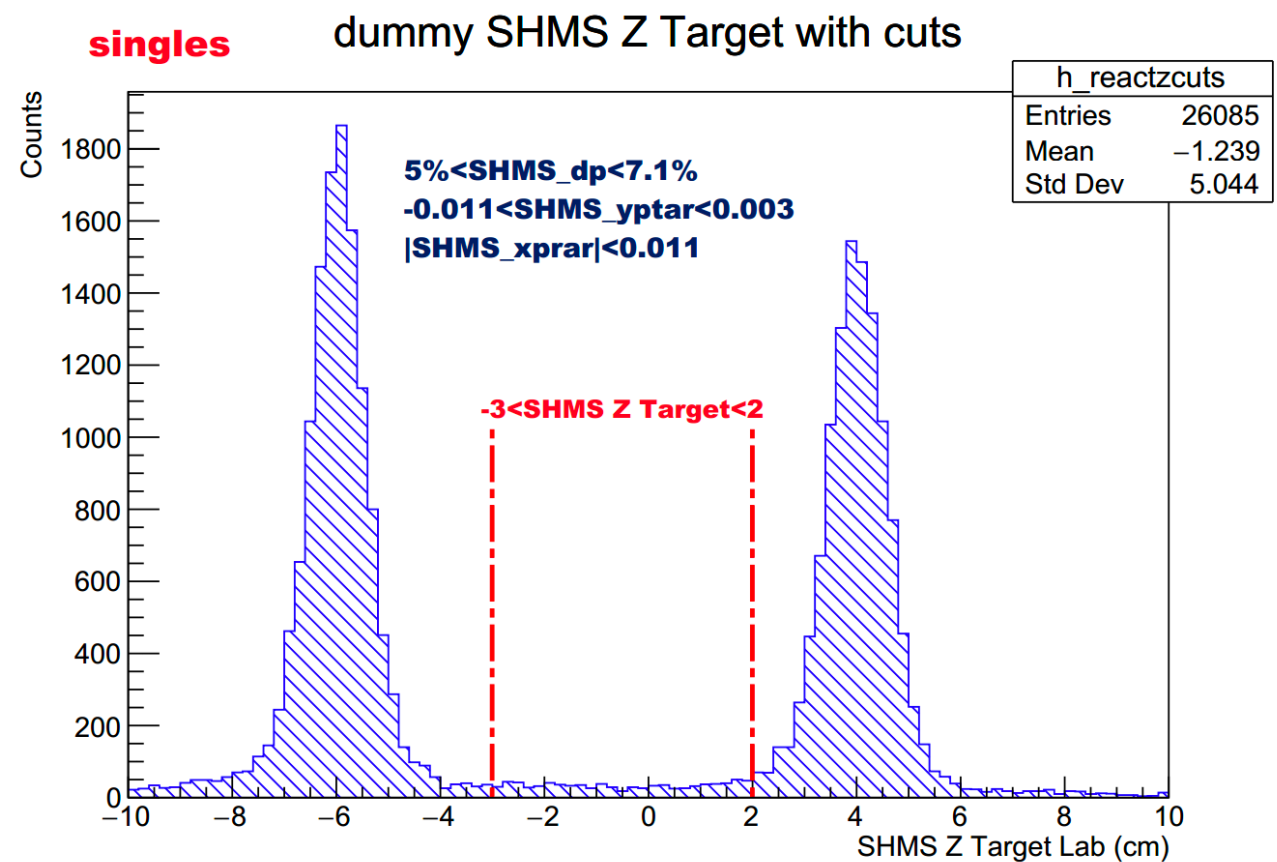
Before
$|HMS\_yptar| < 0.035$
$|HMS\_xptar| < 0.075$

After
$-0.025 < HMS\_yptar < 0.02$
$|HMS\_xptar| < 0.065$

dummy SHMS Z Target

singles

h_reactz	
Entries	3284737
Mean	−0.1959
Std Dev	5.163

No cuts

5%<SHMS_dp<7.1%

SHMS Z Target Lab (cm)

dummy SHMS Z Target with cuts

singles

h_reactzcuts	
Entries	26085
Mean	−1.239
Std Dev	5.044

5%<SHMS_dp<7.1%
-0.011<SHMS_yptar<0.003
|SHMS_xprar|<0.011

-3<SHMS Z Target<2
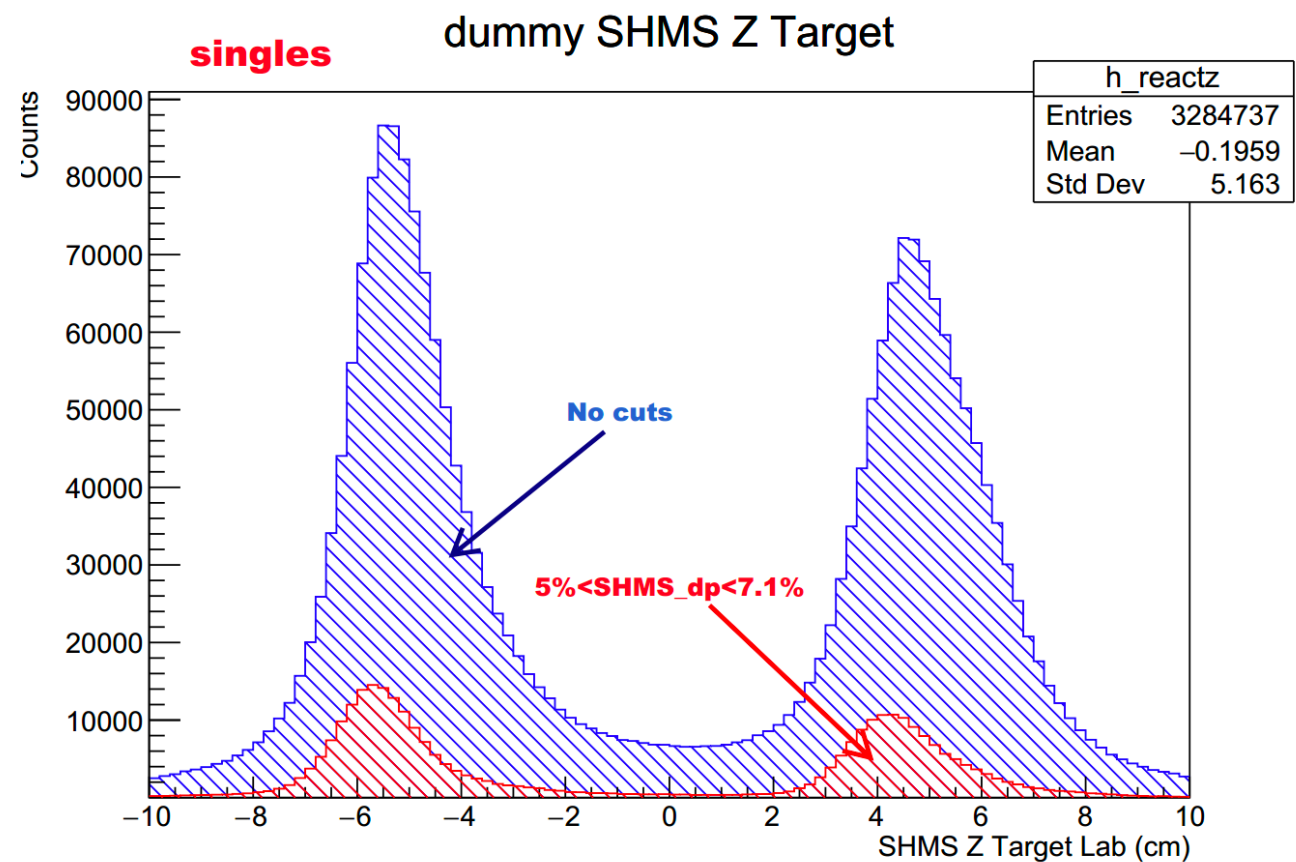
SHMS Z Target Lab (cm)

Before
-3.5<SHMS Z Target<1.5

After
-3<SHMS Z Target<2

singles Z Target Cut

singles

-3<SHMS Z Target<2

h_sigdphp	
Entries	1131982
Mean x	−1.144
Mean y	6.022
Std Dev x	4.154
Std Dev y	0.6212

SHMS singles Xtar and Ytar

singles

5%<SHMS_dp<7.1%
-3 < SHMS Z Target < 2
-0.011<SHMS_yptar<0.003
|SHMS_xptar|<0.011

h_sigpxytar	
Entries	302536
Mean x	−0.006952
Mean y	−0.004075
Std Dev x	0.008773
Std Dev y	0.02219
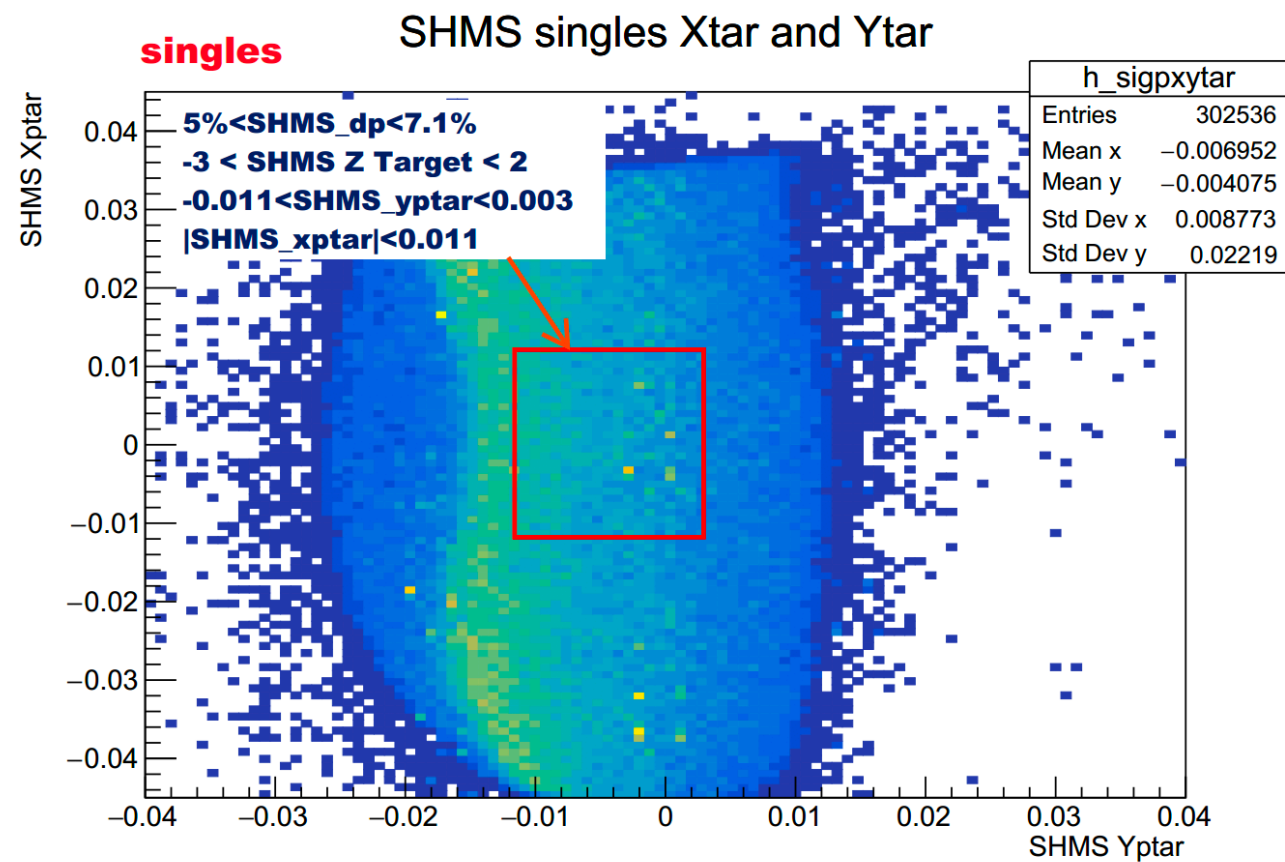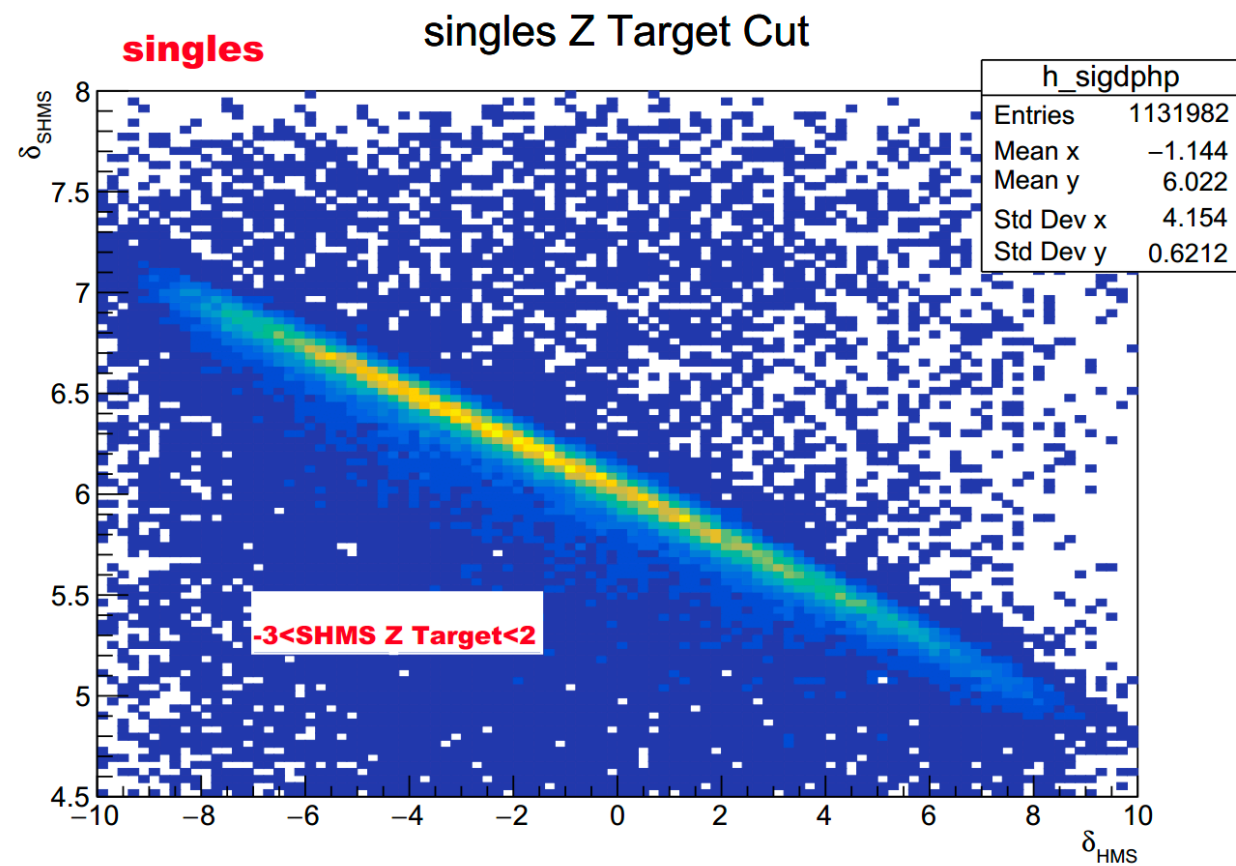
Determined from coincidence run

SHMS Xptar e_should and e_did

h_sigxtarshould	
Entries	105749
Mean	−0.004353
Std Dev	0.02229

Counts

SHMS xptar

SHMS Xptar e_did /e_should

h_sigxtaratio	
Entries	895
Mean	−0.0003495
Std Dev	0.01099

Proton Transmission Factor

85%

Tighter SHMS xptar cuts:
-0.008< SHMS_xptar < 0.005

e_should cuts:
5%<SHMS_dp<7.1%
-0.011<SHMS_yptar<0.003
-3<SHMS Z Target<2
0.935<W<0.952

e_did cuts
e_should cuts+
-8.5<HMS_dp<7.5
hTRIG1_ROC2>0
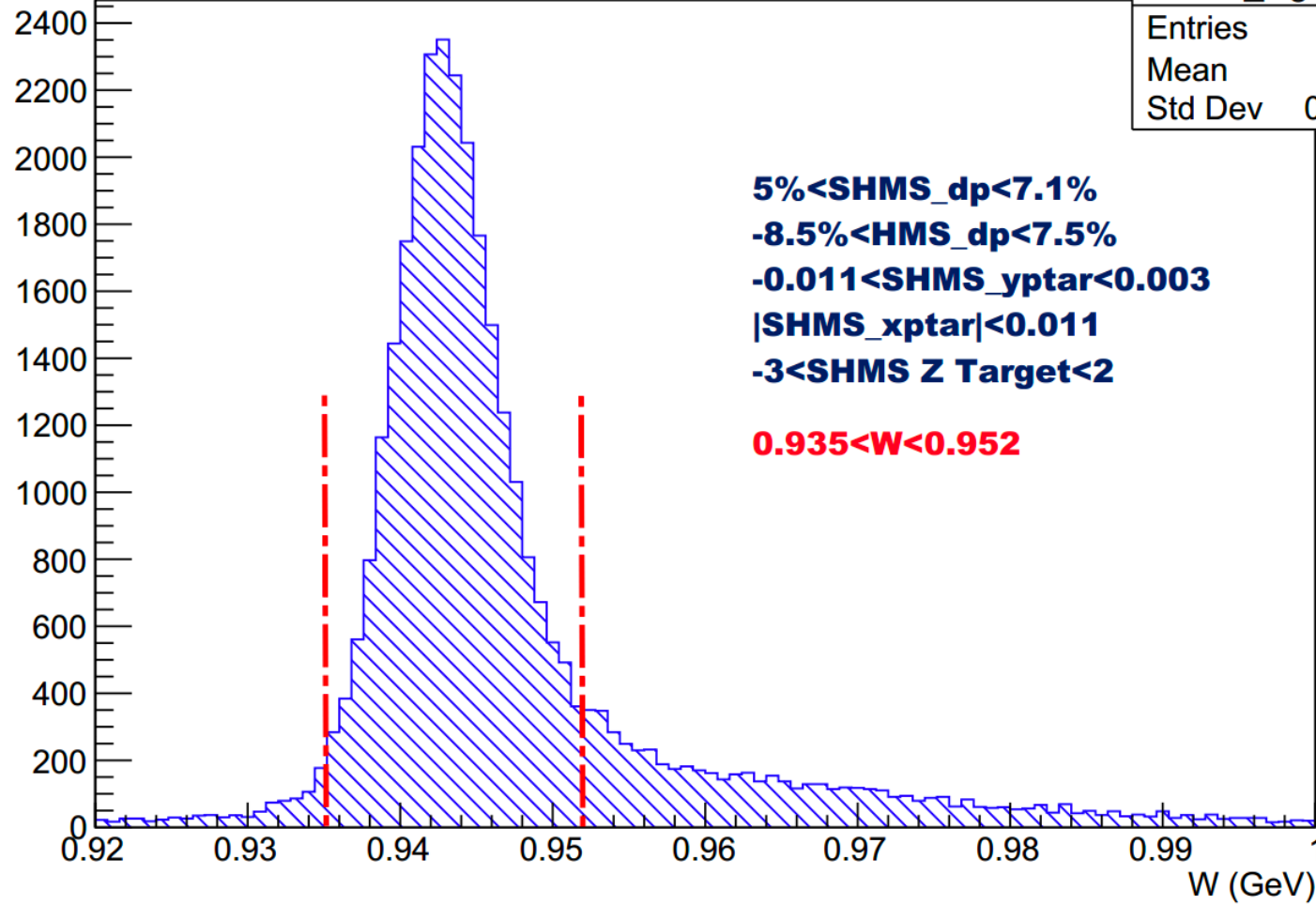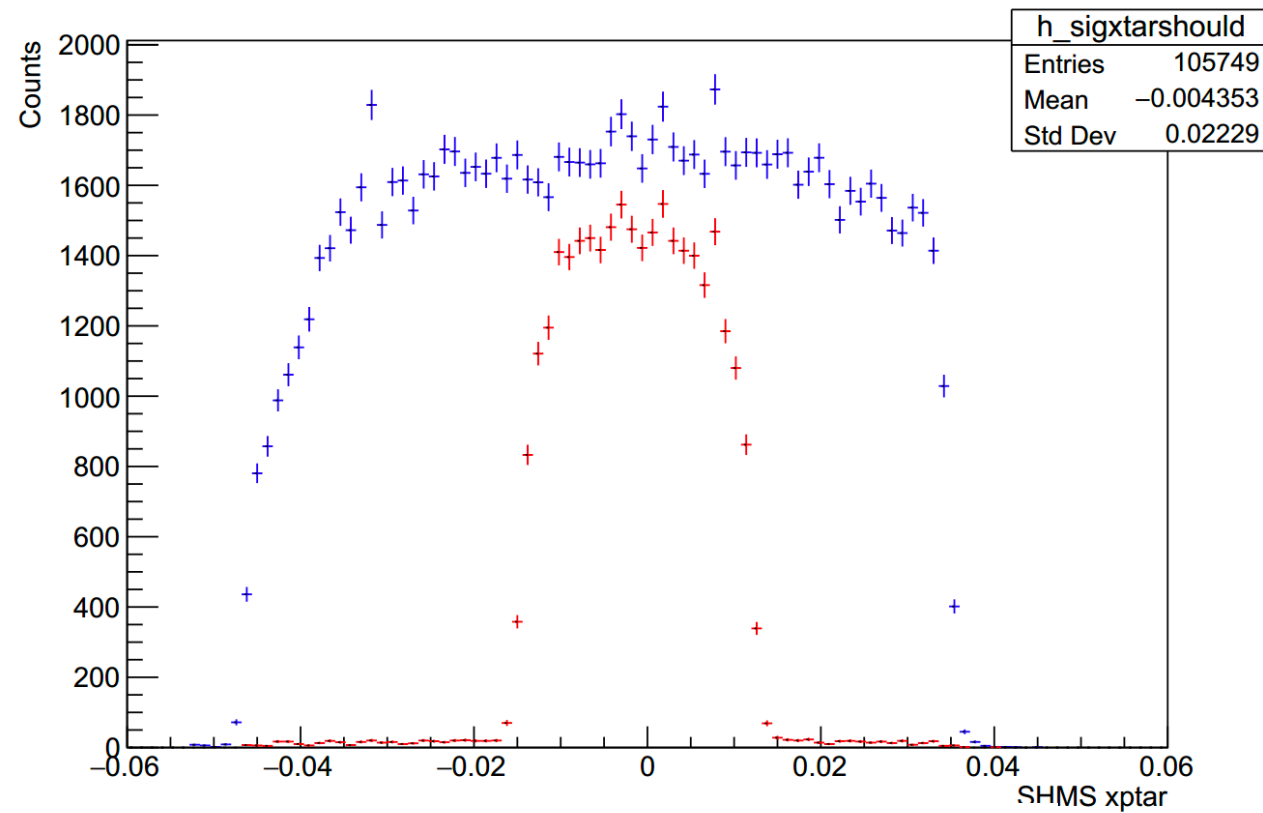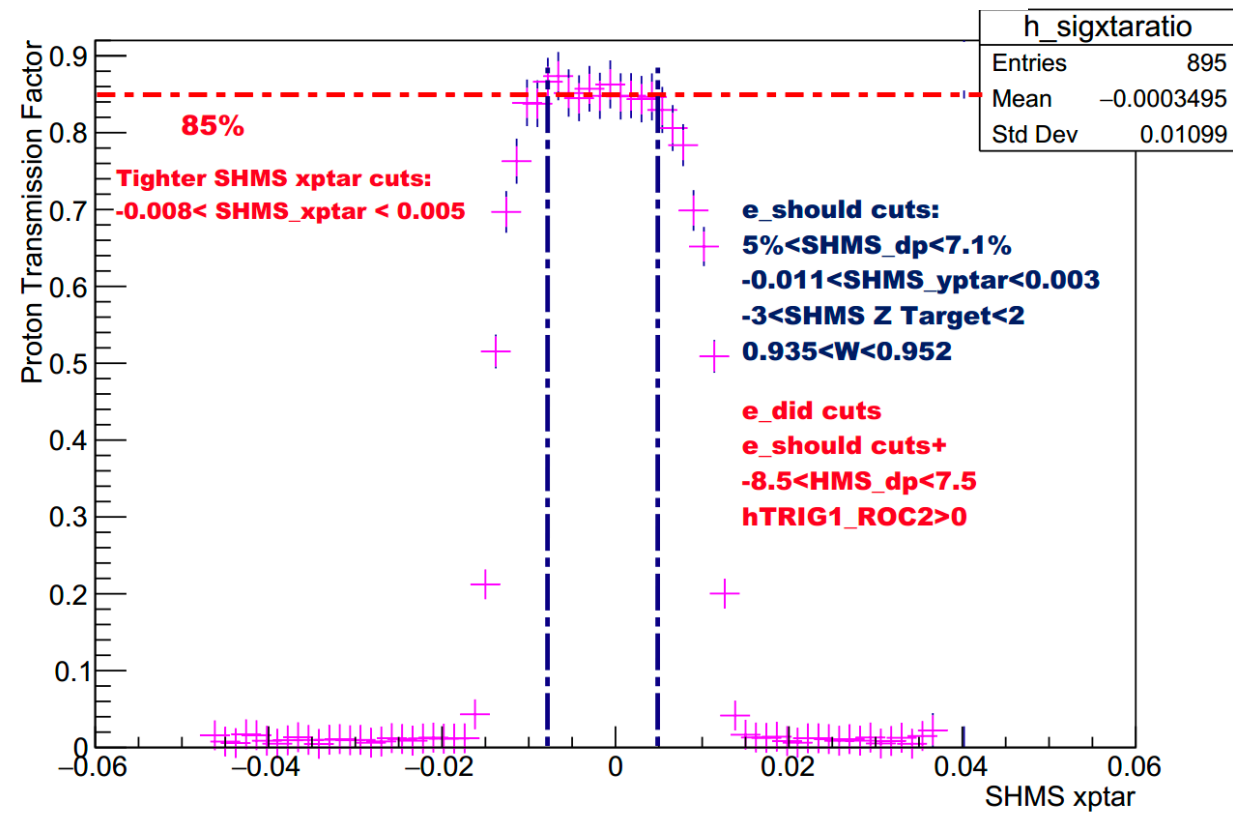
SHMS xptar

Before
-0.01<SHMS_xptar tighter cut<0.005

After
-0.008<SHMS_xptar tighter cut<0.005

SHMS Yptar e_should and e_did

h_sigytarshould	
Entries	33741
Mean	−0.004109
Std Dev	0.007665

SHMS Yptar e_did /e_should

h_sigytaratio	
Entries	11763
Mean	−0.0008464
Std Dev	0.006734

90%

Tighter SHMS yptar cuts:
-0.006< SHMS_yptar < 0.0025

e_should cuts:
5%<SHMS_dp<7.1%
-0.008<SHMS_xptar<0.005
-3<SHMS Z Target<2
0.935<W<0.952

e_did cuts
e_should cuts+
-8.5<HMS_dp<7.5
hTRIG1_ROC2>0
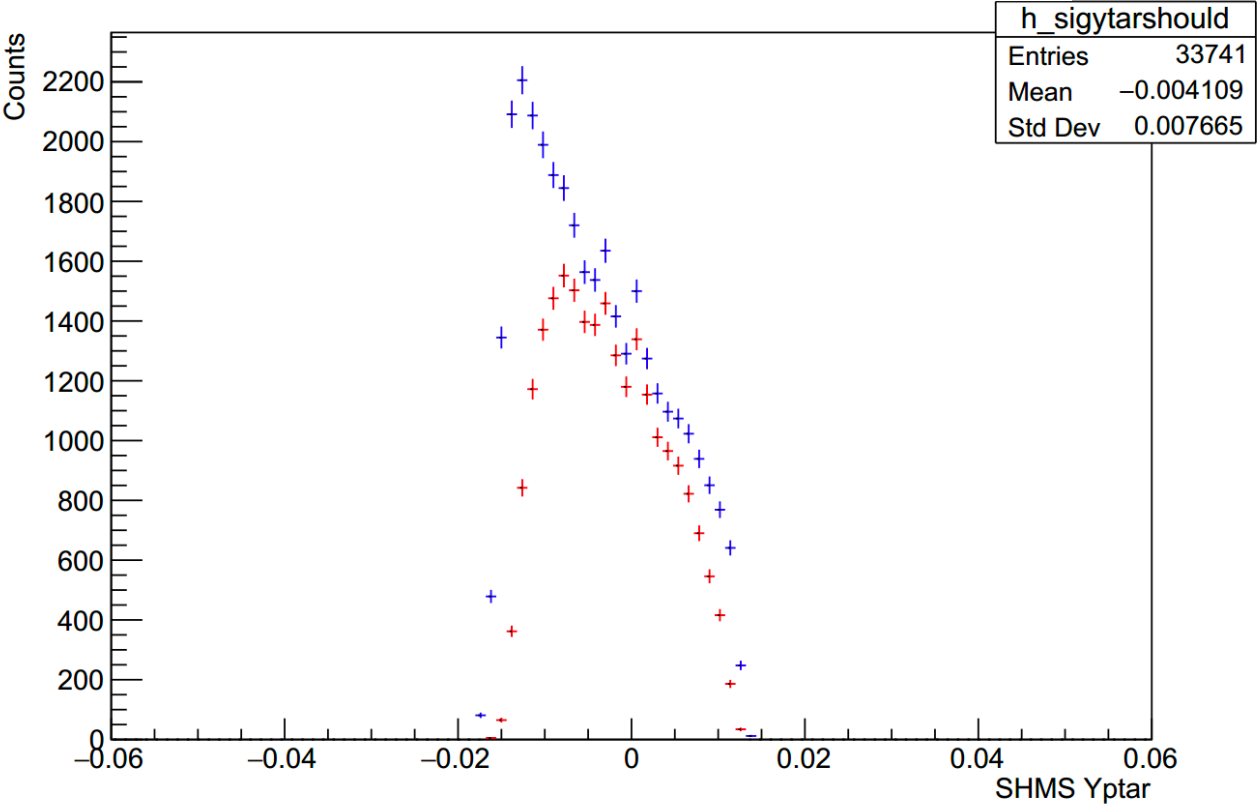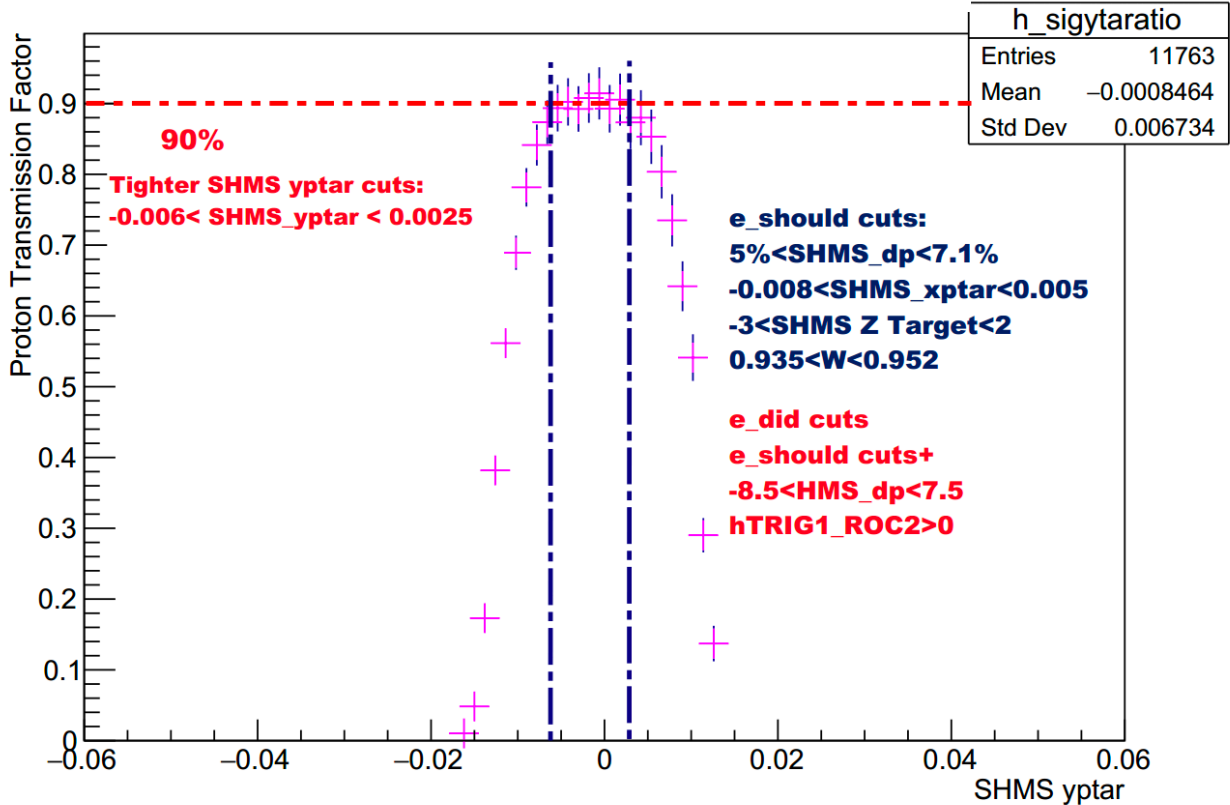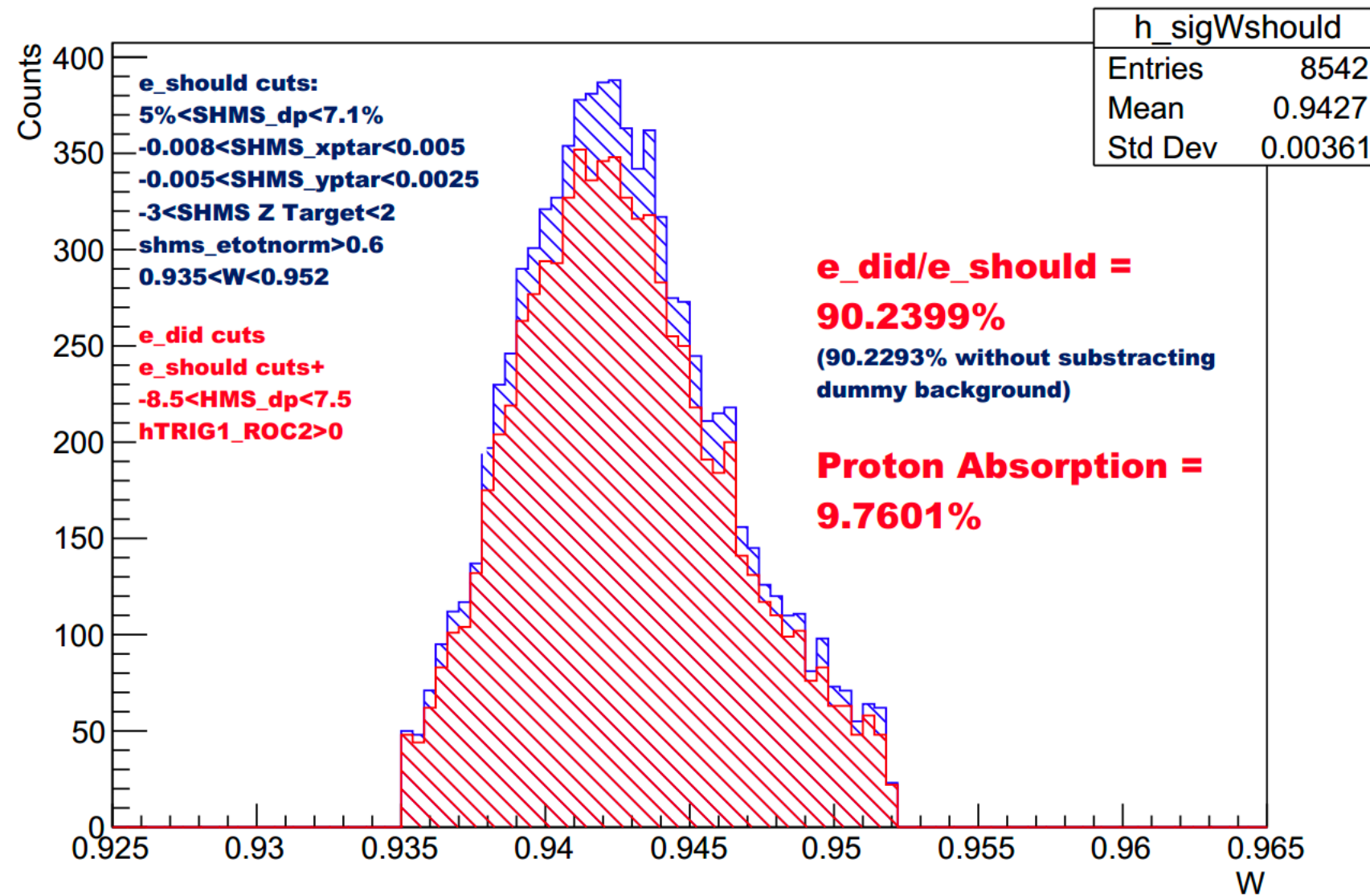
Before
0<SHMS_yptar tighter cut<0.007

After
-0.006<SHMS_yptar tighter cut<0.0025

W e_did /e_should

9.7601% Proton did NOT make it to form a trigger