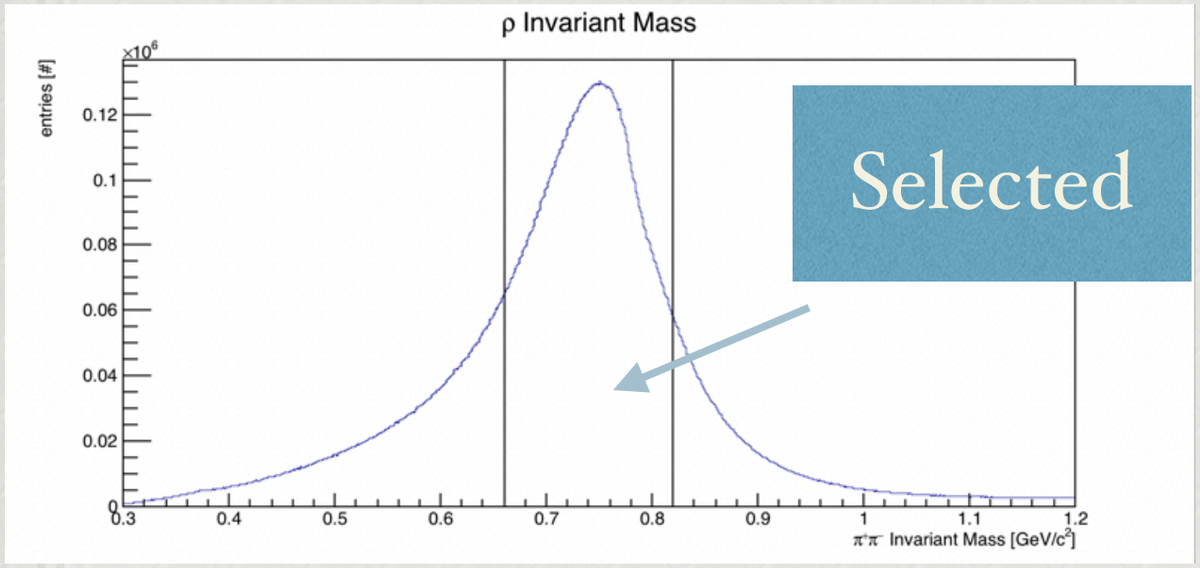
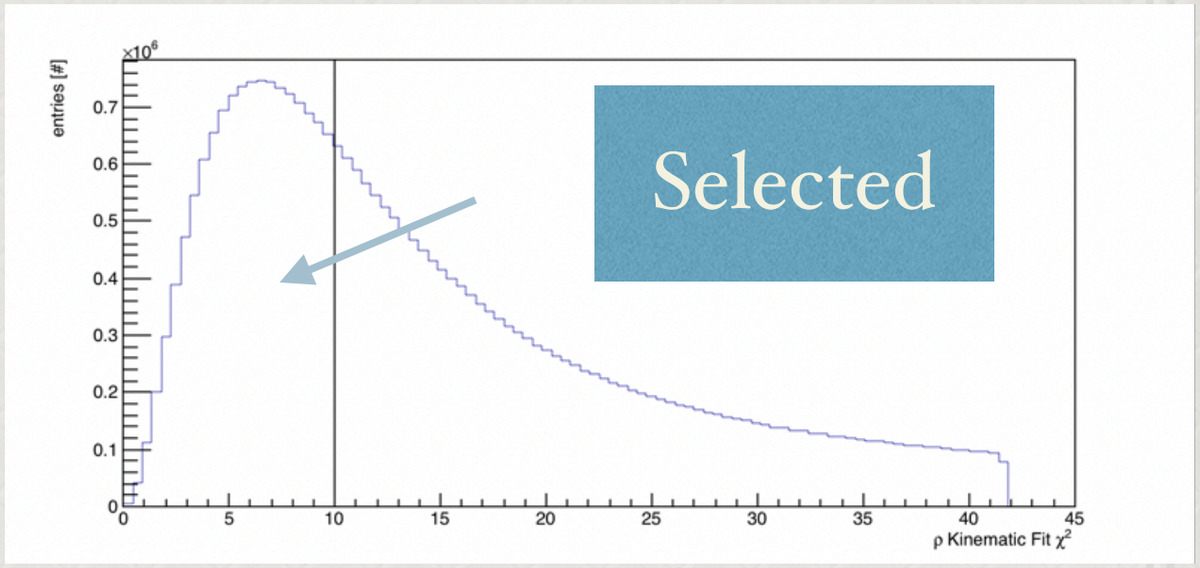
Status

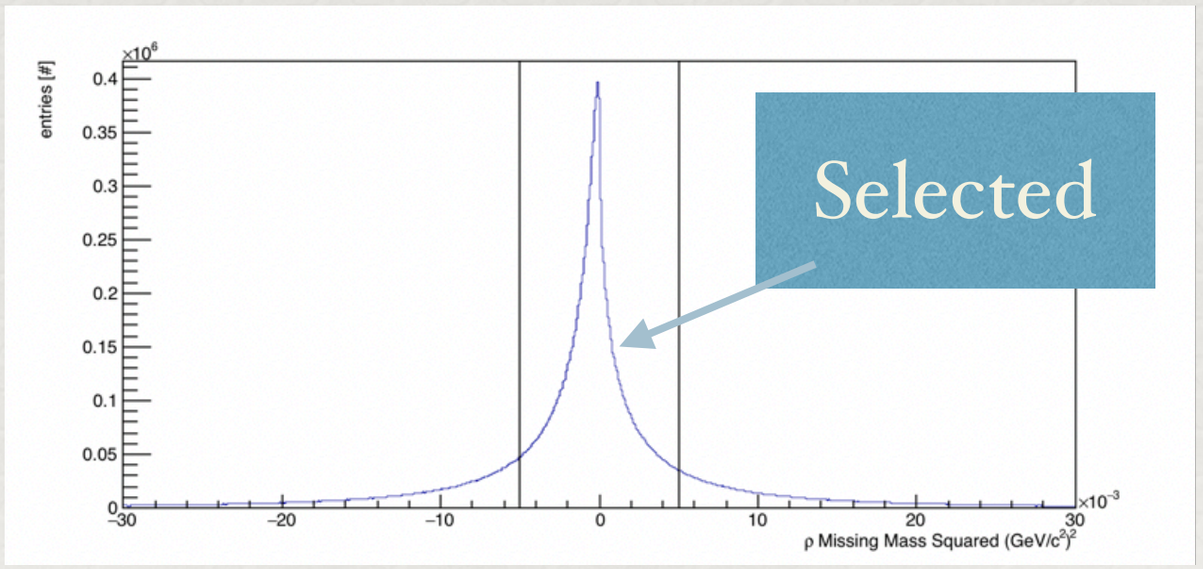
Ahmed Ali

20 Apr 2020

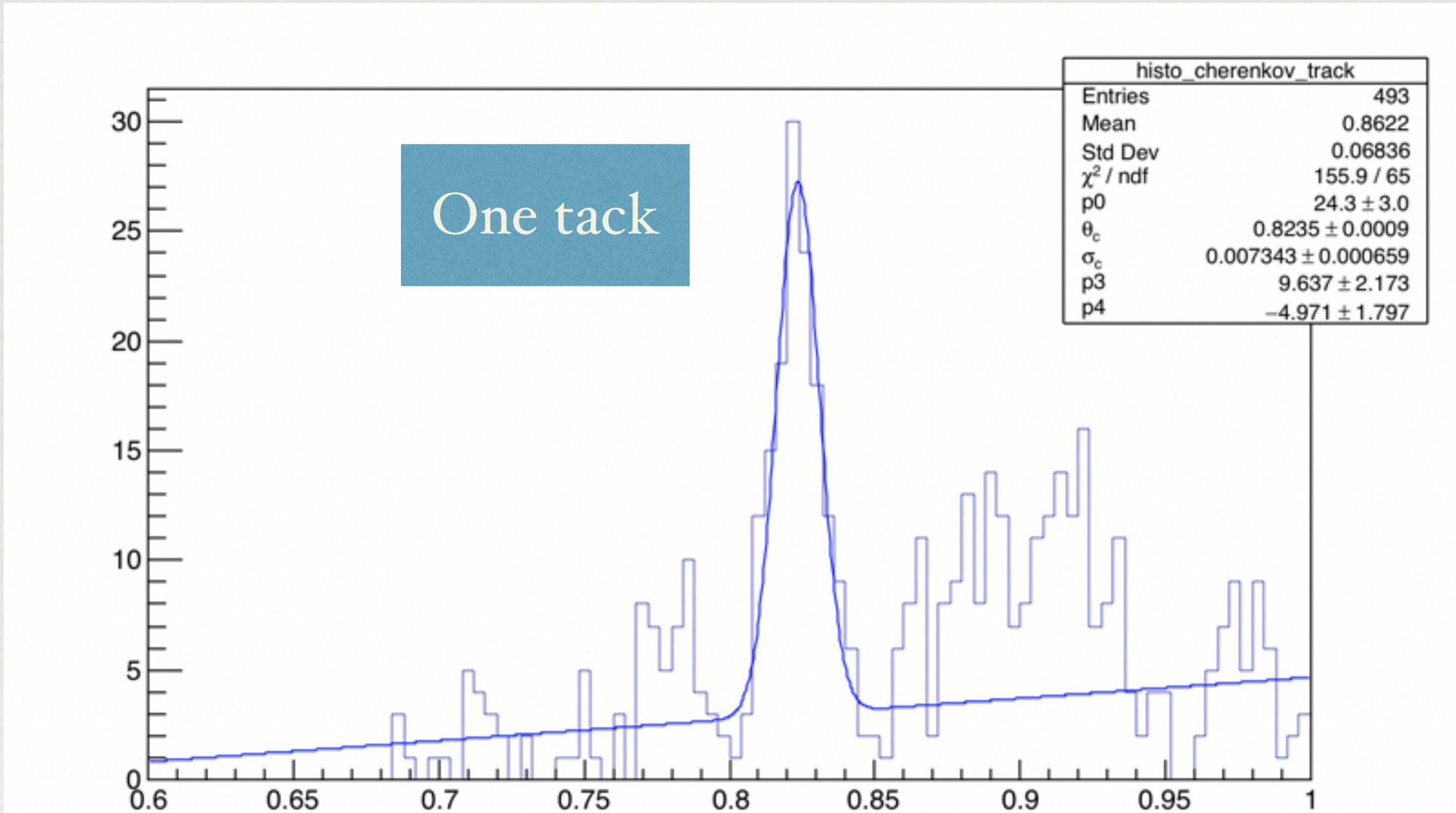
Event Selection (Pions)
2019 1st commissioning data

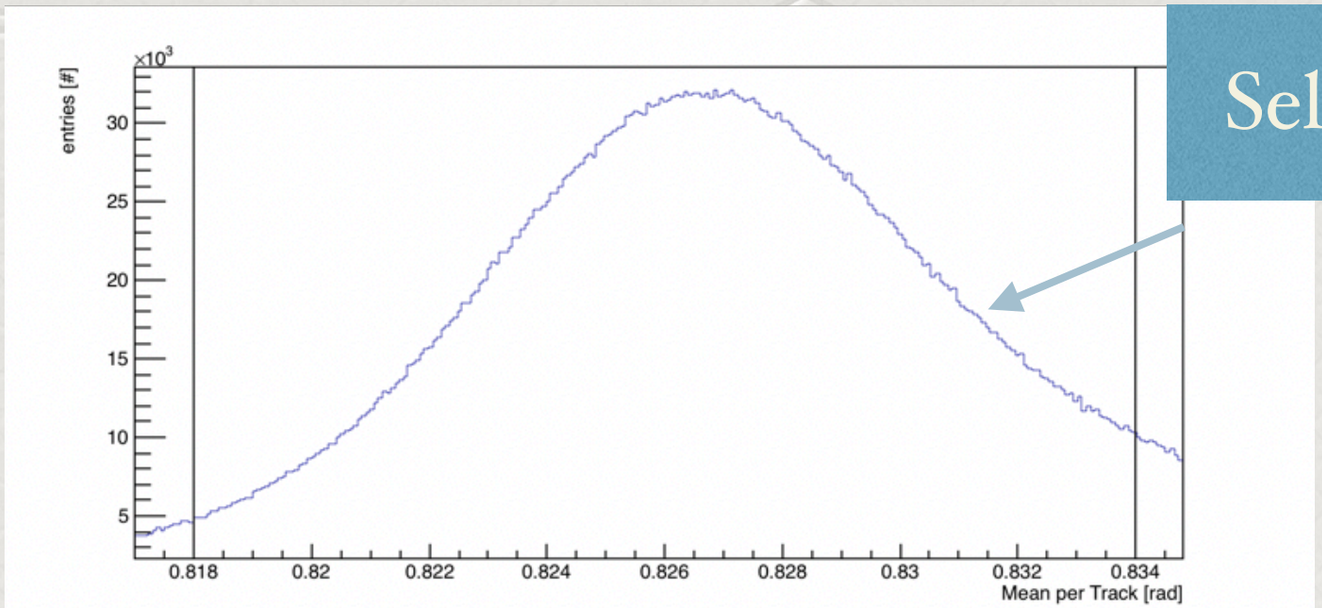


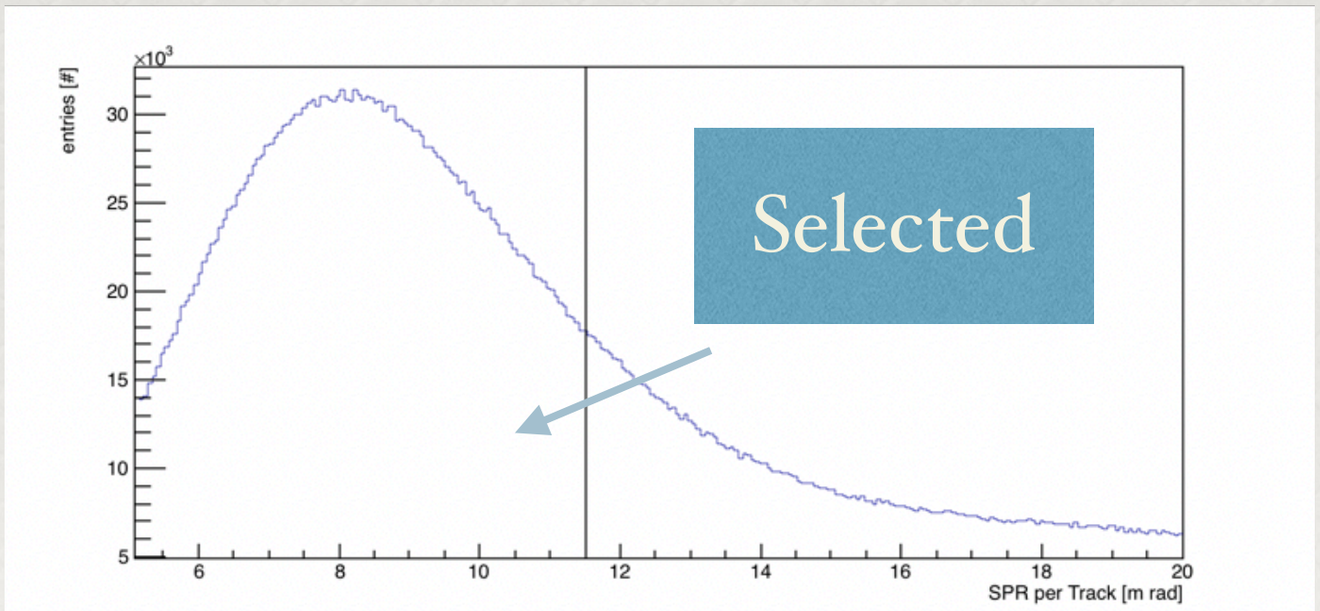




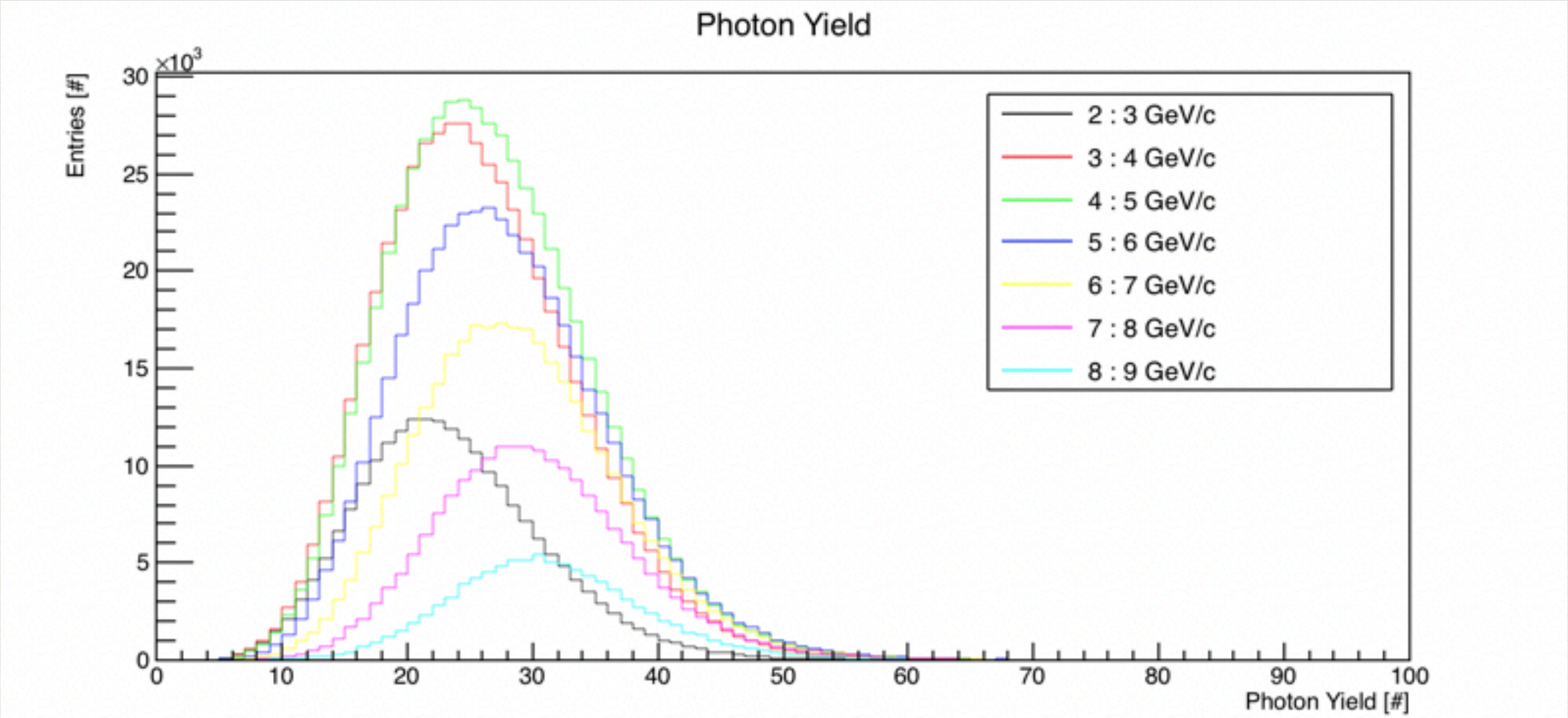
Cherenkov angle distribution per tack



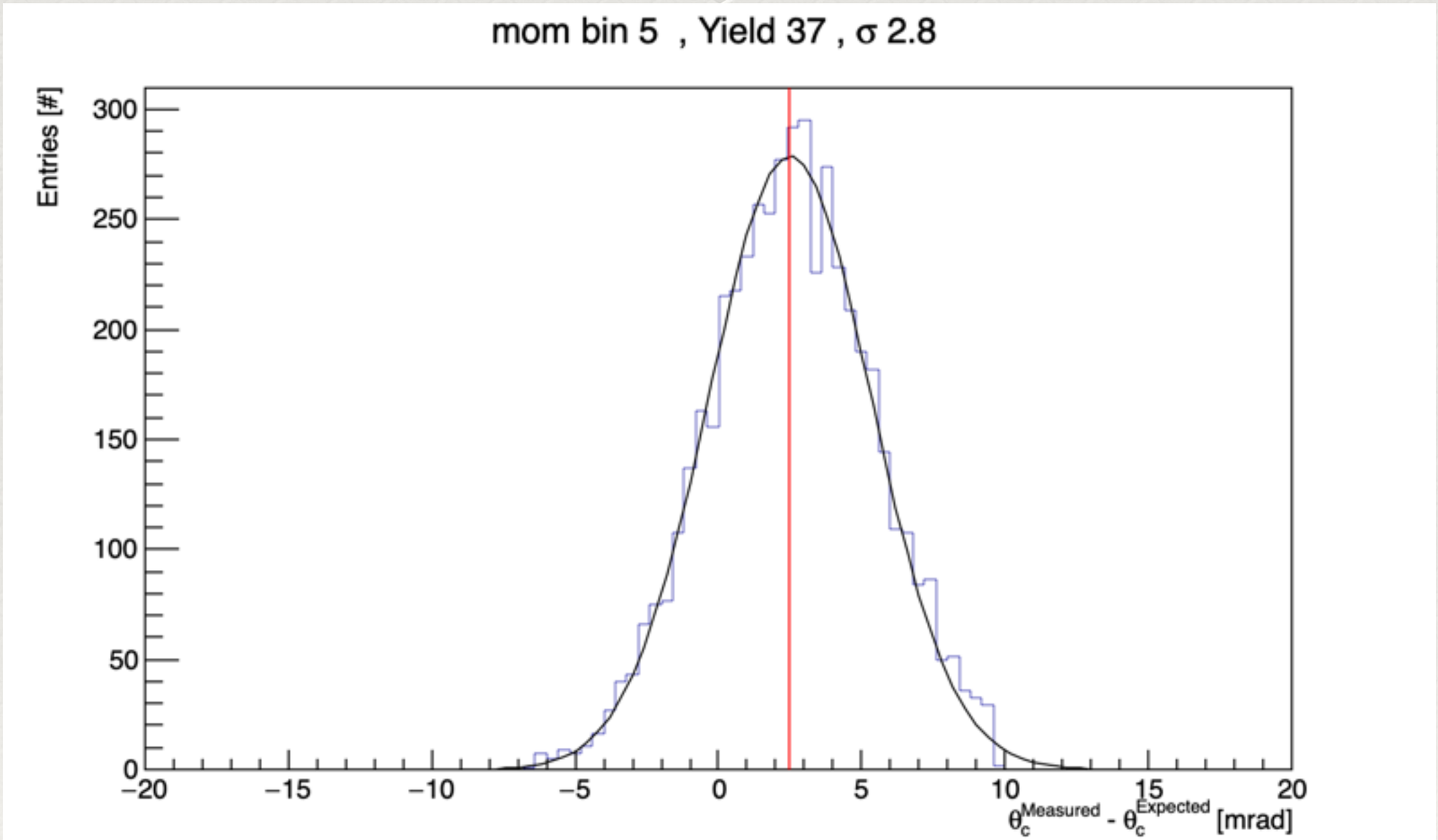

entries [#]
×10^3
30
25
20
15
10
5
0.818
0.82
0.822
0.824
0.826
0.828
0.83
0.832
0.834
Mean per Track [rad]
Selected


entries [#]
×10^3
30
25
20
15
10
5
6
8
10
12
14
16
18
20
SPR per Track [m rad]
Selected

Photon Yield

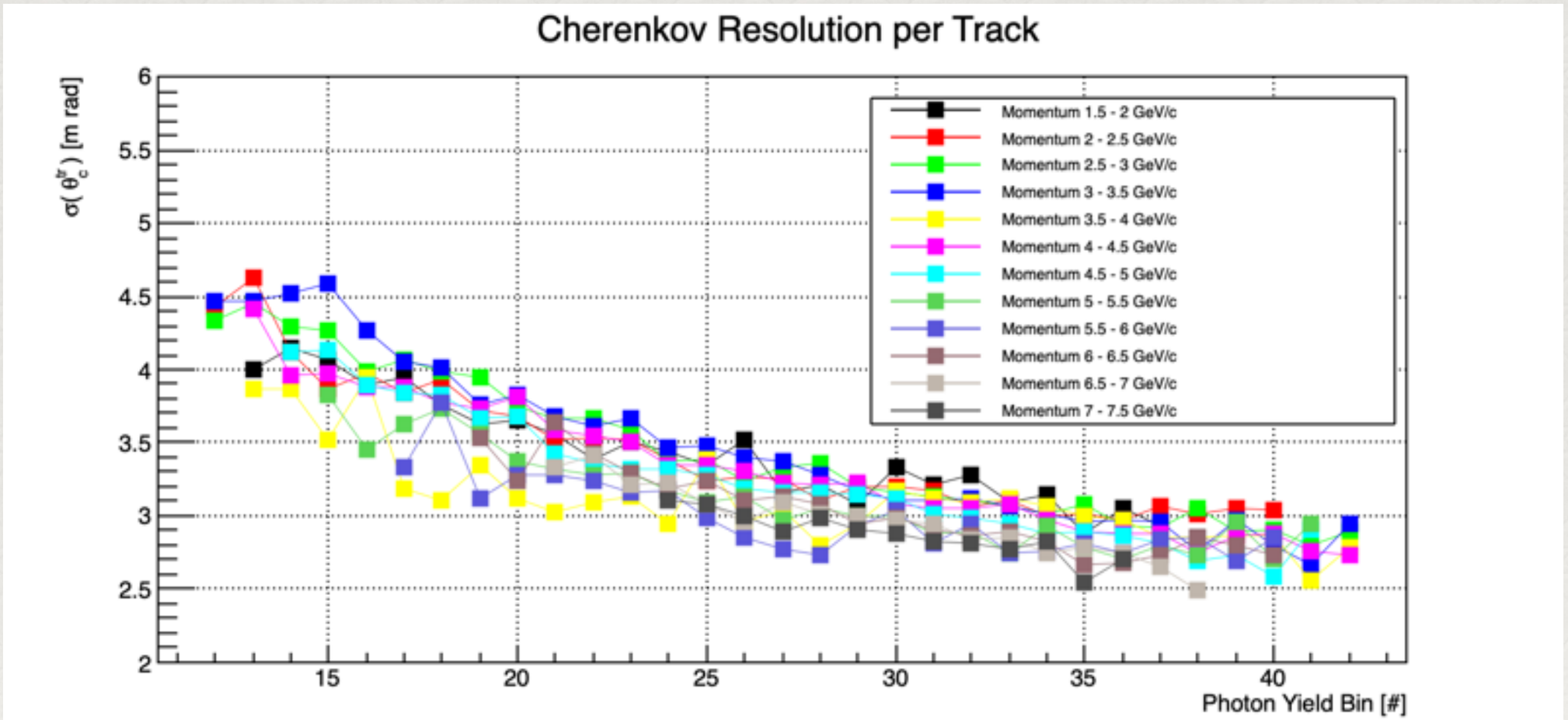


Example of measured - expected Cherenkov angle

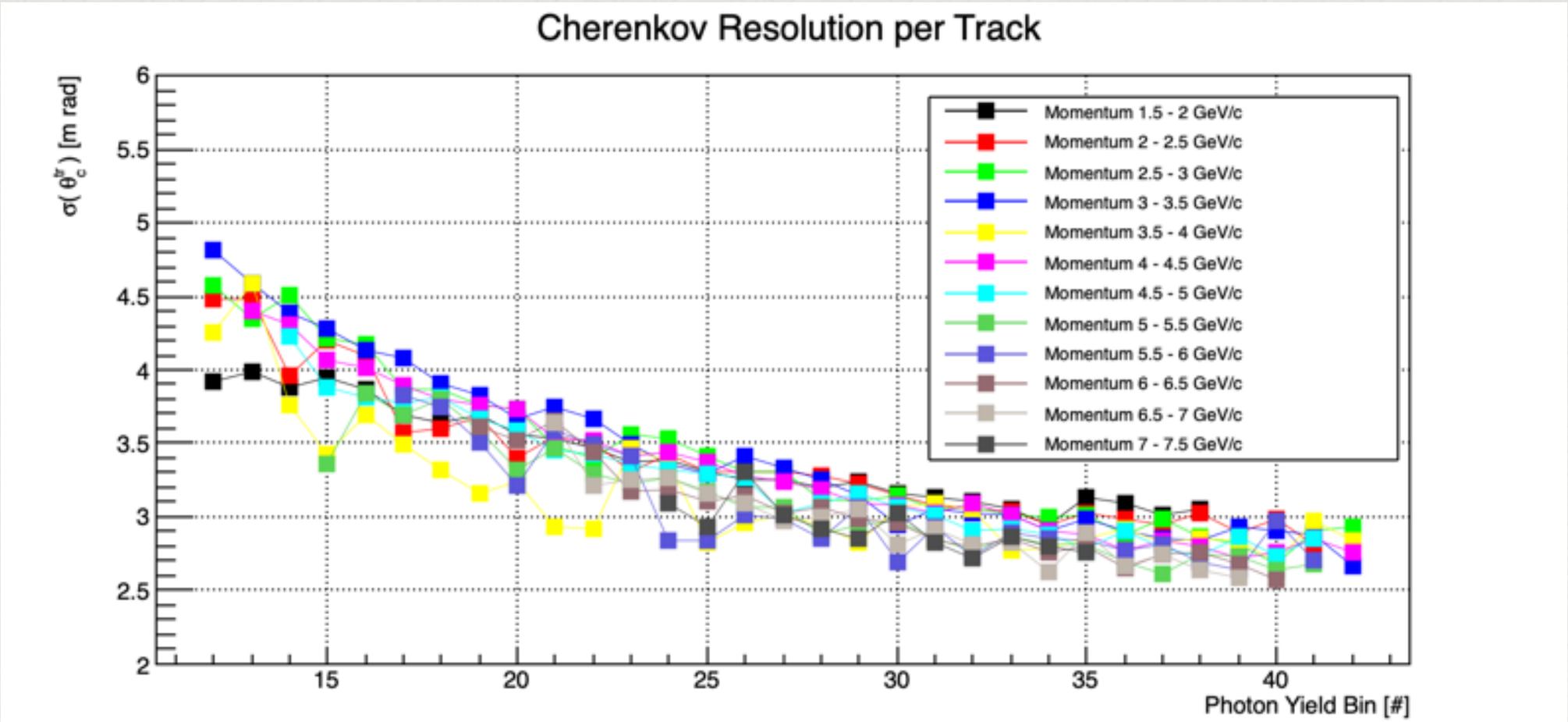


Positive Pions

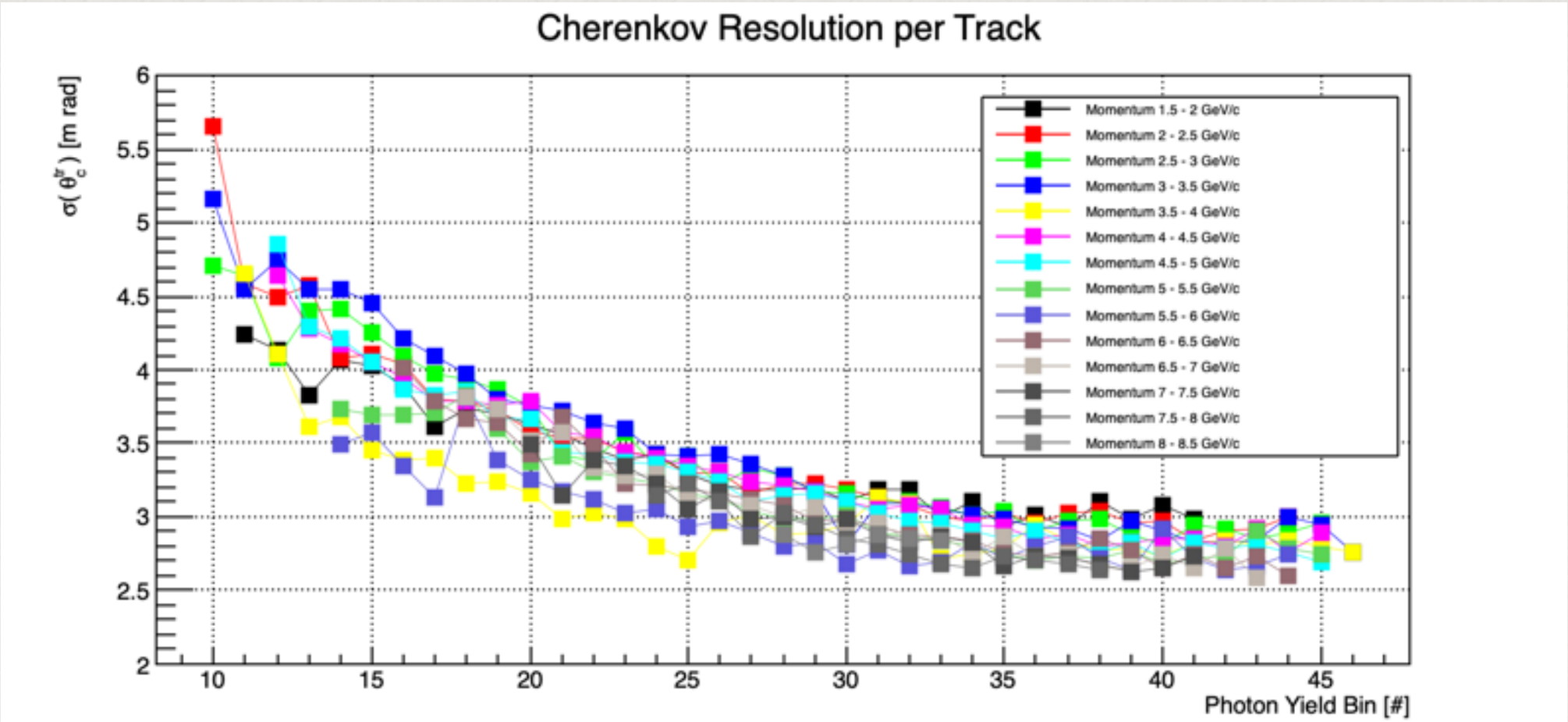
$$\sigma_{\theta_C}^{\text{track}} = \sqrt{\left(\frac{\sigma_{\theta_C}^{\text{photon}}}{\sqrt{N_{\text{photons}}}}\right)^2 + (\sigma^{\text{correlated}})^2}$$



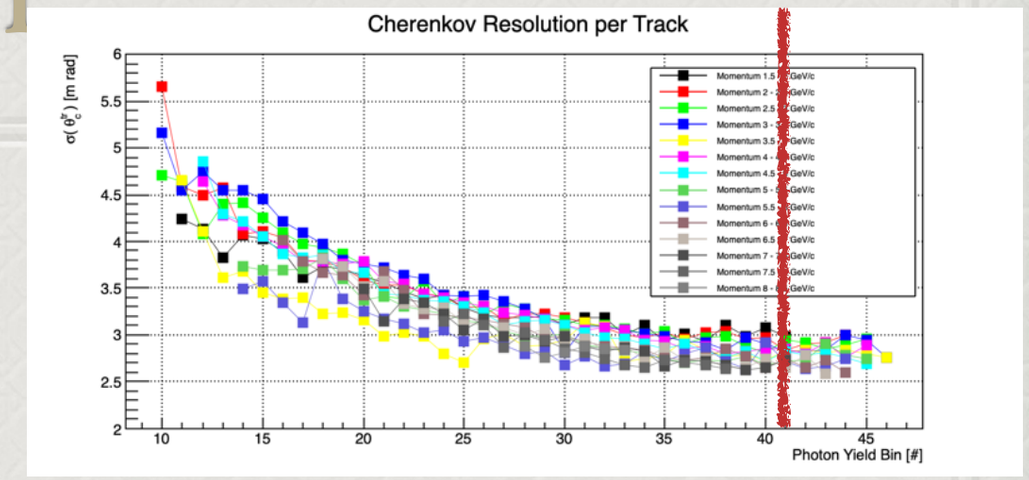
Negative Pions

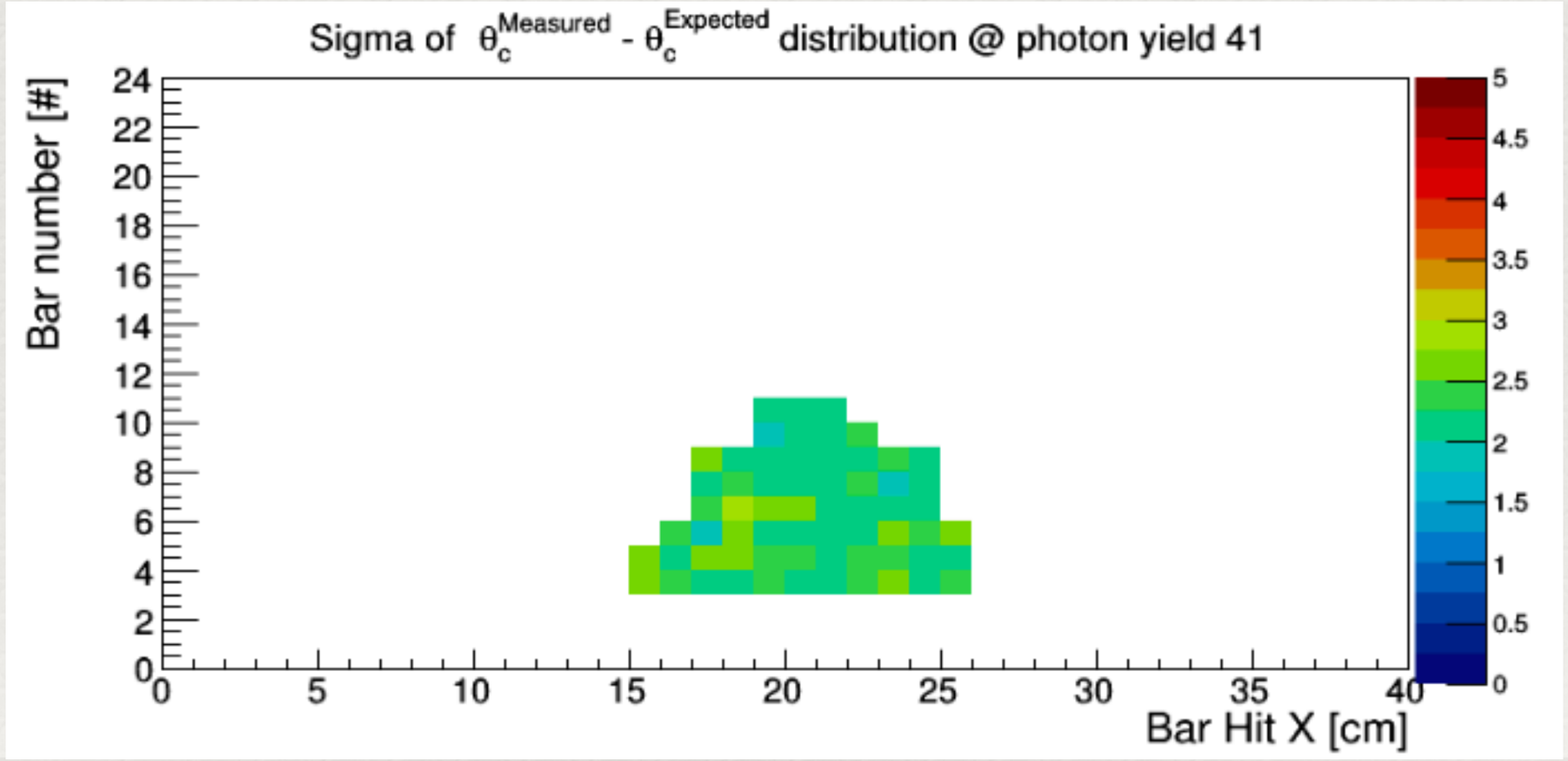


All Pions


Cherenkov Resolution per Track
σ(θ$_c^{tr}$) [m rad]
Photon Yield Bin [#]
Momentum 1.5 - 2 GeV/c
Momentum 2 - 2.5 GeV/c
Momentum 2.5 - 3 GeV/c
Momentum 3 - 3.5 GeV/c
Momentum 3.5 - 4 GeV/c
Momentum 4 - 4.5 GeV/c
Momentum 4.5 - 5 GeV/c
Momentum 5 - 5.5 GeV/c
Momentum 5.5 - 6 GeV/c
Momentum 6 - 6.5 GeV/c
Momentum 6.5 - 7 GeV/c
Momentum 7 - 7.5 GeV/c
Momentum 7.5 - 8 GeV/c
Momentum 8 - 8.5 GeV/c

All momentum together at certain yield bin

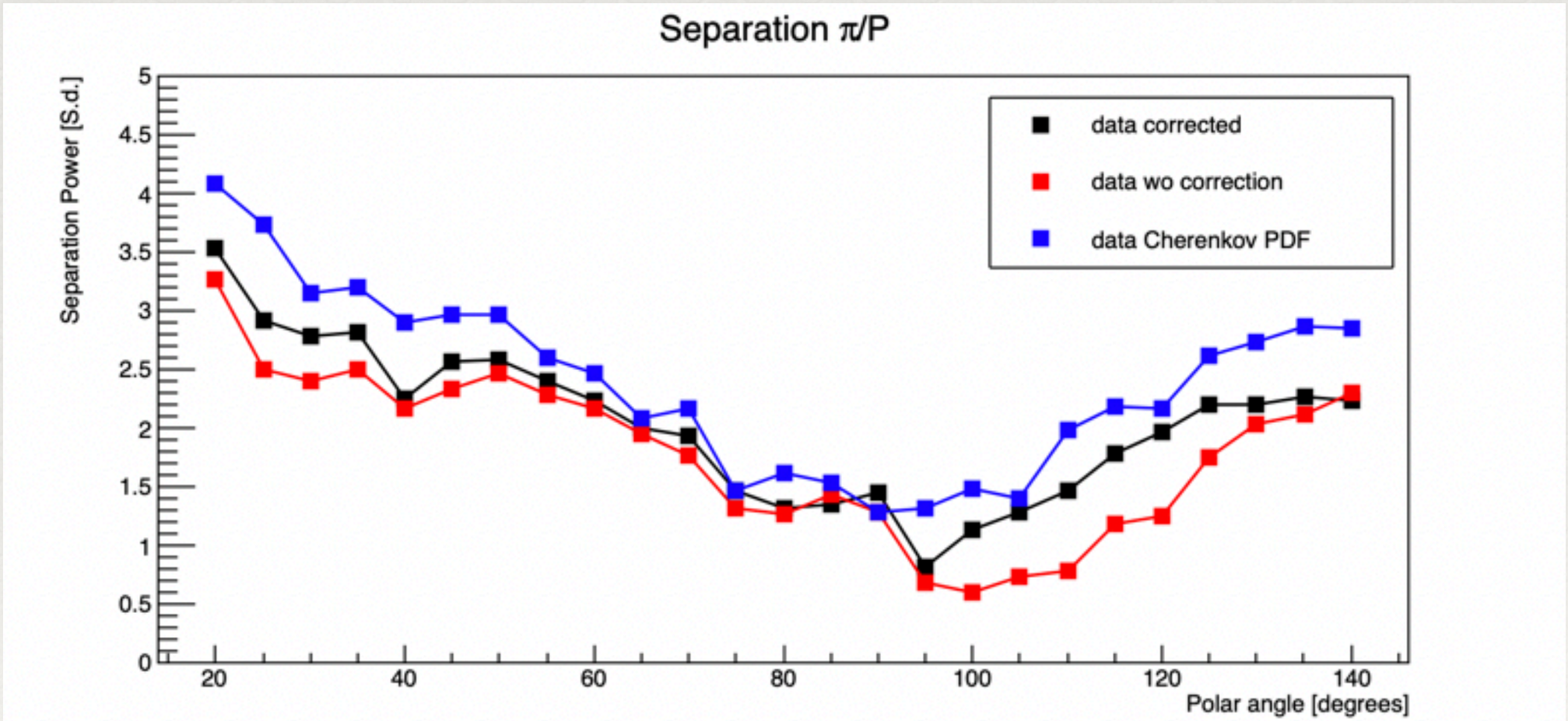




Cherenkov PDF

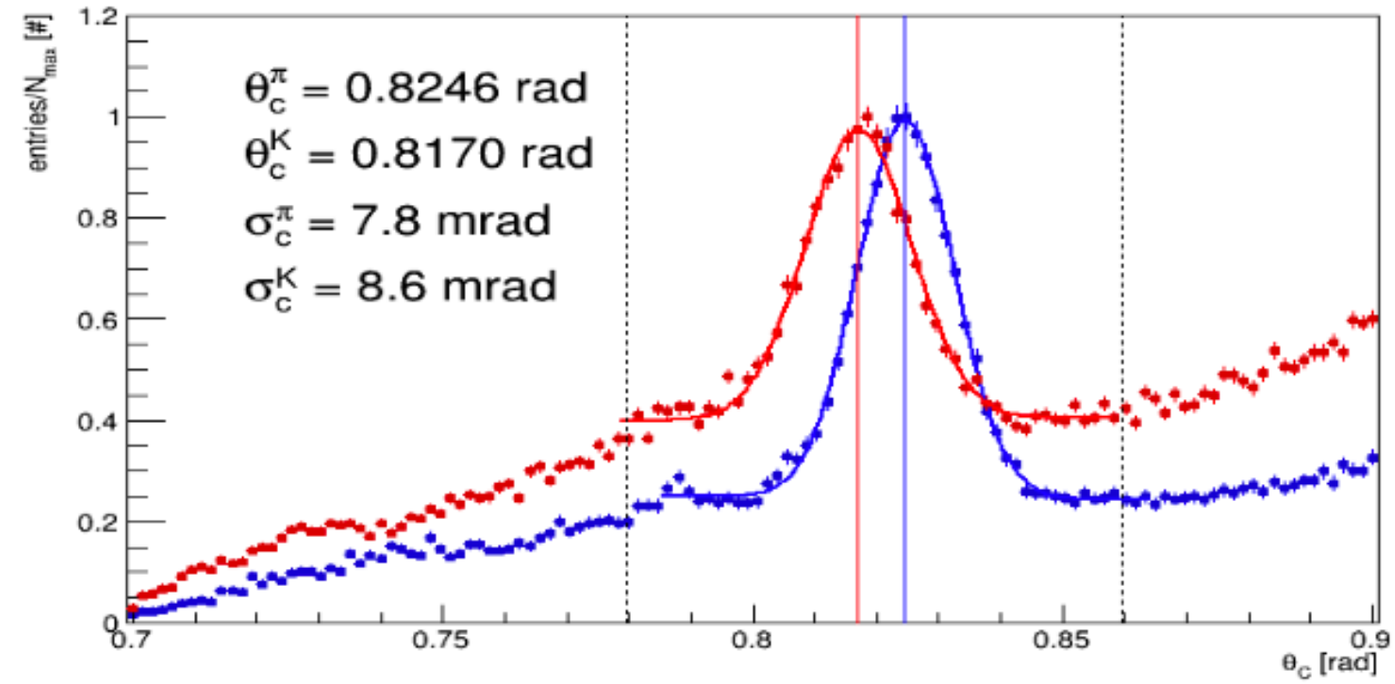
Motivation:

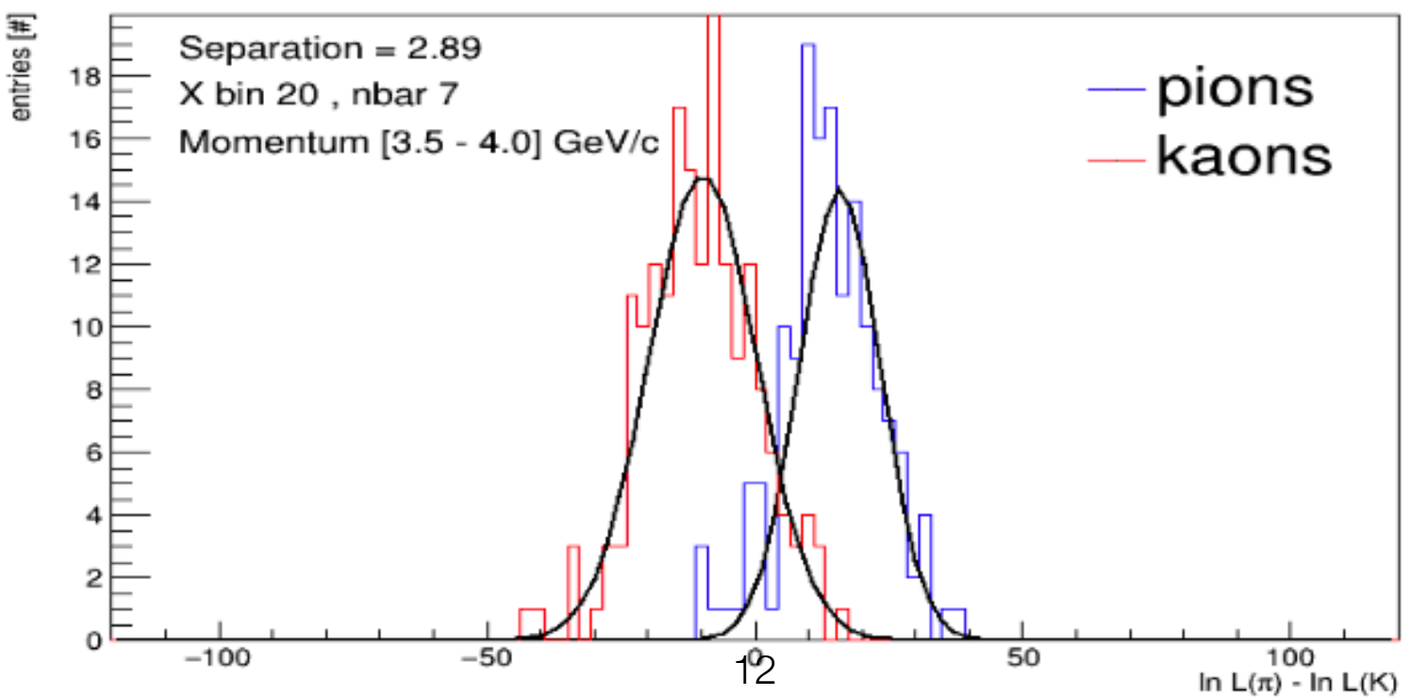
PANDA Barrel DIRC Prototype Beam test Data



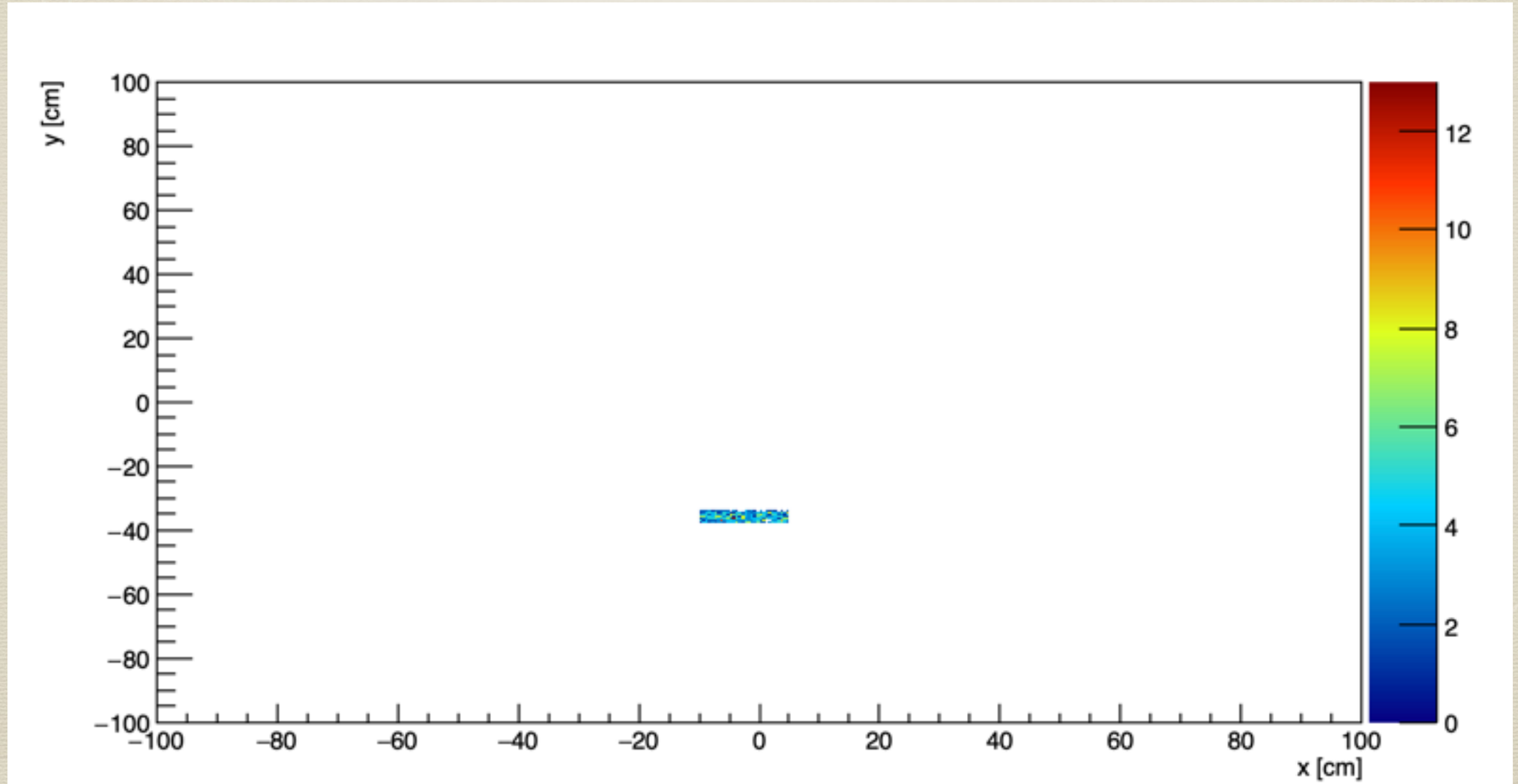
Example of GlueX PI/K Separation

1st Commissioning 2019

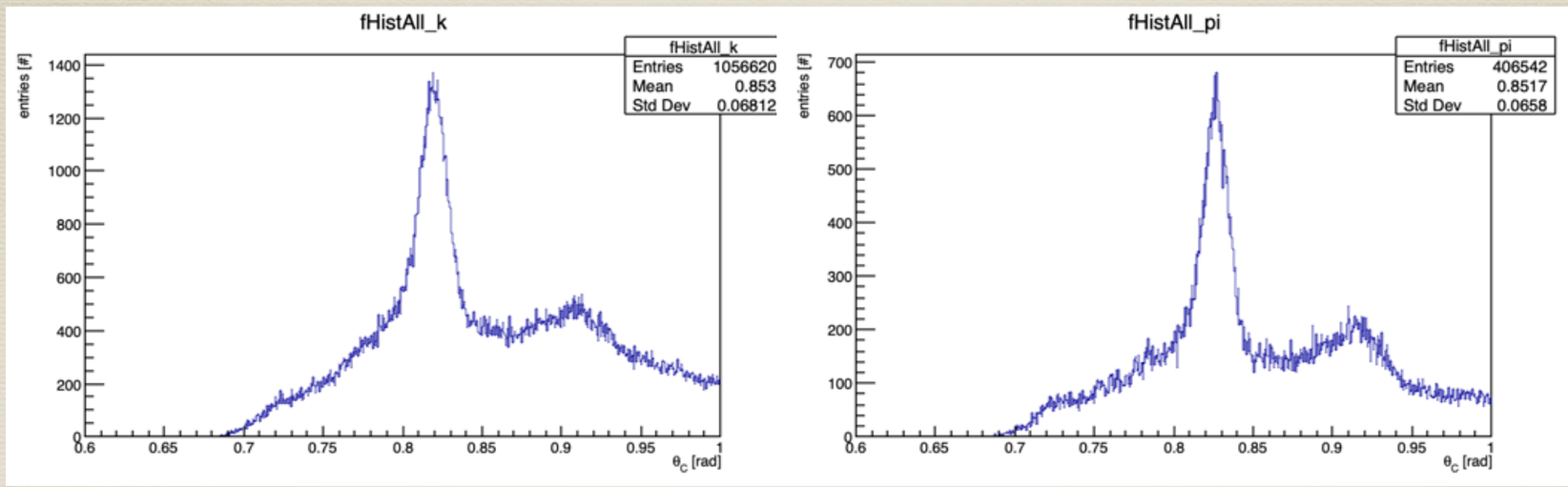




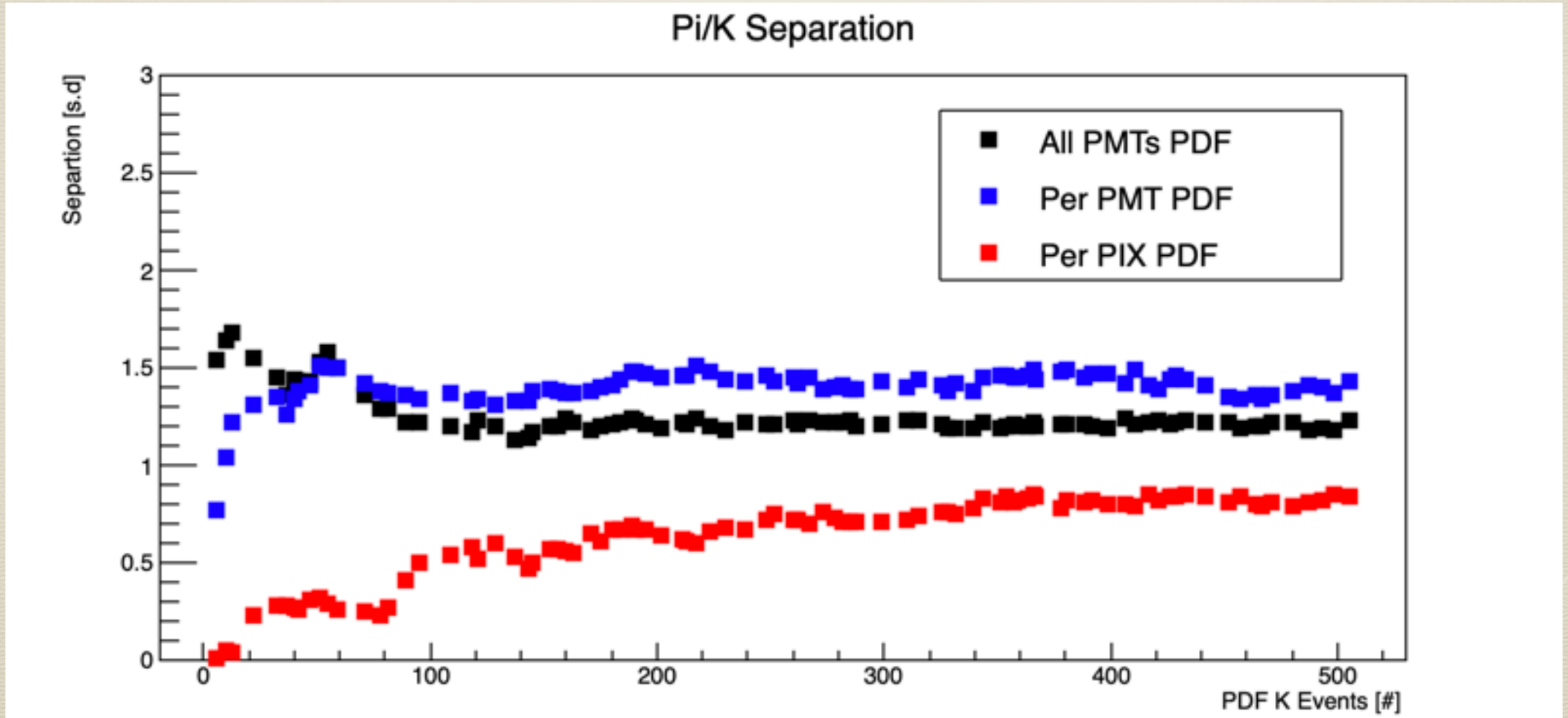
Location on DIRC Wall



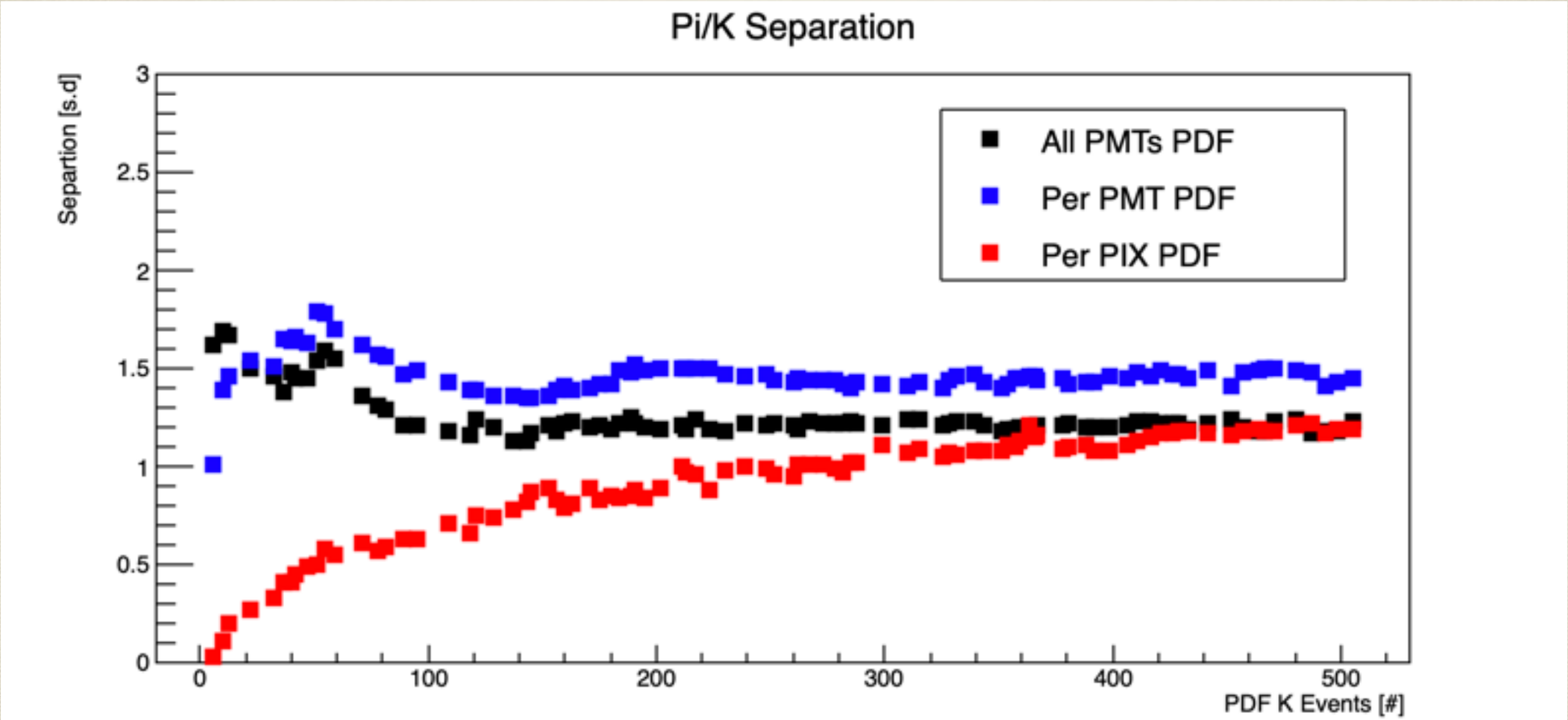
Cherenkov PDF



0.4 mrad PDF binning



4 mrad PDF binning



Thanks