

Update on
 $\gamma p \rightarrow p\phi\eta$

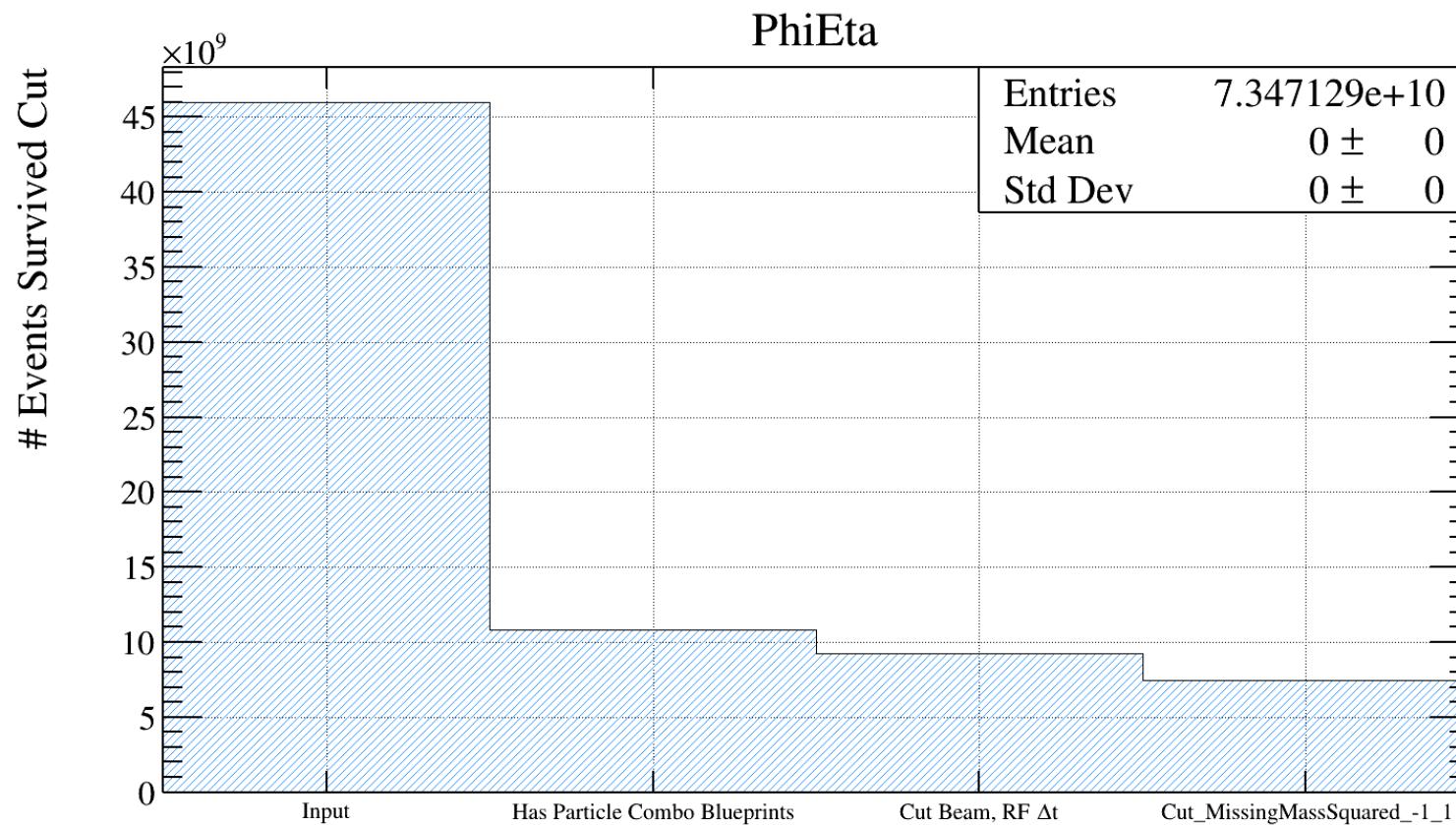
08/10/2017

Bradford Cannon

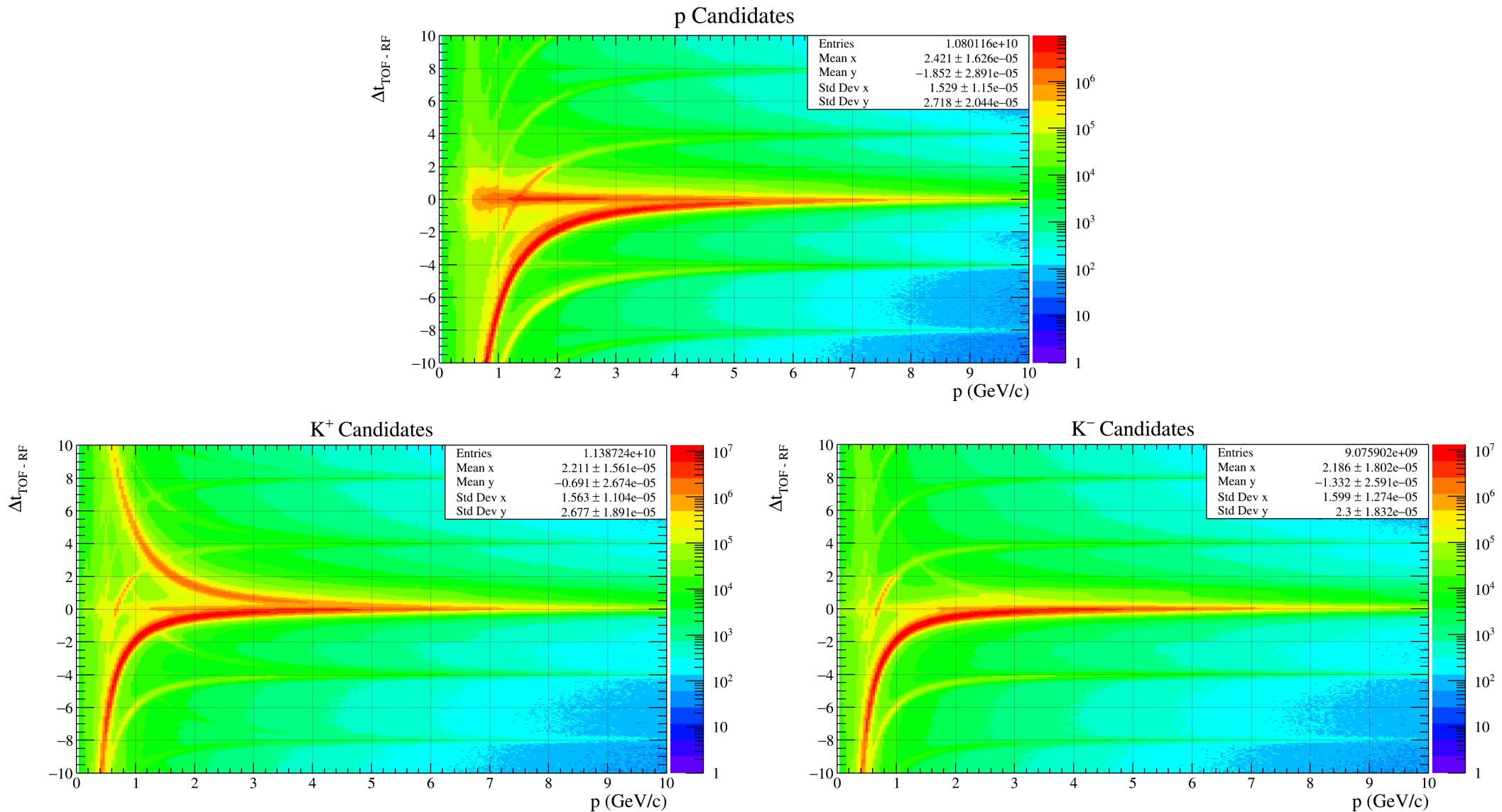
Details of Initial Data Cuts:

- All of Fall 2016 Run Data (~41 K Files)
- Initial Cuts:
 - Cut Photon RF DeltaT: +/- 2.0 ns
 - Invariant Mass Cut of K+/K-: (0.95, 3.0)
 - Invariant Mass Cut of gamma1/gamma2: (0.0, 2.0)
 - Missing Mass Squared Cut: (-1.0, 1.0)

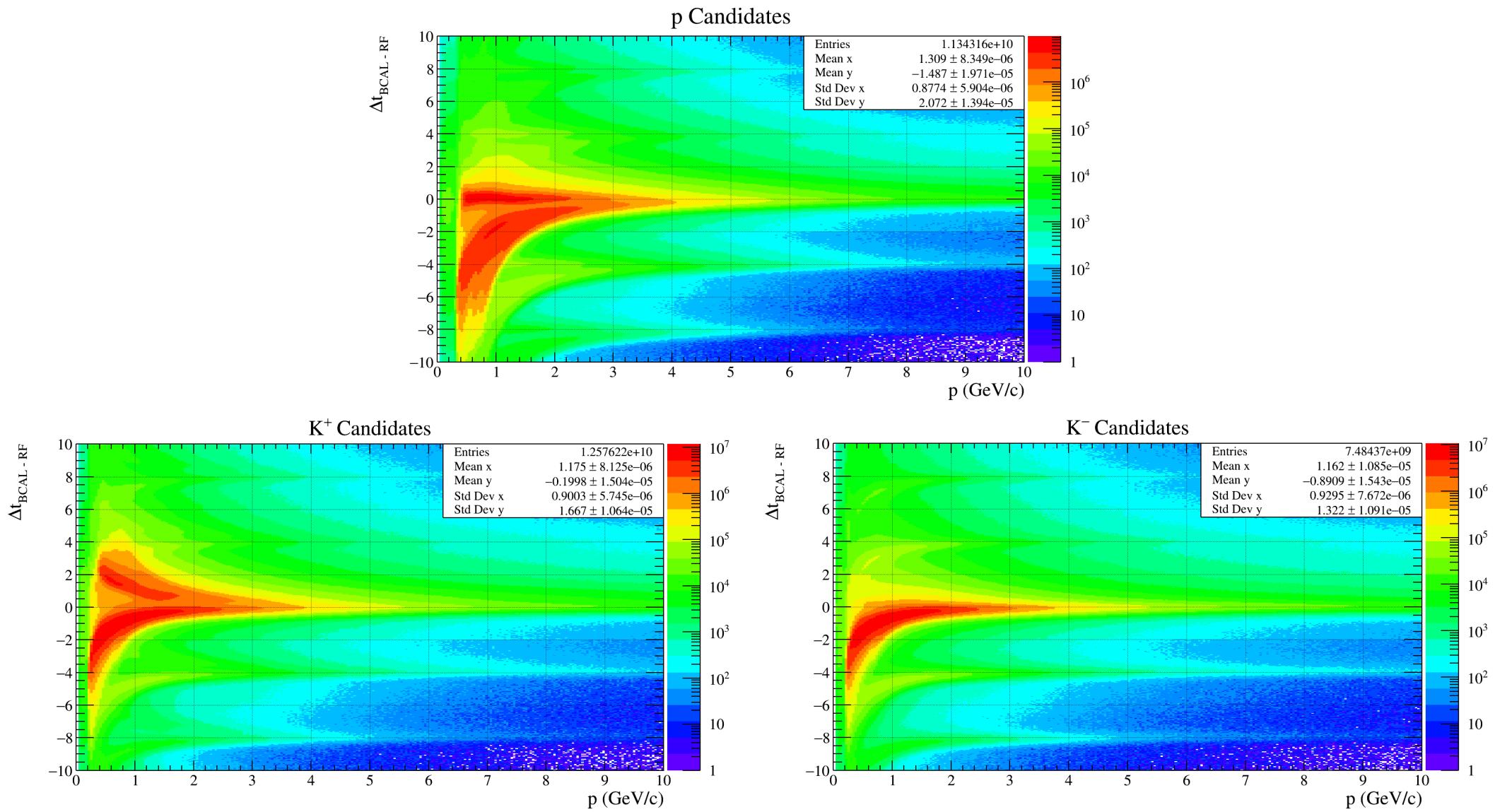
After Initial Cuts: ~7.5 B Events



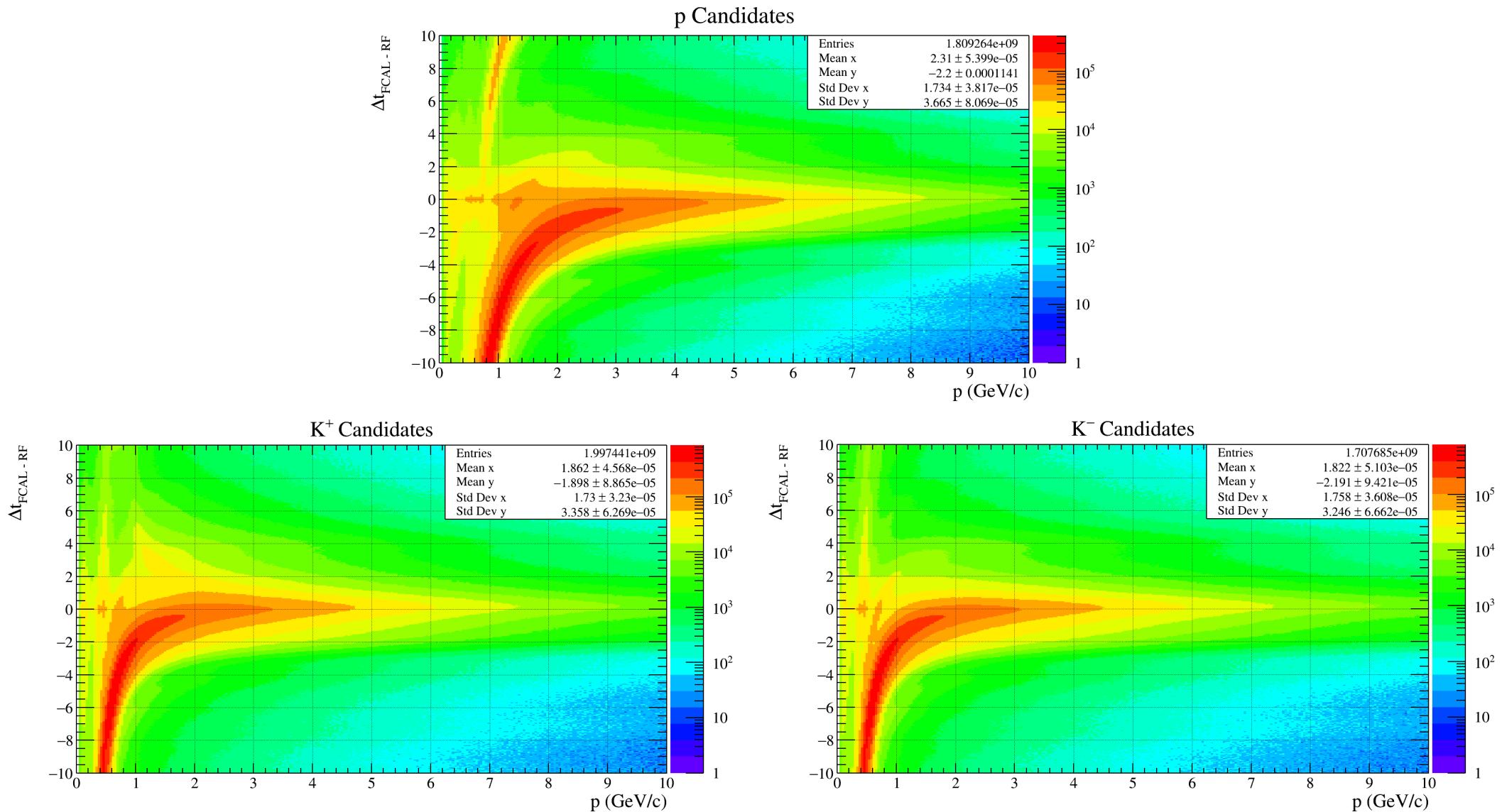
Delta T Vs P: TOF



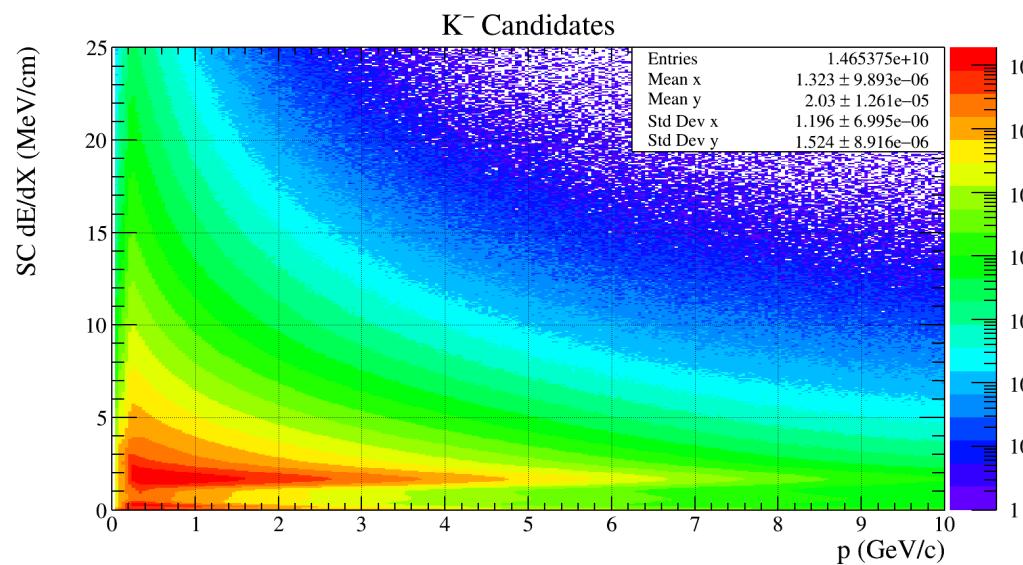
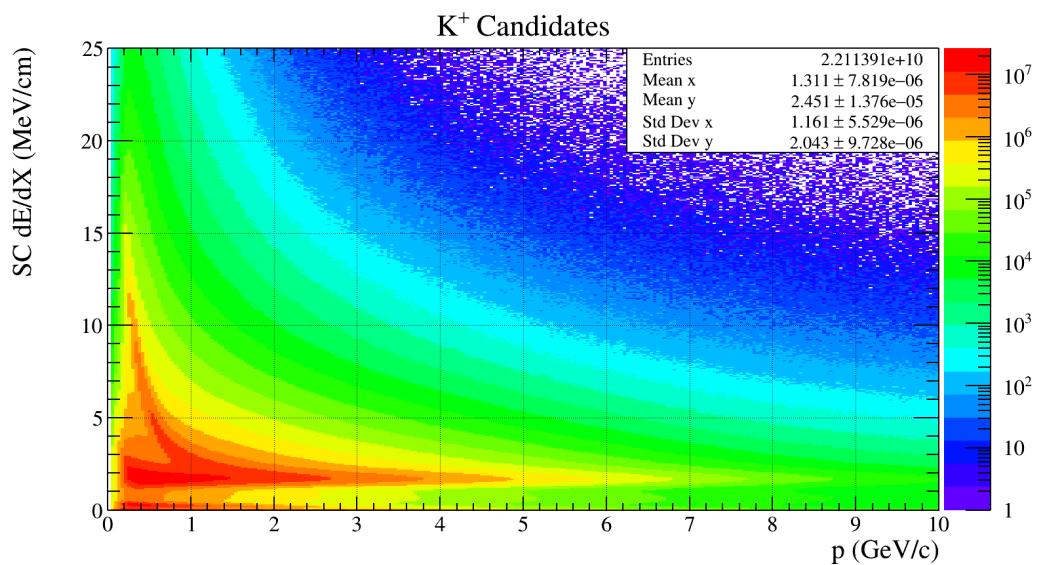
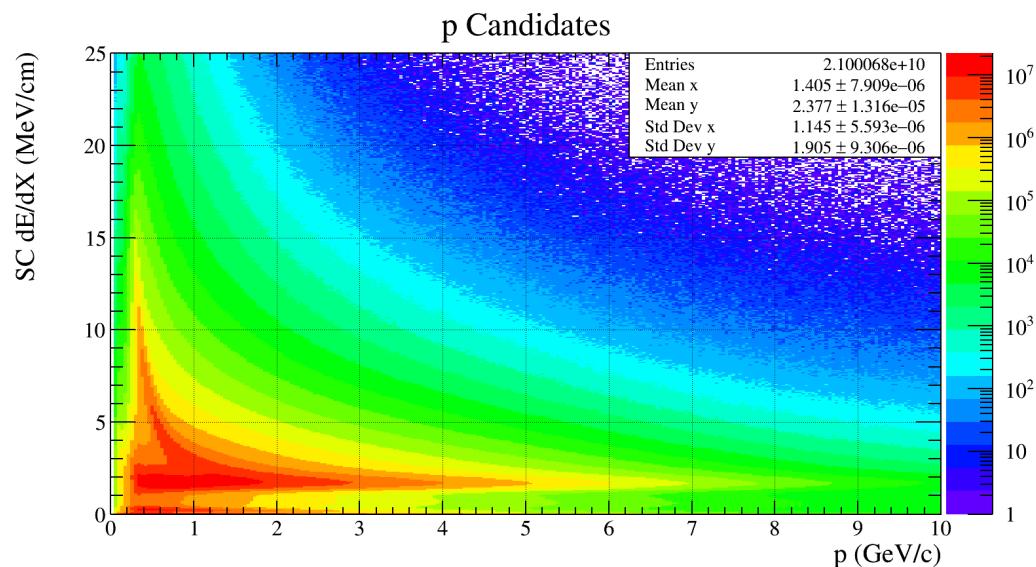
Delta T Vs P: BCAL



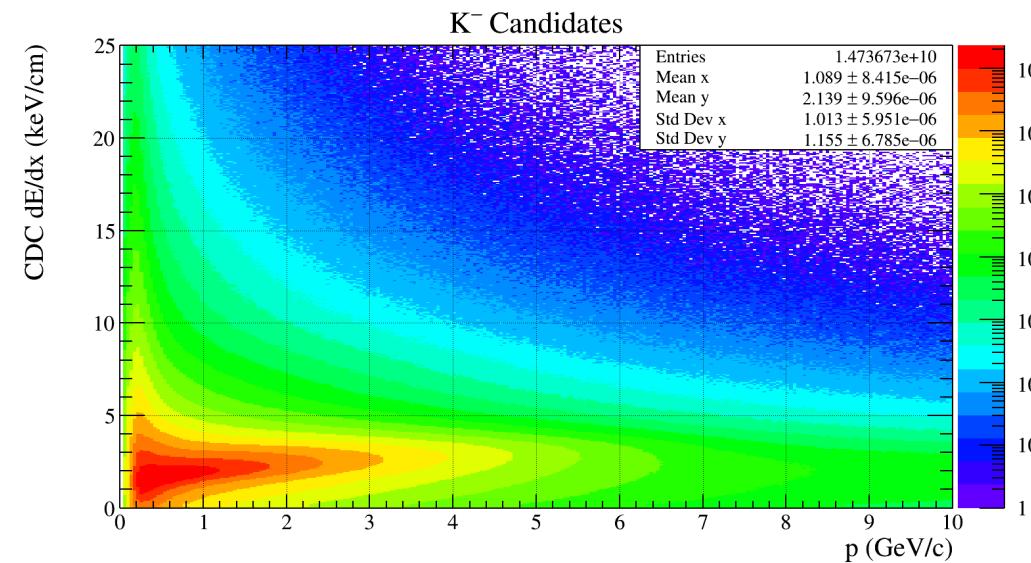
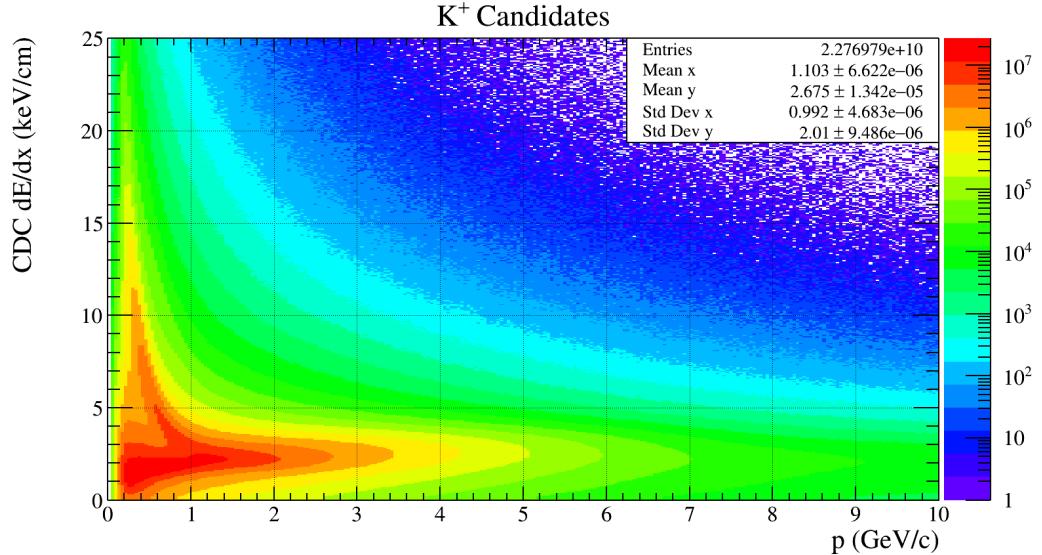
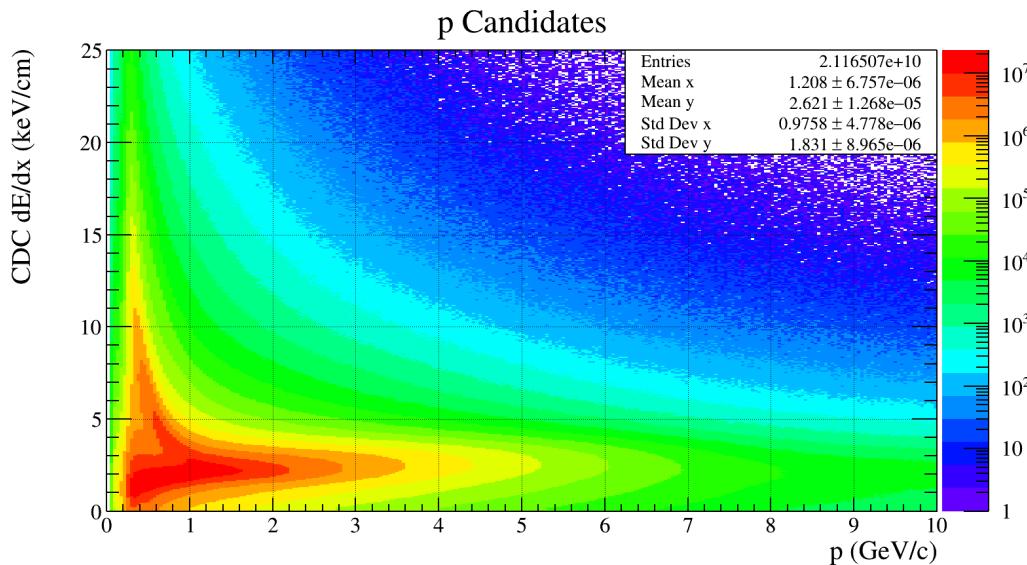
Delta T Vs P: FCAL



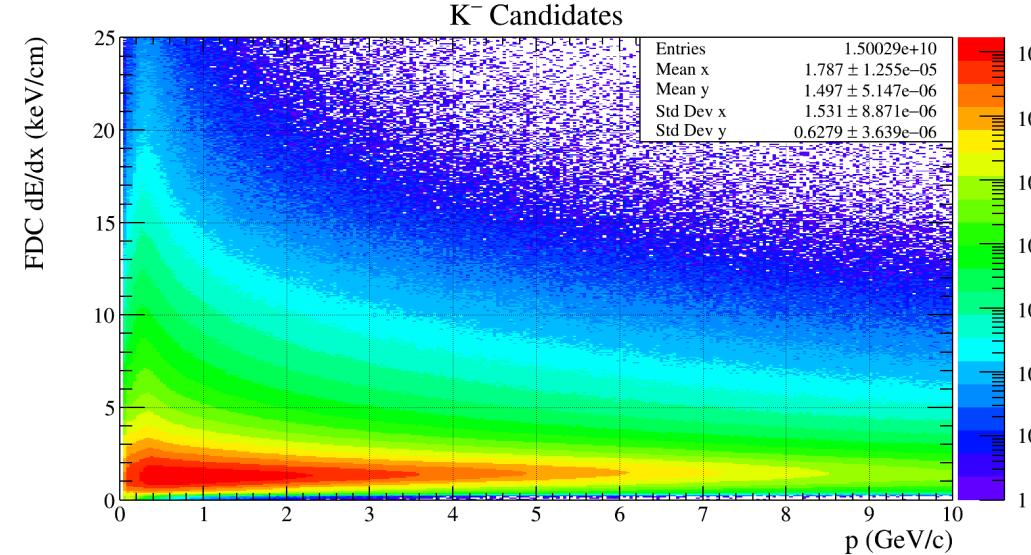
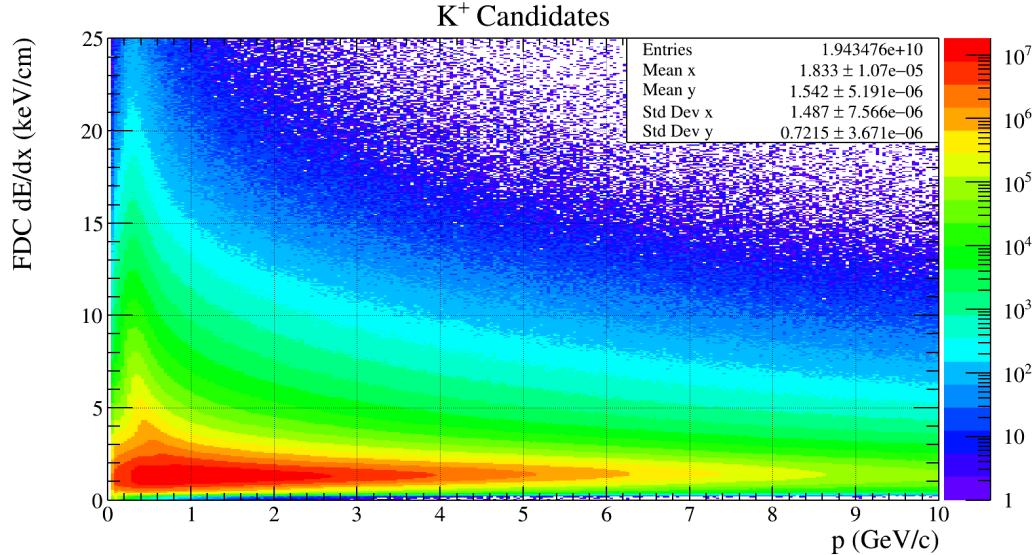
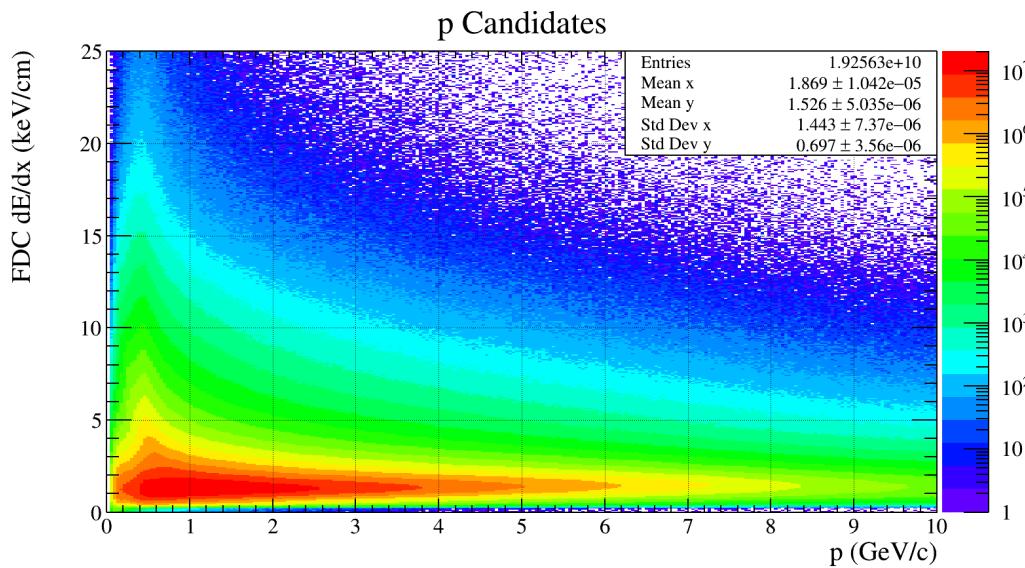
dEdX Vs P: SC



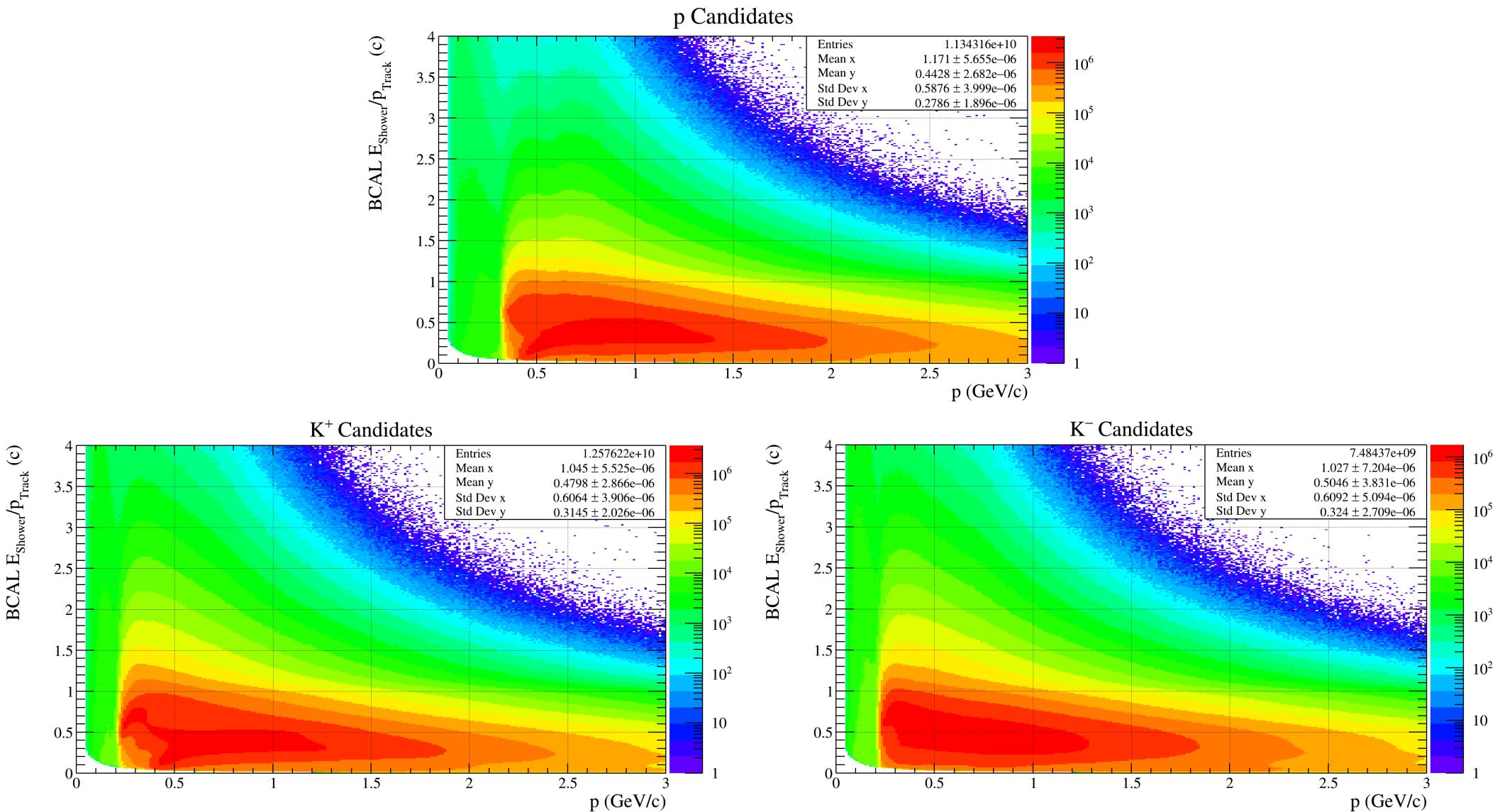
dEdX Vs P: CDC



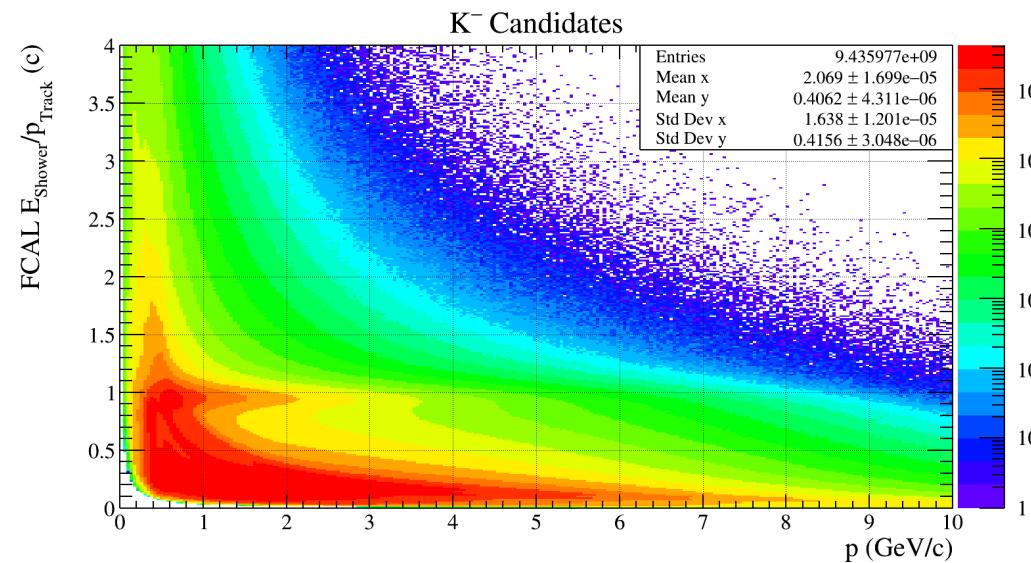
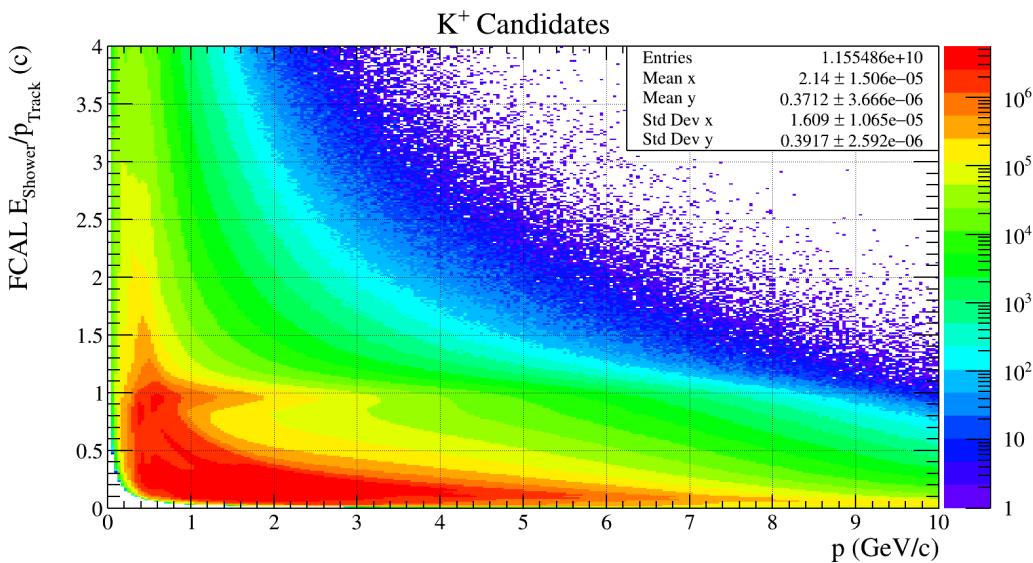
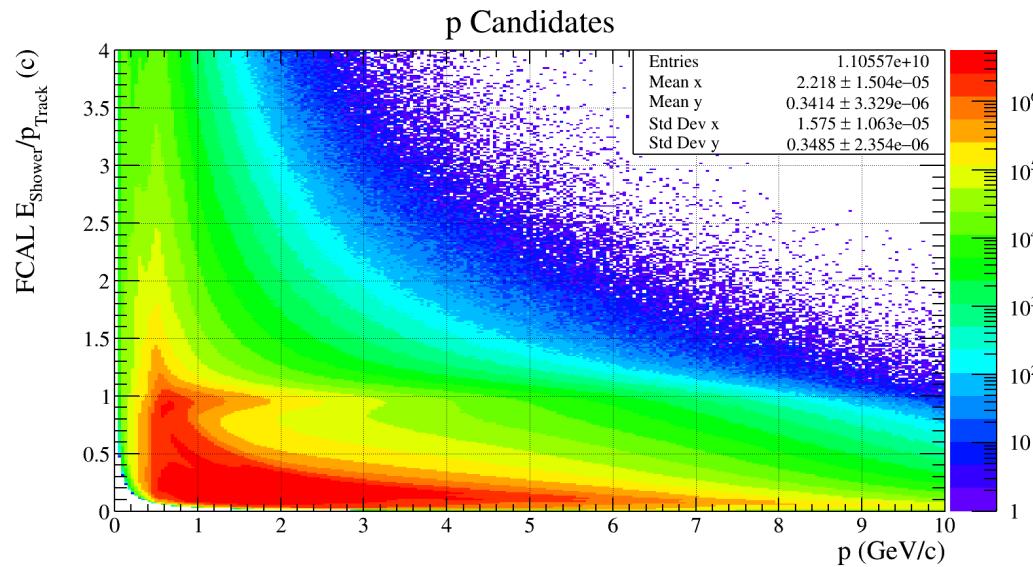
dEdX Vs P: FDC



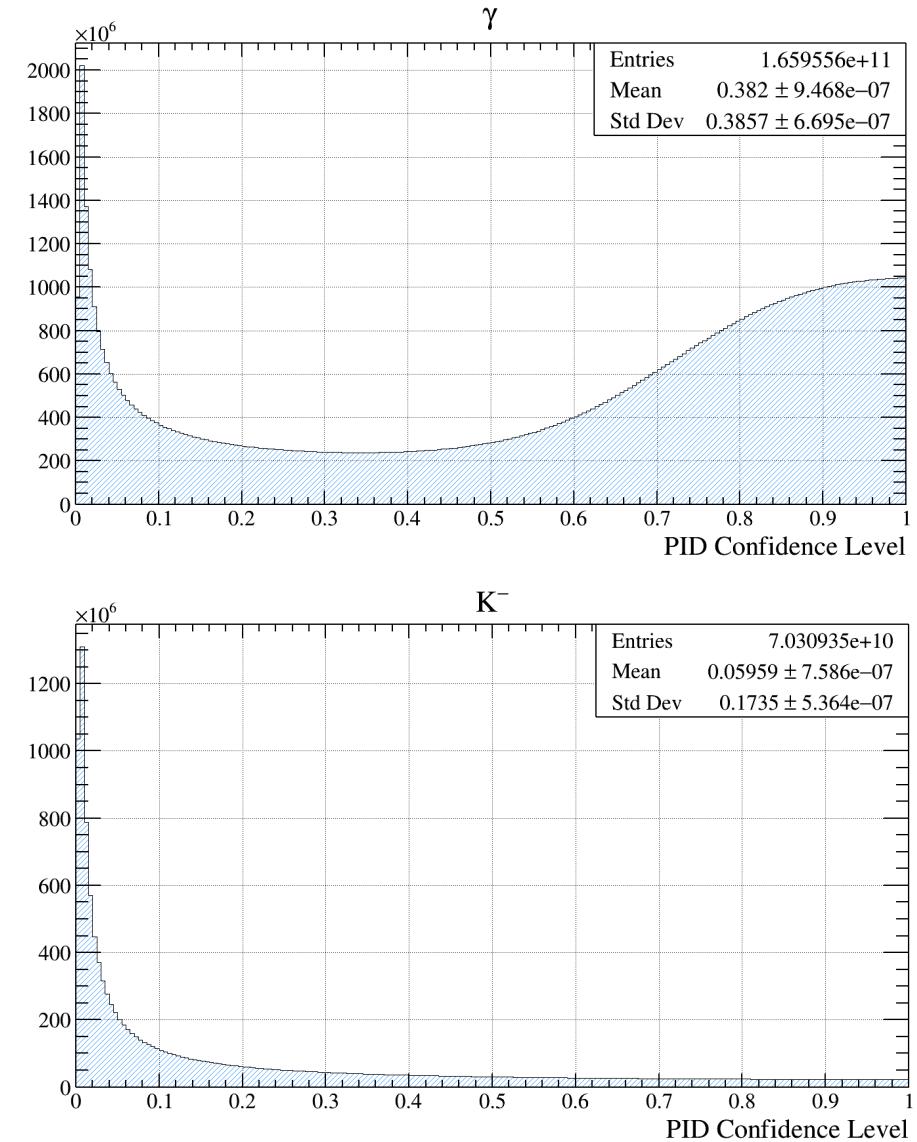
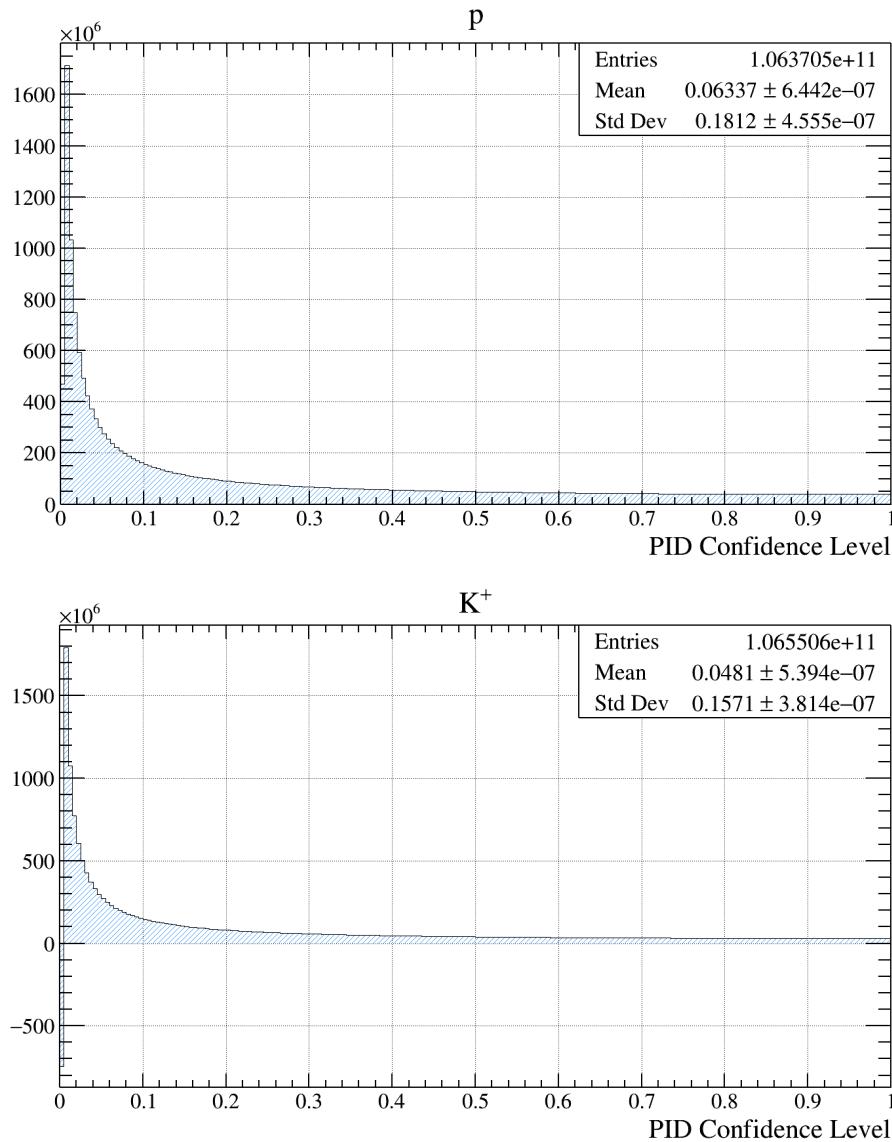
E over P Vs P : BCAL



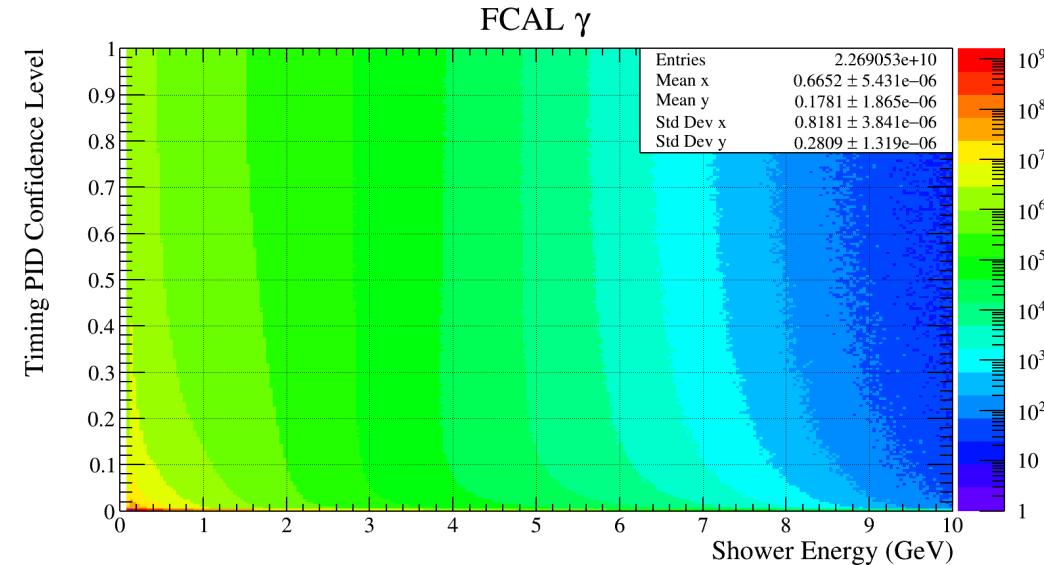
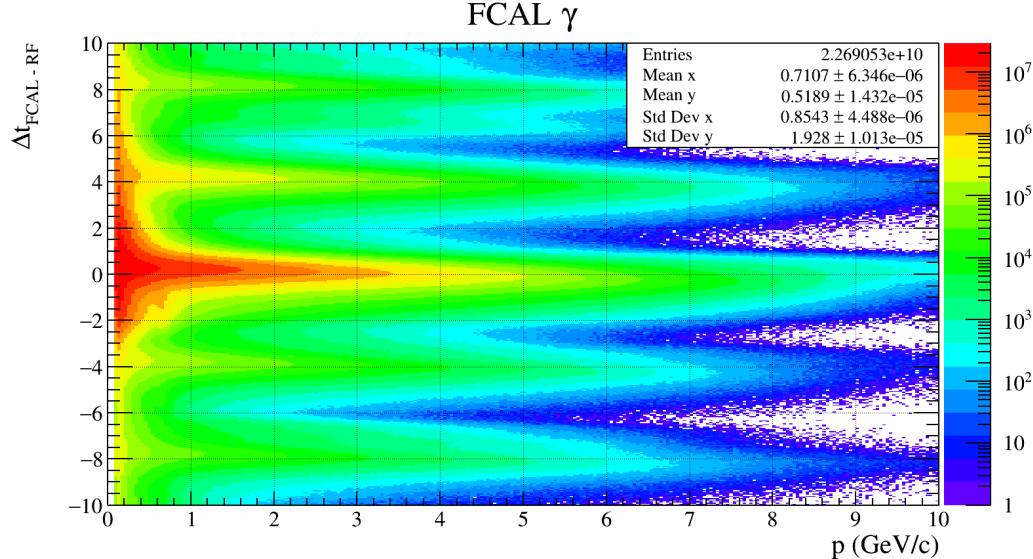
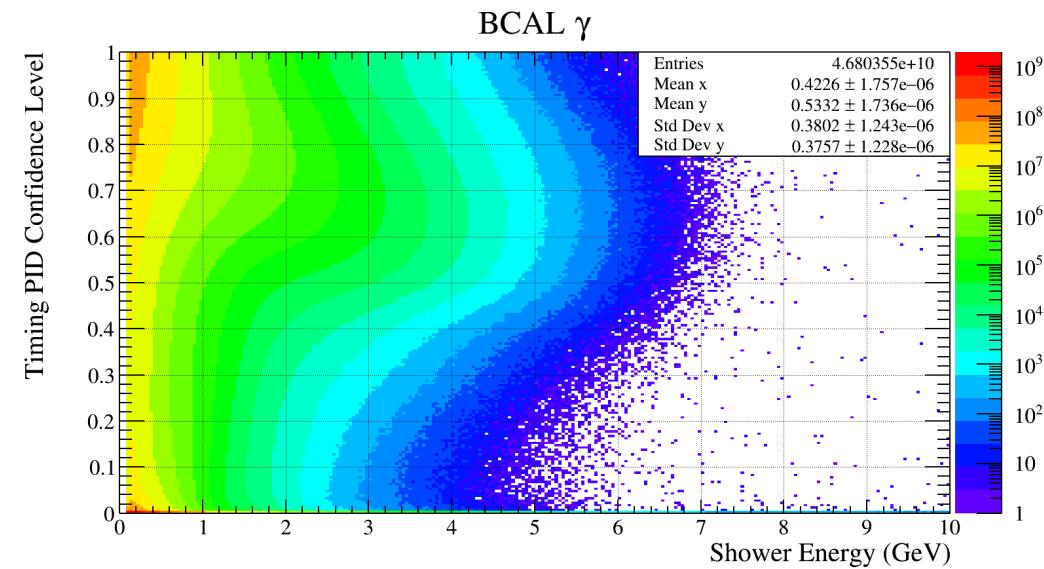
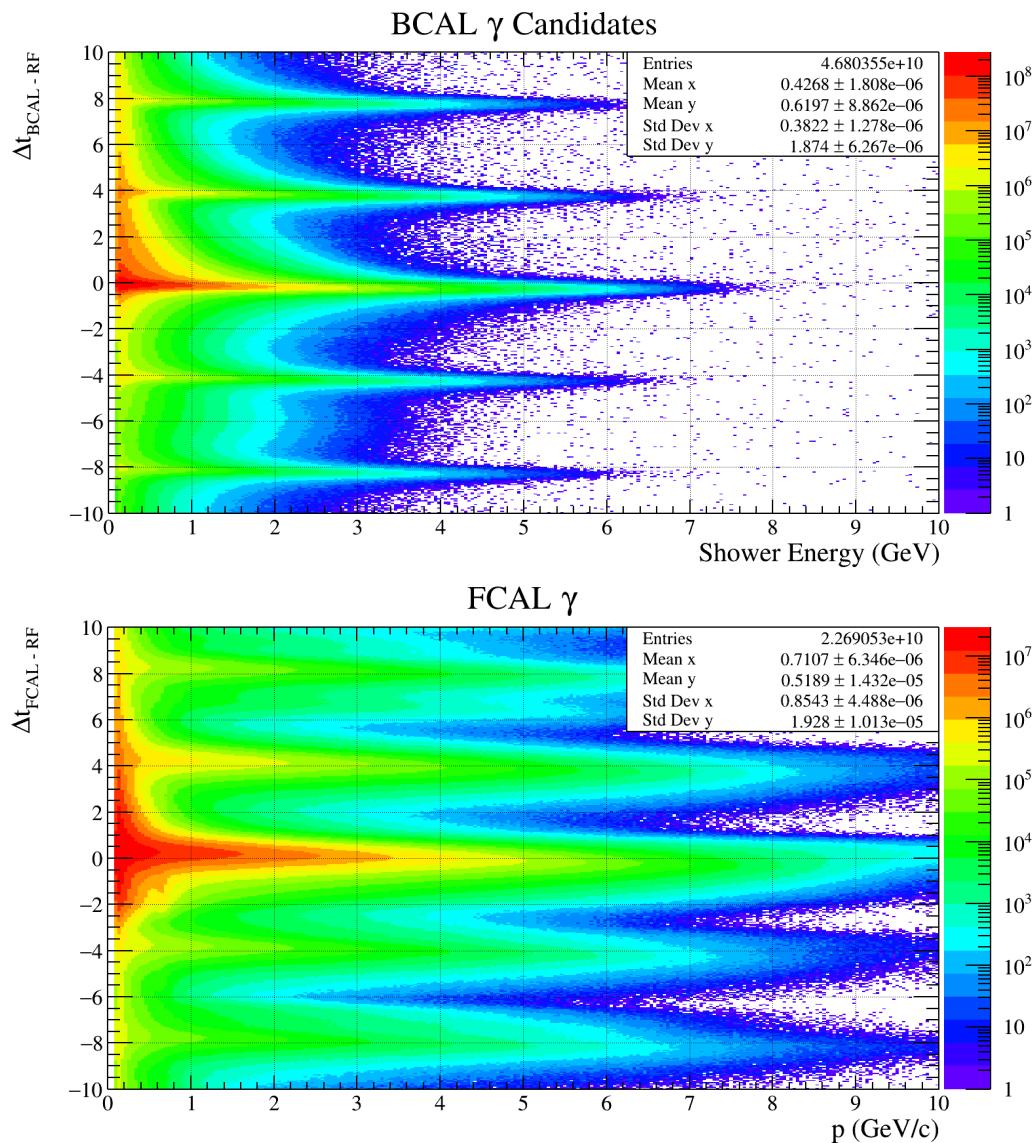
E over P Vs P : FCAL



PID Confidence Level



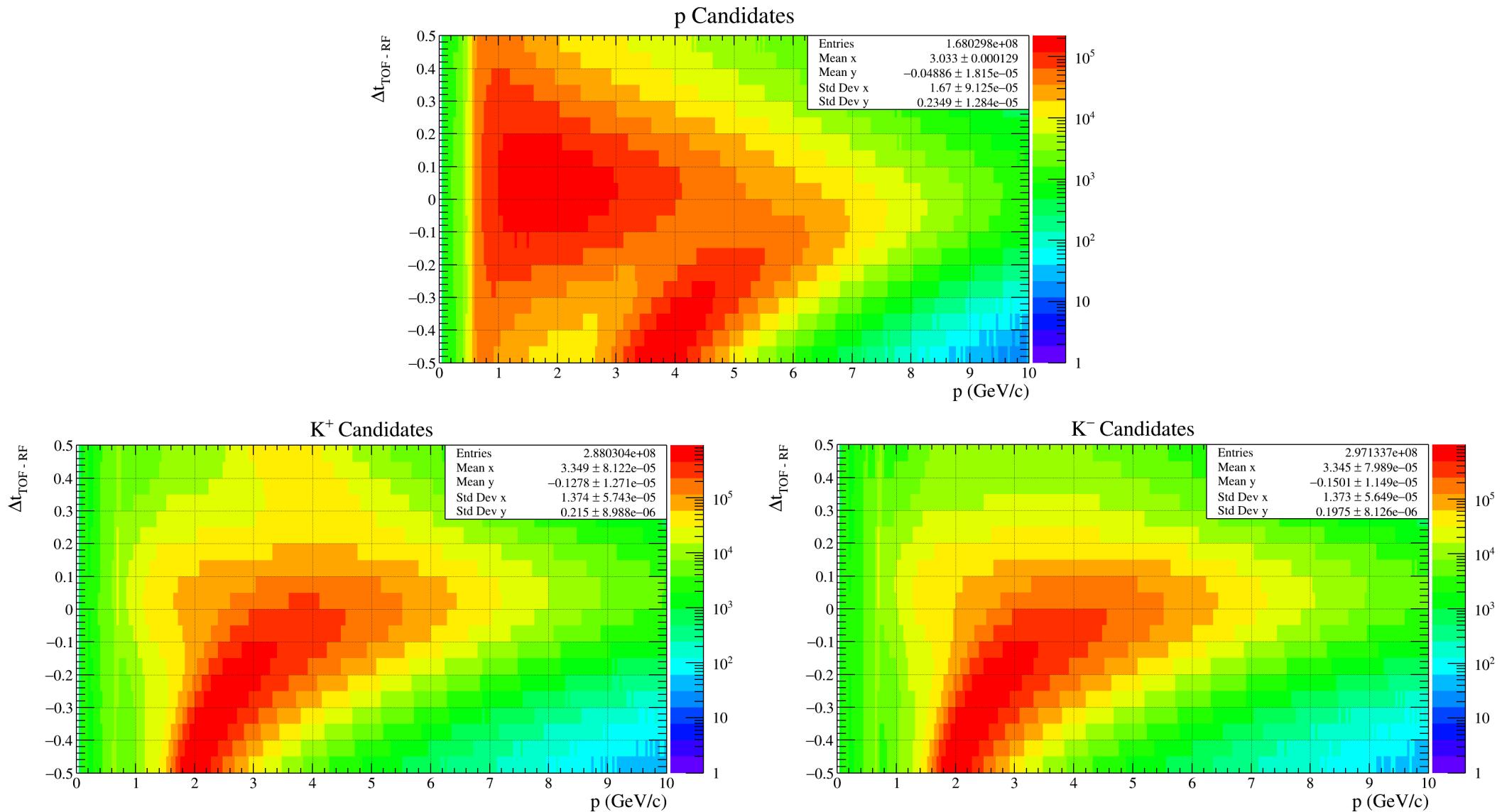
PID Confidence Level Vs Shower Energy: Photon



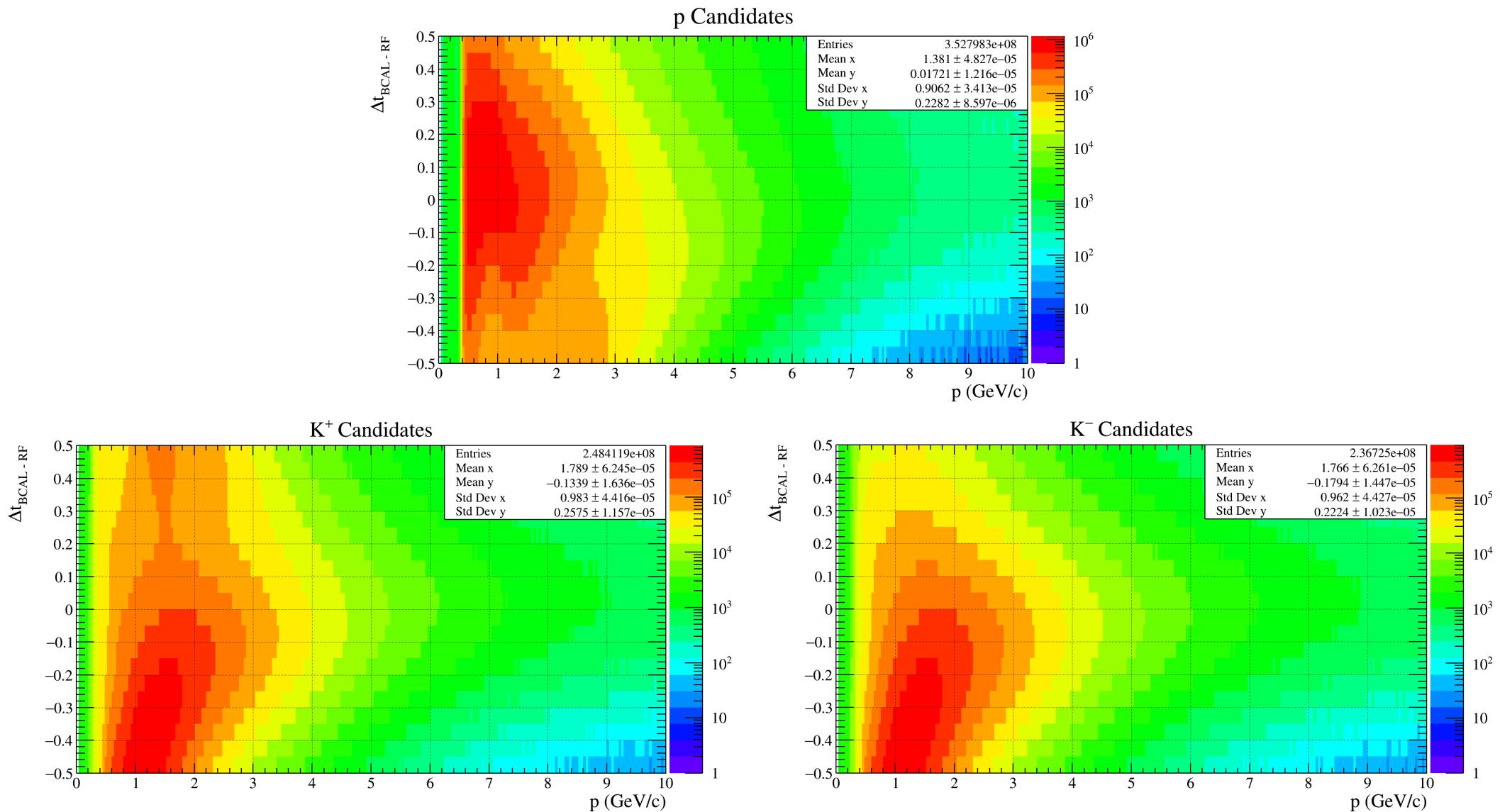
Second Round of Cuts:

- PID DeltaT Cut On ALL* Timing Detectors and ALL Particles: +/- 0.5 ns
- PID DeltaT Cut On FCAL Timing Detectors for gammas: +/- 1.0 ns

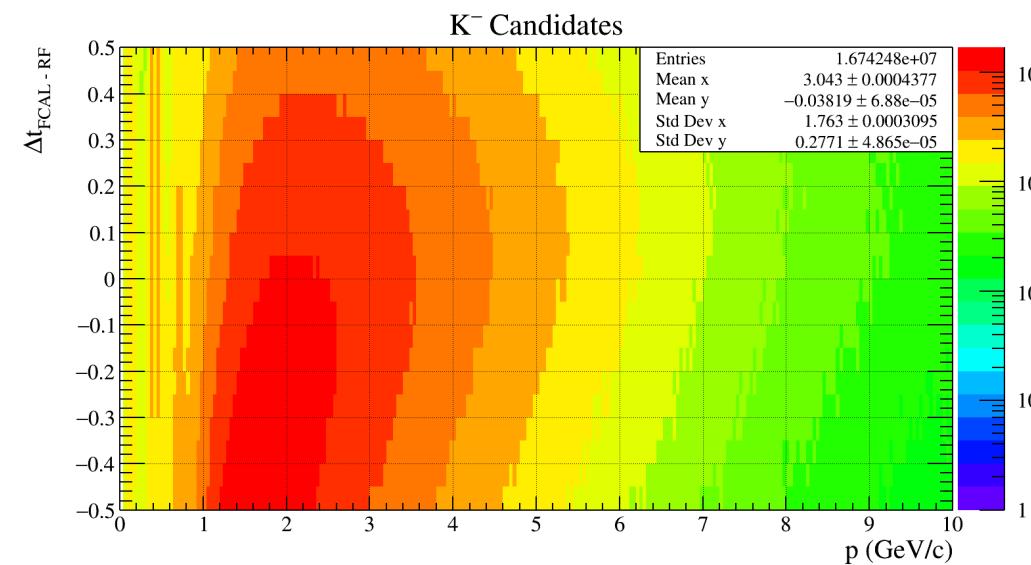
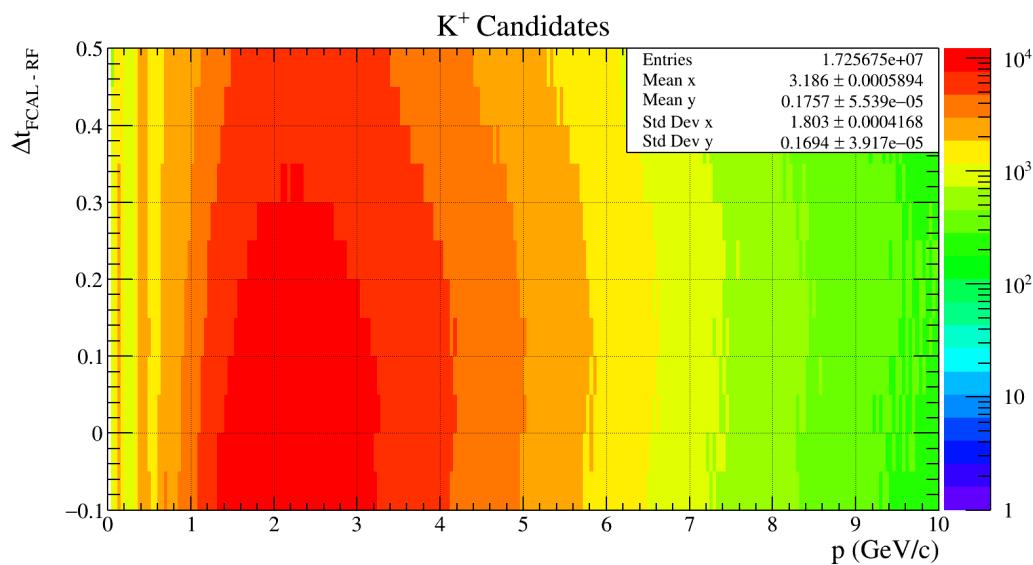
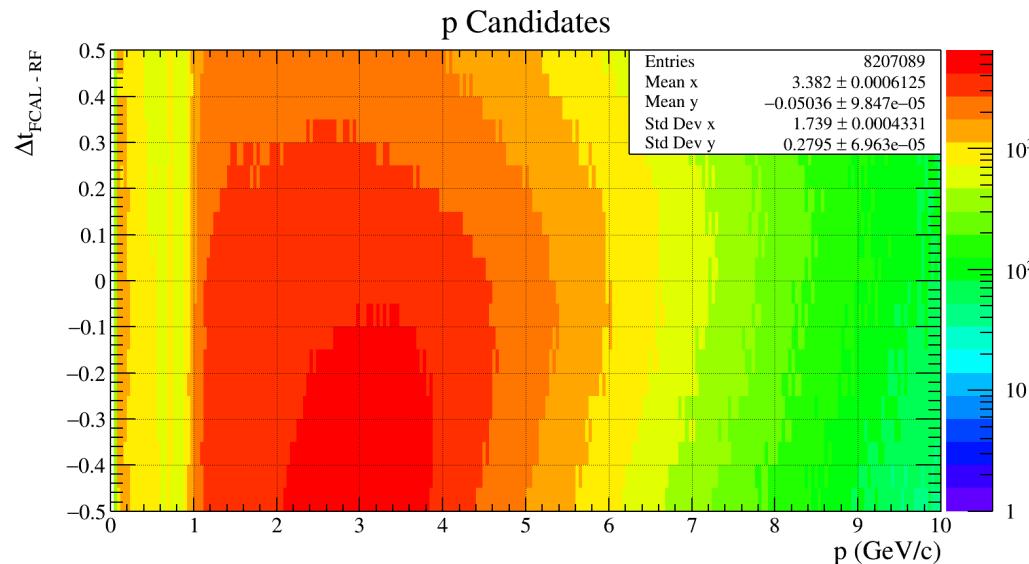
Delta T Vs P: TOF



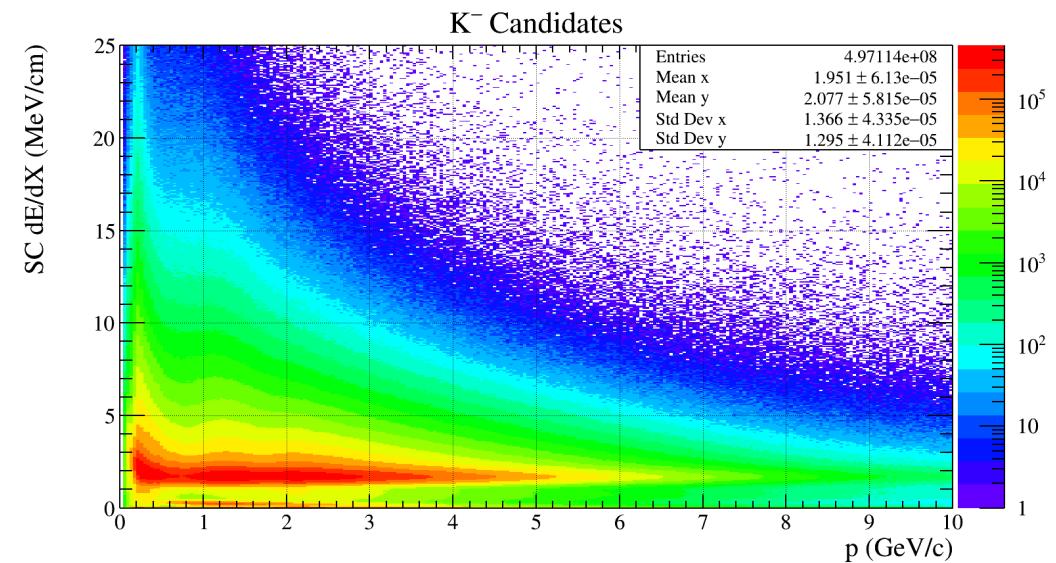
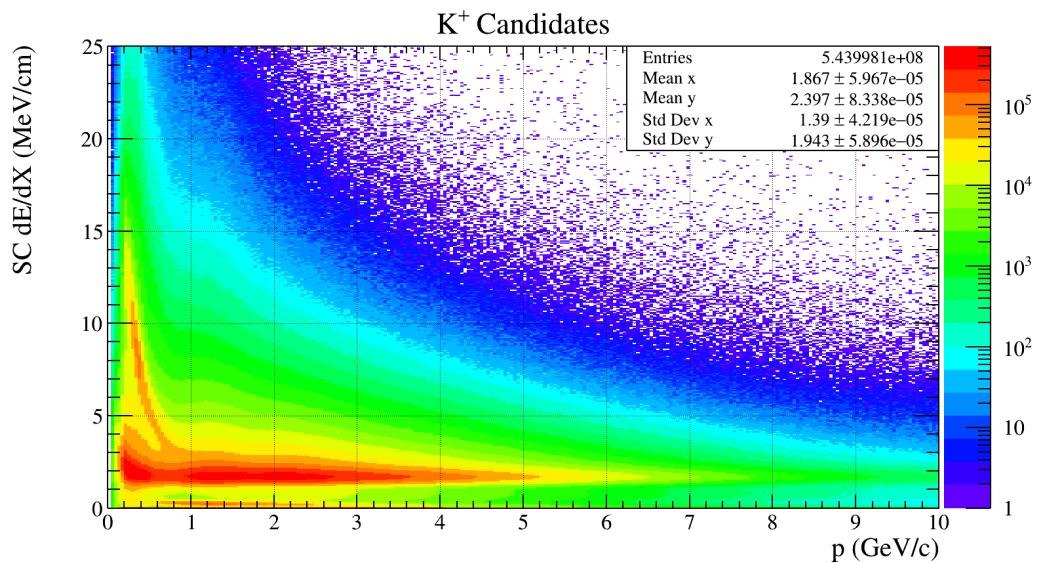
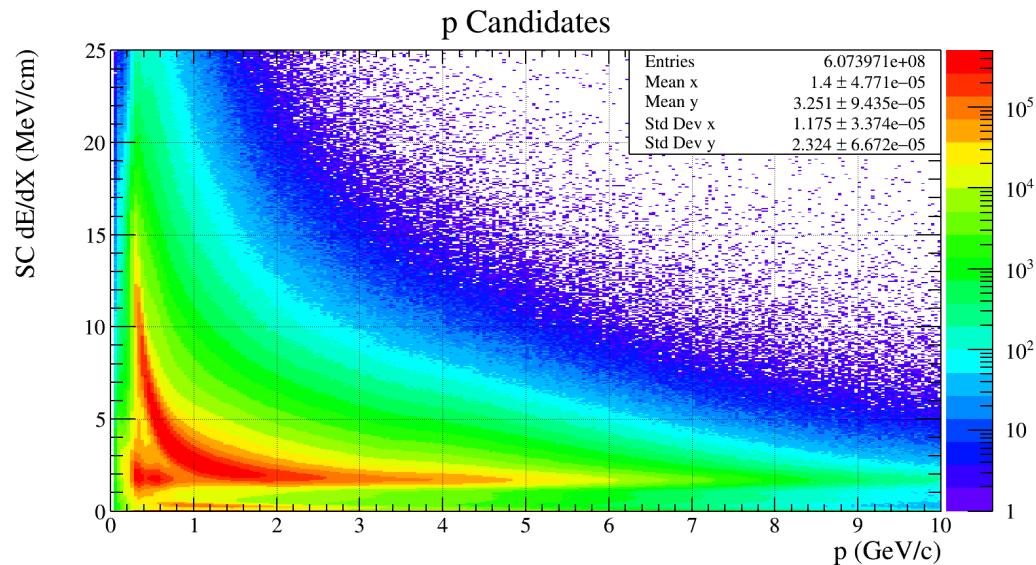
Delta T Vs P: BCAL



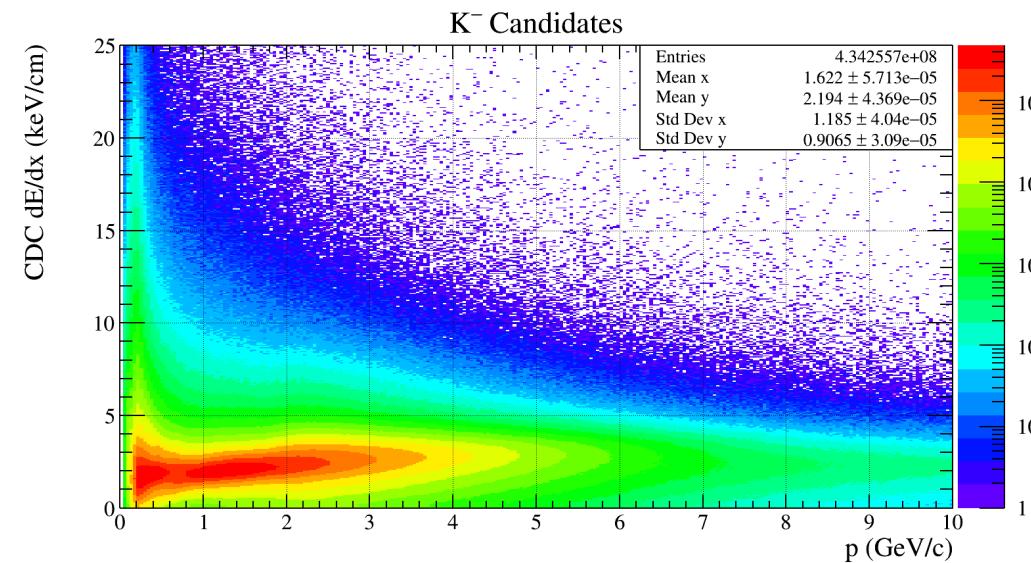
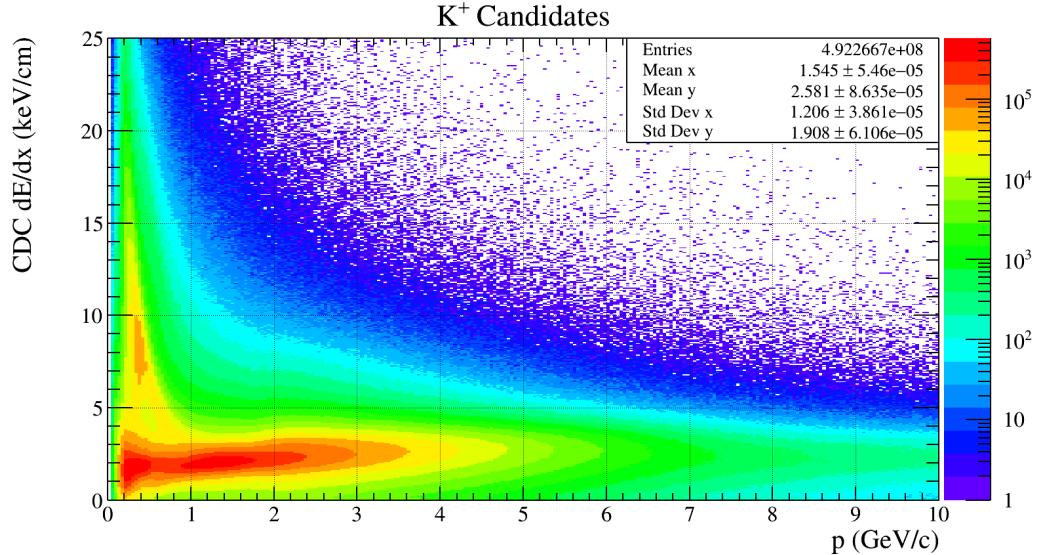
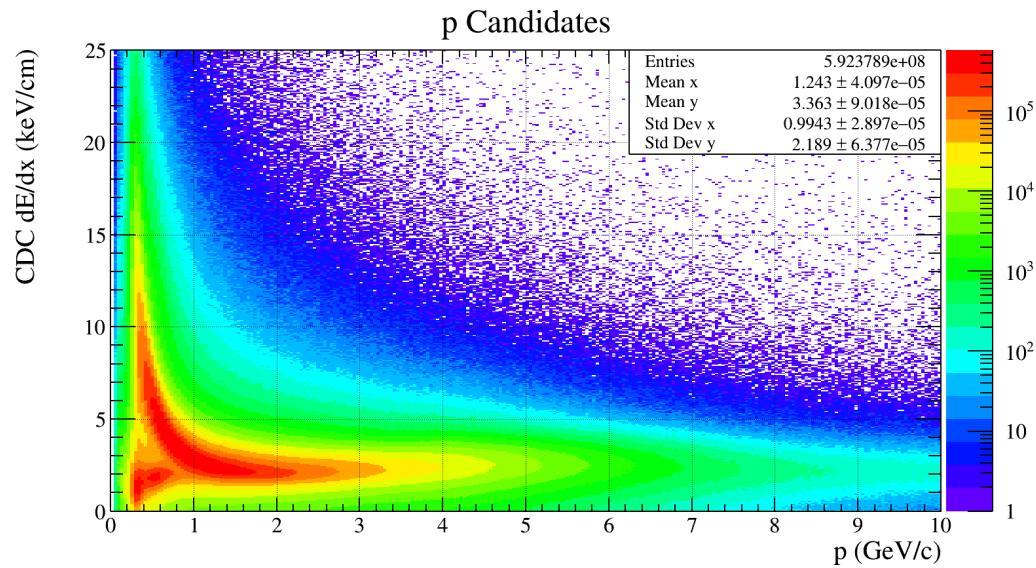
Delta T Vs P: FCAL



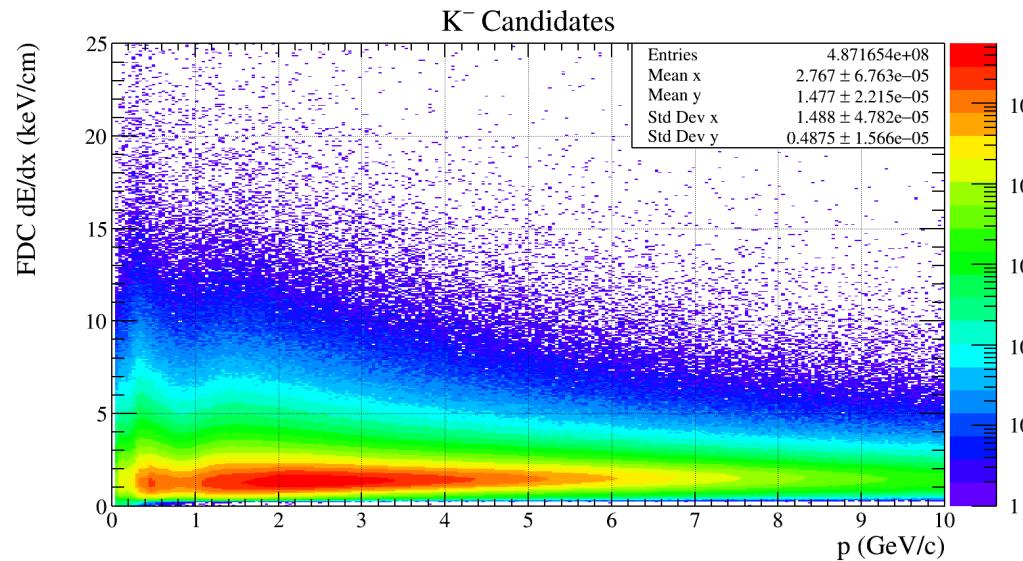
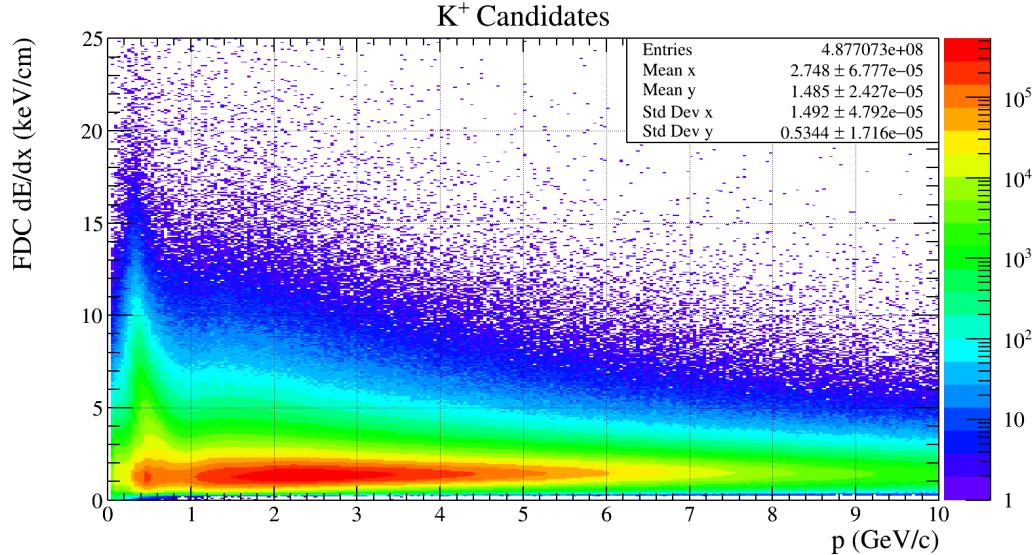
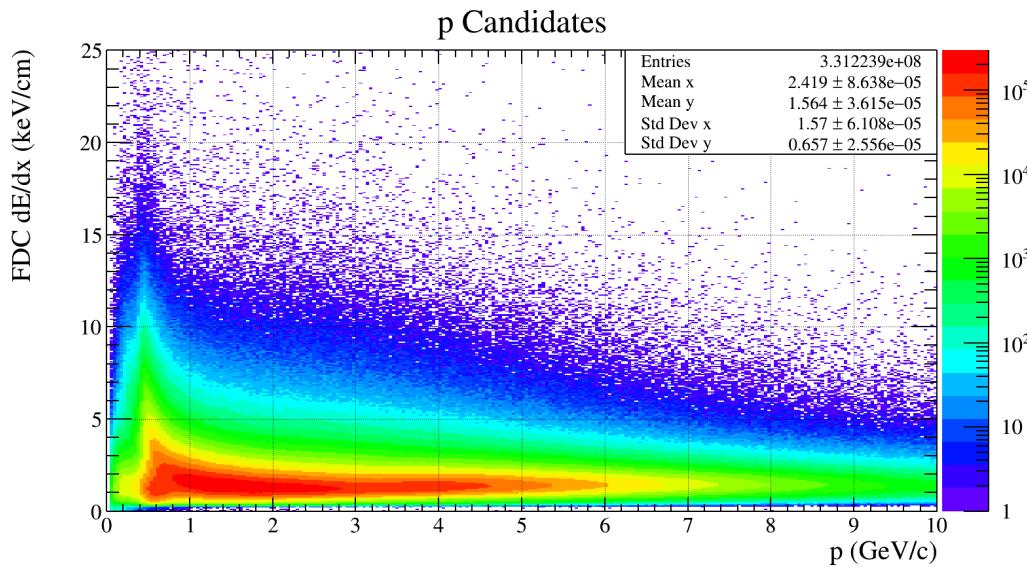
dEdX Vs P: SC



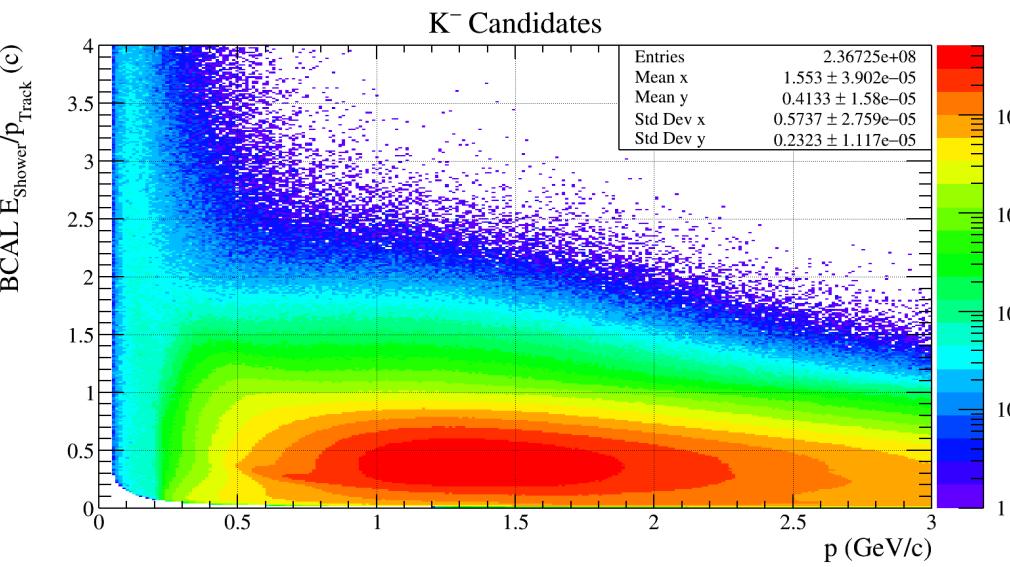
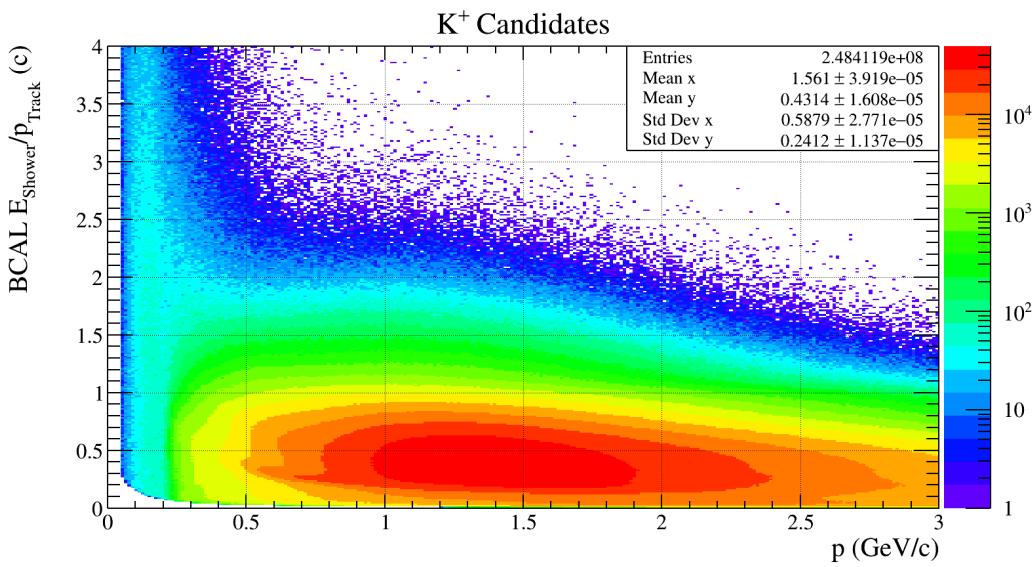
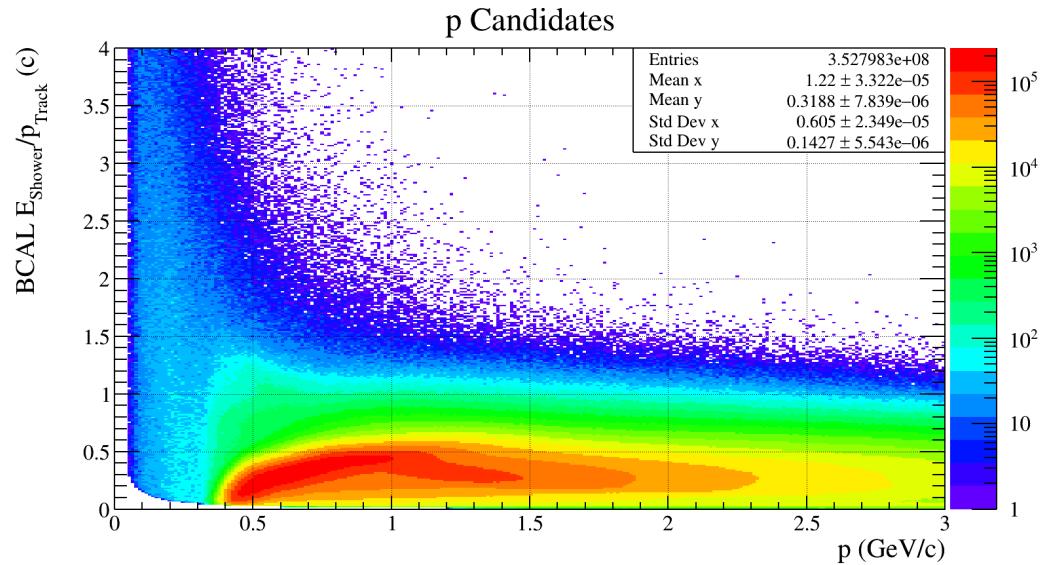
dEdX Vs P: CDC



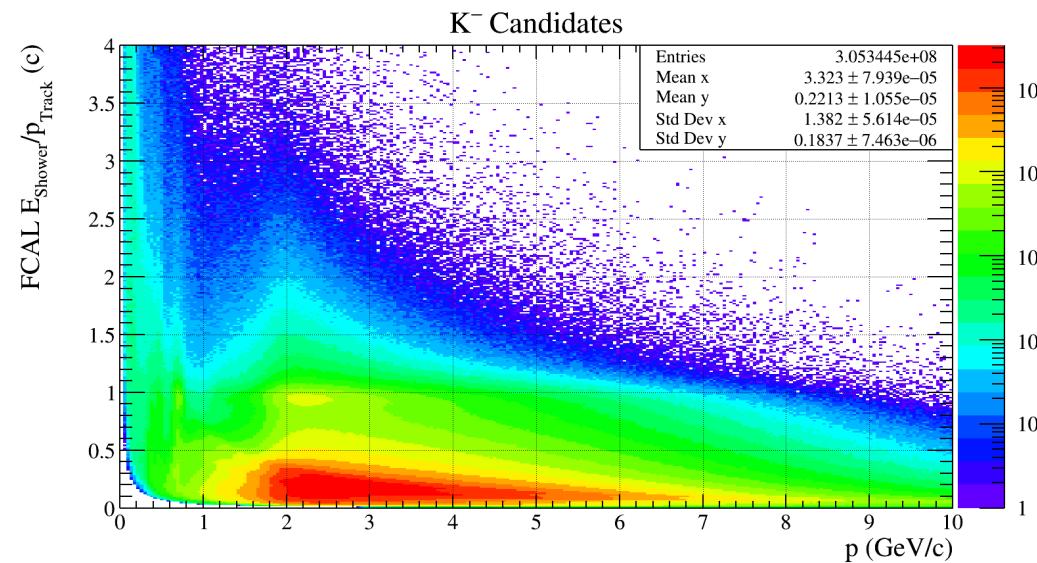
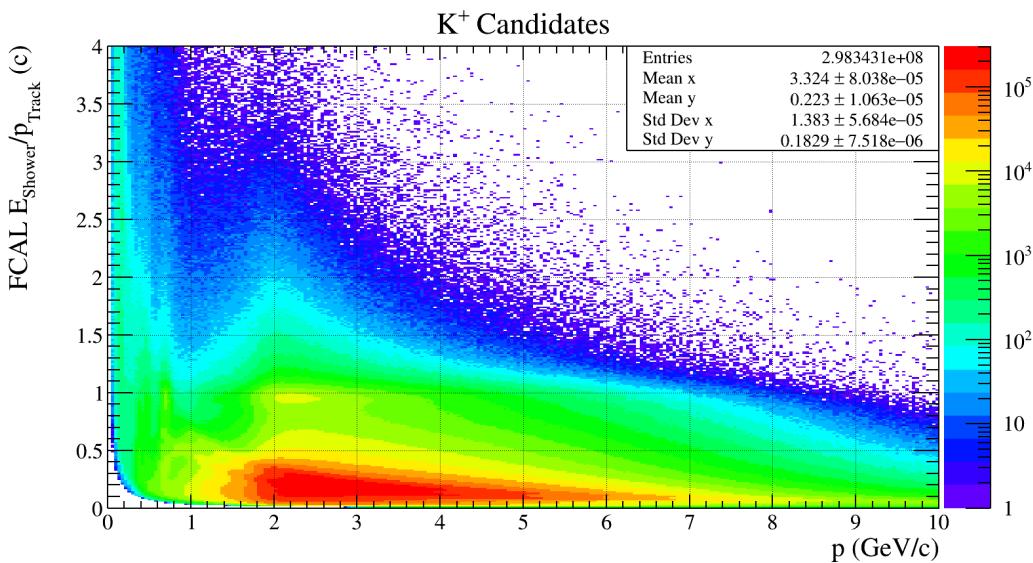
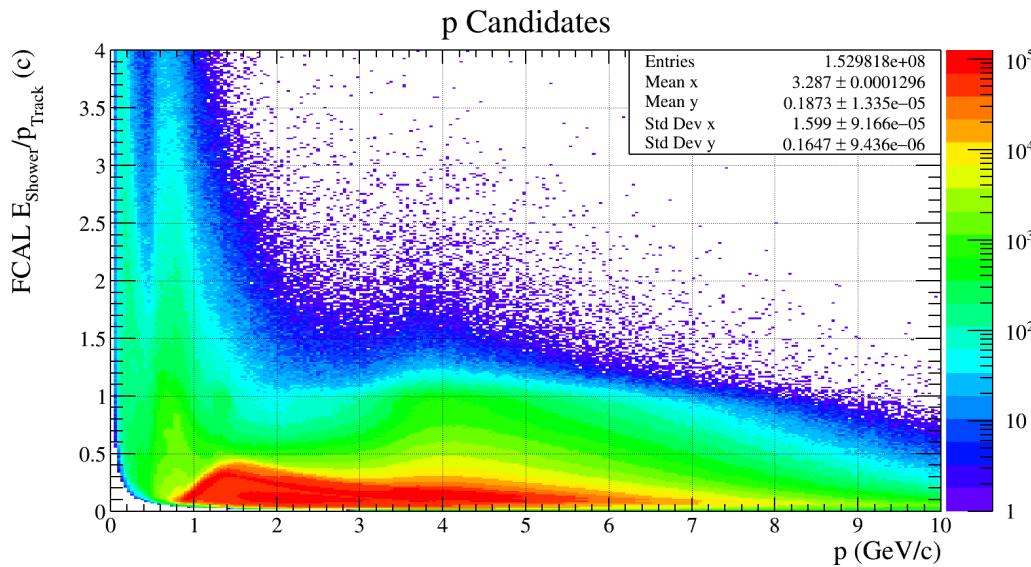
dEdX Vs P: FDC



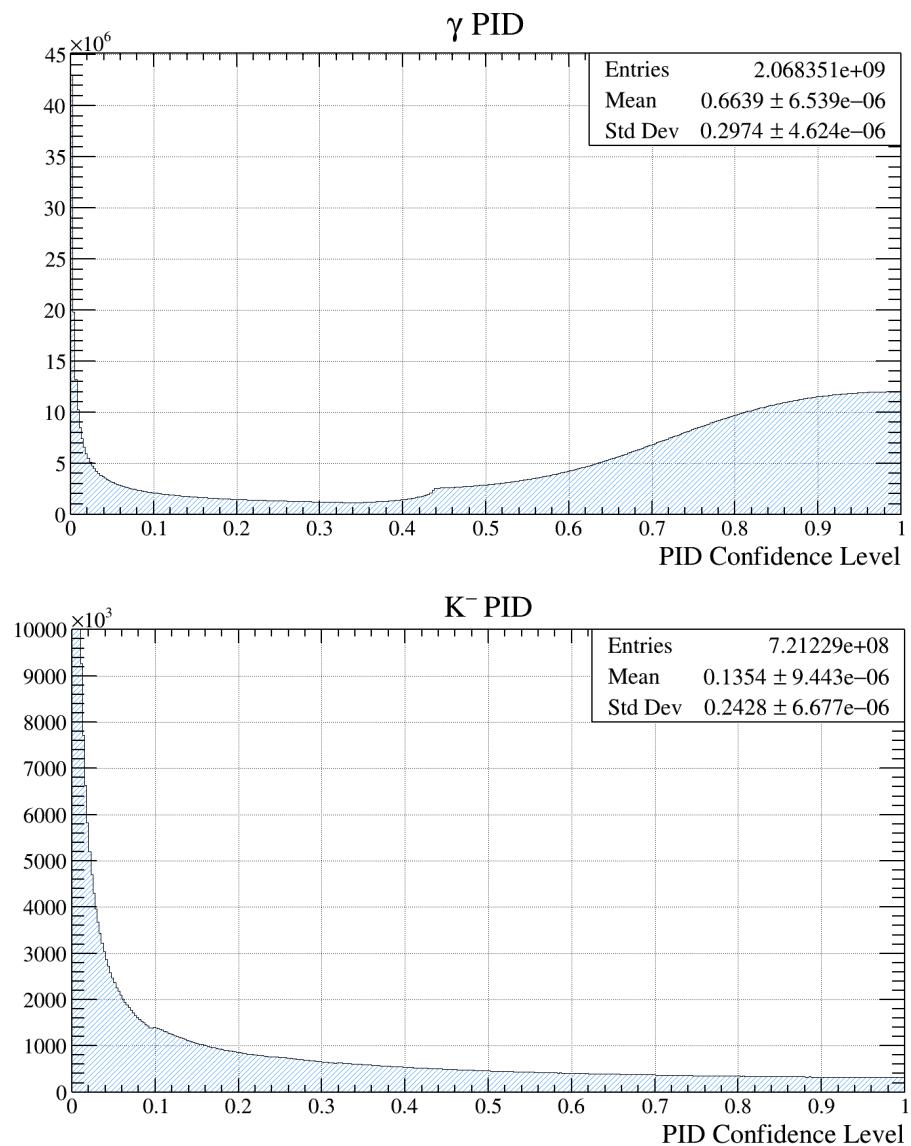
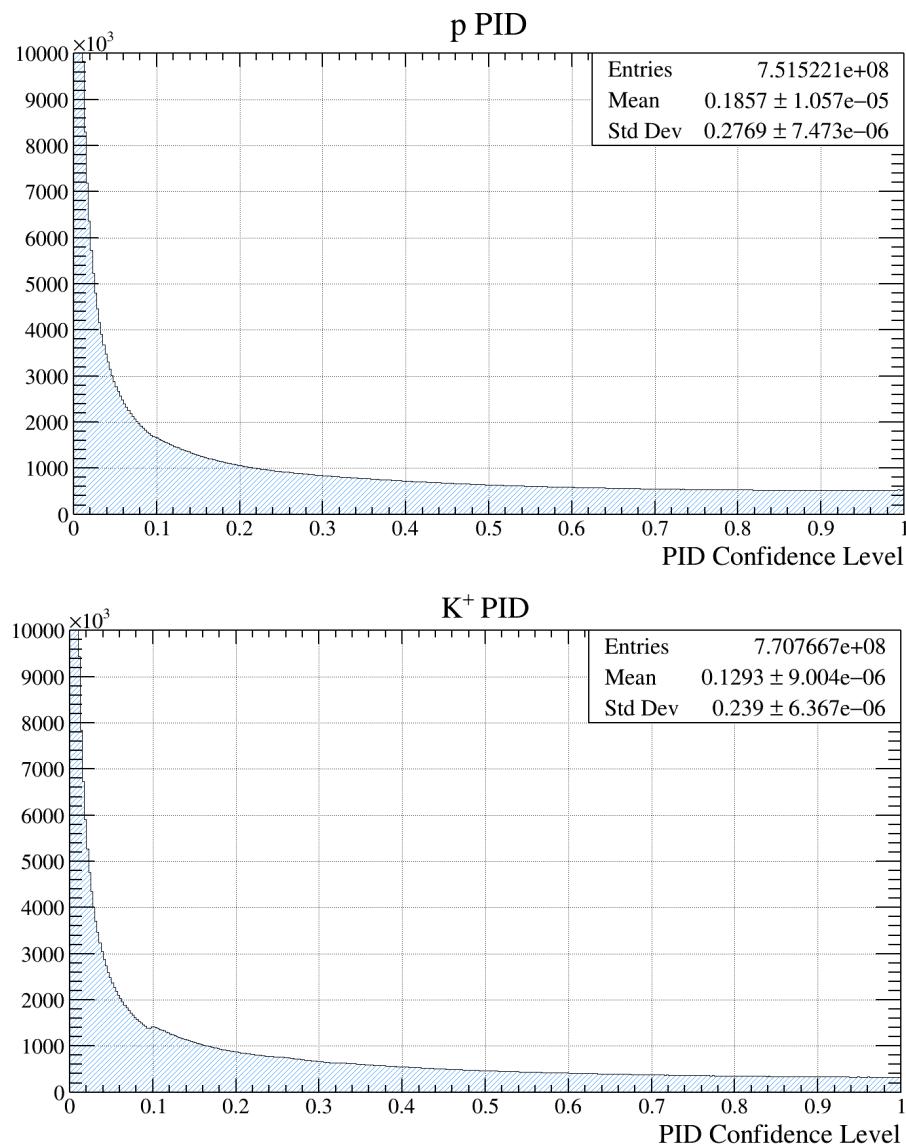
Σ Over P Vs P: BCAL



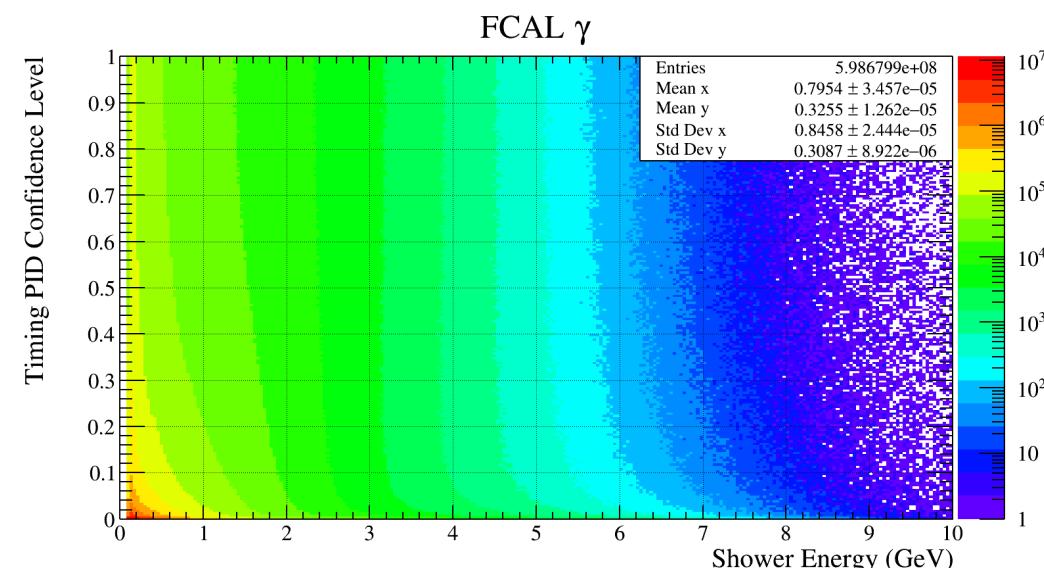
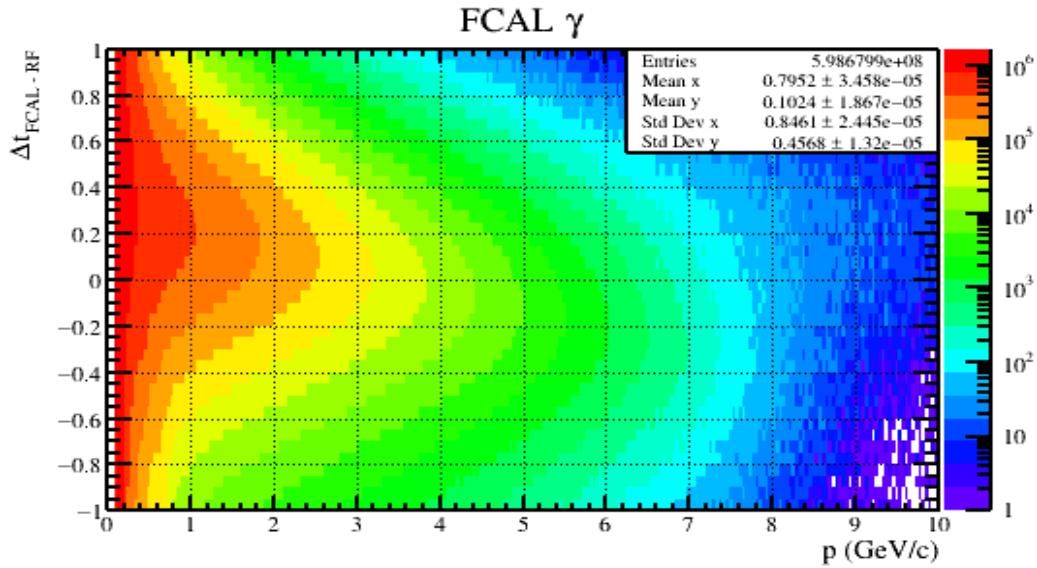
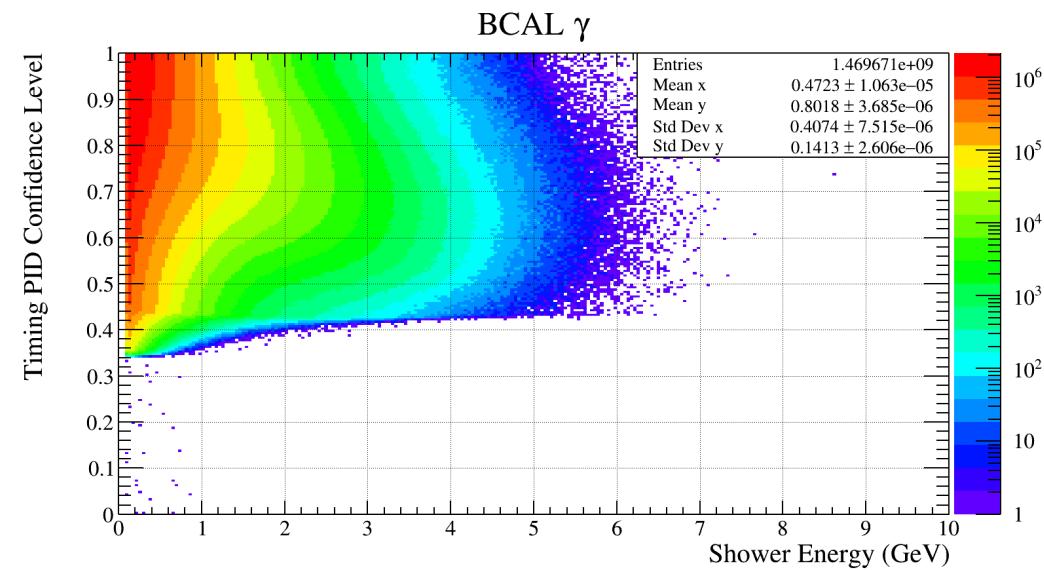
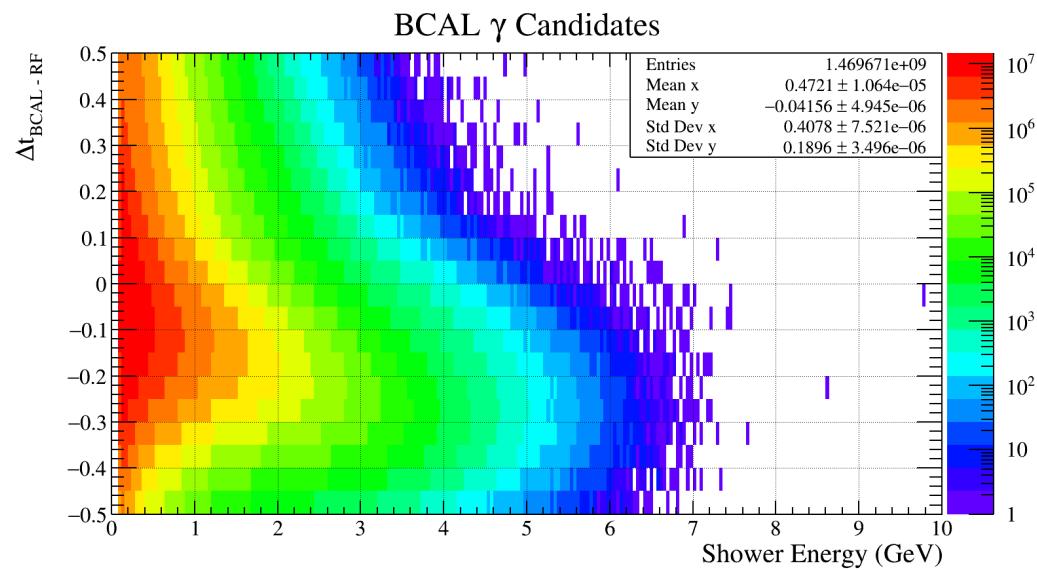
E Over P Vs P : FCAL



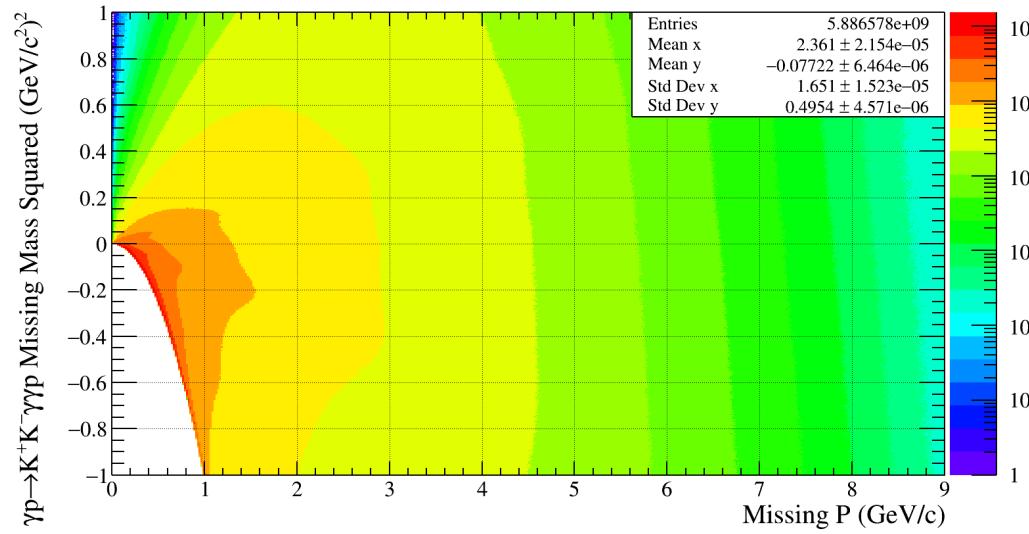
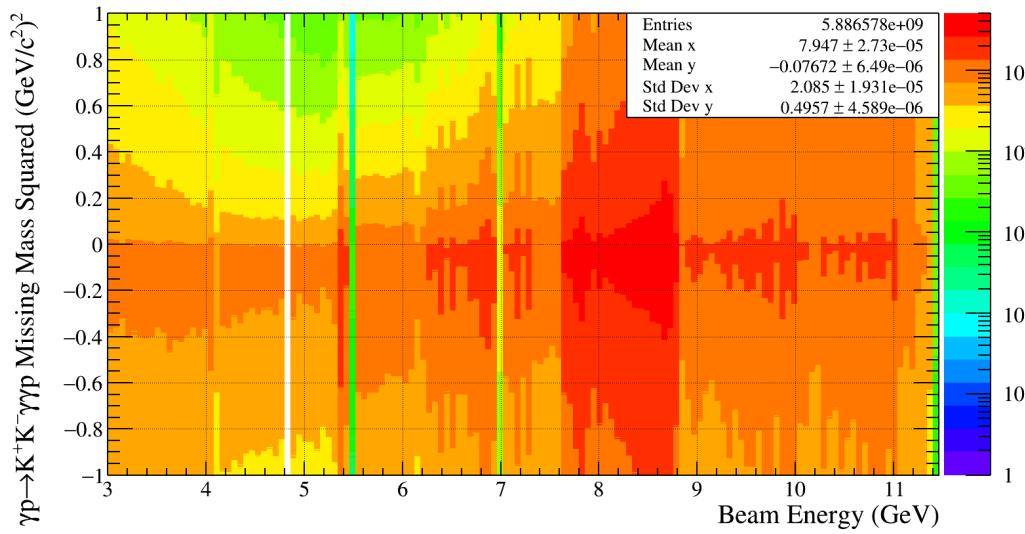
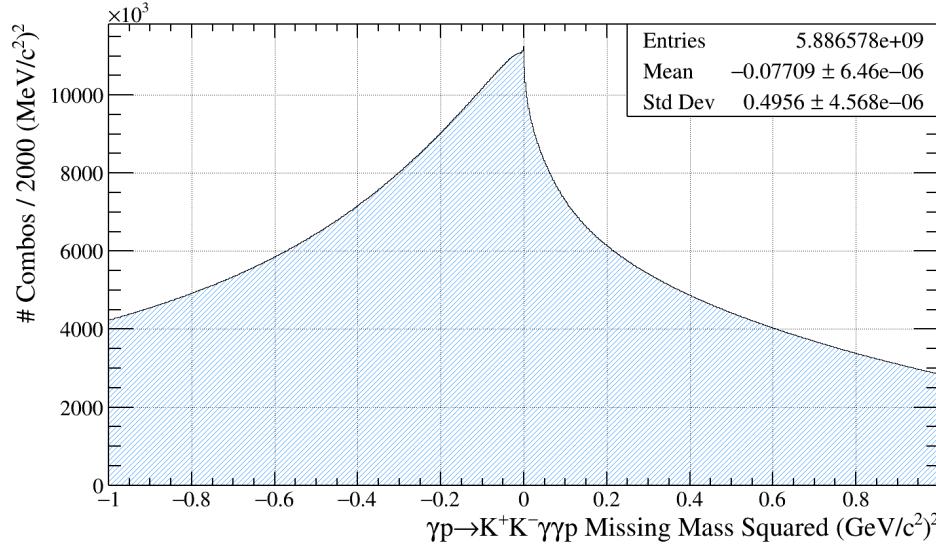
PID Confidence Level



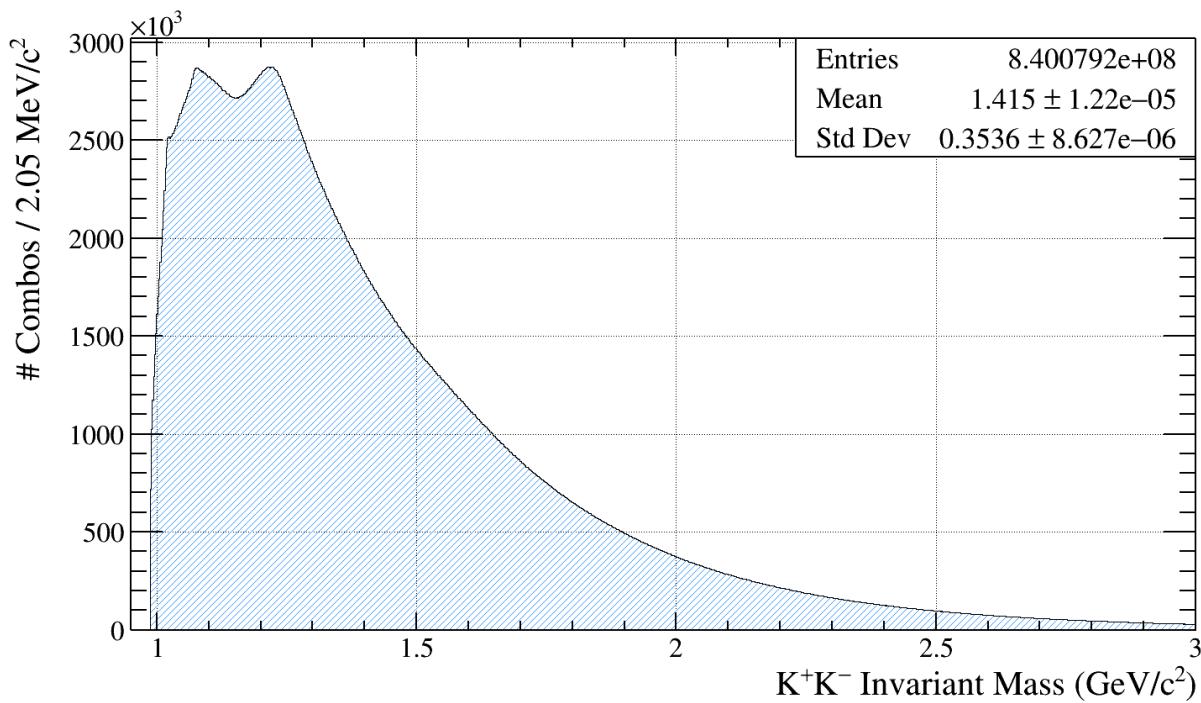
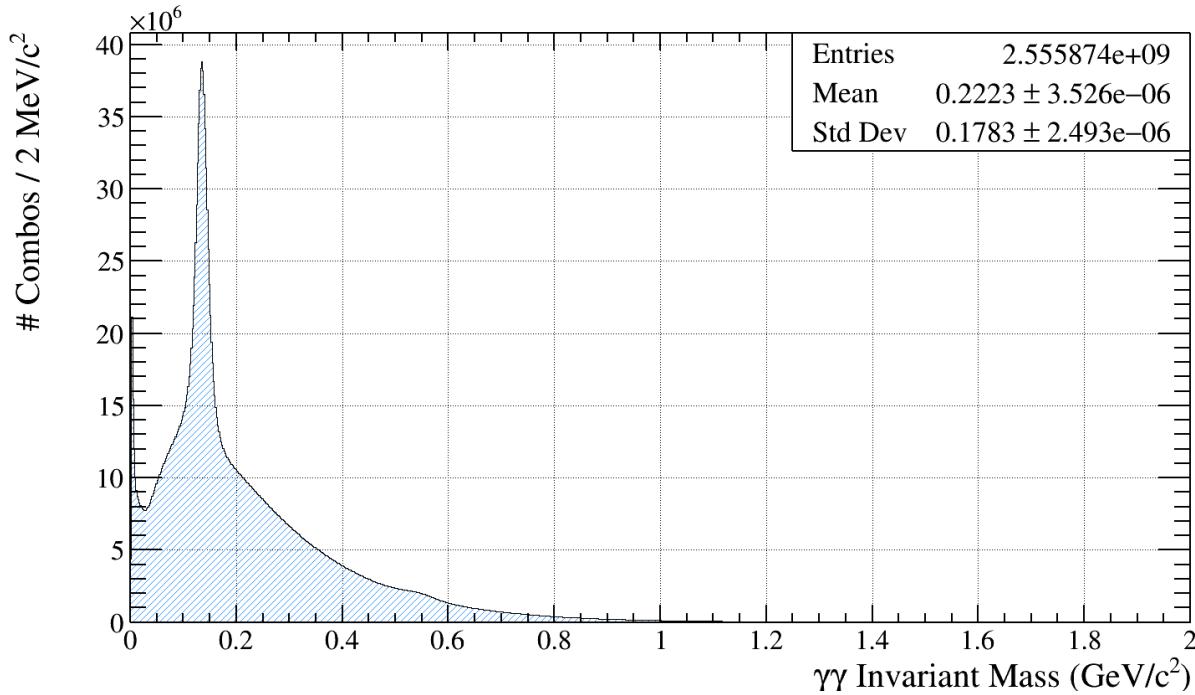
PID Confidence Level Vs Shower Energy: Photon



Missing Mass Squared



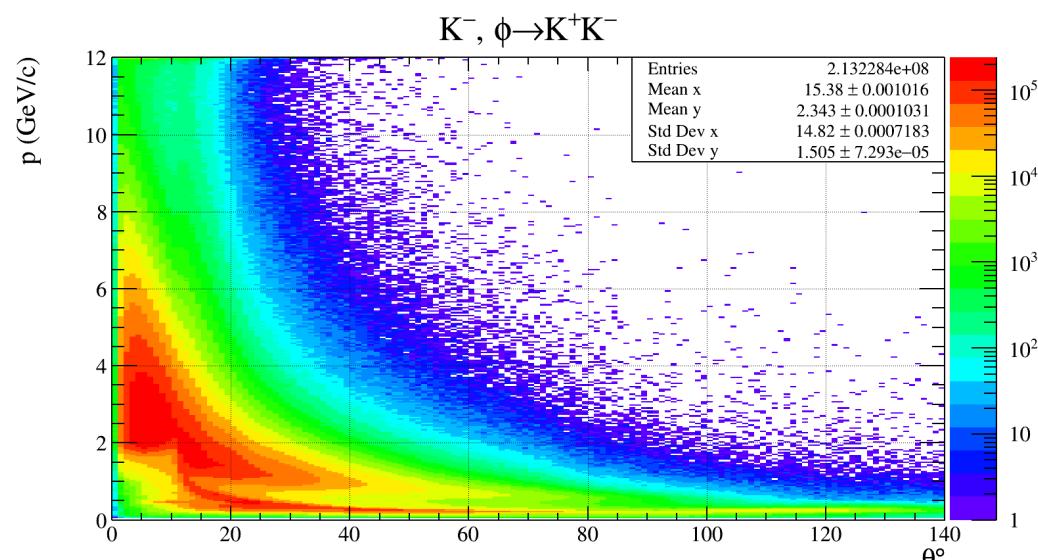
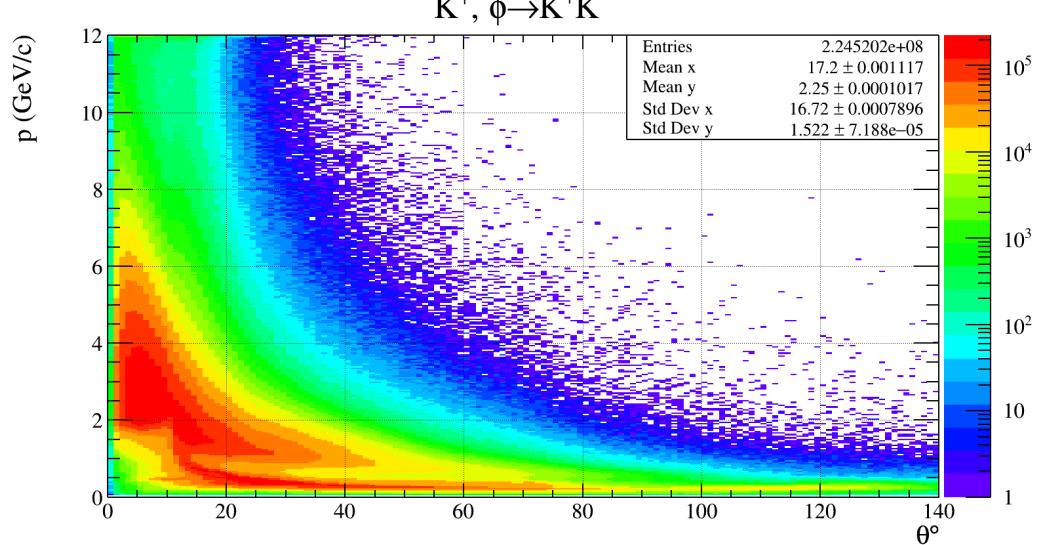
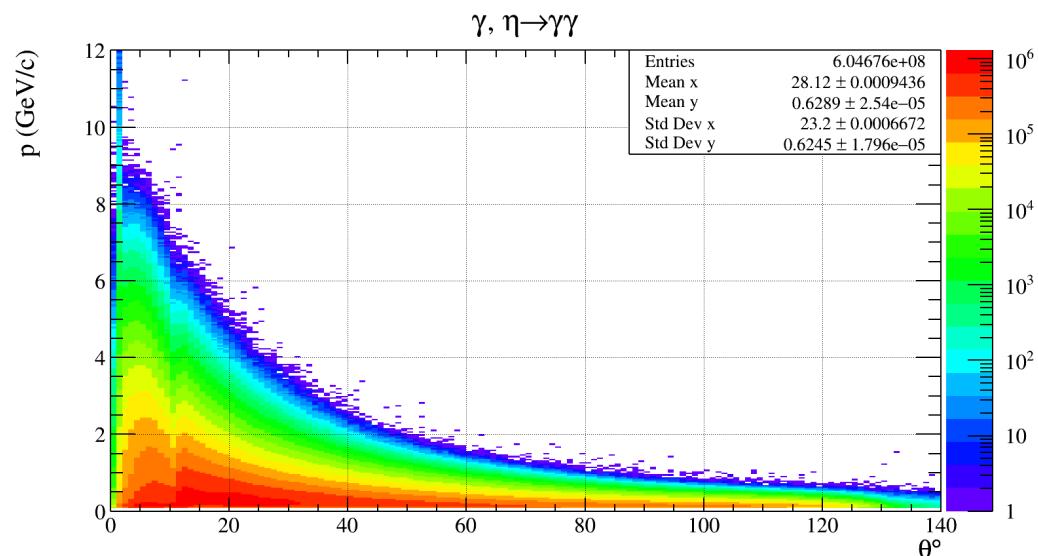
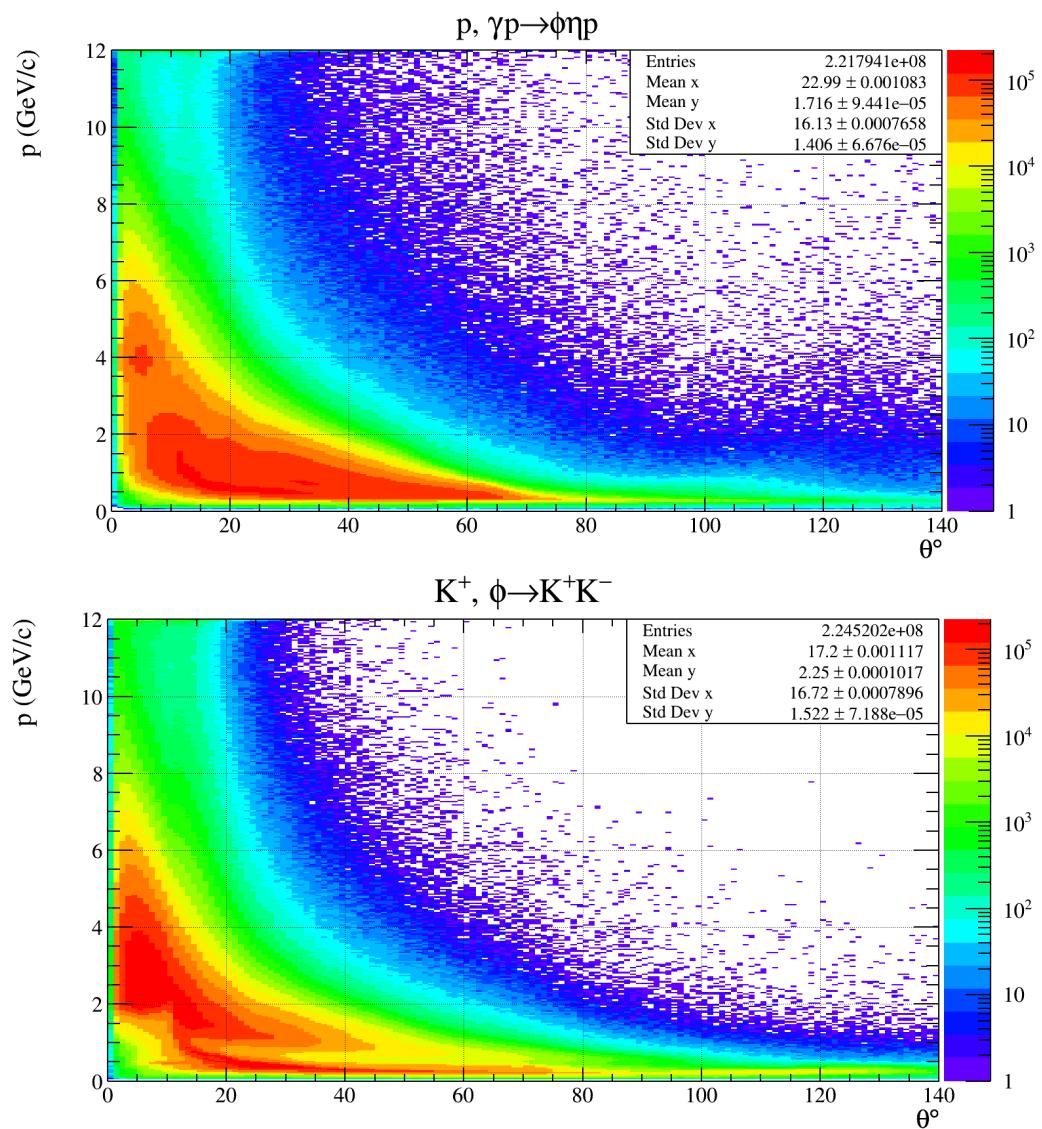
Invariant Mass Distributions



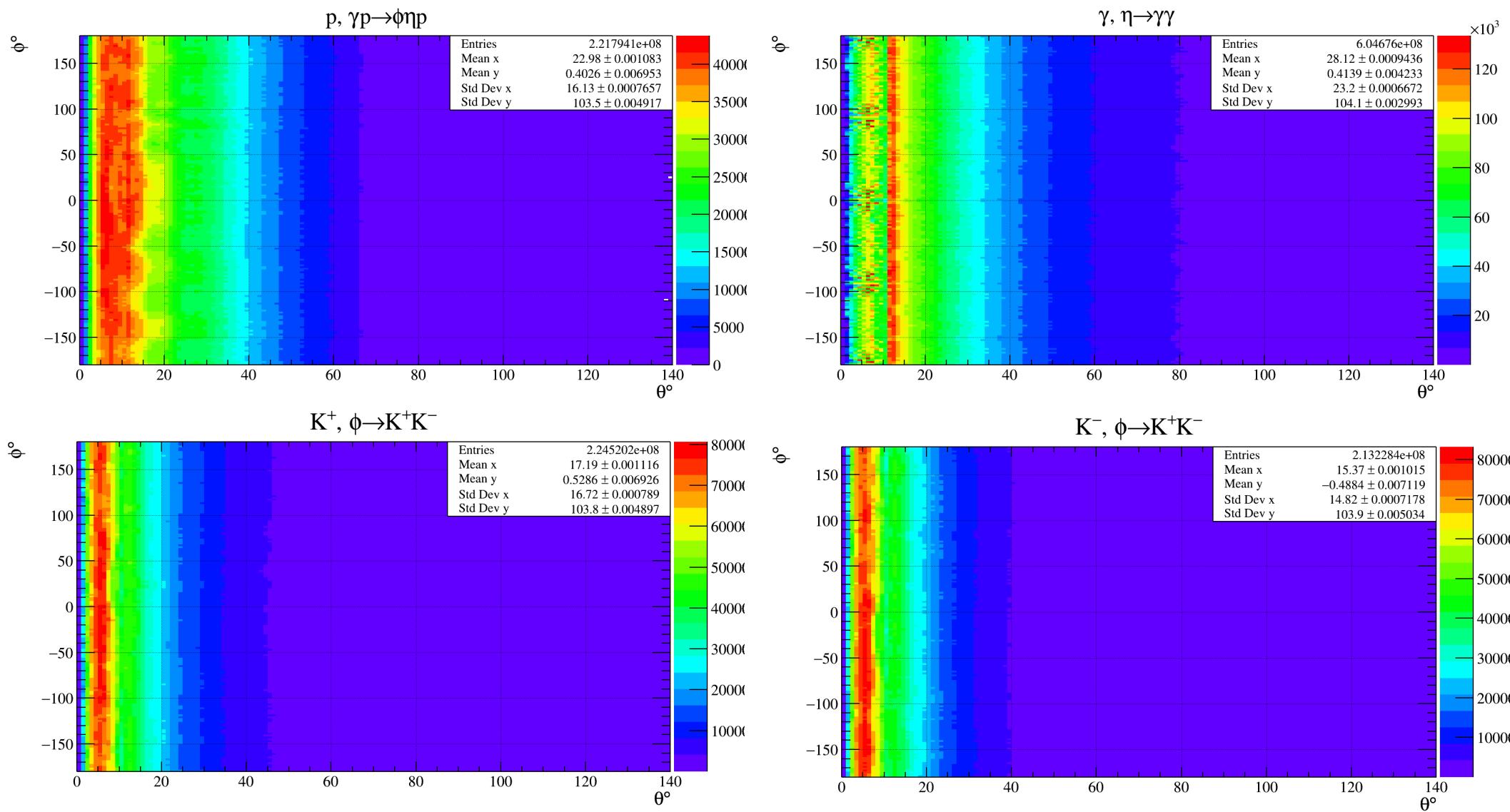
Third Round of Cuts:

- Kinematic Fit Type: P4 And Vertex
- Require Kinematic Fit converges

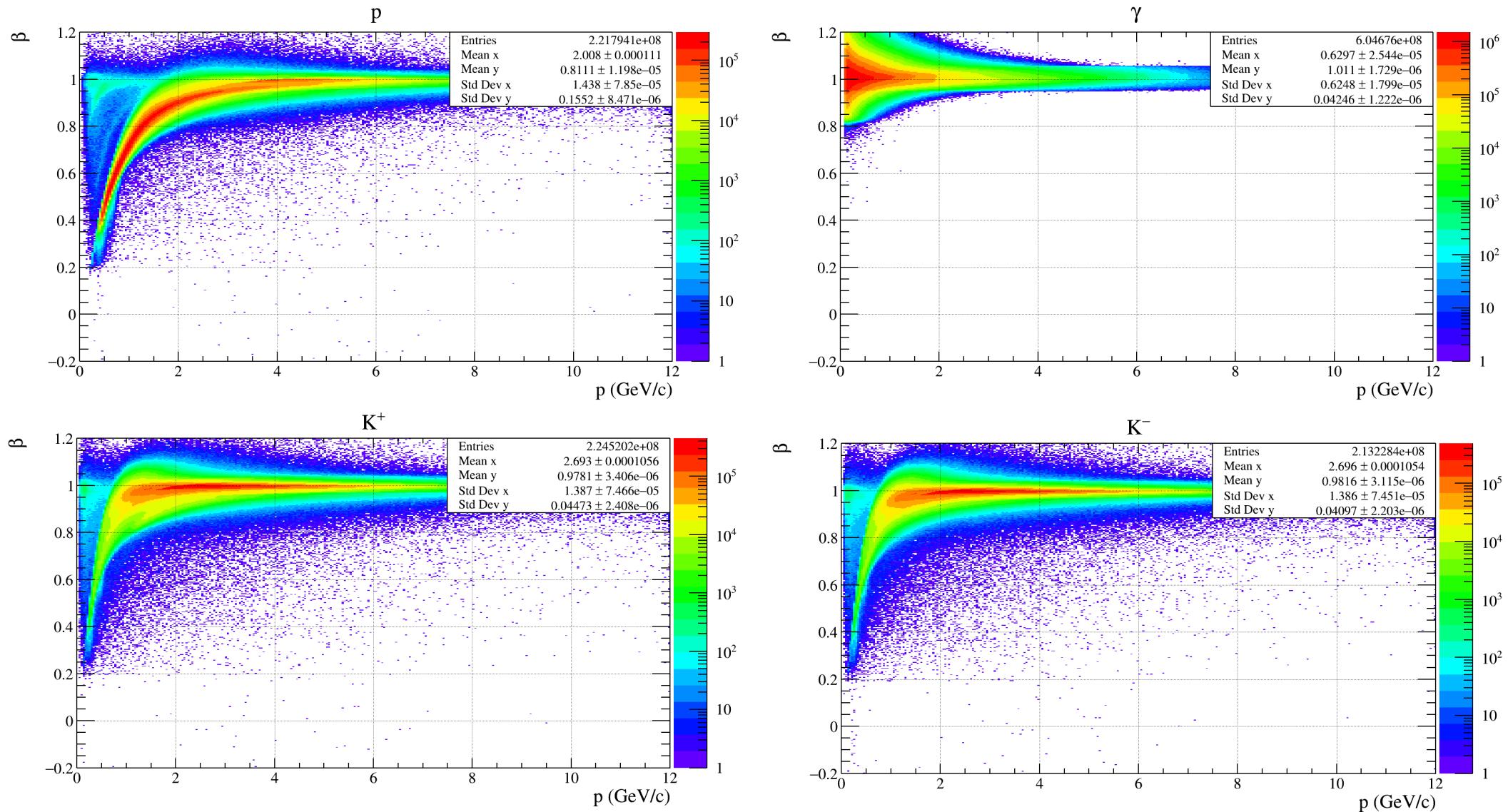
P Vs Theta



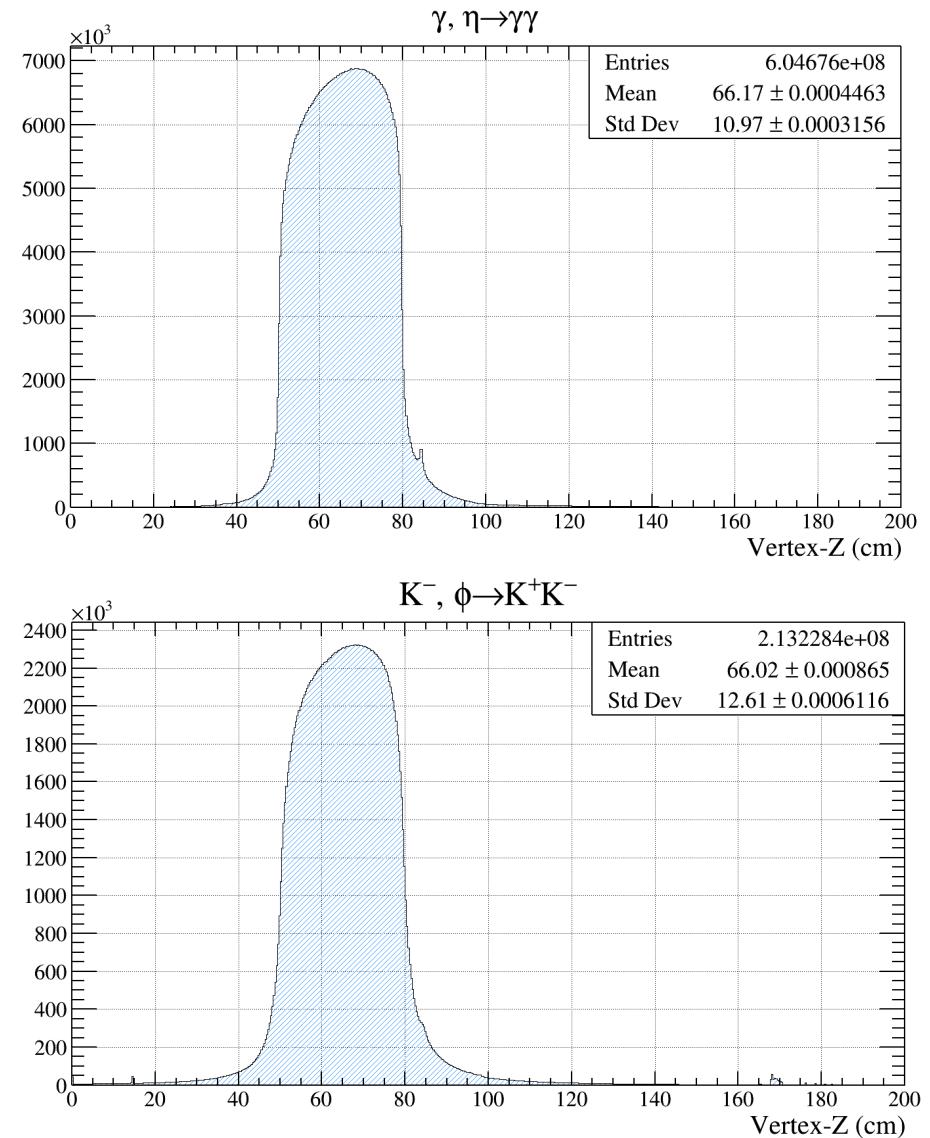
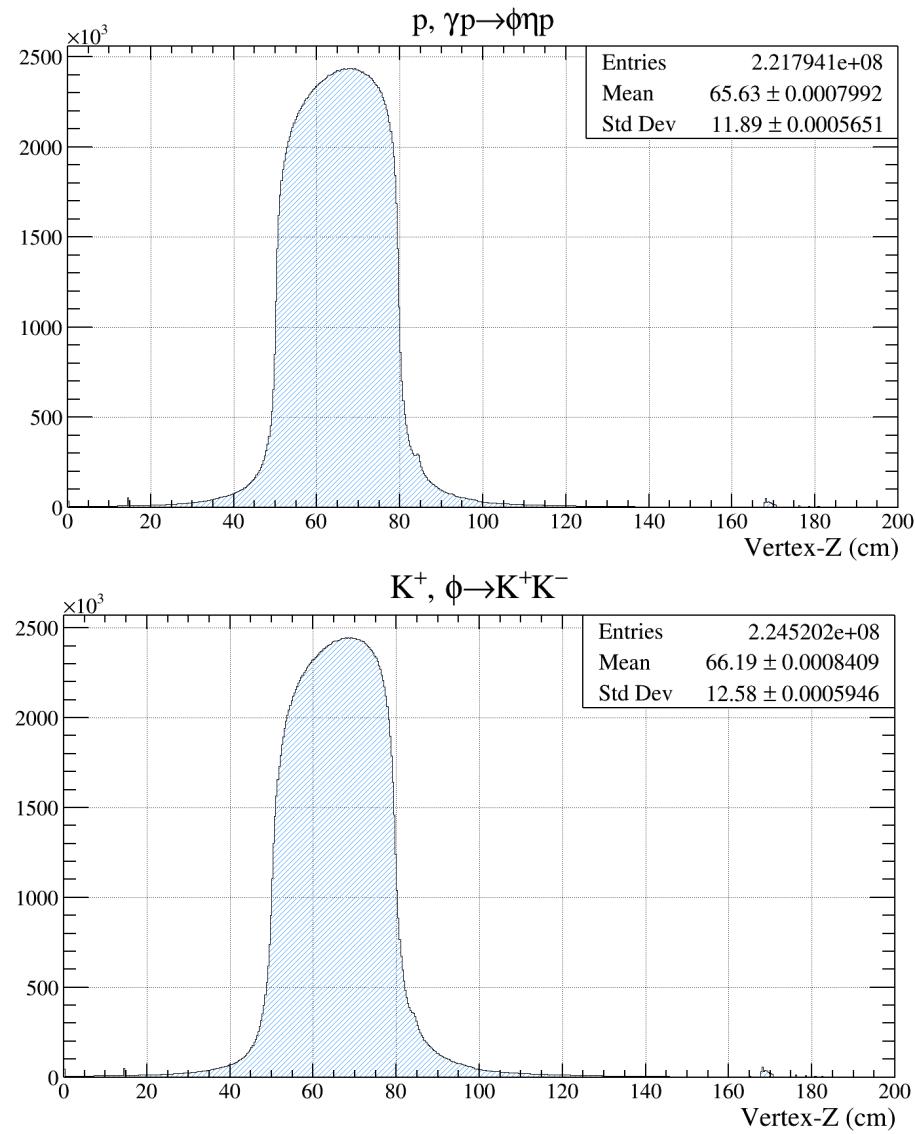
Phi Vs Theta



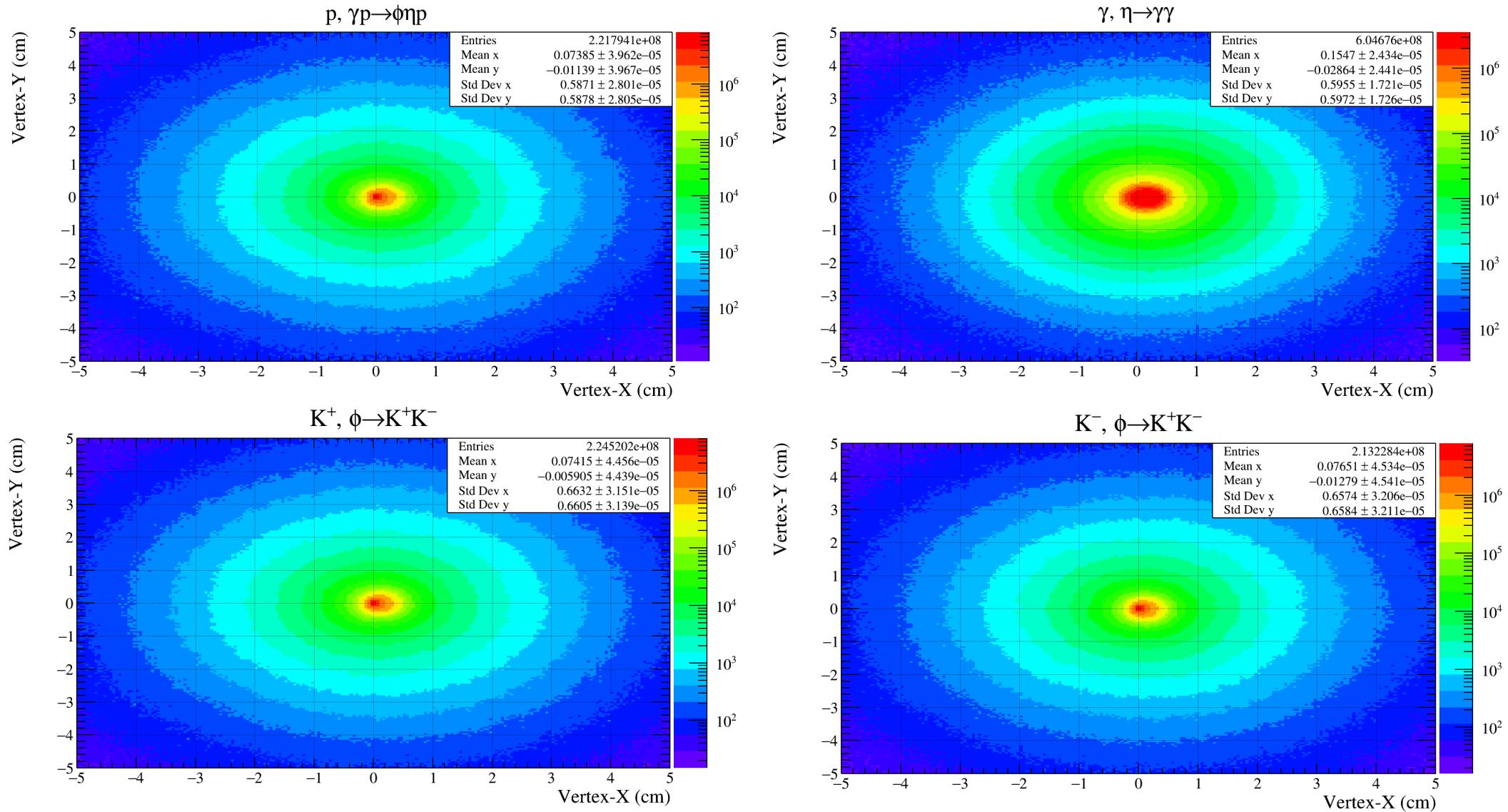
Beta Vs P



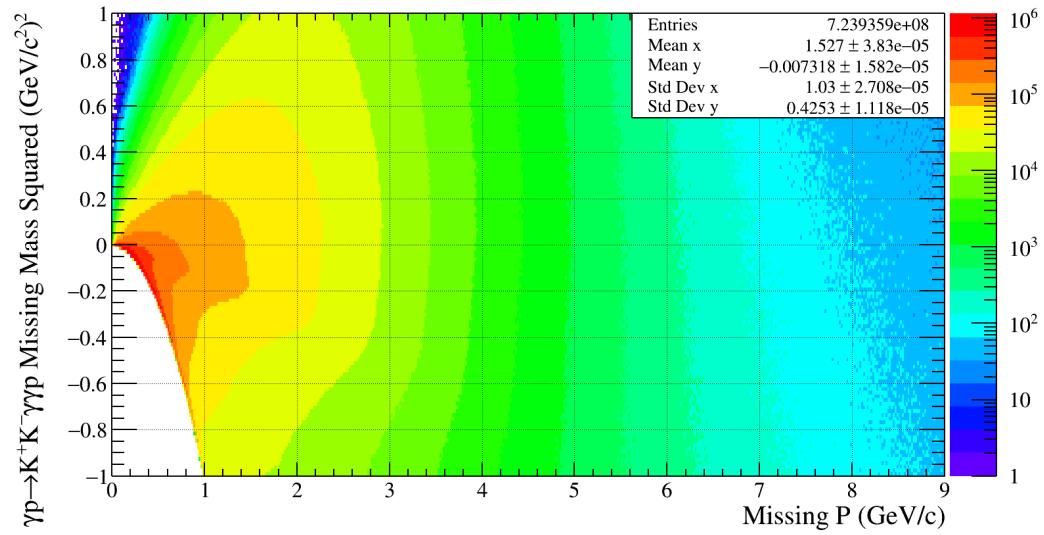
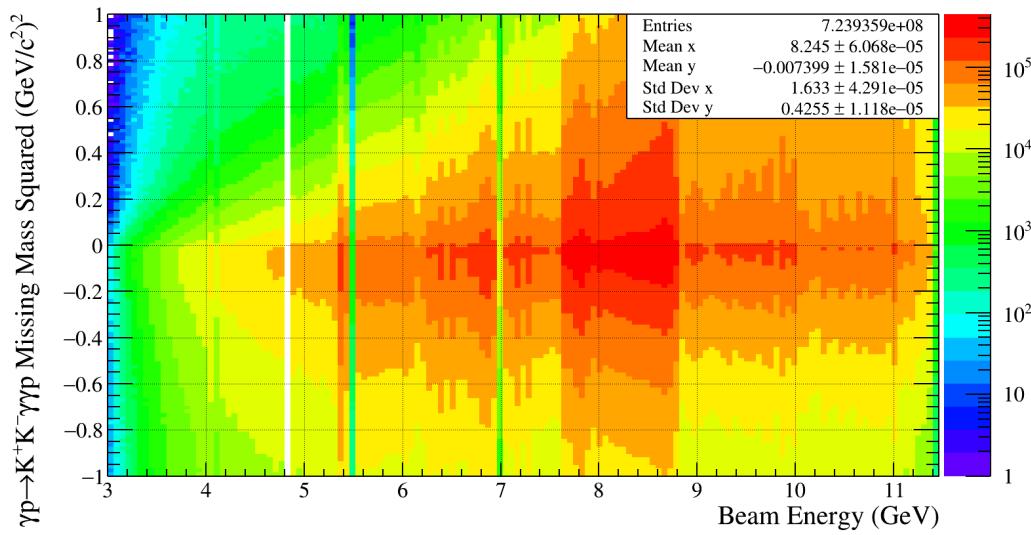
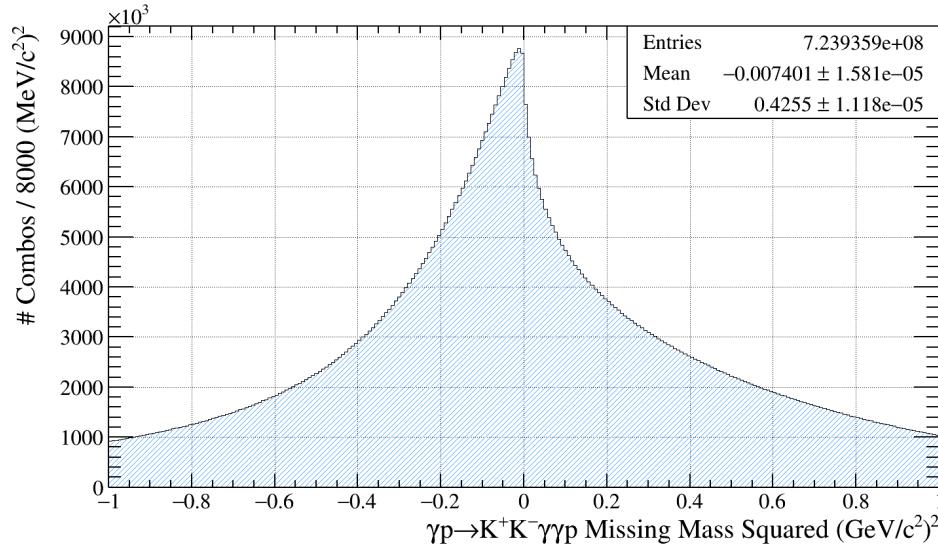
Vertex Z



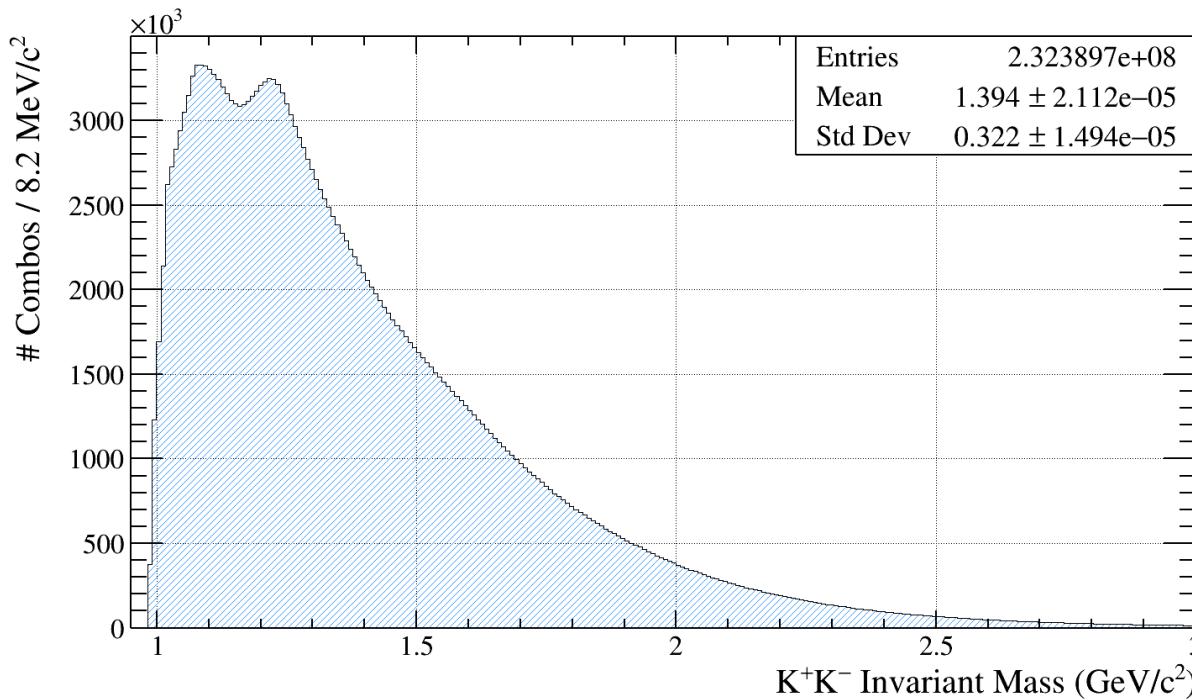
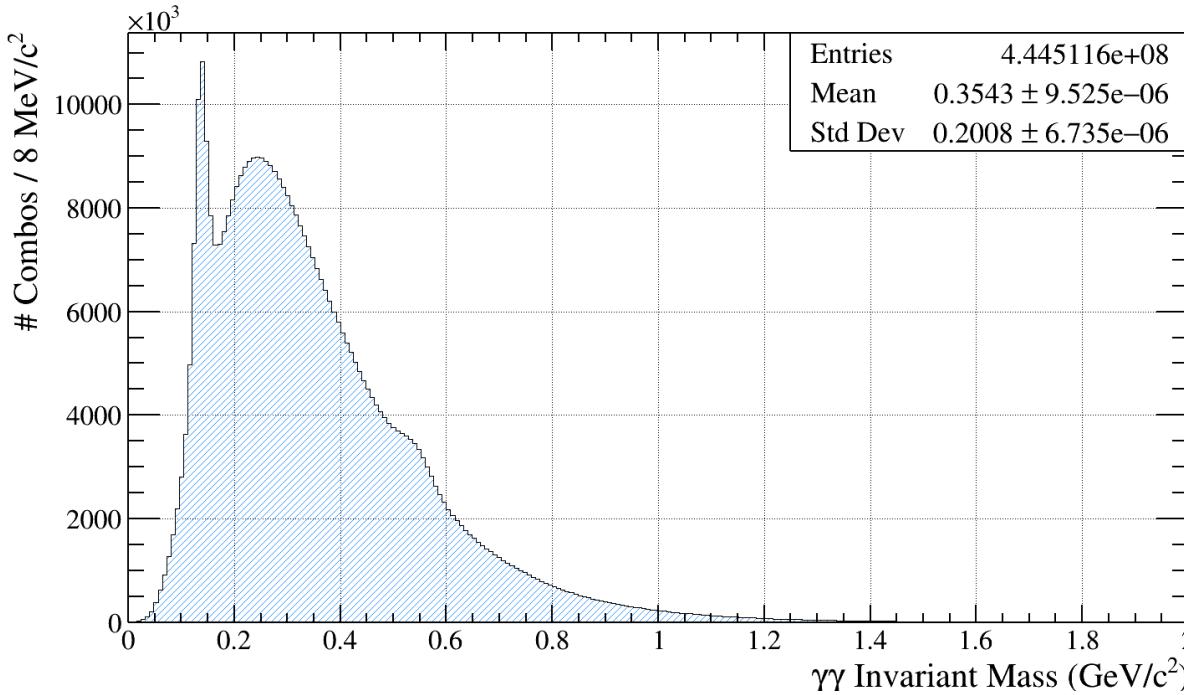
Vertex Y Vs X



Missing Mass Squared



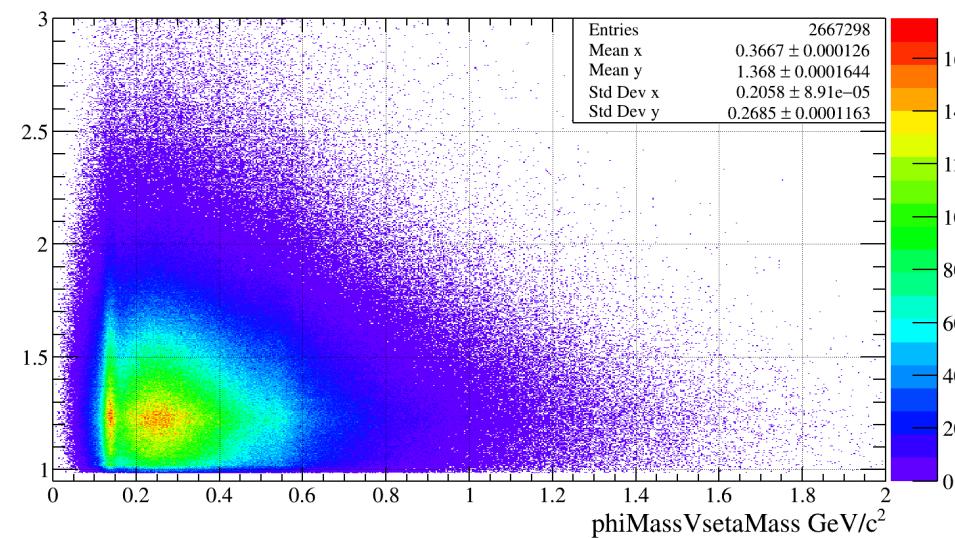
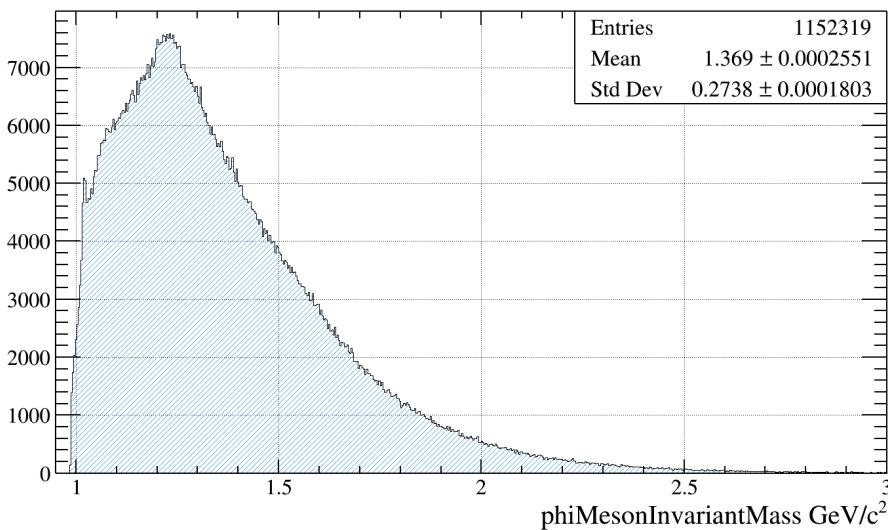
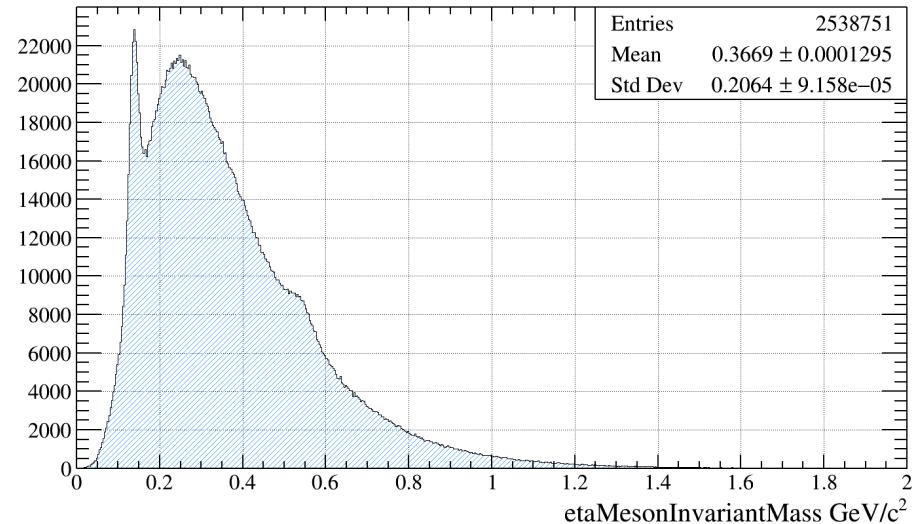
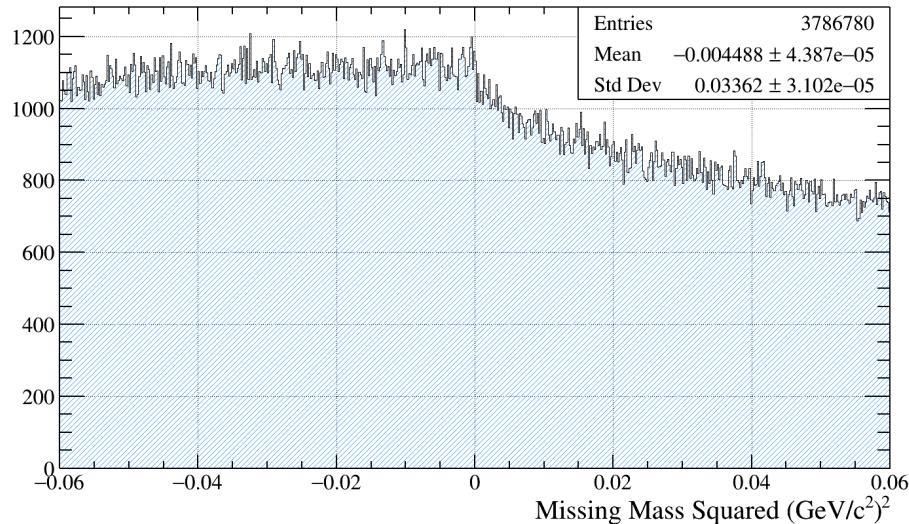
Invariant Mass Distributions



Fourth Round of Cuts:

- Only 10% of the Fall 2016 Data (due to time restrictions)
- dEdX CDC: Proton, Kplus, Kminus
- dEdX ST: Proton, Kplus, Kminus
- DeltaT Vs P TOF: Proton, Kplus, Kminus
- Vertex Z && Y vs X: Proton, Kplus, Kminus, Gamma
- All Particles must have a timing hit in detectors

Mass Distributions



Fifth Round of Cuts:

- These are some cuts that I am playing with right now:
- Require exactly 2 photons
- Require exactly 1 K-
- Require 1 or 2 protons/K+

Mass Distributions

