

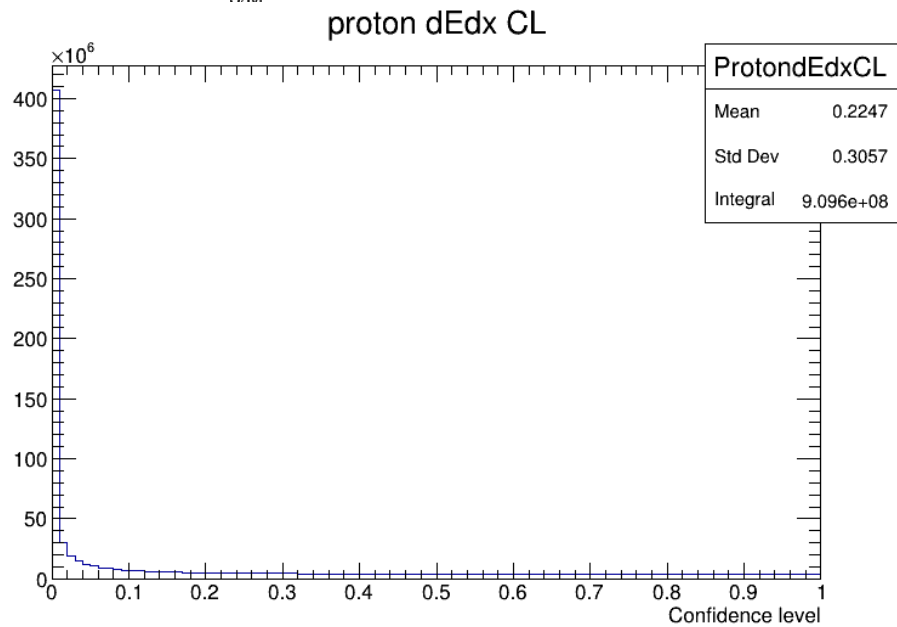
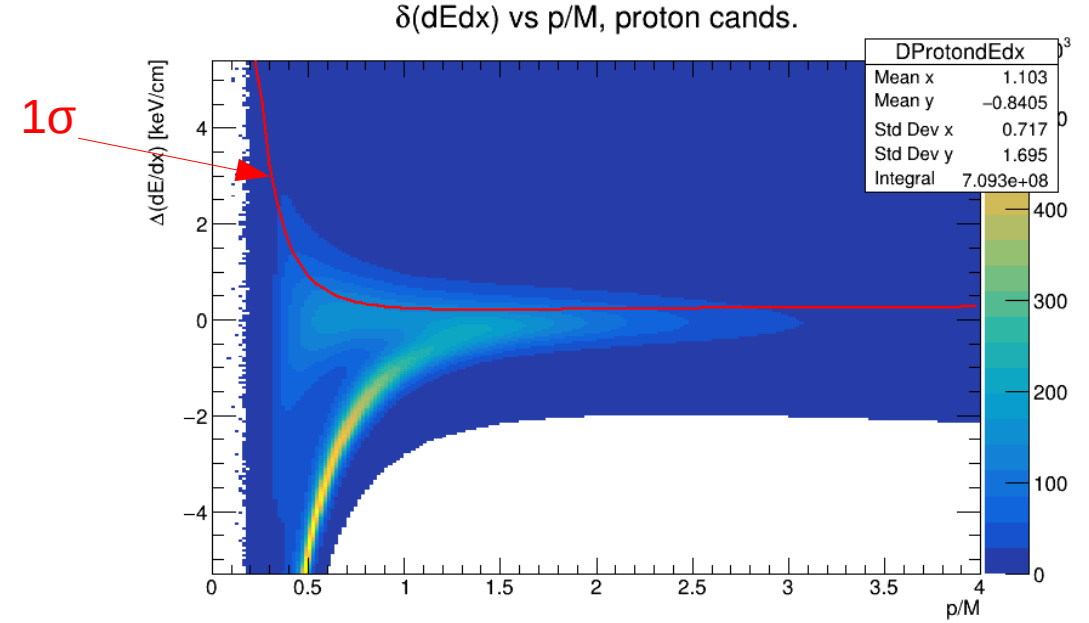
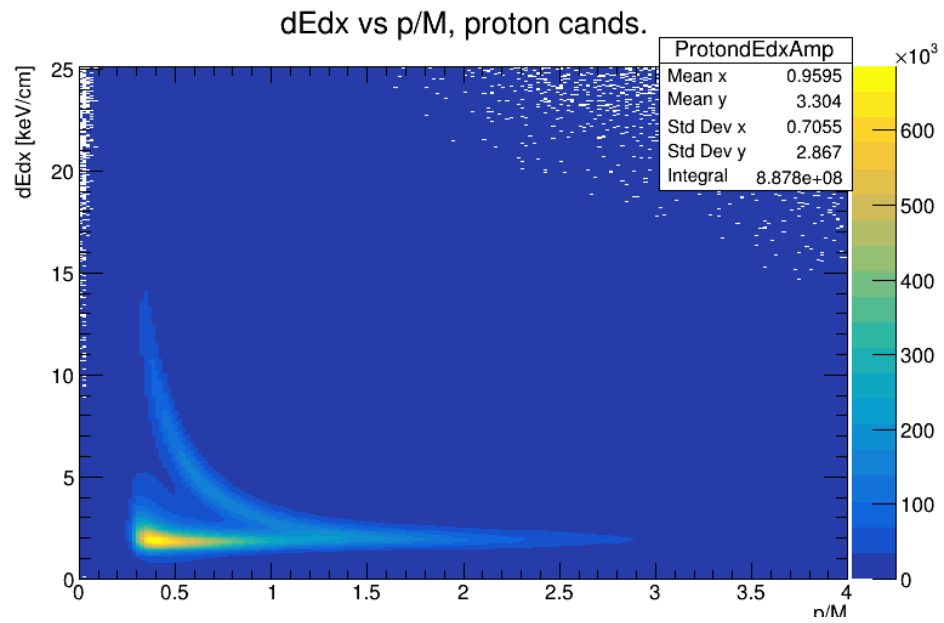
# PIDFOM update

## Simon Taylor / JLab

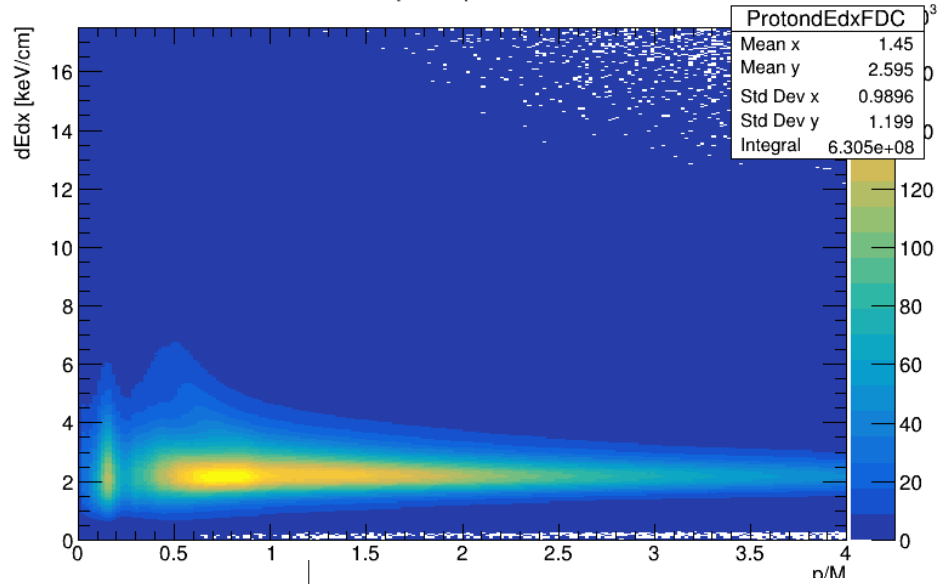
- Idea: for each particle hypothesis, add  $\chi^2$  contributions from various PID sources and convert to a probability = PIDFOM
  - CDC/FDC dE/dx, time-of-flight to BCAL/TOF, E/p for FCAL/BCAL, ...
    - Hooks for dE/dx mean and sigma already in code and ccdb
  - Main task: find resolutions as function of p (perhaps also  $\theta$ ?) for each particle type

1/17/19

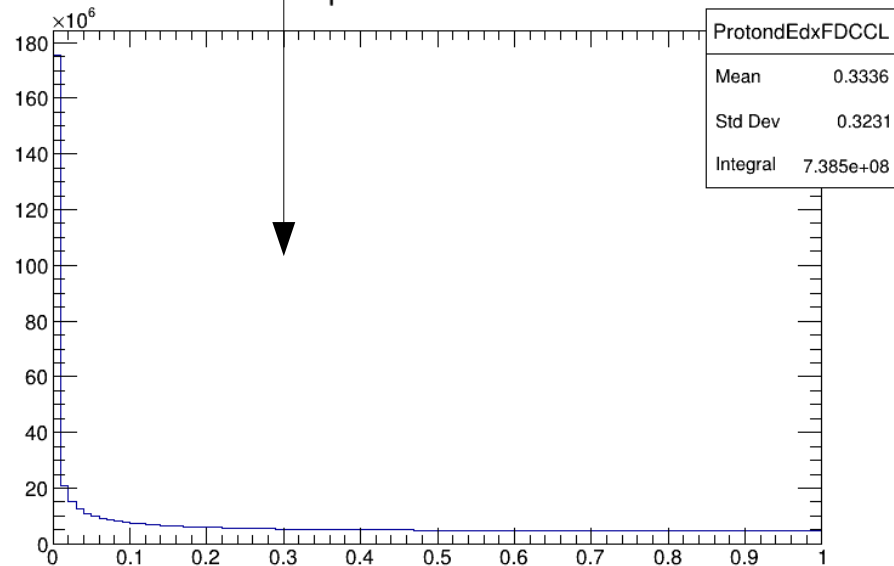
# Proton ID: CDC dE/dx



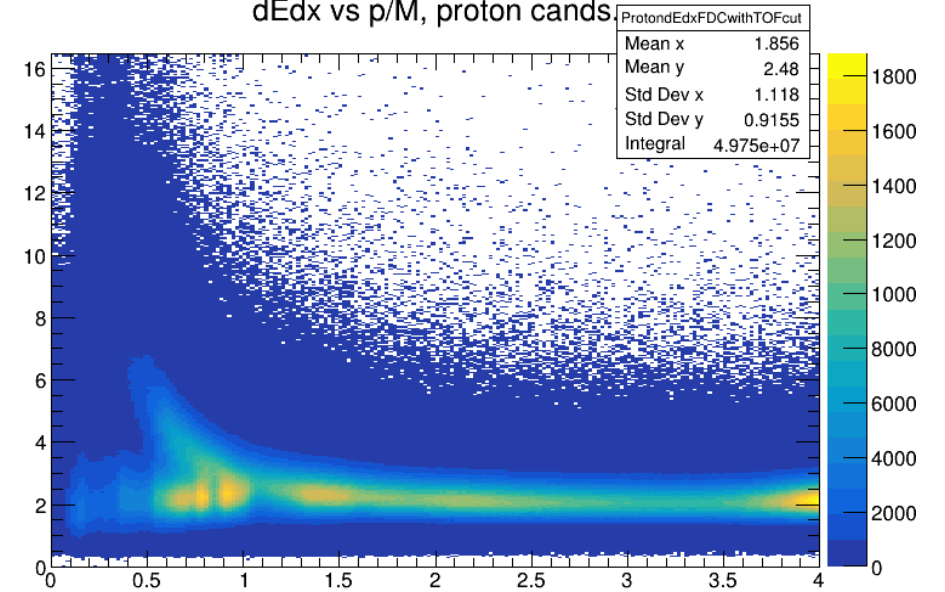
dEdx vs p/M, proton cand.



proton dEdx CL

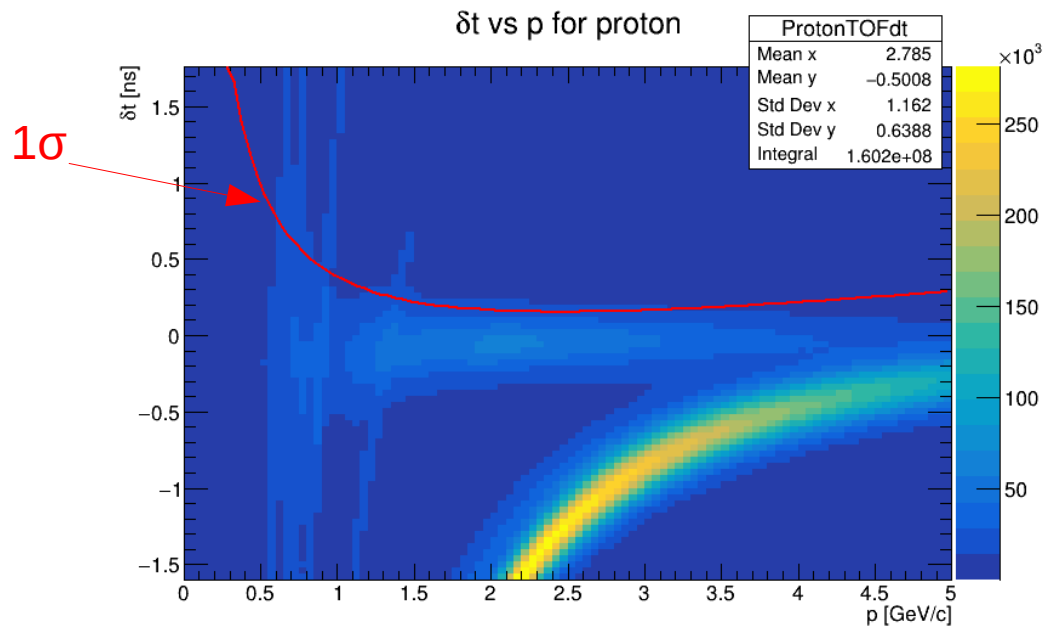


With cut on TOF  
dEdx vs p/M, proton cand.

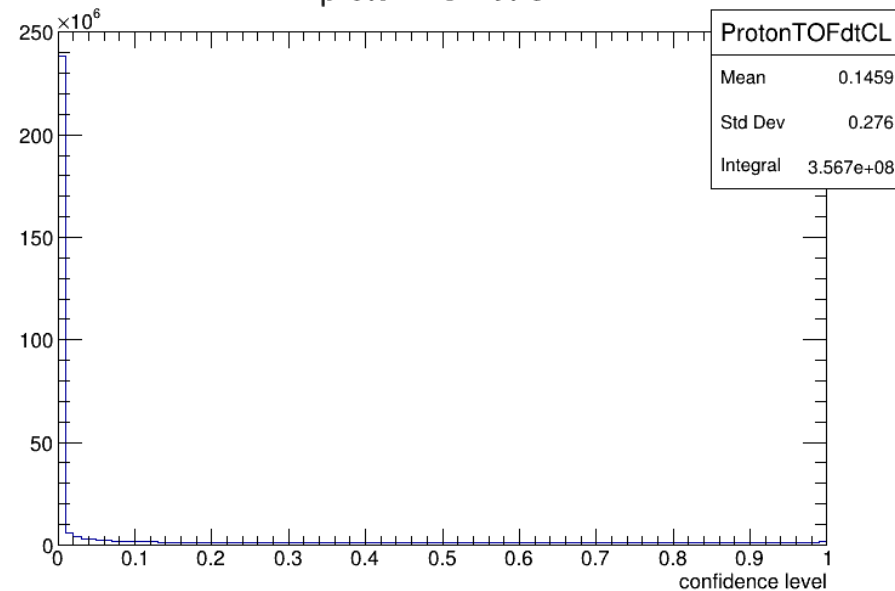


# Proton ID: Timing info

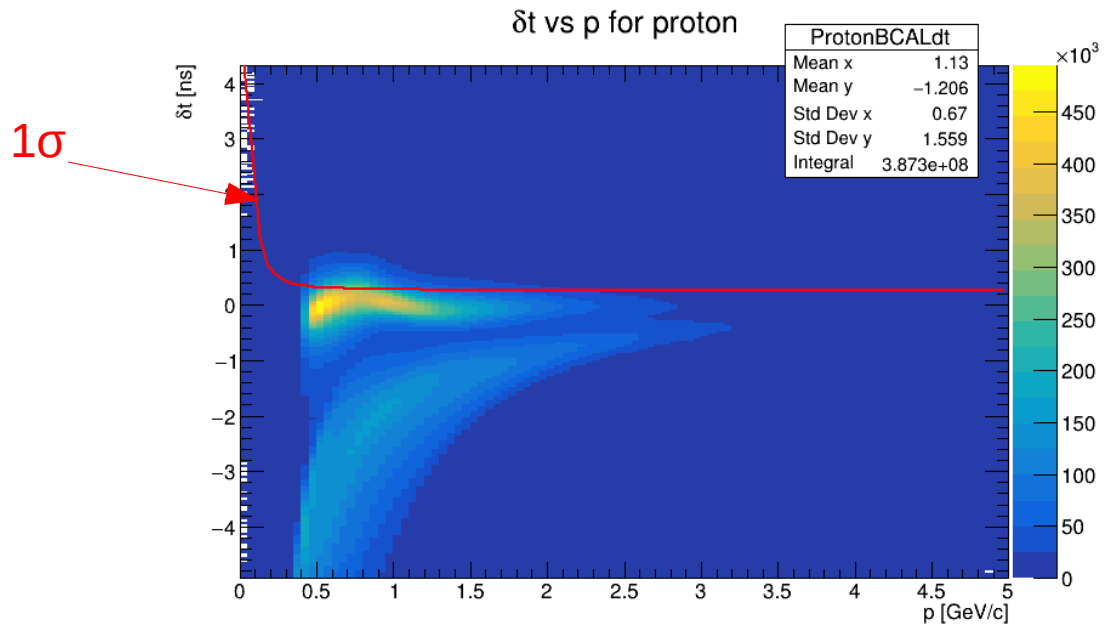
$\delta t$  vs  $p$  for proton



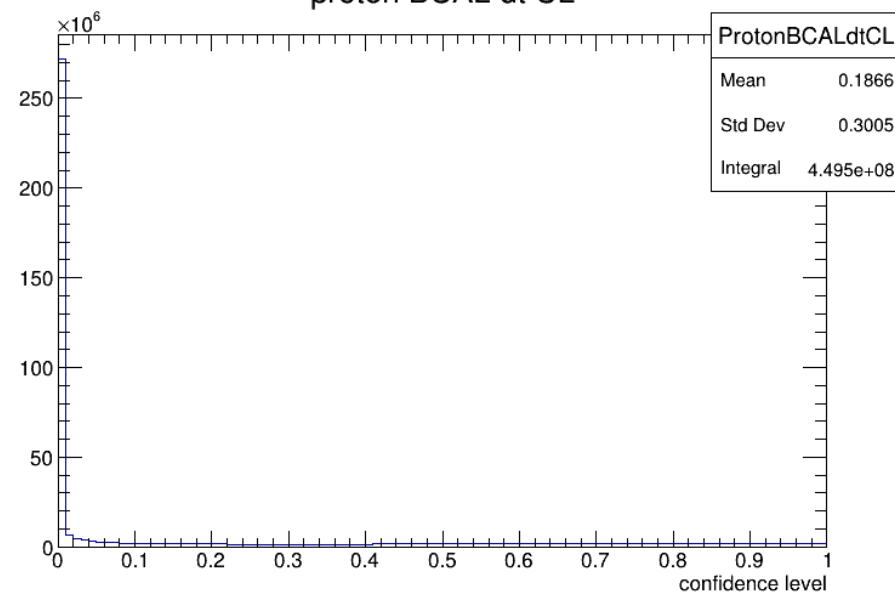
proton TOF dt CL



$\delta t$  vs  $p$  for proton

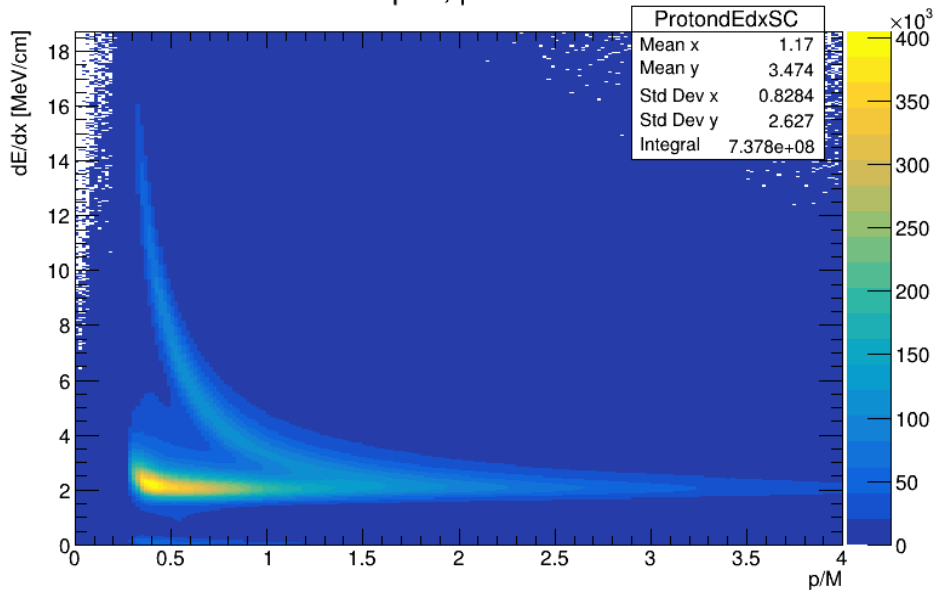


proton BCAL dt CL

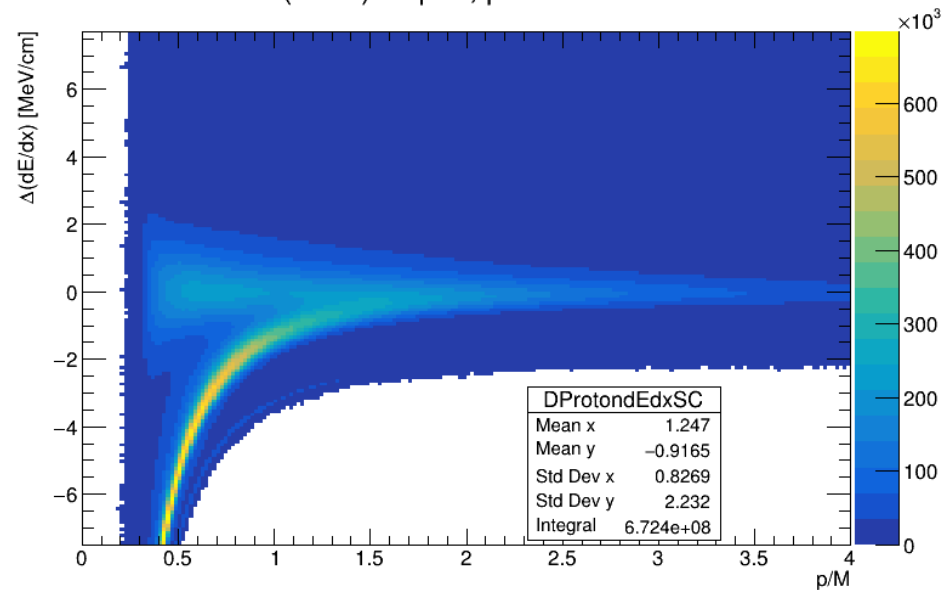


# Proton ID: SC dE/dx

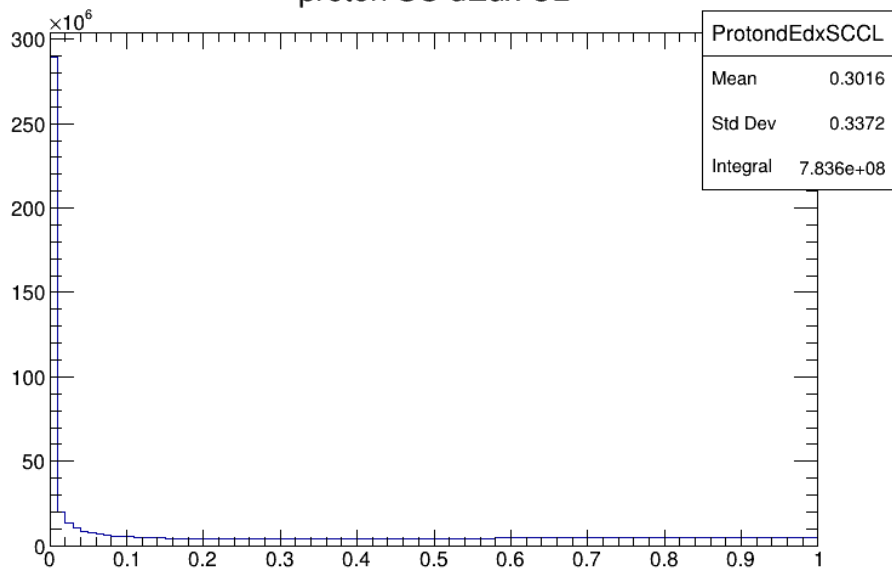
dEdx vs p/M, proton cand.



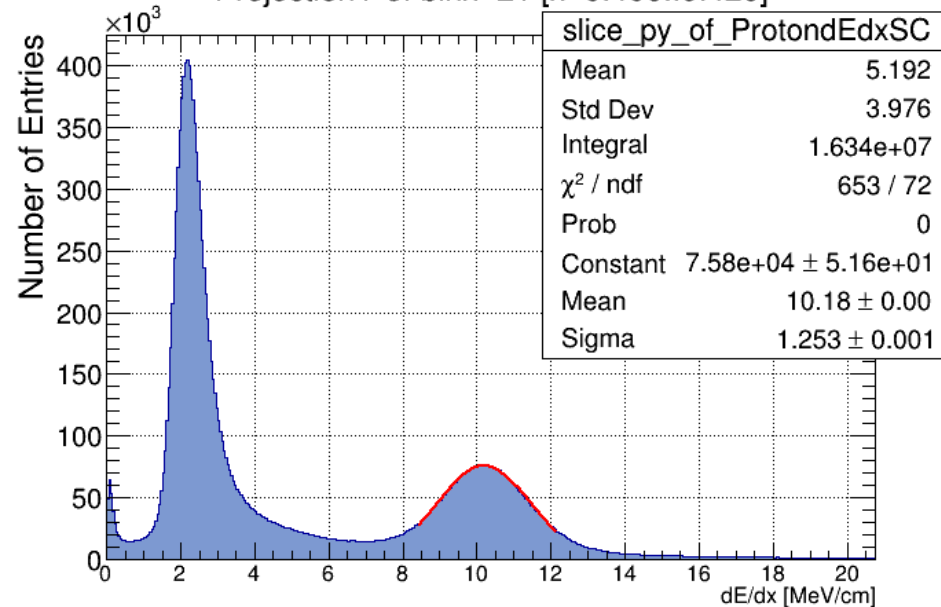
d(dEdx) vs p/M, proton cand.



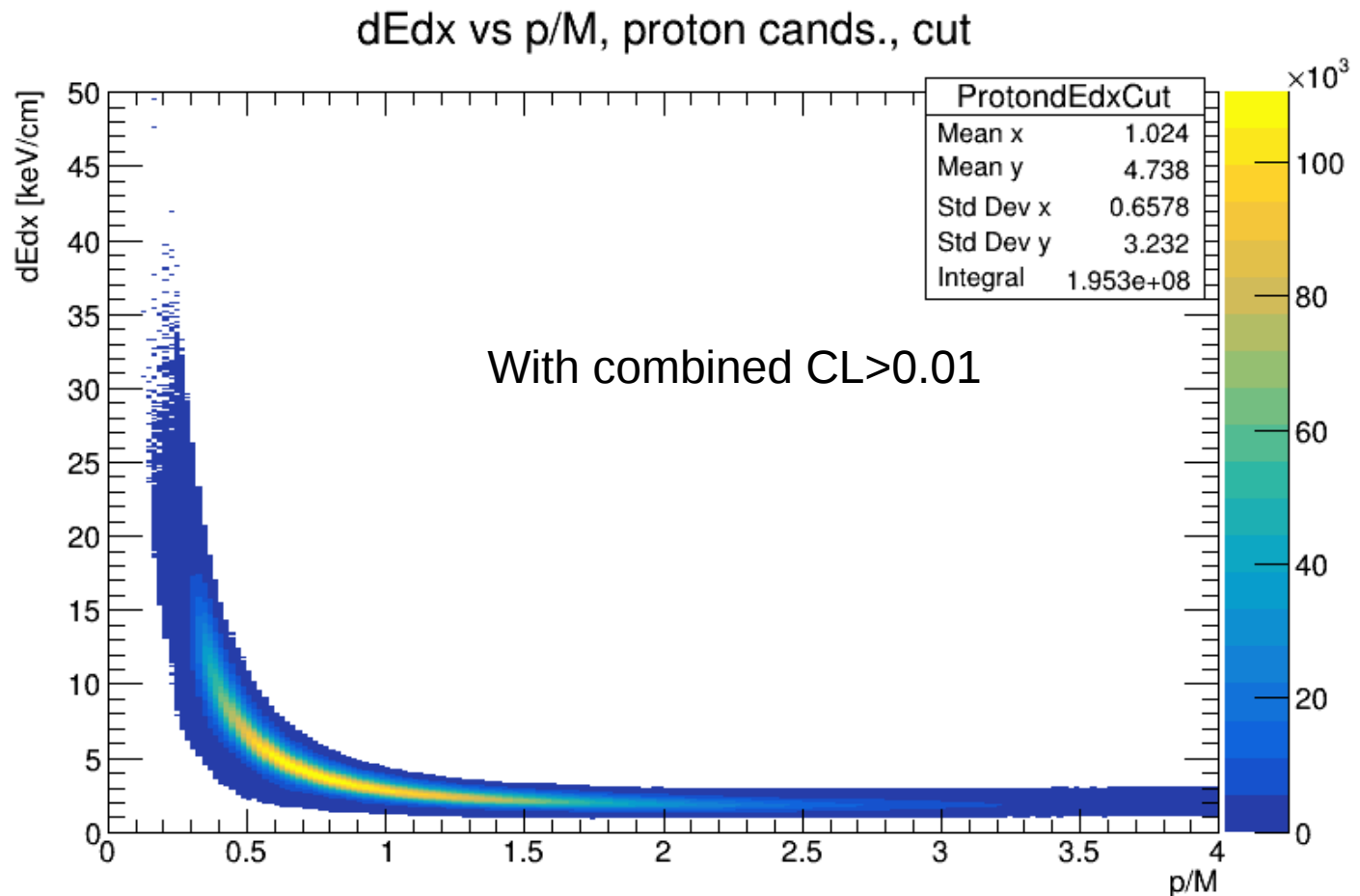
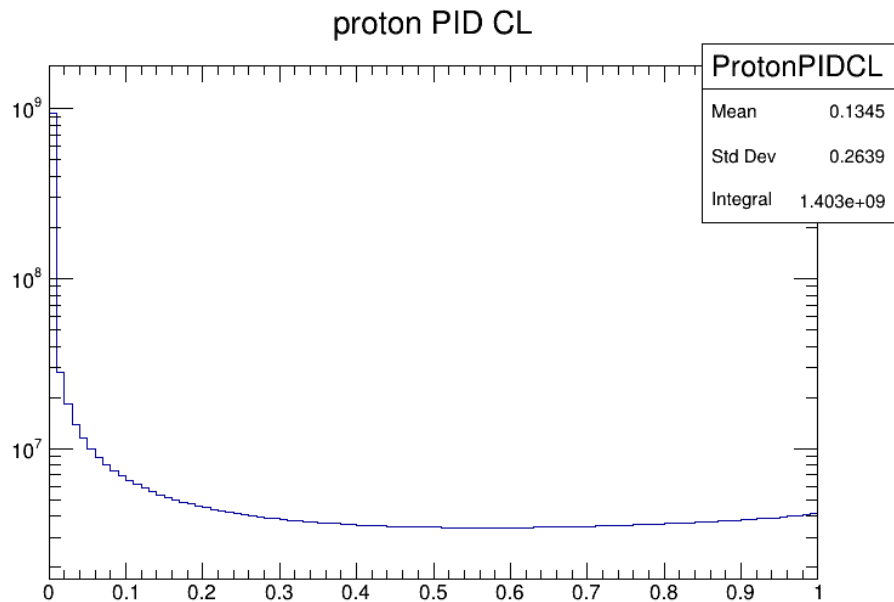
proton SC dEdx CL



ProjectionY of binx=21 [x=0.400..0.420]



# Proton ID: combined result



- Updated function parameters for  $dE/dx$  mean and sigma for both CDC and FDC in local cddb for protons and pions (with guesses for kaons guided by MC)
- Found preliminary p-dependent timing resolutions for BCAL and TOF
- Working on sigmas on  $E/p$  for electron/positron identification
- SC looks like it might be usable for proton ID