MC SCE ON vs SCE OFF

Francesca, work ongoing

Sample Details

Using the MC SCE ON and OFF samples:

- RITM0986948_MC_1GeV_reco_sce_datadriven
- RITM0986948_MC_1GeV_reco_sce_off

Cuts

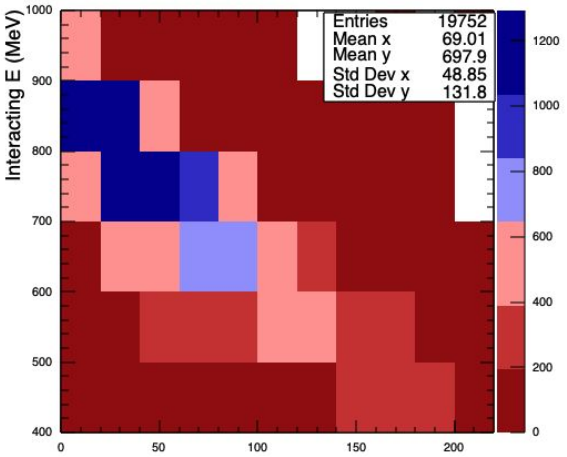
- **Primary is a true Pion**
- **Is beam Type as characterised by Reco**
- **primary ends before APA3 (endZ < 226cm)**

In my Plots I show the relative difference between SCE OFF and SCE ON

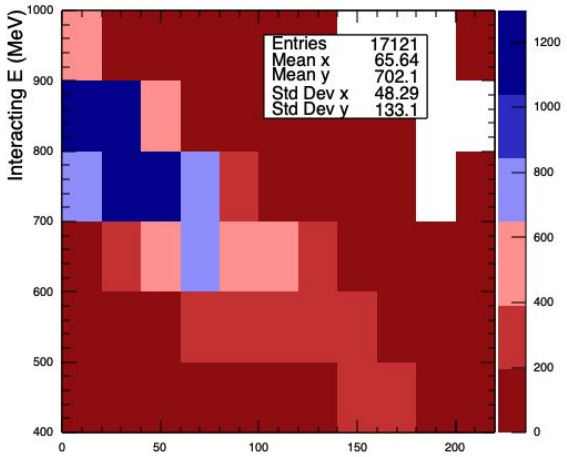
(noSCE - SCE) / noSCE

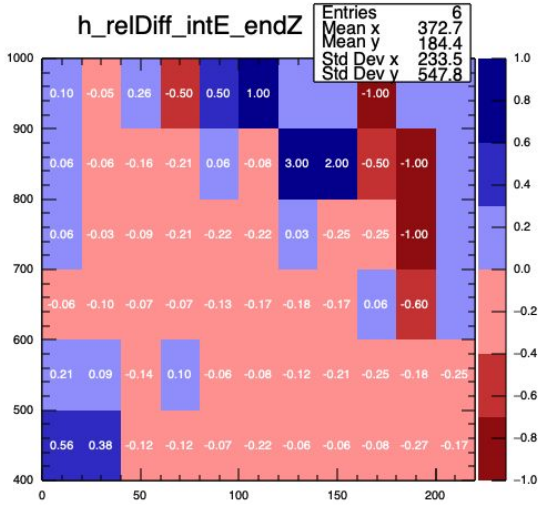
Interacting Energy vs Vtx Pos in Z

SCE ON



SCE OFF



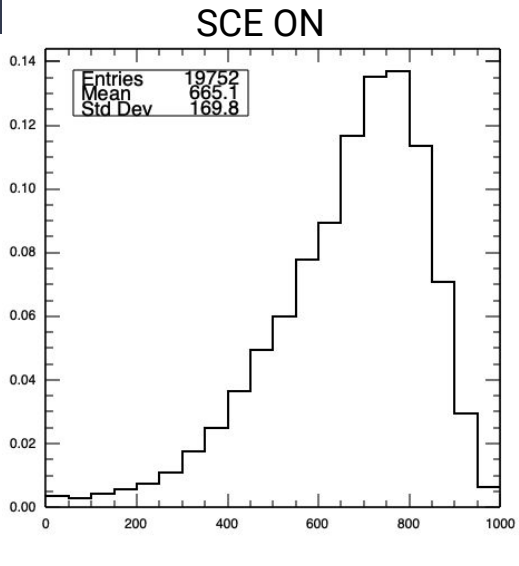


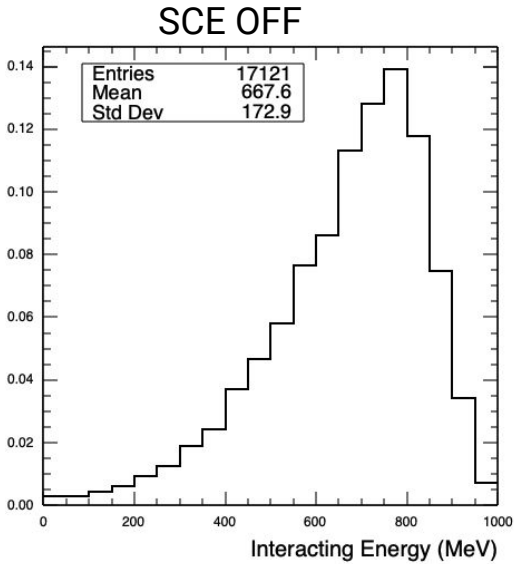
z Coordinate

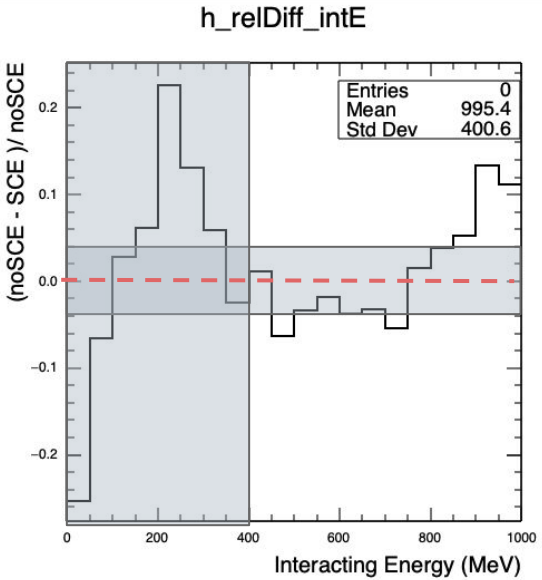
visible shift at the SCE sample inside the detector (SCE effect) for bin of 700-800 MeV (look at entries per bin)

3rd TH2 shows rel difference, the noSCE has more interacting particles at low Z (positive entry) and with increasing Z less → expected lensing of SCE… nothing new

Interacting Energy



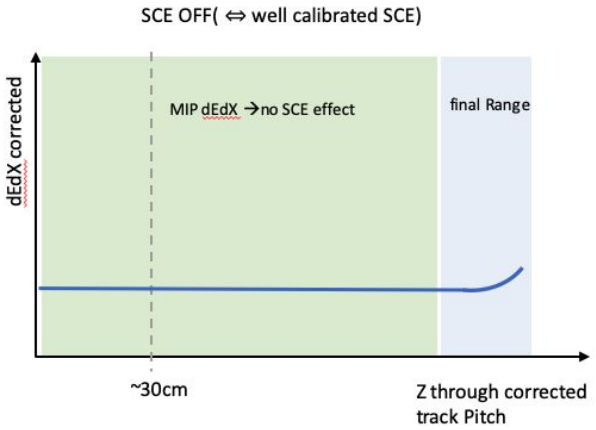


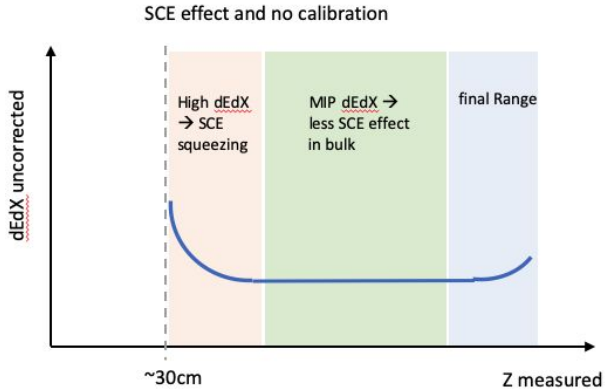


Distributions of interacting Energy for Pions are similar (obviously because SCE is calibrated), below 400MeV we have poor statistics

The relative Difference histo reveals bin-to-bin correlations (still have to confirm), statistical error is about 3-4%

A proposal



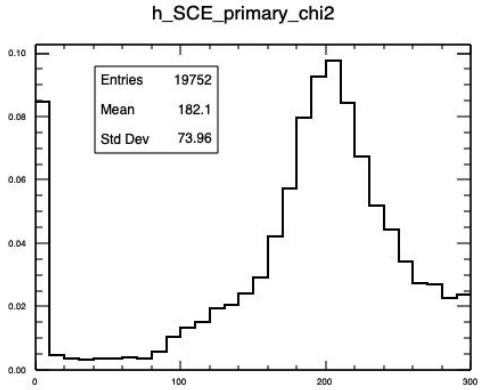


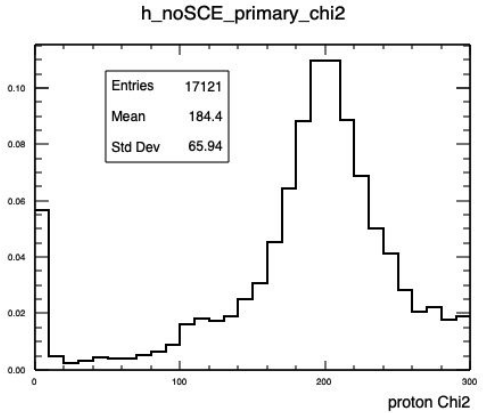
Simple Approach: Parametrise a function that corrects for effect, compare to calibration → systematic of calibration without going through E-field error? Provides a point by point correction

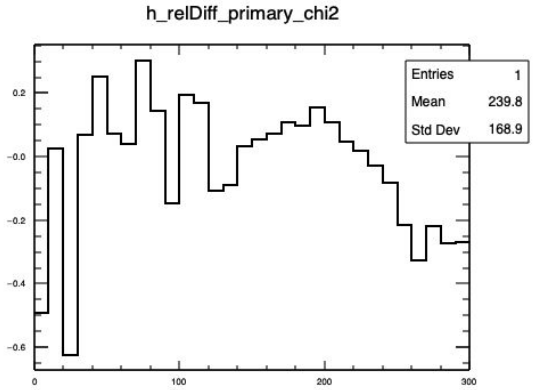
Samples: Beam Pions of narrow interacting Energy Range, CRT tagged tracks

Verify that uncalibrated MC and data agree → re-producing pionAnalyzer flat tree with non-calibrated dEdX

Proton Chi2 for primaries (true Pions)

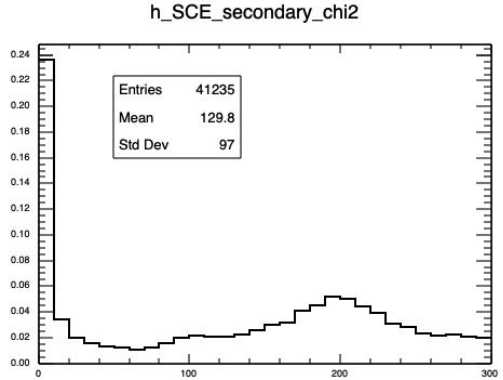


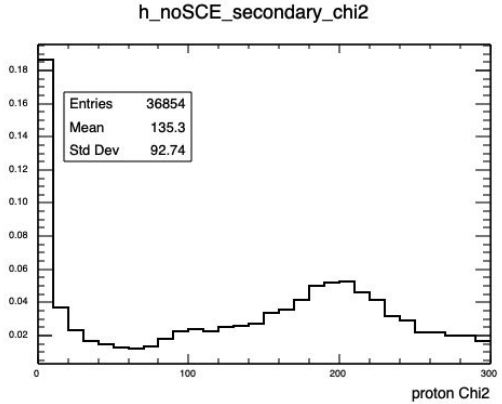


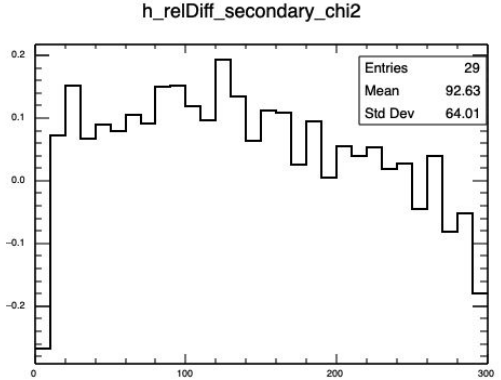


mean and Std Dev don’t change much between the samples! good → it’s all pions anyway

Proton Chi2 for Secondaries (true Pions)

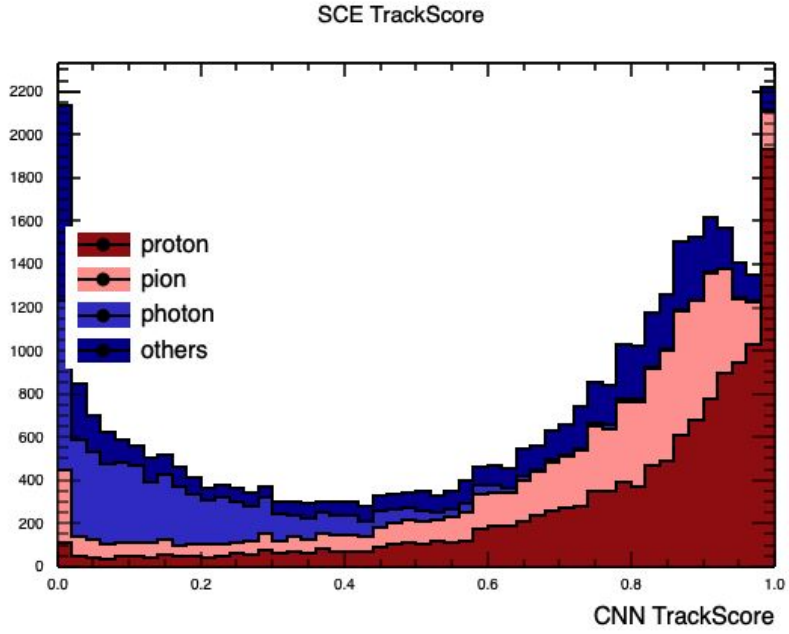


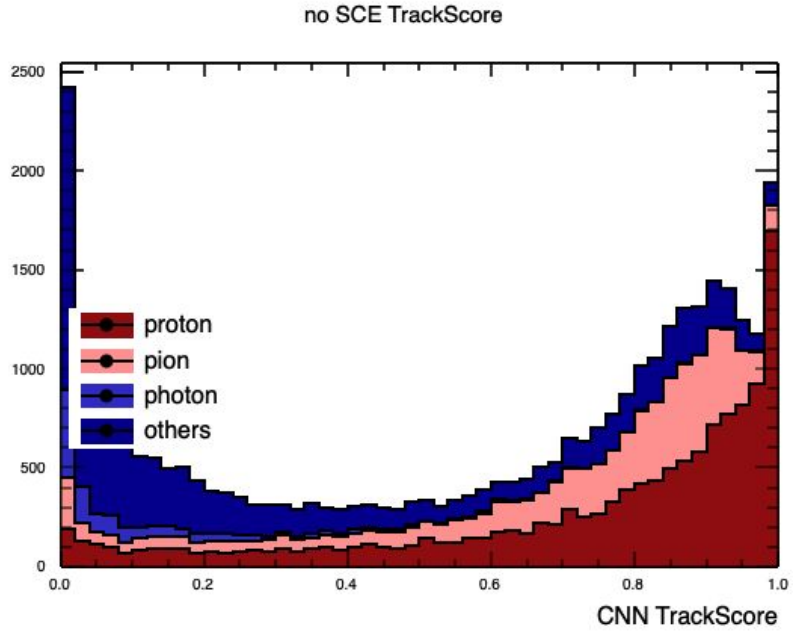




mean and Std Dev still very similar also for Secondaries

TrackScore





les photons in no SCE sample, backtracker issue, have to correct this.