

2x2 CAF Validation Update

Roberto Mandujano



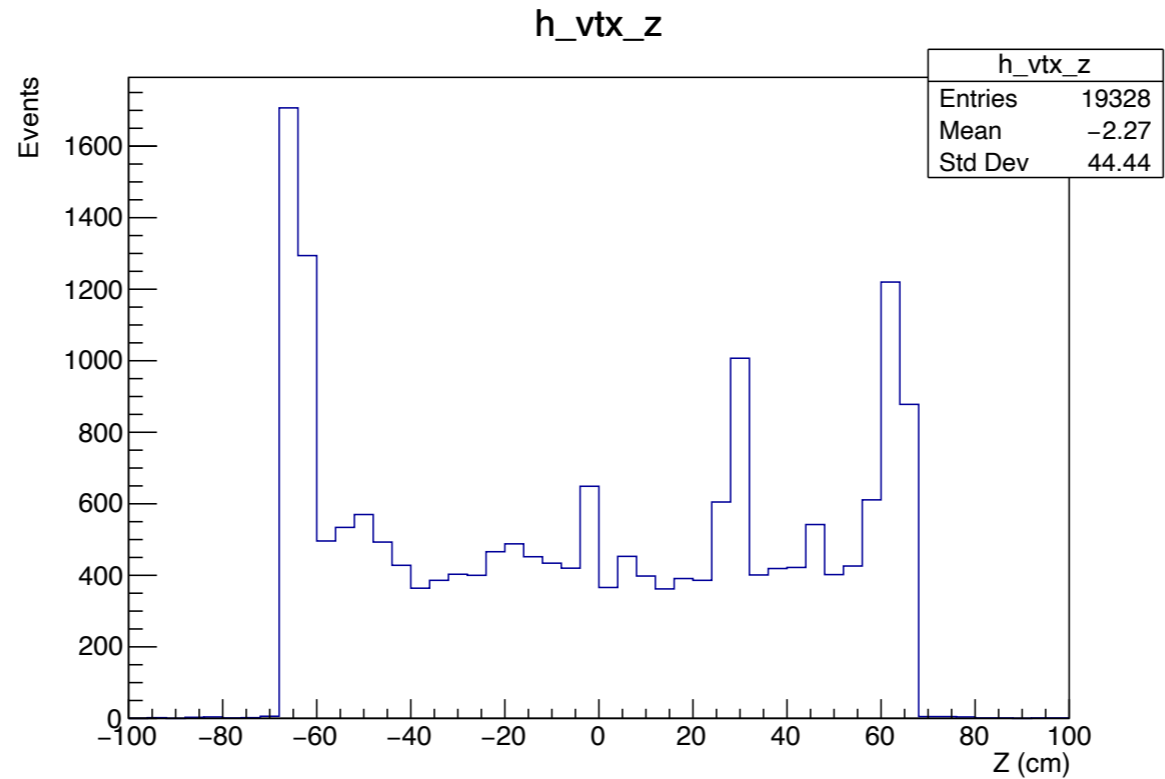
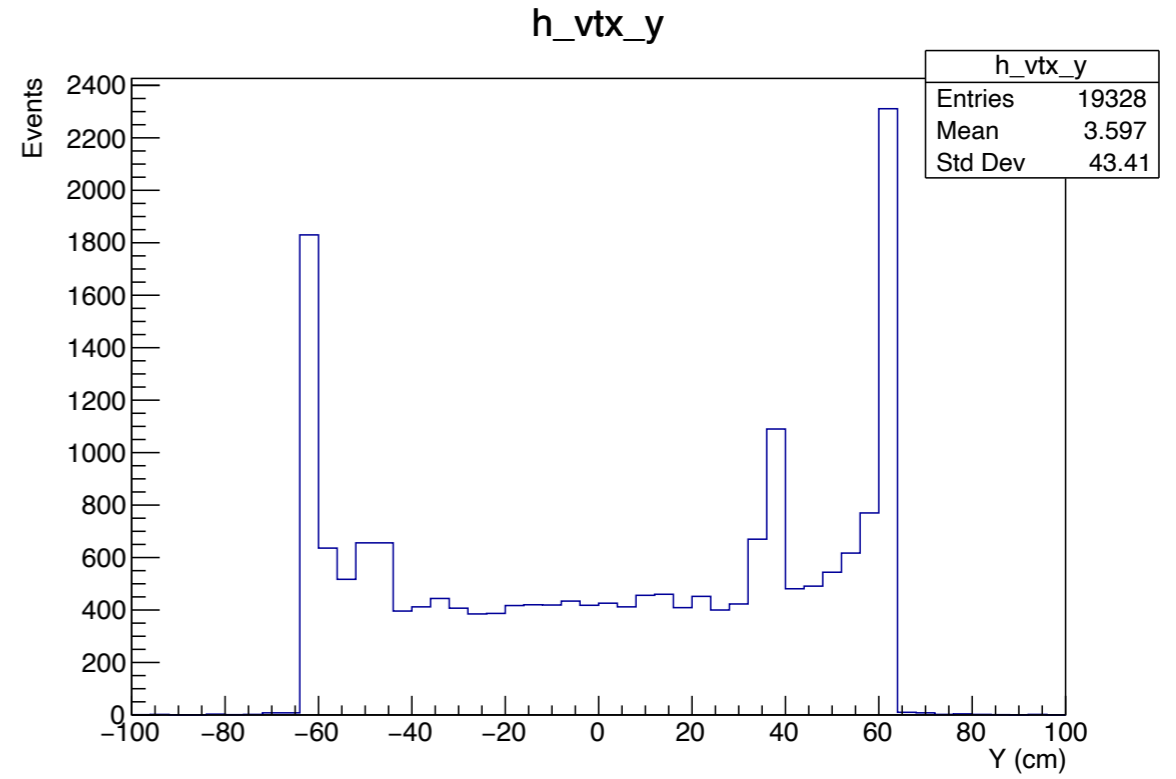
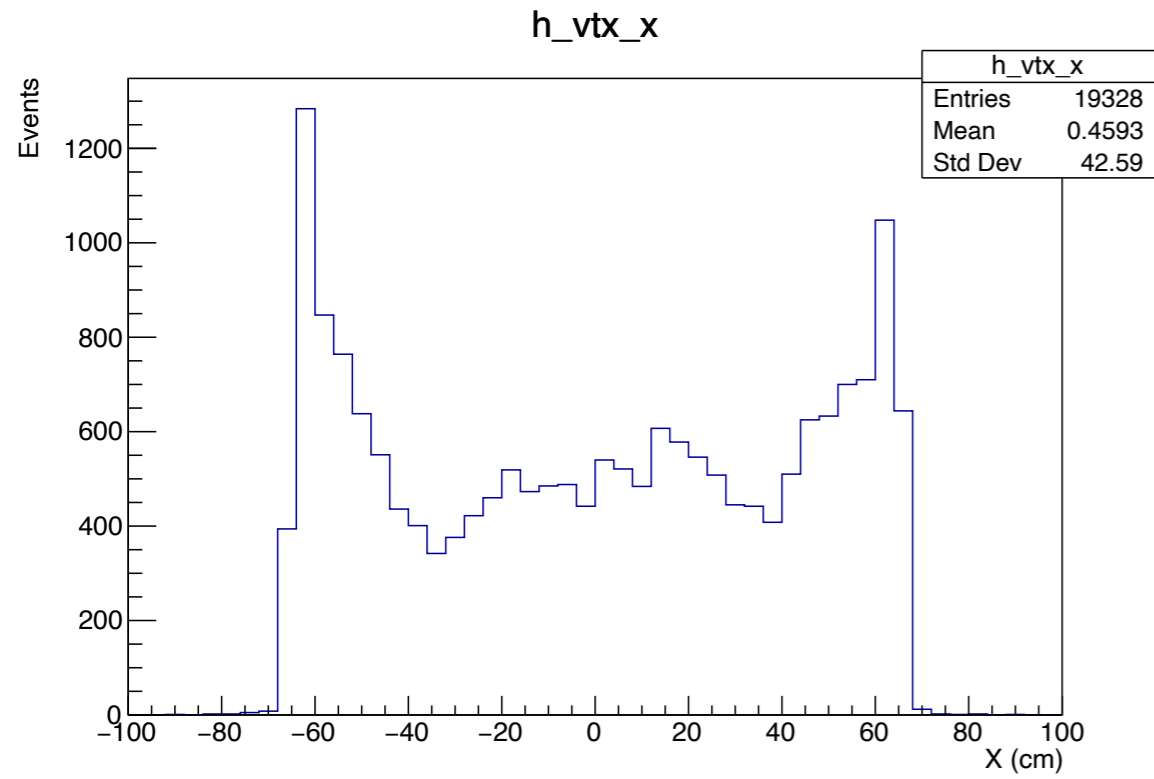


Background

- Goal: Develop a tool to validate reco performance for data CAFs
- Based on previous work for simulated CAFs by A. Cudd and E. Hinkle
 - github.com/cuddandr/2x2_CAFs/tree/feature/ehinkle_reco_benchmark
- Previously shown some data distributions
 - Today: Reco/MC comparisons from MR5 beta2a



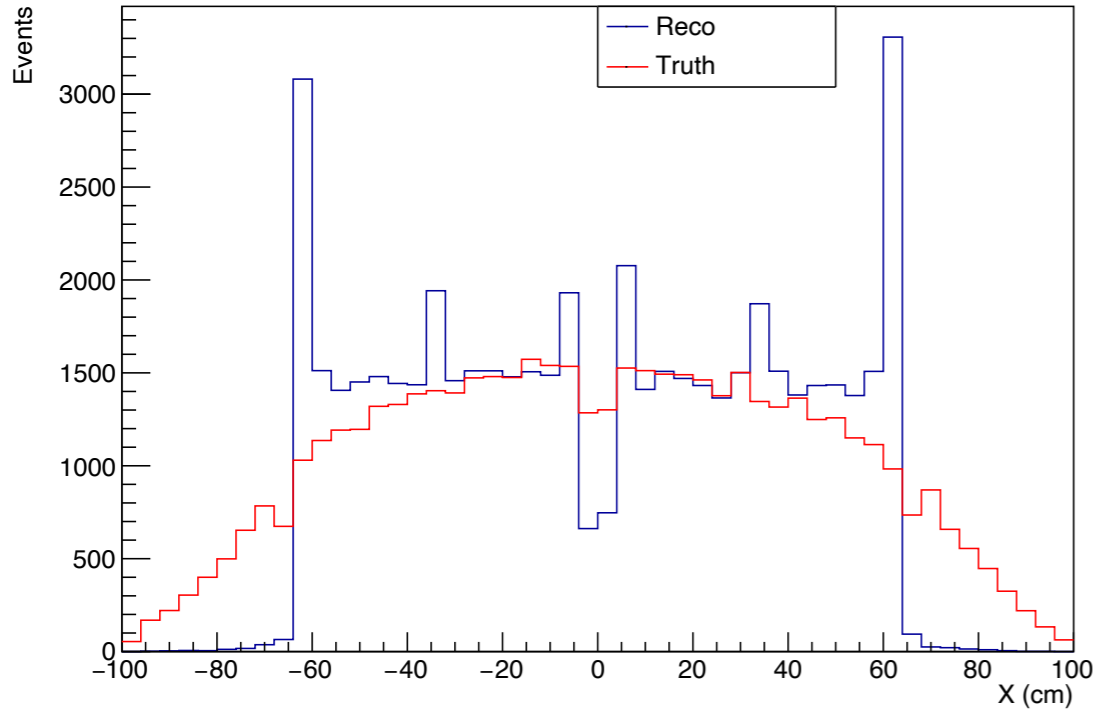
Vertices



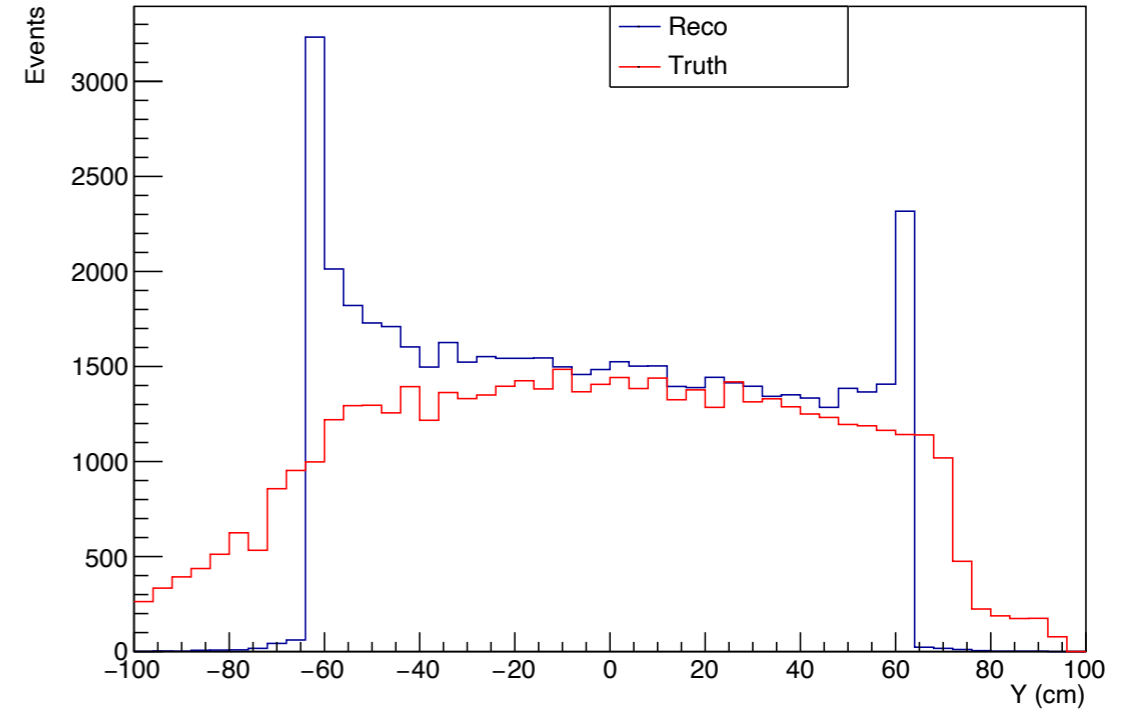


Vertices

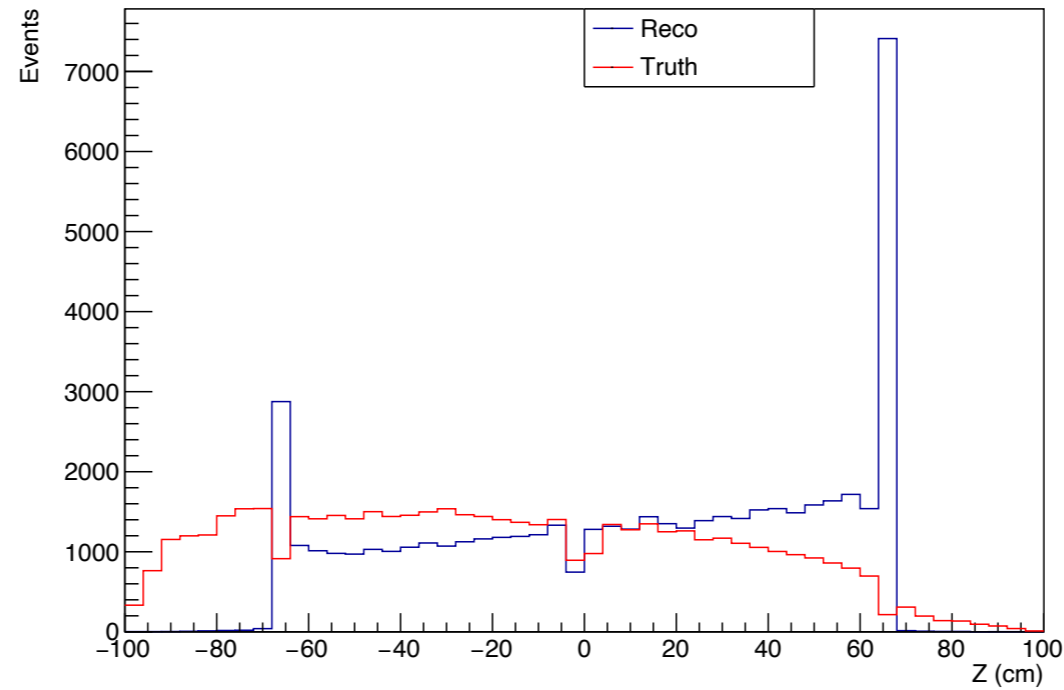
h_vtx_x



h_vtx_y

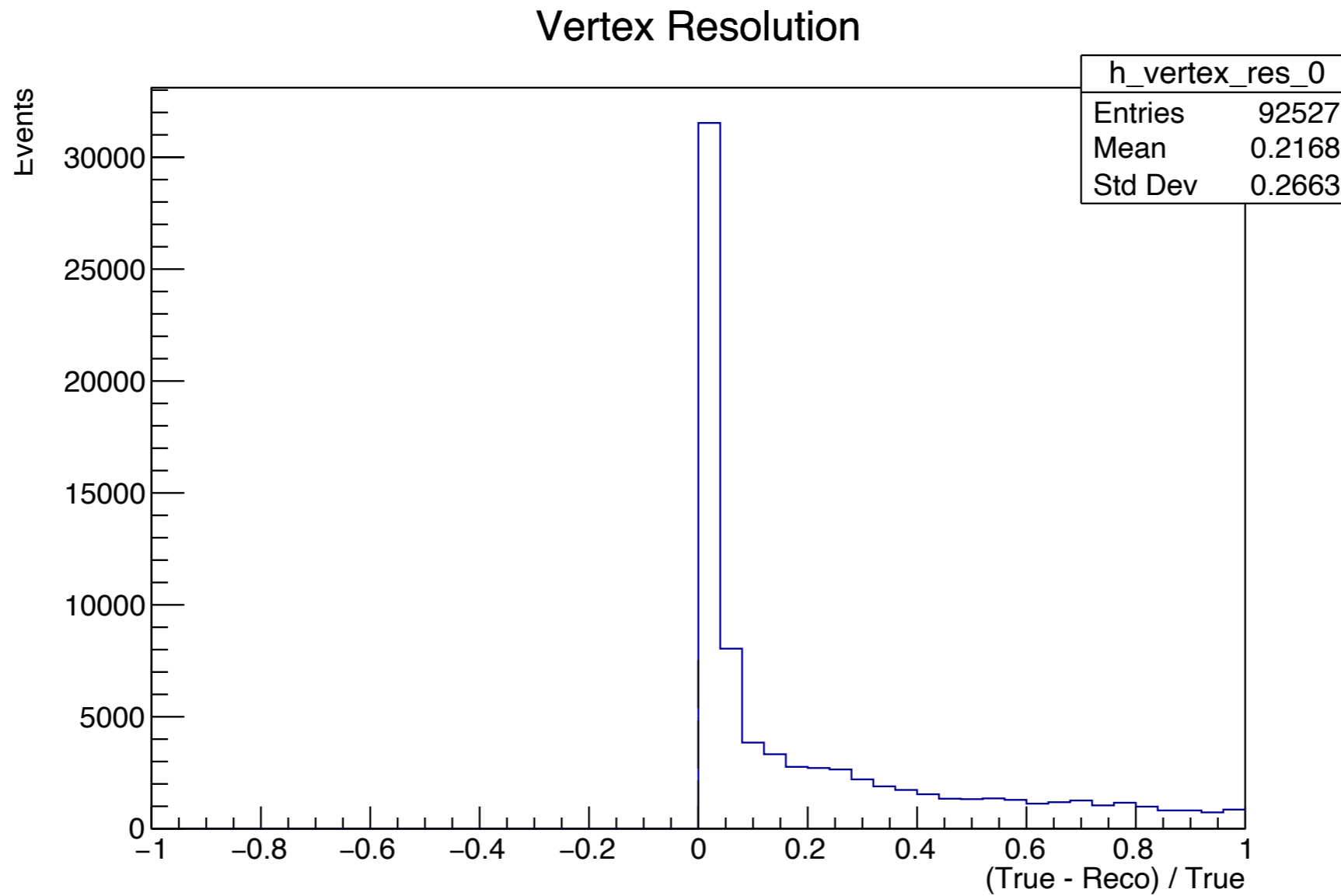


h_vtx_z





Vertex Resolution

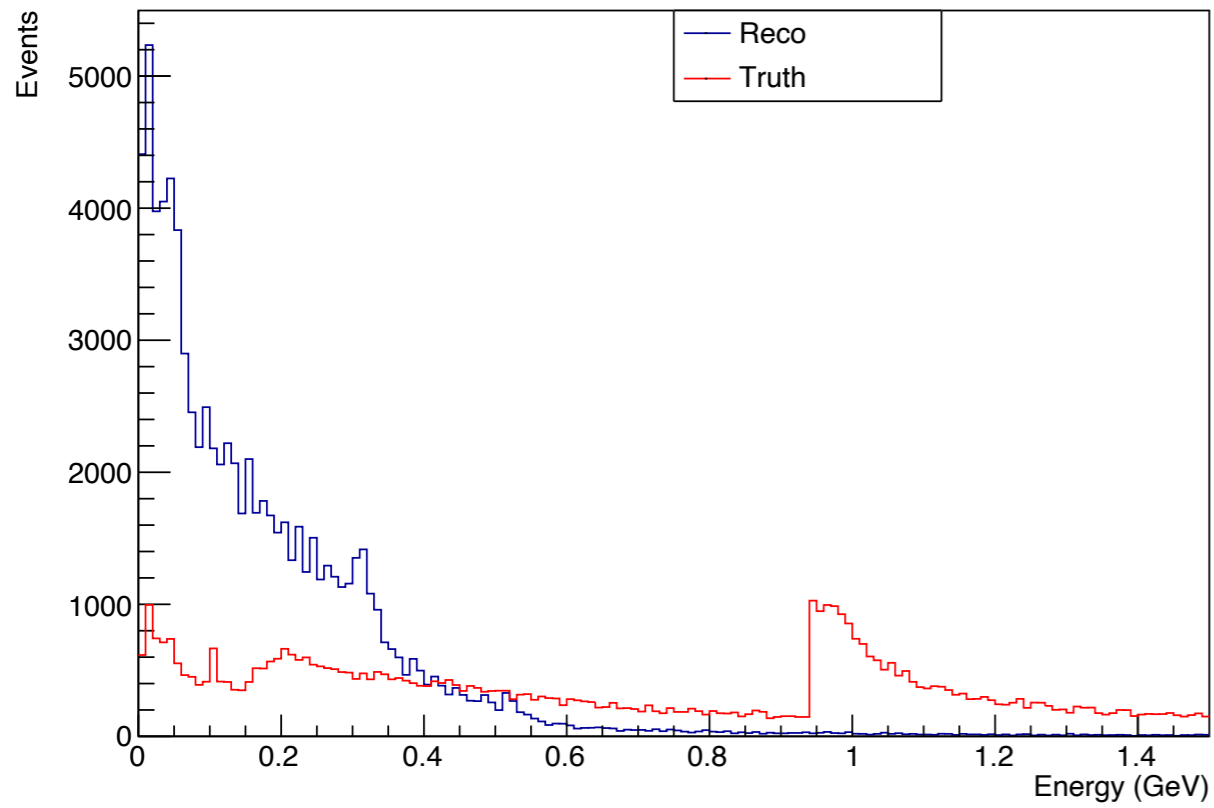


- Somewhere around ~26%

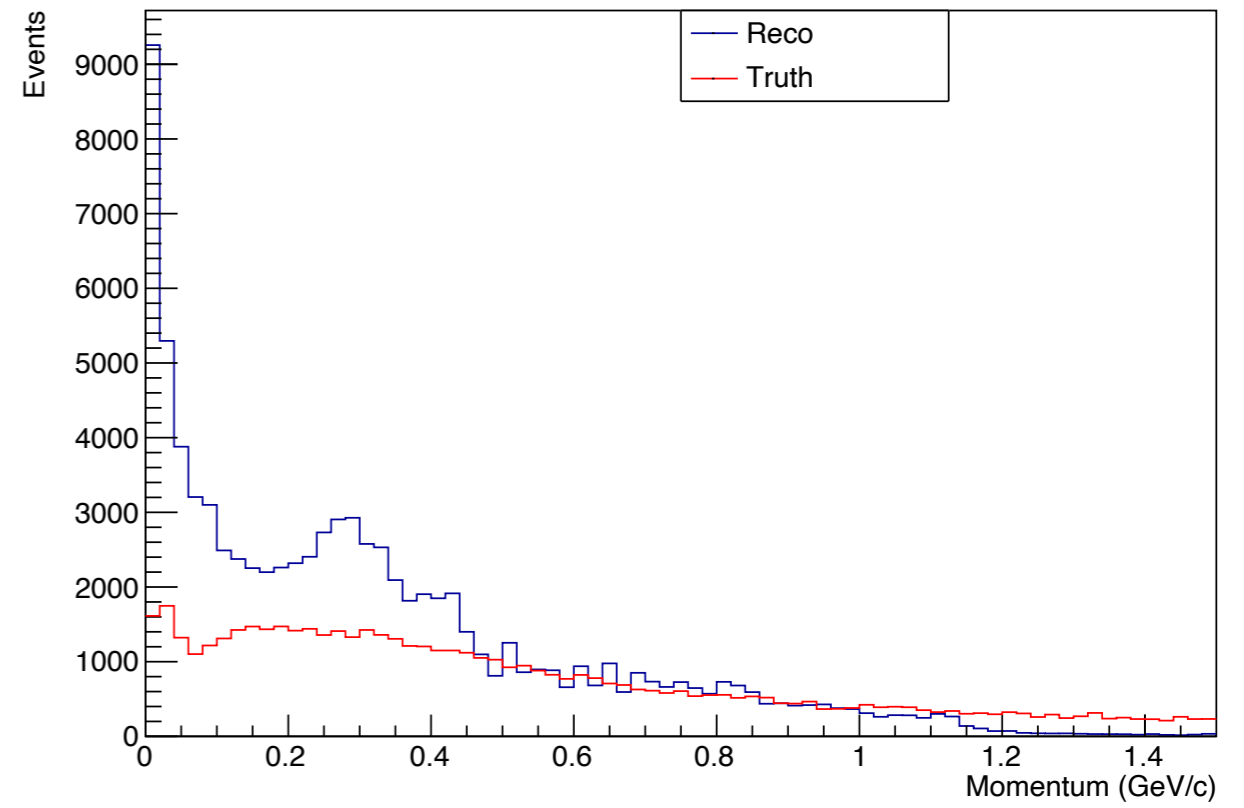


Energy & Momentum

Reco Energy



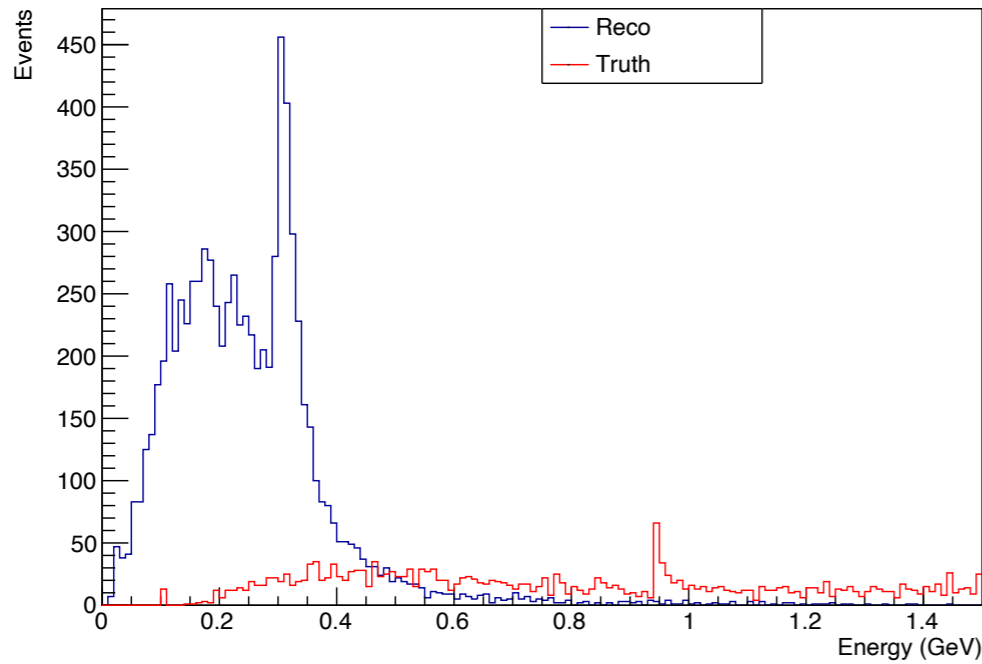
Momentum



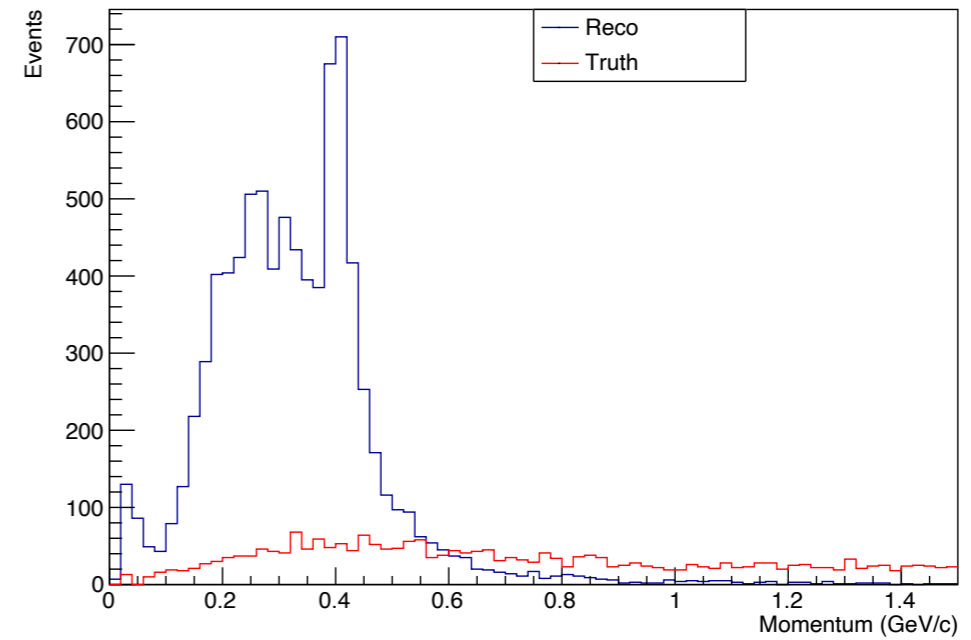


Energy & Momentum

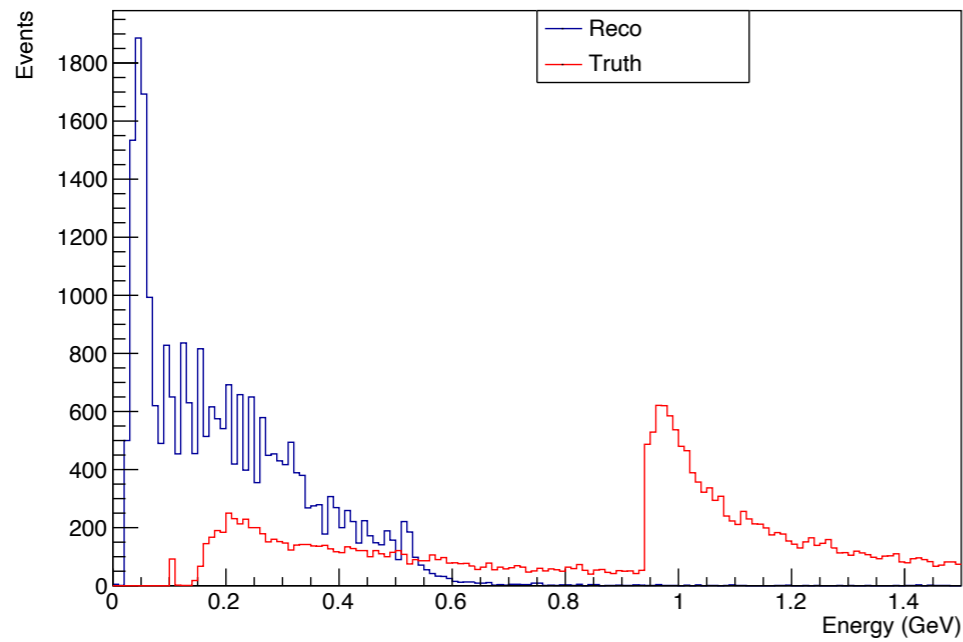
Muon Energy



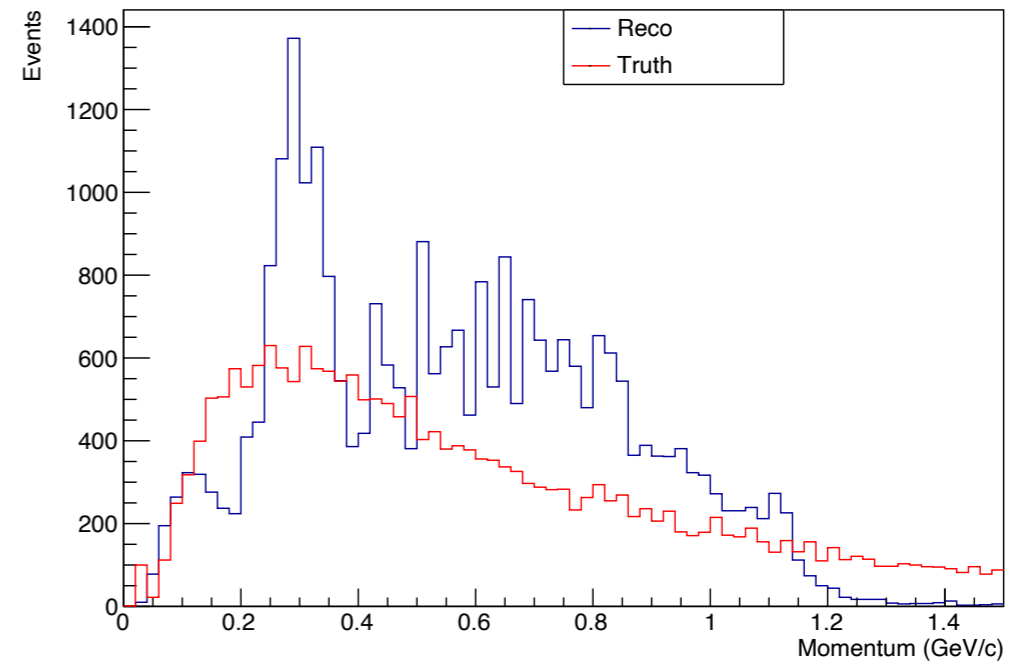
Muon Momentum



Proton Energy



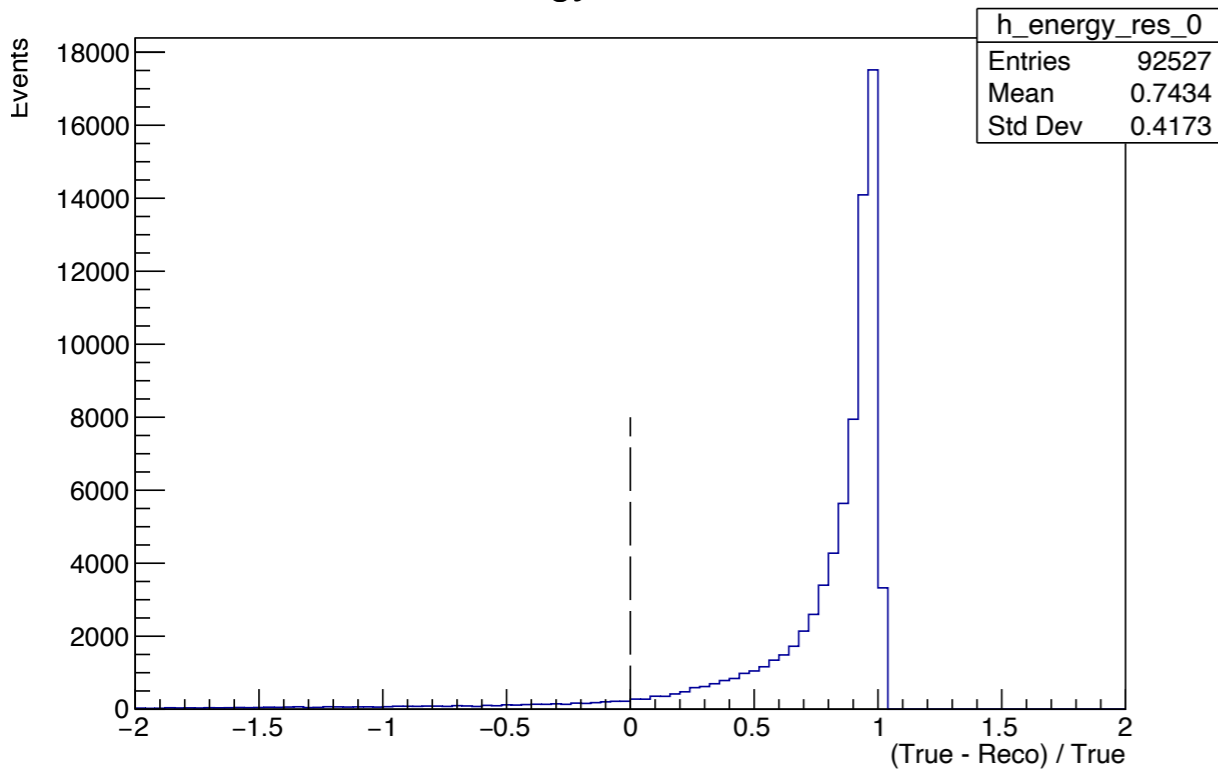
Proton Momentum



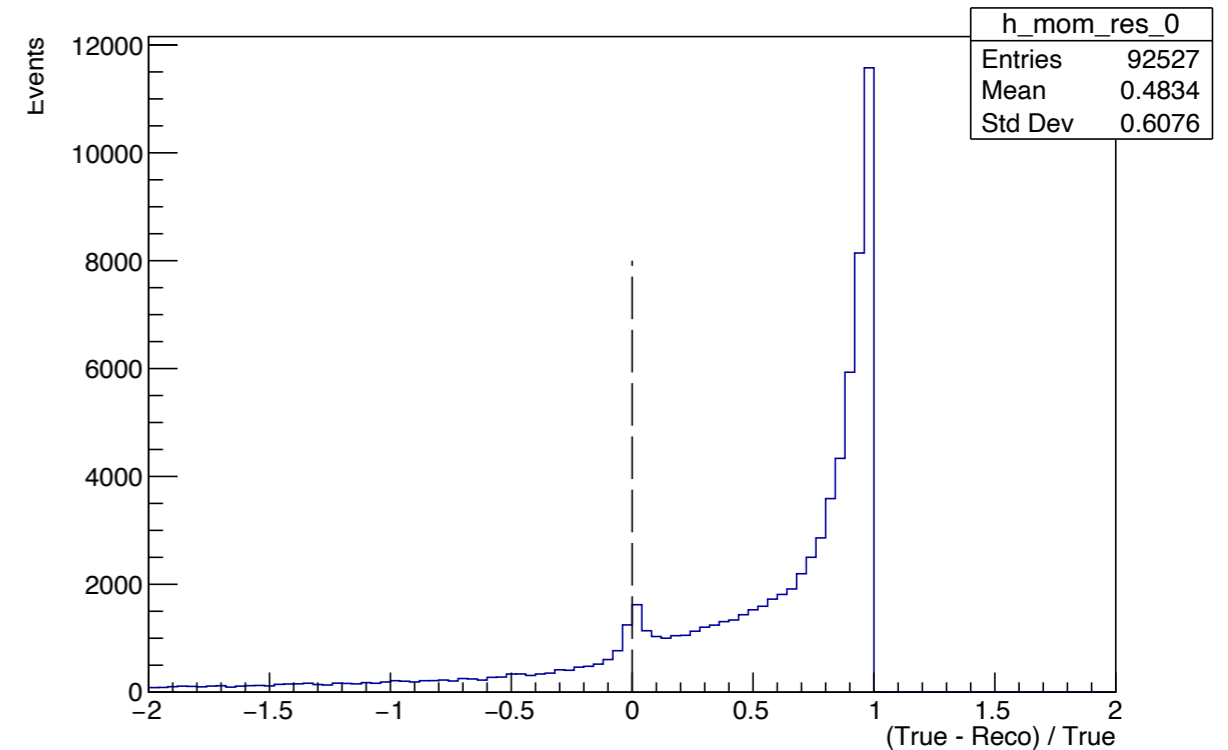


Energy/Momentum Resolution

Energy Resolution



Momentum Resolution

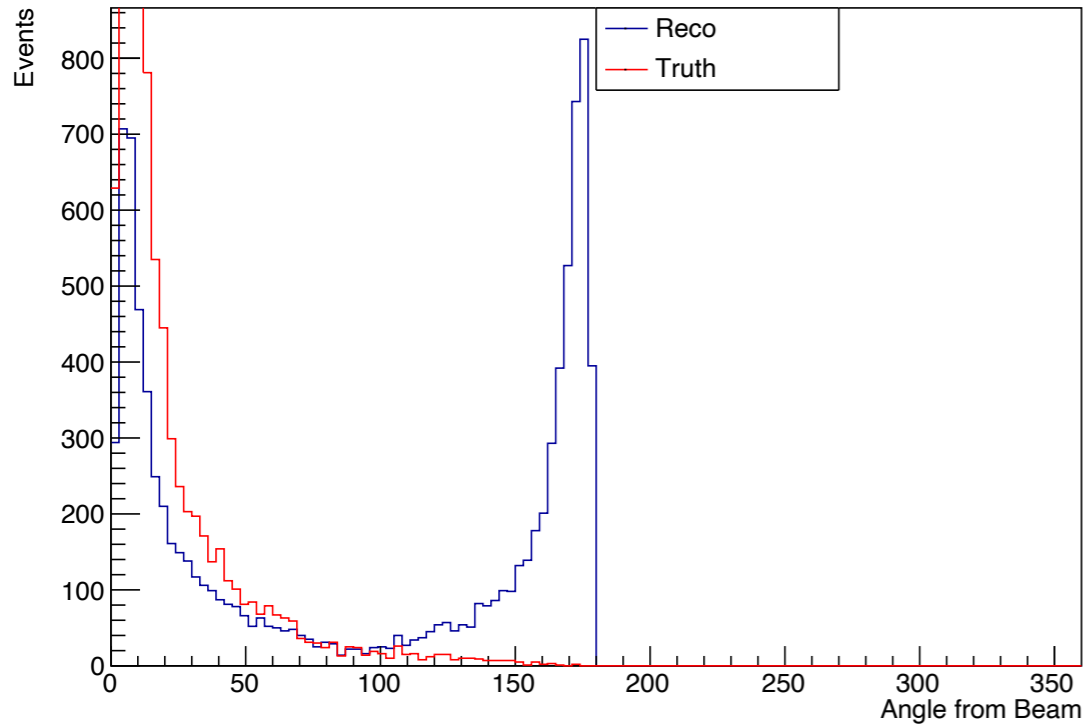


- Large differences expected from spectra
 - Bad true interaction matching?

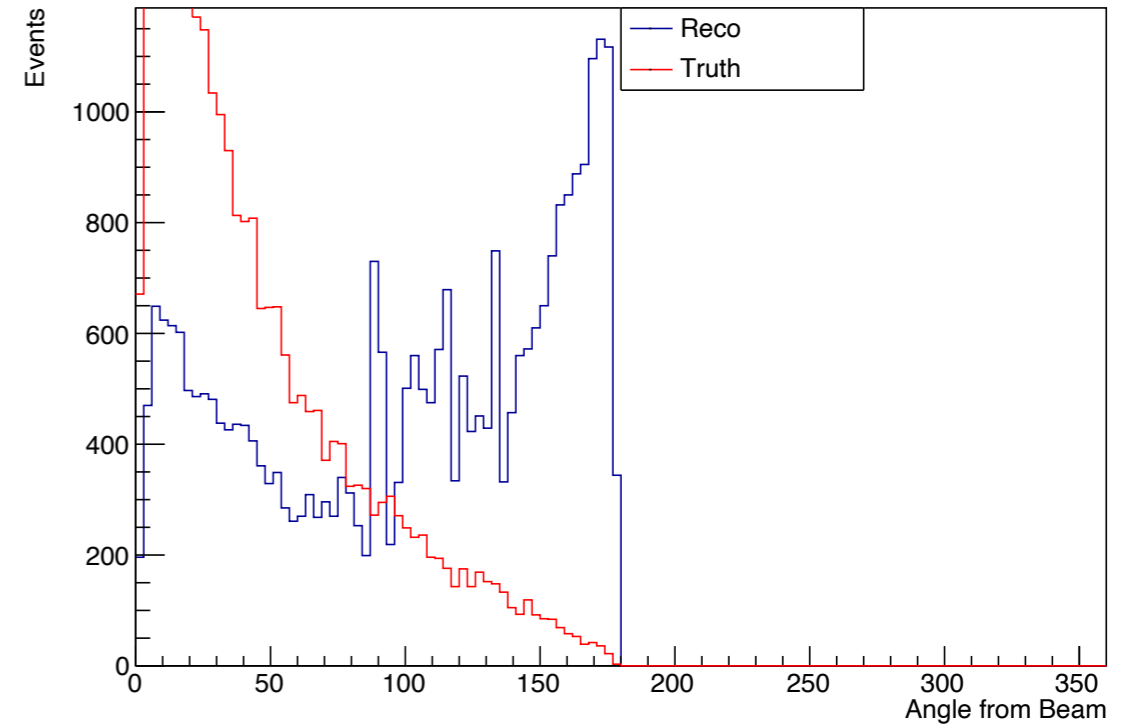


Angle wrt Beam

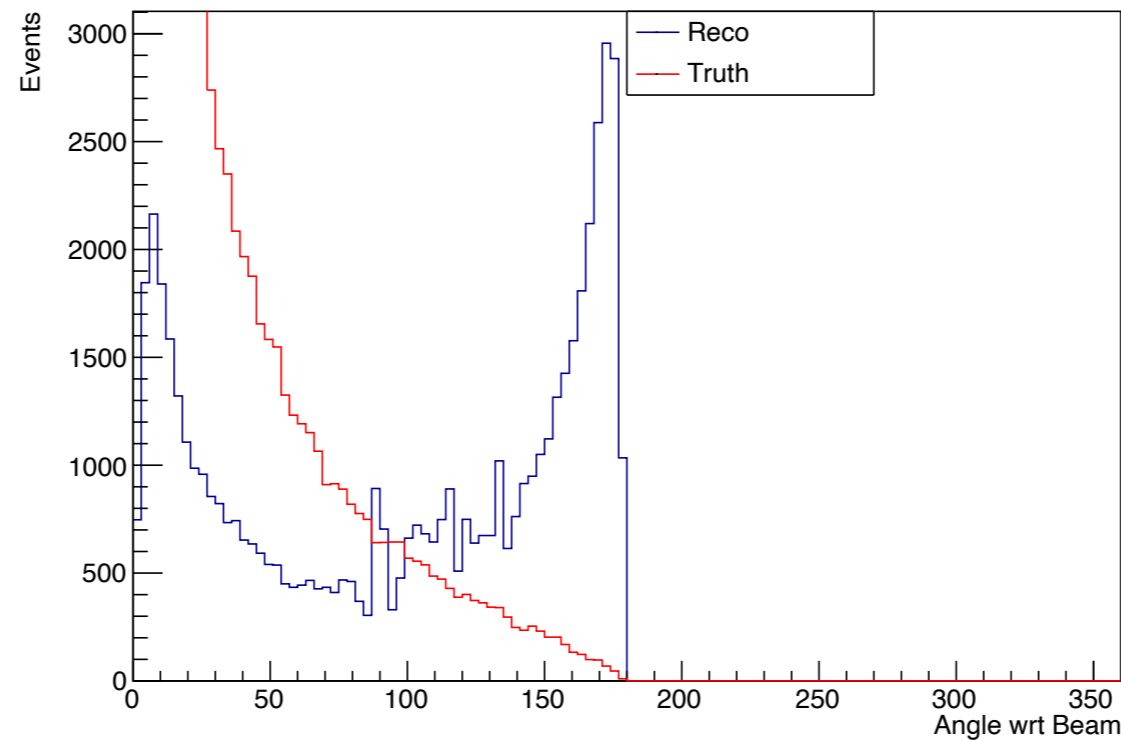
Muon Angle wrt Beam



Proton Angle wrt Beam

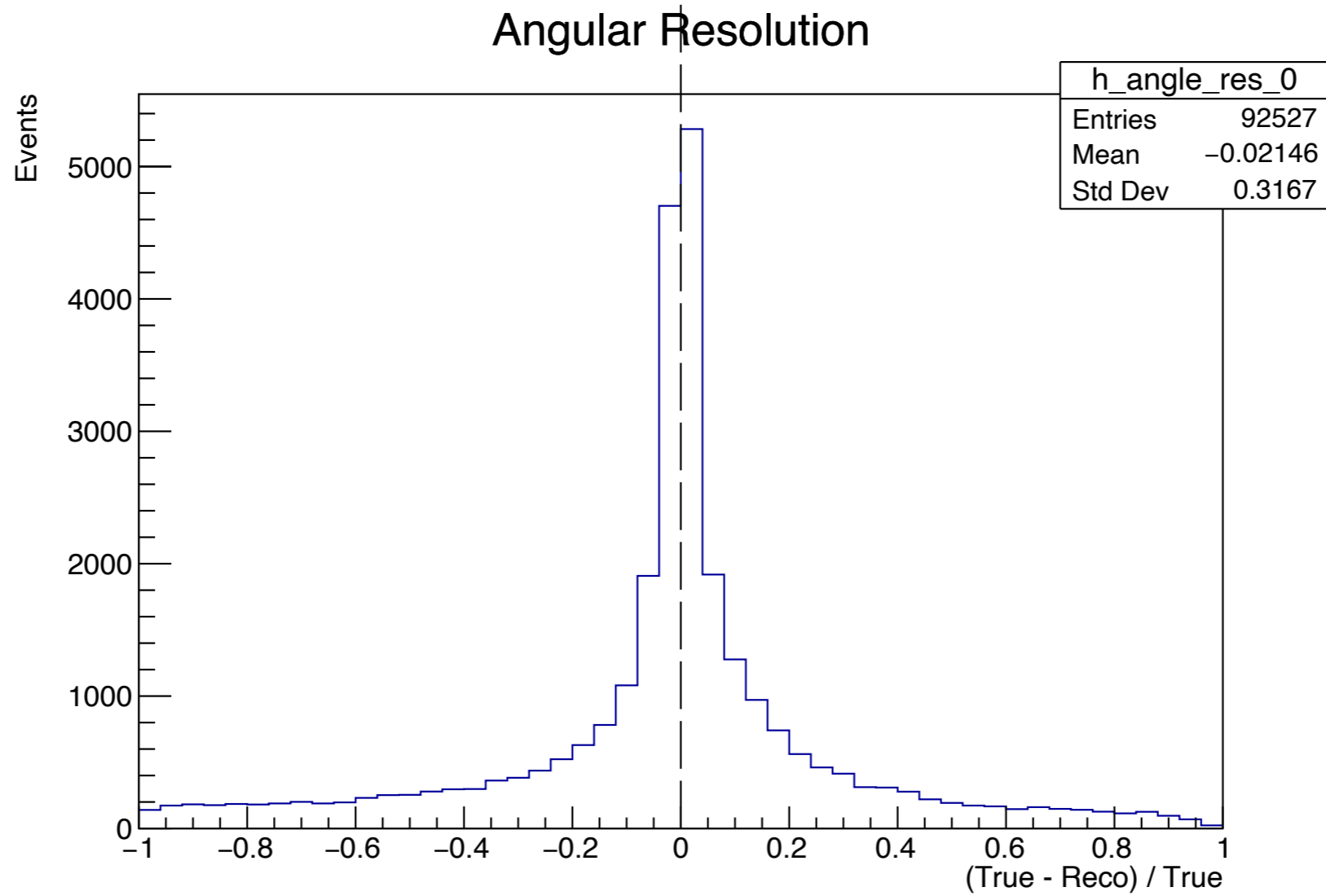


Angle wrt Beam





Angular Resolution

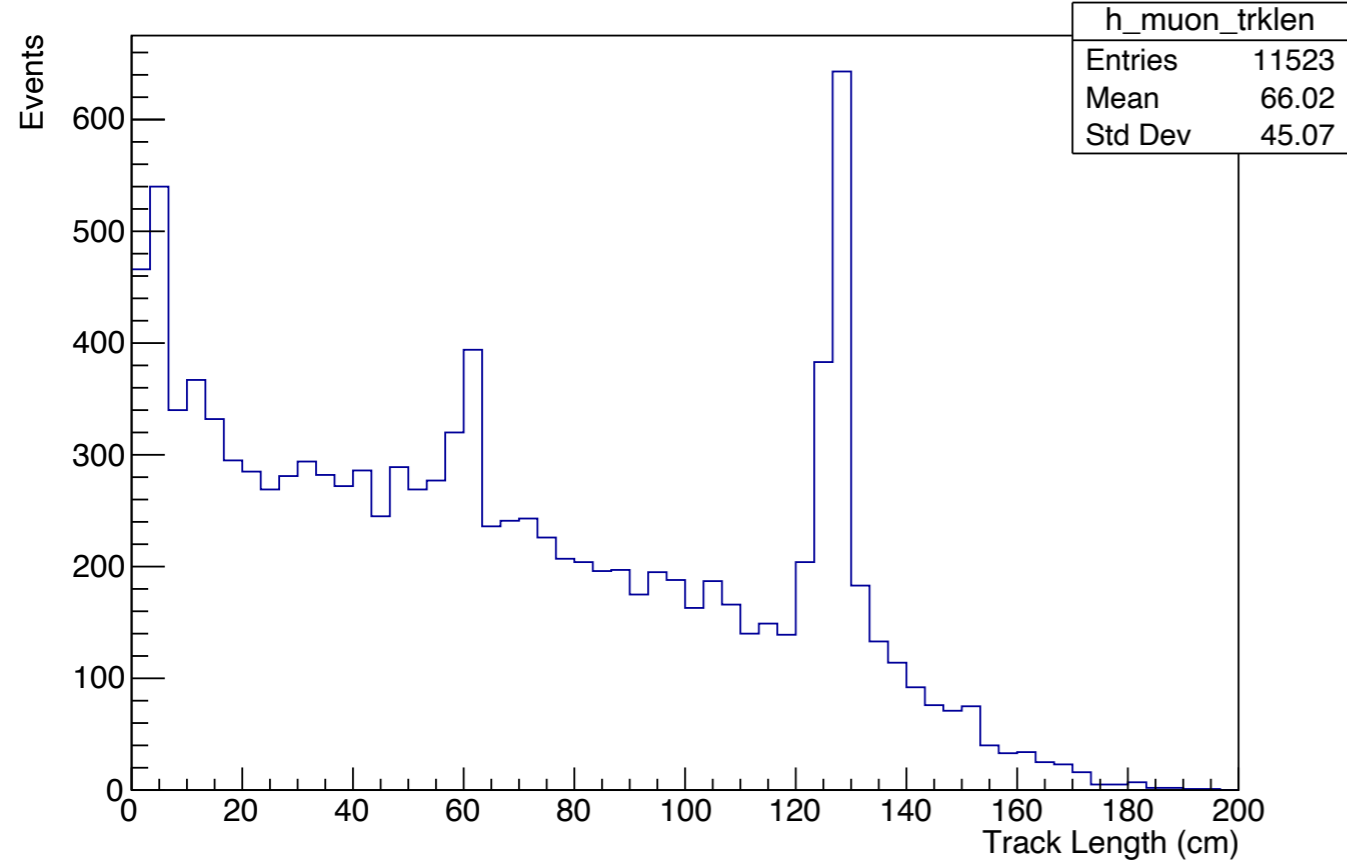


Too nice...

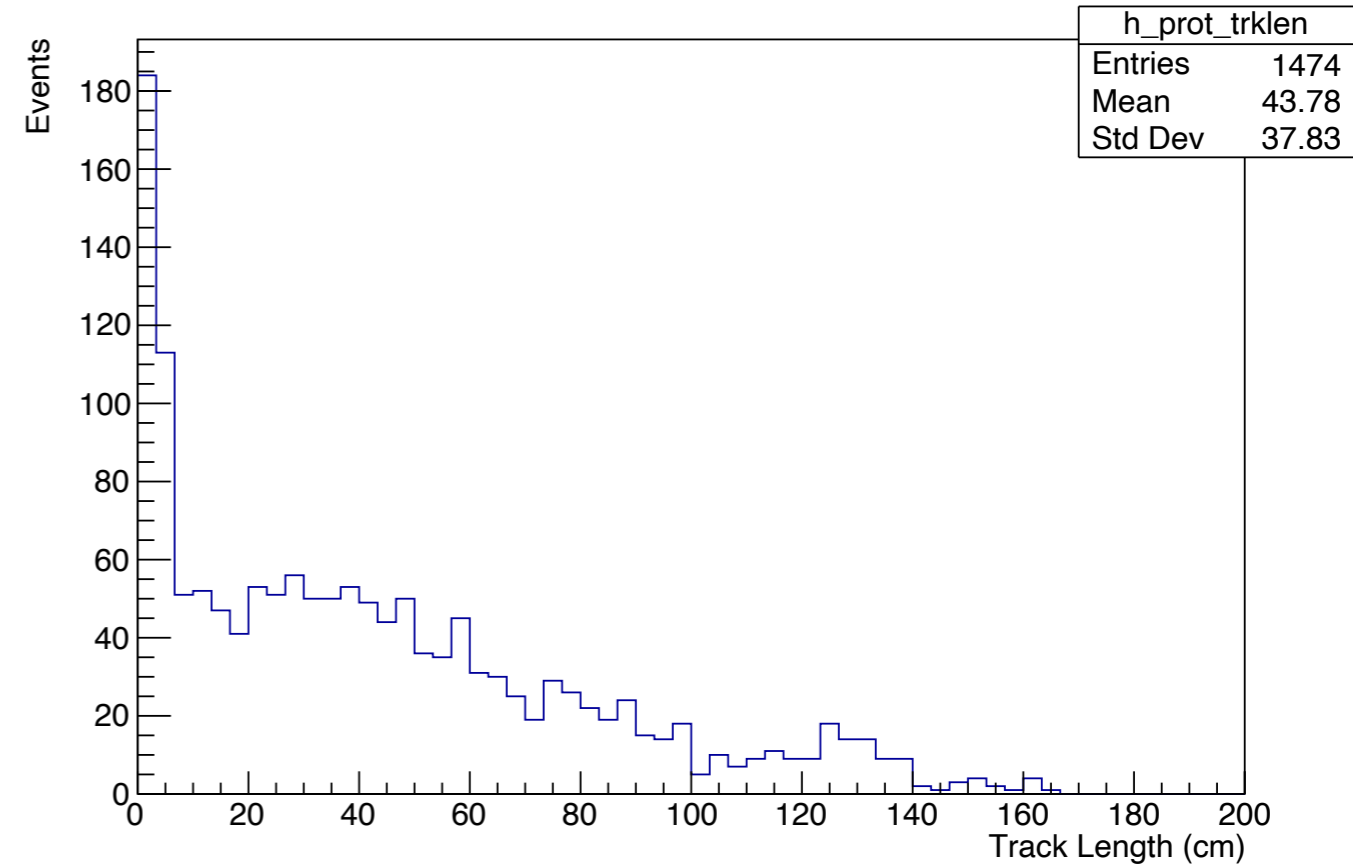


Half-Field Track Length

h_muon_trklen



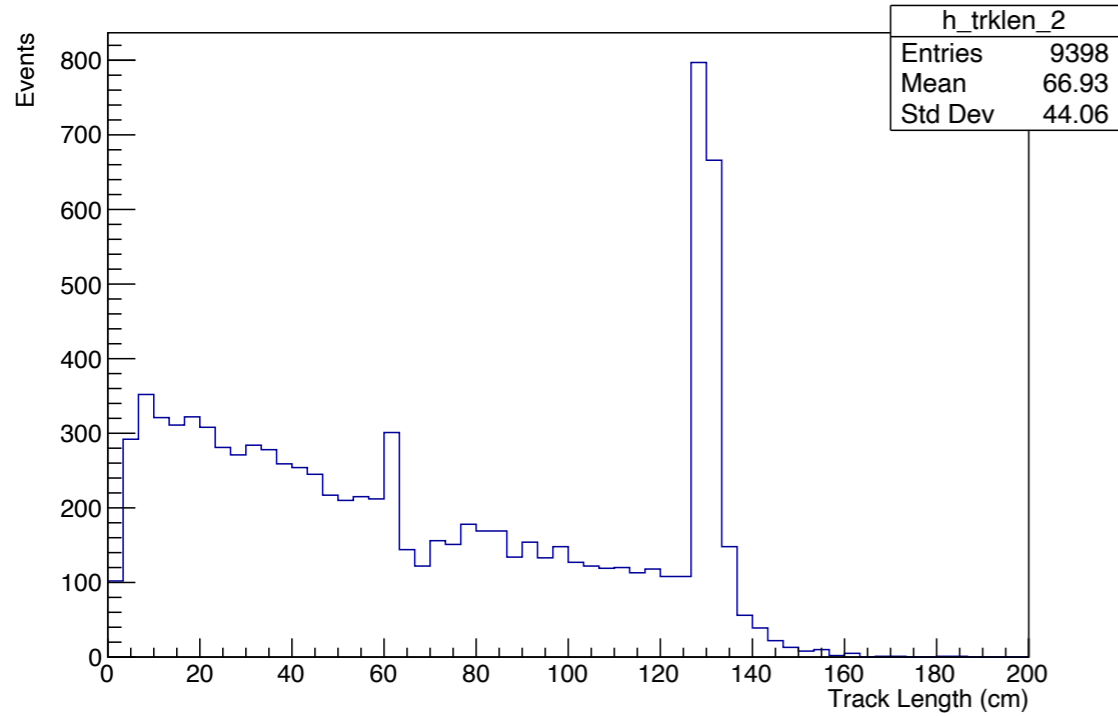
h_prot_trklen



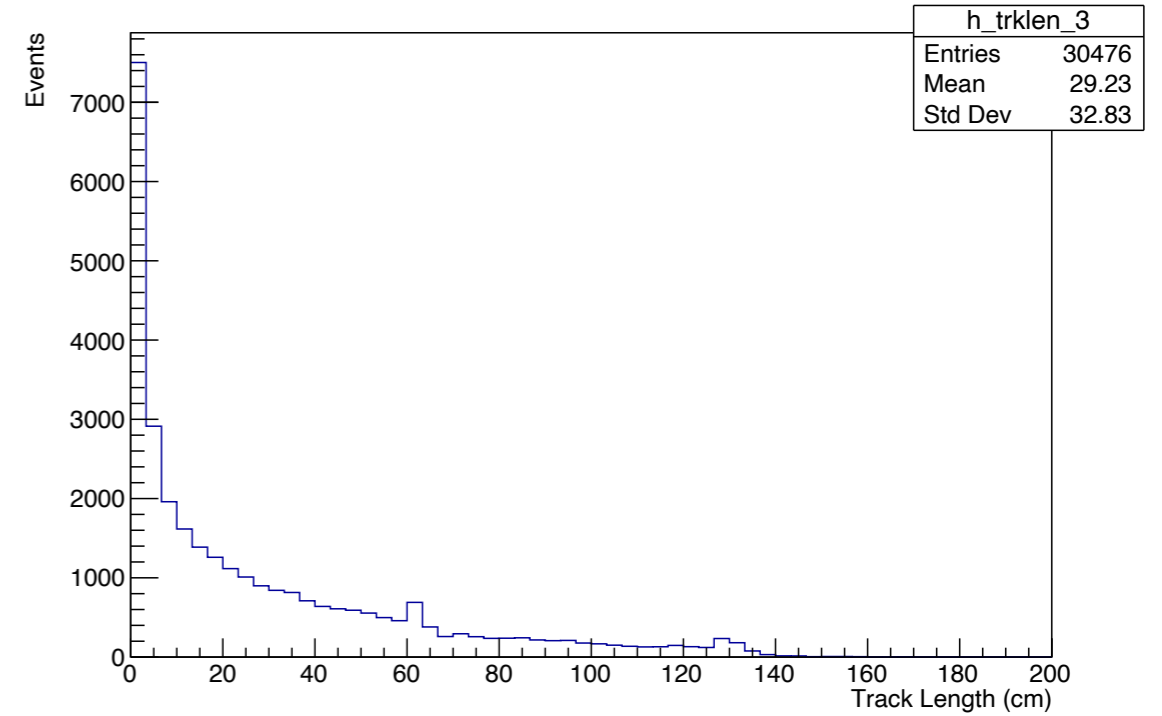


Track Length

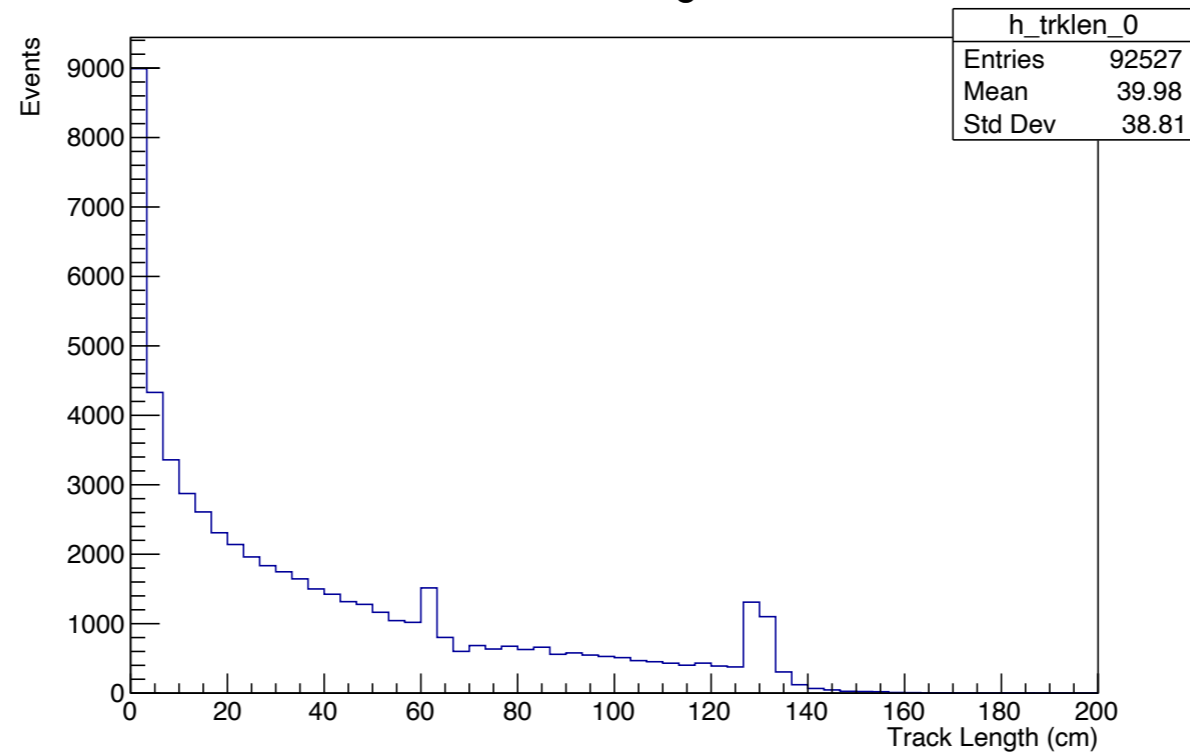
Muon Track Length



Proton Track Length



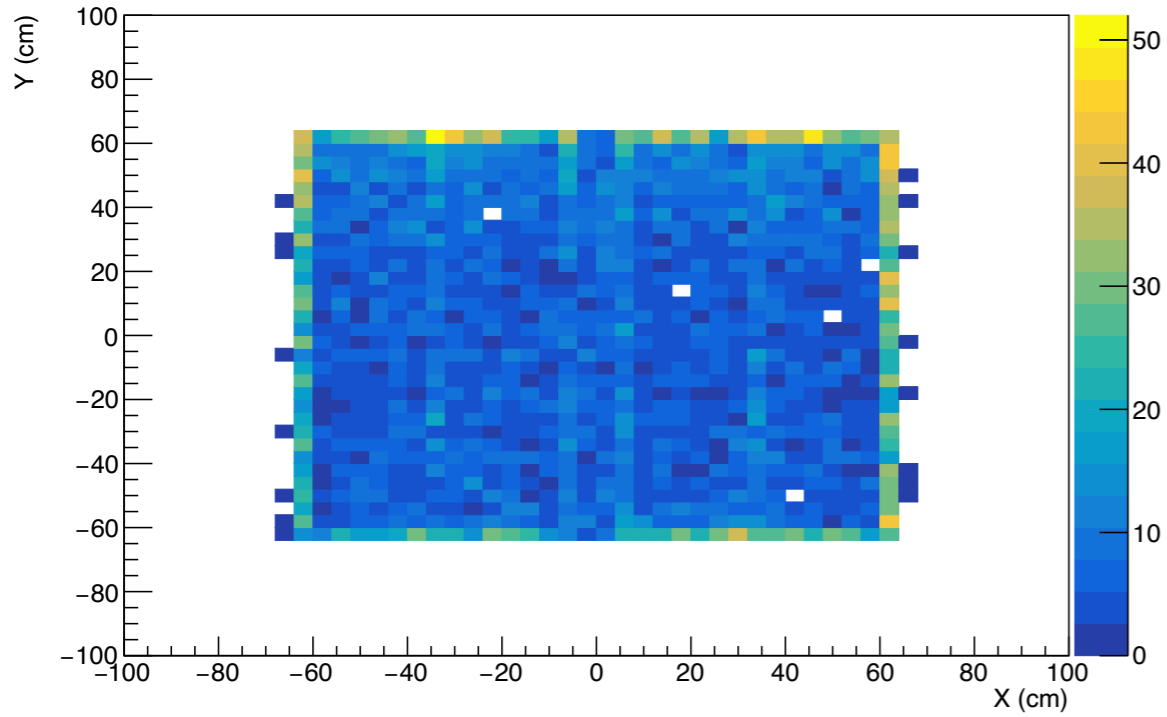
Track Length



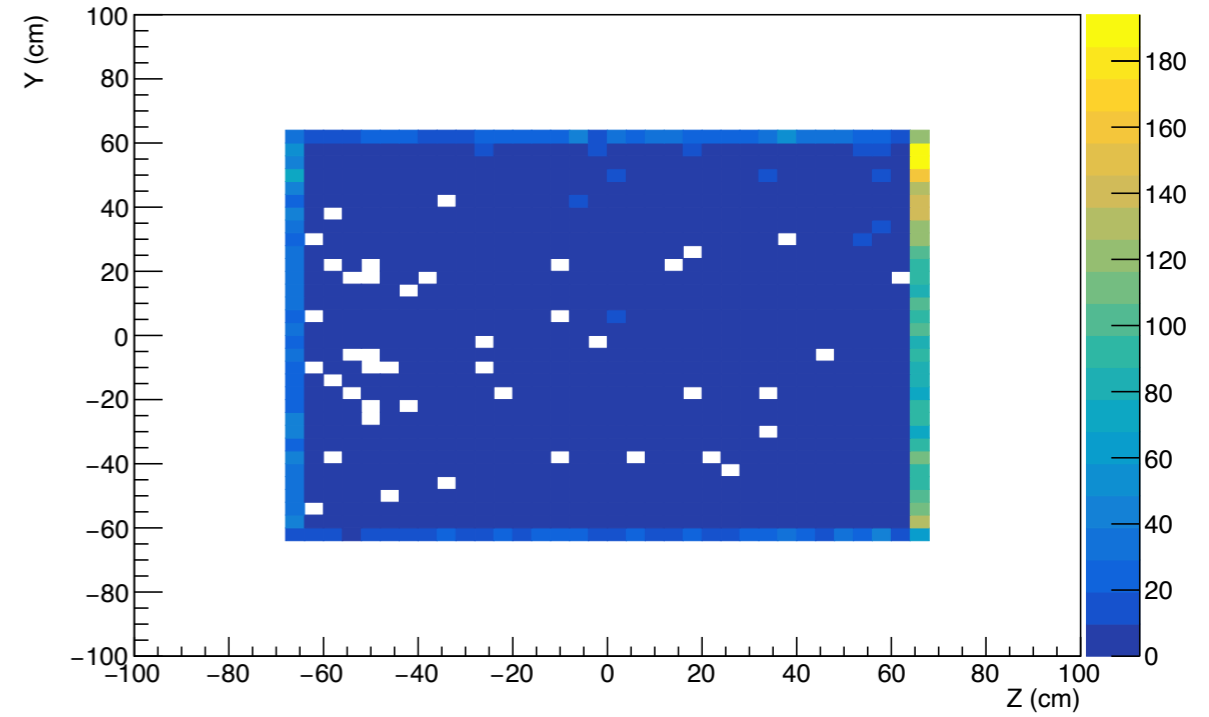


Muon Track Start/End XY/ZY

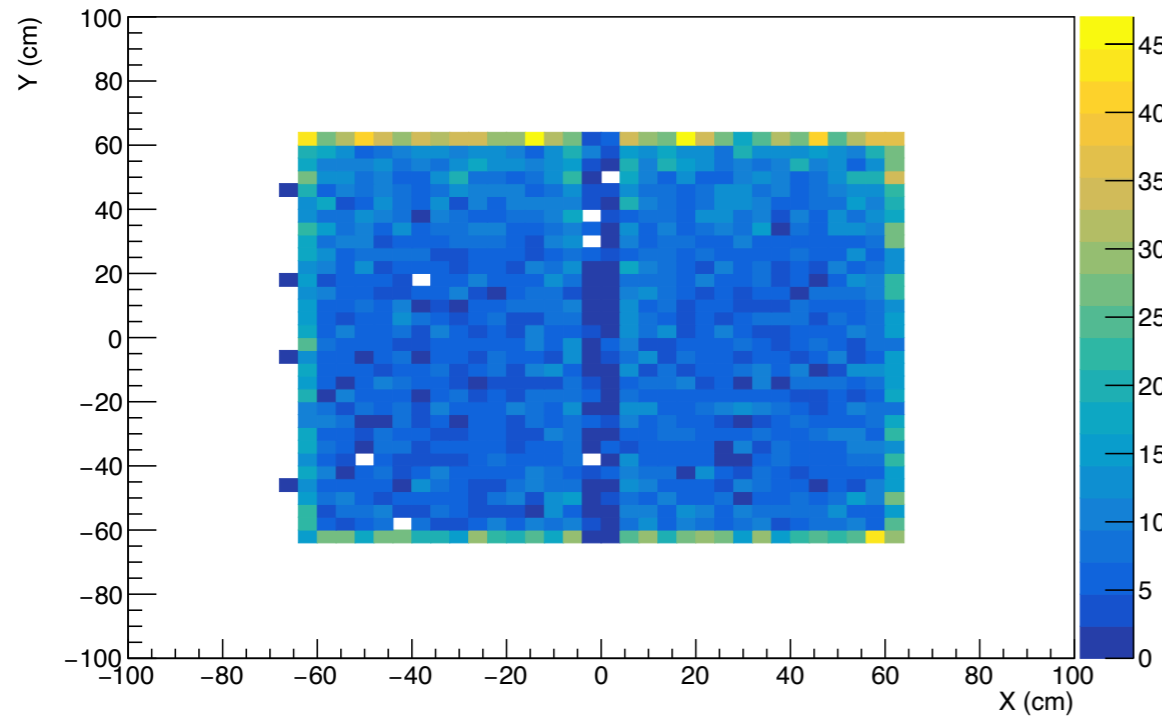
Reco Muon Track Start X vs Y



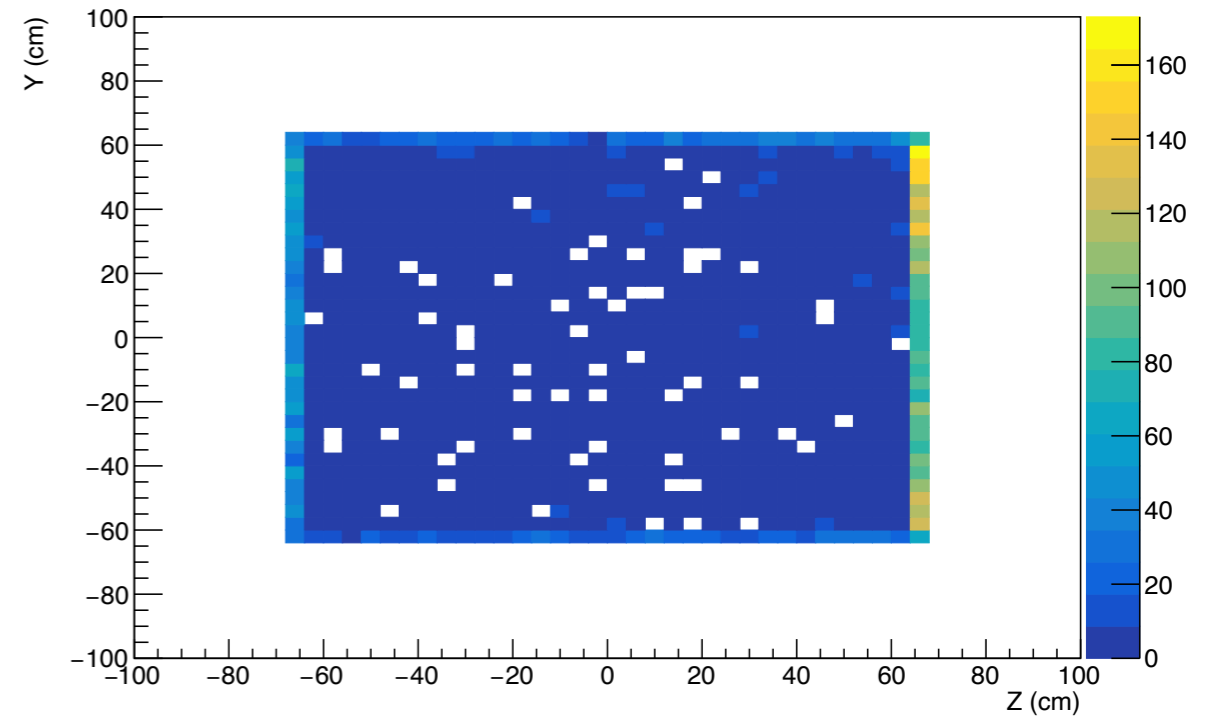
Reco Muon Track Start Z vs Y



Reco Muon Track end X vs Y



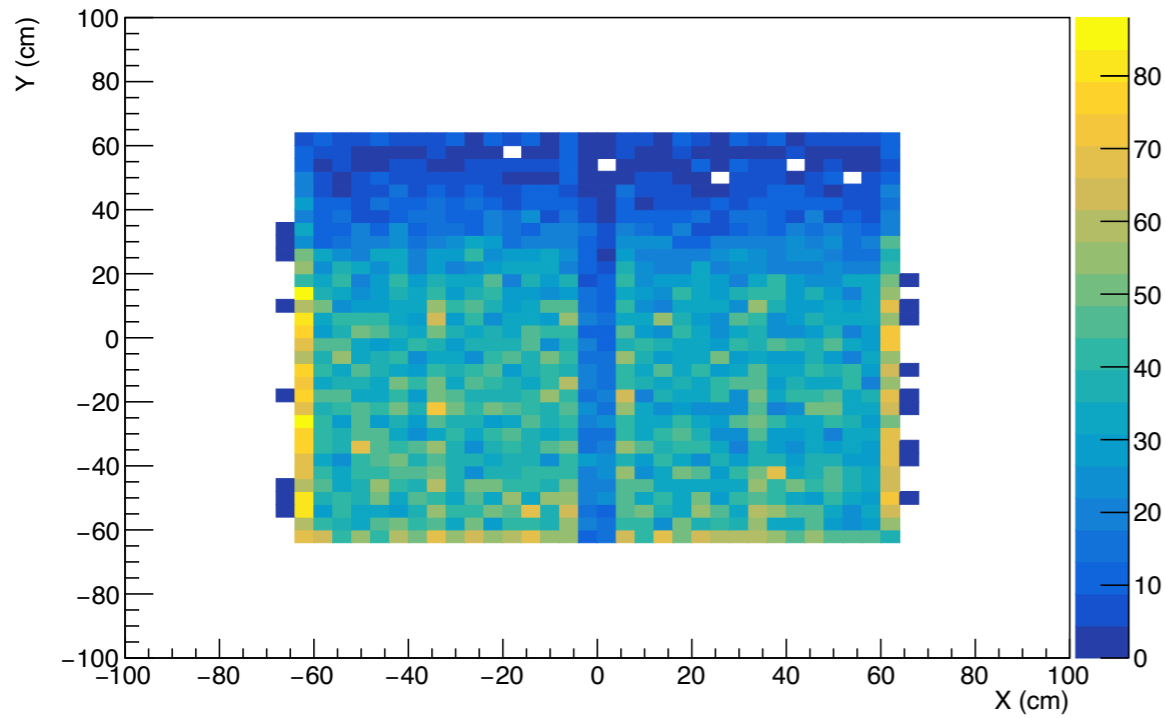
Reco Muon Track end Z vs Y



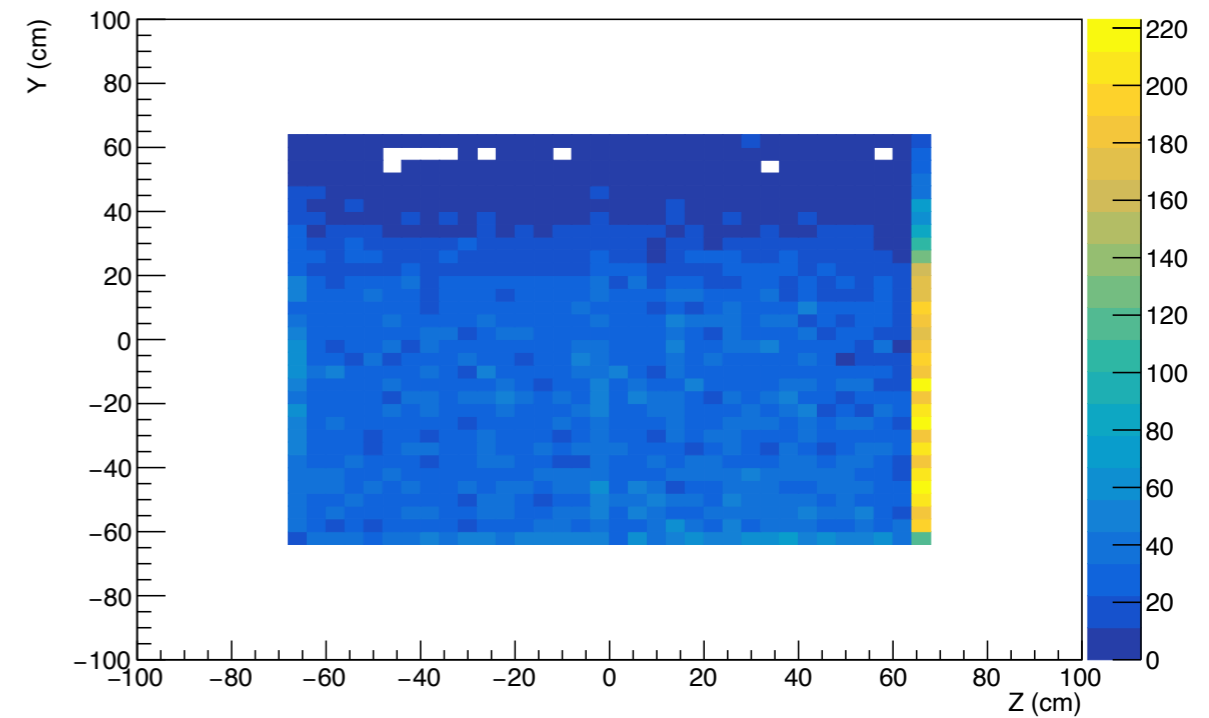


Muon Track Start/End XY/ZY

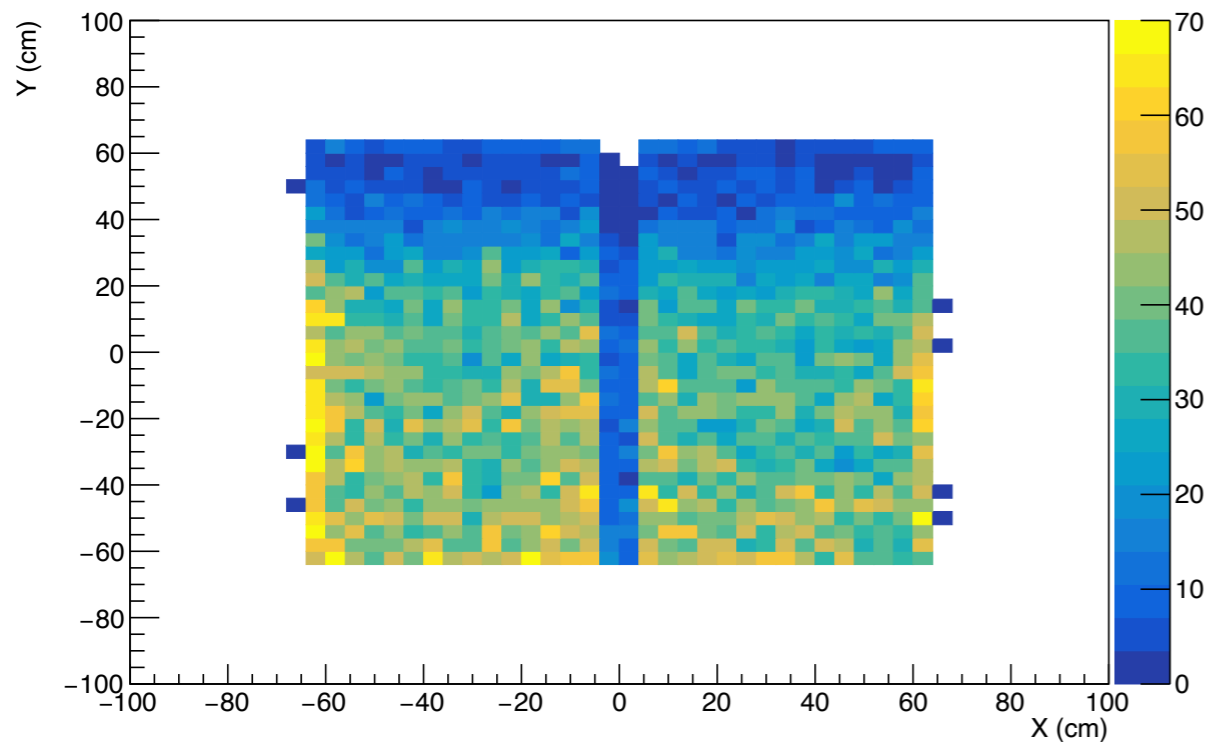
Reco Proton Track Start X vs Y



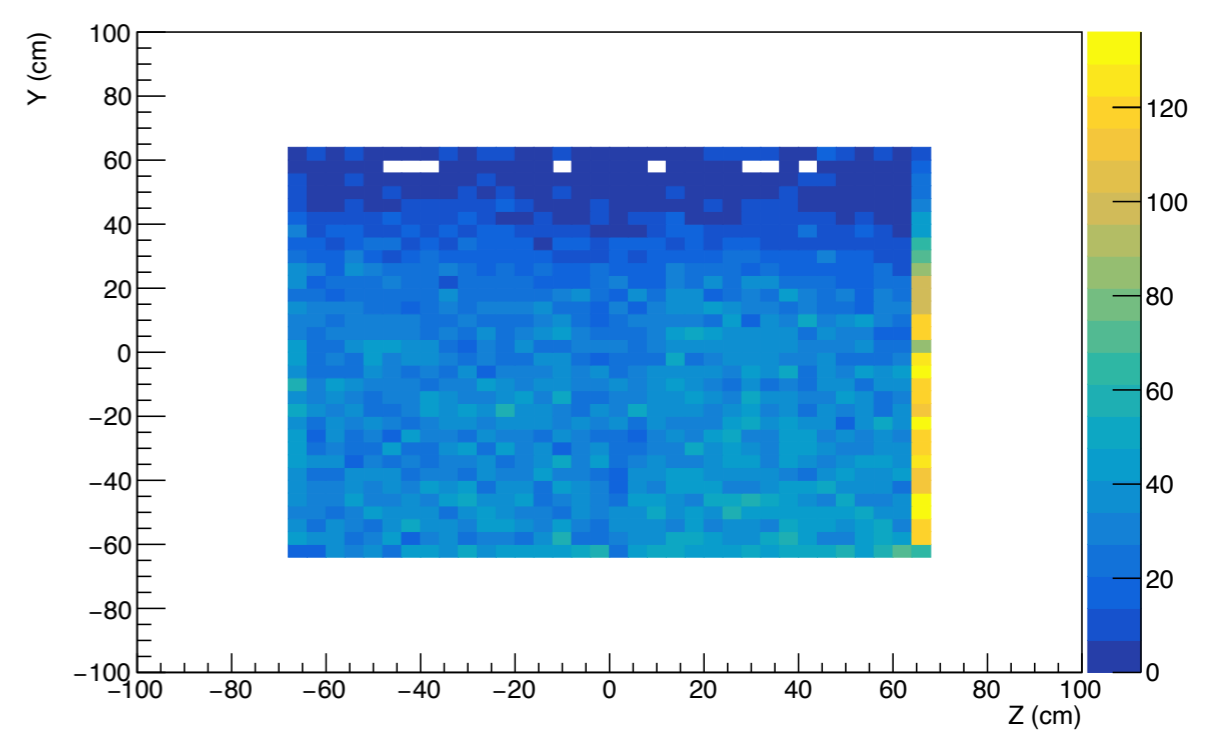
Reco Proton Track Start Z vs Y



Reco Proton Track end X vs Y



Reco Proton Track end Z vs Y





Conclusions

- **Validation tool not in final form**
 - Keep adding more plots/information - suggestions welcome
 - Close look to some features required
 - Elise had developed some nicer plotting, merge style
- Run on “redo-only” version on sandbox when available as CAF