

G4Bealine Simulation in LArIAT Update

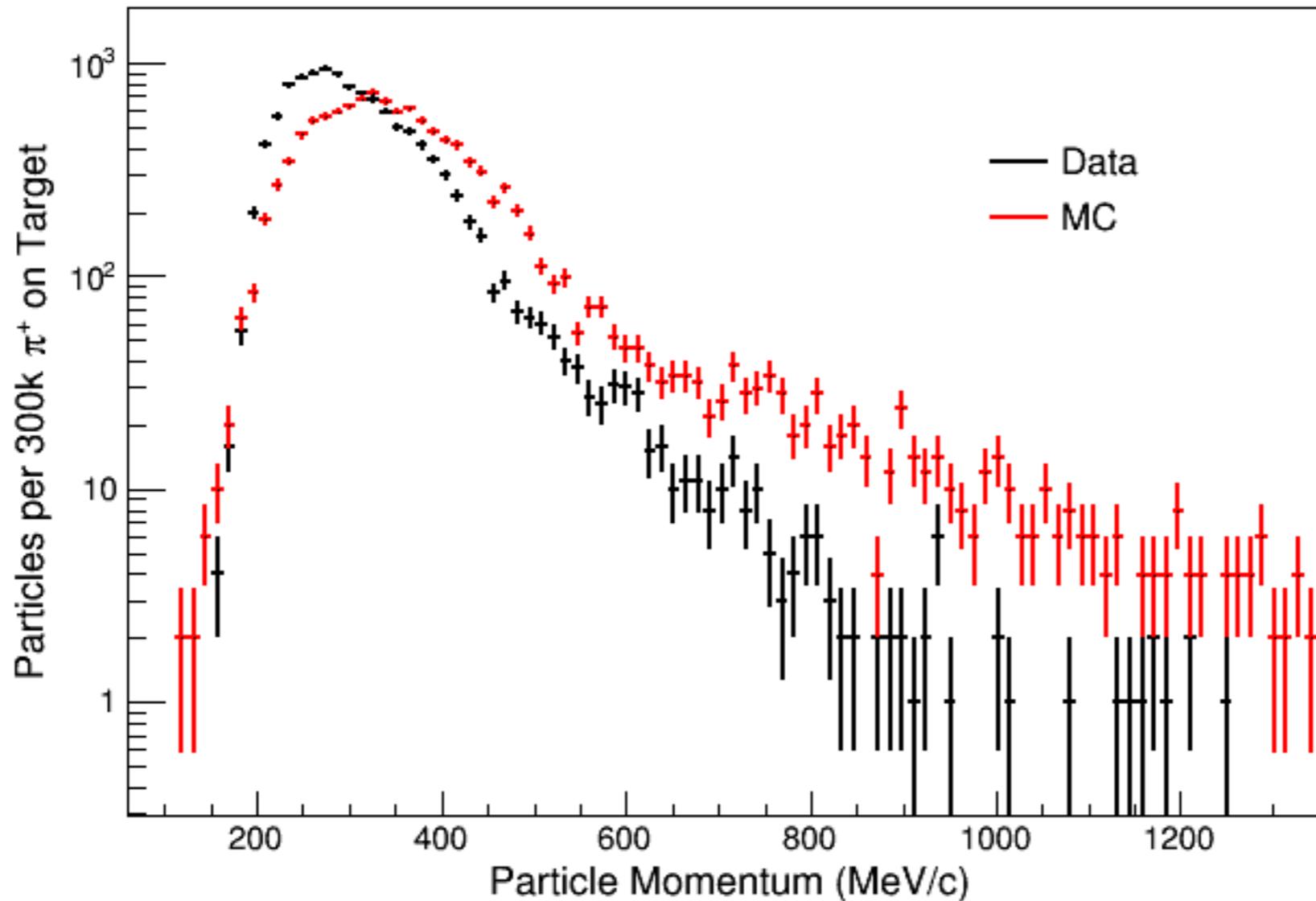


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05 August 2016

Data MC Comparison

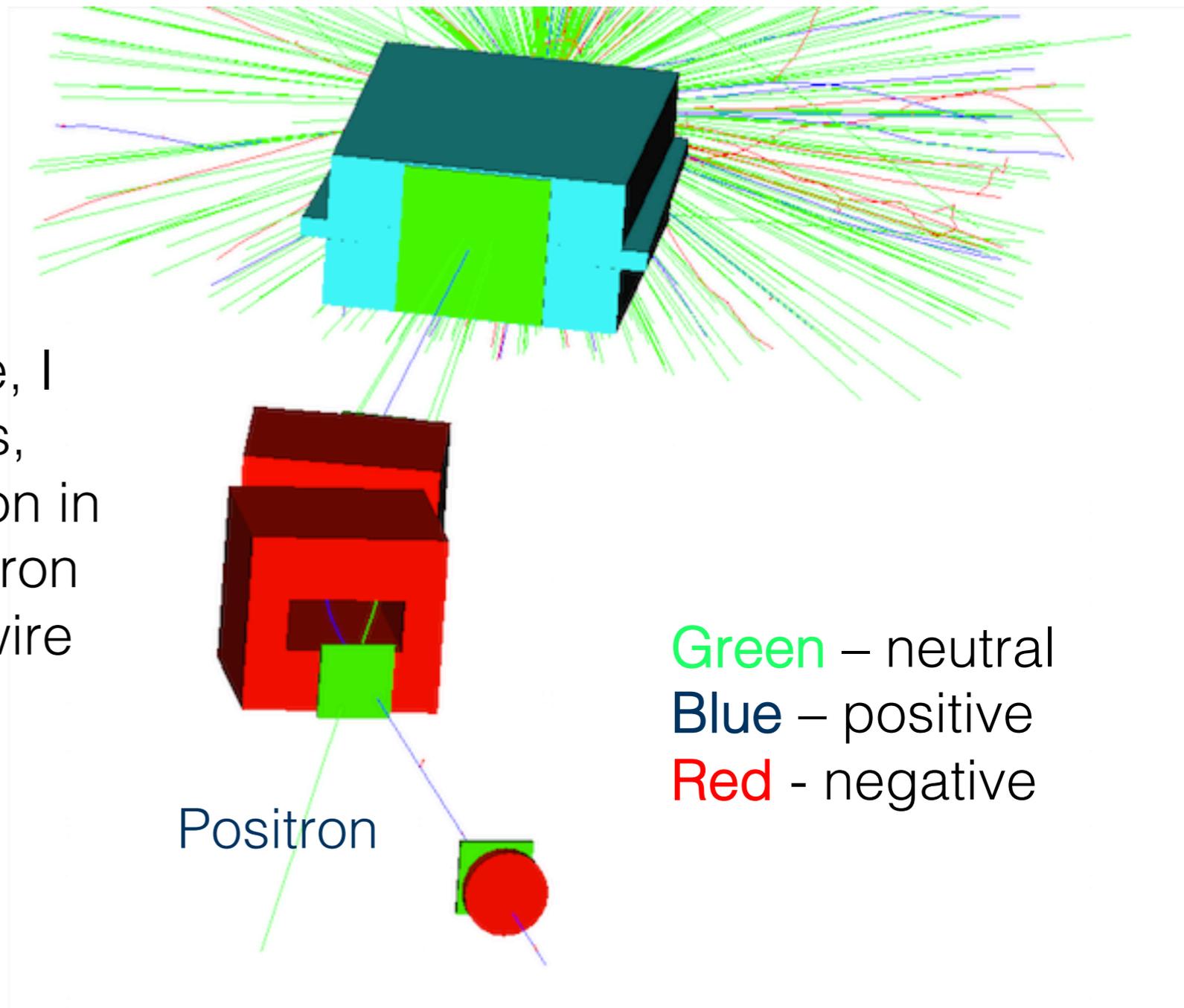
64GeV 40A



- How can we get the correct configuration/geometry in G4 to agree with data?

e^+ events G4Beamline

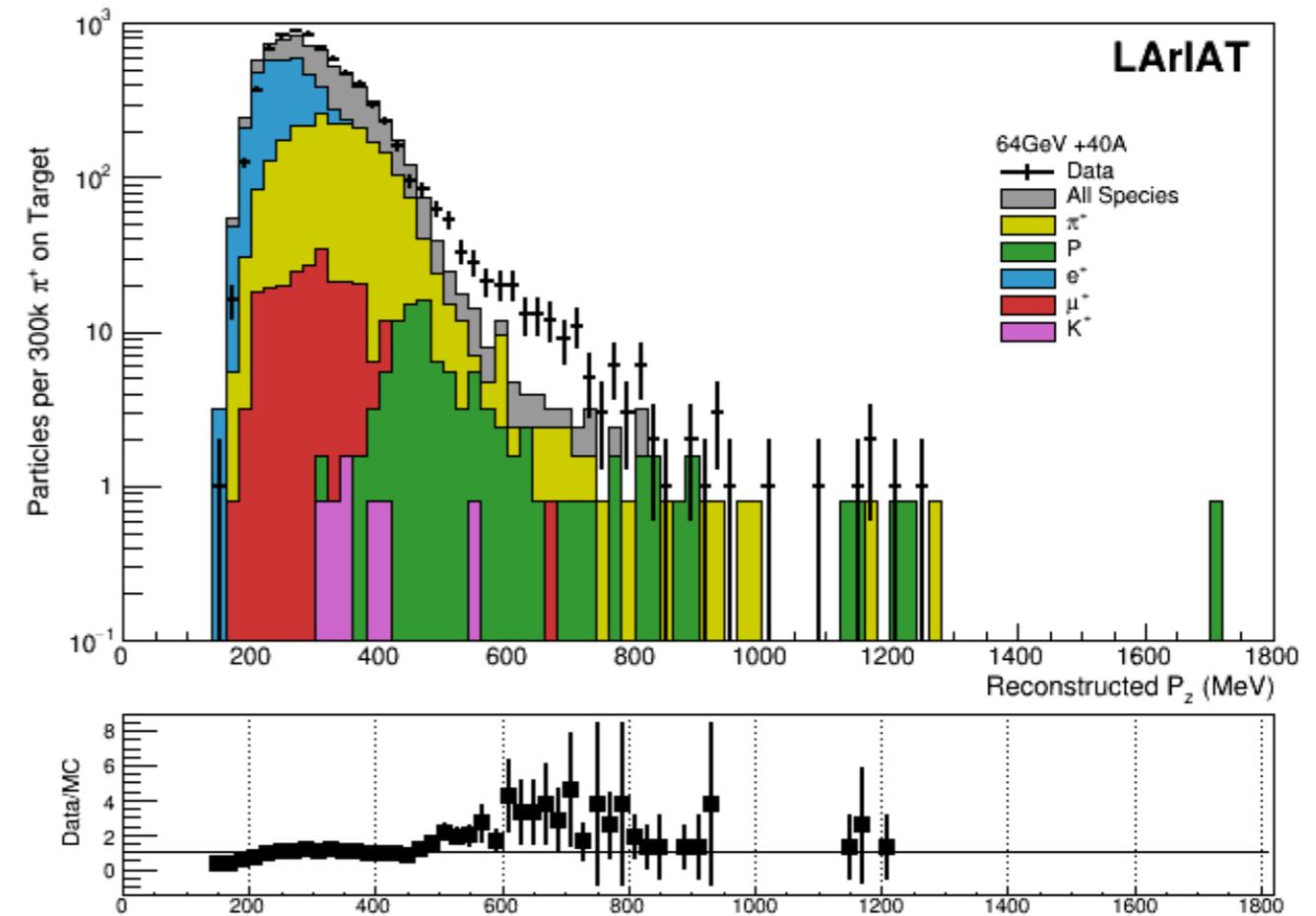
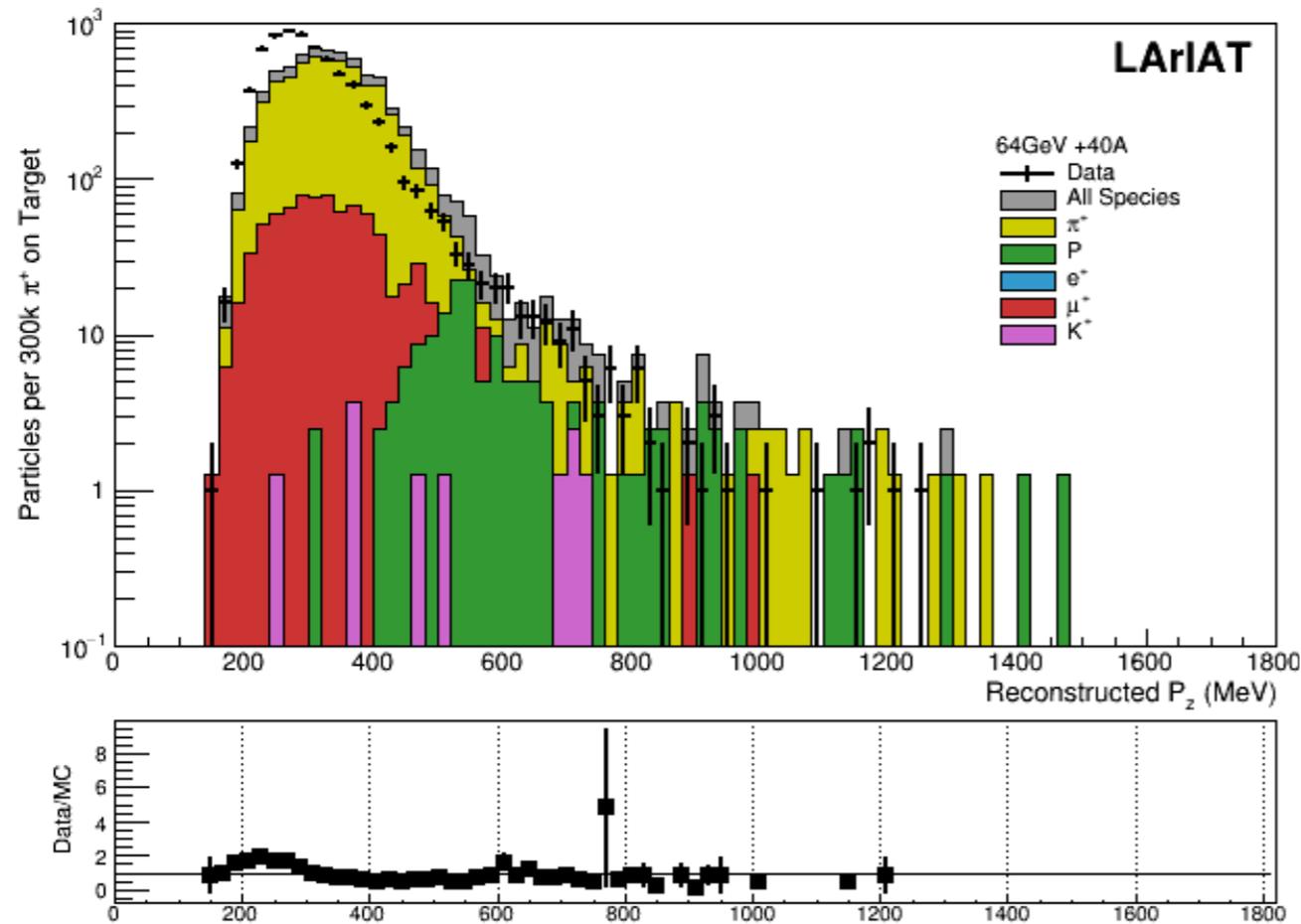
- Using Jason's configuration file, I was able to study single events, where I used the PID information in G4beamline to search for positron events passing through each wire chamber



Reconstructed Data MC comparisons

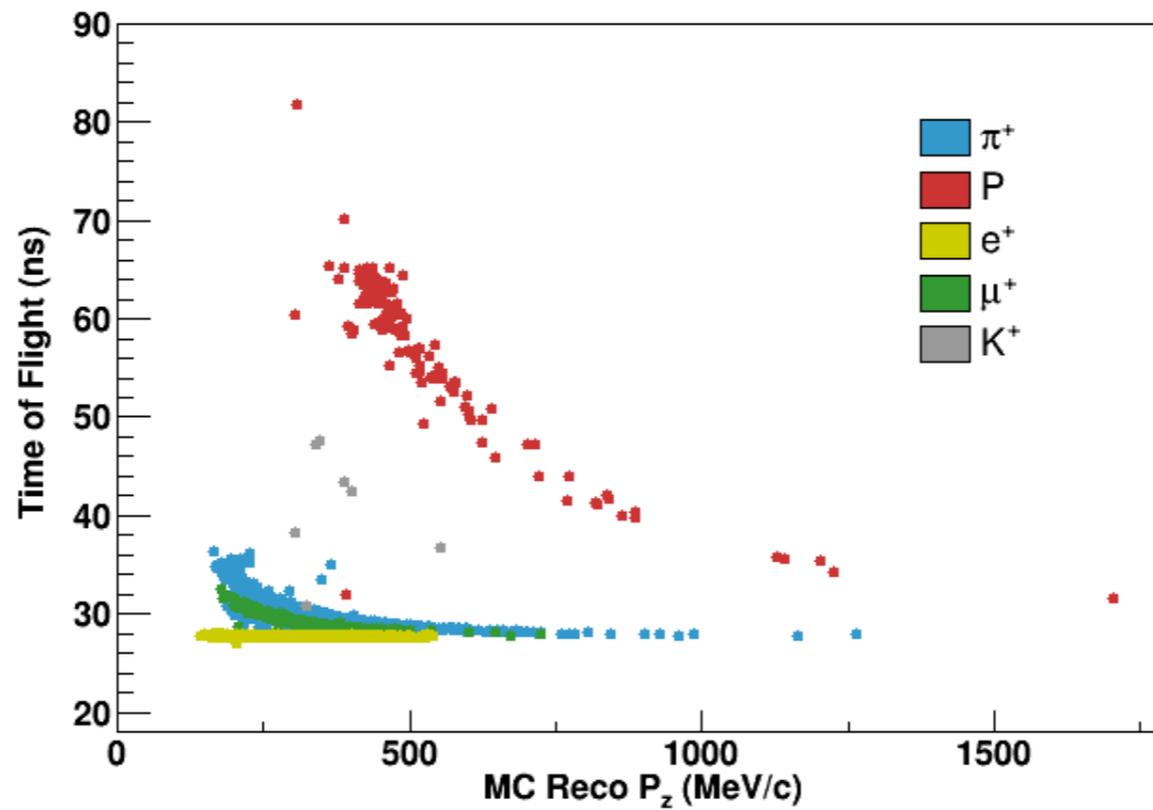
Gammas KILLED ⚡ :

Gammas included:

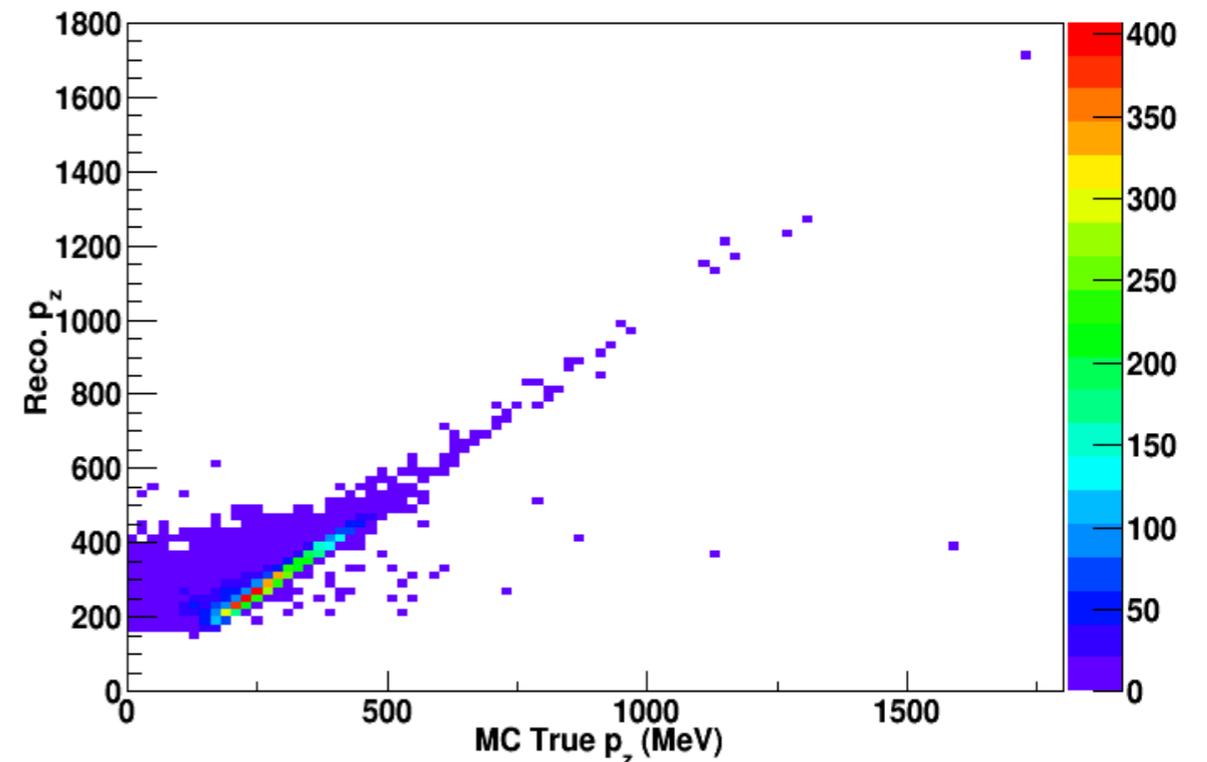
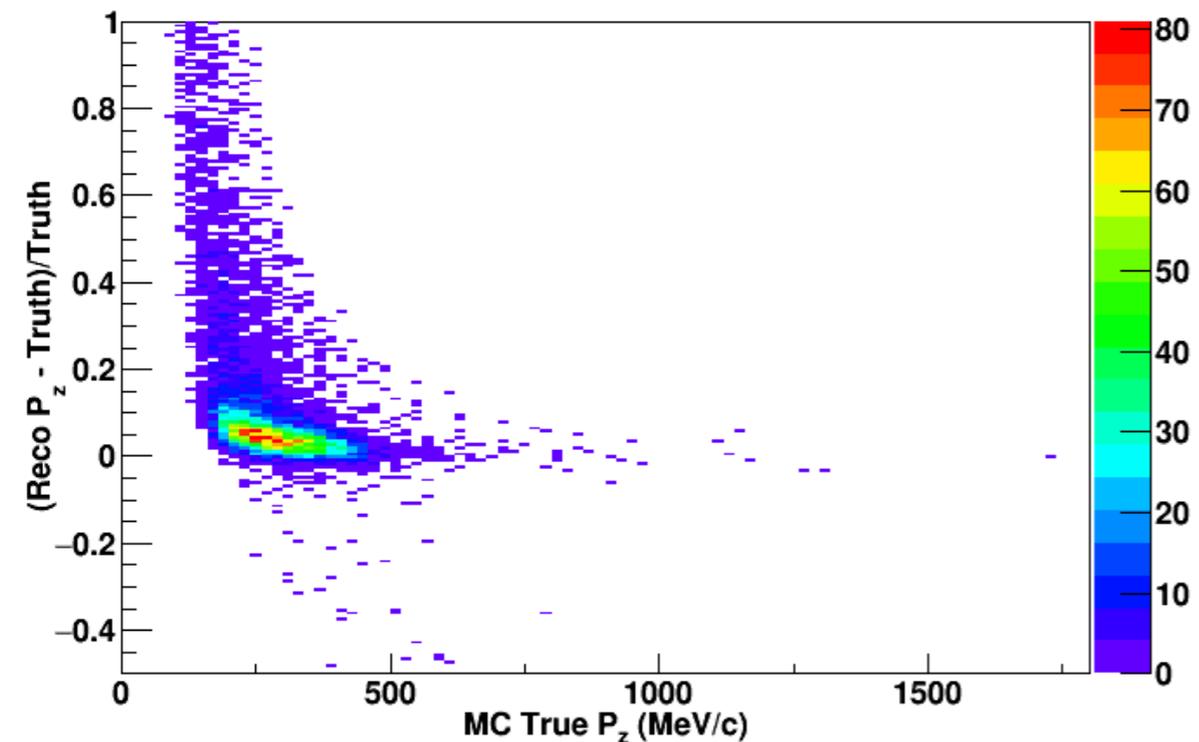


❖ source of electrons: π -zero decays in the target, which give pairs of photons, many of which pair produce while still inside the target.

More MC beam measurement



❖ TOF v. MC reconstructed momentum for different particle species



❖ Fractional momentum as a function of momentum

❖ Reconstructed momentum v. Momentum

Summary

- ❖ There is **BEAUTIFUL** Wiki page to help others produce these G4BL files for different beam configurations.
https://cdcvs.fnal.gov/redmine/projects/lardbt/wiki/Beam_Sim_Files
- ❖ Currently running a job at 64GeV -100A beam configuration.