

# Data Quality Checks for LHRS PID Detectors

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# Reminder: What to Check

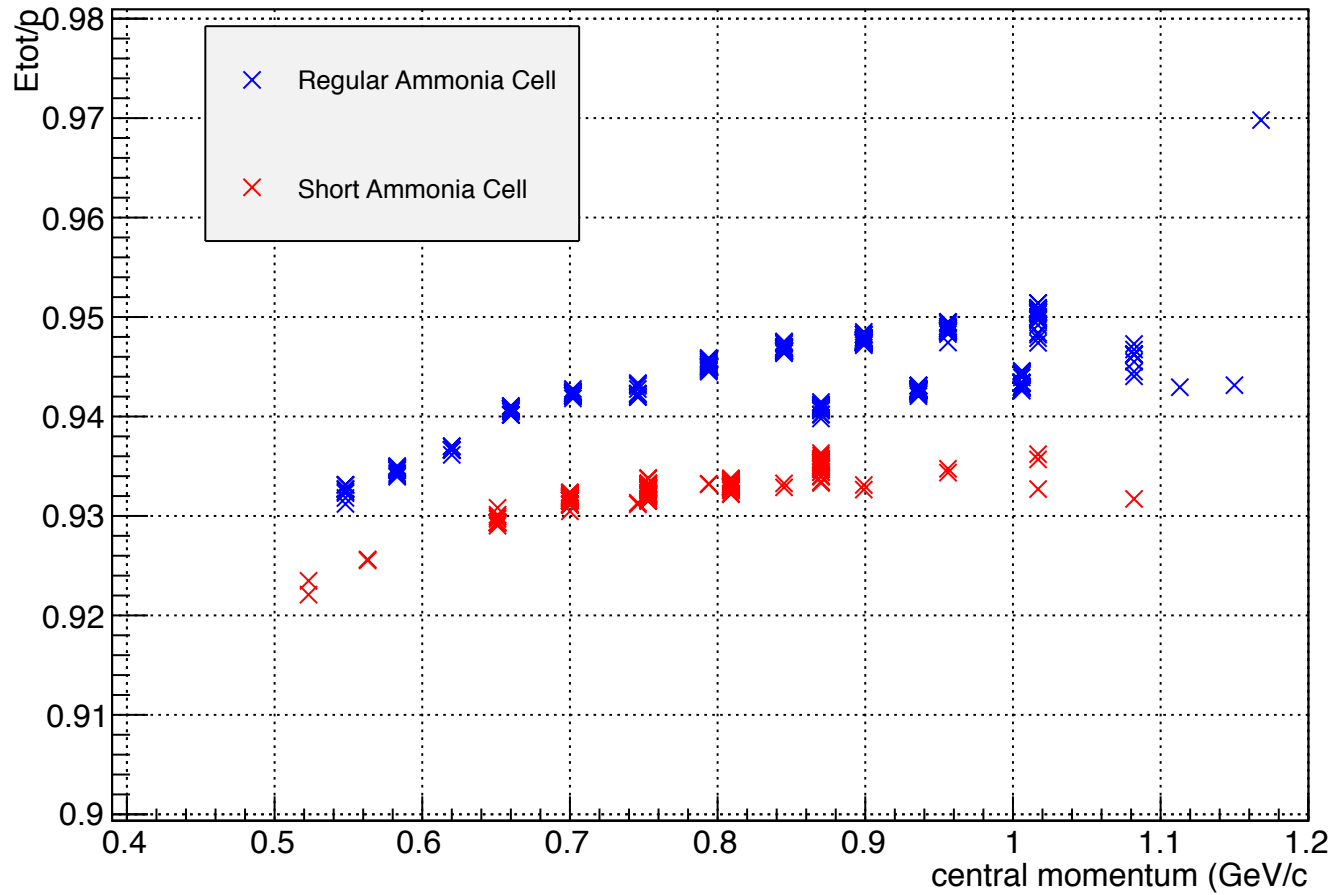
- Cherenkov
  - single photoelectron peak location
  - main peak location
  - detector efficiency
  - cut efficiency
- Pion Rejectors
  - mean of E/p distribution
  - detector efficiency
  - cut efficiency
- Pion Contamination

# The Highlights

- 48 runs found to have “issues”
  - 24 carbon runs that are mislabeled as production
  - 5 runs with low statistics ( < 1M events)
  - 19 runs with varying issues
- PID cuts needed to be adjusted for short ammonia cell running

# E = 1.1 GeV, 2.5T, Transverse

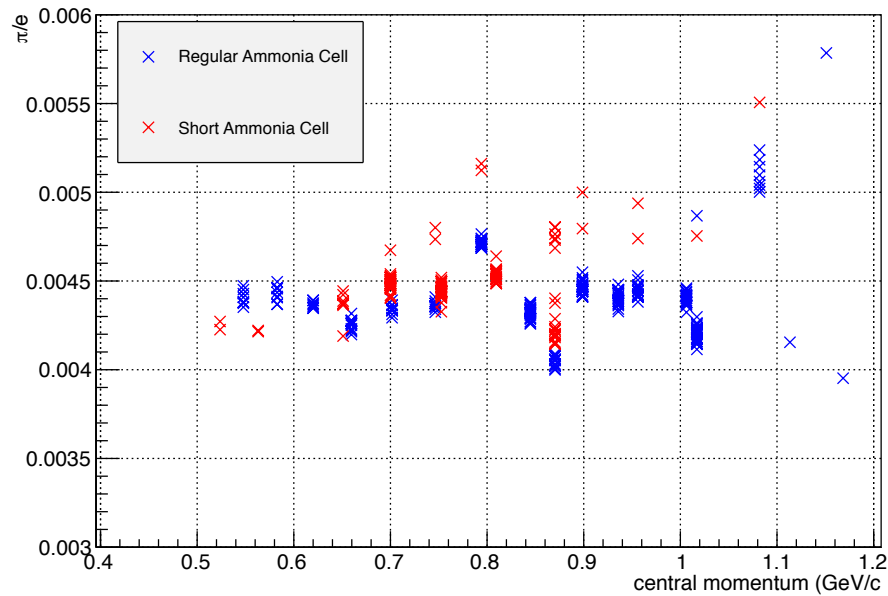
LHRS Pion Rejector Calibration Stability Check for 1157 MeV, 2.5T, 90 deg



# E = 1.1 GeV, 2.5T, Transverse

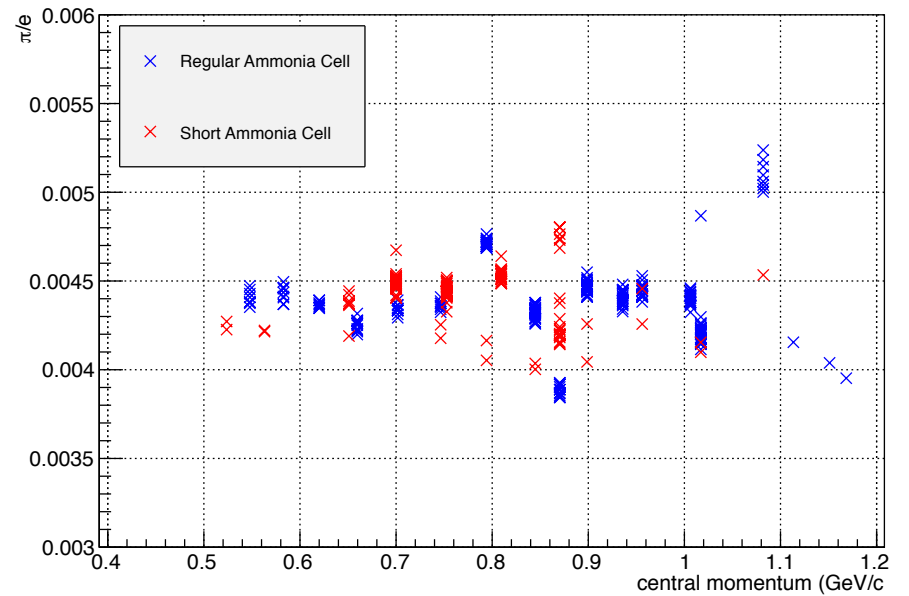
Using Original PID Cuts

LHRS  $\pi/e$  Ratio for 1.1 GeV, 2.5T, 90 deg



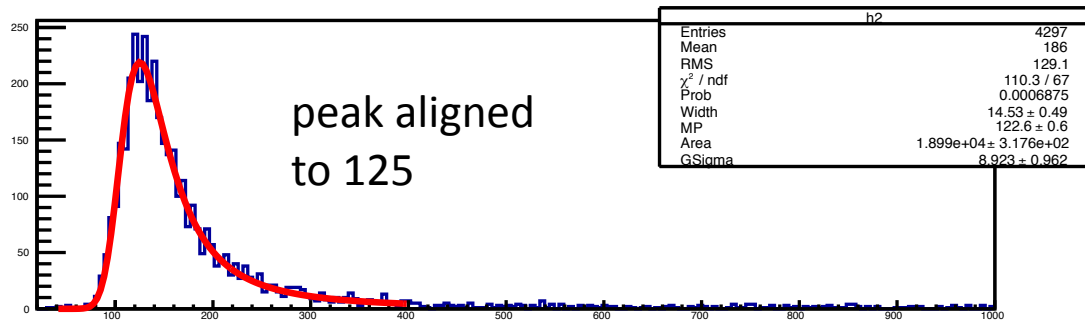
Using adjusted PID Cuts for Short Ammonia Cell

LHRS  $\pi/e$  Ratio for 1.1 GeV, 2.5T, 90 deg

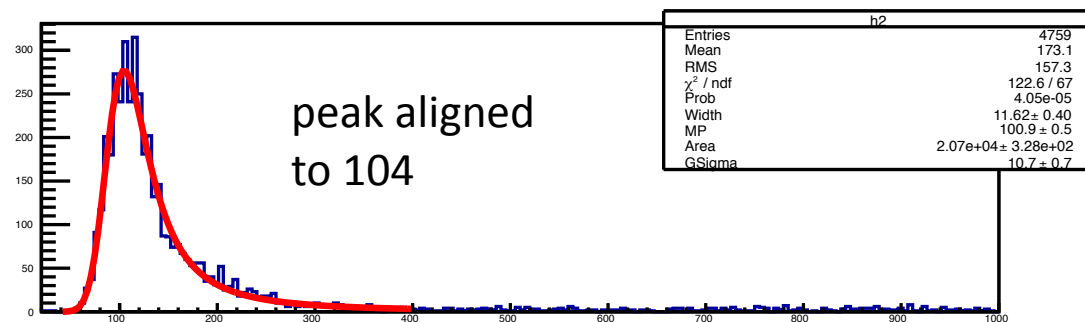


E = 2.2 GeV, 2.5T, Transverse, p0 = 1.247 GeV/c

Cherenkov Channel [2] – run 3596



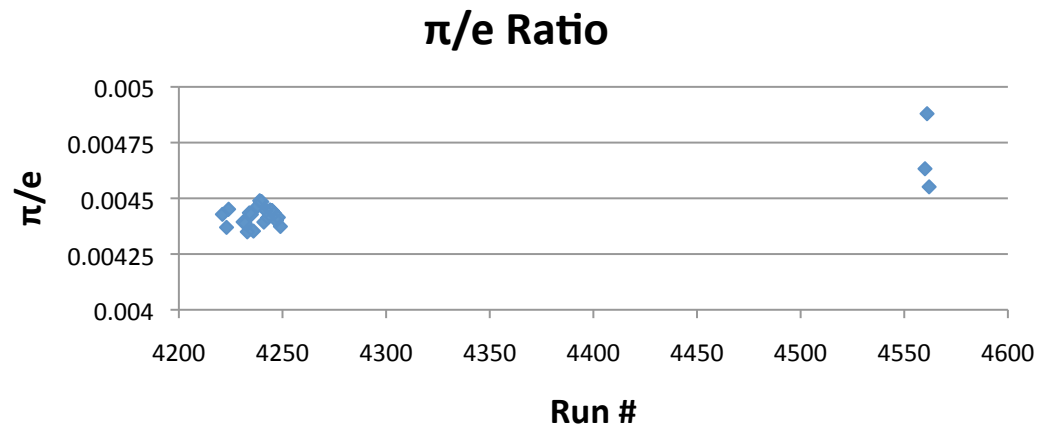
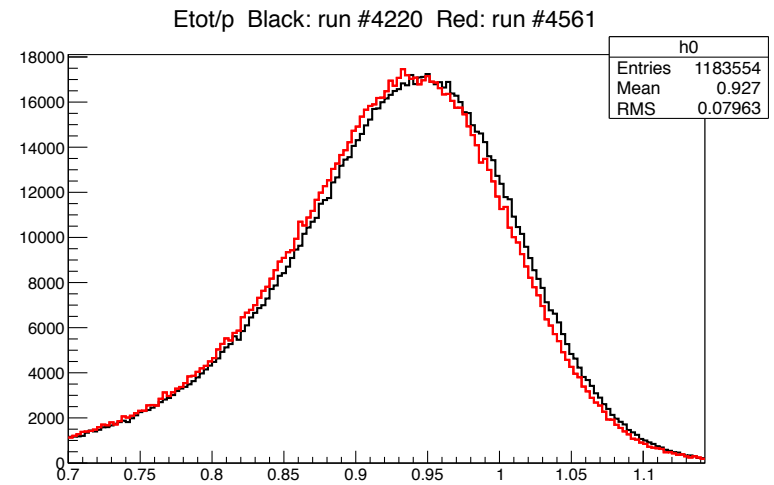
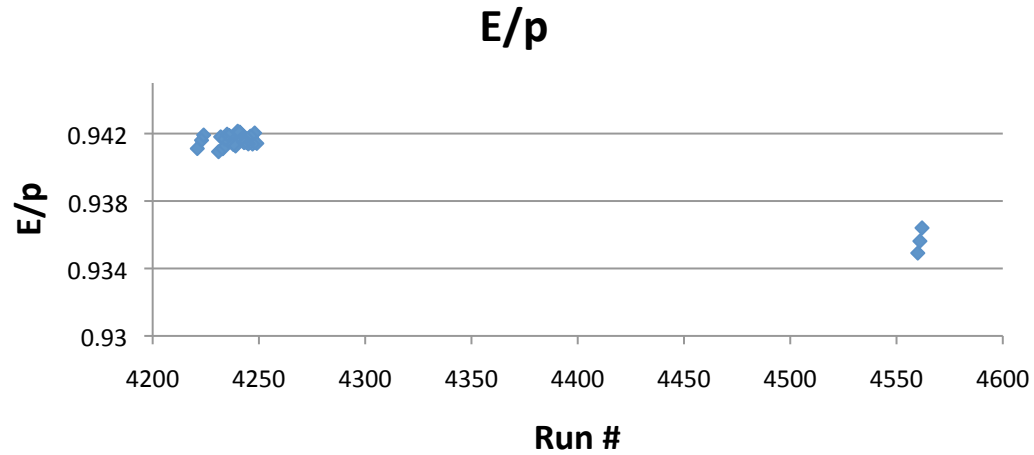
Cherenkov Channel [2] – run 3599



Run Number	SPE Peak of Channel 2
3592	104
3596	125
3597	120
3598	102
3599	104
3600	136
3601	138
3602	115
3603	103
3607	101
3609	104
3610	103
3611	105
3612	100

Possible fluctuation in HV??

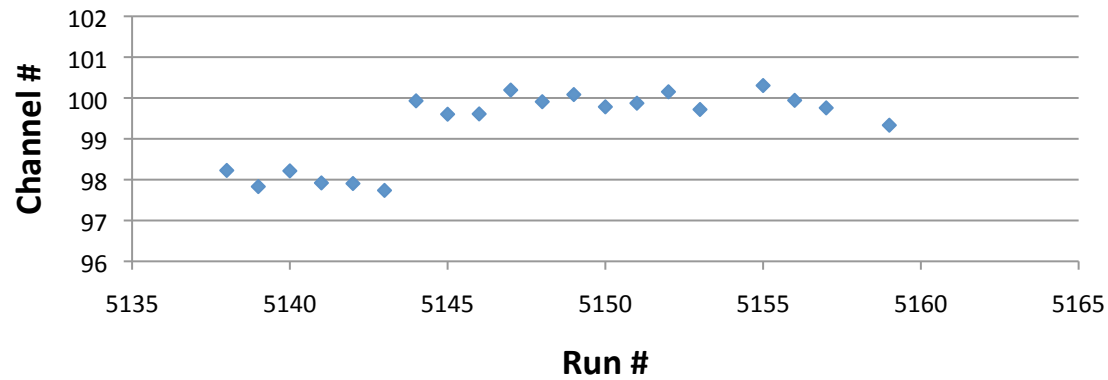
$E = 1.7 \text{ GeV}$ ,  $2.5\text{T}$ , Transverse,  $p_0 = 1.589 \text{ GeV}/c$



Runs 4560 – 4562  
~1% shift in  $E/p$

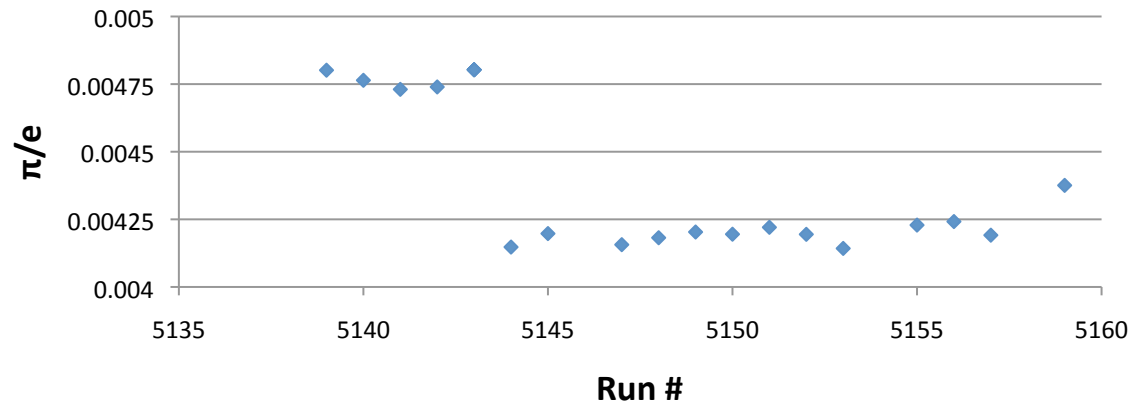
$E = 1.1 \text{ GeV}$ ,  $2.5\text{T}$ , Transverse,  $p_0 = 0.870 \text{ GeV}/c$

**SPE Peak Locations  
(Avg of 10 Channels)**



Runs 5138 – 5143  
~2% shift in SPE location

**$\pi/e$  Ratio**





## To Do:

- Compile this into a document
- Finish RHRS