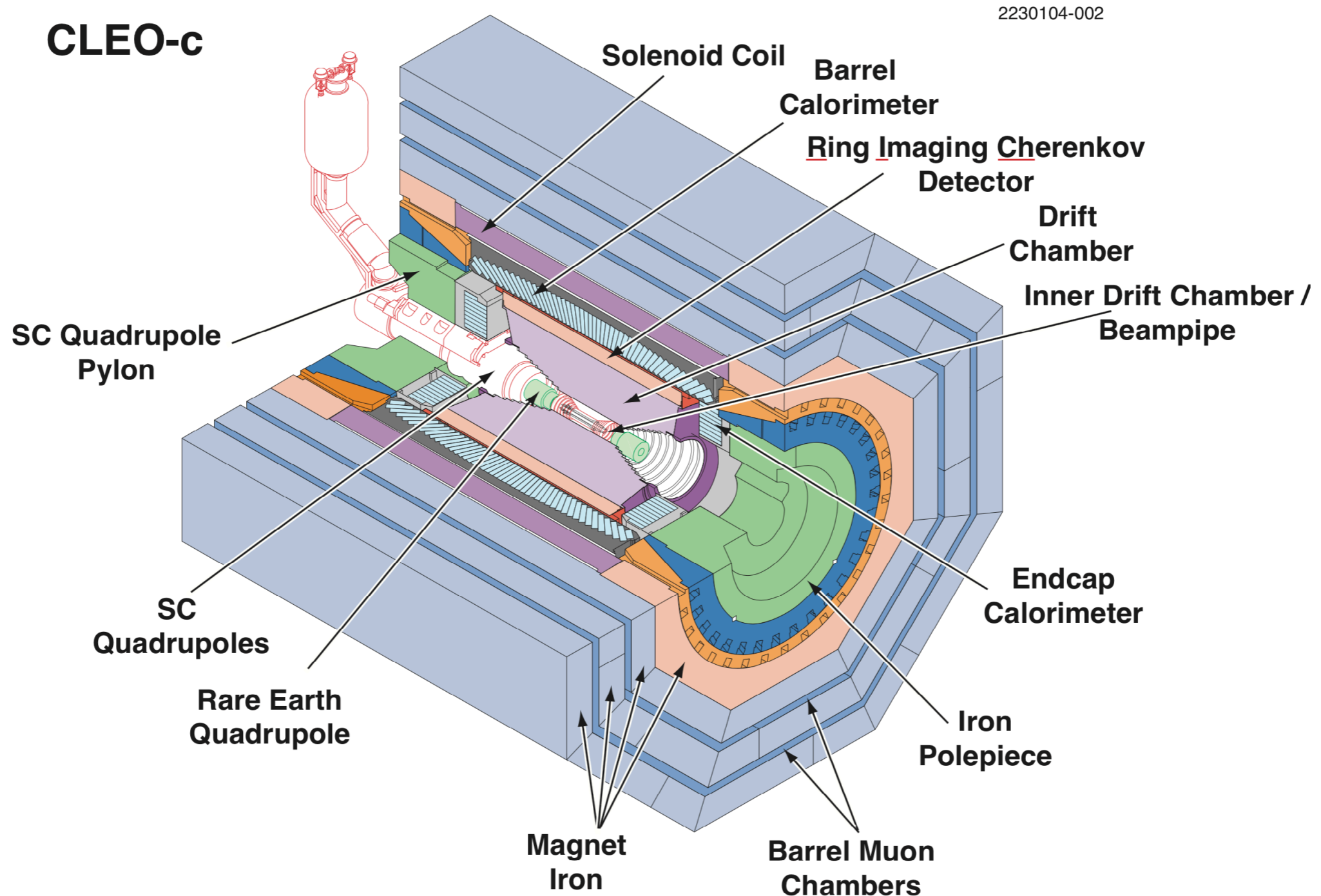


PID @ CLEO

- Hermetic detector studying e^+e^- collisions



dE/dx in drift chamber

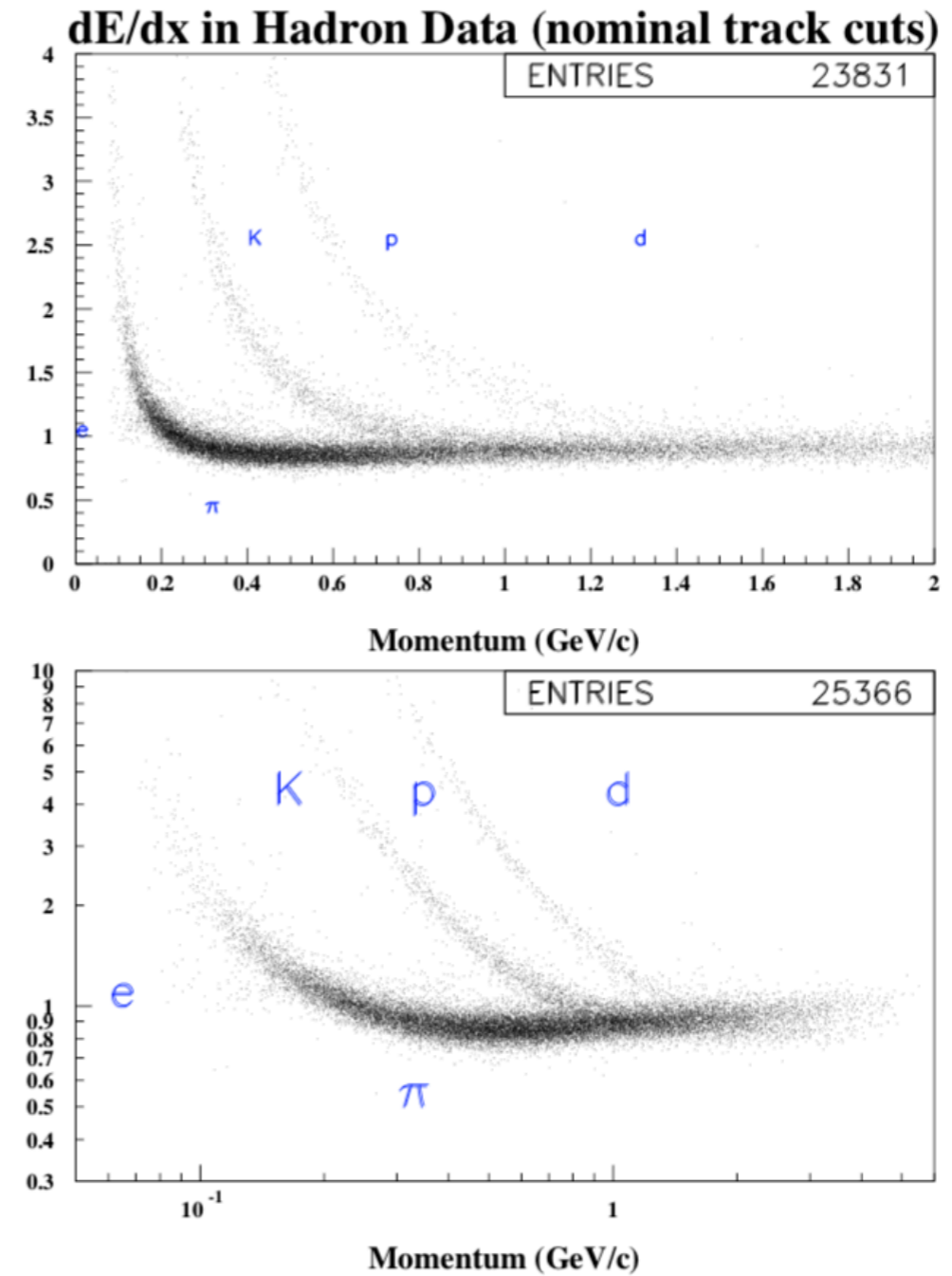
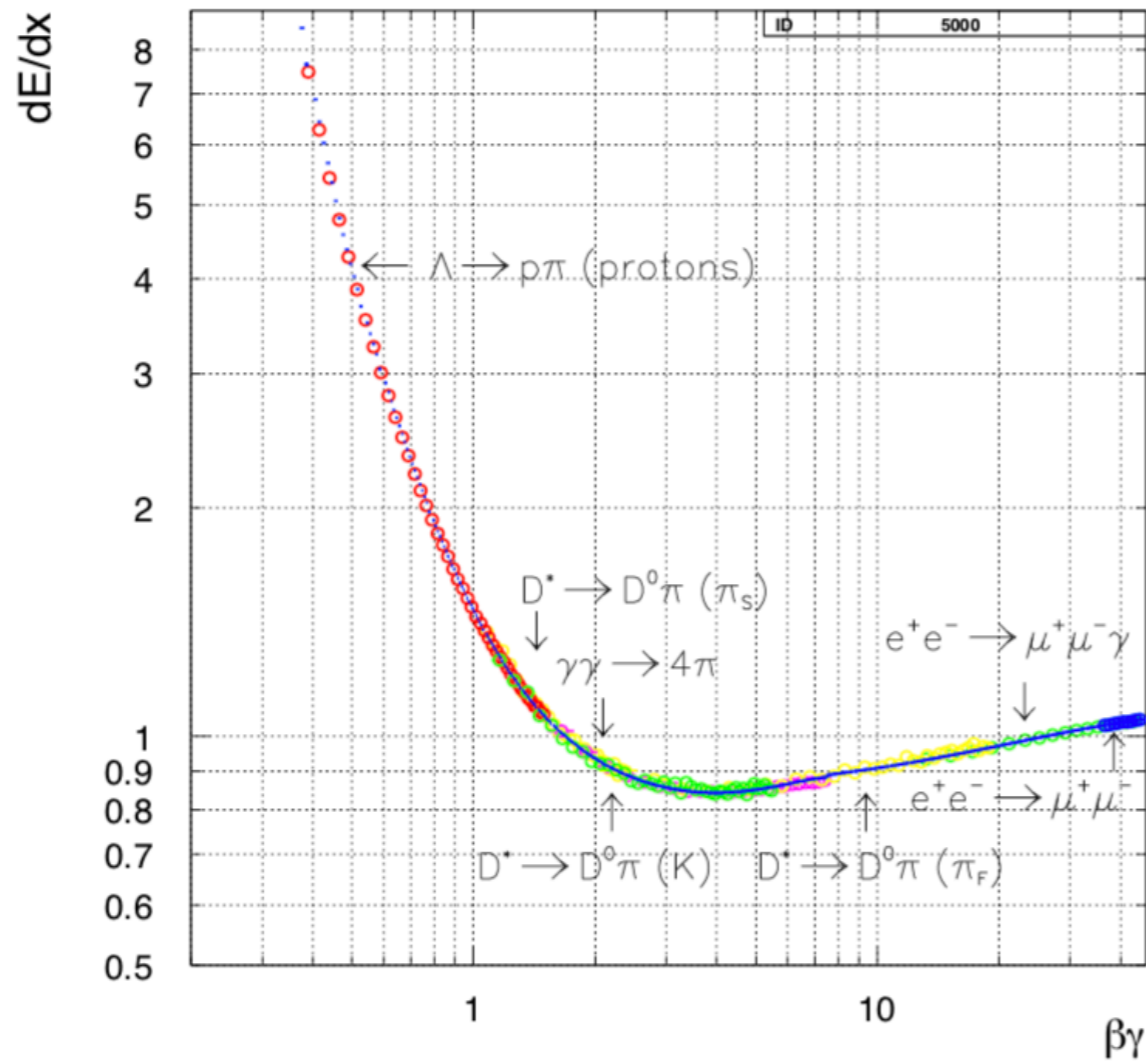
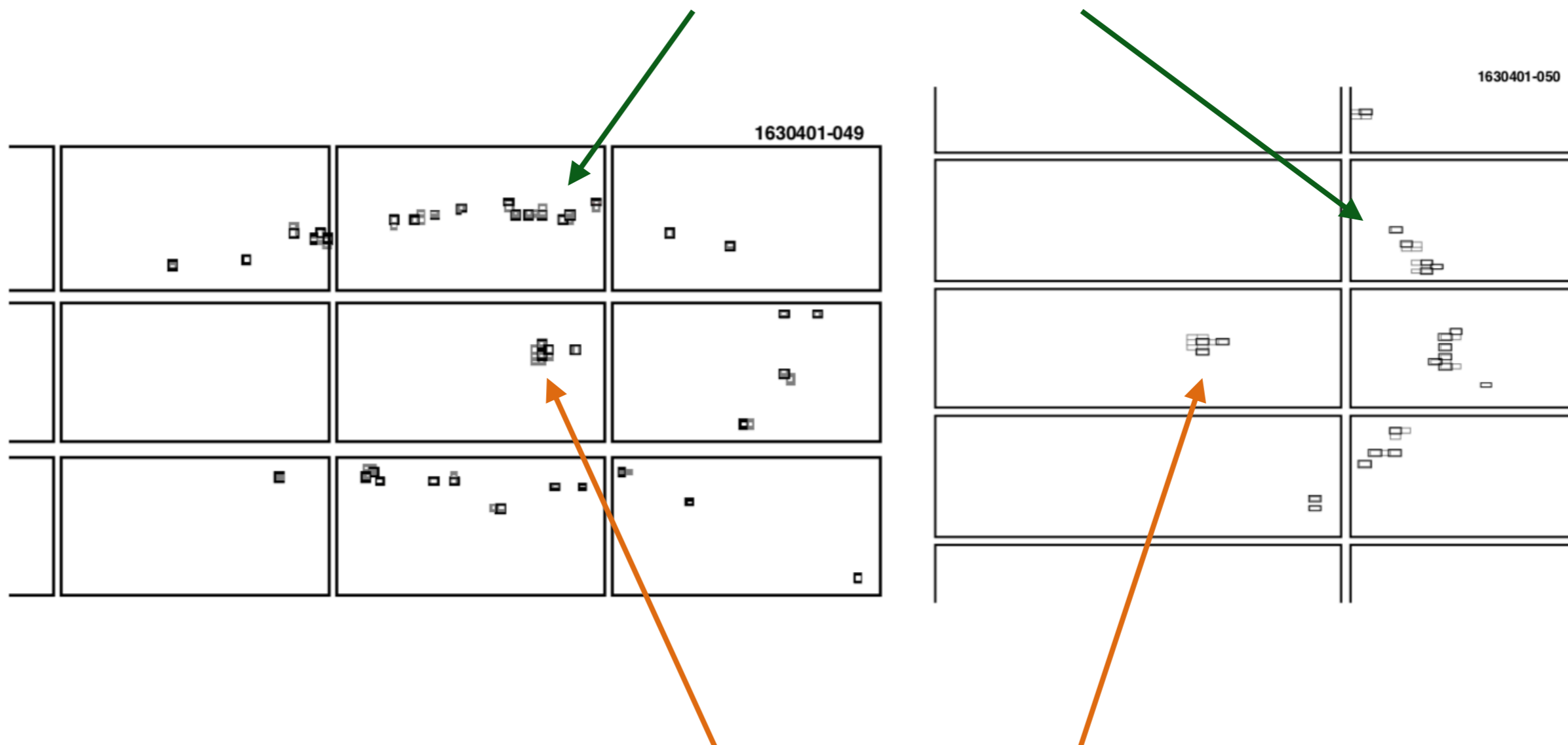


Figure 1: (a) dE/dx vs $\beta\gamma$ and (b) dE/dx vs momentum (linear and log)

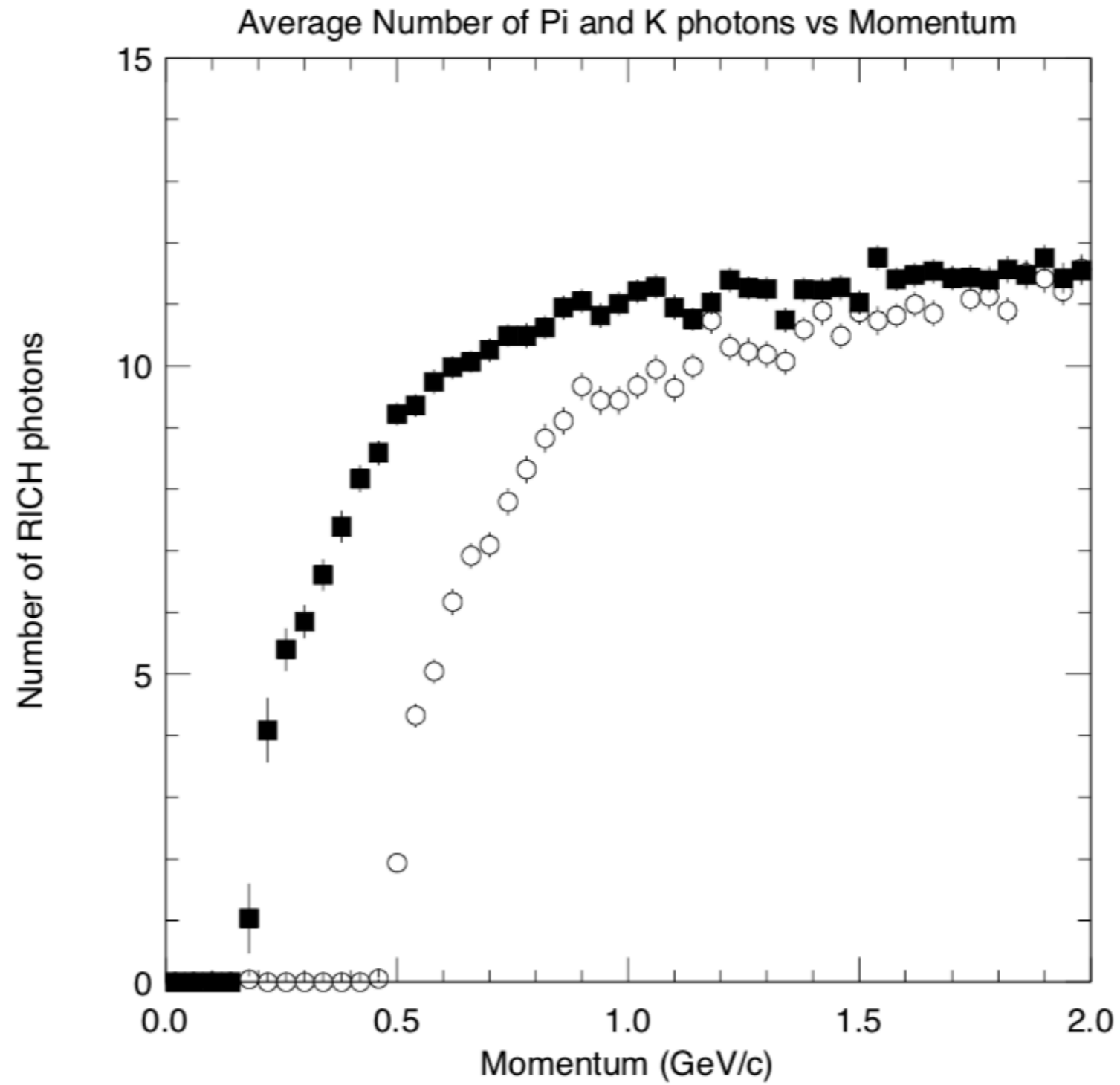
RICH Rings

Cherenkov Rings



Incident Particle

RICH Thresholds



RICH Likelihood difference

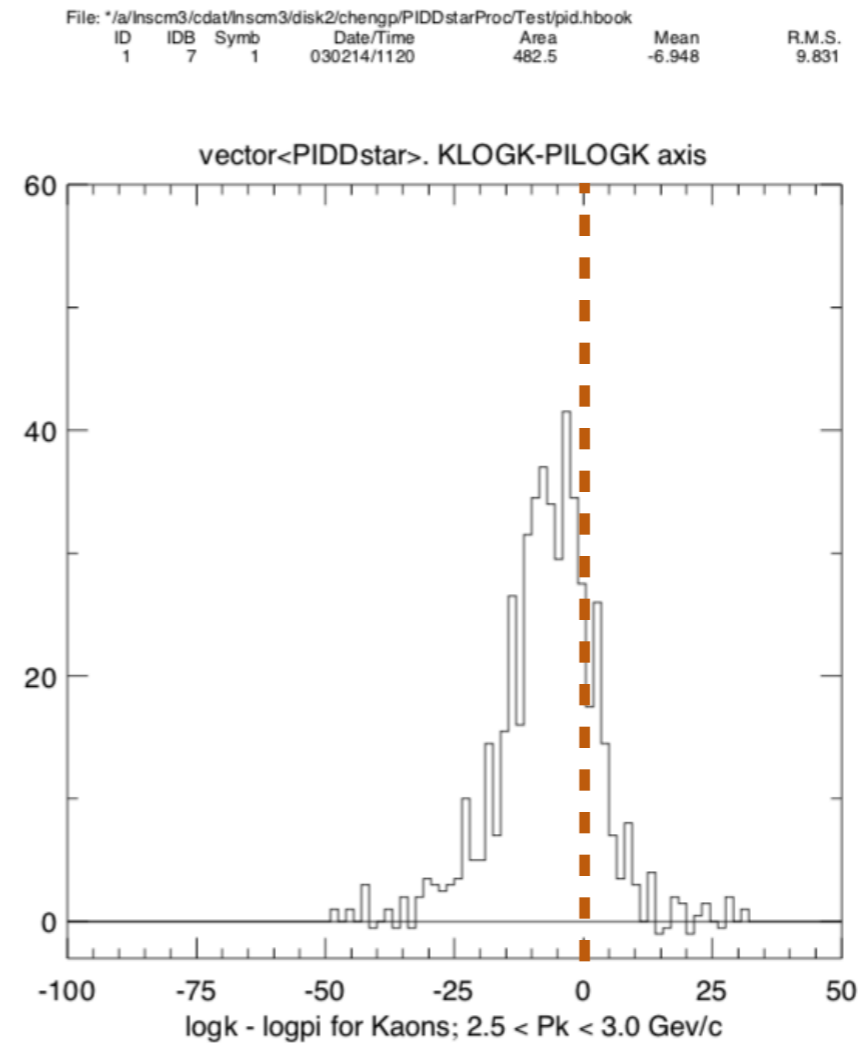
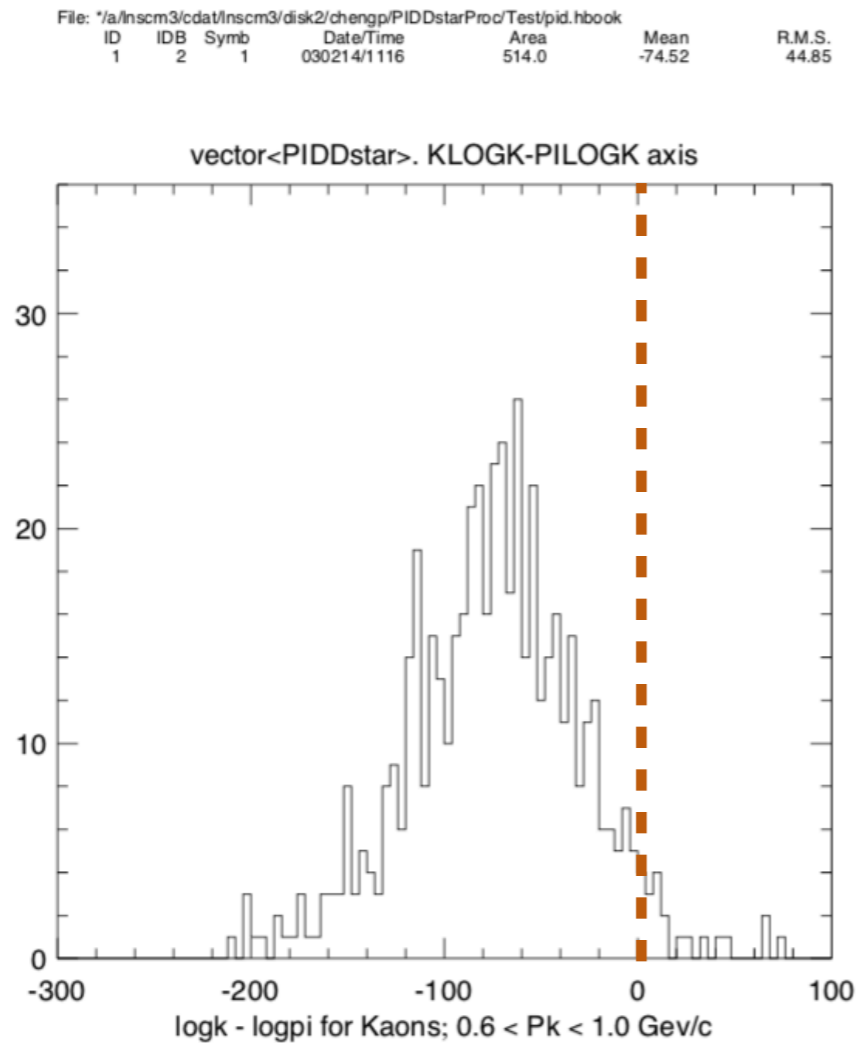


Figure 5: (a) K/π $\log(\text{likelihood})$ difference for P_K between 0.6 and 1.0 GeV/c (b) Same as (a) but P_K between 2.5 and 3.0 GeV/c

PID Variables

- Electron ID: $E(CC)/p(\text{track})$, shower shape
- Hadron ID:
 - DC dE/dx: $sig = ((dE/dx)_{meas} - (dE/dx)_{expected}) / \sigma$.
 - RICH Likelihood: Log-likelihood based on Cherenkov angle for particle hypothesis for each photon
 - “Low” momentum: Just dE/dx (absolute, relative)
 - “High” momentum: Combined likelihood variable

$$\mathcal{L}_K = (LL(K) - LL(\pi)) + (\sigma_K^2 - \sigma_\pi^2).$$