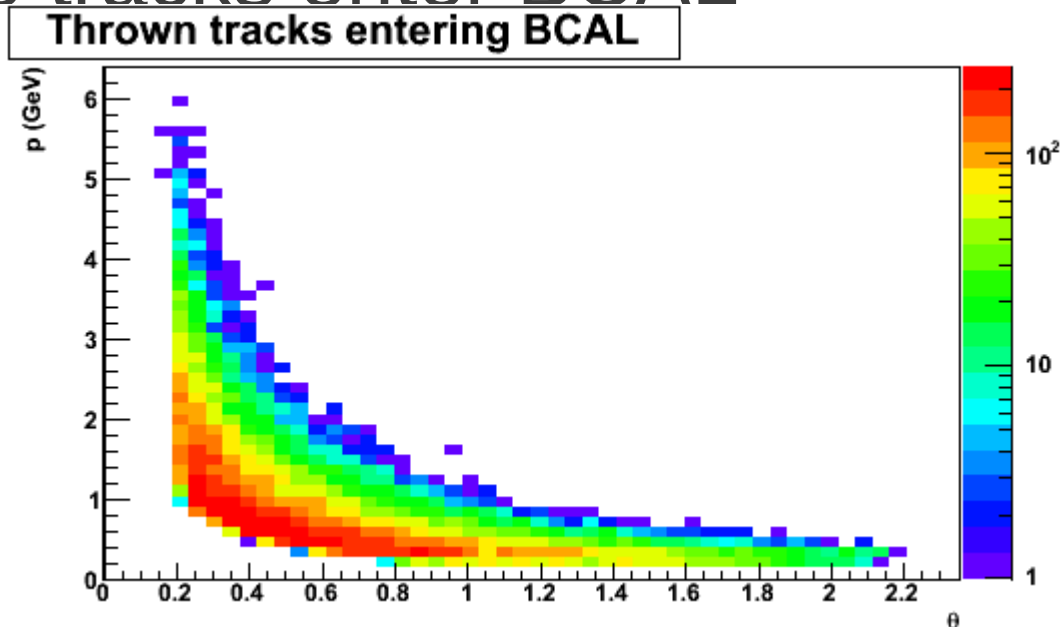


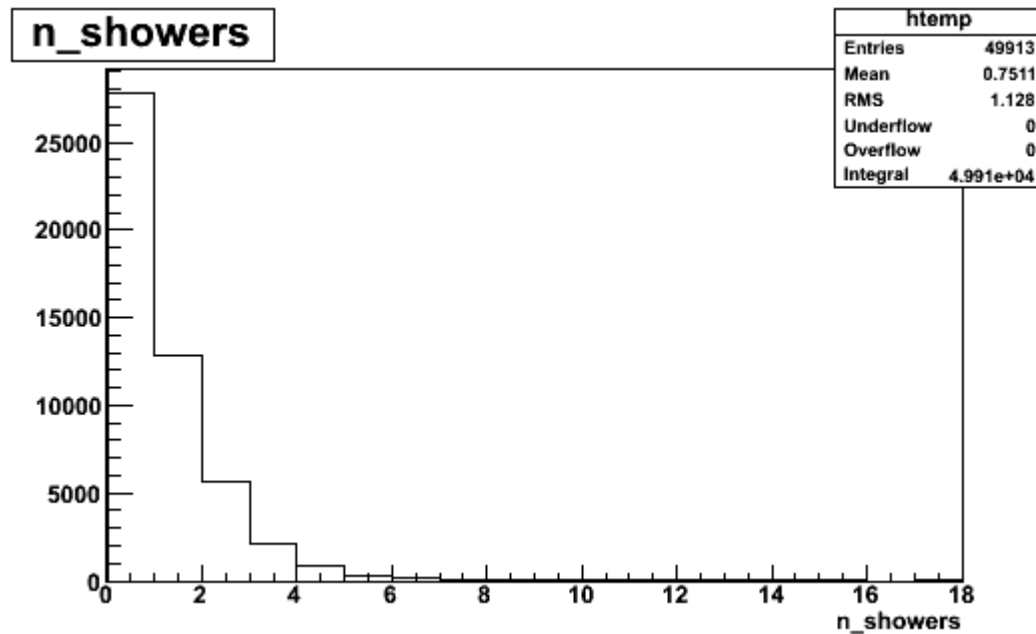
# Charged pions in the BCAL

- 50,000 single-charged-pion events isolated from pythia sample
- Construct tracks (DReferenceTrajectory) from **thrown** momentum
- ~22,000 tracks enter BCAL



# Charged pions in the BCAL

- ~22,000 events with  $>1$  BCAL Shower

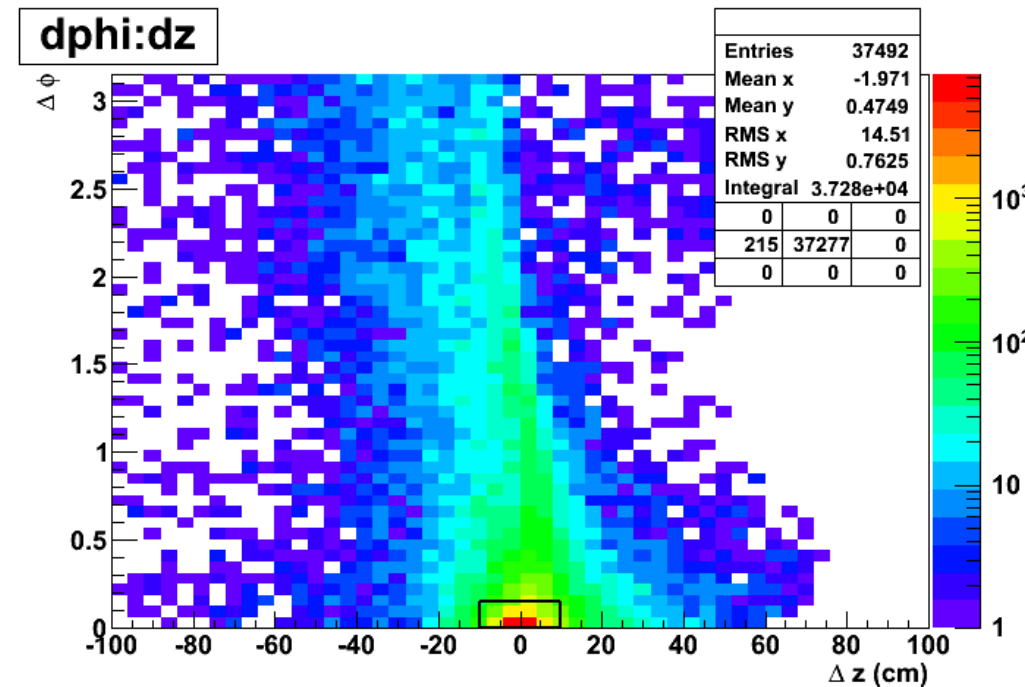


# Matching tracks to clusters

- How to decide if track matches a BCAL cluster
  - DParticleID:MatchToBCAL()
  - Calculate track's point of closest approach to cluster location
  - Compare POCA with cluster location, track matches if
    - $|\Delta z| < 10 \text{ cm} \ \&\&$
    - $\left| \Delta\phi + 0.002 + \frac{0.008314}{(p + 0.3788)^2} \right| < 3 \left( 0.025 + \frac{0.00058}{p^3} \right)$ 
      - ???
  - This is wrong
    - No consideration of radial coordinate means you get matches where track is not near BCAL

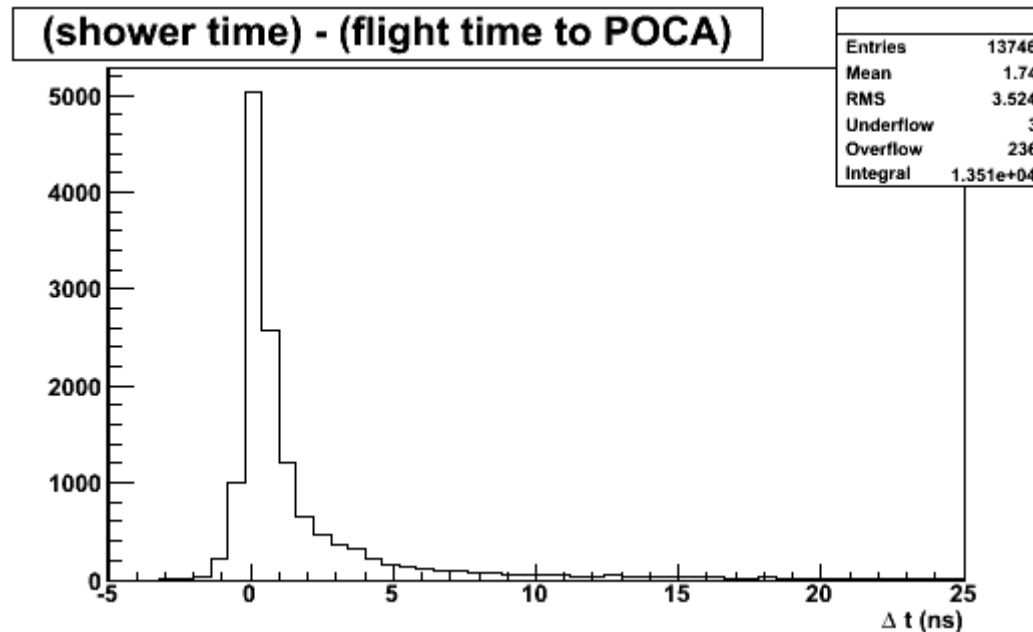
# Matching tracks to clusters

- Compute closest distance between **thrown** track and BCAL cluster
- Only ~50% of clusters in black box



# Timing

- (shower time) – (flight time to POCA of **reconstructed** track)
- Using more stringent than default matching criteria to prevent false matches



# Timing

- Potential effect on PID?
- Why?
  - Not due to bad cluster-track matching

