12 GeV Upgrade
Future Science at Jefferson Lab

Hall B – CLAS12
KPP Demonstration

March 1, 2017

Hall B Key Performance Parameters

Commissioning Run: 2 days: Feb. 10 – Feb. 12, 2017

Detector operational: events recorded with a > 2 nA electron beam at > 6 GeV beam energy (3 passes)

KPP Demonstration:

1. **Detector running for 8 hours recording data from all subsystems.**
2. **Screenshots of beam status and/or accelerator e-log.**
3. **Plots showing relative timing of calorimetry, time-of-flight, and Cherenkov detectors.**
4. **Event displays showing correlated particle hits in the Forward Detectors.**
5. **Plots of reconstructed particle trajectories showing target position.**
6. **Particle identification plots using signals from calorimetry and Cherenkov detector.**

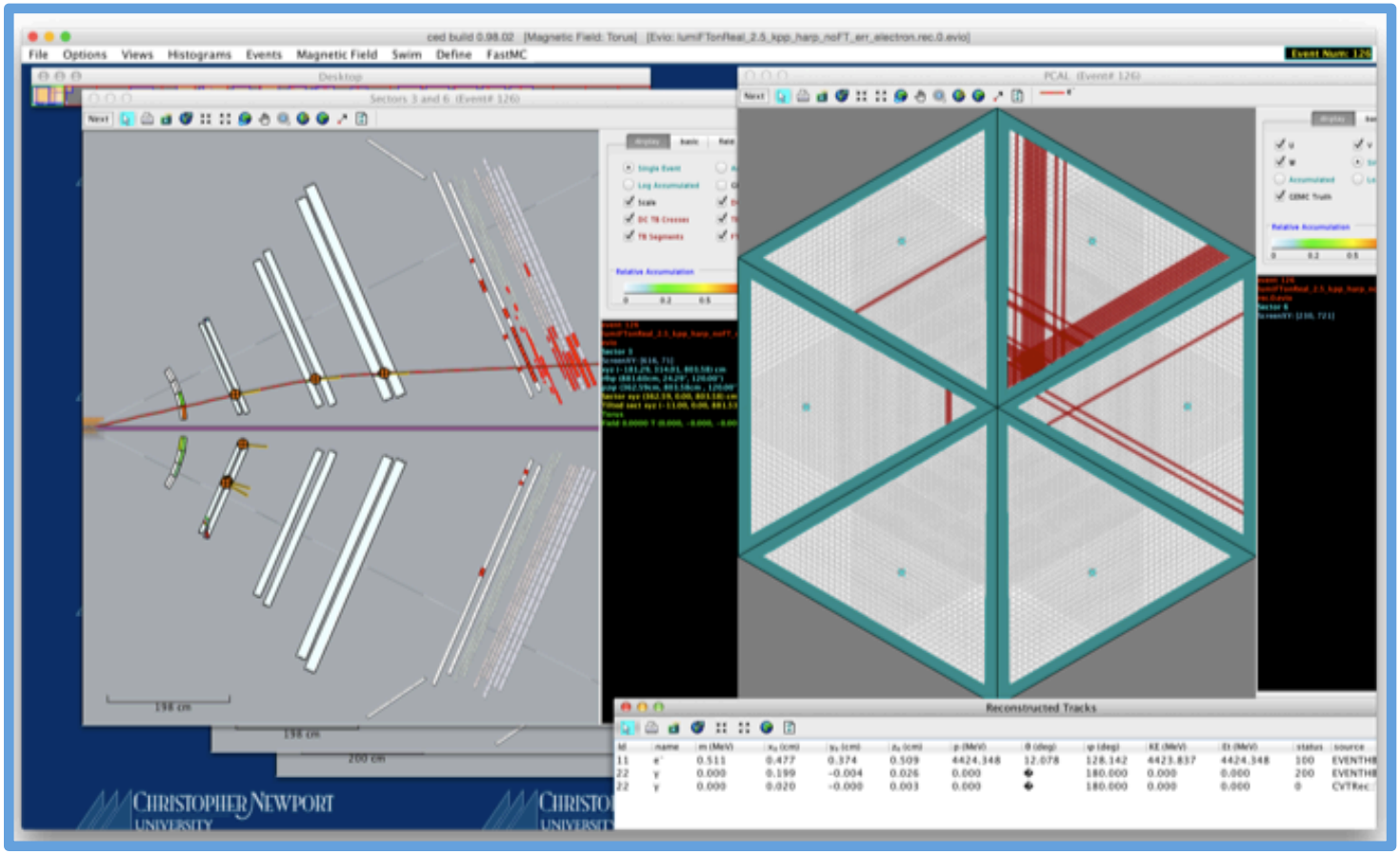
Hall B Glossary

Acronym	Detector
CTOF	Central Time-of-Flight
DC	Drift Chamber
EC	Electromagnetic Calorimeter
FTOF	Forward Time-of-Flight
HTCC	High Threshold Cherenkov Counter
LTCC	Low Threshold Cherenkov Counter
PCAL	Pre-shower Calorimeter
SVT	Silicon Vertex Tracker

1: Detector Running: Data Taking

Data taking with the full detector readout:

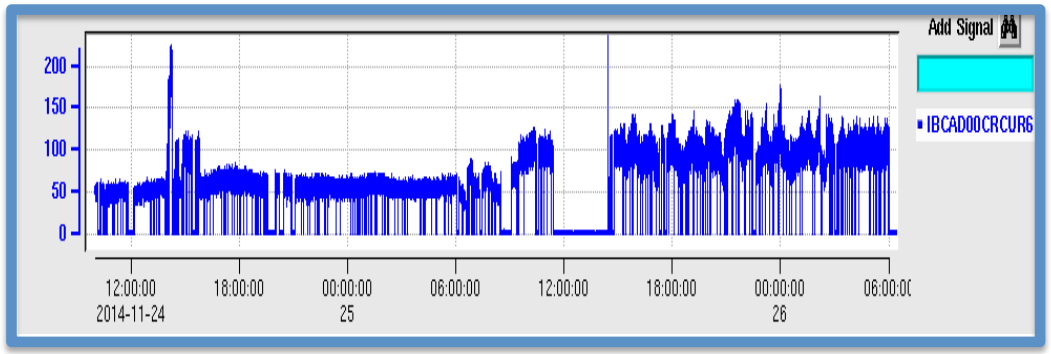
- **8 hr data taking on Feb. 10 8:00 a.m. – 4:00 p.m. - 5 nA, carbon wire, electron trigger**



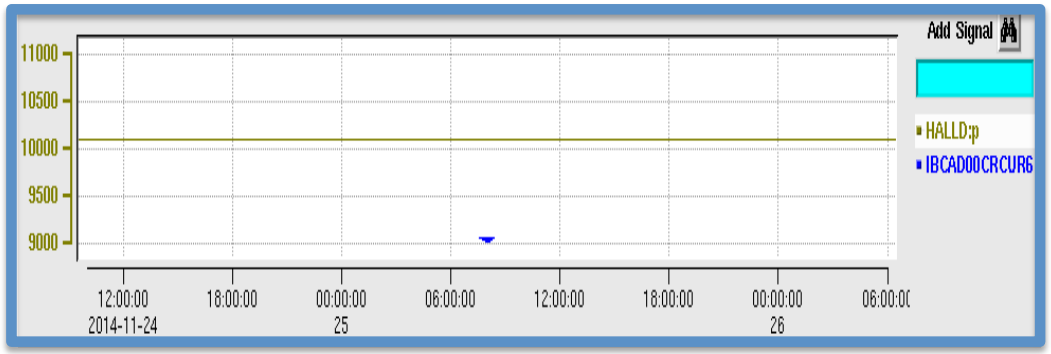
2: Running Conditions

1-day running period: 5-10 nA, 6.4 GeV electrons

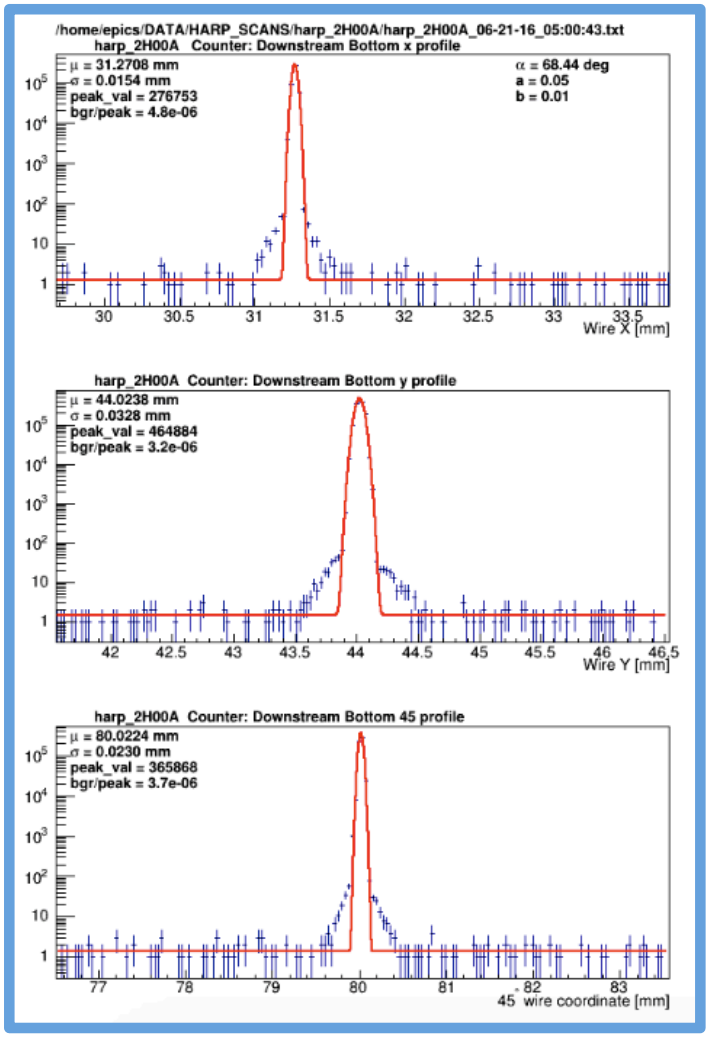
Beam Current, nA



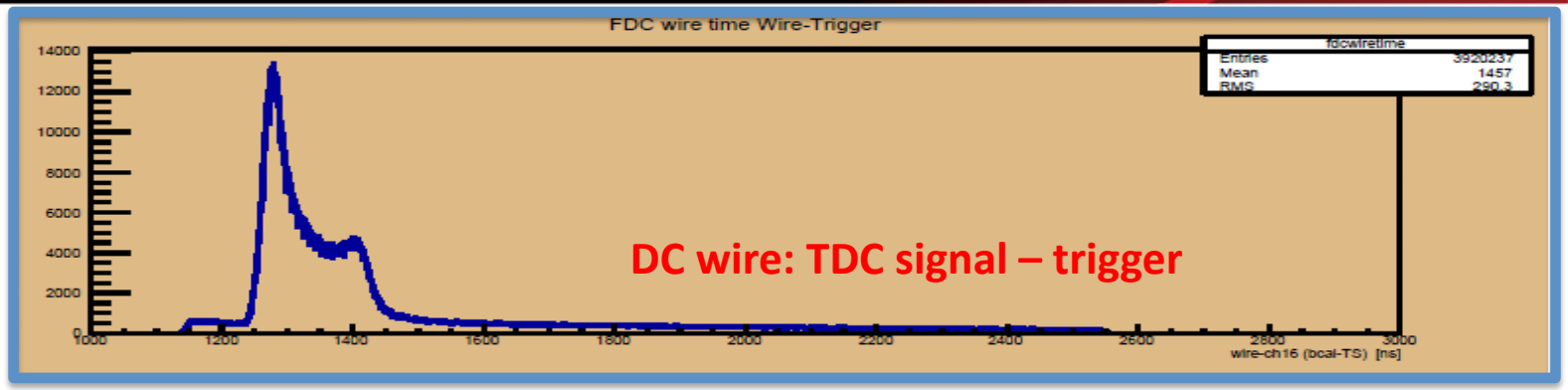
Beam Energy, MeV

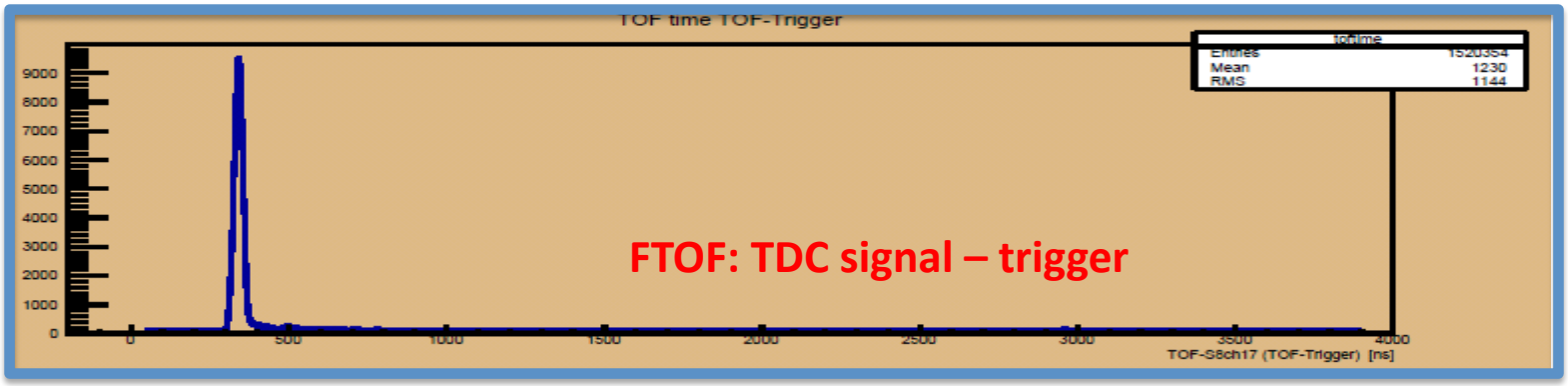


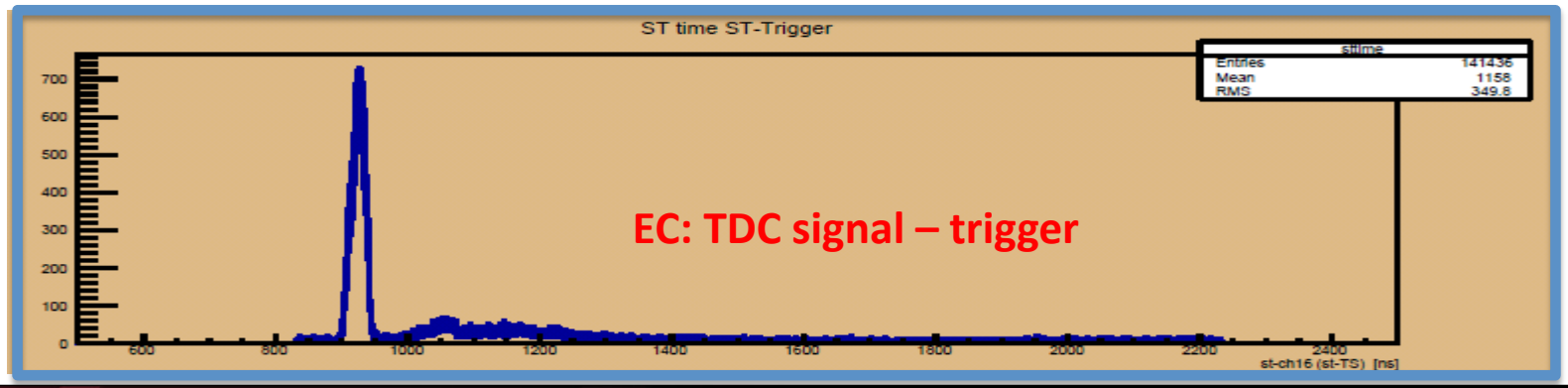
Beam Profile – Harp Scan



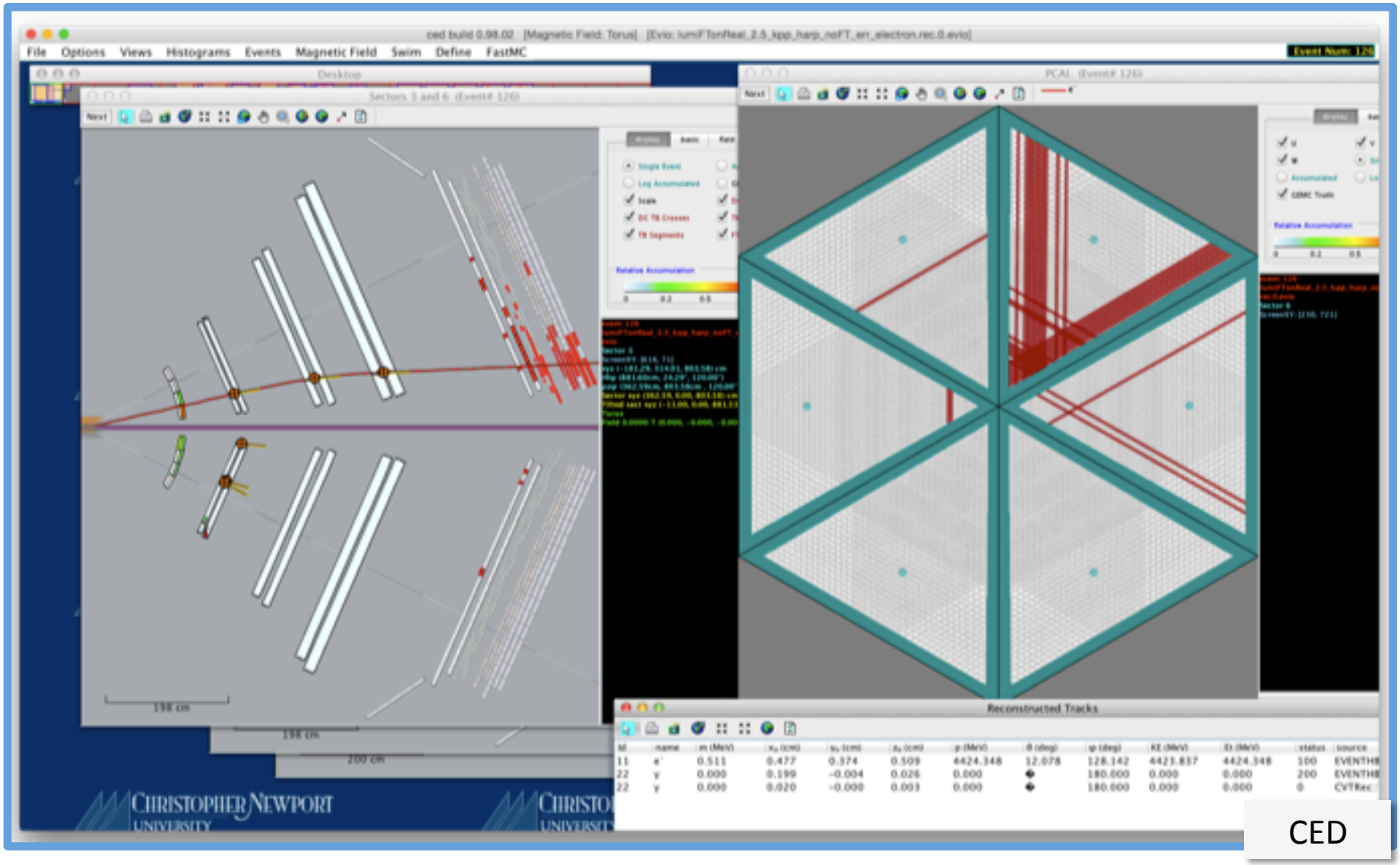
3: Relative Timing of Signals





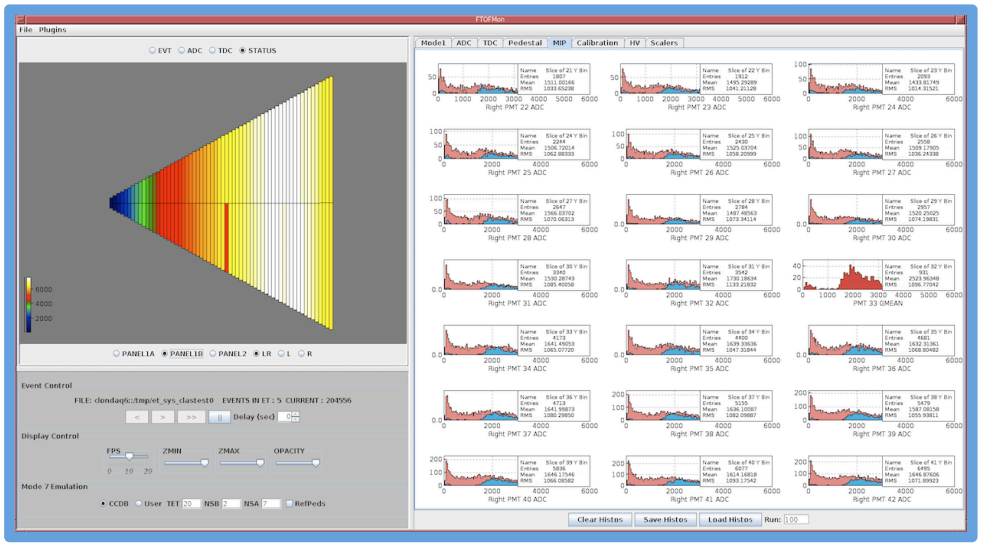


4: Event Displays

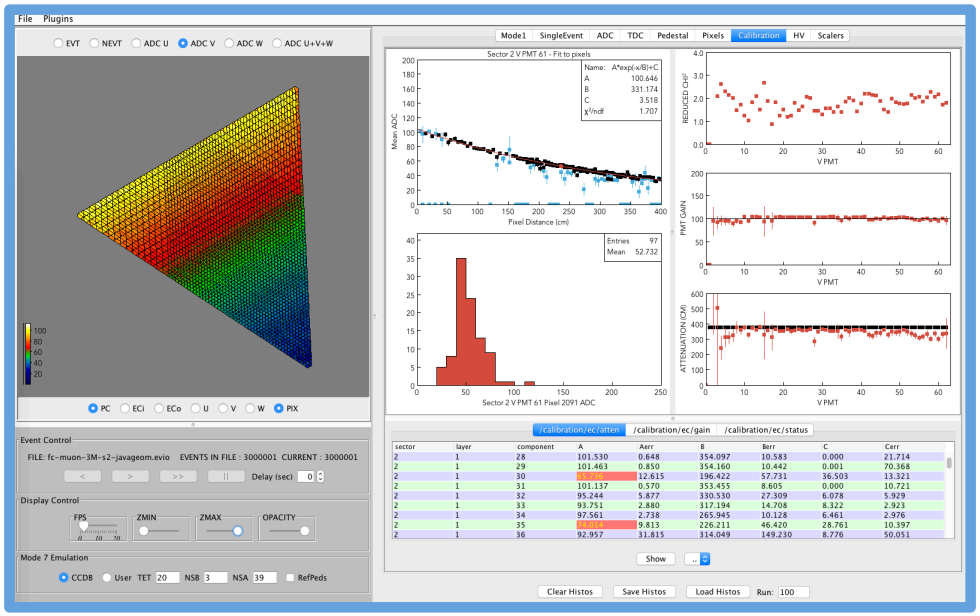


CED

4: Event Displays

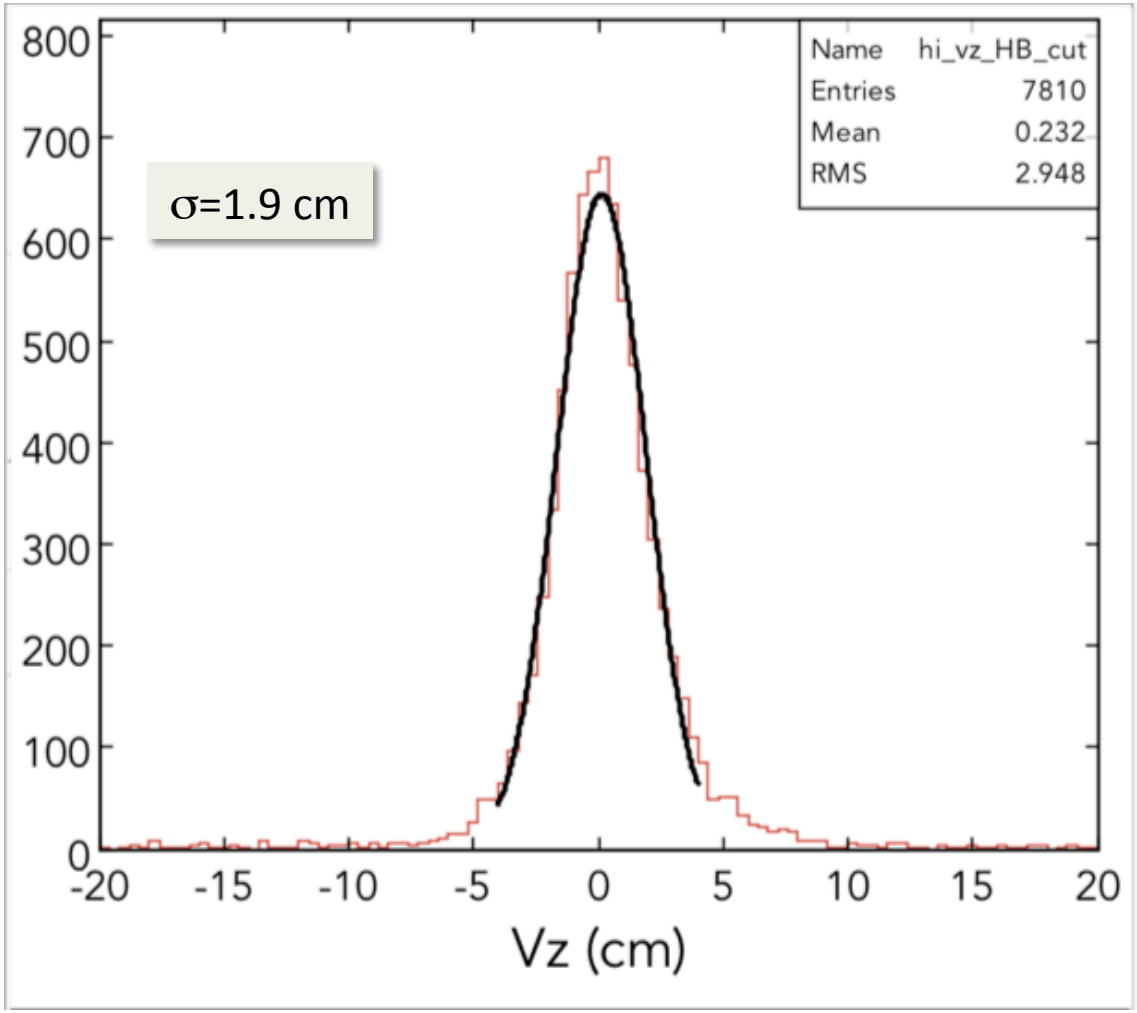


FTOF



PCAL

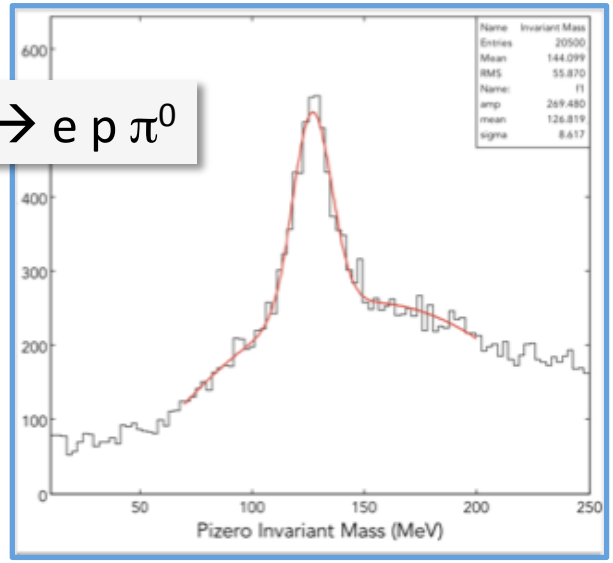
5: Reconstructed Particle Trajectories



Hit-based Tracking with DC

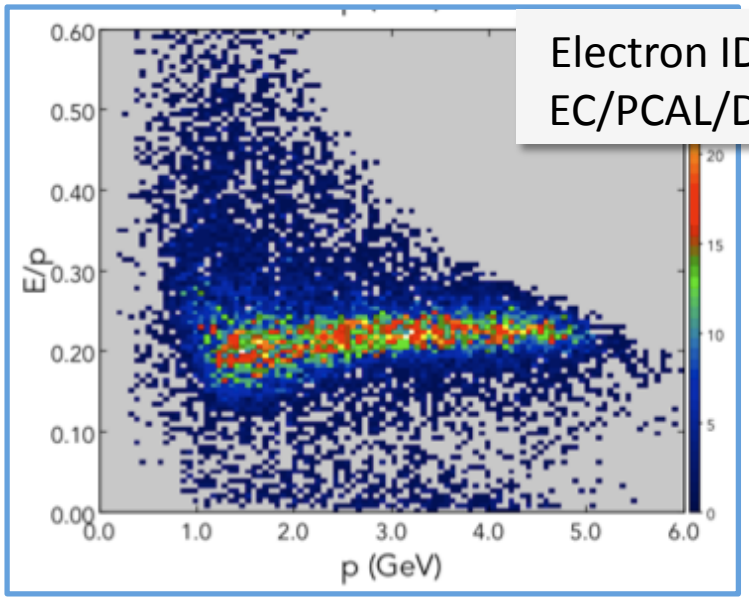
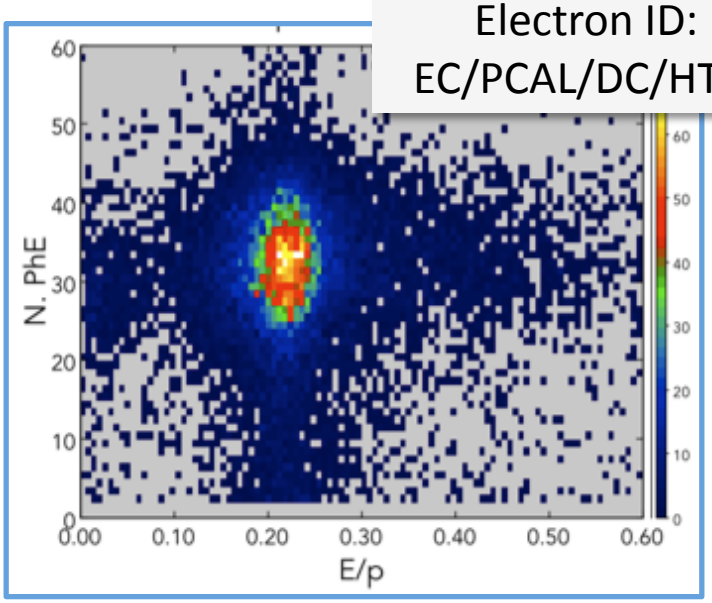
6. Particle Identification

$e\ p \rightarrow e\ p\ \pi^0$



Neutrals ID:
EC/PCAL

Electron ID:
EC/PCAL/DC



Electron ID:
EC/PCAL/DC/HTCC