Pass0 Analysis: SVT Hits and Timing II

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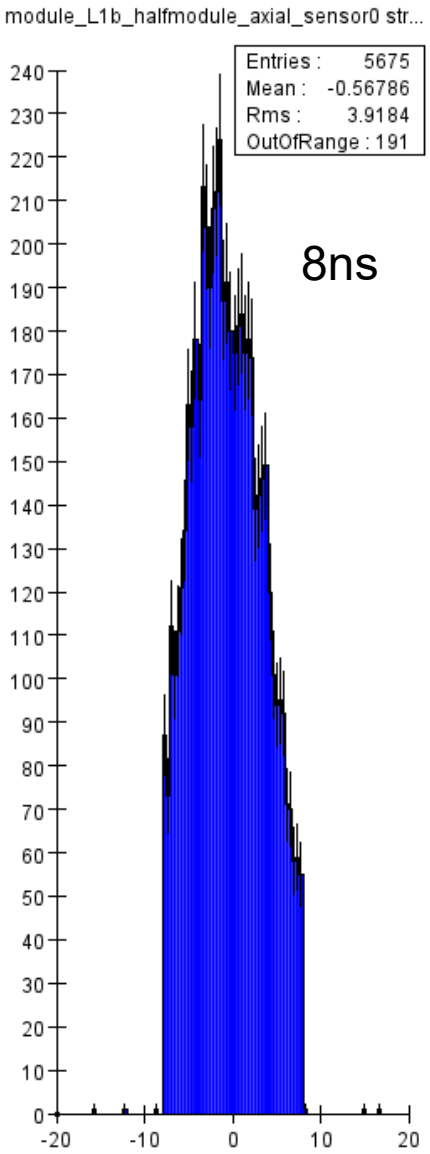
Reconstruction / Analysis Meeting

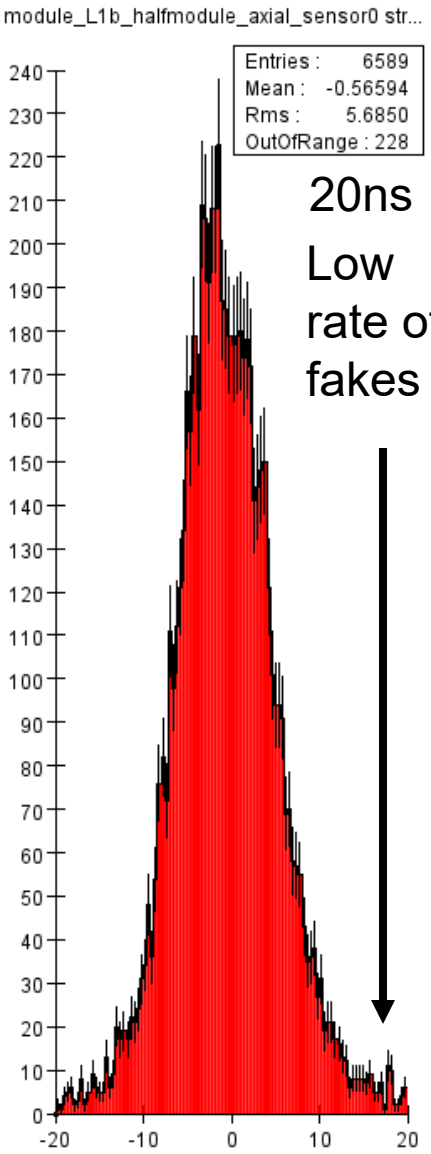
March 28, 2023

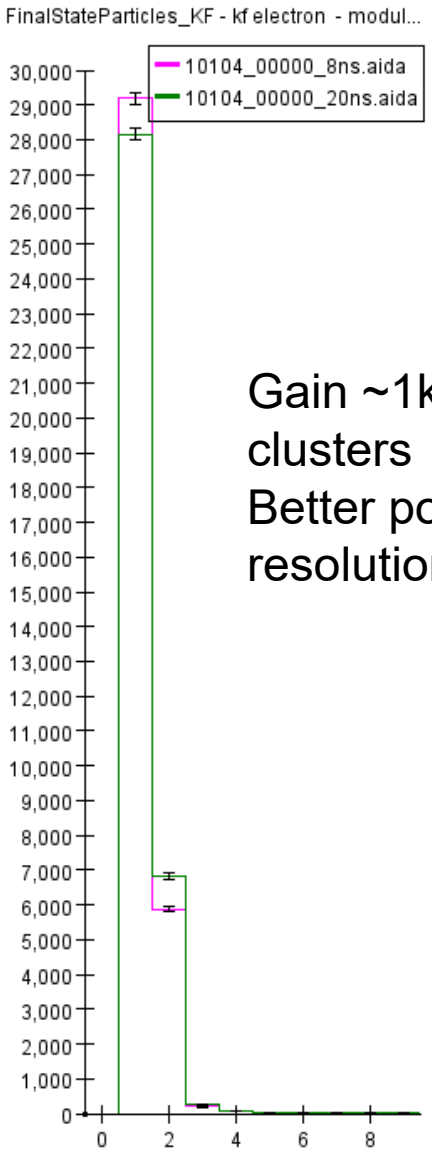
SVT Hits and Timing Data

- Previous talk demonstrated that the 8ns timing cut in the strip-clustering was too aggressive
- Reconstruct some 2019 data using default value of 8ns and also with a looser cut of 20ns
  - batch farm was experiencing hardware issues, so only reconstructed one set of skims, 10104 bottom FEE
- Compare output

Two-strip Cluster δHit Times Layer 1

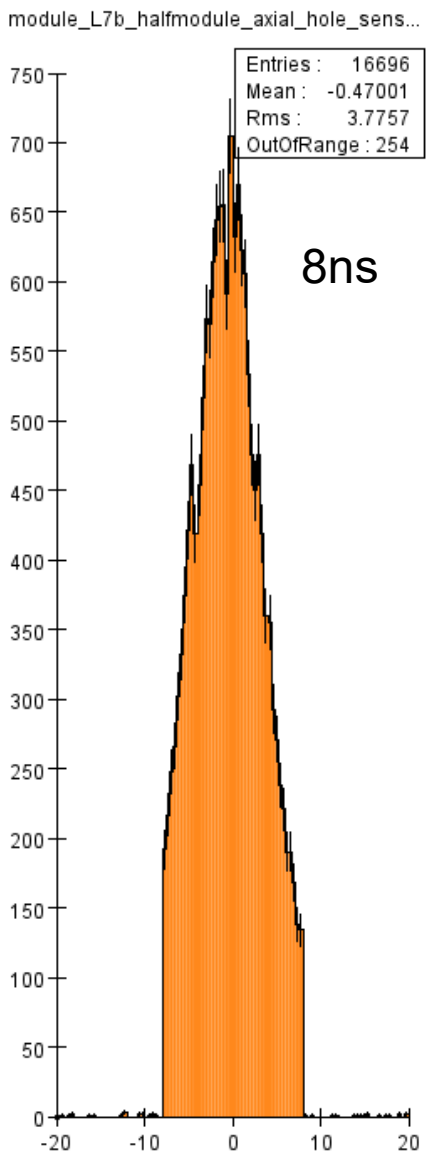


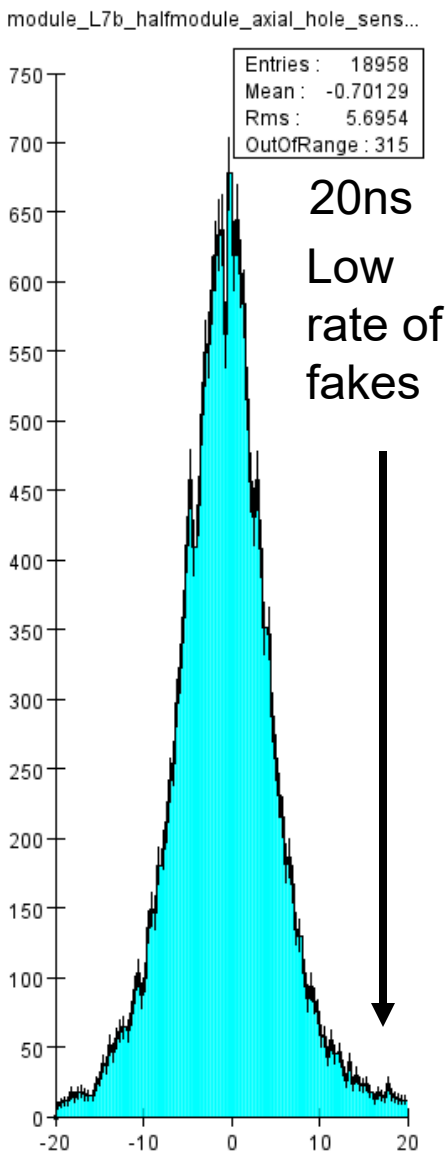


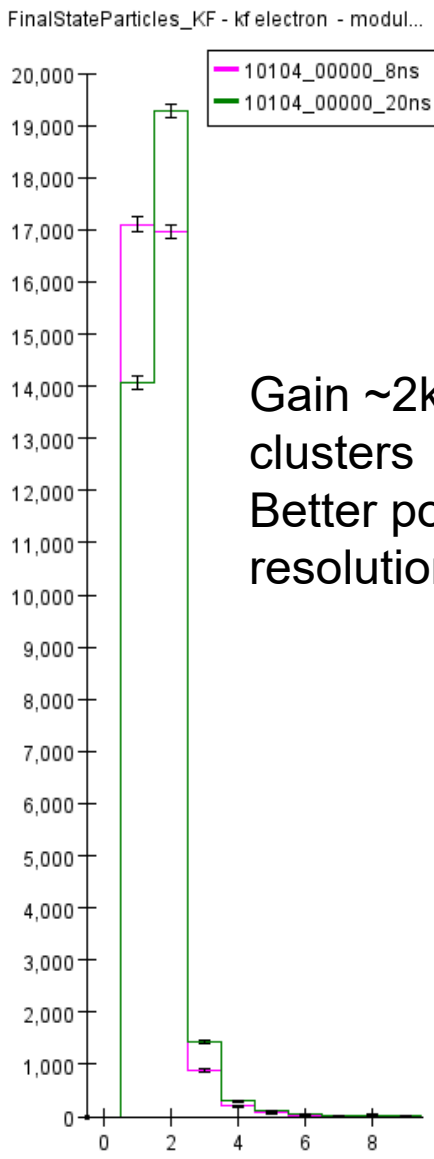


Gain ~1k two-strip clusters
Better position and resolution

Two-strip Cluster δHit Times Layer 7

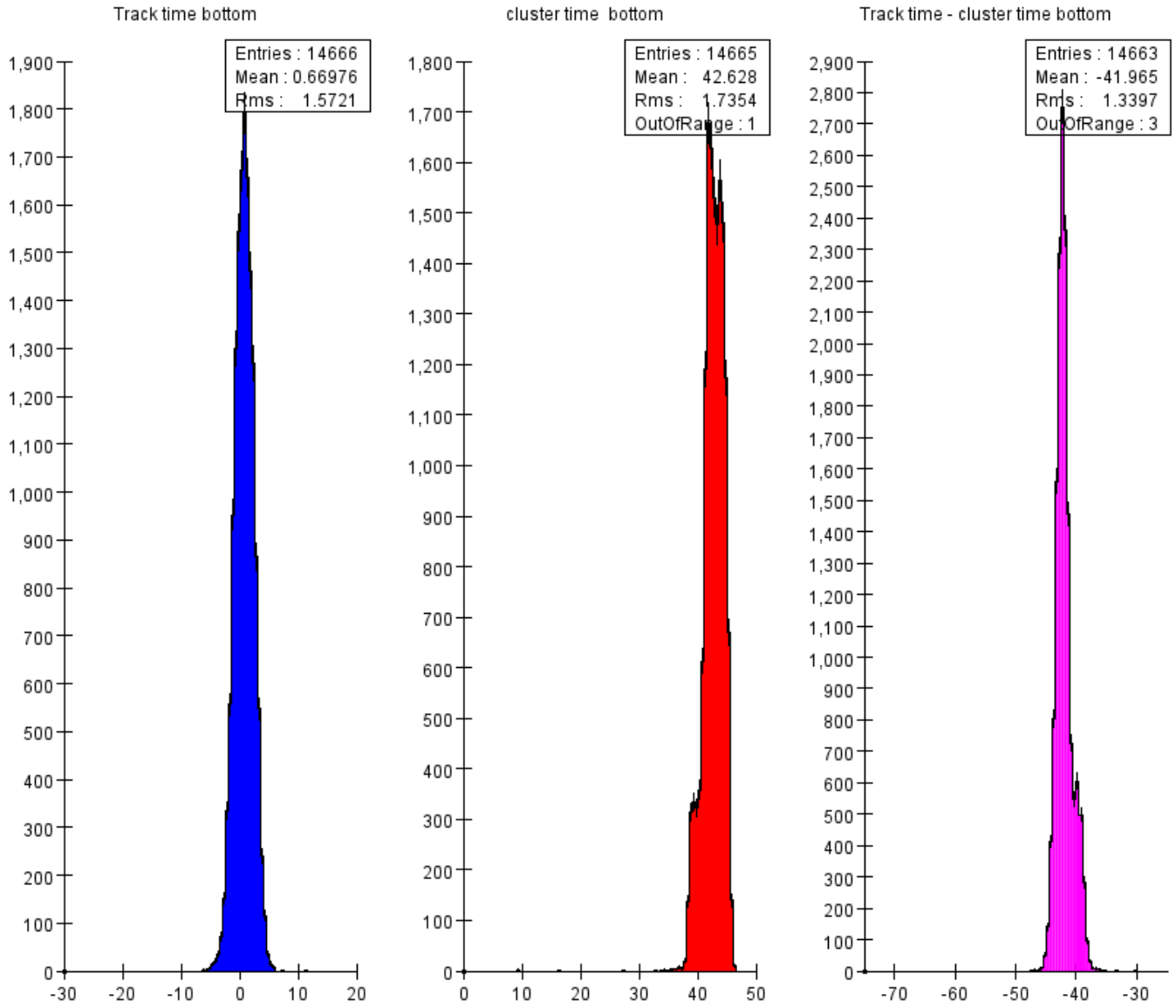




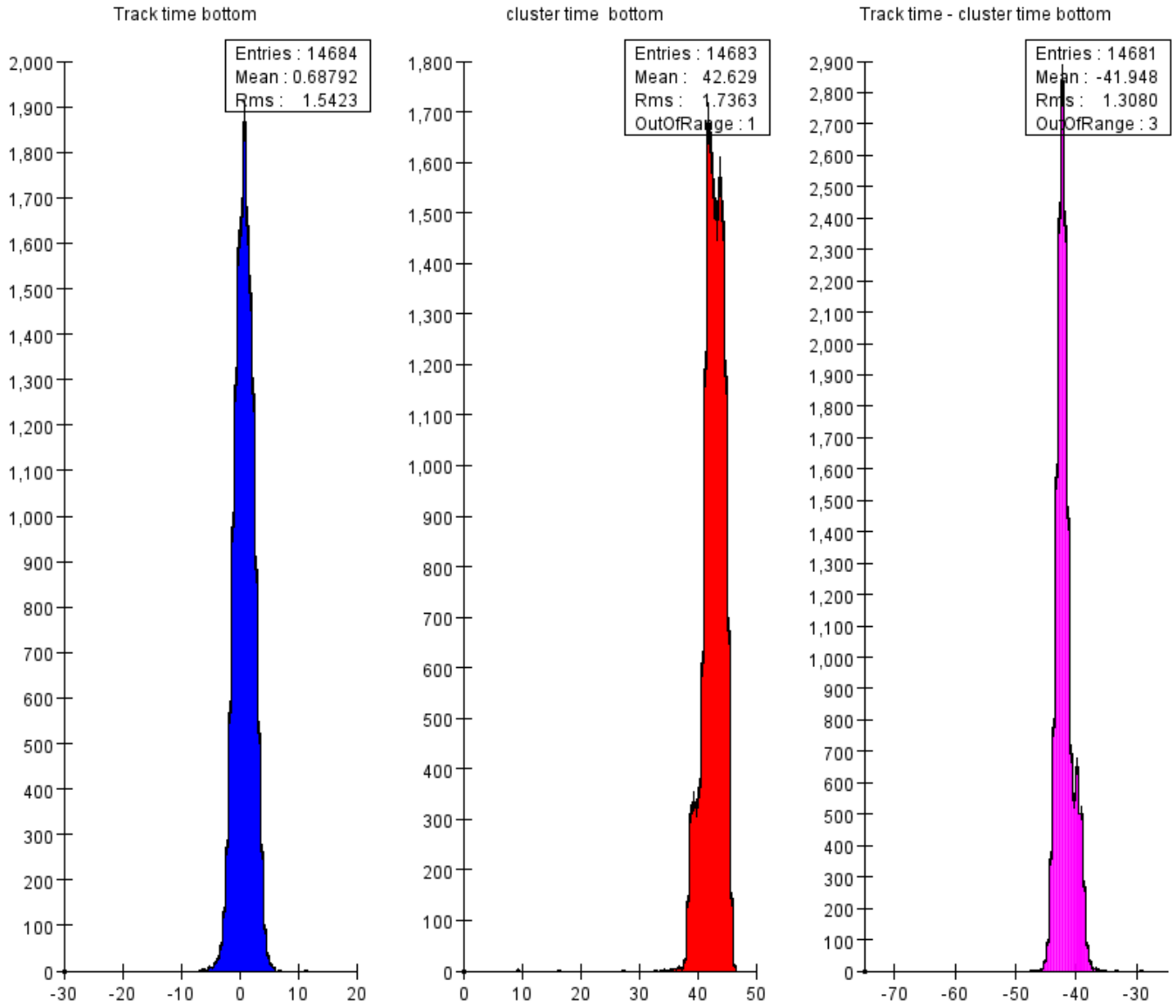


Gain ~2k two-strip clusters
Better position and resolution

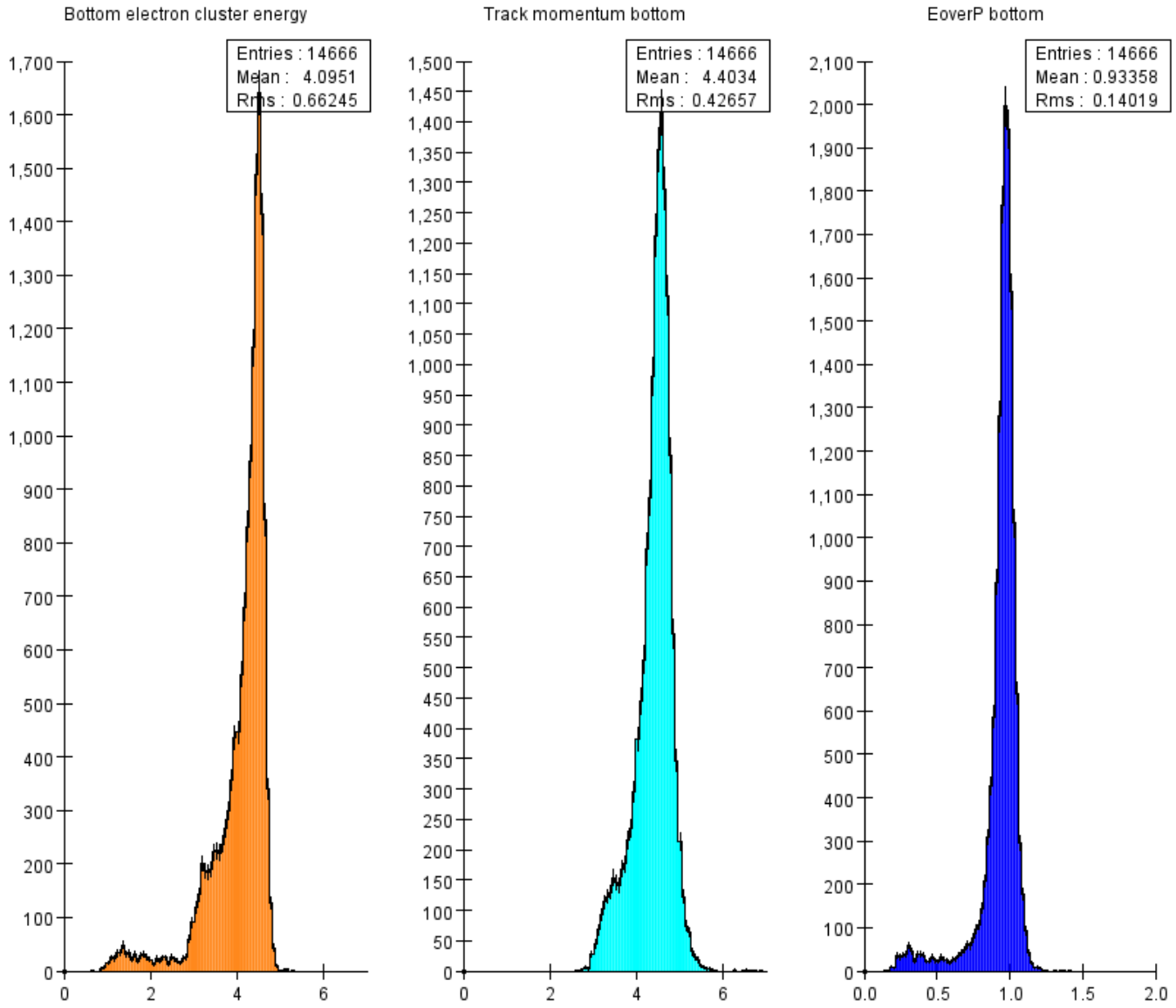
Track & Cluster Times 8ns



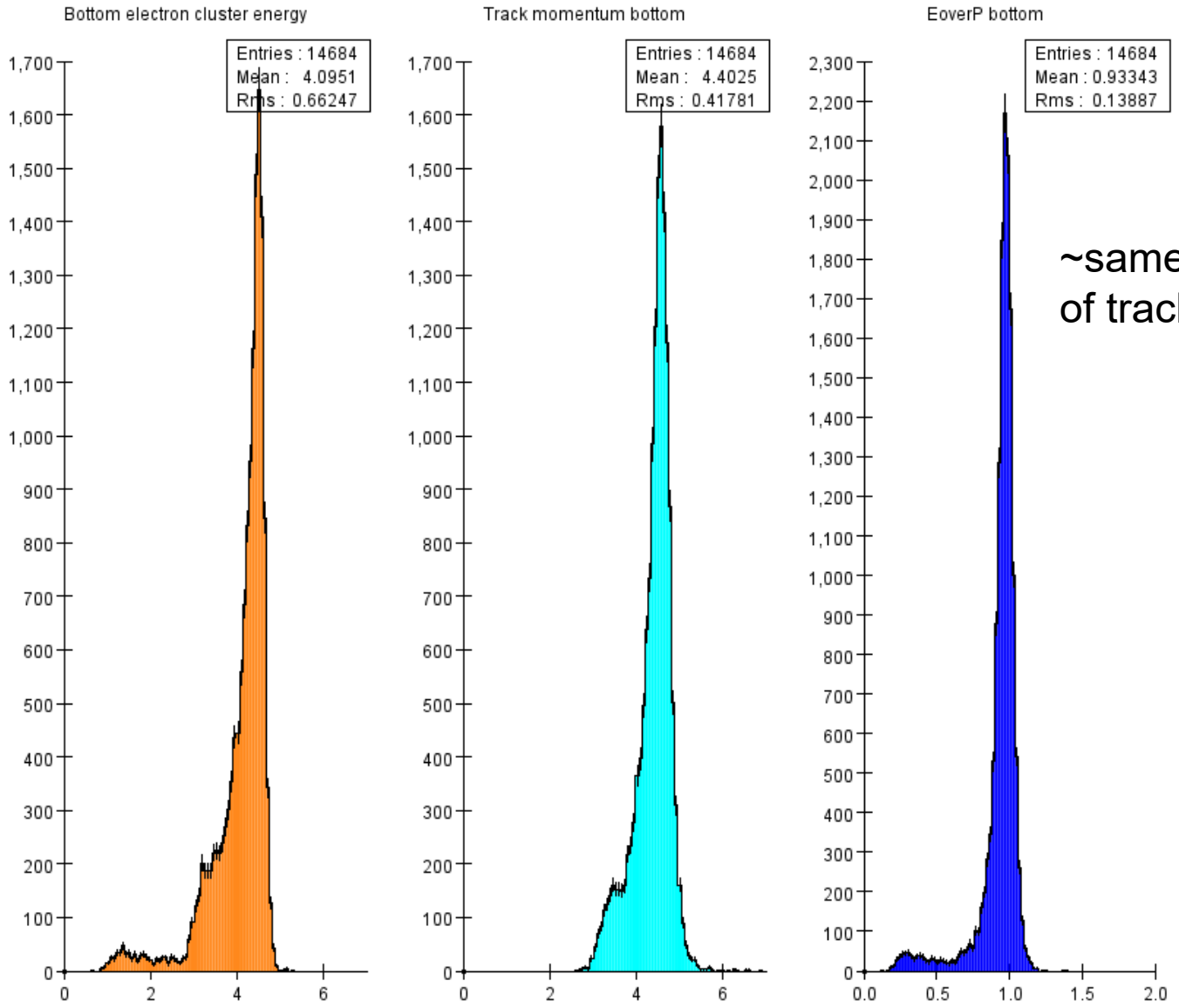
Track & Cluster Times 20ns



Energy, Momentum, E/p 8ns

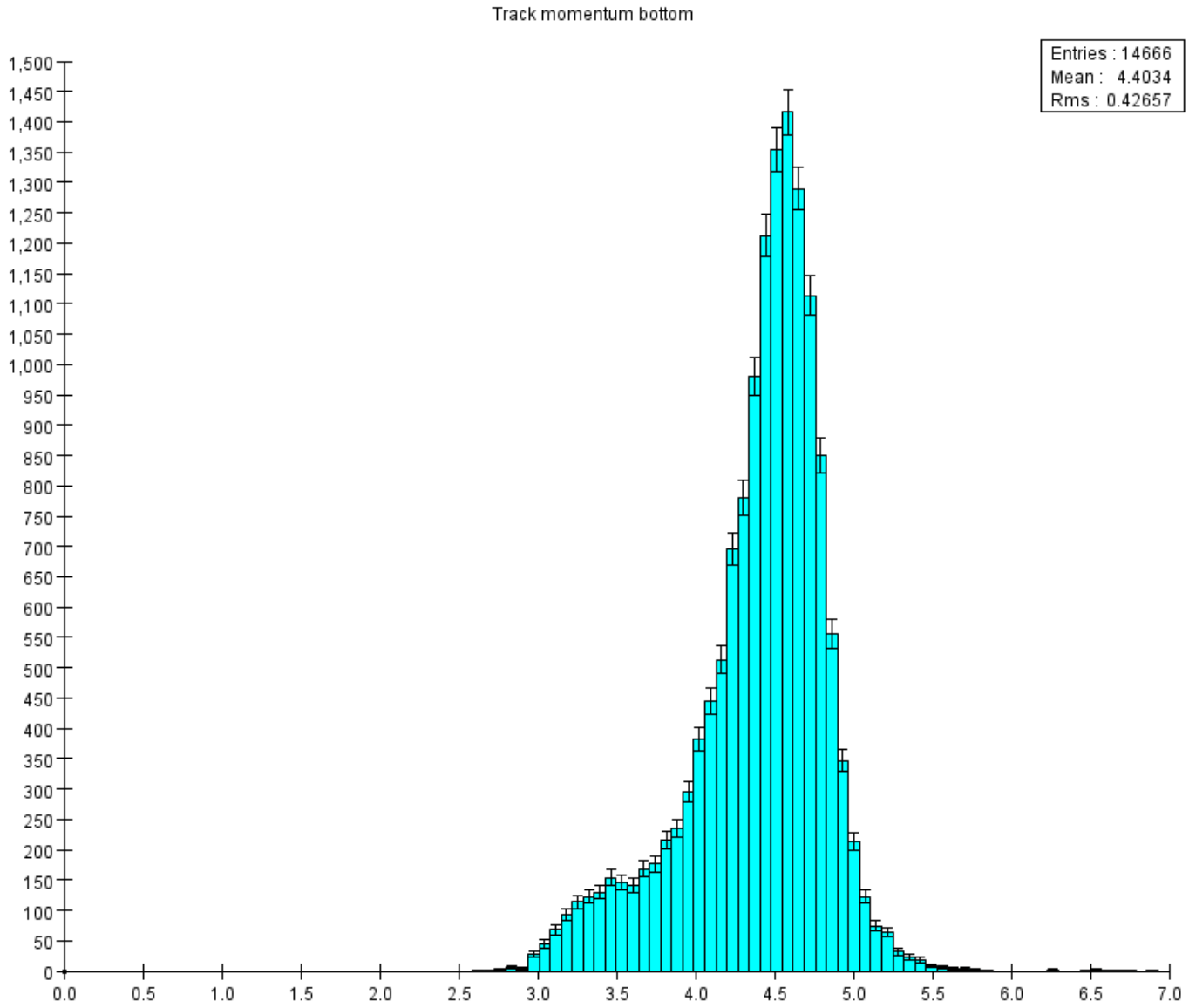


Energy, Momentum, E/p 20ns

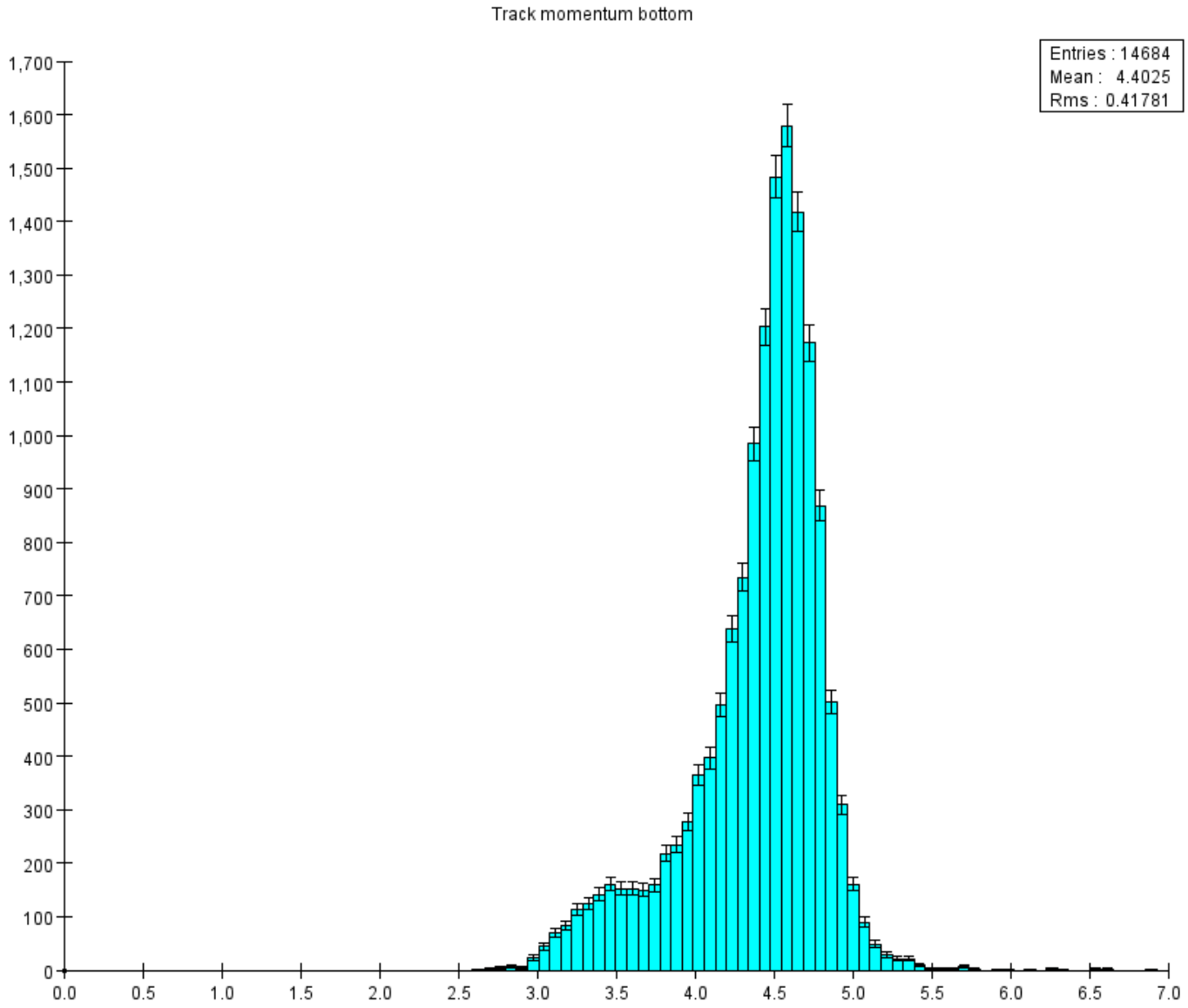


~same number of tracks found

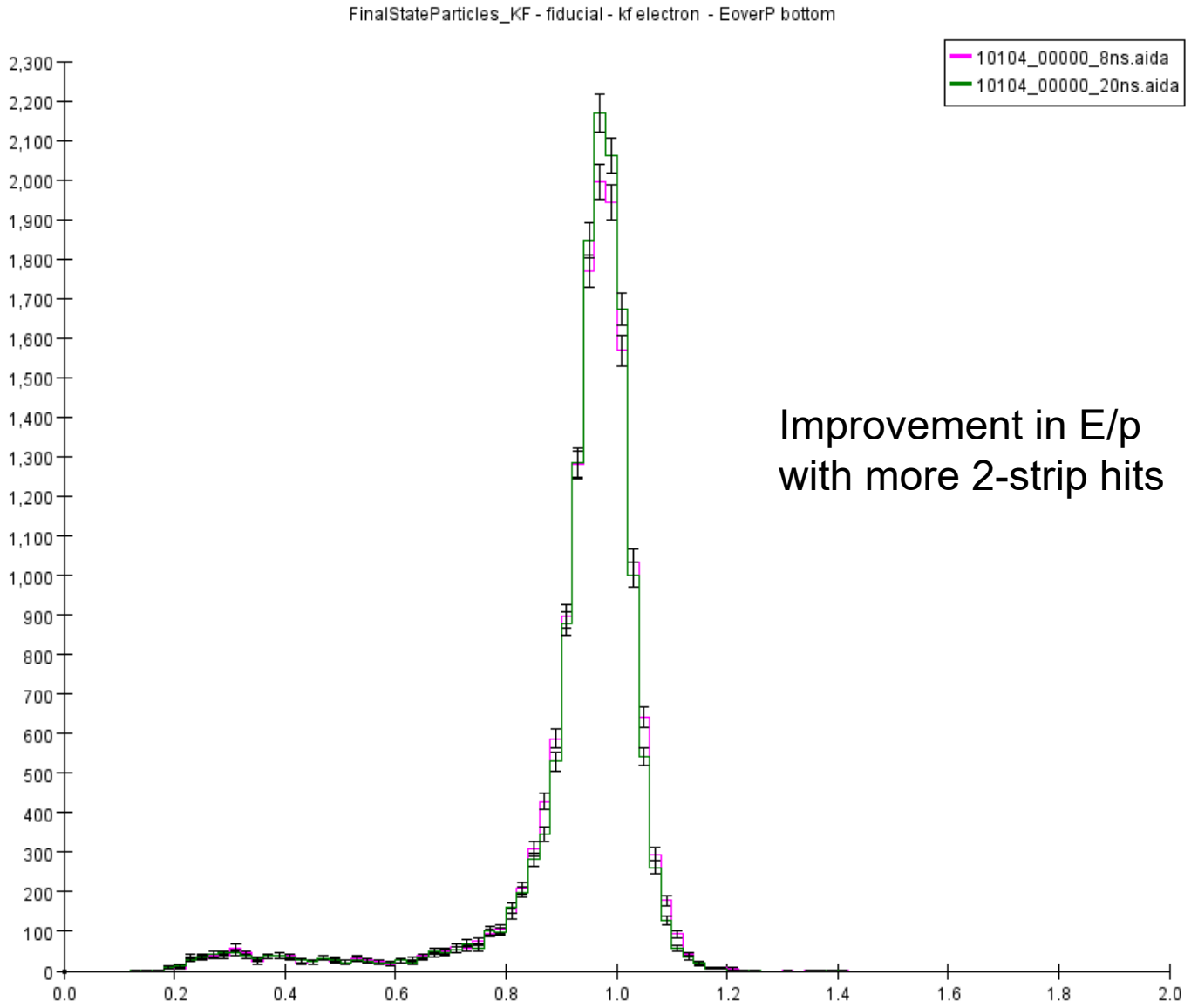
Track Momentum 8ns



Track Momentum 20ns



E/p 8/20 ns



Improvement in E/p
with more 2-strip hits

Summary

- Opening up the time window for strip clustering from 8ns to 20s does not appear to introduce any appreciable background
  - delta-time distribution ~baseline resolved
- Promotion of single-strip clusters to two-strip clusters leads to an improvement in the track momentum reconstruction.
- 20ns should be the default for further processing unless we can achieve significant improvements in the time resolution from fitting the APV25 waveforms.