

2021 FEE Calibration

Run 14628 @ 1.92GeV

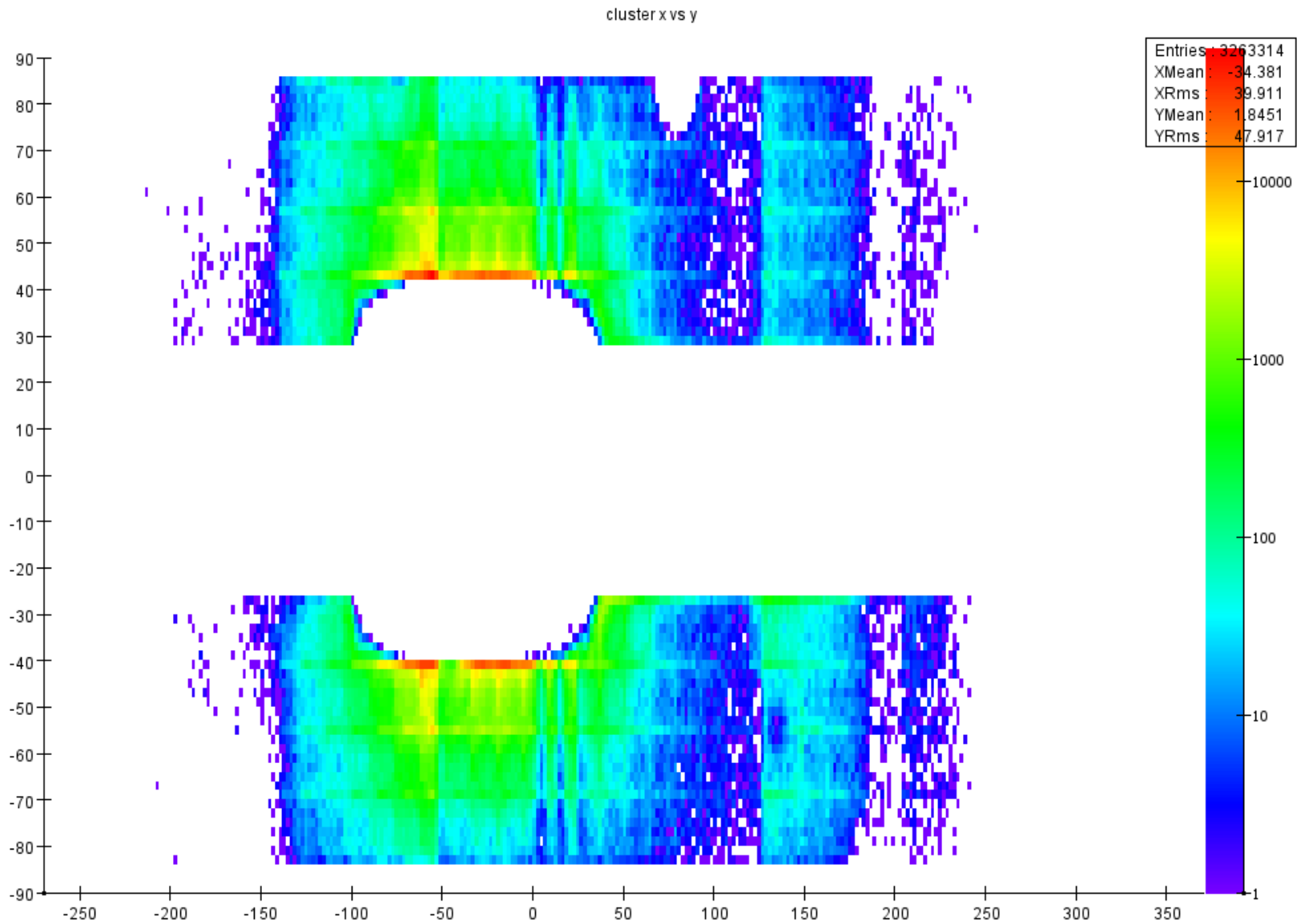
Norman Graf (SLAC)

November 18, 2022

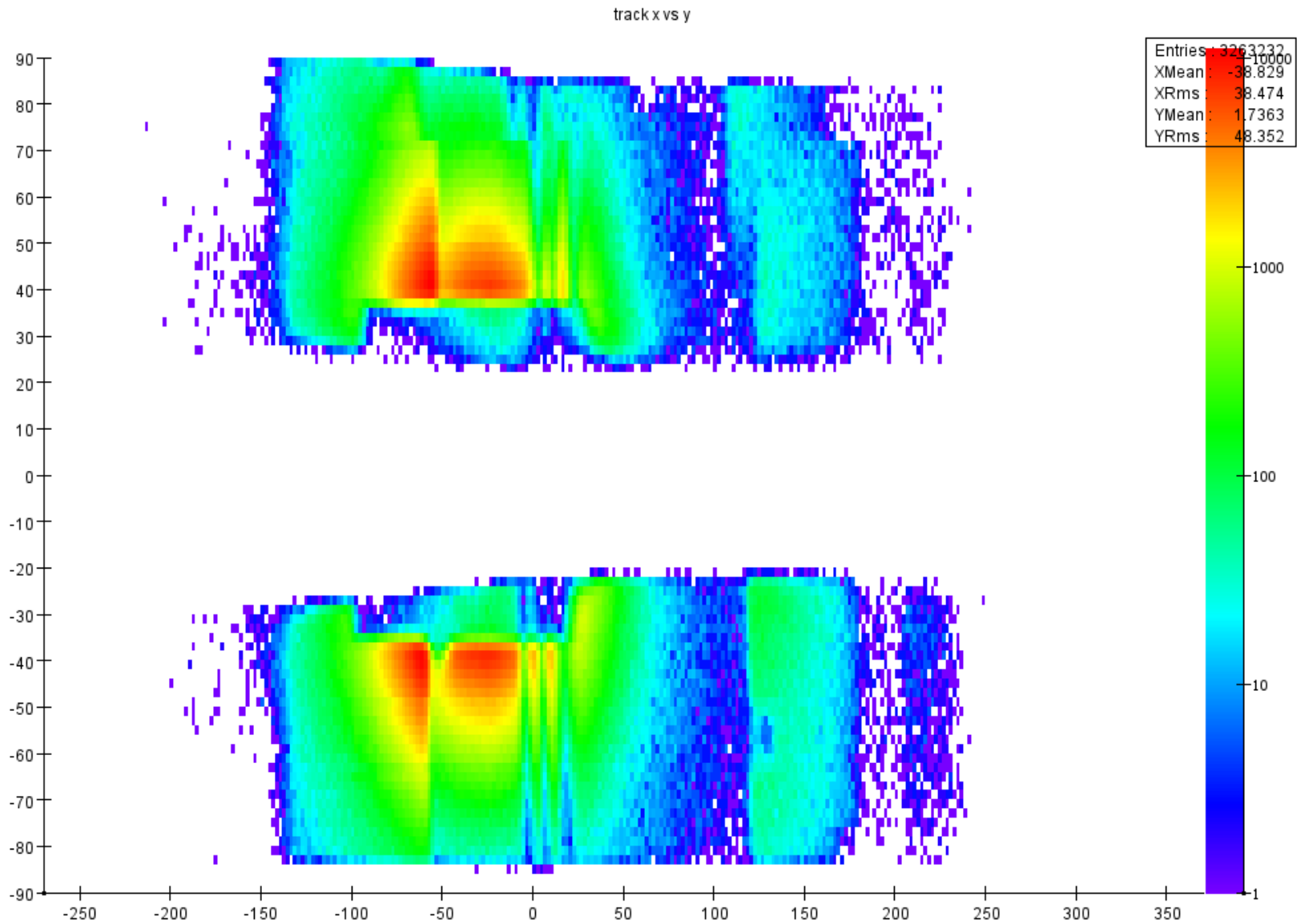
Pass0 Reconstruction

- Analyze FEEs from the 2021 dataset
 - FEE triggers skimmed from run 14628
 - HPS_Run2021Pass0_v1
 - hps-java 5.2-SNAPSHOT

Cluster X vs Y

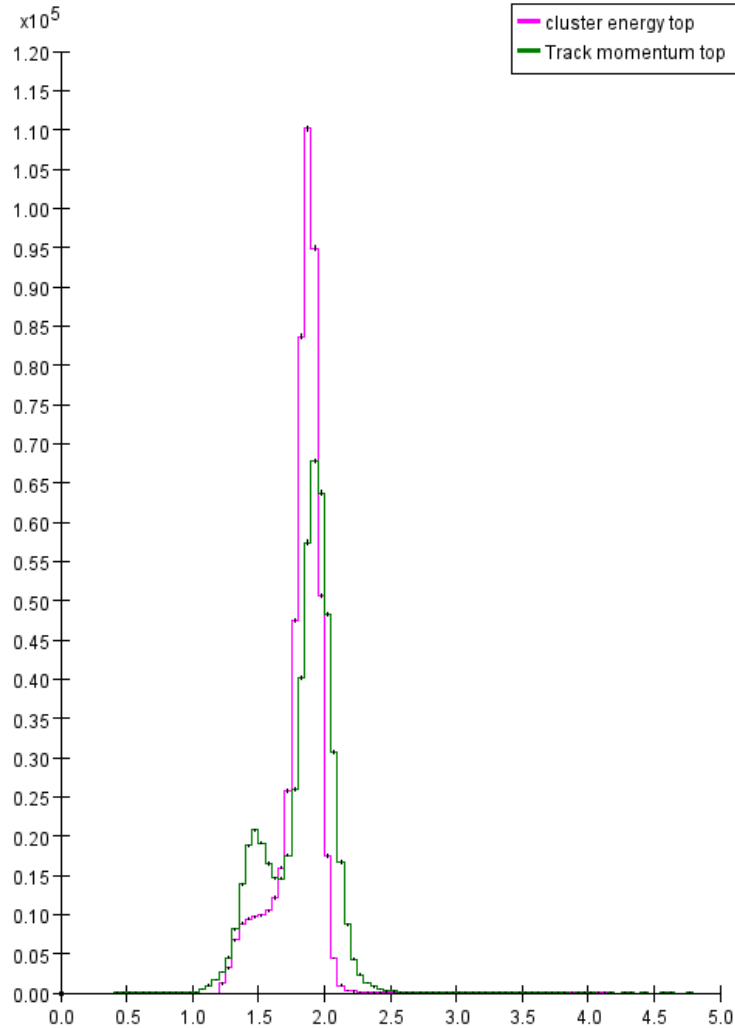


Track X vs Y

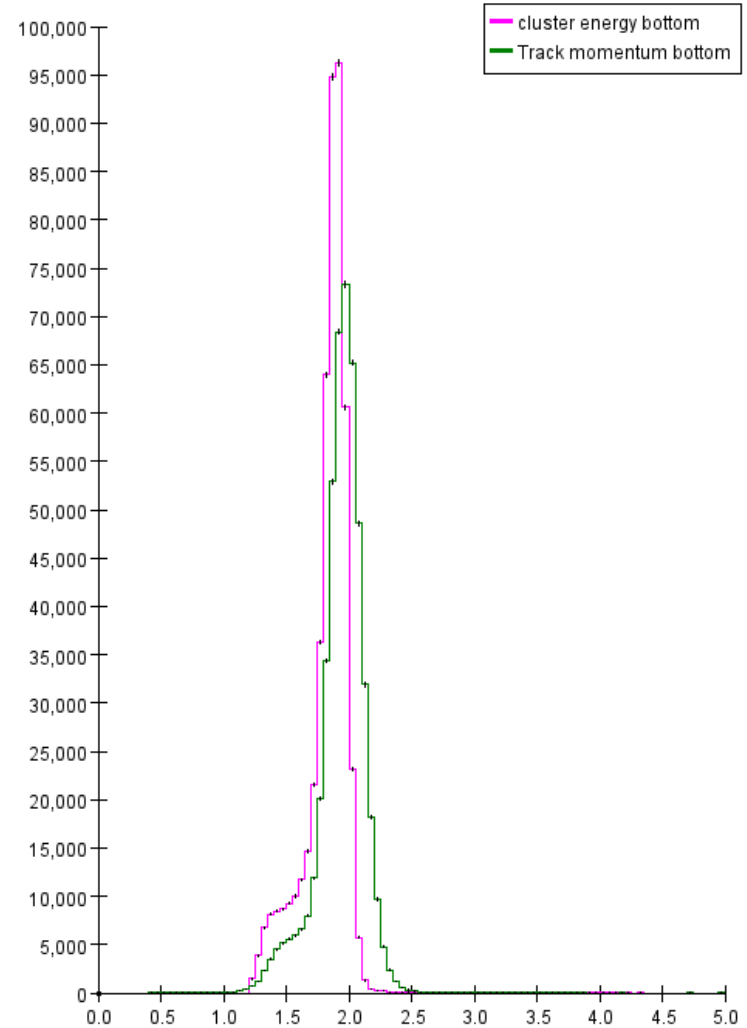


Cluster Energy & Track Momentum

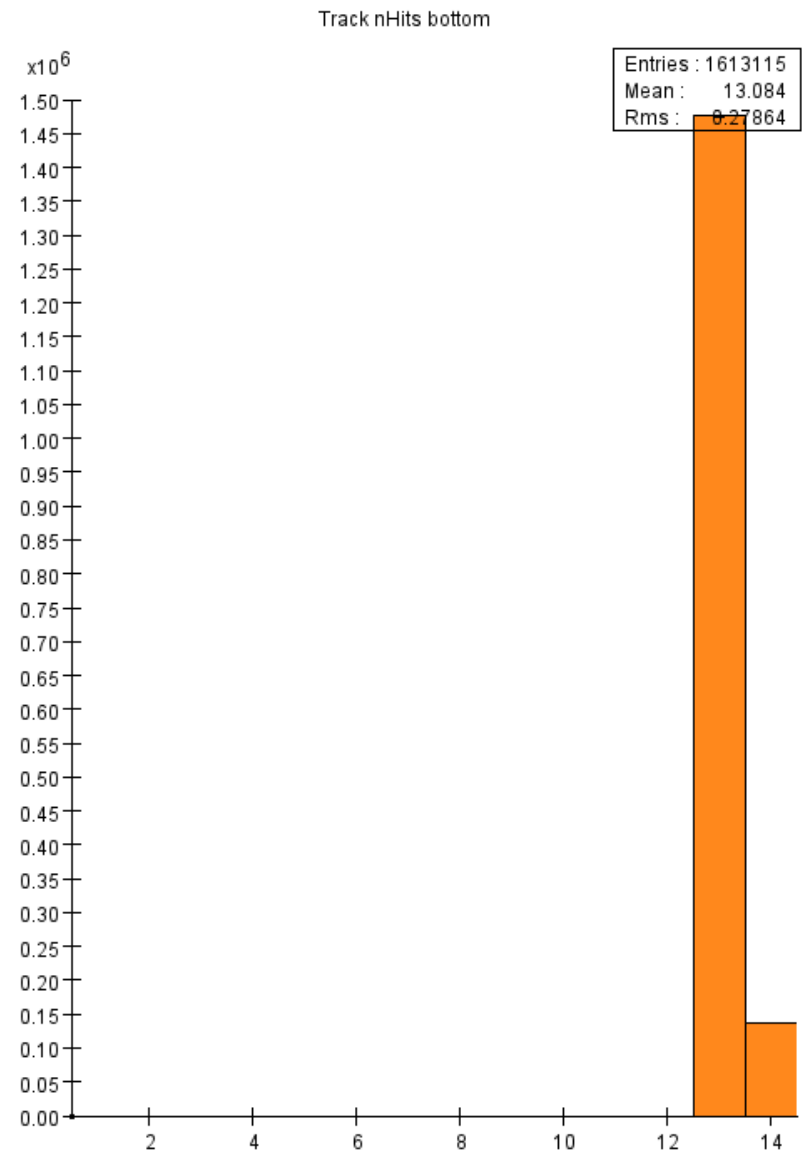
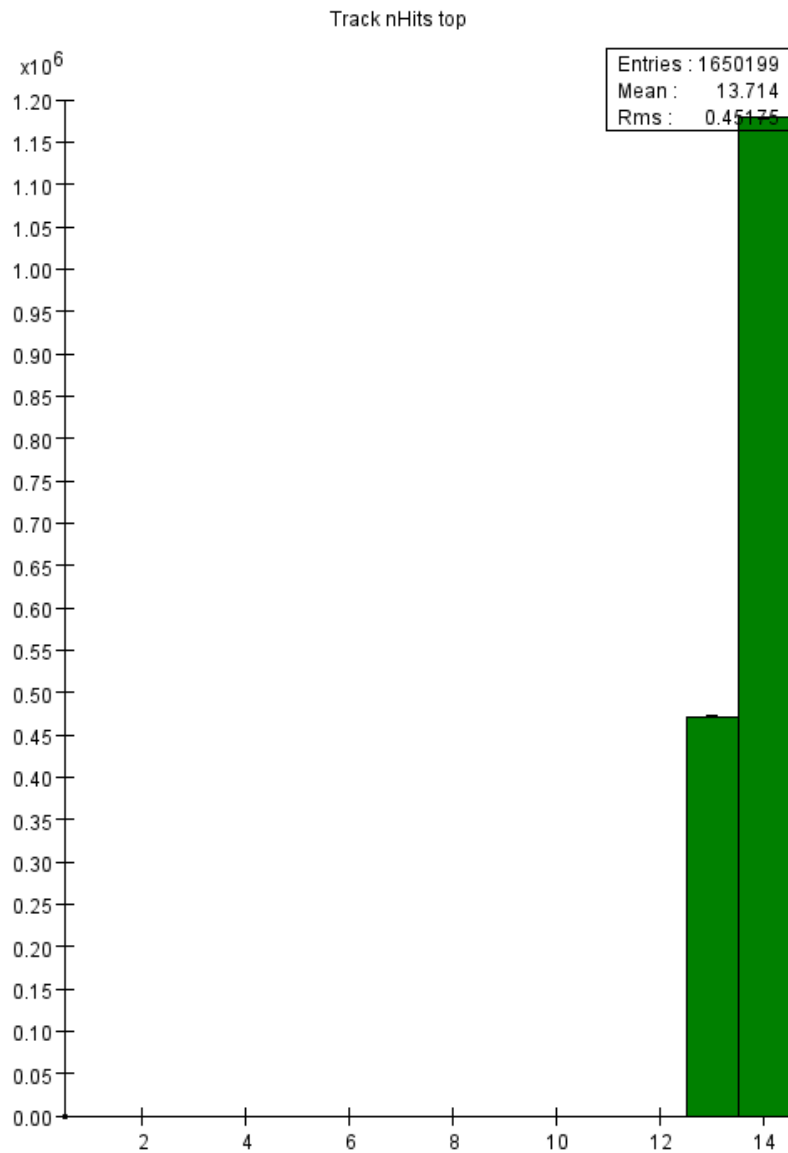
hps_fee_014628_FeeAnalysis2021_20221118.aida - FinalStateParticles_KF - kf - fi...



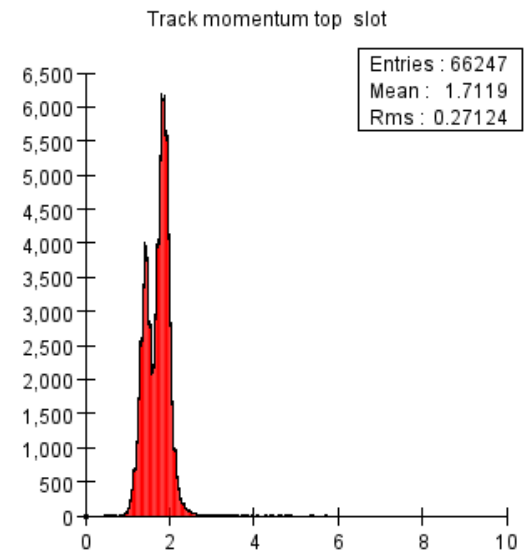
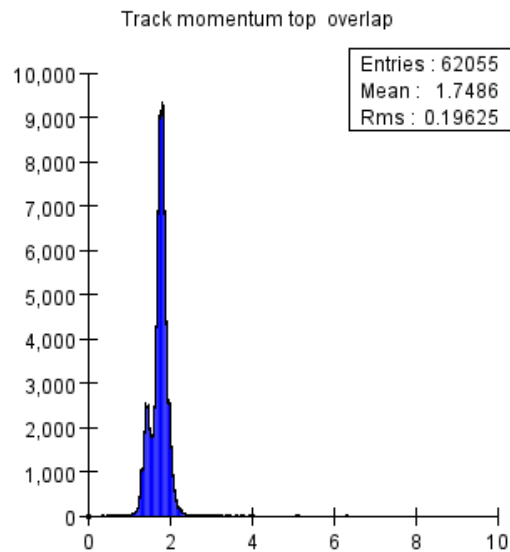
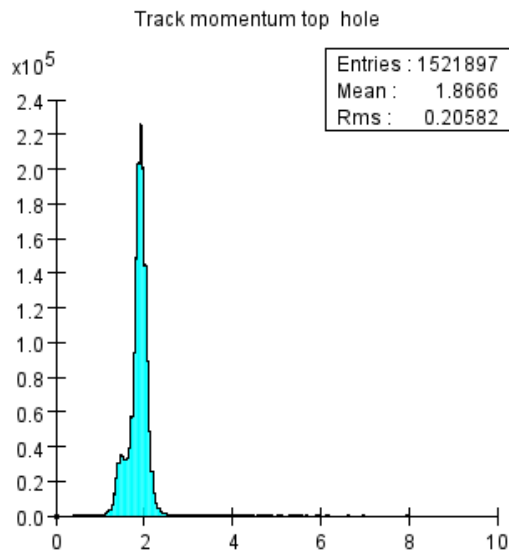
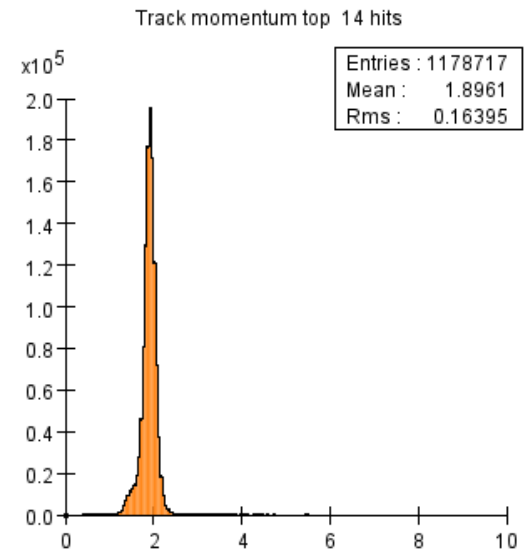
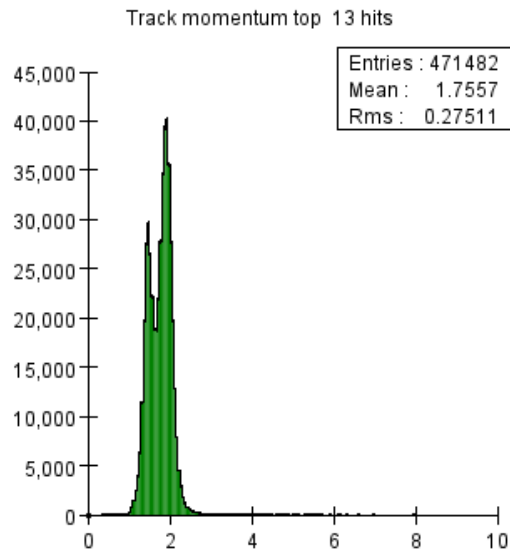
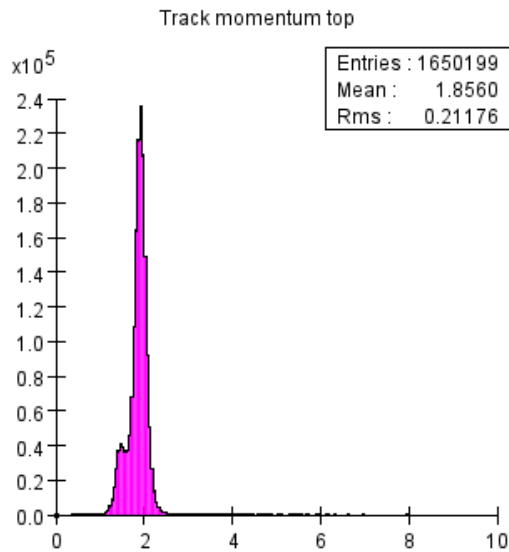
hps_fee_014628_FeeAnalysis2021_20221118.aida - FinalStateParticles_KF - kf - fi...



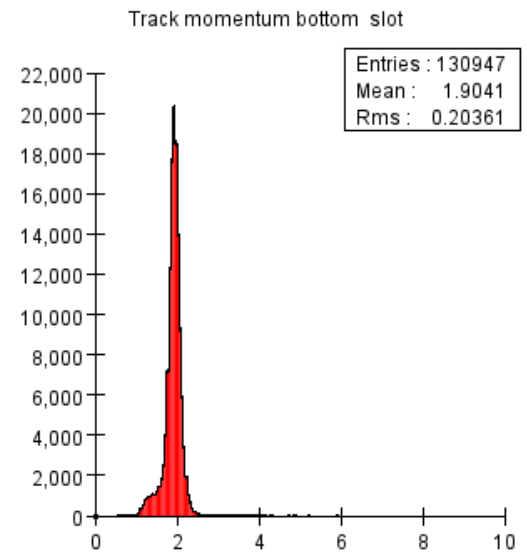
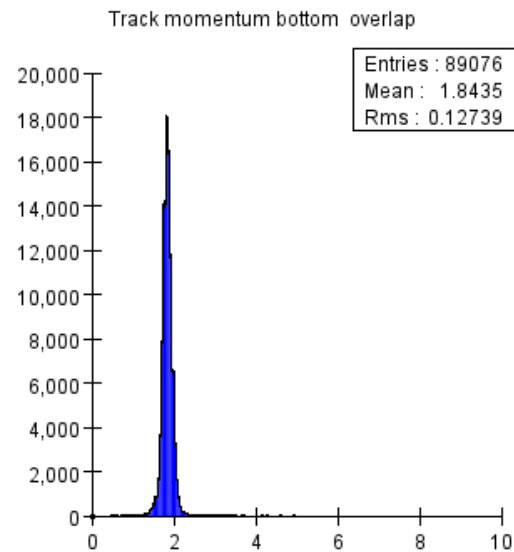
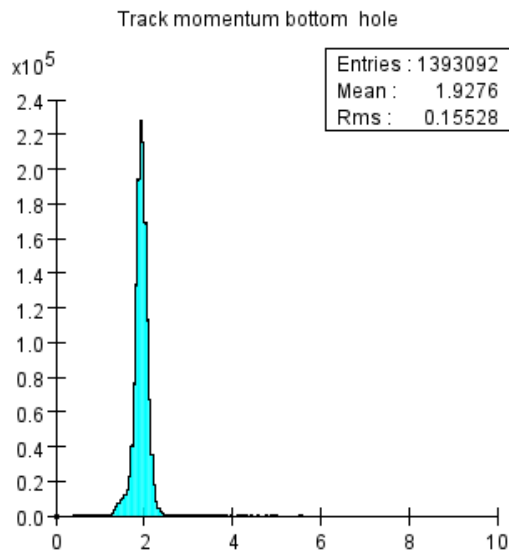
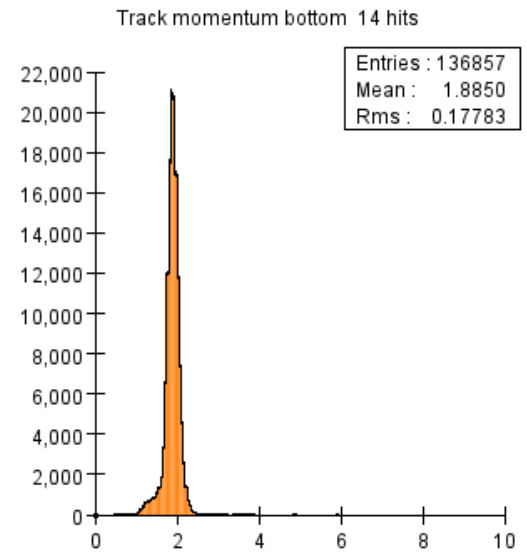
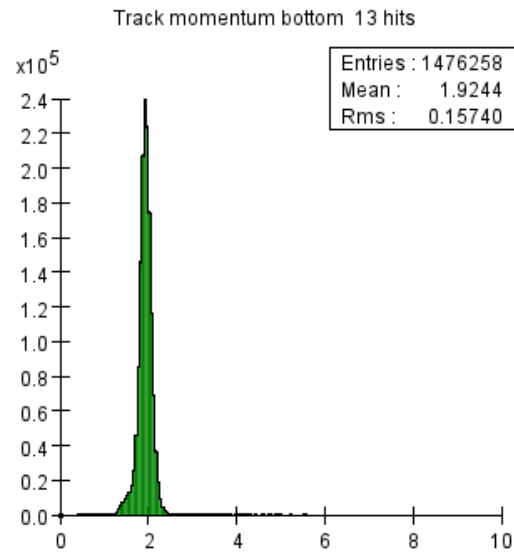
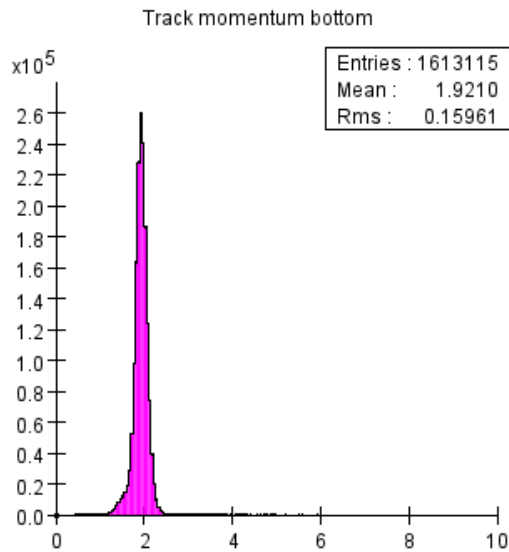
Track Number of Hits



Track Momentum by Track Type

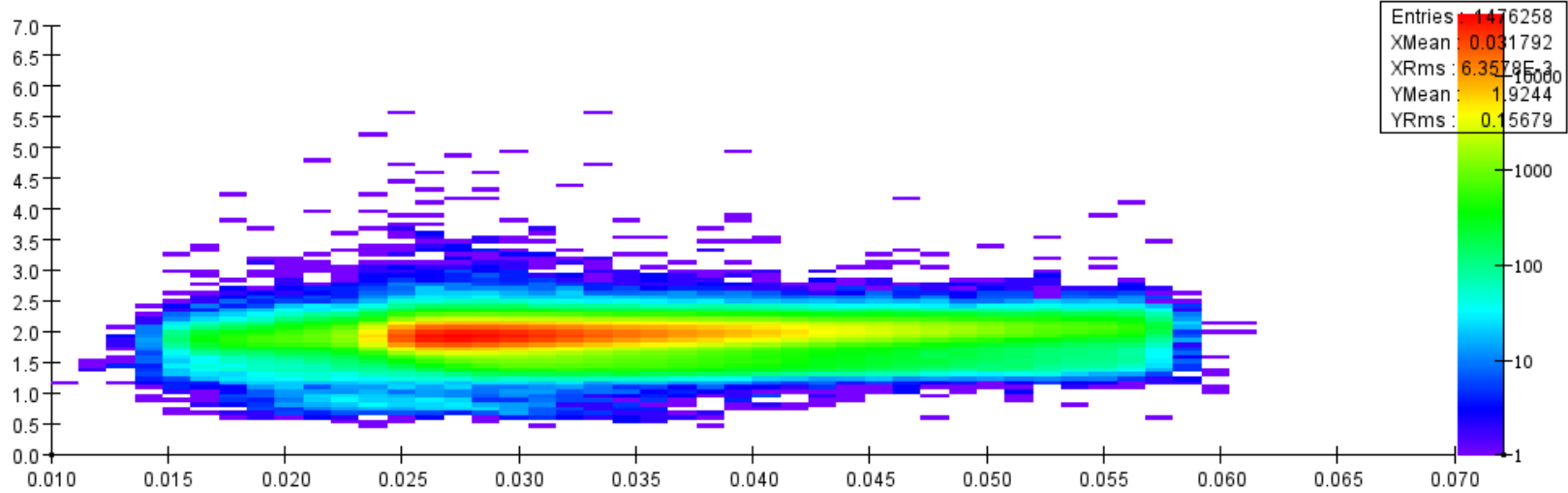


Track Momentum by Track Type

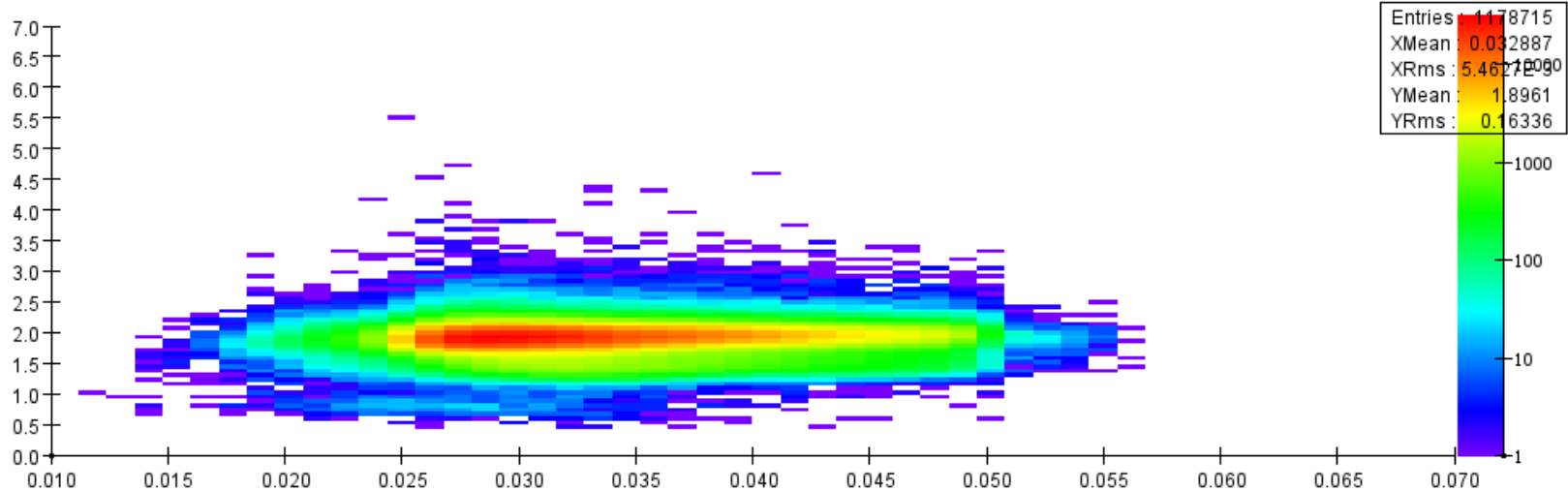


Track Momentum vs $\tan\lambda$

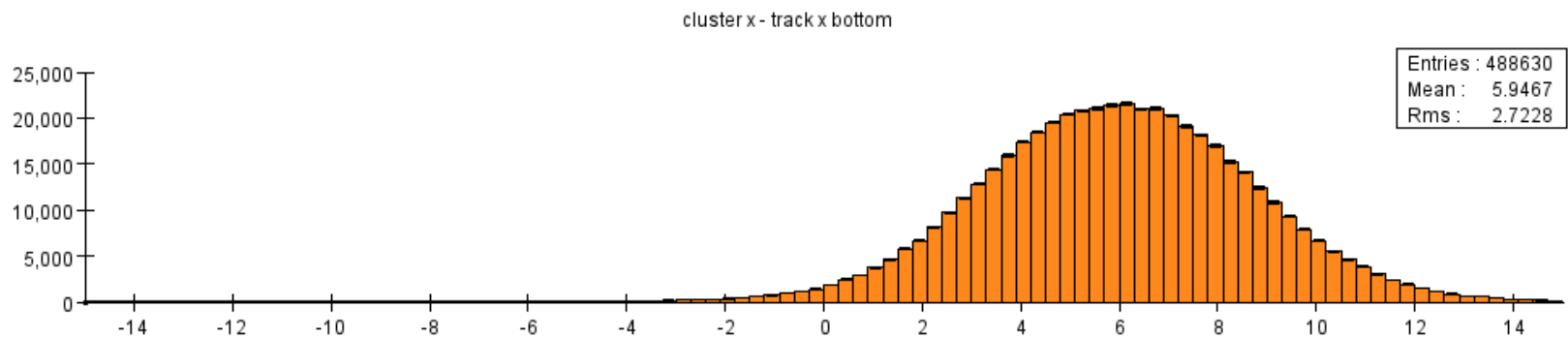
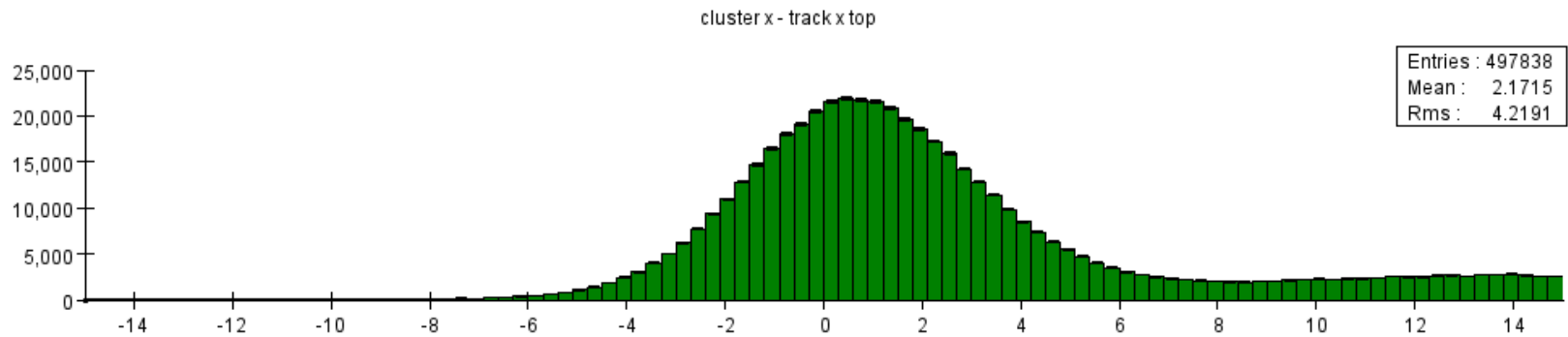
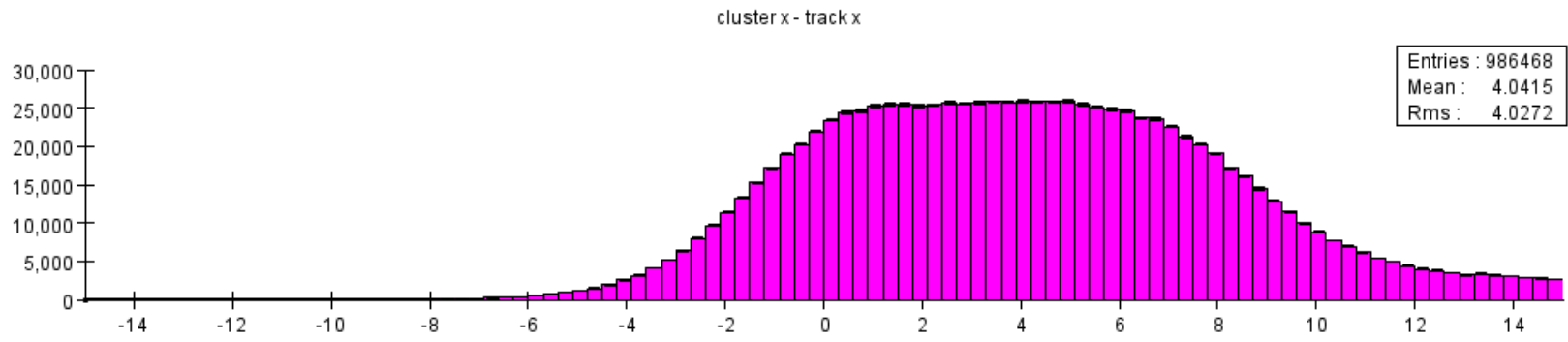
Track $\tan\lambda$ vs p bottom 13 hits



Track $\tan\lambda$ vs p top 14 hits

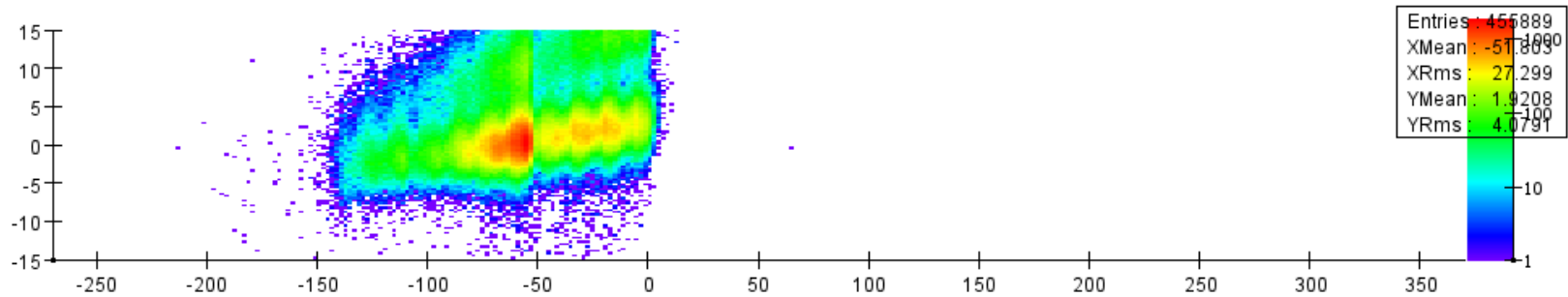


Cluster X – Track X

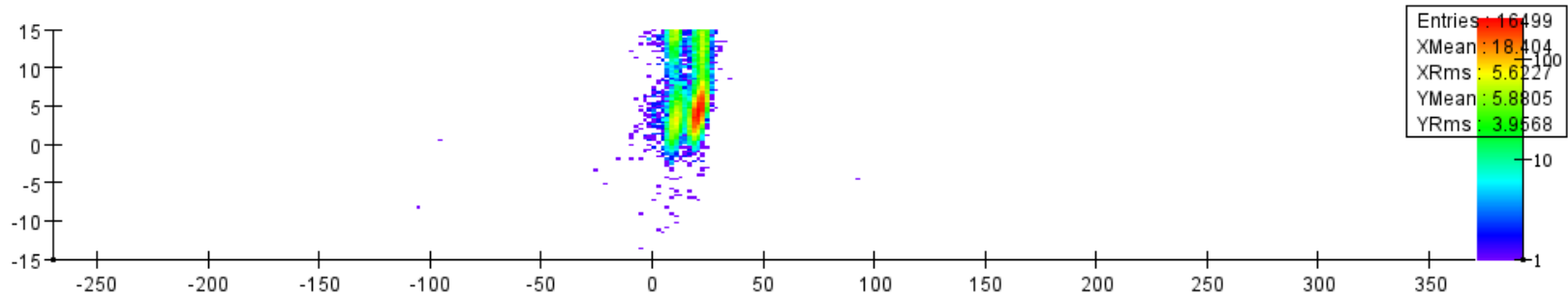


Cluster X – Track X vs Cluster X

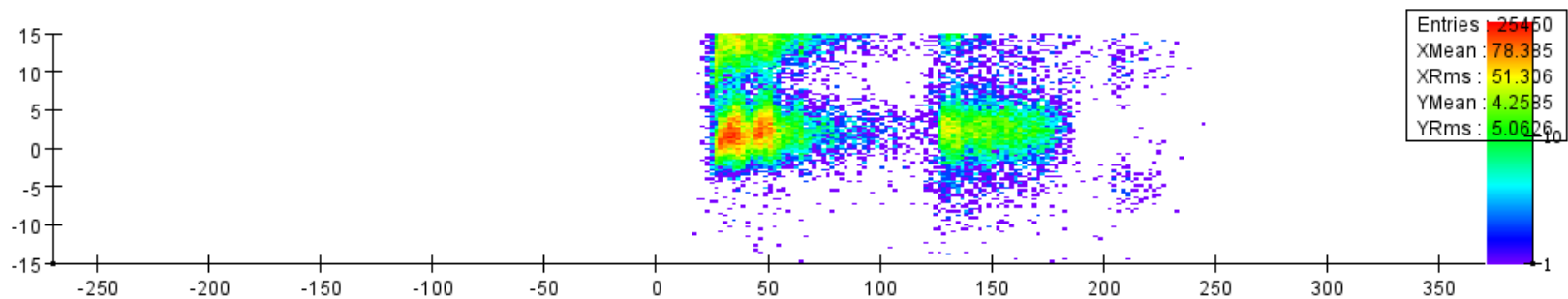
cluster x - track x vs cluster x top hole



cluster x - track x vs cluster x top overlap

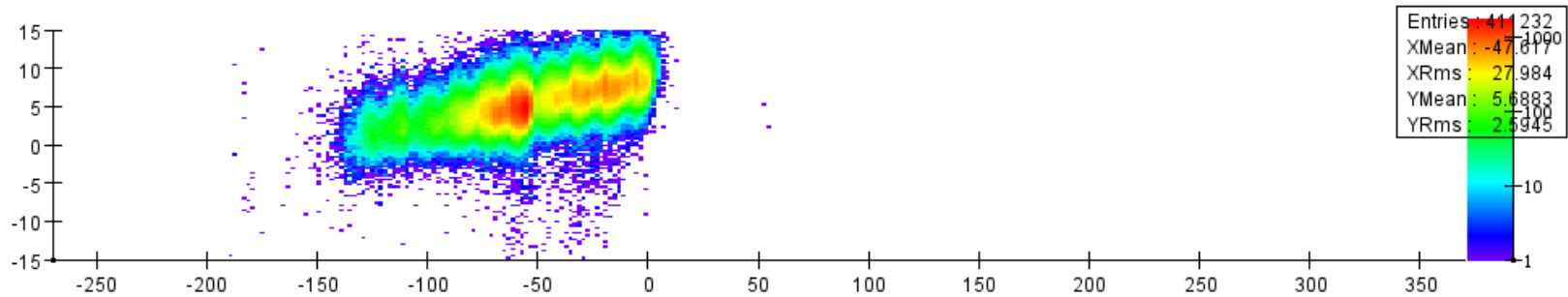


cluster x - track x vs cluster x top slot

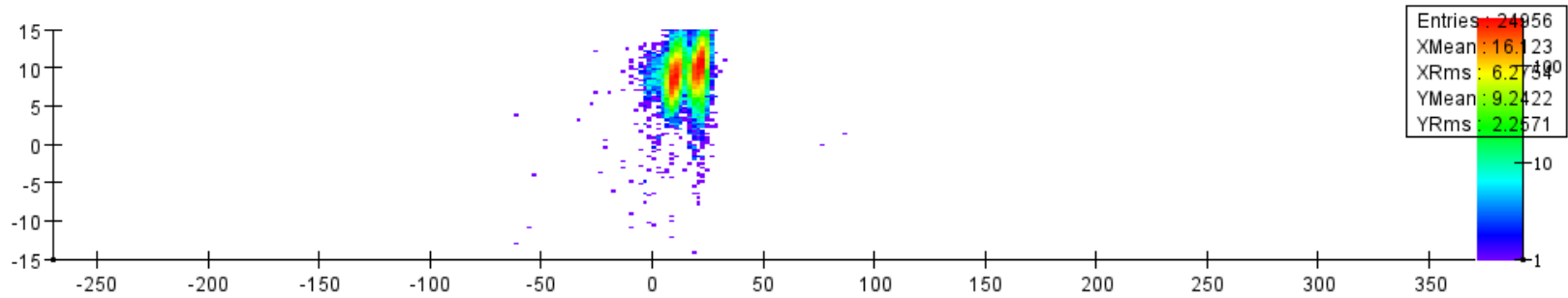


Cluster X – Track X vs Cluster X

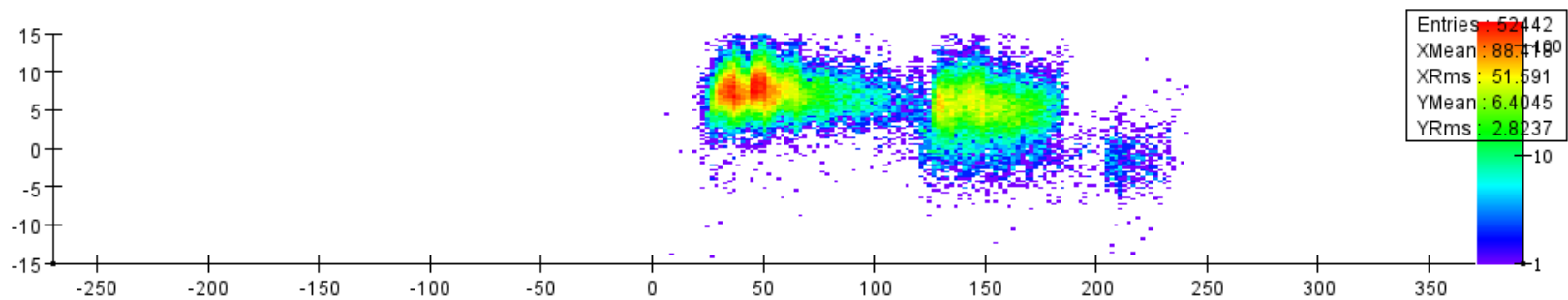
cluster x - track x vs cluster x bottom hole



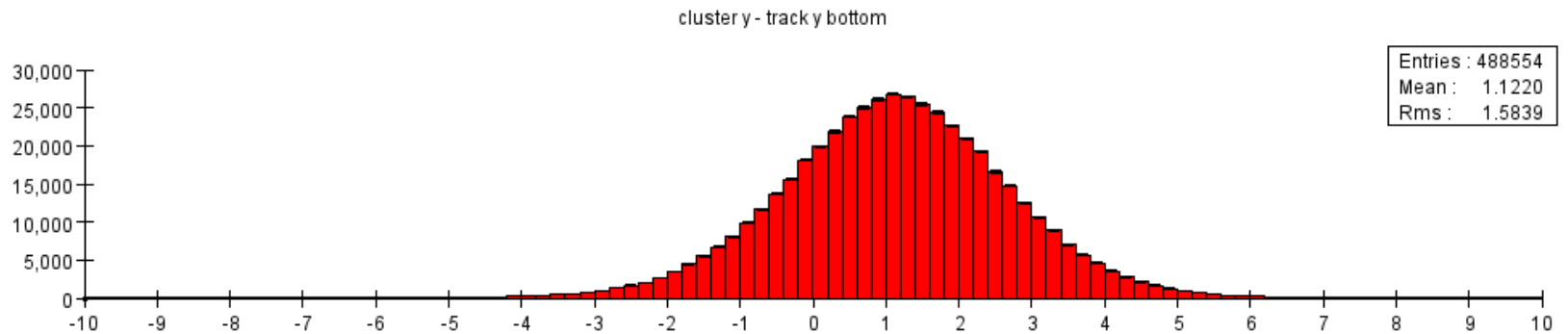
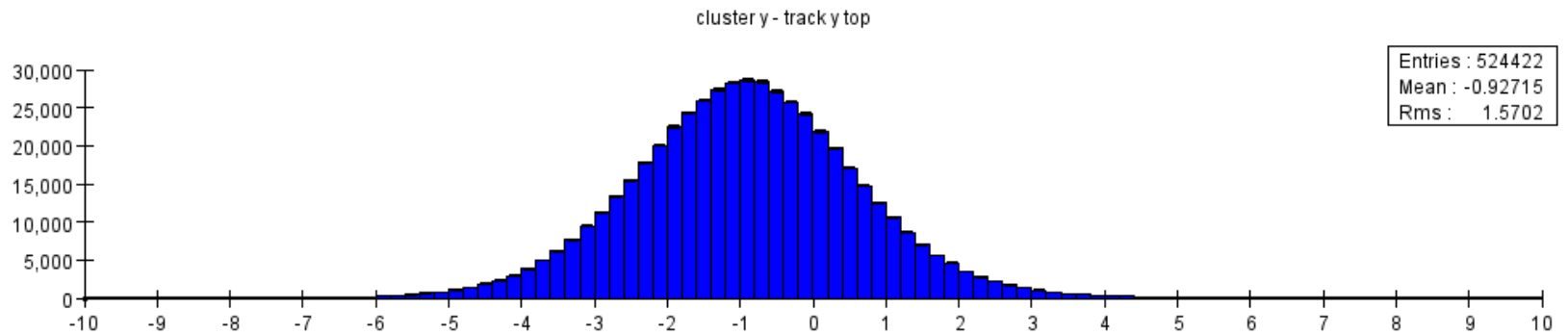
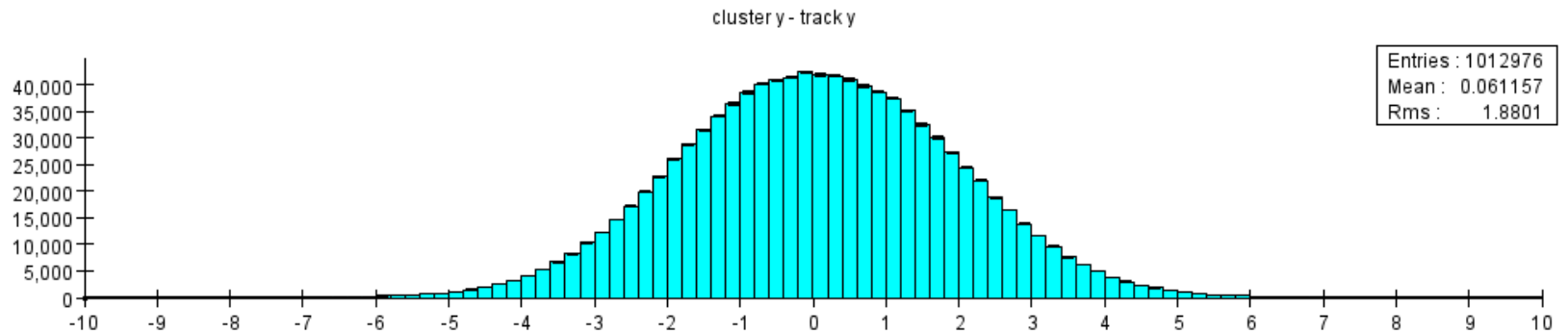
cluster x - track x vs cluster x bottom overlap



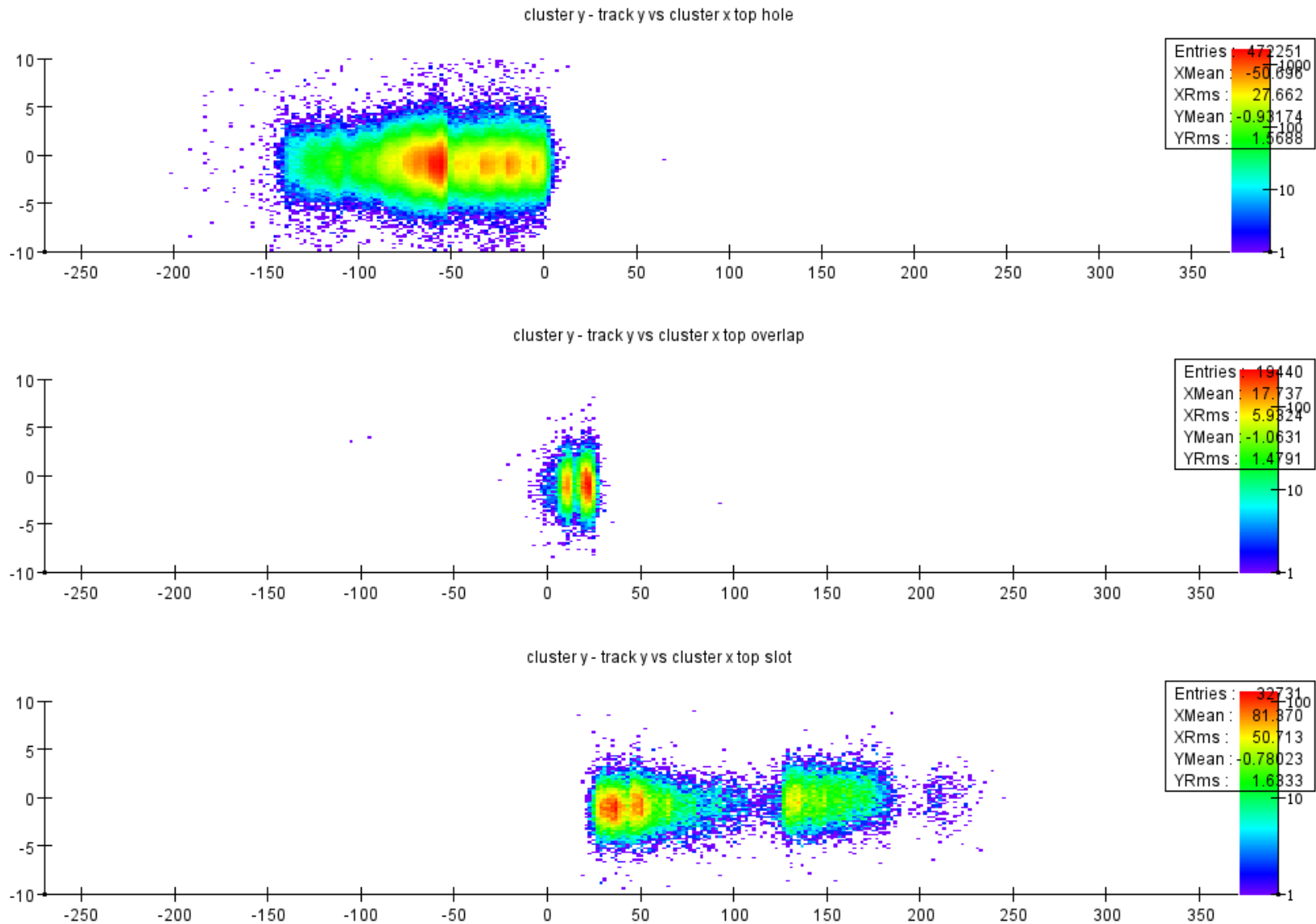
cluster x - track x vs cluster x bottom slot



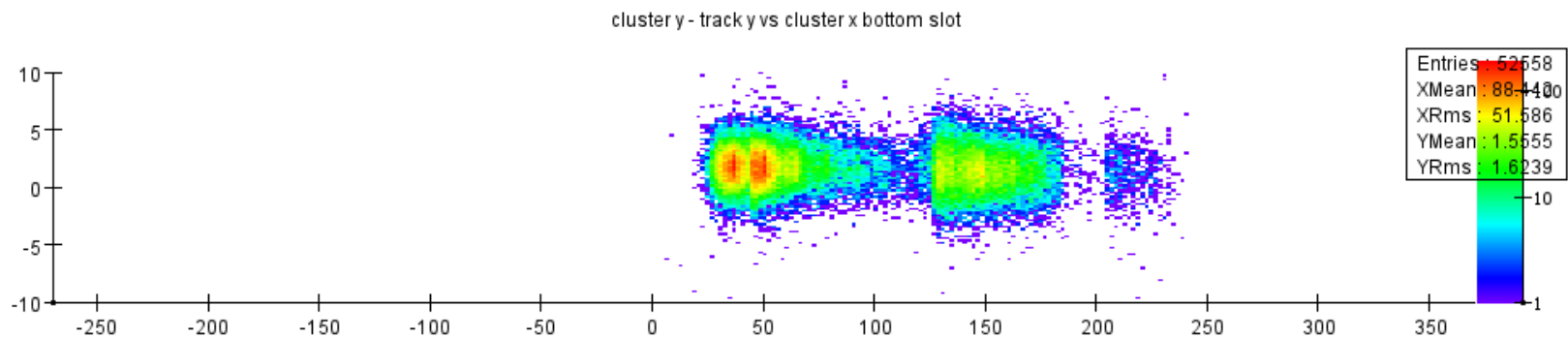
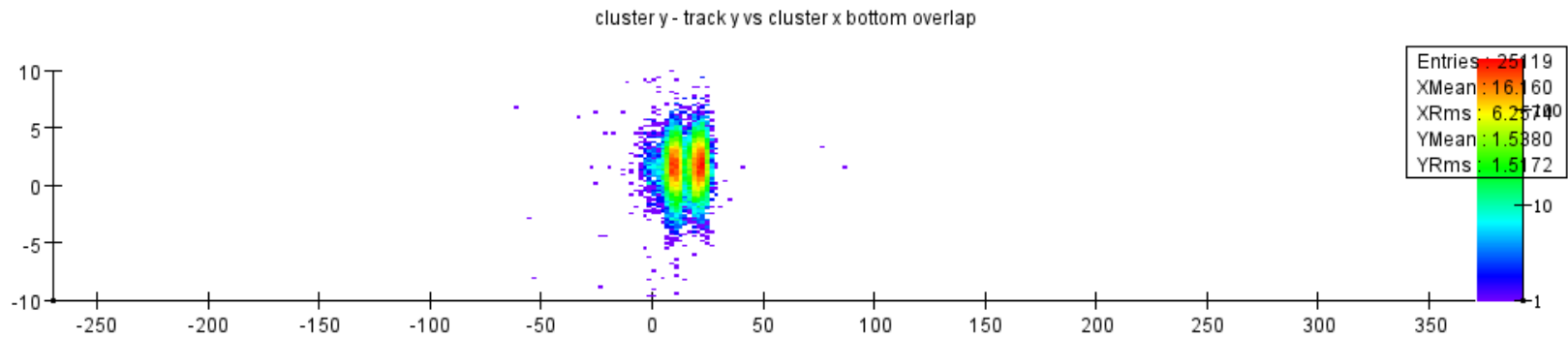
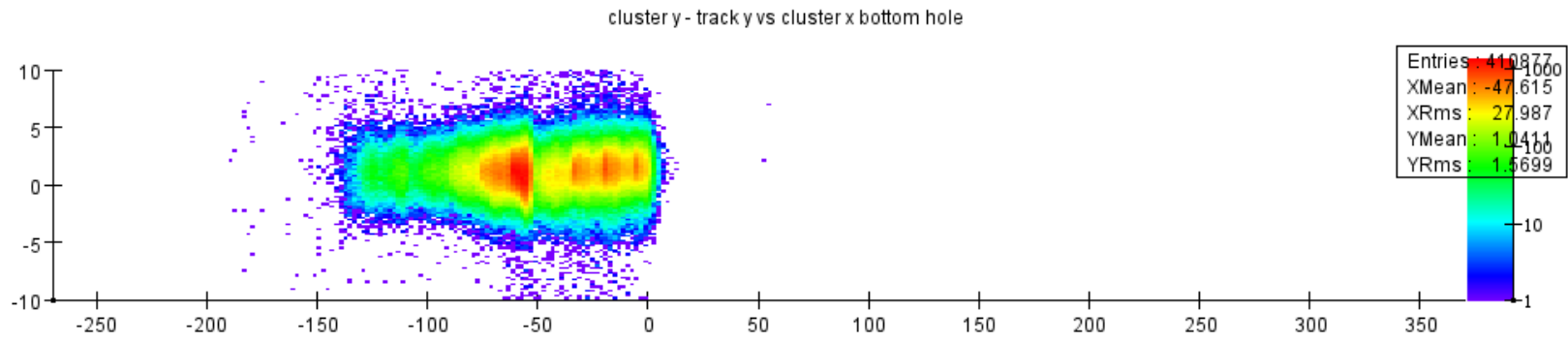
Cluster Y – Track Y



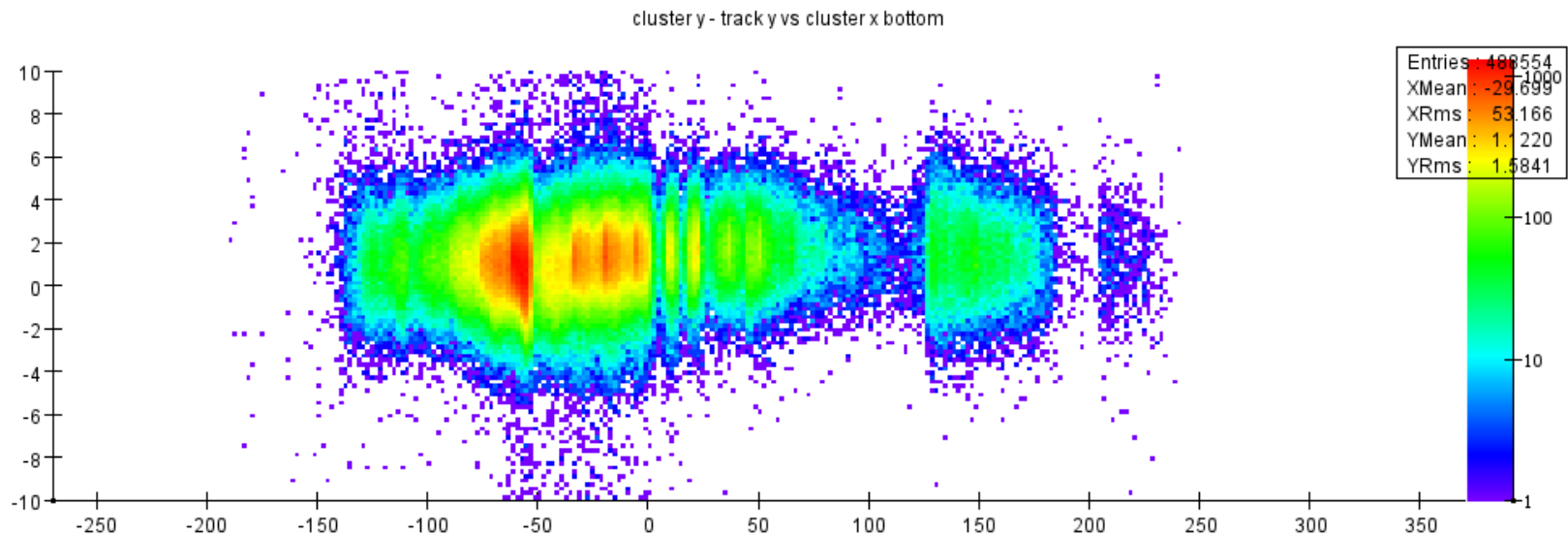
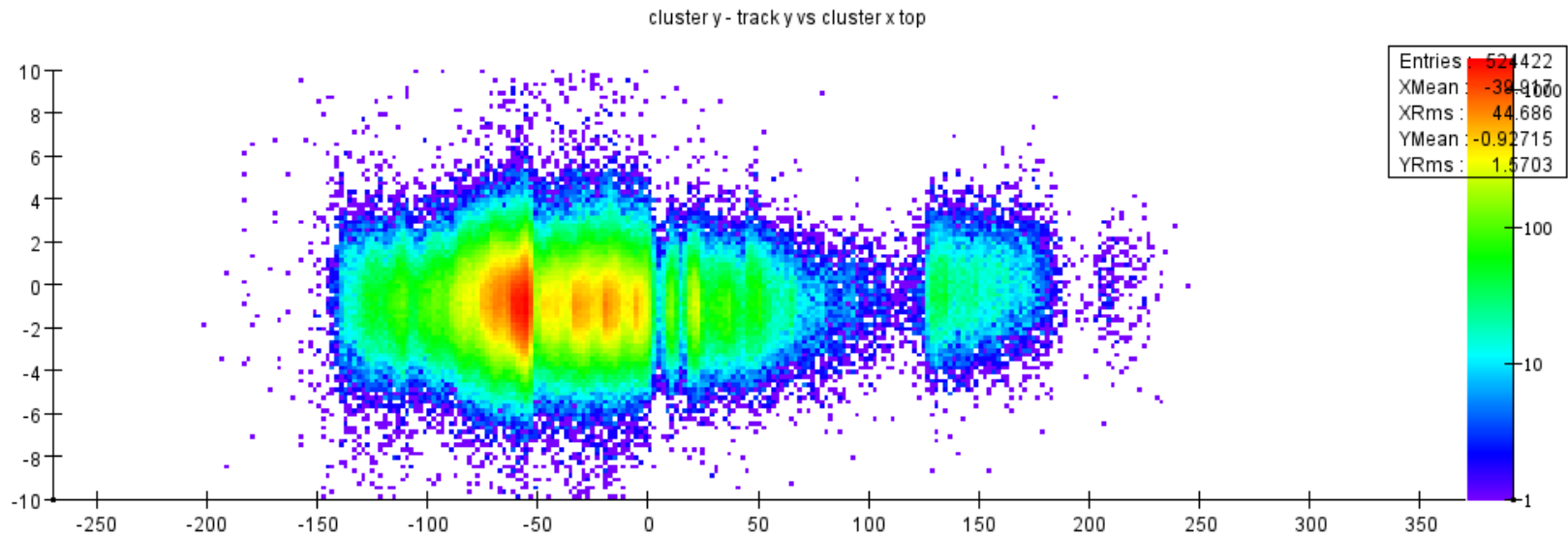
Cluster Y – Track Y vs Cluster X



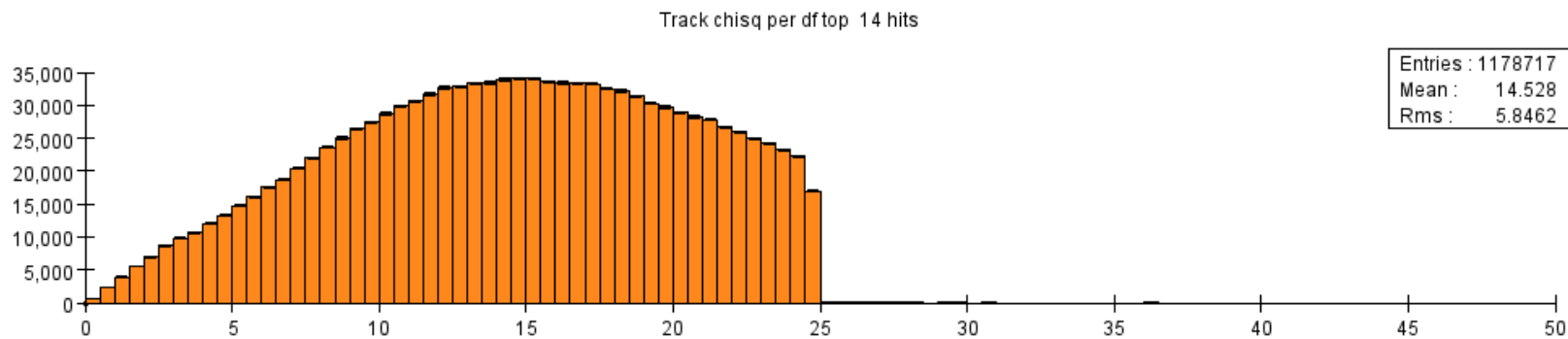
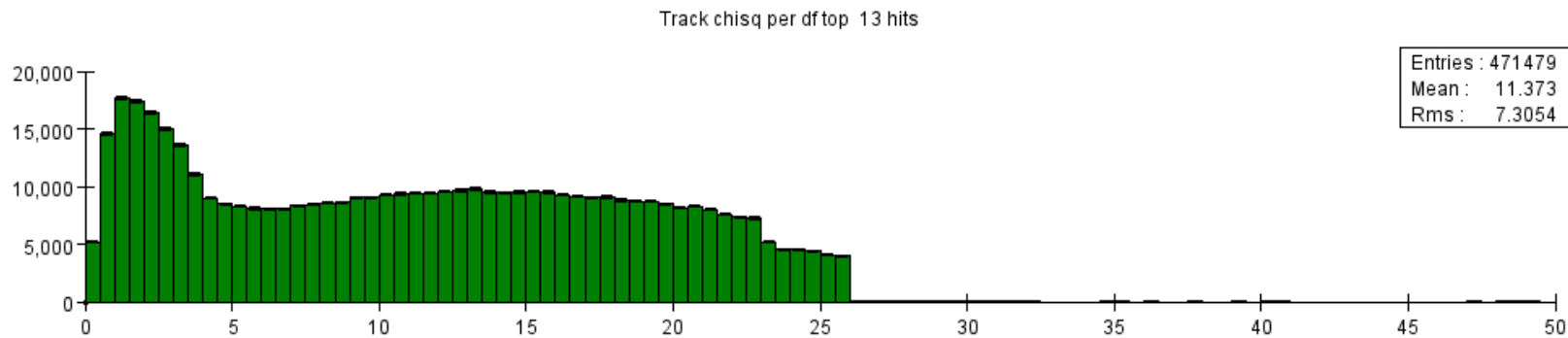
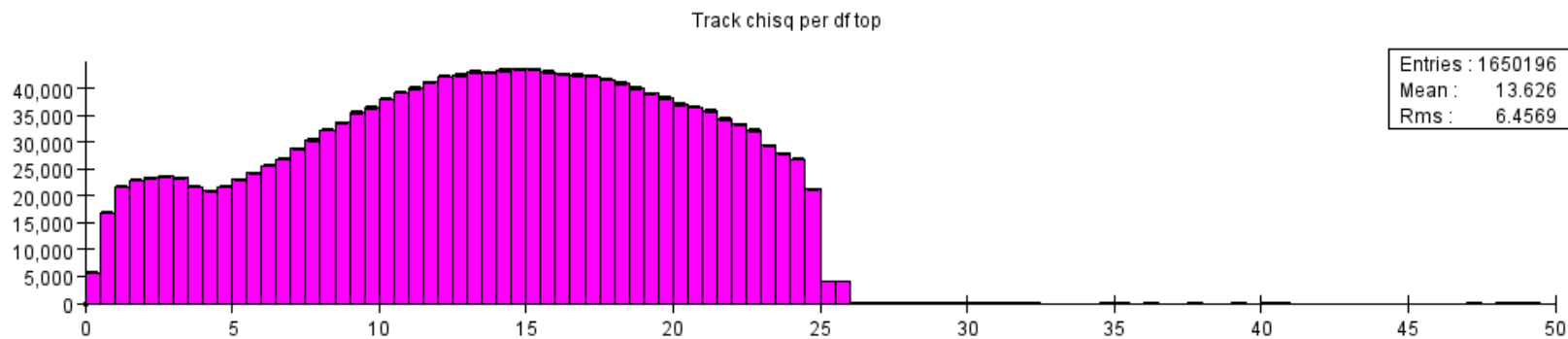
Cluster Y – Track Y vs Cluster X



Cluster Y – Track Y vs Cluster X

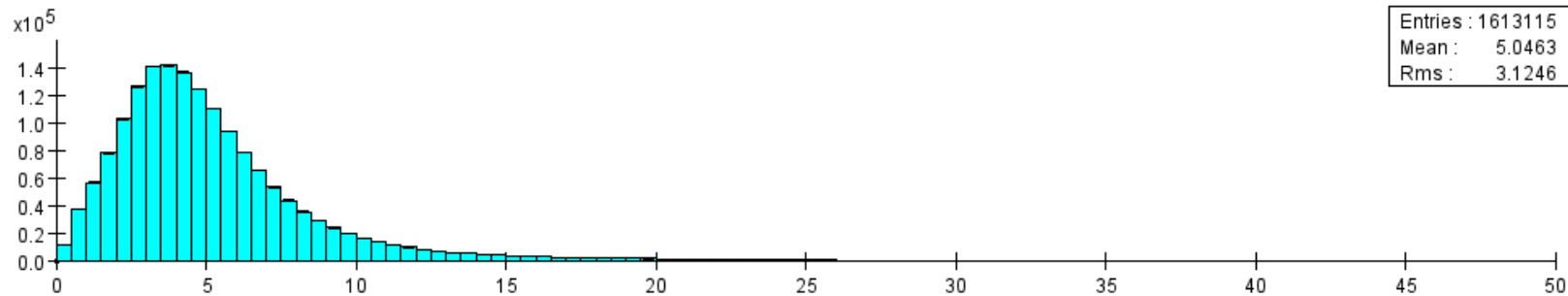


Track χ^2

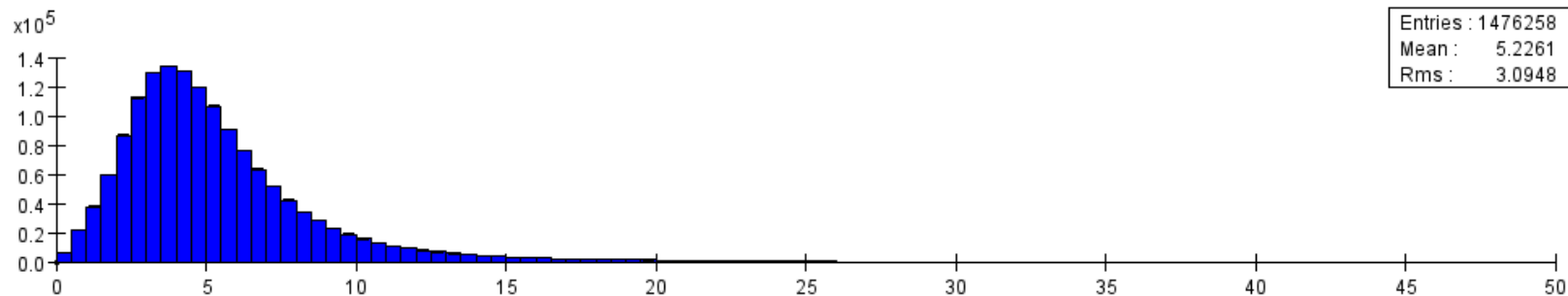


Track χ^2

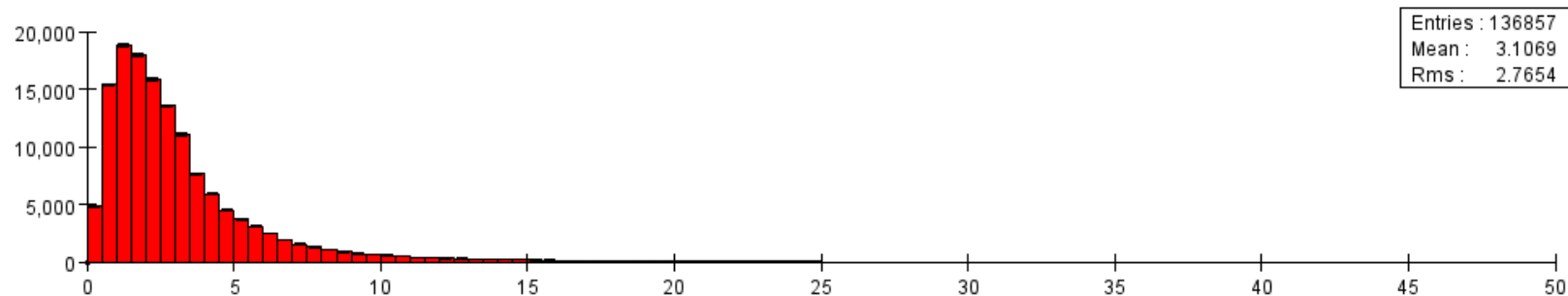
Track chisq per df bottom



Track chisq per df bottom 13 hits



Track chisq per df bottom 14 hits



Update of FEE analysis of Run 14628

- Cluster energy and track momenta appear to be OK at beam energy except for 13-hit top tracks.
- Track momentum appears flat as a function of $\tan\lambda$
- Track-cluster X positions show large (up to 6mm), excursions from zero, opposite in top and bottom
 - Clear dependence on x of cluster
- Track-cluster Y positions show substantial (~ 1.1 mm) excursions from zero, opposite in top and bottom
 - Roughly flat in x of cluster position
- χ^2 for top tracks anomalously large.
 - Note that this is quite different from earlier run 14168!