

MC Hit Resolution

Norman Graf (SLAC)

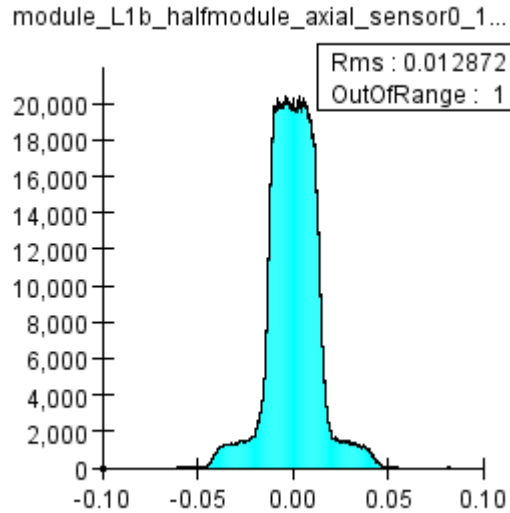
January 22, 2018

Tracking Down Tracking

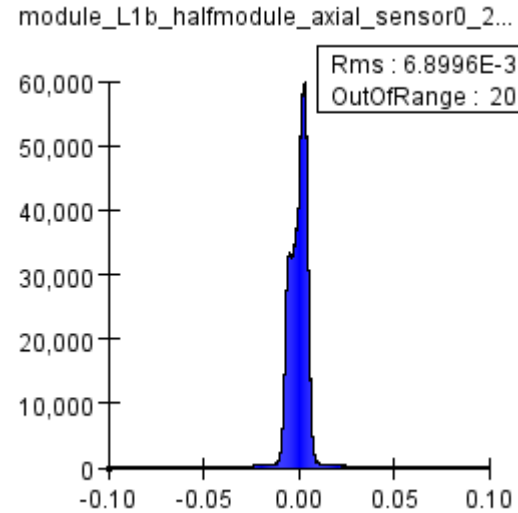
- My quest to understand our track reconstruction has led me back to hits.
 - Recall that our track fit metric is not χ^2 distributed.
- Analyze MC hits to check our input to track fitting.
- Analyze latest set of tri-trig-wab-beam events.
- Compare measurement (u) of strip cluster hits to the SimTrackerHit position as a function of sensor as well as number of hits in the strip cluster.

Hit Residuals (measured-predicted)

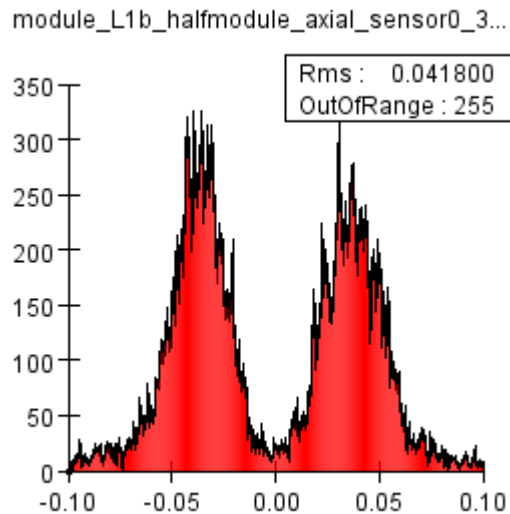
1 strip



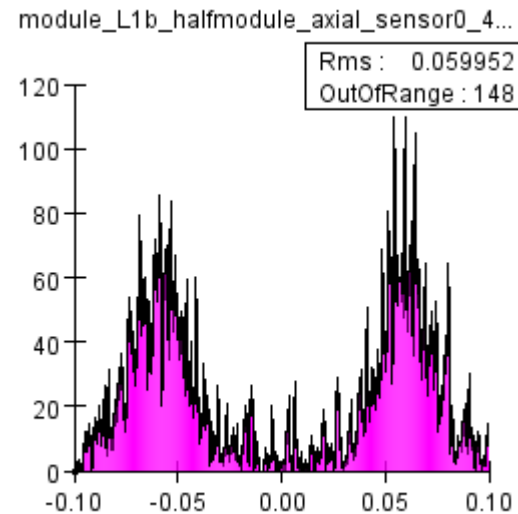
2 strip



3 strip

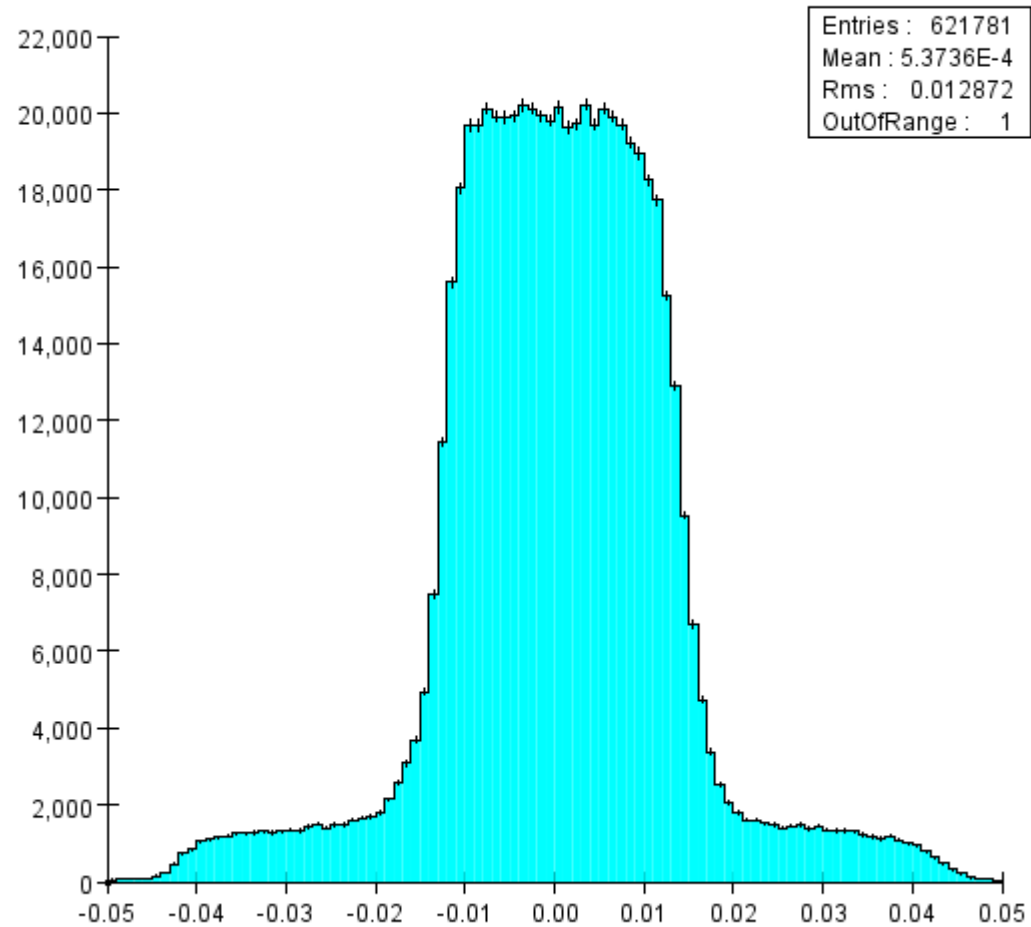


4 strip



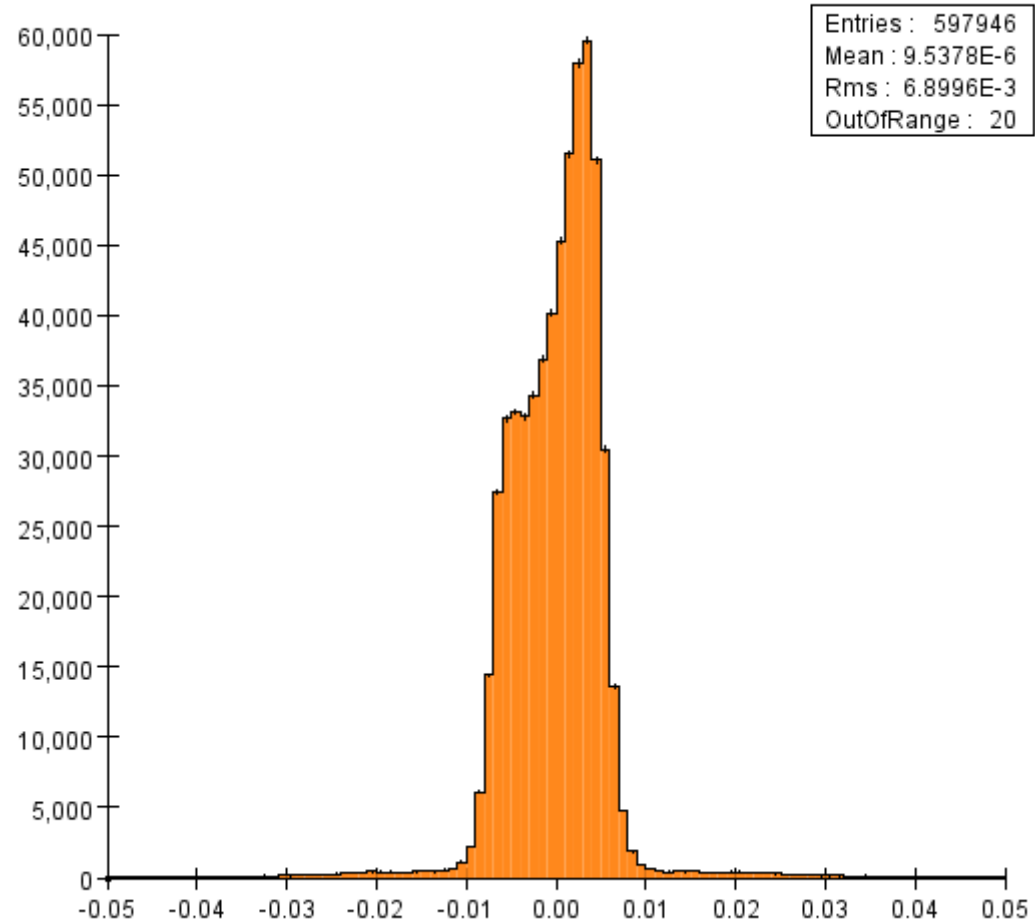
1 Strip

module_L1b_halfmodule_axial_sensor0_1_hitCluster meas - MC u posit...



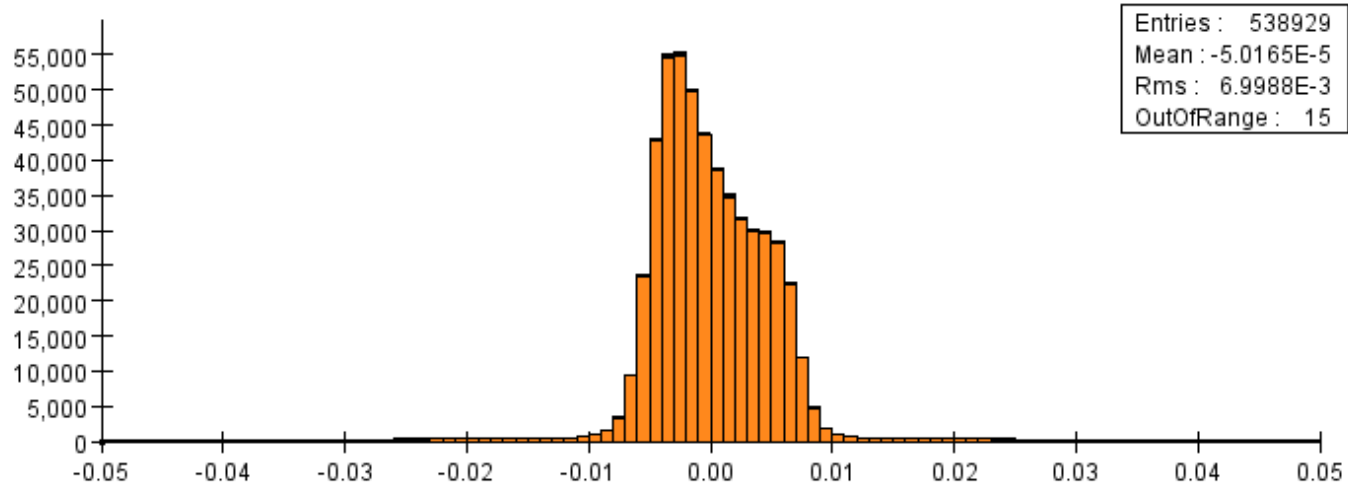
2 Strip

module_L1b_halfmodule_axial_sensor0_2_hitCluster meas - MC u posit...

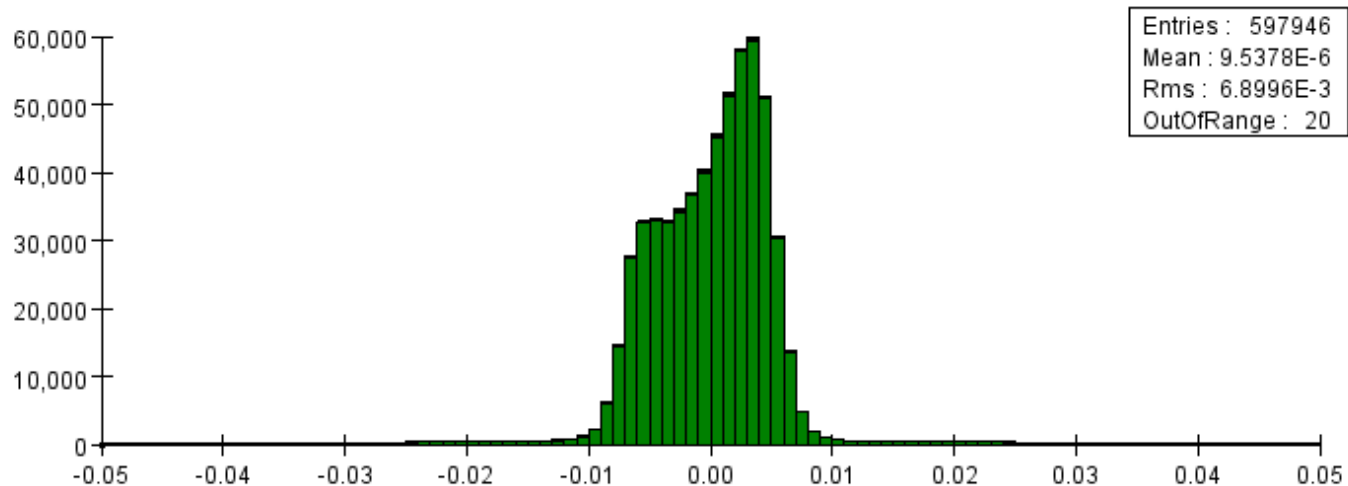


2 Strip (top vs bottom)

module_L1t_halfmodule_axial_sensor0_2_hitCluster meas - MC u position residual

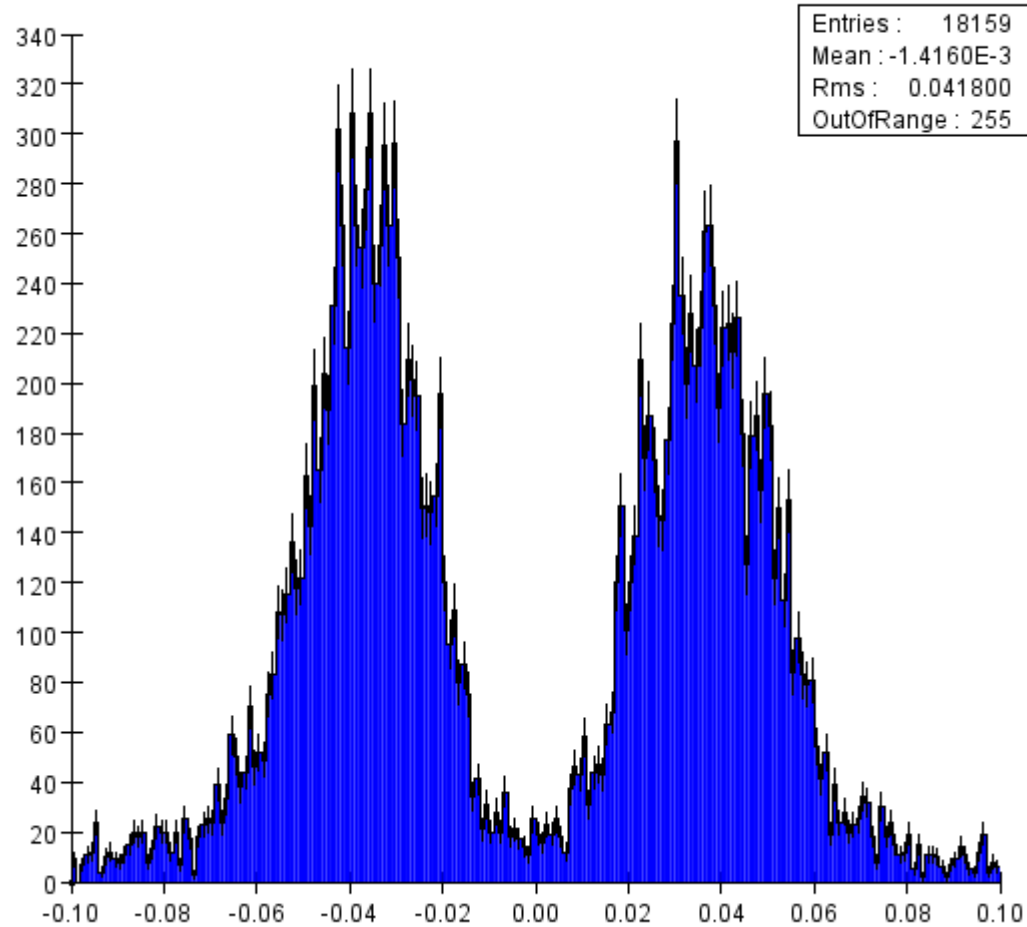


module_L1b_halfmodule_axial_sensor0_2_hitCluster meas - MC u position residual



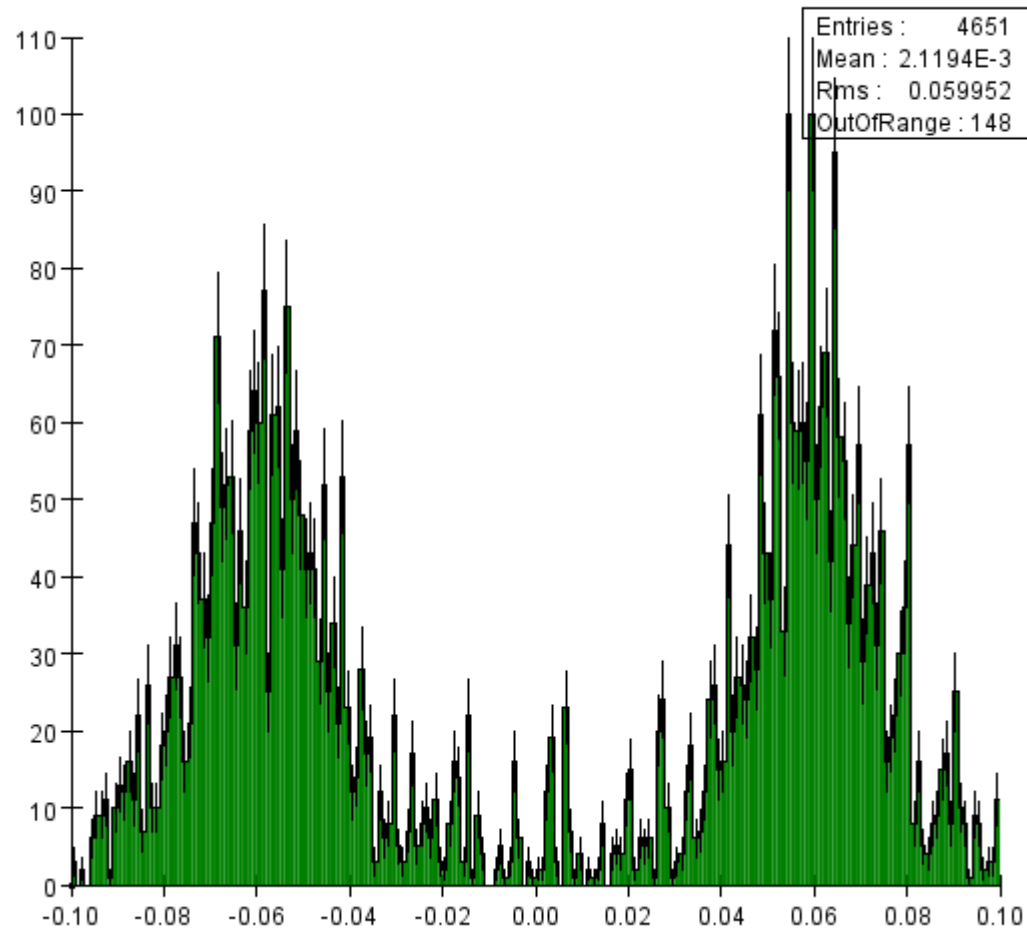
3 Strip

module_L1b_halfmodule_axial_sensor0_3_hitCluster meas - MC u position residual



4 Strip

module_L1b_halfmodule_axial_sensor0_4_hitCluster meas - MC u position residual



MC Hit Summary

- No resolution (yet) to the resolution
- Single strip clusters seem to be OK
- Two-strip clusters are asymmetric
- Three- and four-strip clusters are bimodal
- Currently looking into both the charge drift and diffusion code as well as the clustering.
- Also looking at unbiased hit residuals to see if there is evidence of this in the data (although MCS dominates).