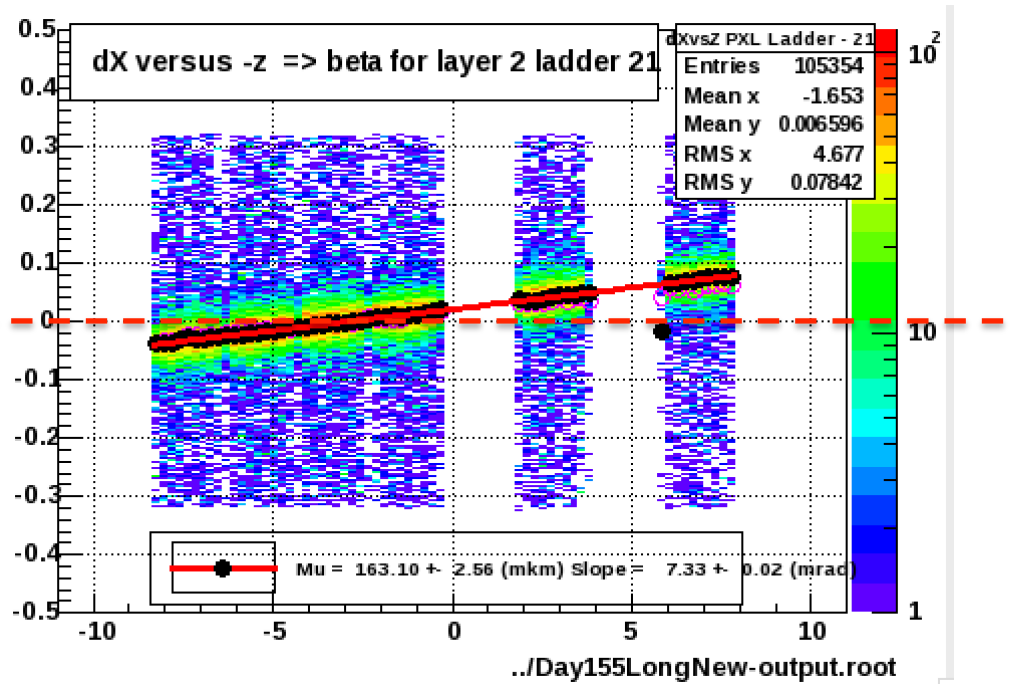
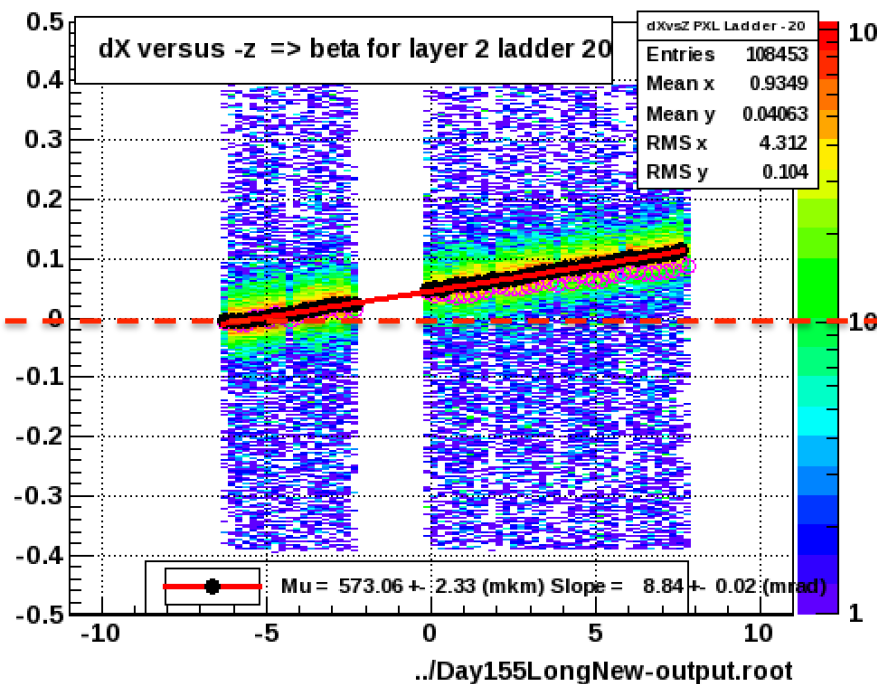
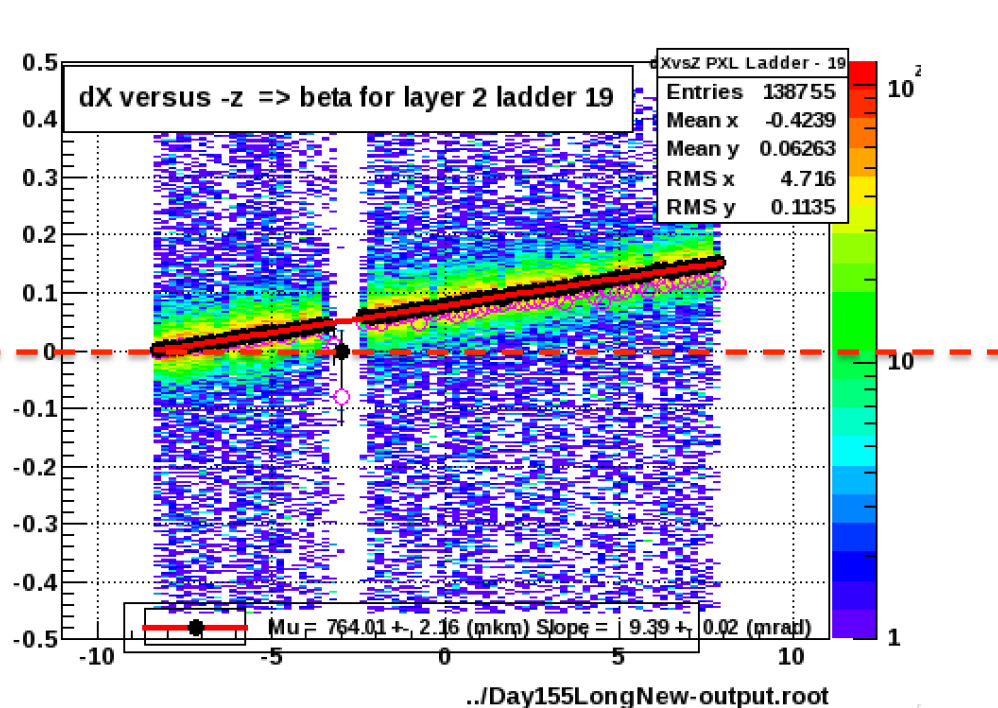
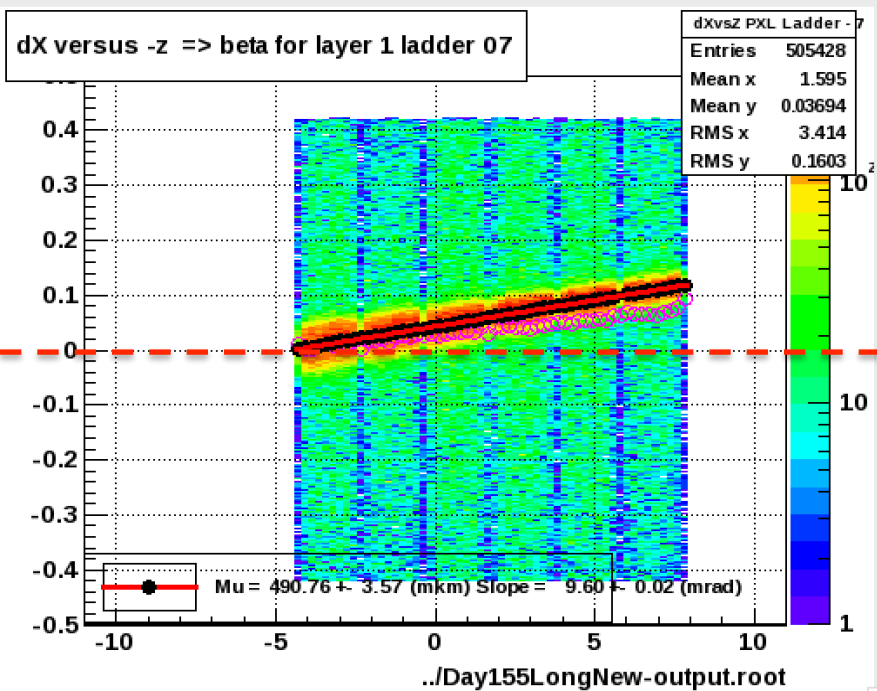


Alignment work update

S. Margetis

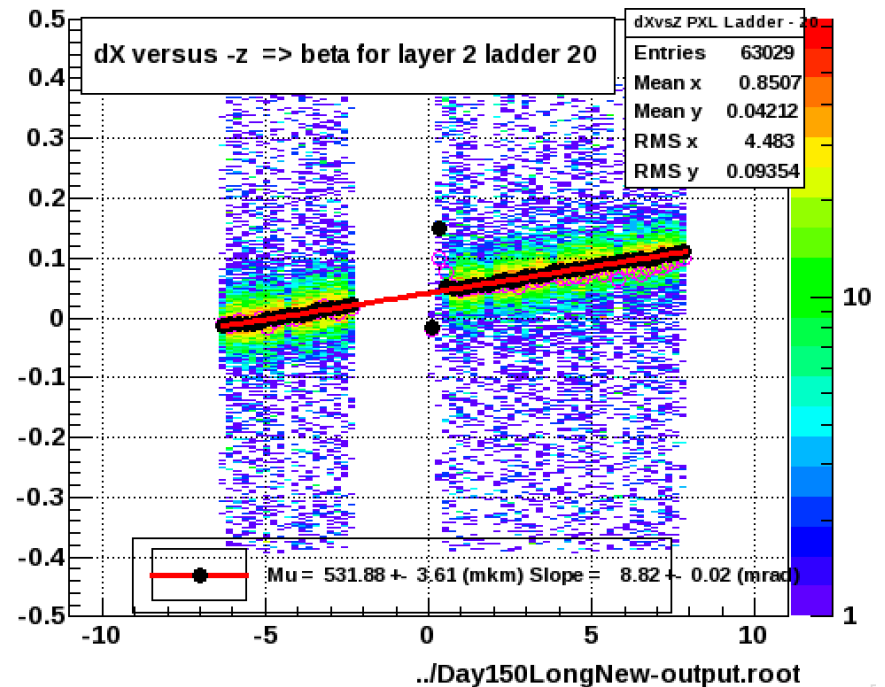
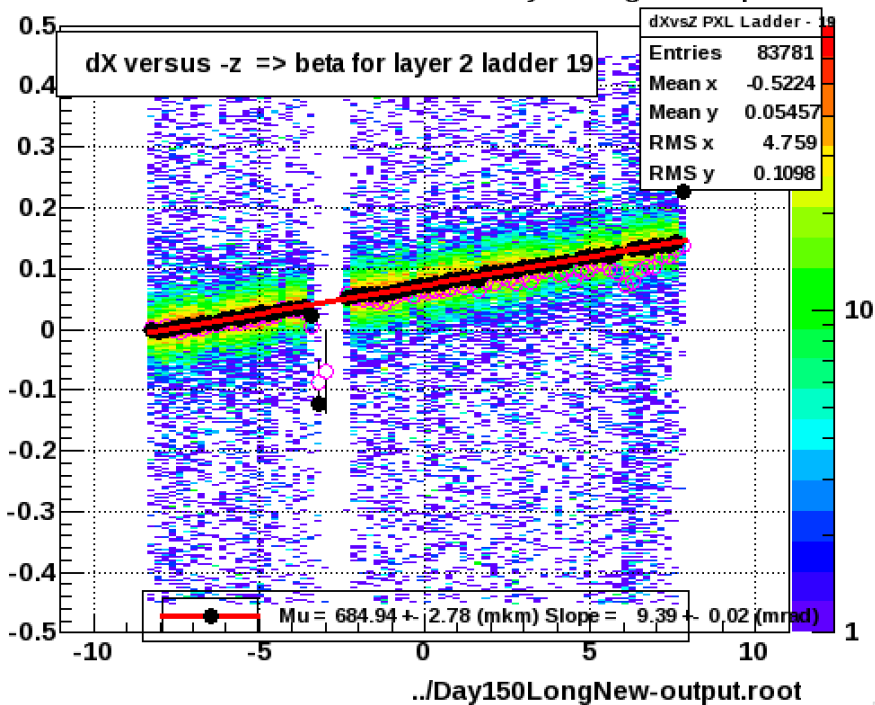
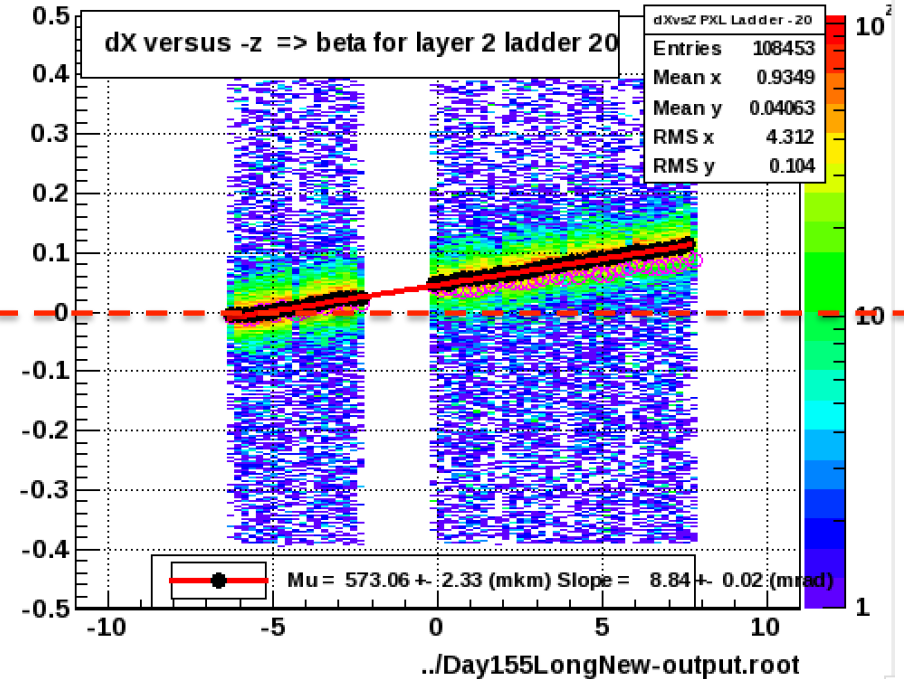
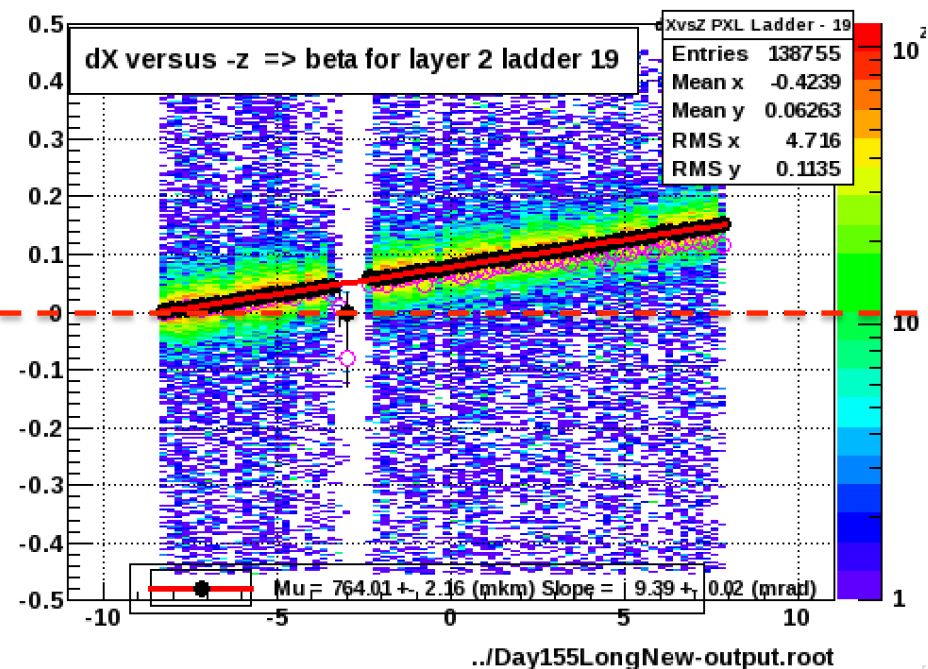
Q: Is it a Sector thing or individual Ladder ?

A: Rotations seem common but shifts are not



Q: Is there stability over two different runs?

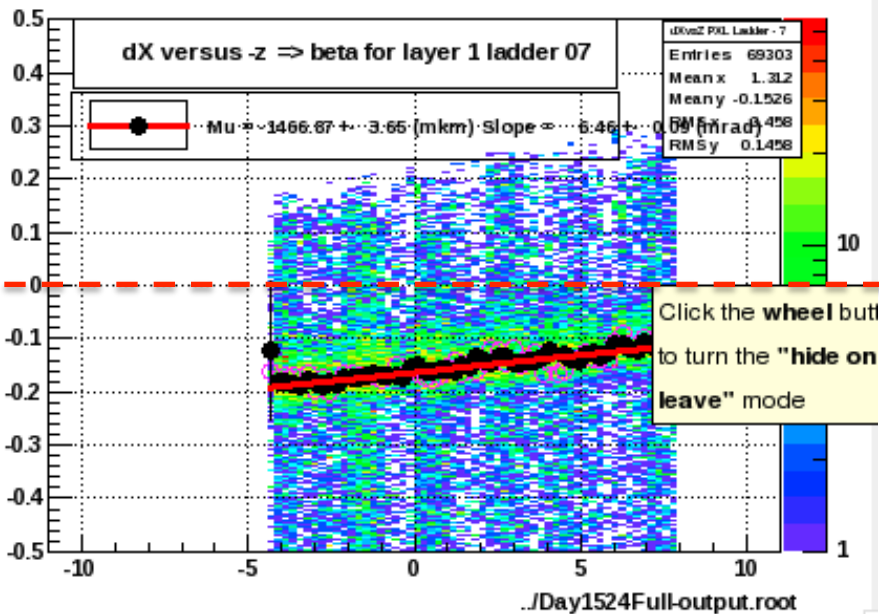
A: Rotations seem to be stable, shifts <100um but significant...need to understand cause



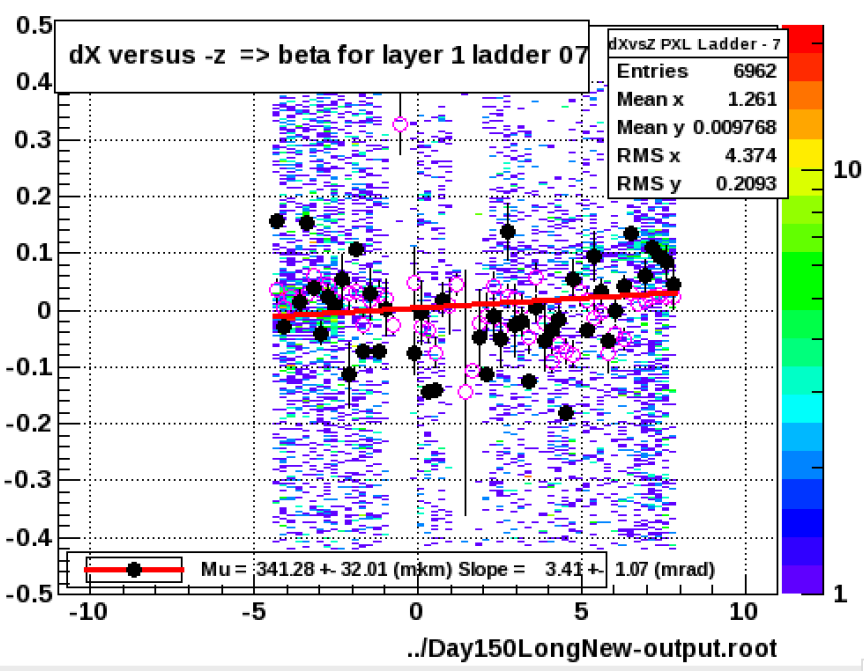
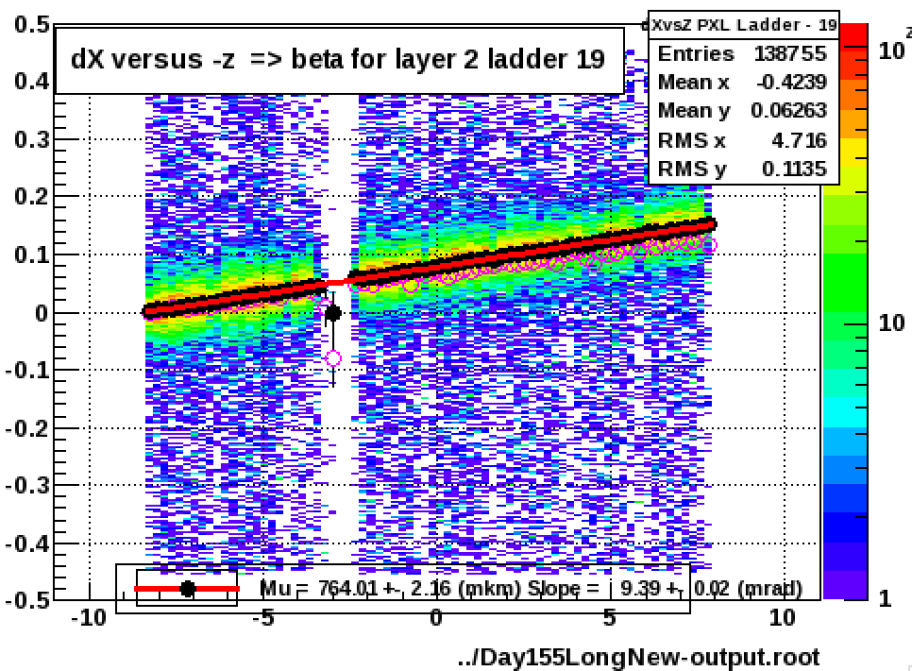
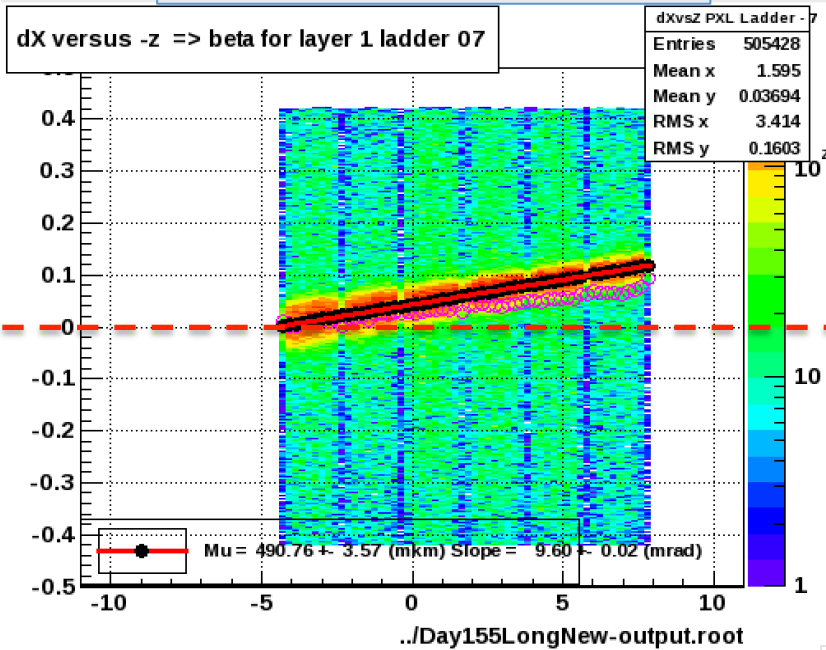
Q: Is SURVEY geometry better than ideal?

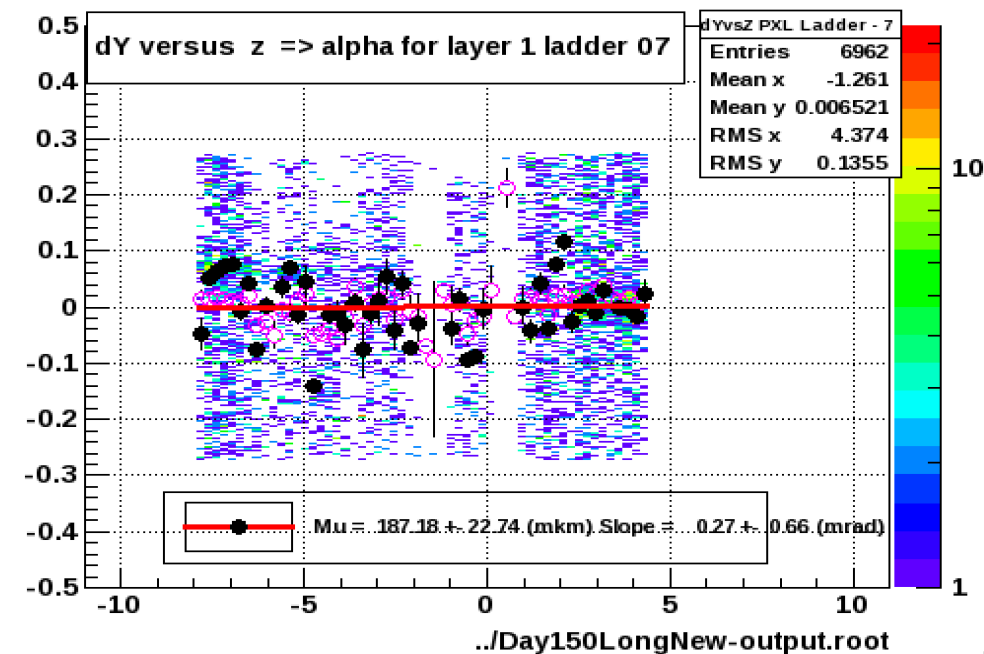
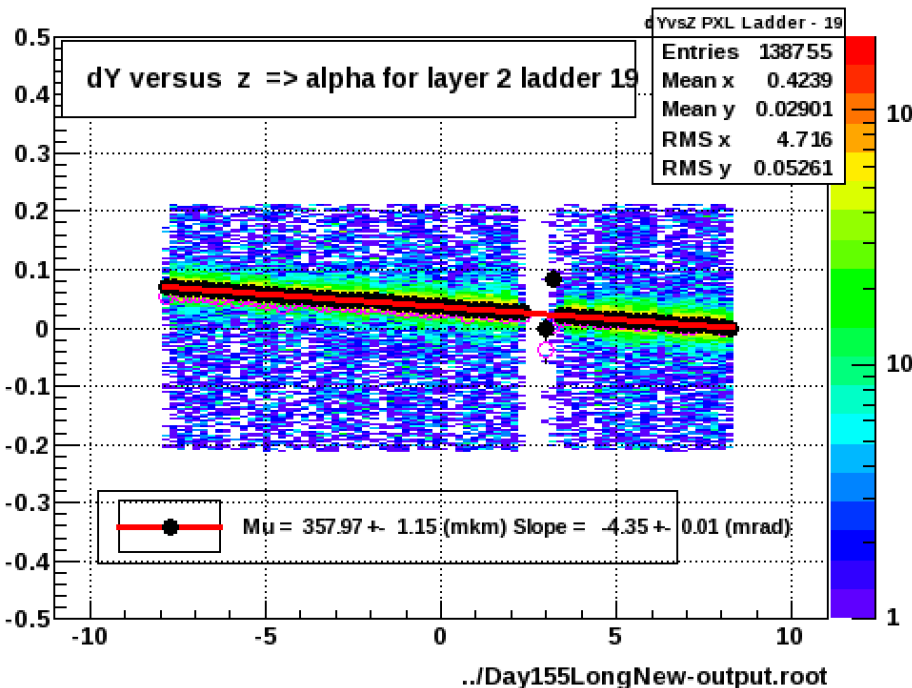
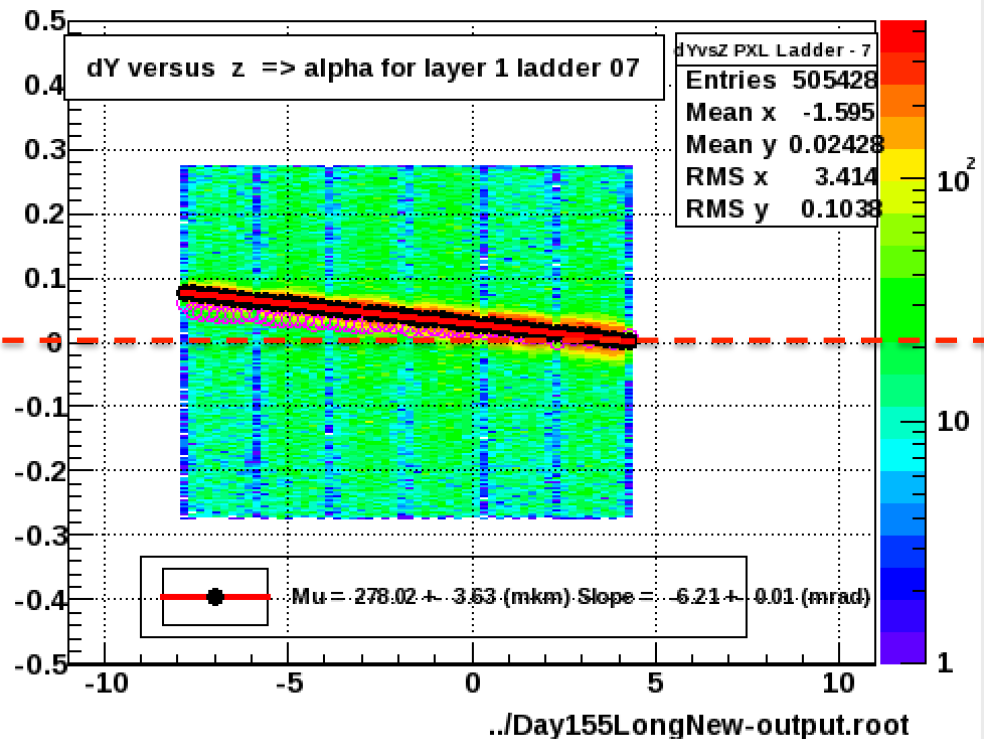
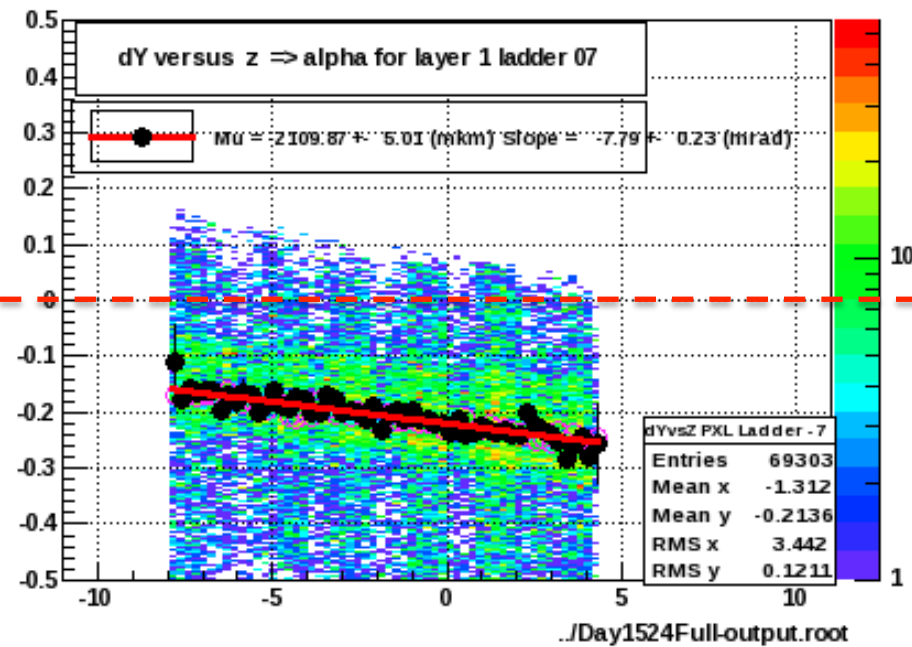
**A: In several aspects YES. Also quality is better.
Still significant deviations from in-situ
geometry exist**

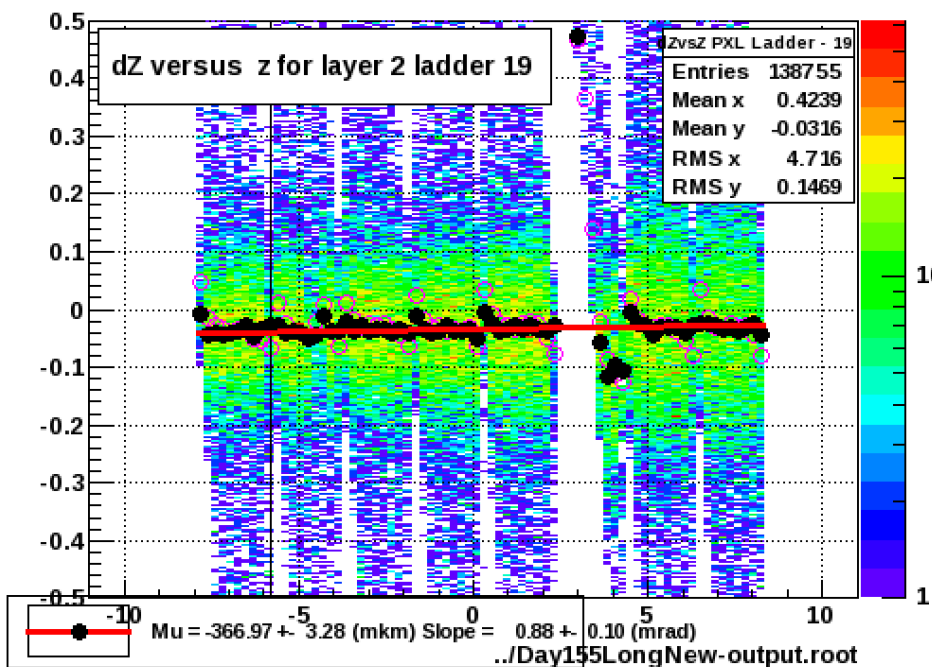
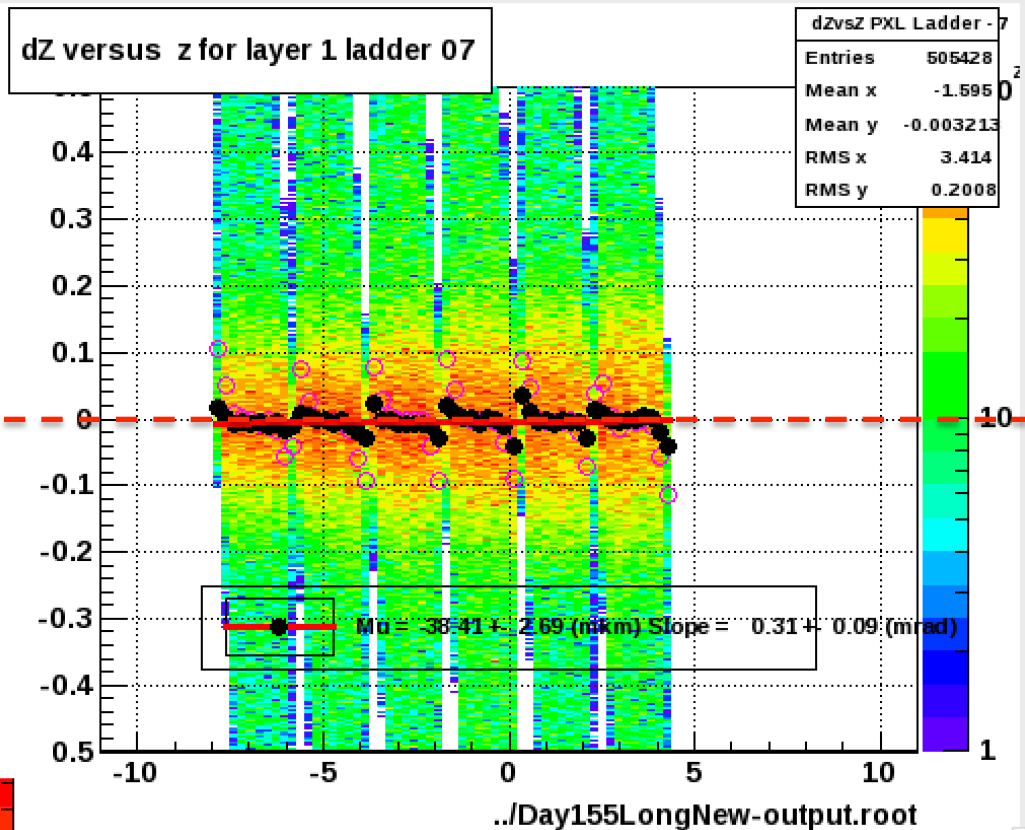
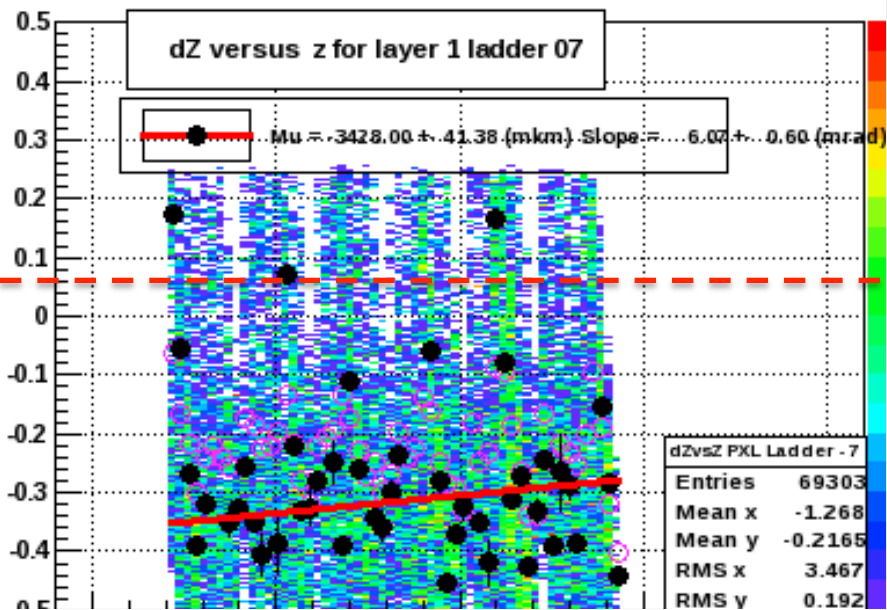
Un-Calibrated/Ideal



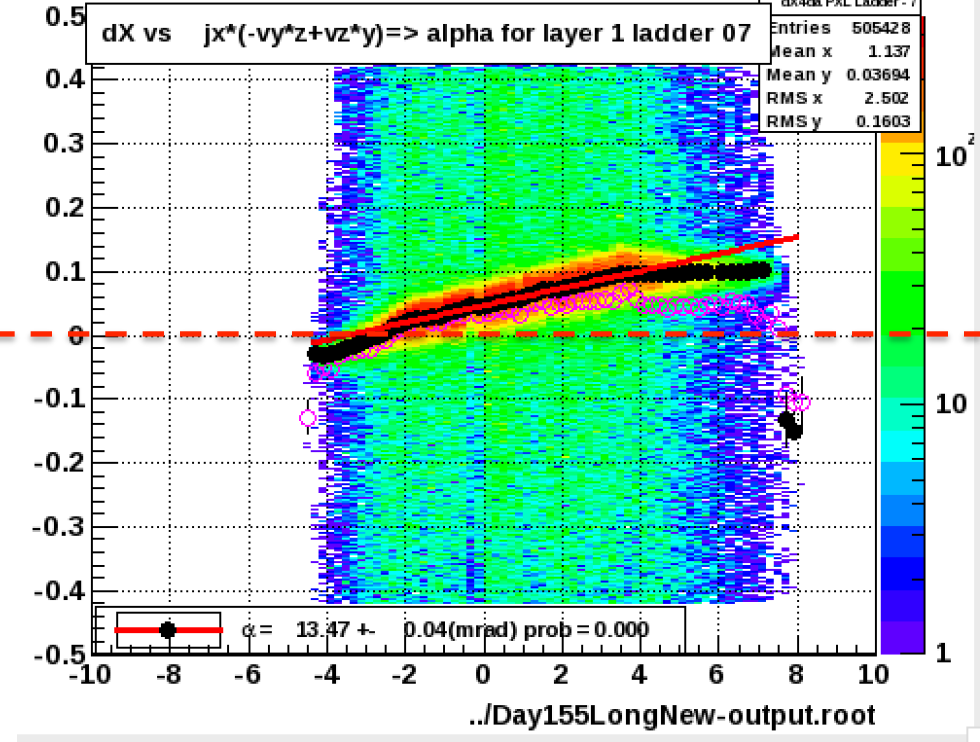
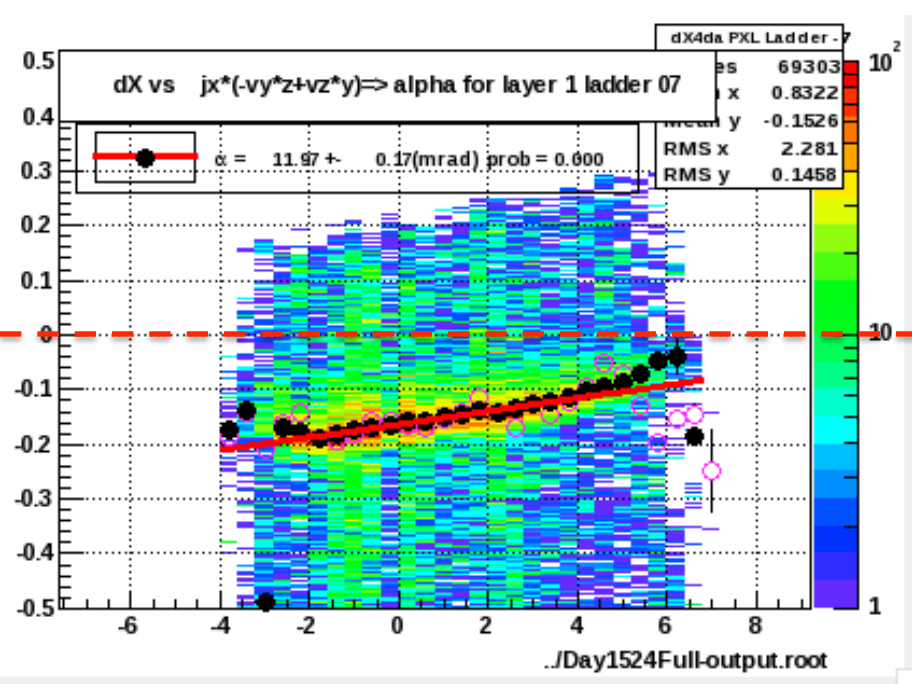
Calibrated/Survey

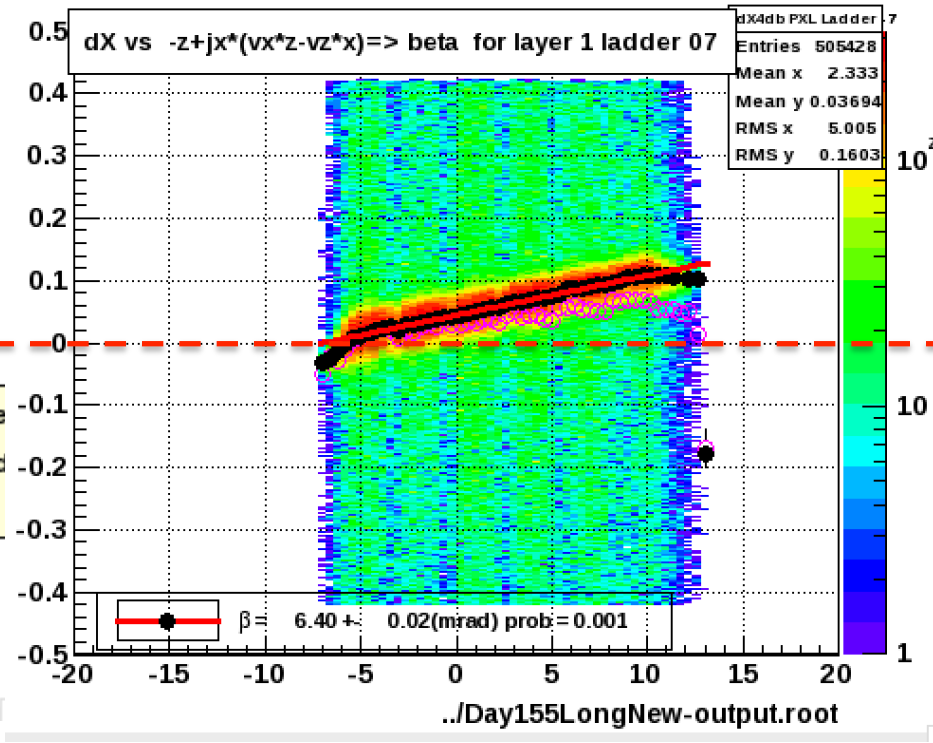
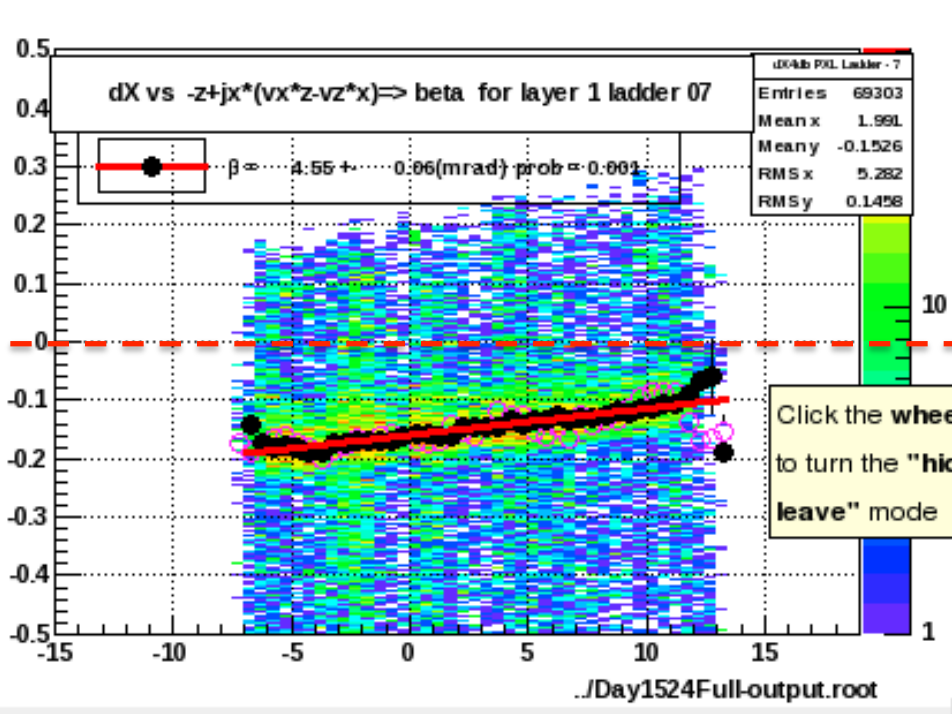


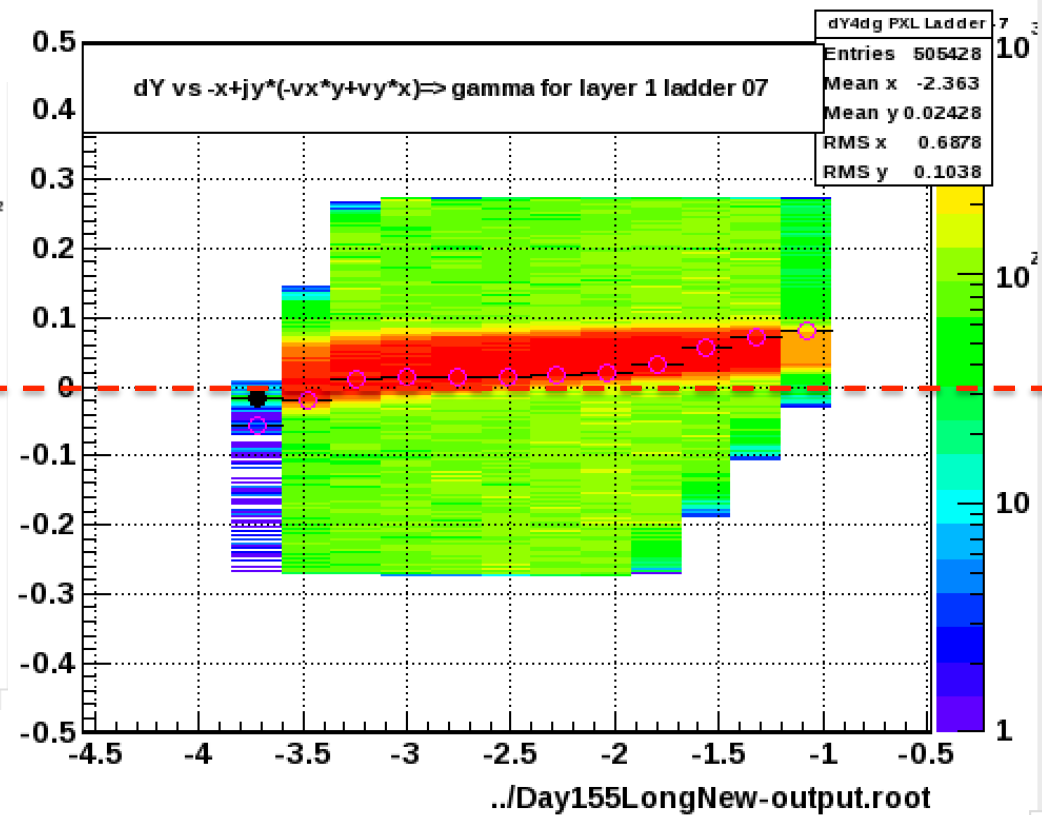
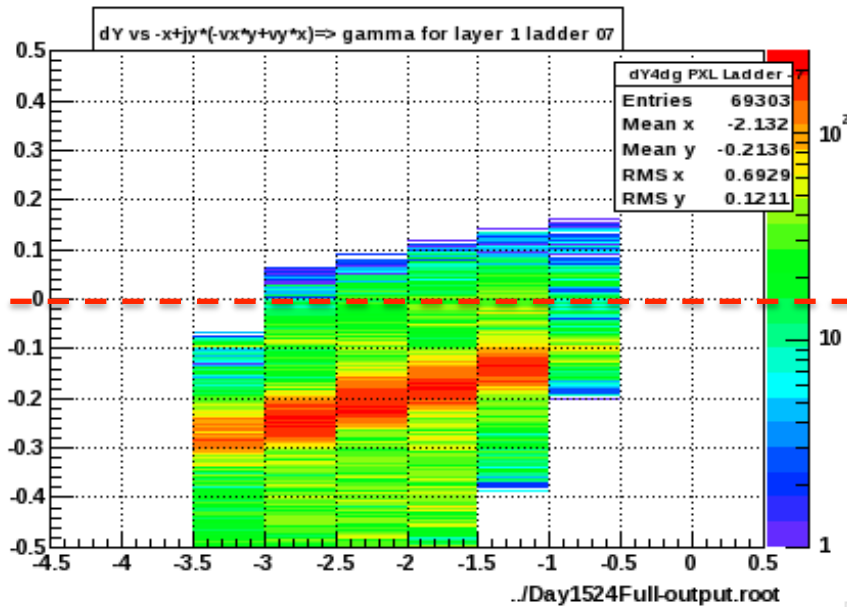




Effect of masking/calibrations more obvious







SURVEY appears to have this right

Q: Is Alignment procedure working?

A: YES. Even after a single iteration a big improvement is seen

Day 152 – First Pass Alignment Update

- With the ~600K events I got from Long, I ran the alignment code and got precise estimates (see slide-2)
- Produced the “corrected” geometry and re-run the full BFC with updated geometry
 - about 50K event so far

FIRST PASS ESTIMATED Corrections (angles [only] need a minus sign)

SECTOR 4

dX mkm	dY mkm	dZ mkm	alpha mrad	beta mrad	gamma mrad	Comment
-100	300	2900	0	0.	-0	Average for PXL sector 4 Ladder 1
-20	150	2970	0	0.	0	Average for PXL sector 4 Ladder 2
-100	350	2700	0	0.	-0	Average for PXL sector 4 Ladder 3
-200	+400	3000	0	0	0	Average for PXL Ladder 4

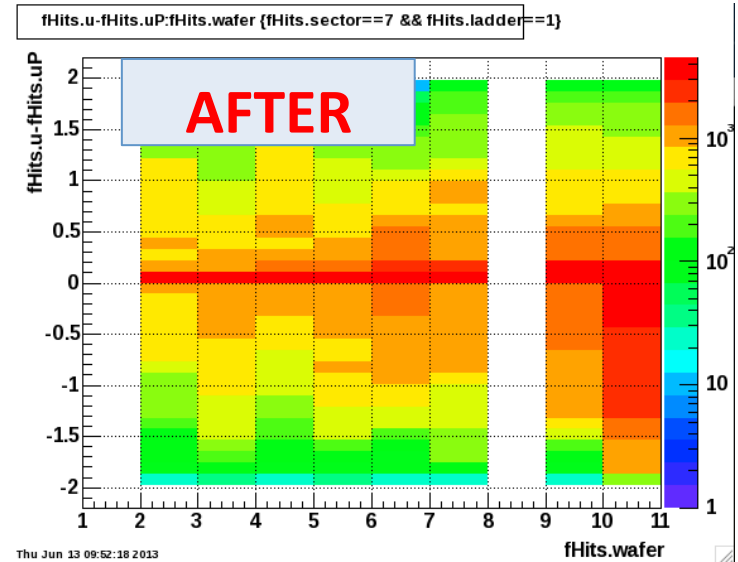
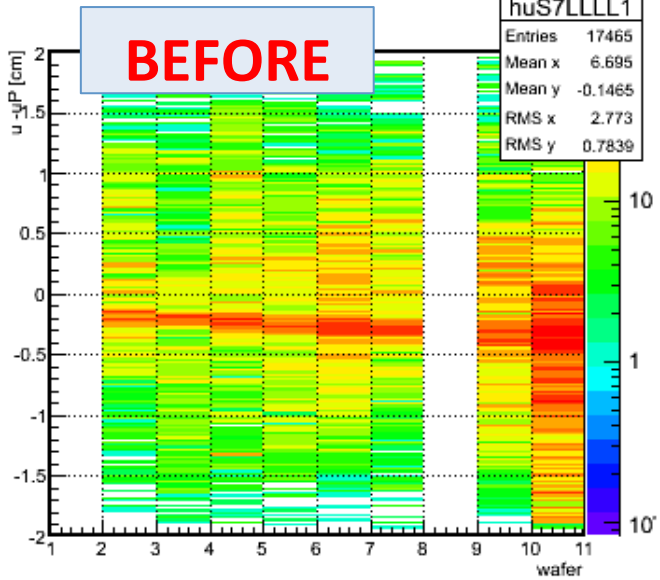
SECTOR 7

1500	2100	3000	-10	10	80	Ladder 1
2350	1150	2900	-15	10	80	Average for PXL sector 7 Ladder 2
2330	1800	2440	-15	20	80	Average for PXL Ladder 3
2230	2710	2570	-10.	20	80	Average for PXL Ladder 4

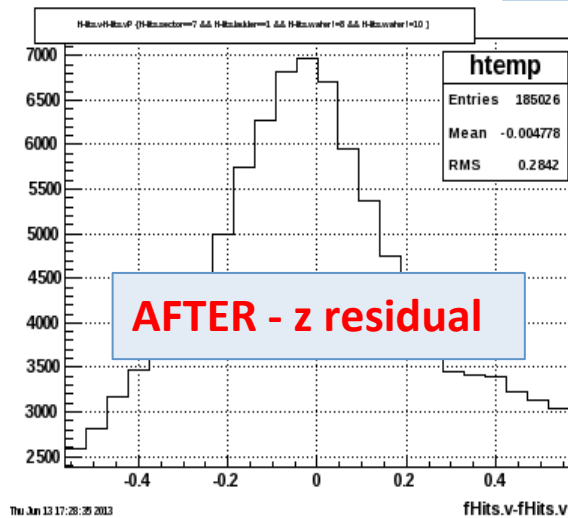
!!!

Sector 7 ladder 1 (inner)

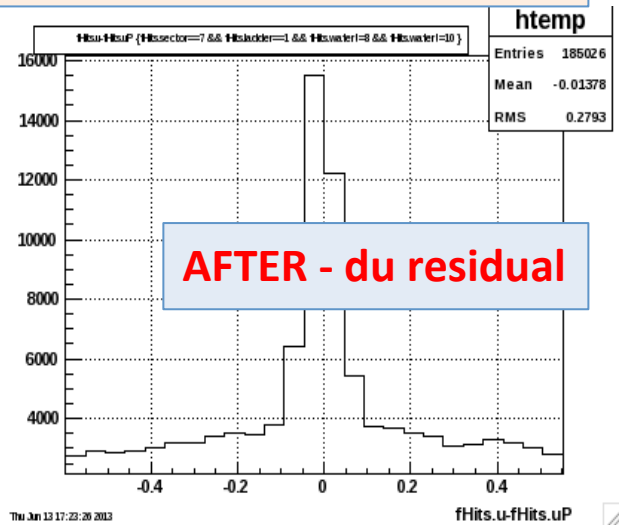
huS7L1 14152027



Most offset and slope gone!



AFTER - z residual

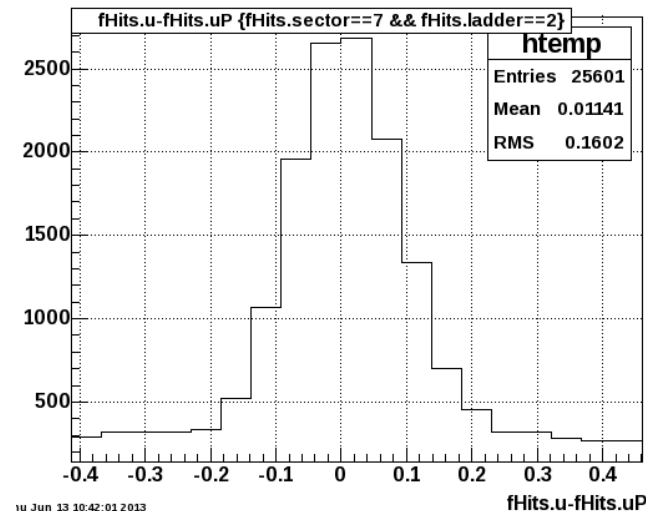
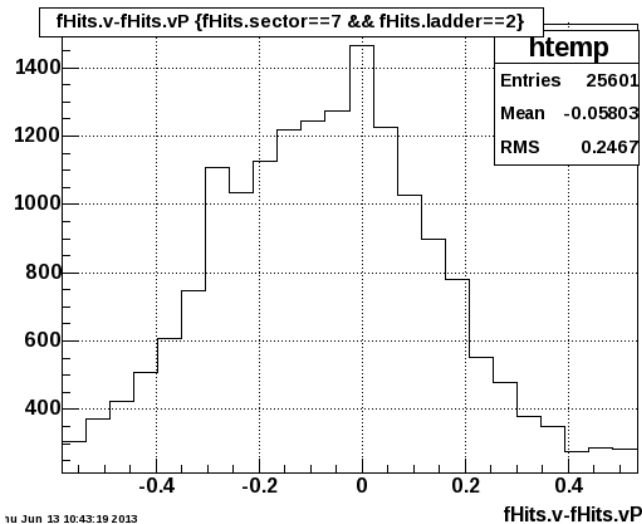
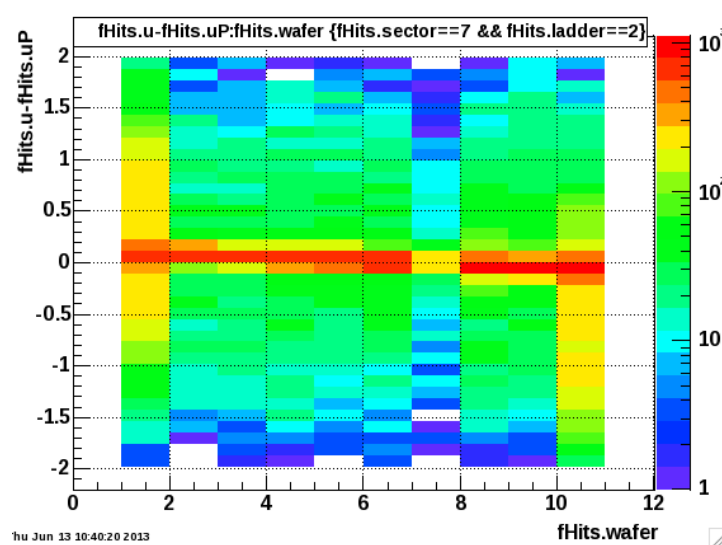
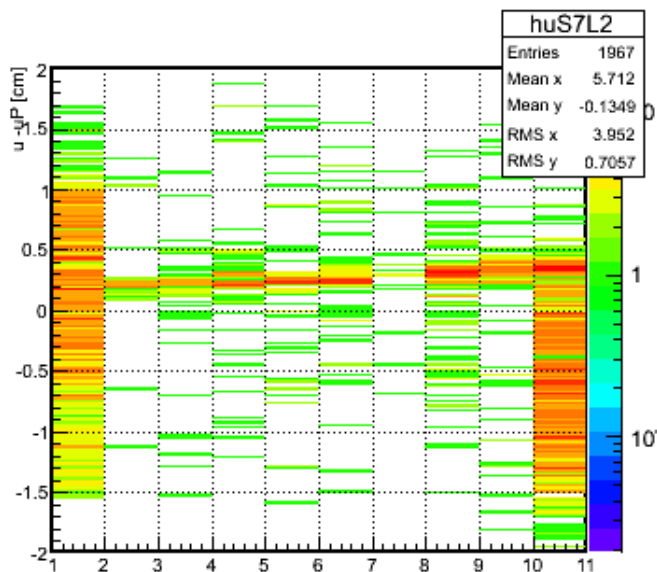


AFTER - du residual

dX mkm	dY mkm	dZ mkm	alpha mrad	beta mrad	gamma mrad	
1500	2100	3000	-10	10	80	

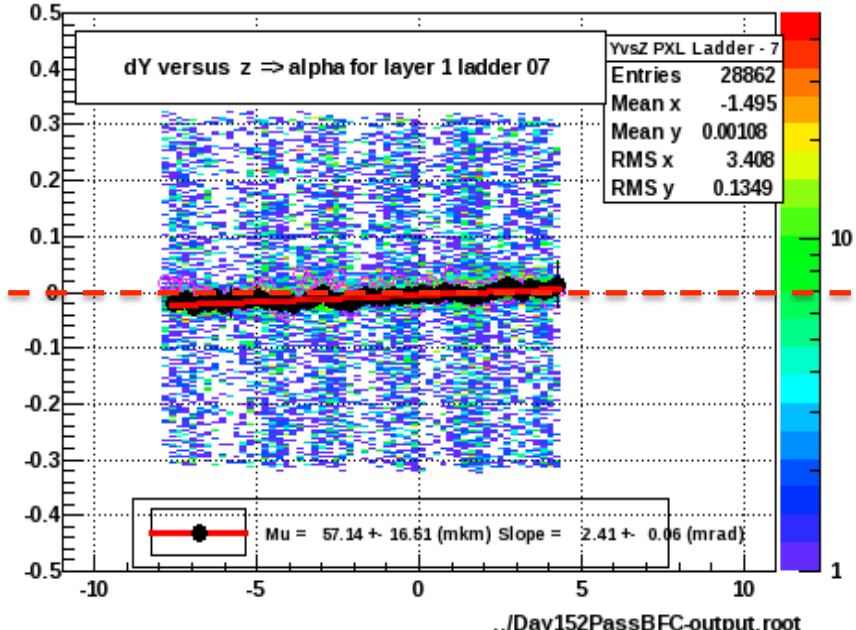
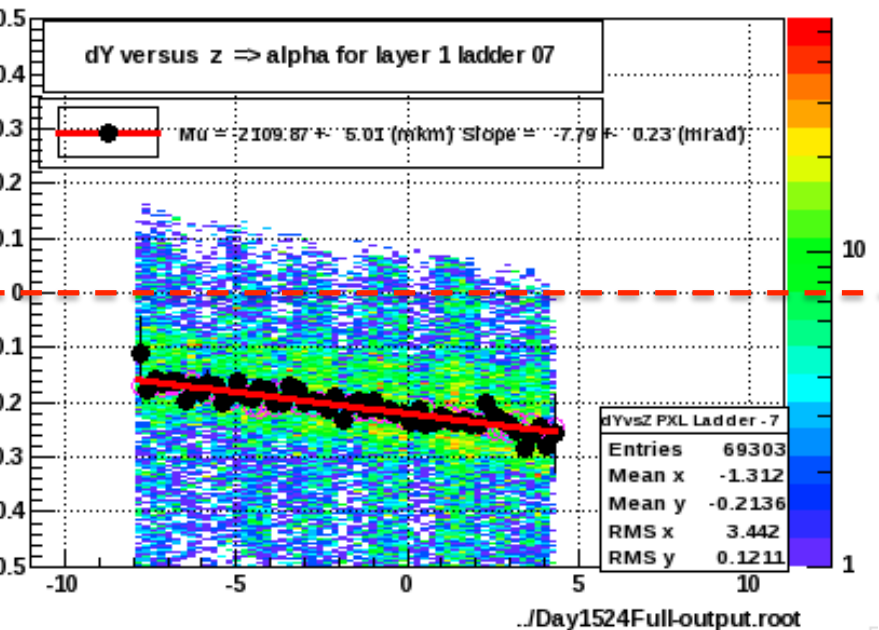
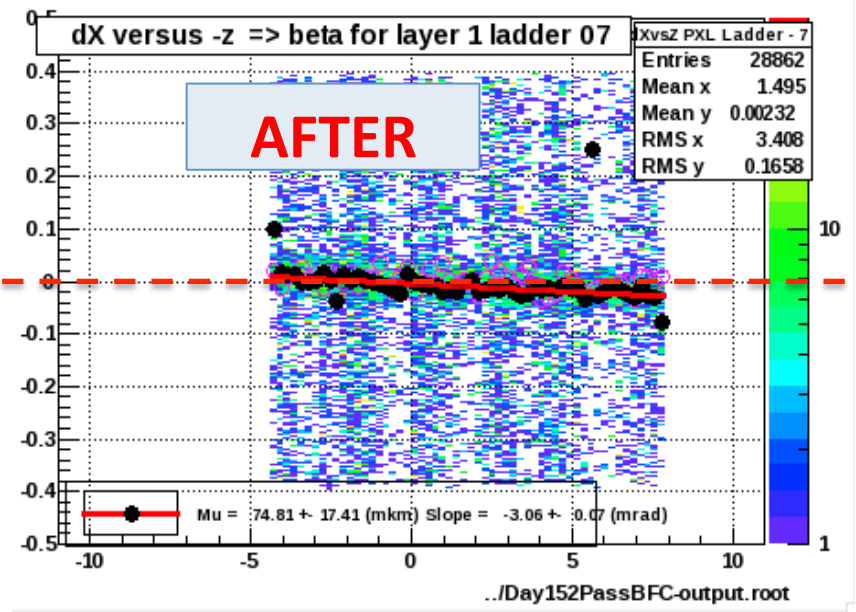
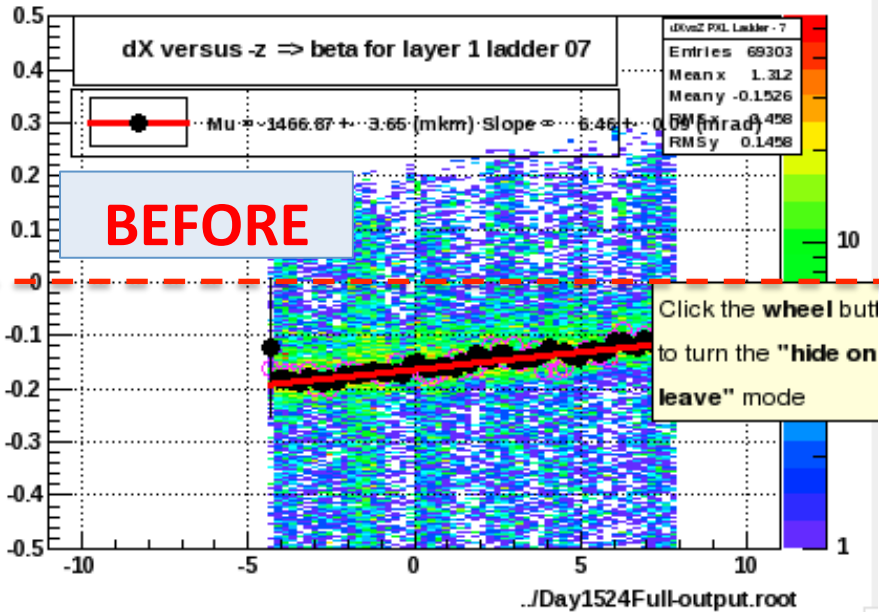
Sector 7 ladder 2 (outer)

huS7L2 14152024

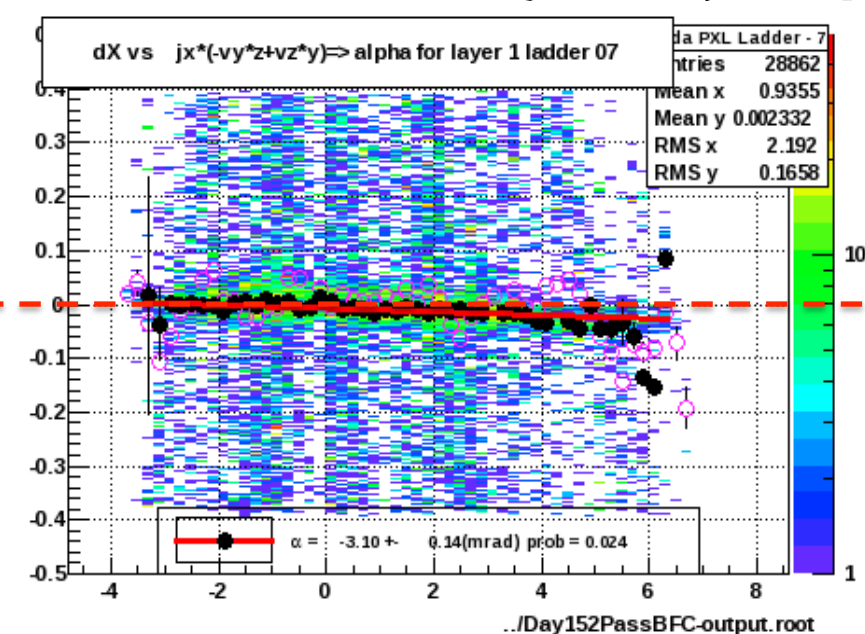
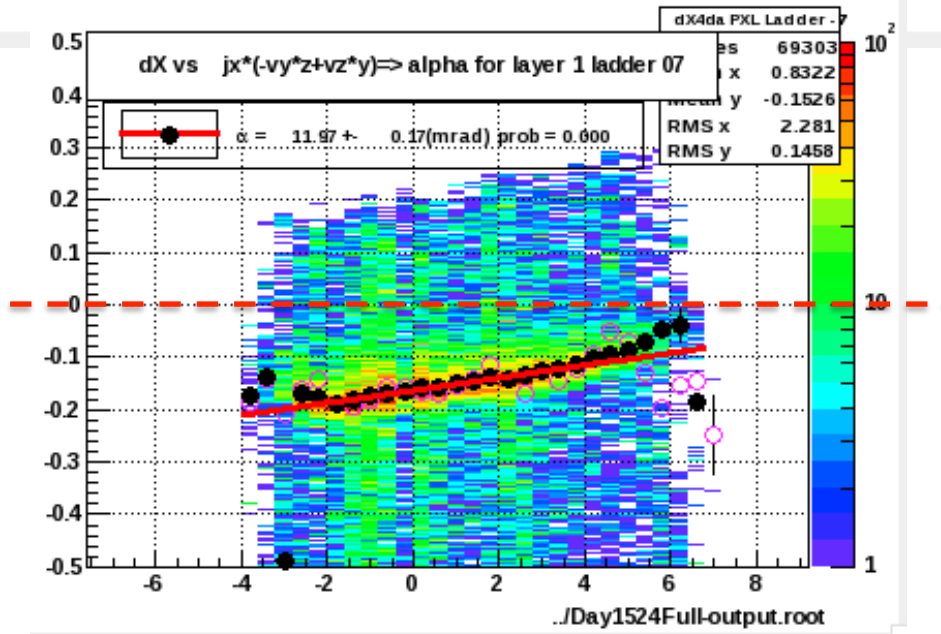
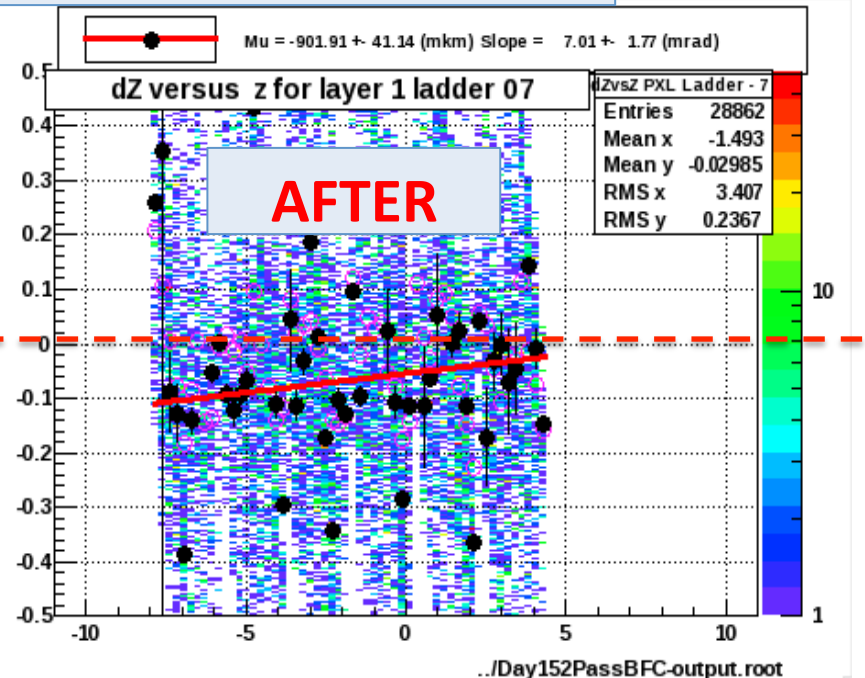
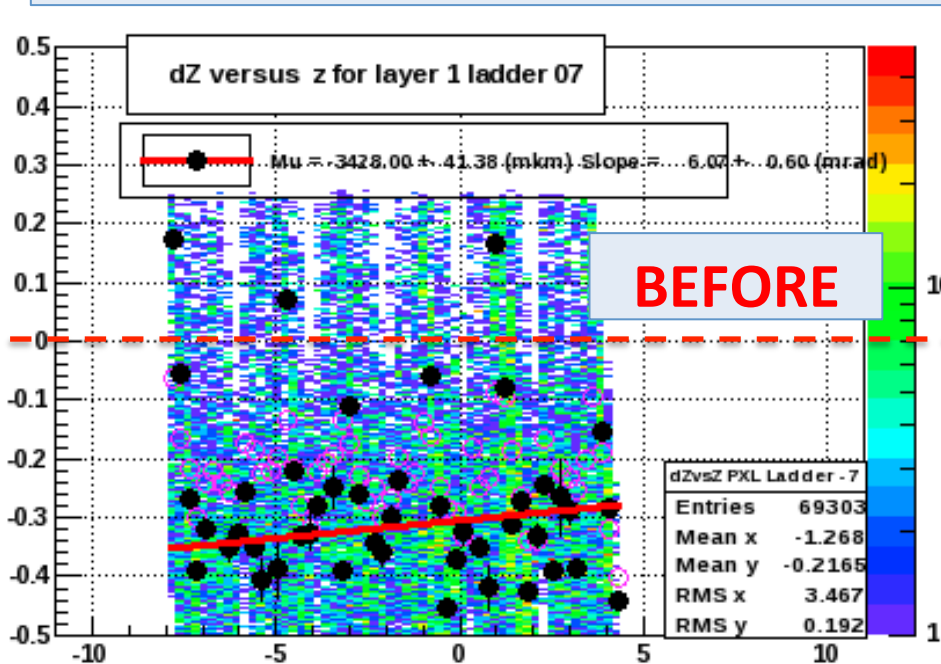


dX mkm	dY mkm	dZ mkm	alpha mrad	beta mrad	gamma mrad	
2350	1150	2900	-15	10	80	

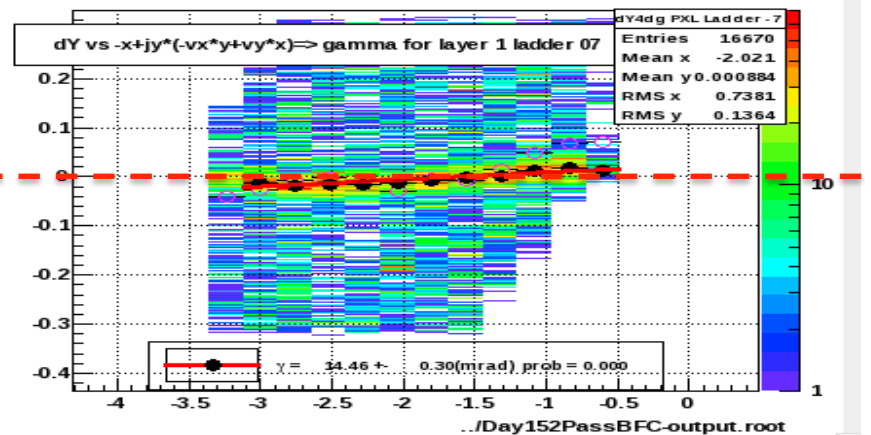
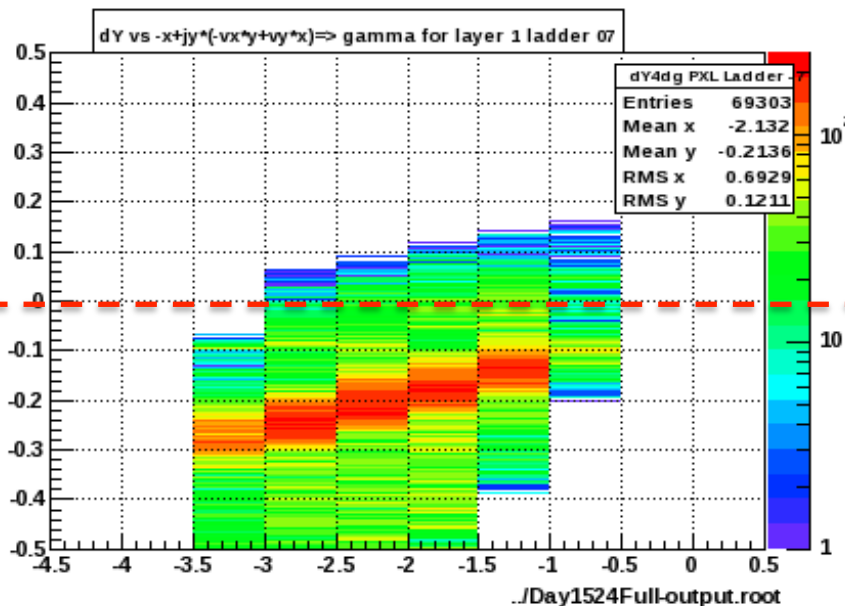
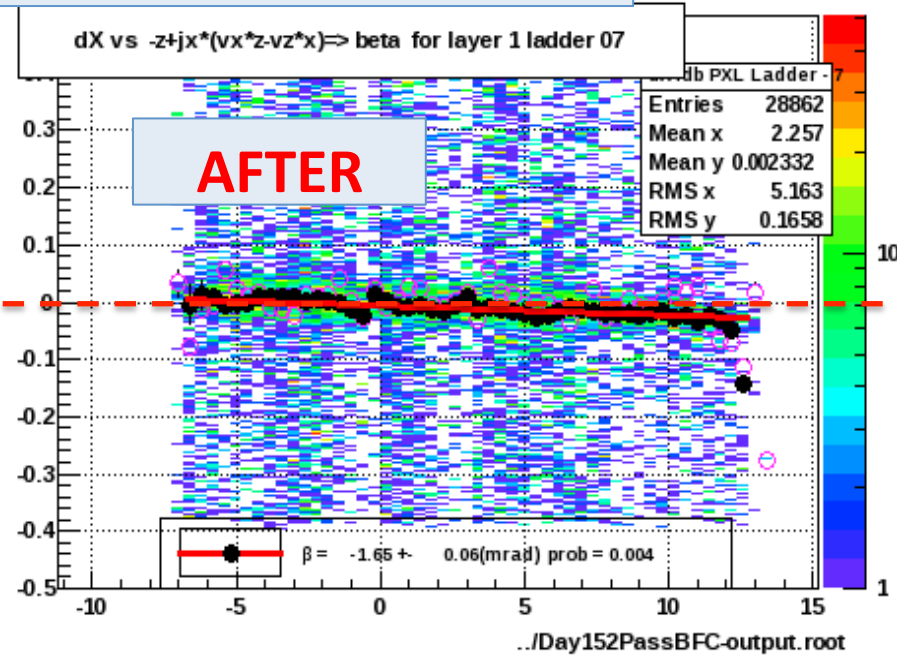
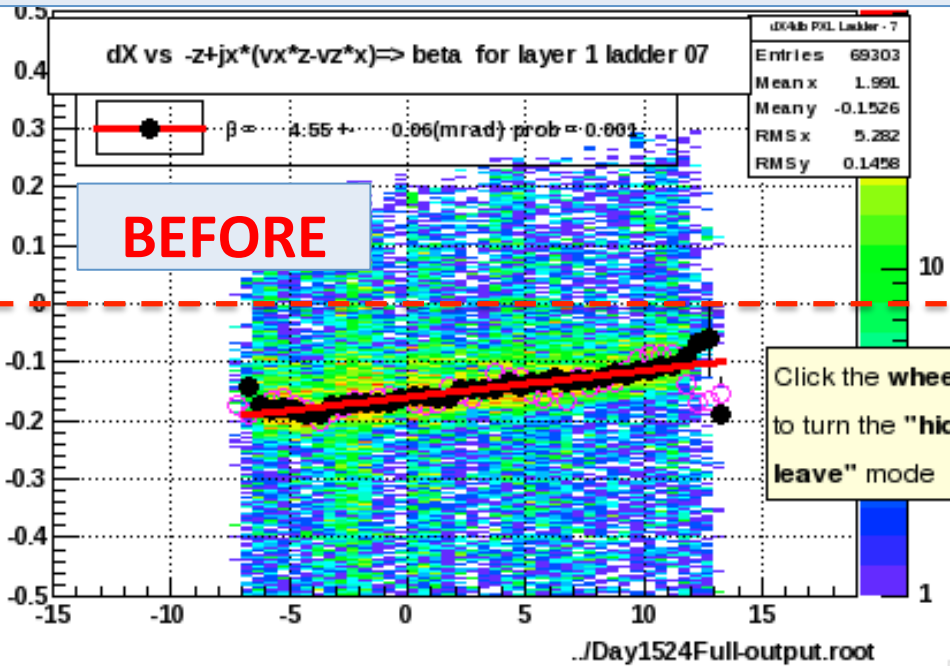
Sector 7 ladder 1 (inner) GLOBAL after BFC rerun (50K)



Sector 7 ladder 1 (inner) GLOBAL after BFC rerun



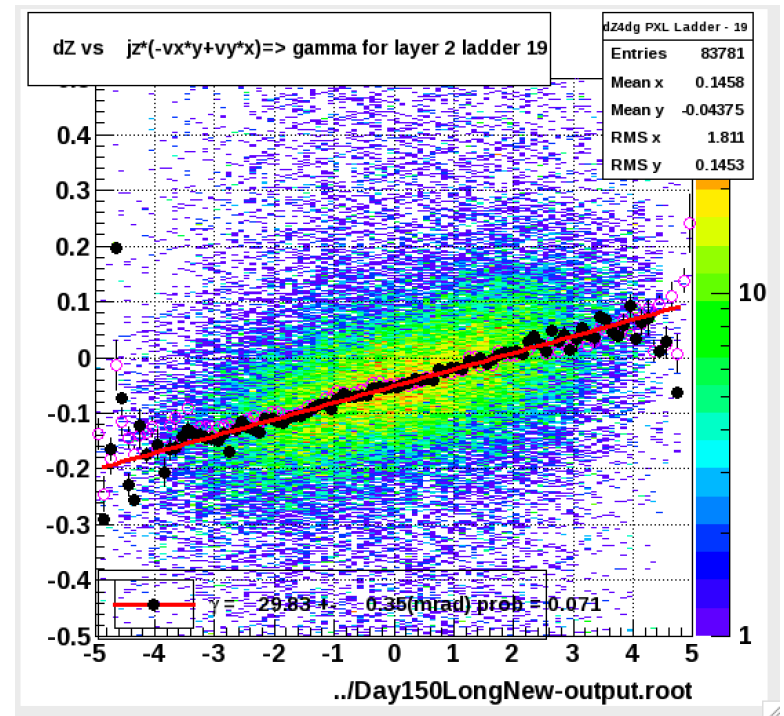
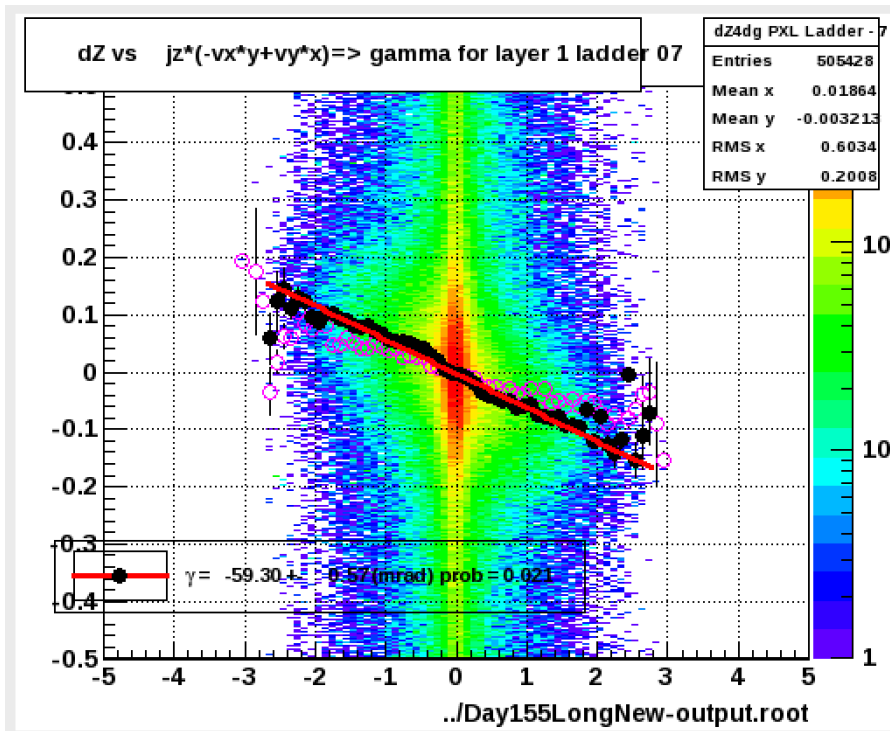
Sector 7 ladder 1 (inner) GLOBAL after BFC rerun

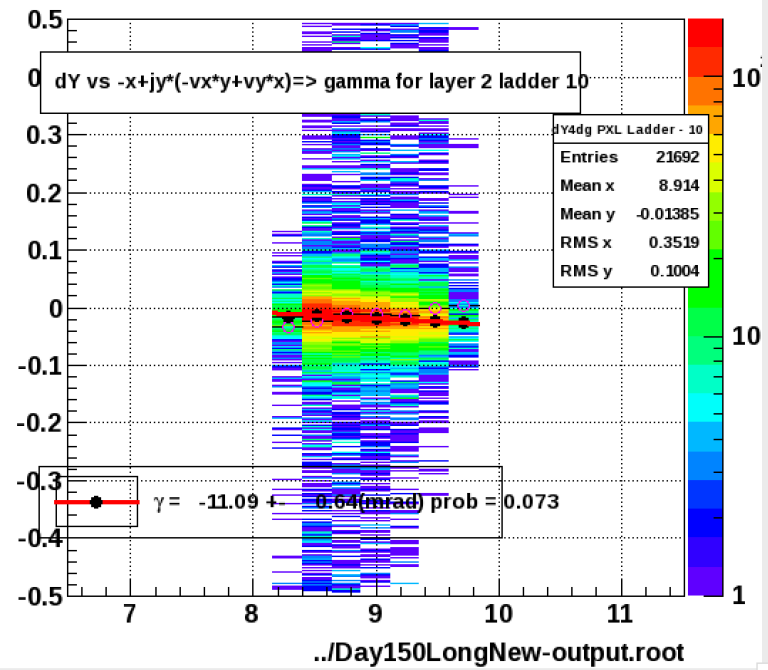


Q: Any strange things that call for deeper tests ?

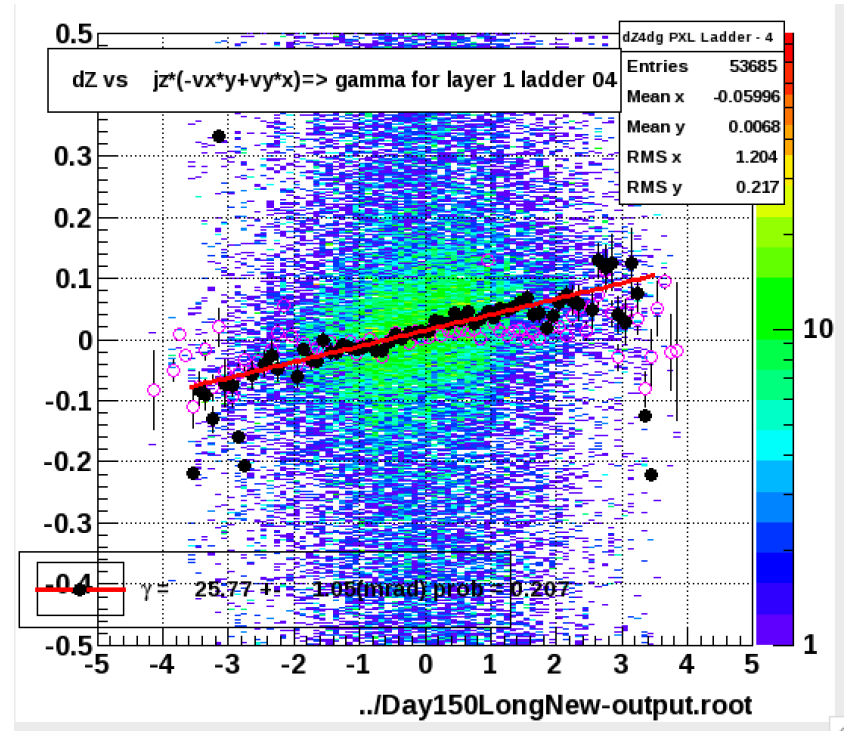
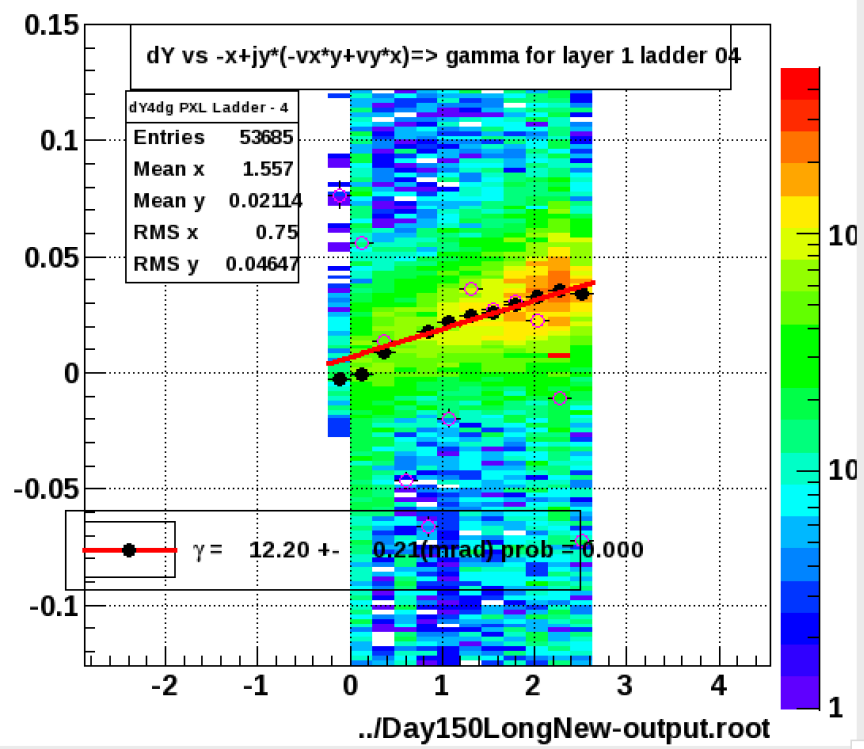
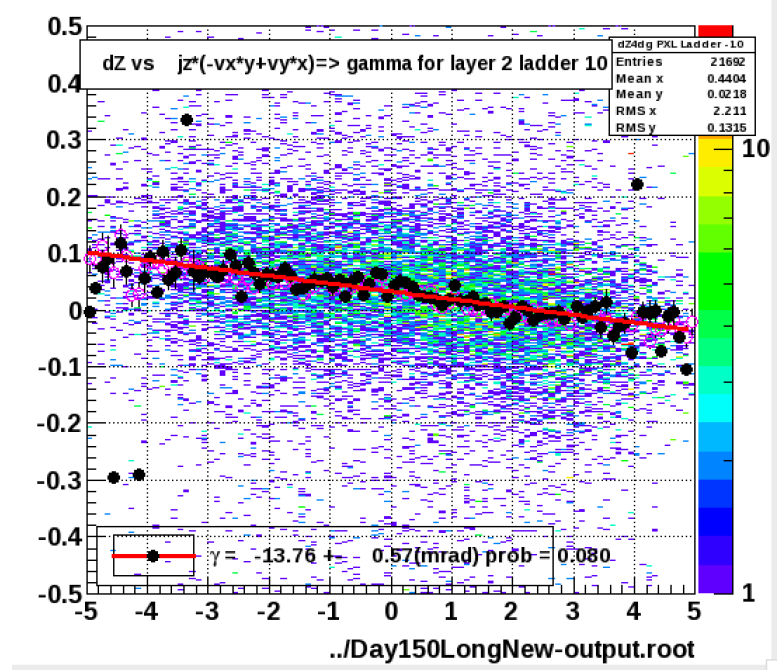
A: Several

- Inner ladder inversion?



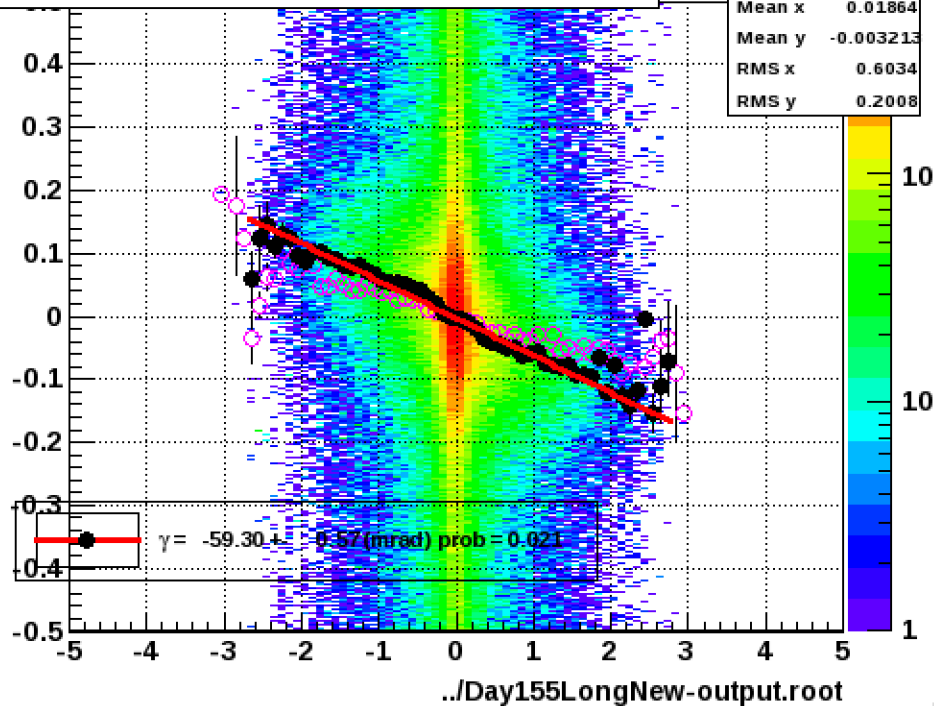


OK



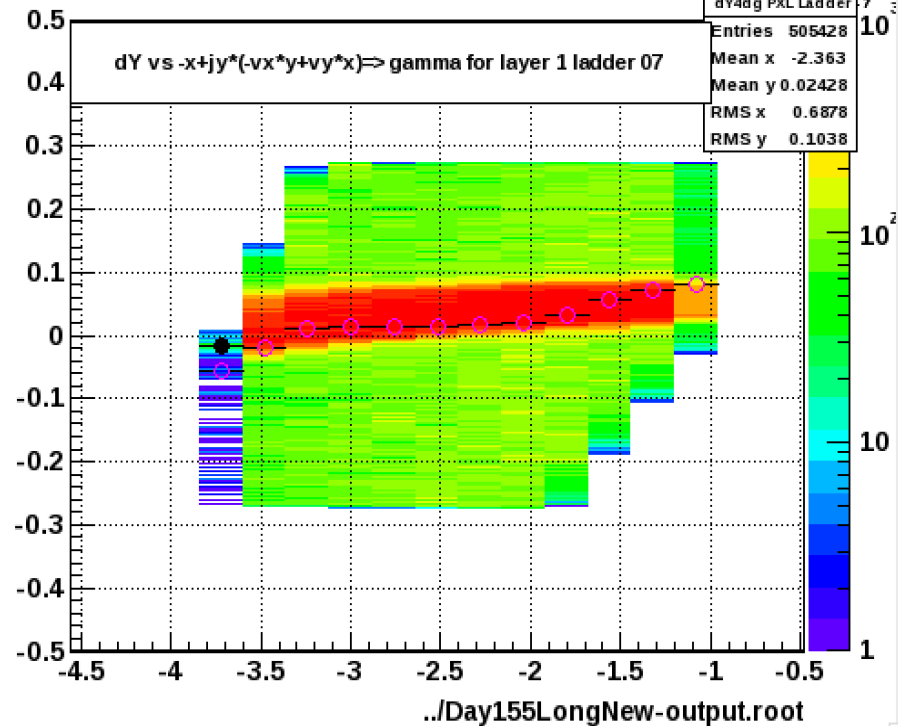
dZ vs $jz^*(-vx*y+vy*x) \Rightarrow \gamma$ for layer 1 ladder 07

Entries	505428
Mean x	0.01864
Mean y	-0.003213
RMS x	0.6034
RMS y	0.2008



dY vs $-x+jy^*(-vx*y+vy*x) \Rightarrow \gamma$ for layer 1 ladder 07

Entries	505428
Mean x	-2.363
Mean y	0.02428
RMS x	0.6878
RMS y	0.1038



??????

Summary – To Do list

- Simulation:
 - Individual ladder rots/transls
 - rots in progress
 - Thorough tests is a must
- Code/methods synchronization
- Multi-pass chain implementation/establishment
- Align, monitor time-dependences, understand

Clean/Calibrated Data a MUST for proper Alignment