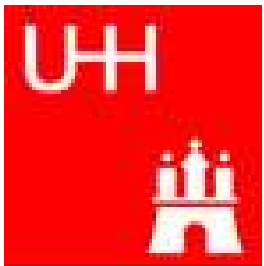


High level structure alignment with MP

Outline:

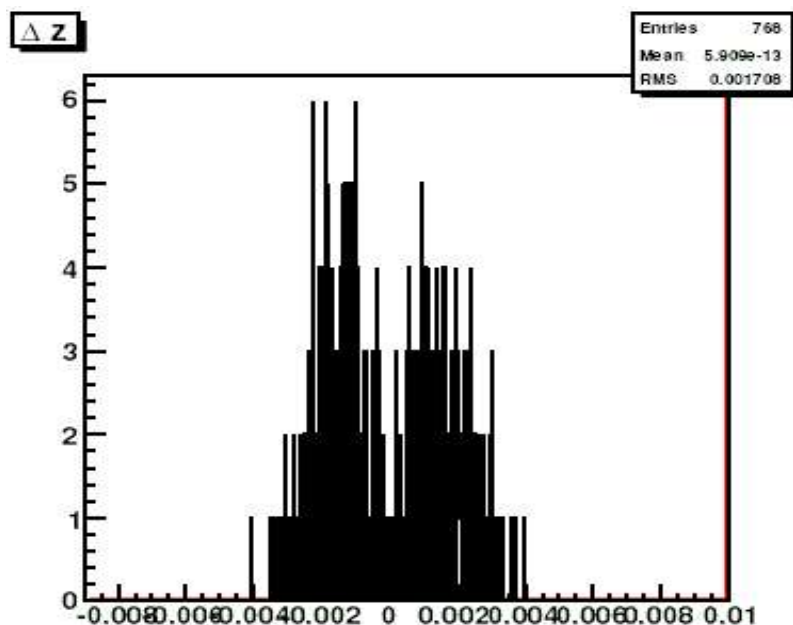
First high level structure alignment with MP(BL and RK)
using runs 123596-123818(first Skim from Ernesto)



Jula Draeger
University of Hamburg



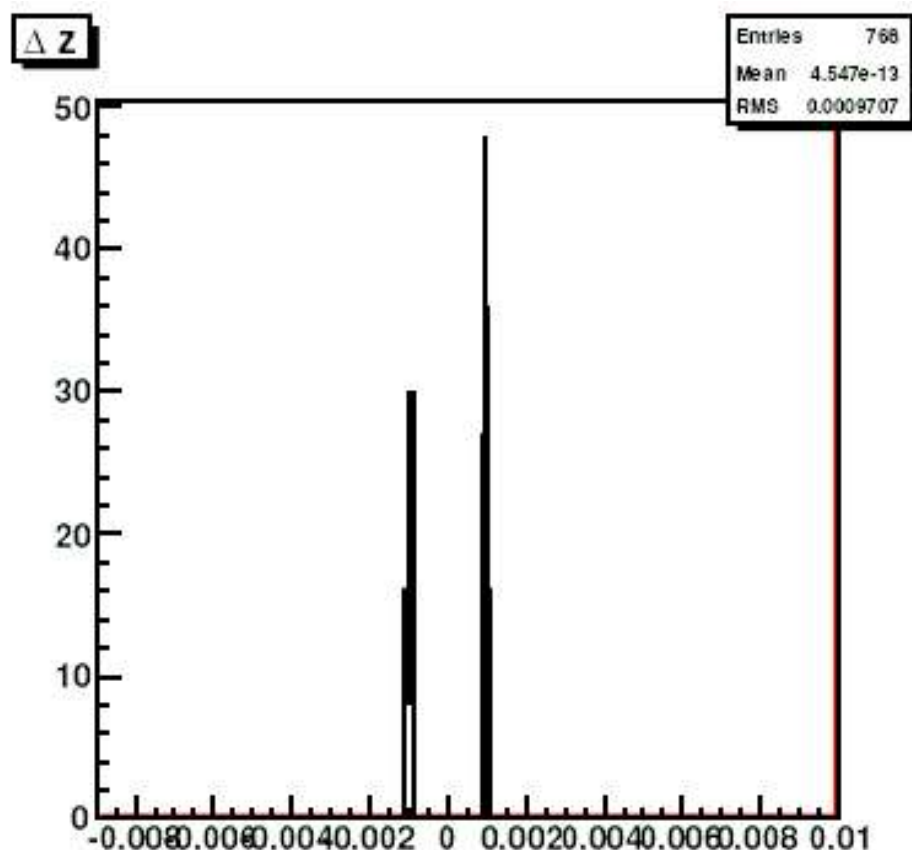
Aug. geometry vs. Nov. geometry



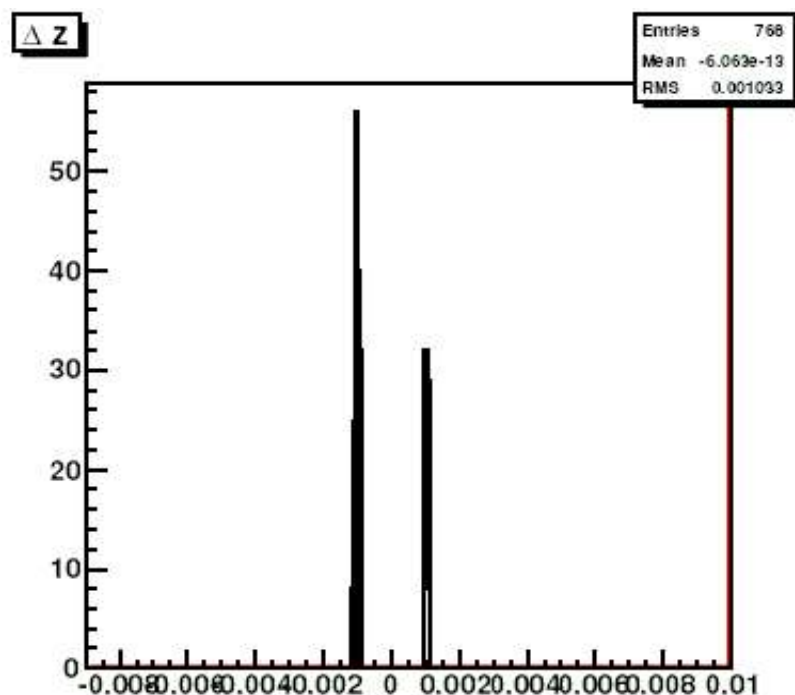
CRAFT09:

pixel half shell movement in z
observed between CRAFT09
August geometry and geometry
obtained in November (20 micron
in opposite direction)

Question: Can this be confirmed/seen with first collision data? --> perform only MP high level structure alignment (HalfBarrels,11111, and HalfCylinder/EndCaps,11111)

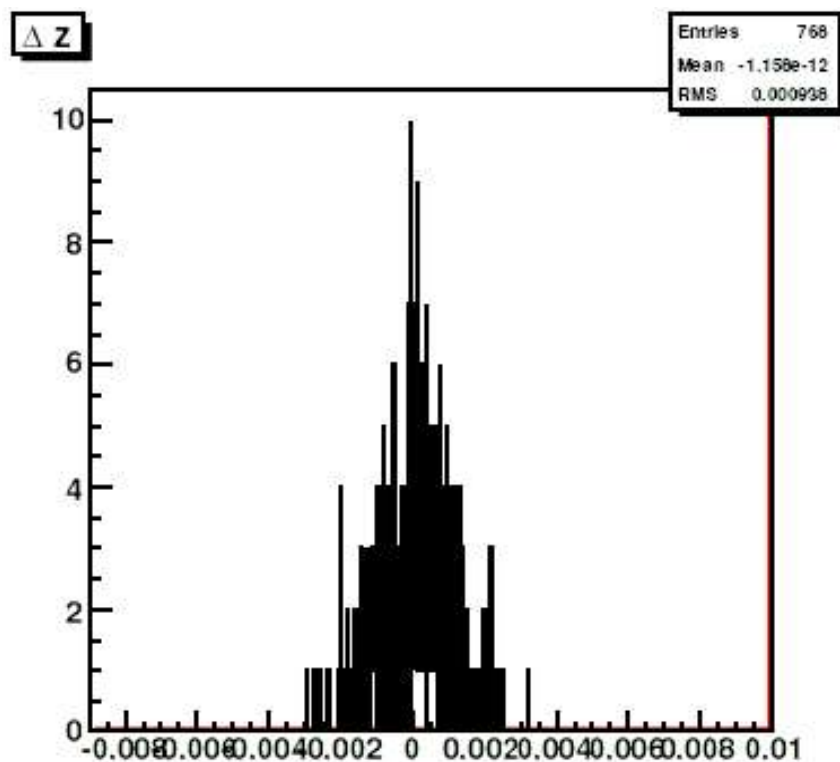


- high level structure alignment starting from Aug. geometry
(/afs/cern.ch/cms/CAF/CMSALCA/ALCA_TRACKERALIGN/Payloads/CRAFT09/TrackerAlignment_2009_v1_prompt/120348-infty/TrackerAlignment_2009_v1_prompt.db)
- Movement of pixel half shells by 10 micron into opposite direction

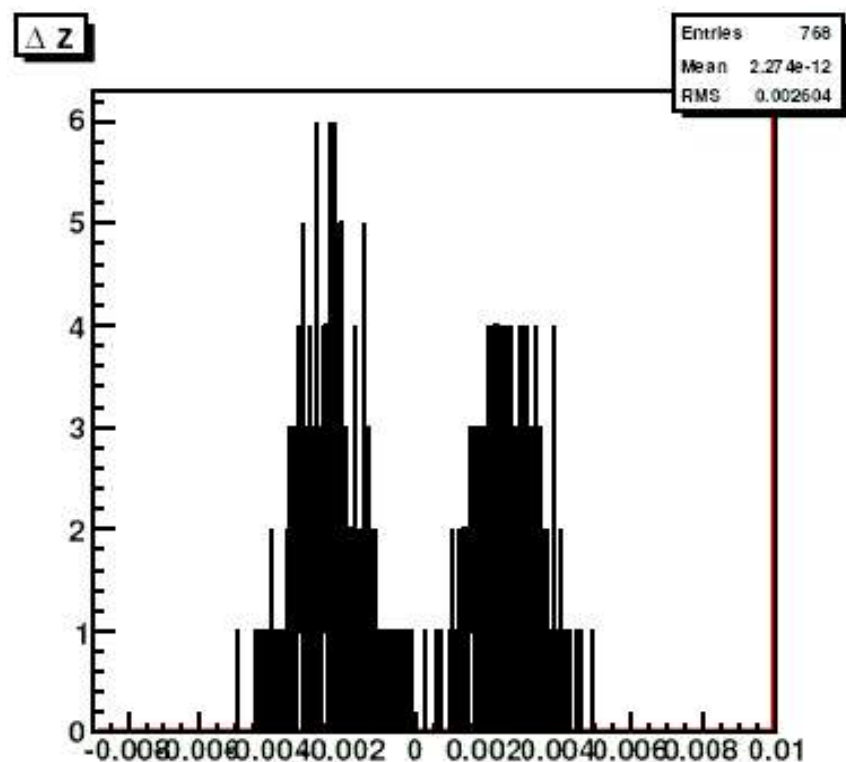


- high level structure alignment starting from Nov. geometry
(/afs/cern.ch/cms/CAF/CMSALCA/ALCA_TRACKERALIGN/PayLoads/CRAFT09/TrackerAlignment_2009_v1_prompt/123098-infity/TrackerAlignment_2009_v1_prompt.db)
- Movement of pixel half shells by 10 micron into opposite direction !!!
- same movement as starting from August geometry?

Compare alignment started from Nov. geometry to Aug. geometry to see whether movement is shifting half shells further apart or closer together.



- high level structure alignment starting from Nov. geometry vs August geometry
- compared to Aug geometry seems to be more or less in agreement
- shift obtained in alignment from November geometry seem to shift half shells back (towards each other)

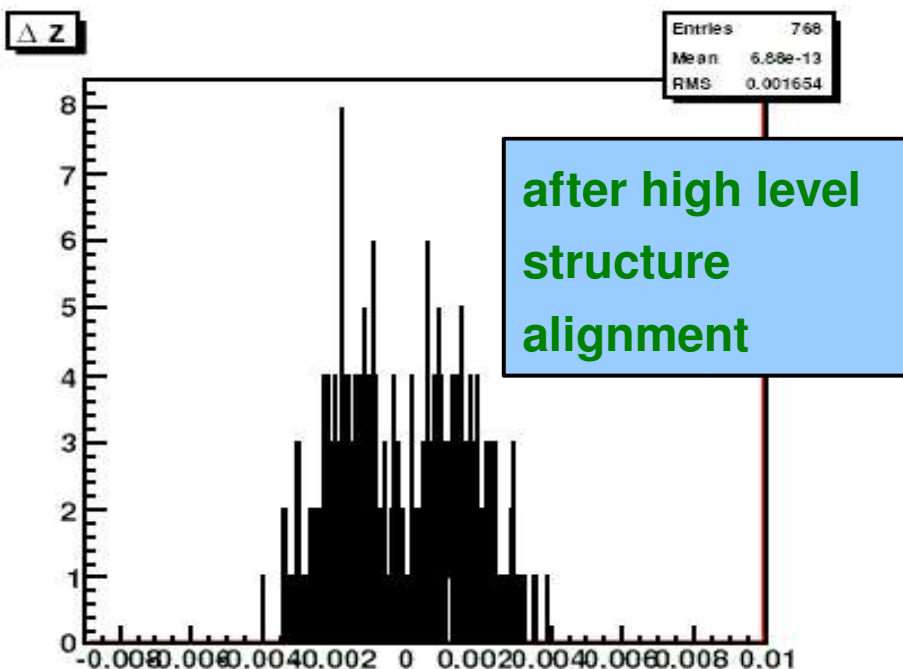
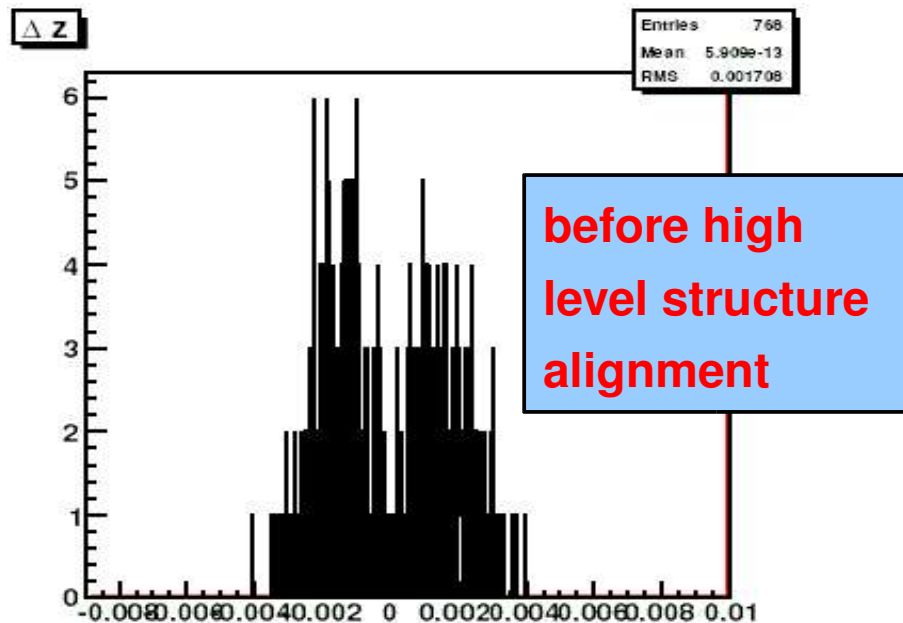


- high level structure alignment starting from Aug. geometry vs. Nov. geometry
- the peaks seem to drift even more apart

It seems the algorithm is shifting the pixel half barrels into the same direction independent of starting geometry, indication for systematic effect of algorithm more than real movement? Further investigation needed.

-->repeat with new skim from Ernesto (BX included)--> same results!

Comparison Aug & Nov geometry using MinBias tracks



- Drift between Nov and Aug. geometries about 20 micron in opposite directions
- no big difference before and after alignment as moduleLevel alignment between the two geometries dominates distribution (rms is slightly narrower for “after alignment” comparison)--> but half shells do not seem to have been moved towards each other but both alignments shift into the same direction in z

- alignment workflow with collisions is working, I used the new MP alignment area: /afs/cern.ch/cms/CAF/CMSALCA/ALCA_TRACKERALIGN/MP/MPproduction (all config files and setting can be found there, + info in MP_ali_list.txt)
- With current statistics (~10k events) confirmation of pixel movement not possible with these settings
- Settings used have been documented @ https://twiki.cern.ch/twiki/bin/view/CMS/SWGuideMillepedeIIProductionEnvironment#CMSSW_3_3_X

Backup

