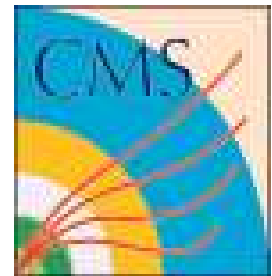


MP alignment using Cosmic MC UPDATE



UHH Alignment Meeting
10.02.2009





General Alignment Setup

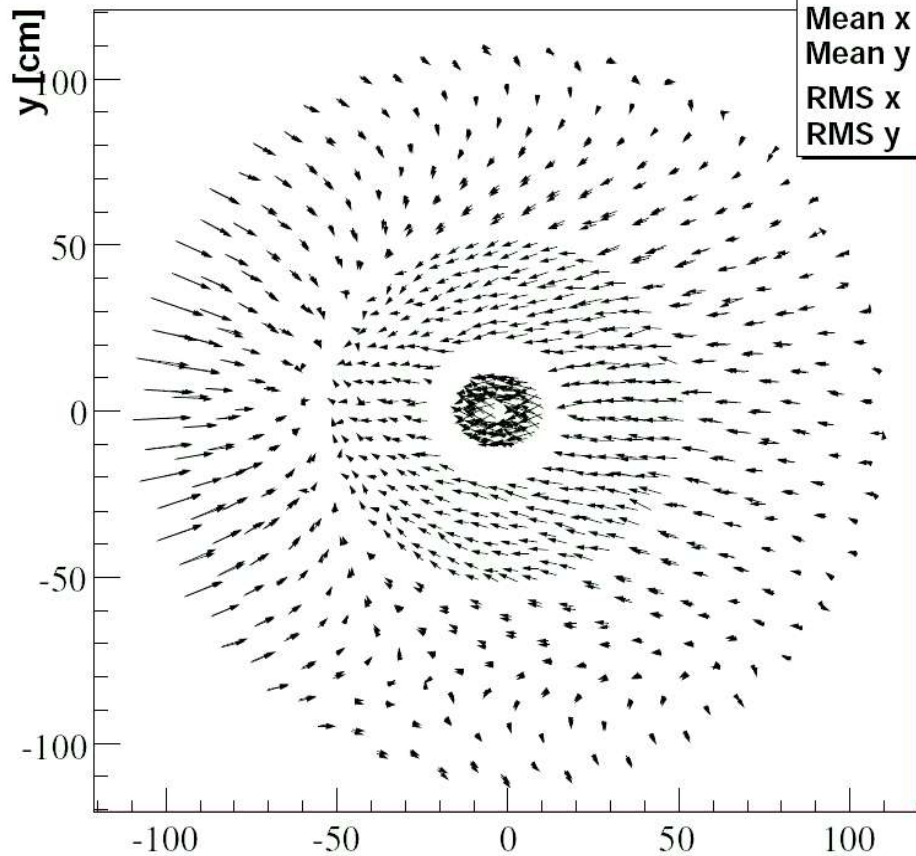


- cosmic track finder
- Alignment track selection:
 - $ptMin = 0.$, $pMin = 5$, $etaMin = -5.$, $etaMax = 5.$, $nHitMin = 15$, $nHitMin2D = 3$,
 $chi2nMax = 100$
- Misalignment:
 - **TOB : IDEAL**
 - **TIB** : **ModuleLevel** $u = 0.025$, $w = 0.05$, $gamma = 0.001$ for SS + $alpha = 0.002$, $beta = 0.002$ + $v = 0.05$ DS
 - **TEC** : **PetalLevel** $u = 0.05$, $v = 0.05$, $w = 0.05$
 - **TID** : **ModuleLevel** $u = 0.025$, $w = 0.05$, $gamma = 0.001$ for SS + $v = 0.05$ DS
 - **Pixel Barrel** : **LadderLevel** $u = 0.05$, $v = 0.05$, $w = 0.05$, $v = 0.001$
 - **Pixel Endcaps** : **BladeLevel** $u = 0.05$, $v = 0.05$, $w = 0.05$

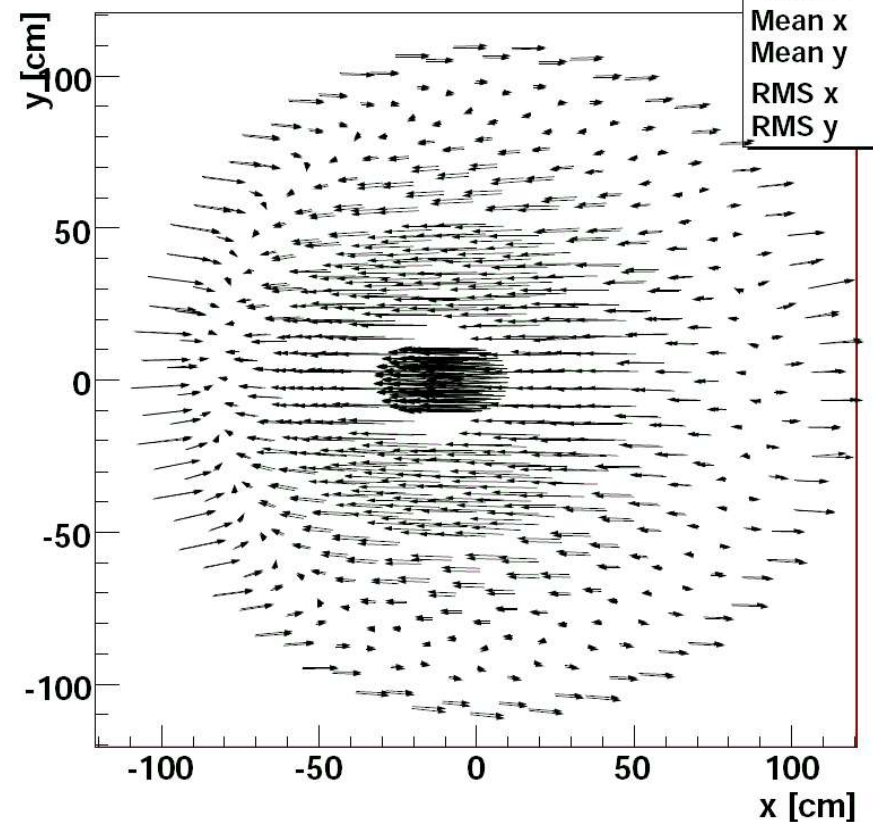
TEC misaligned on petal level ---> TEC misaligned on module level

CTF

scale 4000: $-10 < z < 10$



scale 1000: $-10 < z < 10$



---> same systematic movements but strongly enhanced

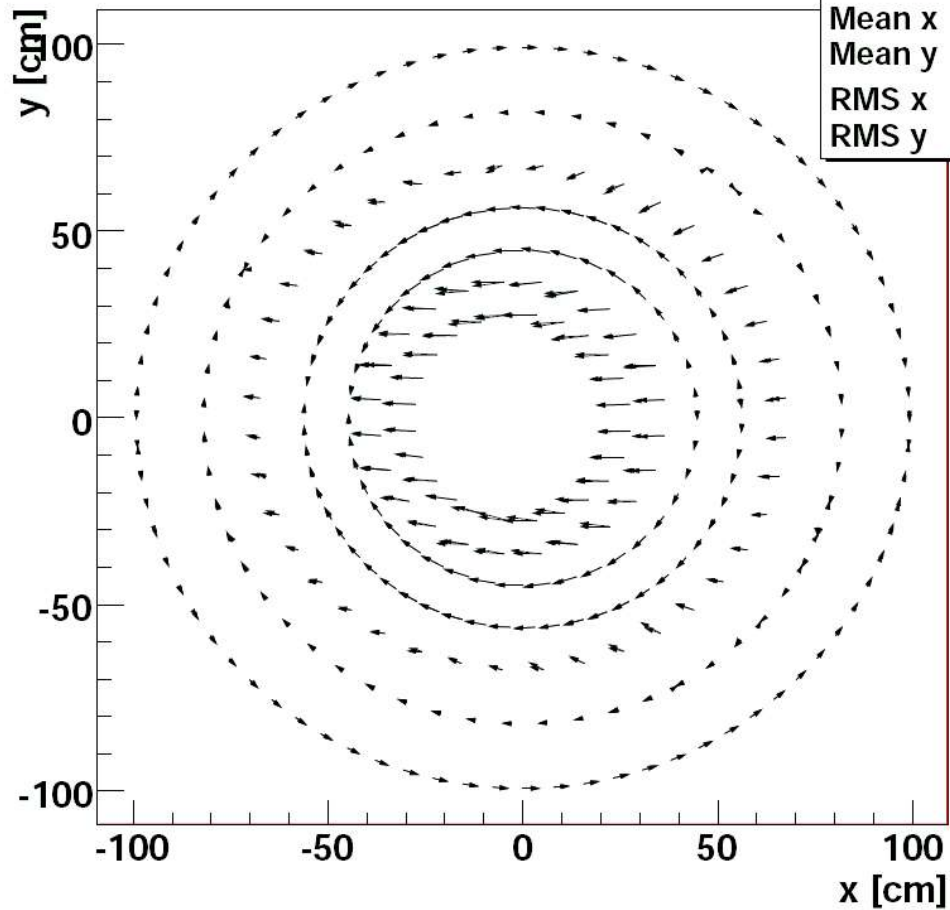
TEC remaining misalignment

Disk 1-3

Disk 4-6

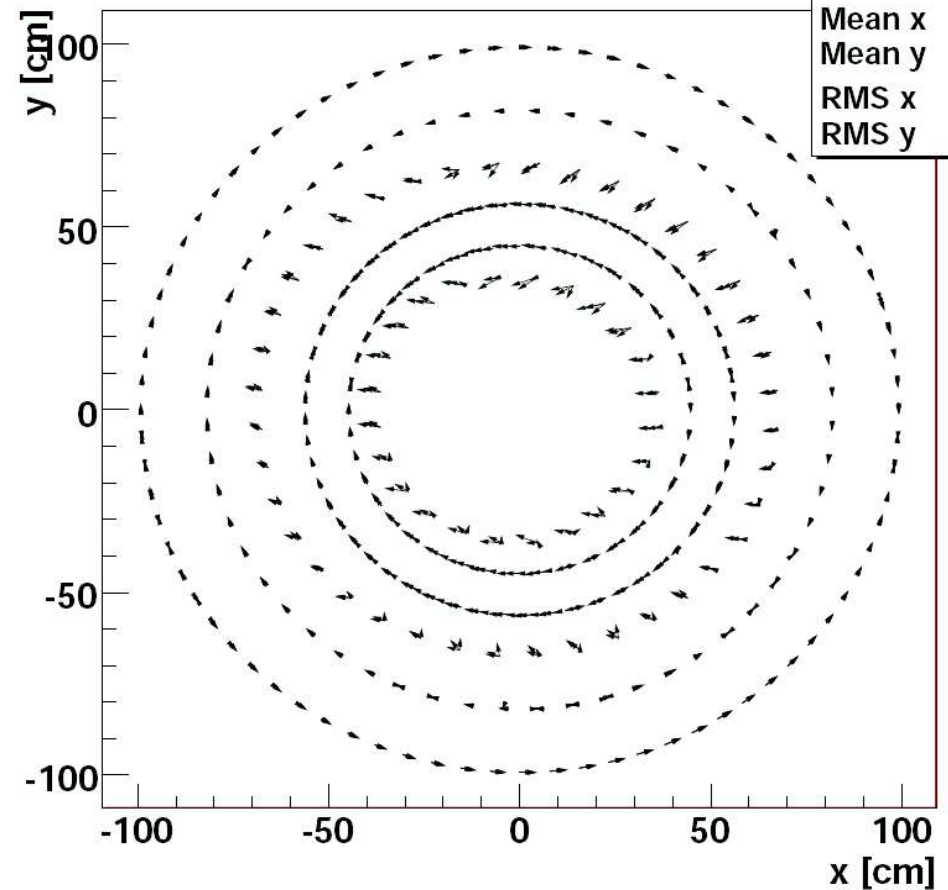
scale 500: TEC, $135 < z < 167$

frame	
Entries	0
Mean x	0
Mean y	0
RMS x	0
RMS y	0

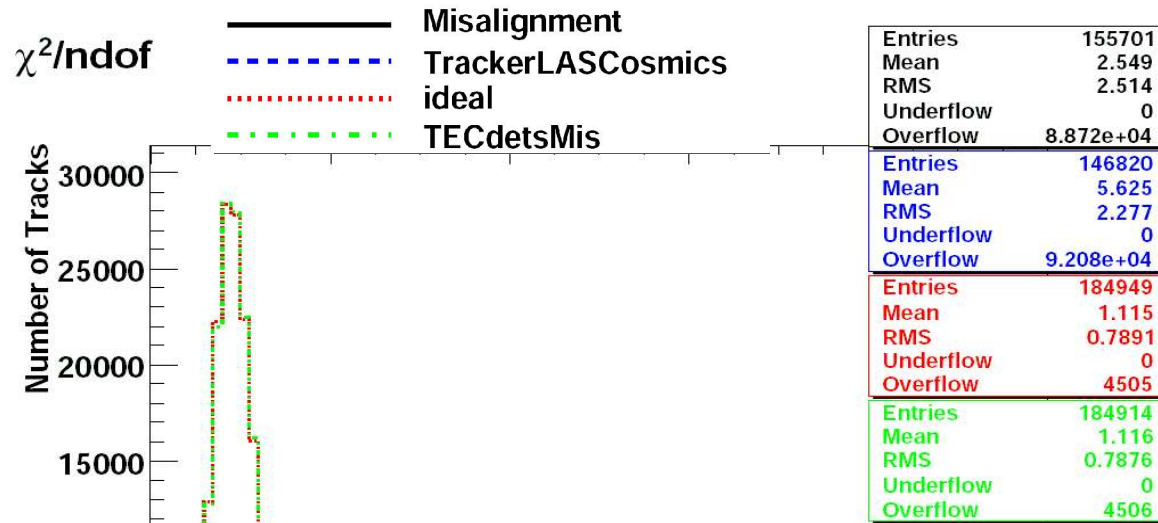


scale 500: TEC, $167 < z < 211$

frame	
Entries	0
Mean x	0
Mean y	0
RMS x	0
RMS y	0

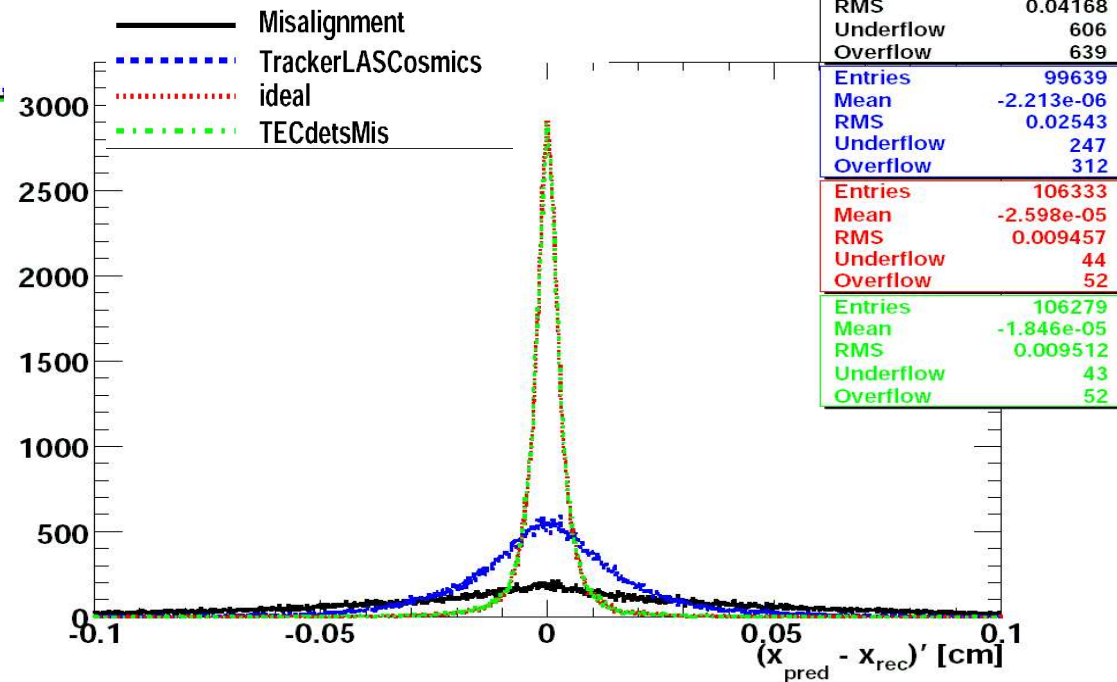


Validation TEC dets misaligned

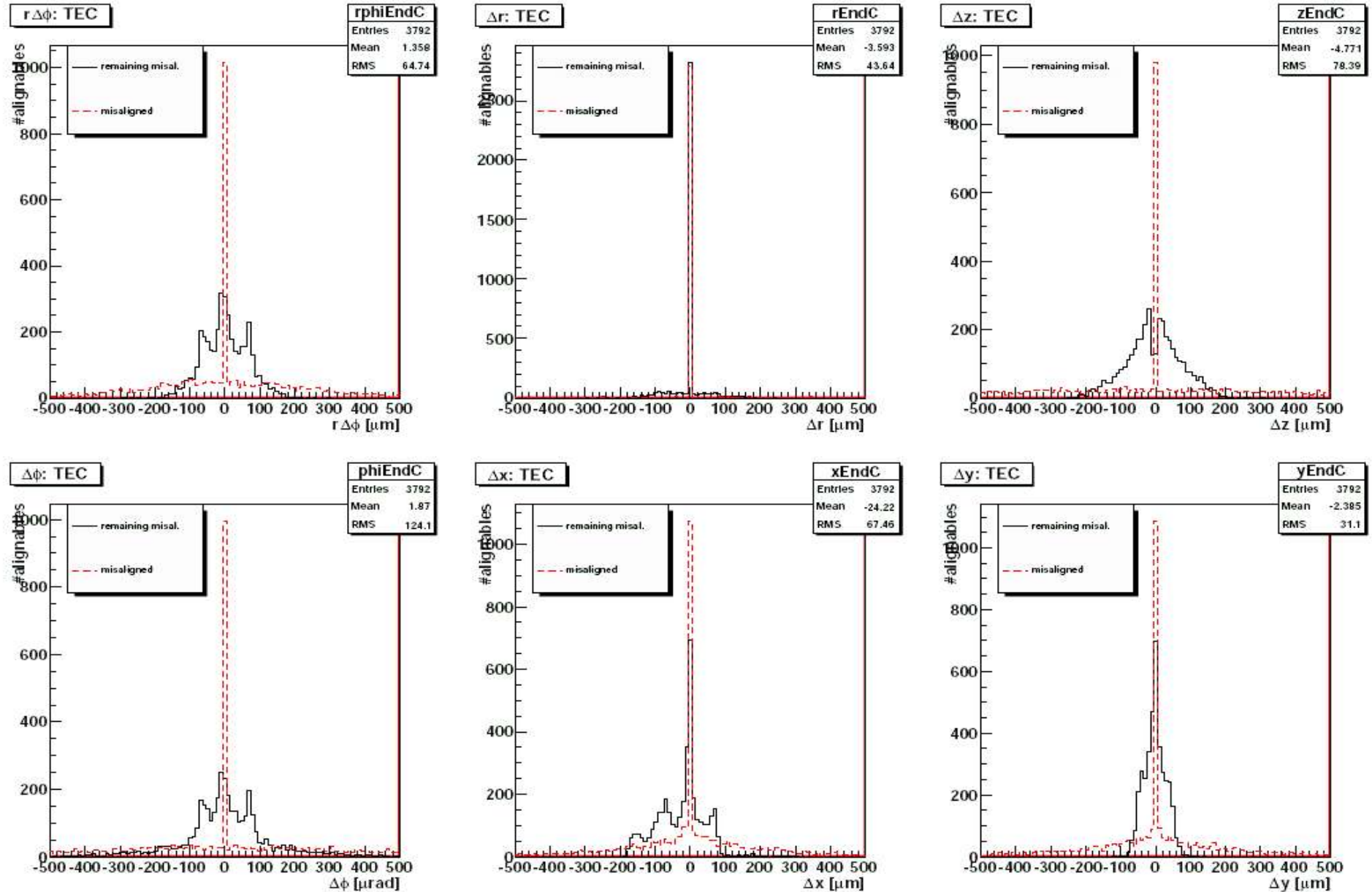


- only systematic misalignments left

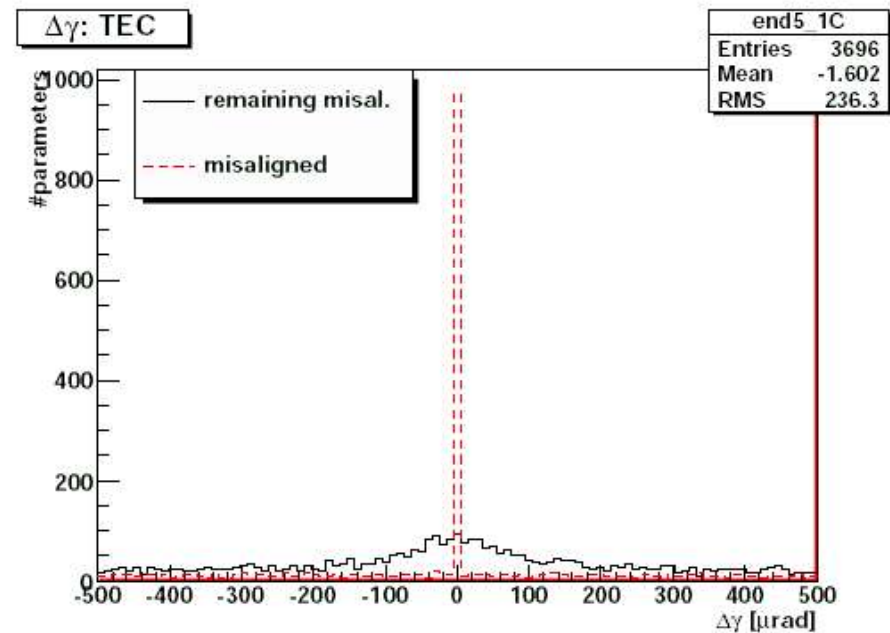
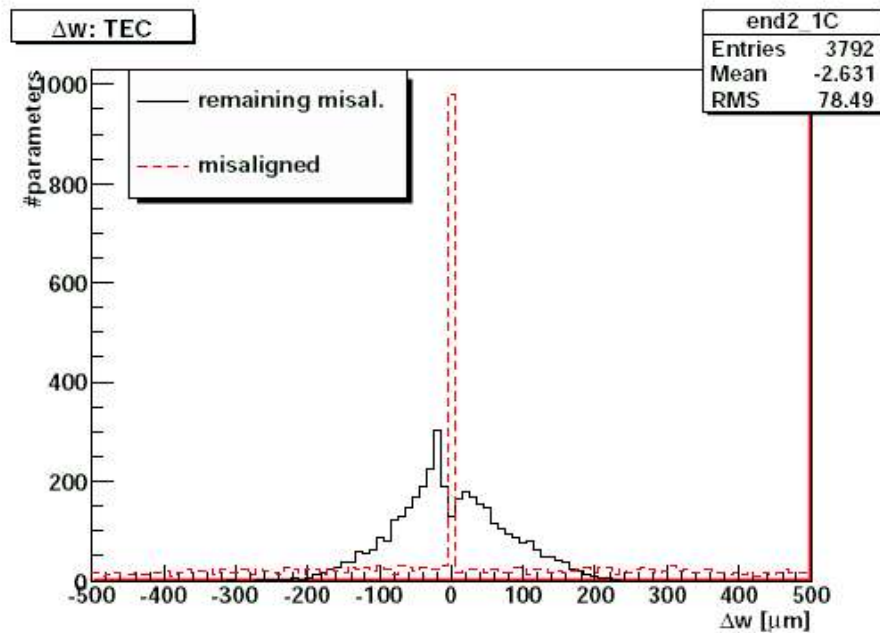
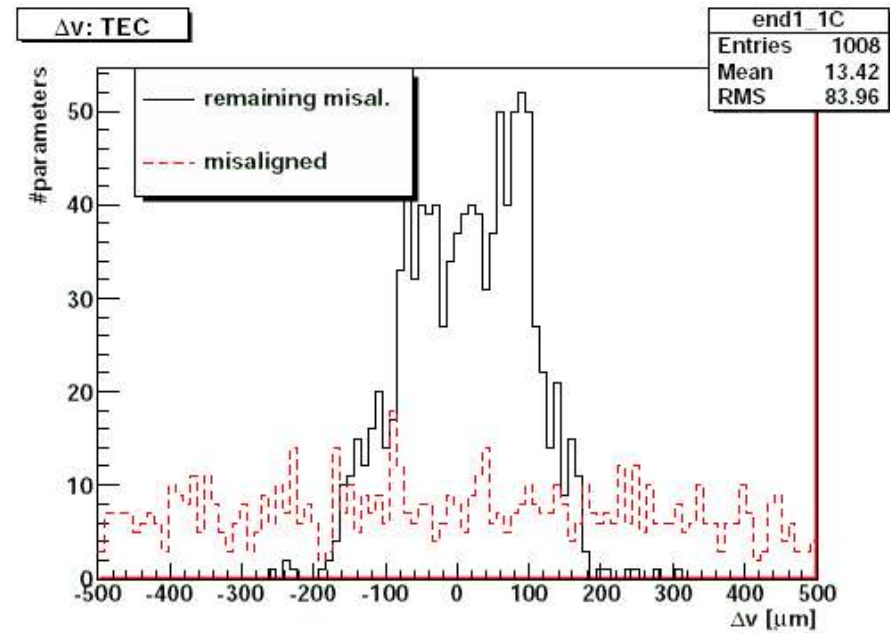
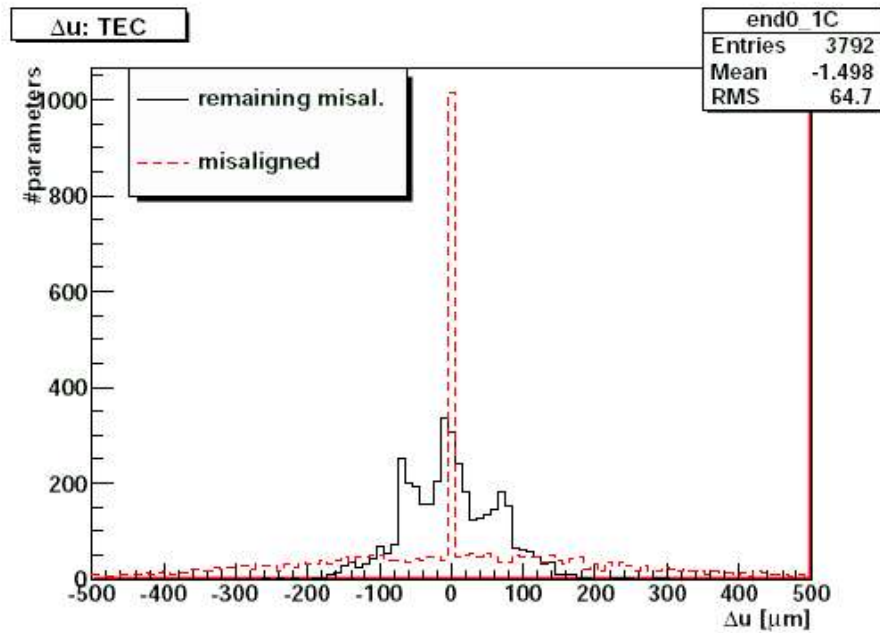
Residual for TECEndcap 5 in Strip

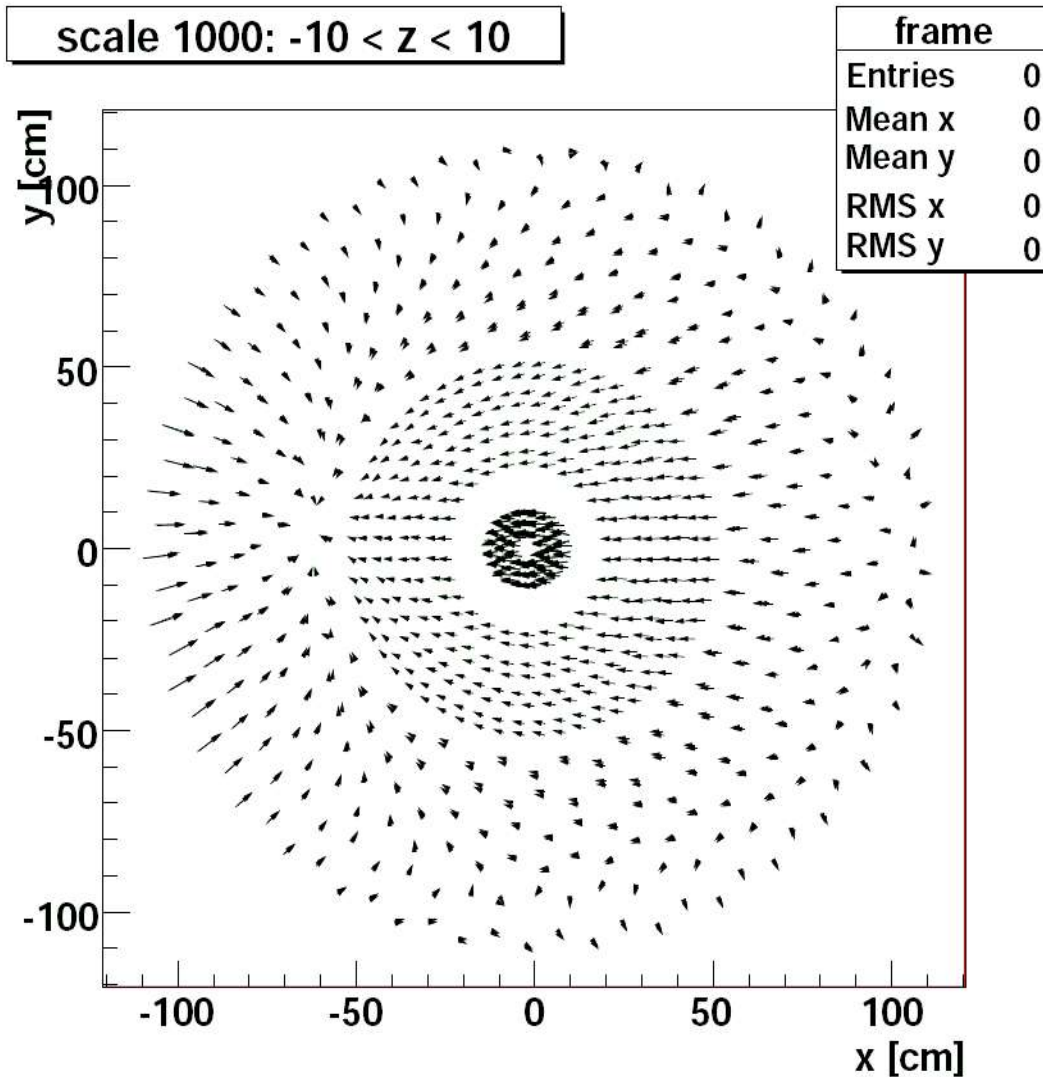


Position results for TEC misaligned on module level (disk 1-6) (missing ring 7)



Parameter results for TEC misaligned on module level (disk 1-6)

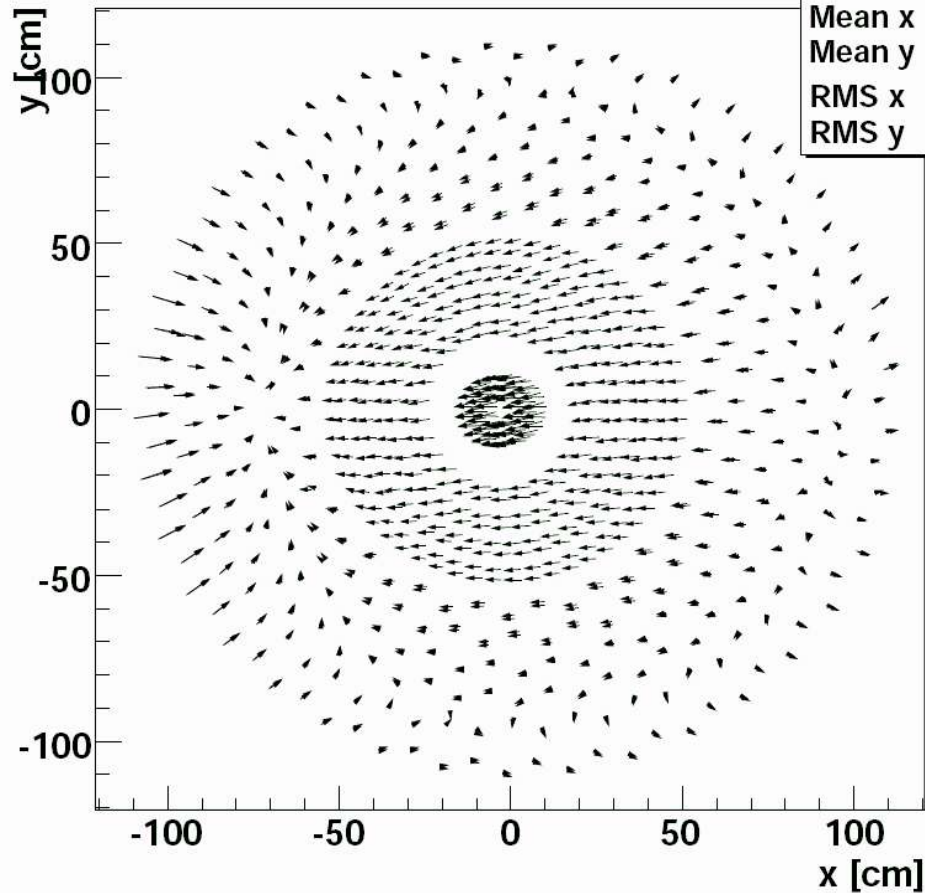




- same systematic distortion
- ratio of pos/neg = 1.45 (1.3 expected) --> investigate (maybe no charge measured for high momentum tracks?)
- charge seems not to be reason for systematic misalignment

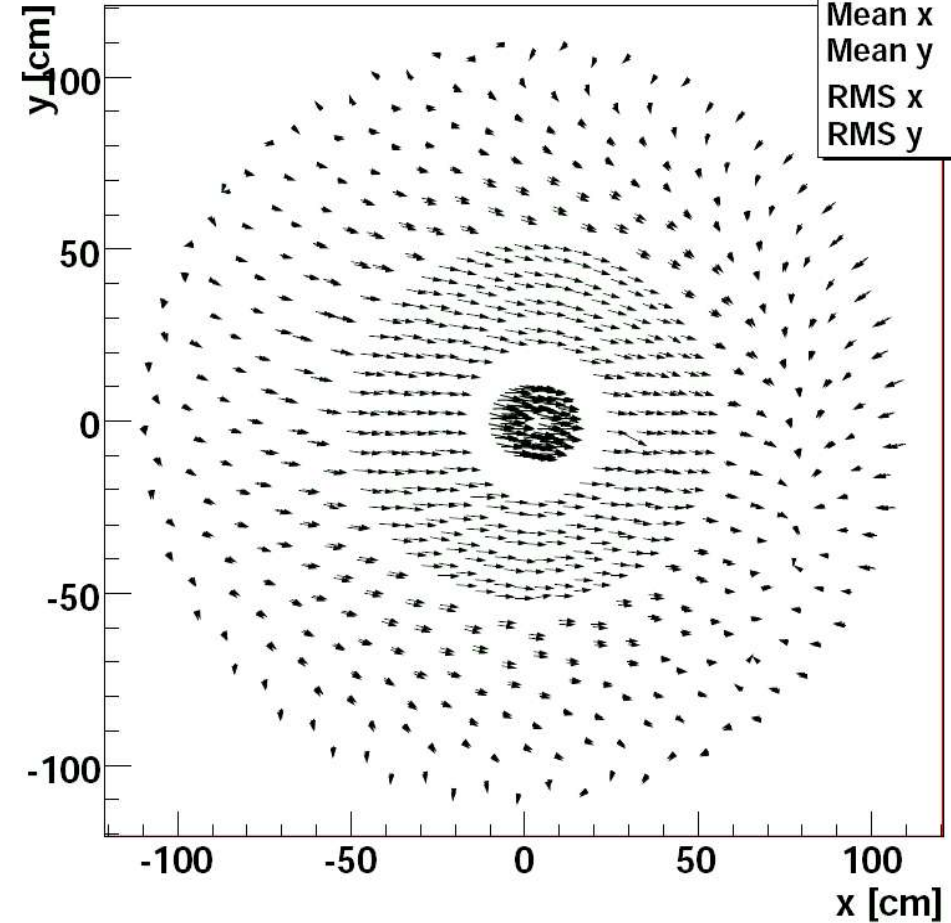
starting from artificial misalignment

scale 1000: $-10 < z < 10$



starting from TrackerLasCosmics scenario

scale 1000: $-10 < z < 10$

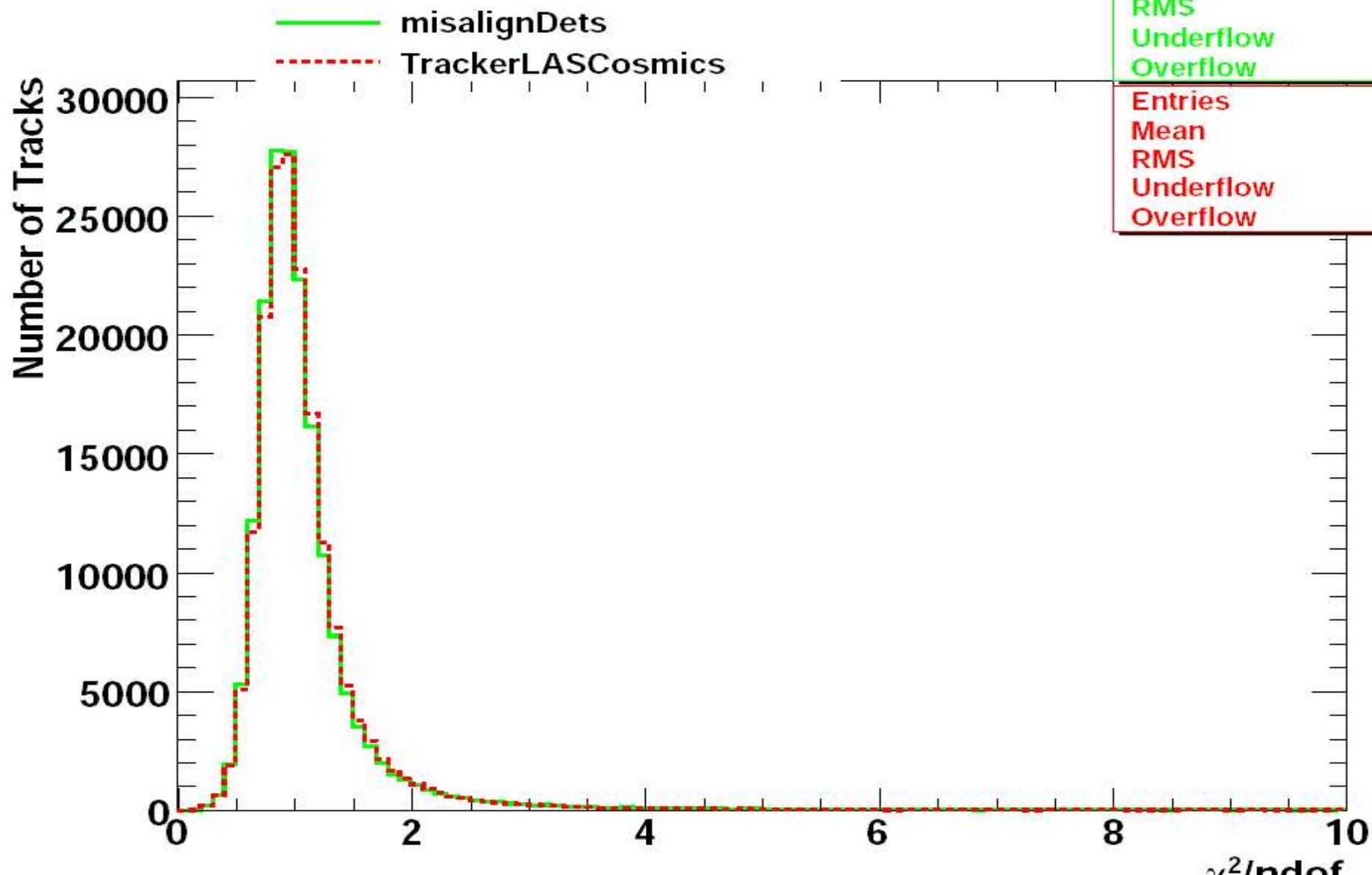




basically no influence on Chi2



χ^2/ndof





plans



1. show standard validation plots for different alignment objects **(done)**
2. sensitivity studies TEC, mis- and align TEC on Det level for RING 1-6 or more? (done) --> also disks 7-9(running) **done**
3. select equal number of 'pos.' and 'neg.' tracks **done**
4. investigate influence of track angle
5. compare hit statistics for MC and data **running**
6. compare MP alignment on MC with data (Torino approach) **running**
7. Run alignment on data in 1 go (not multi-step as Torino) **running**