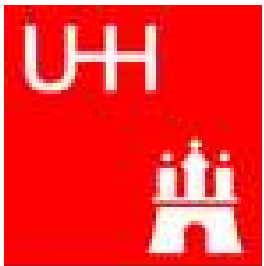


Millepede Alignment Cosmics & MinBias combined

Status Update

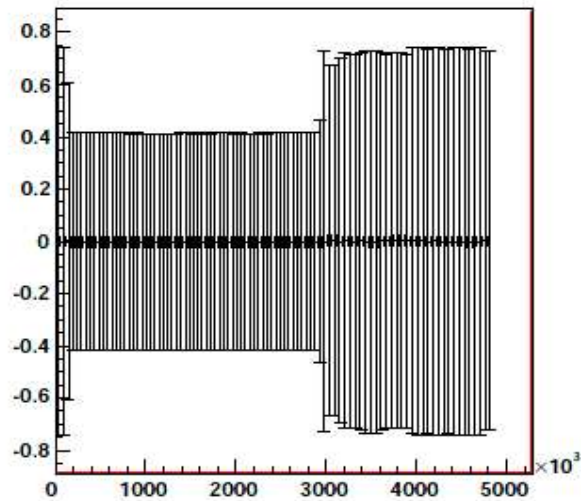


Jula Draeger
University of Hamburg

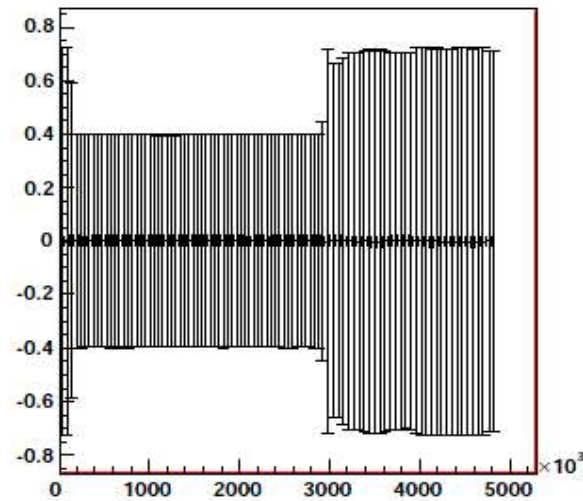


- using CMSSW_3_5_4_patch1
- **Cosmics** taken in 2010 --> standard cosmic track selection applied
- **MinBias** list of good runs following the Twiki: run range 131440-132716
- hard MinBias track selection (12 hits, 4 hits on 2d modules)
- statistics selected to be equal to Cosmics
- starting from Nov. geometry
 - $\chi^2/Ndf = 1.09$
 - Fraction of rejects below 1 %
 - fraction of non-zero off-diagonal elements 24.93 % (MinBias standalone 1.68 %)
 - memory needed 4.67 GB

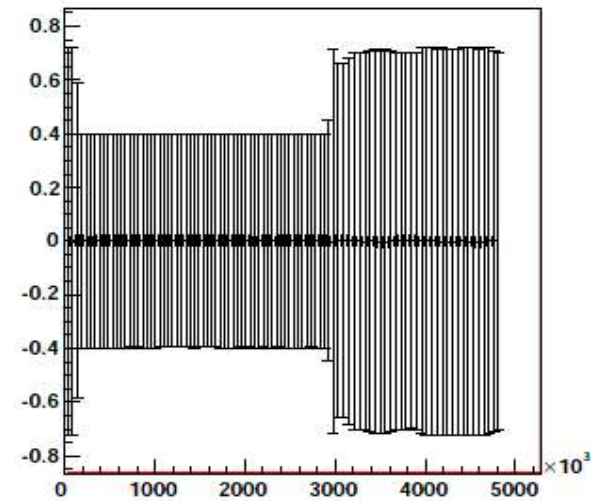
location and dispersion vs record nr (version 0)



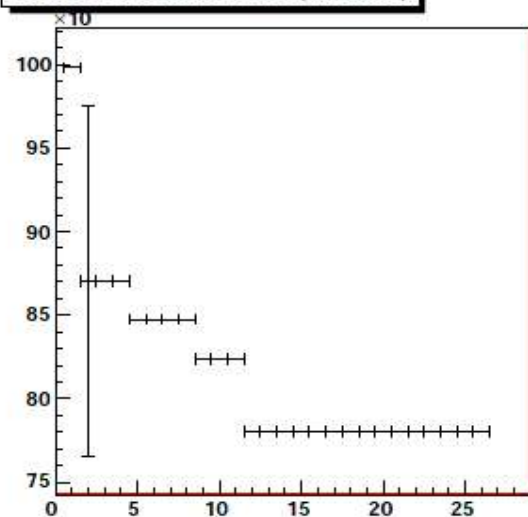
location and dispersion vs record nr (version 1)



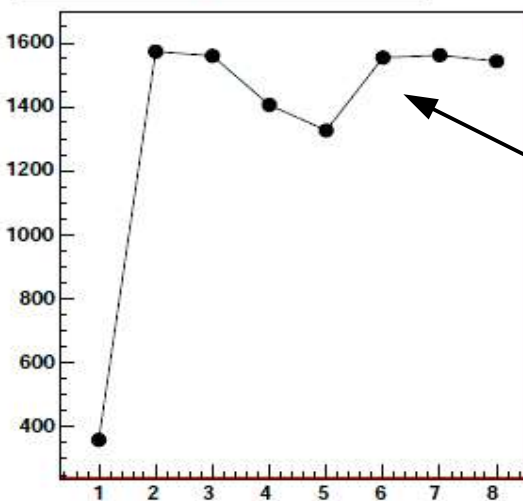
location and dispersion vs record nr (version 25)



Function value in iterations (version 0)



Number of MINRES steps vs iteration nr (version 0)



not understood why iterations do not fall off

CosMin: combined Cosmics&MinBias alignment starting from CRAFT10

CosMinFromIdeal

CosMinFromIdeal1iteration: CosMin starting from CosMinFromIdeal

[CosMinExclMinTOB: CosMin alignment excluding the TOB hits for MinBias data

CosMinExclMinBarrel: CosMin alignment excluding the barrel hits for MinBias data]

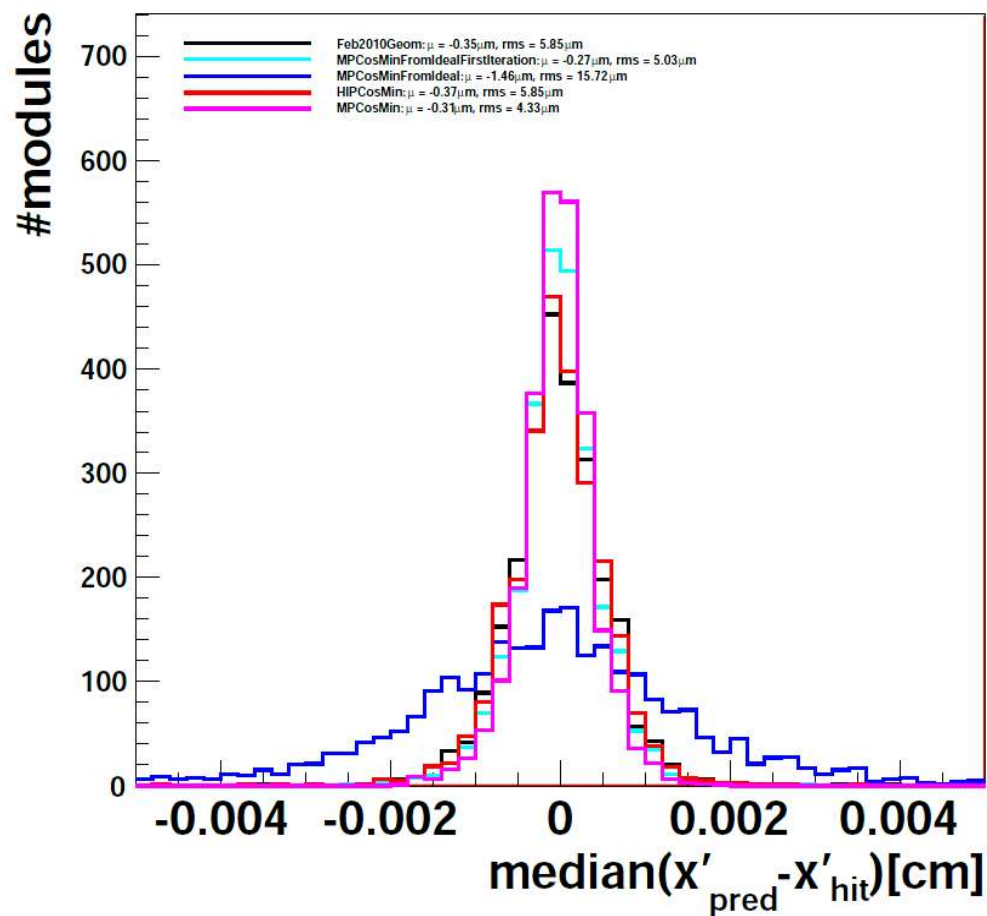
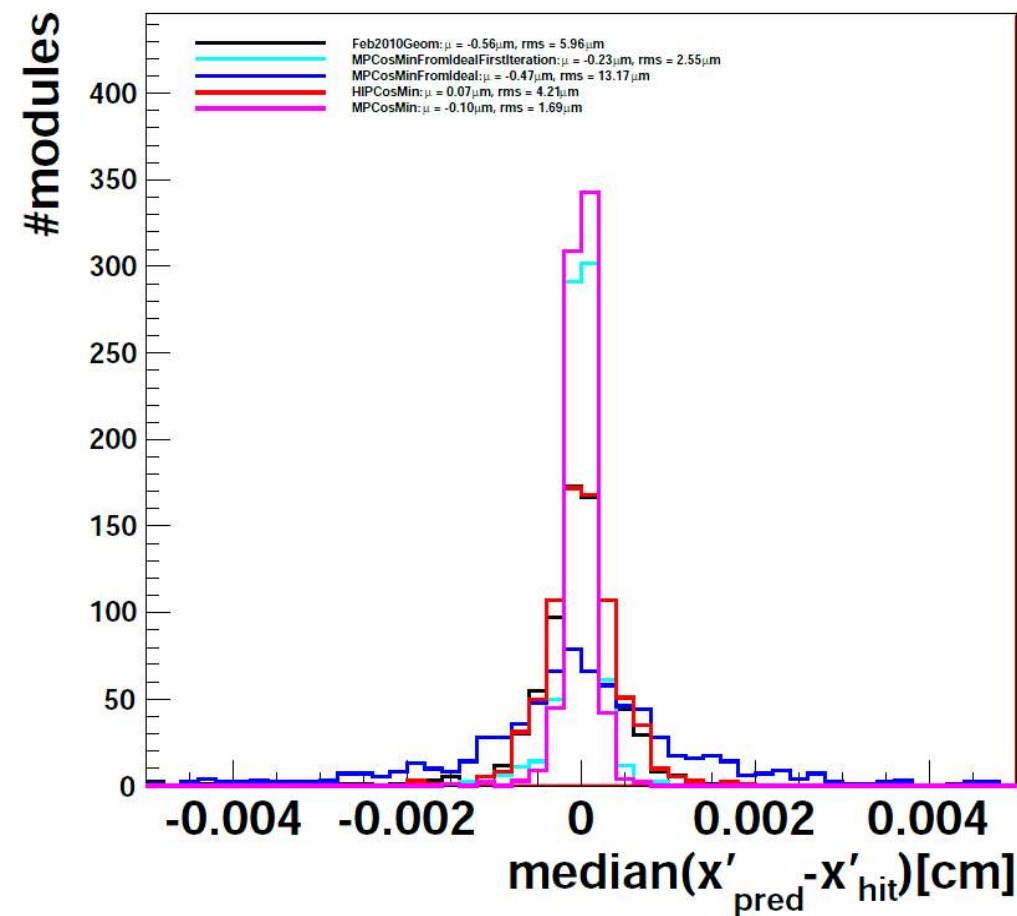
February geometry (last signed off)

HIPCosMin (using only MinBias hits in the forward region)

Observations: Validation with MinBias

Distribution of the median of the residuals in TPB

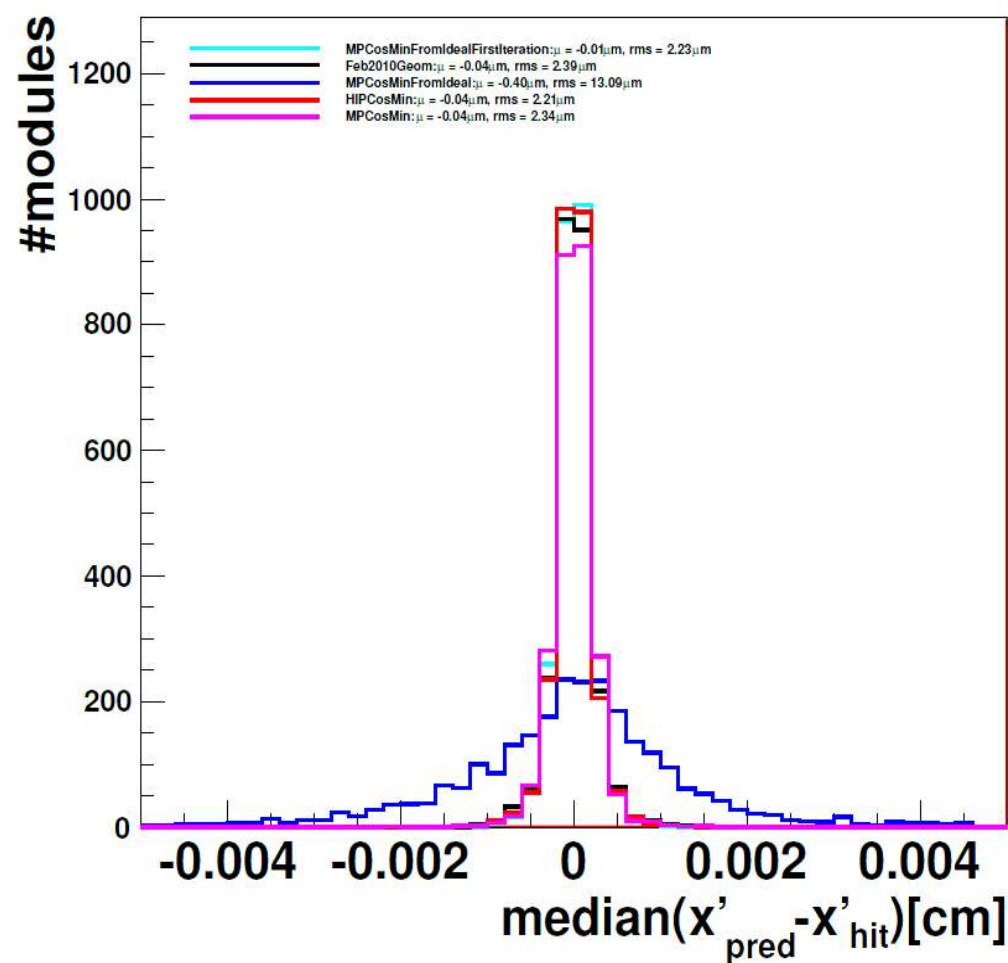
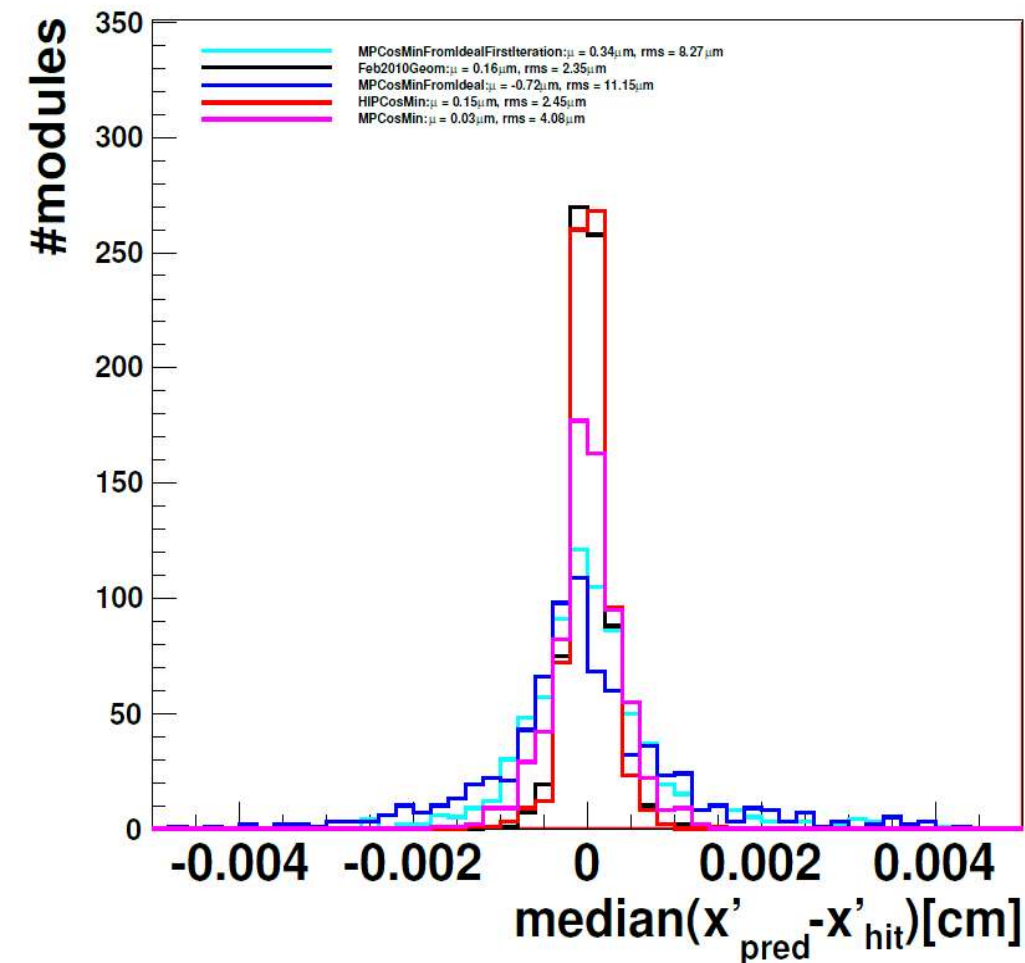
Distribution of the median of the residuals in TIB



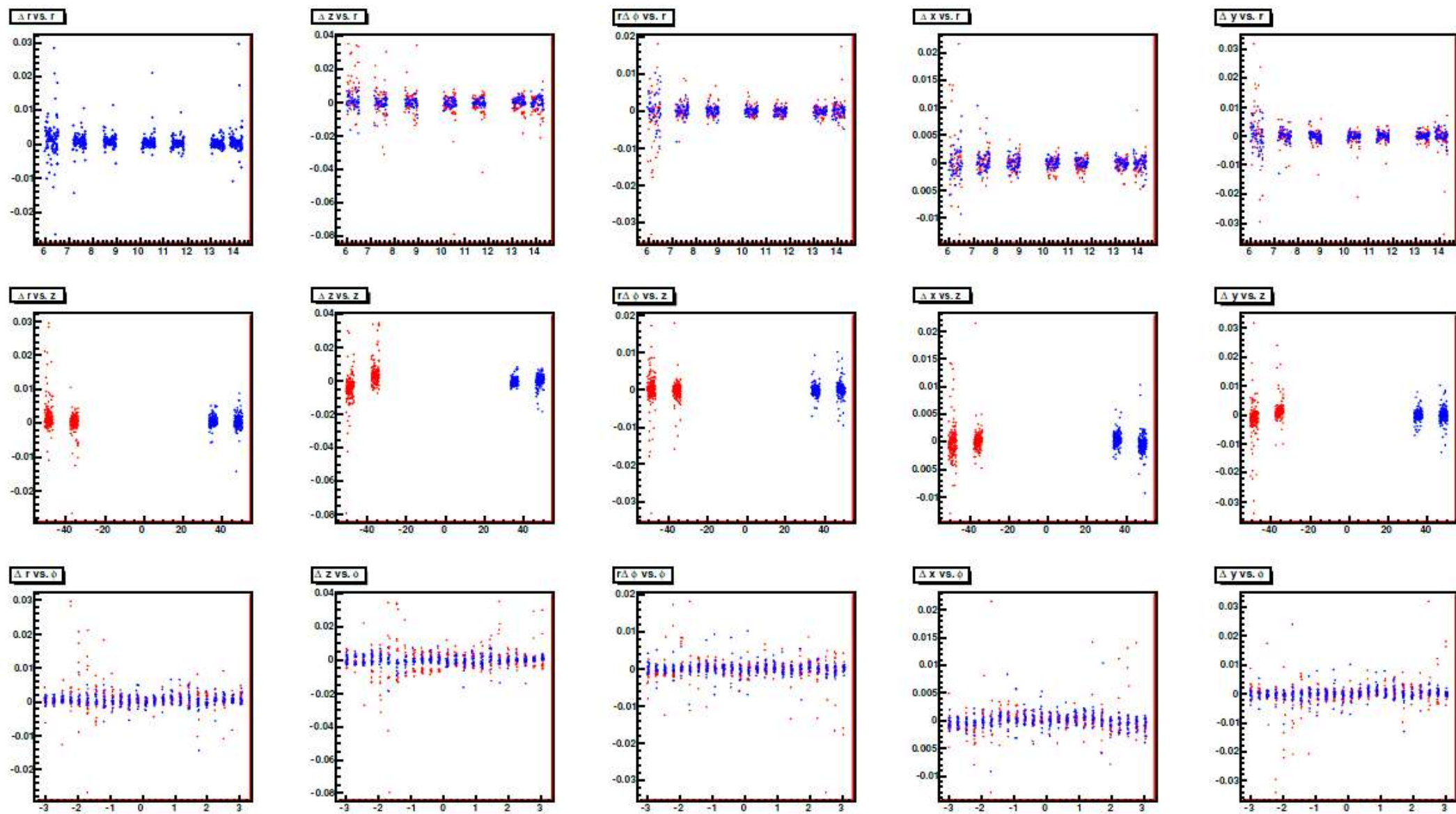
- CosMin from Ideal not quite as good performance as CosMin from CRAFT10 but already better than CRAFT10 concerning χ^2 and DMRs
- clear improvement in DMRs for second iteration for alignment from IDEAL

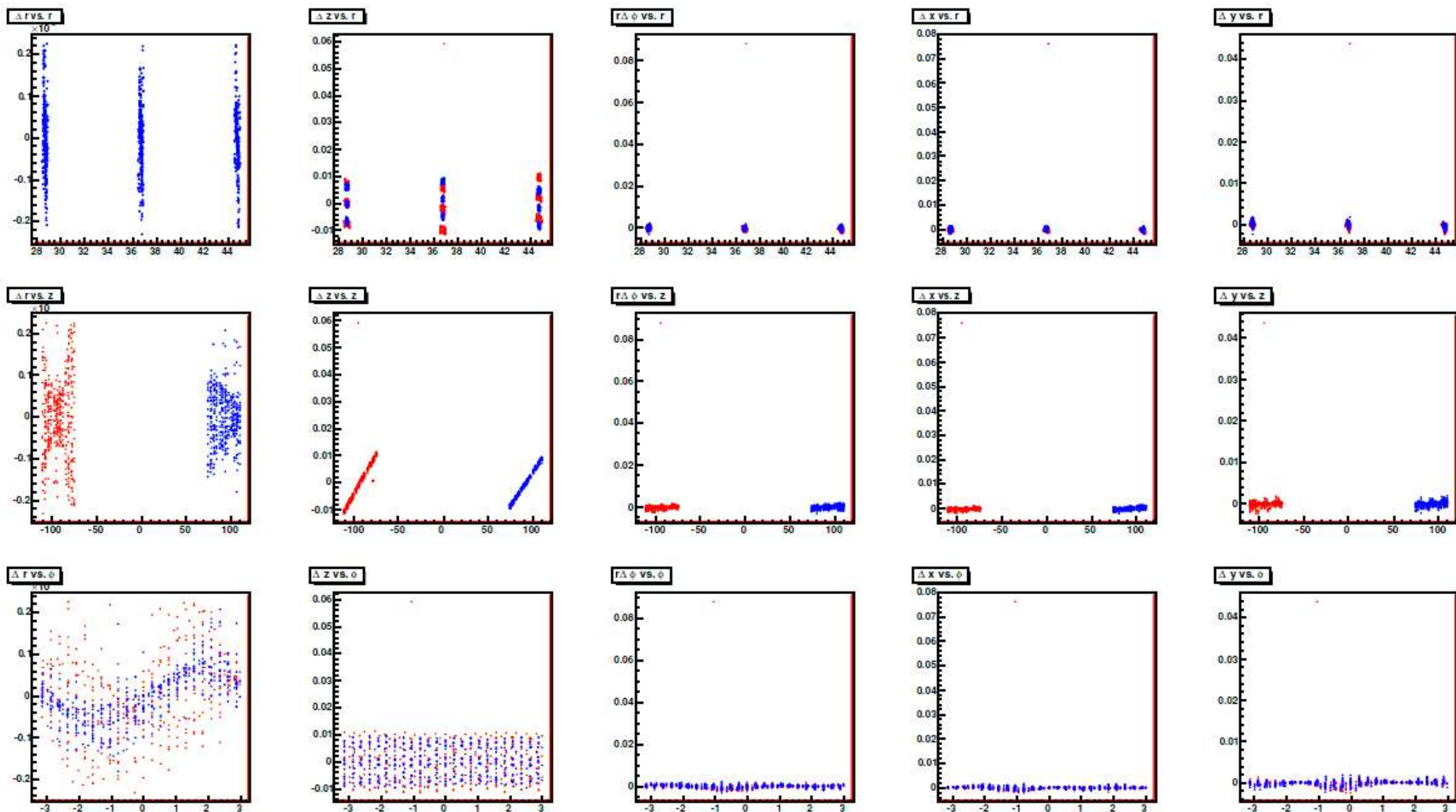
Distribution of the median of the residuals in TPB

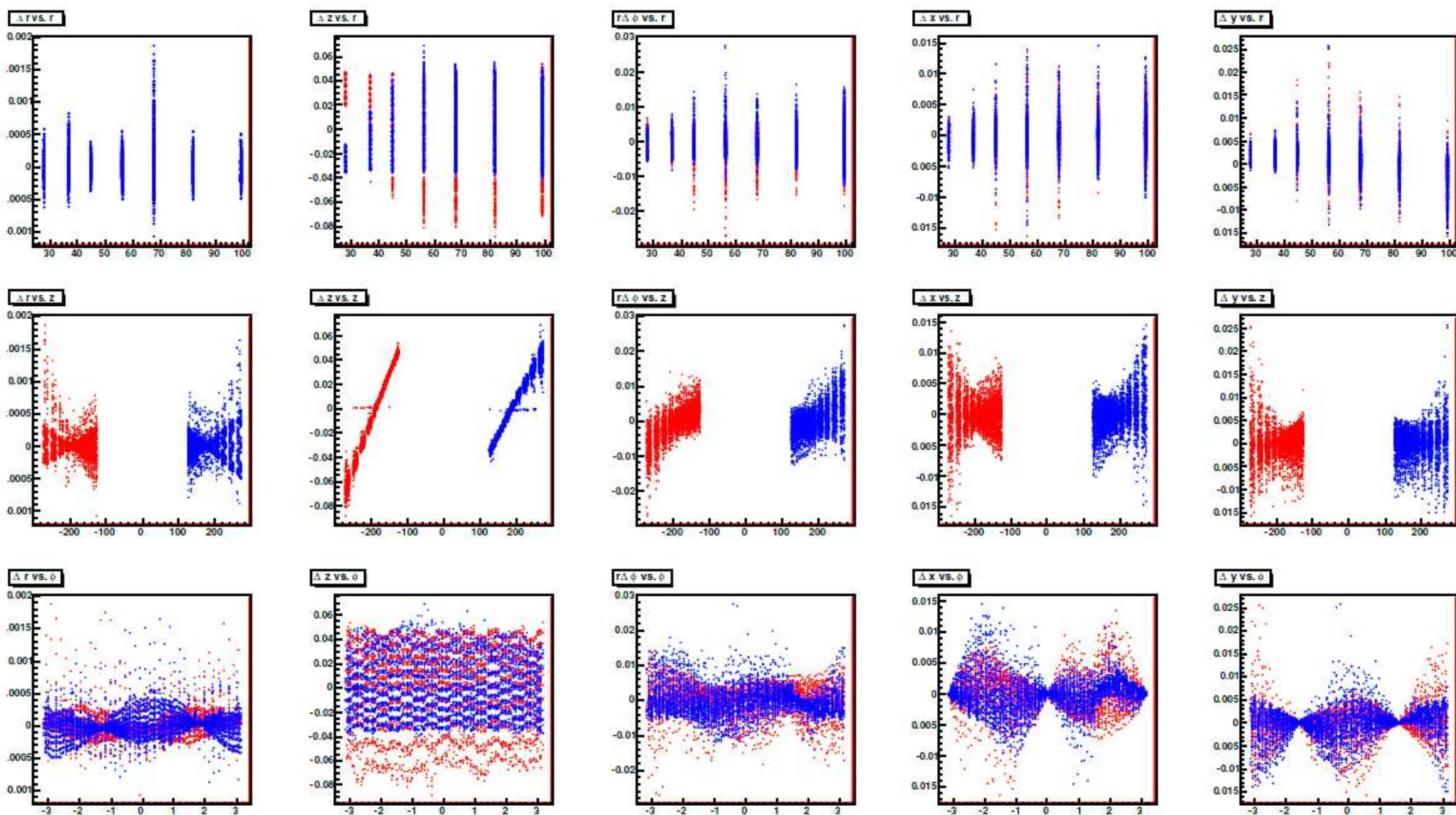
Distribution of the median of the residuals in TIB



- MP alignment on MinBias and Cosmics shows decreased performance for Cosmics except in TIB !?! (magenta)
- no significant changes between 0 and 1 iteration for alignment from ideal except TIB (cyan)



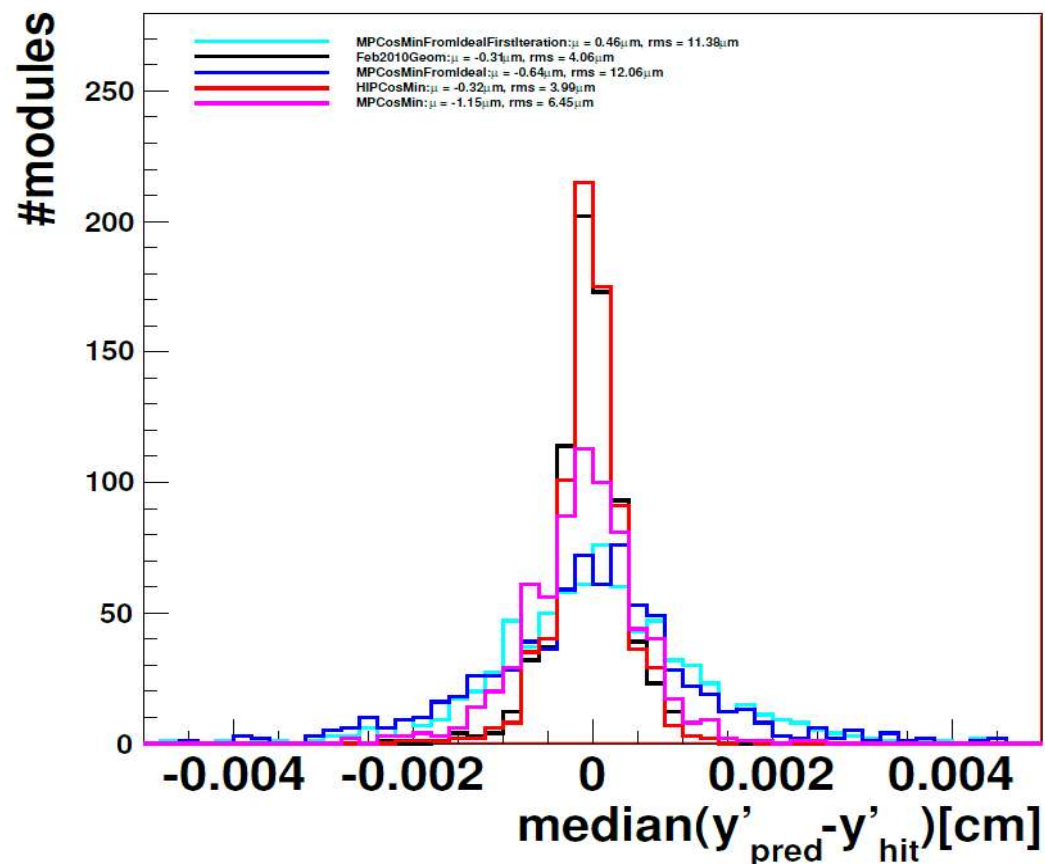




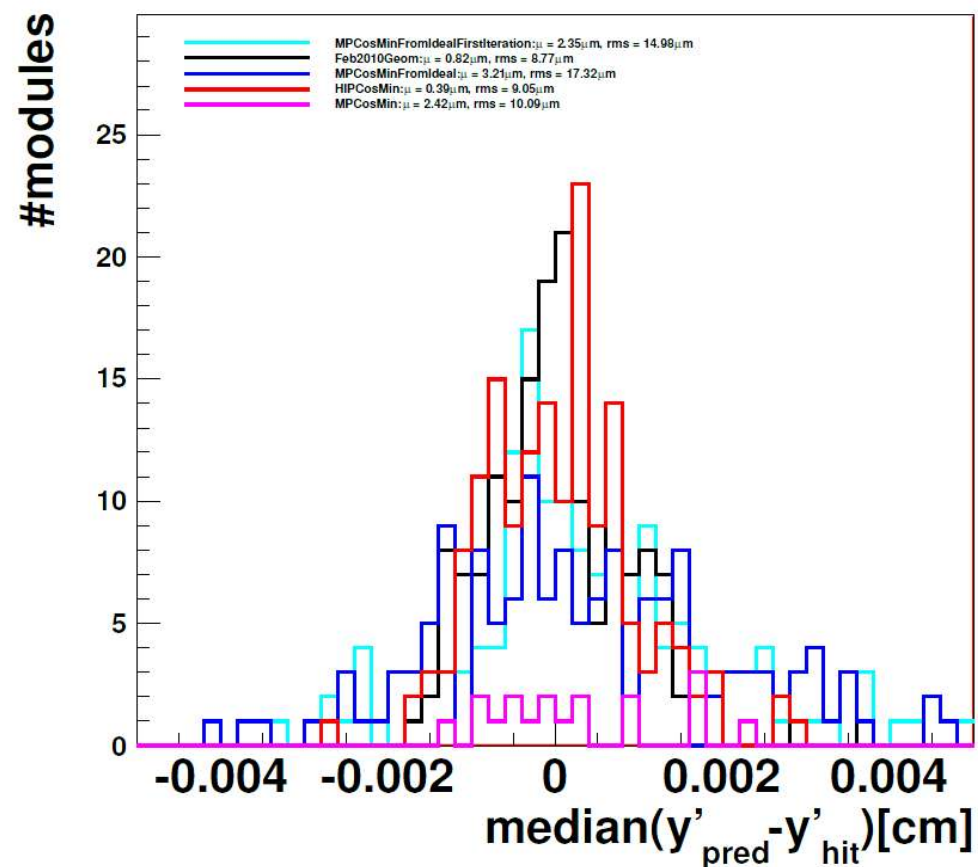
--> clear problem in the TEC, not only in z but also in rphi!

- MP seems to have 'difficulties' in forward direction
 - harder cuts, exclusion of Barrel hits for MinBias do not change much
 - MinBias tracks are favoured
 - Does the effect propagates from the in- to the outside or the other way round (exclude TEC from alignment and see whether TPE and TID behave differently)?
 - BL ~ Kalman track model, so why does HIP not have problems with forward tracks
 - is BL more sensitive to some reconstruction related things (bows and kinks in endcaps???)
- Solution for sign off(internal Thursday: helix model?)?!?

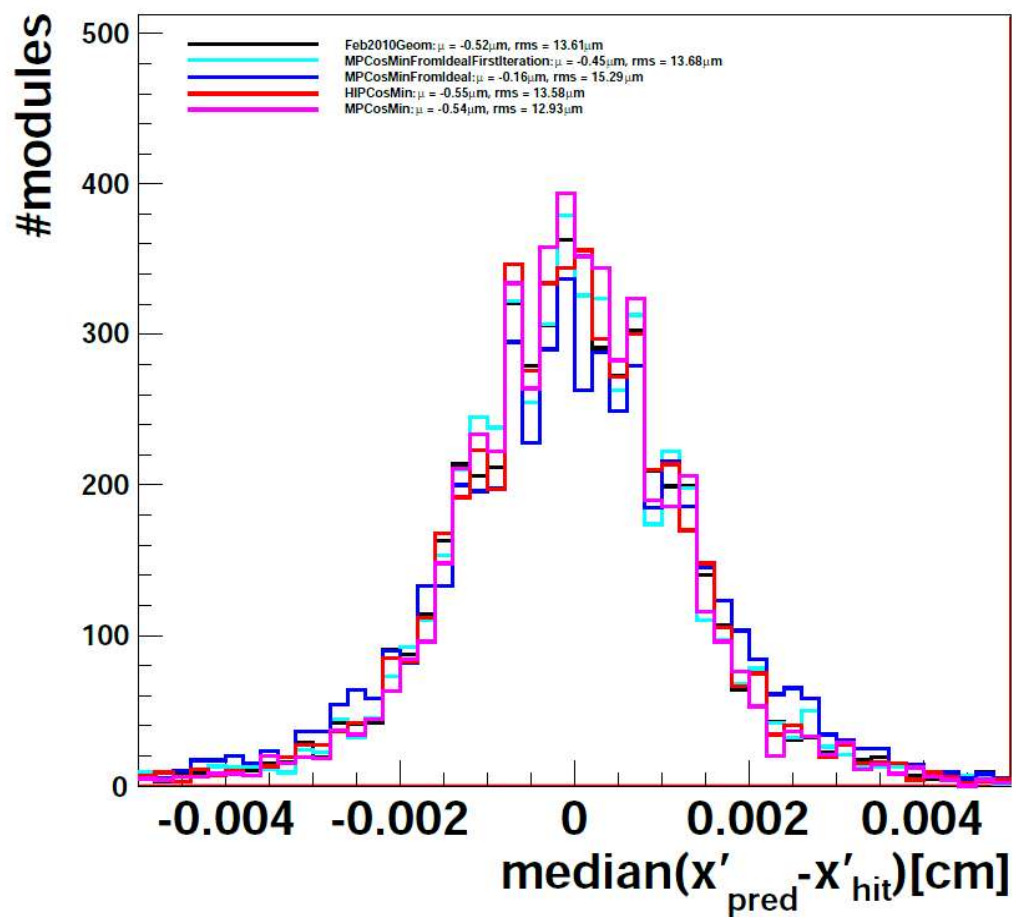
Distribution of the median of the y residuals in TPB



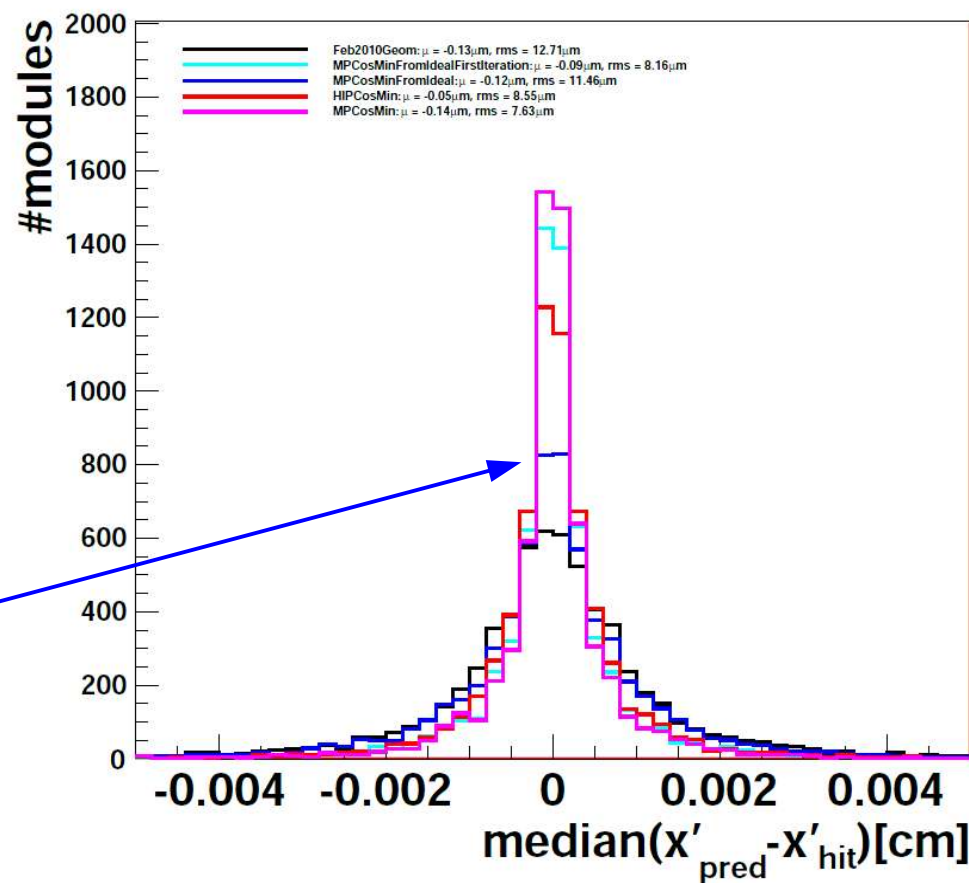
Distribution of the median of the y residuals in TPE



Distribution of the median of the residuals in TOB

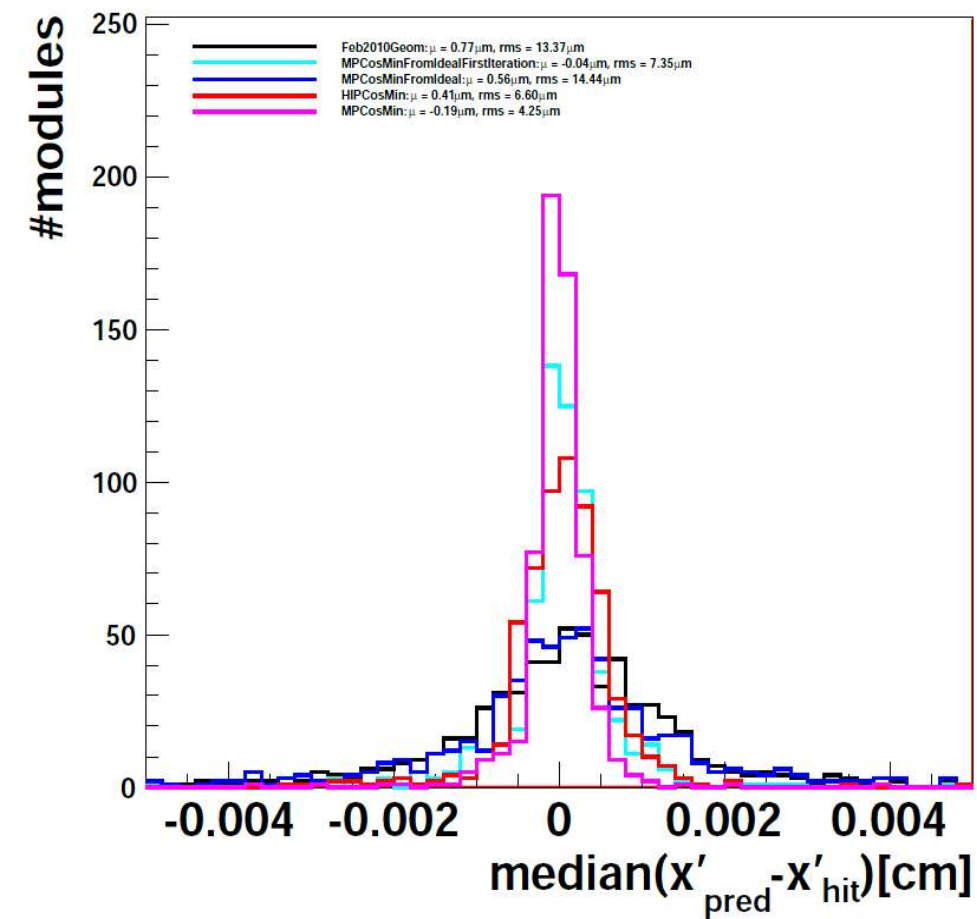


Distribution of the median of the residuals in TEC

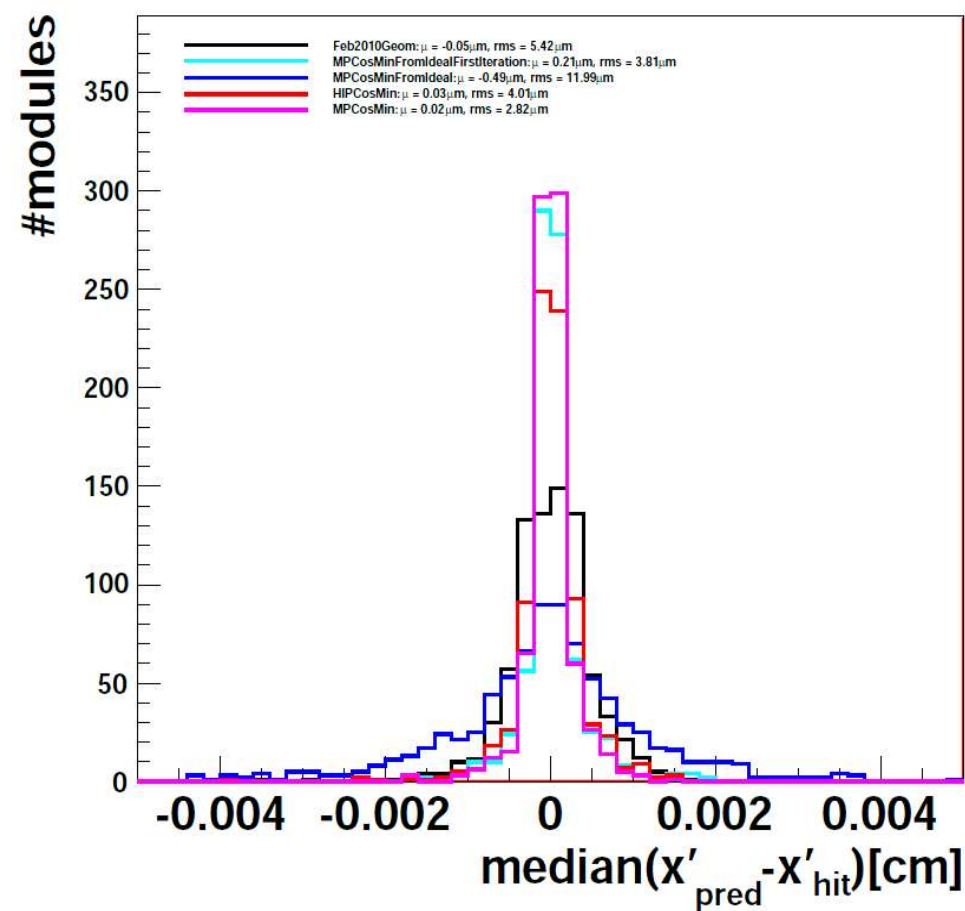


TEC only subdetector where even
0 iteration from IDEAL shows
better DMR than Feb. geometry

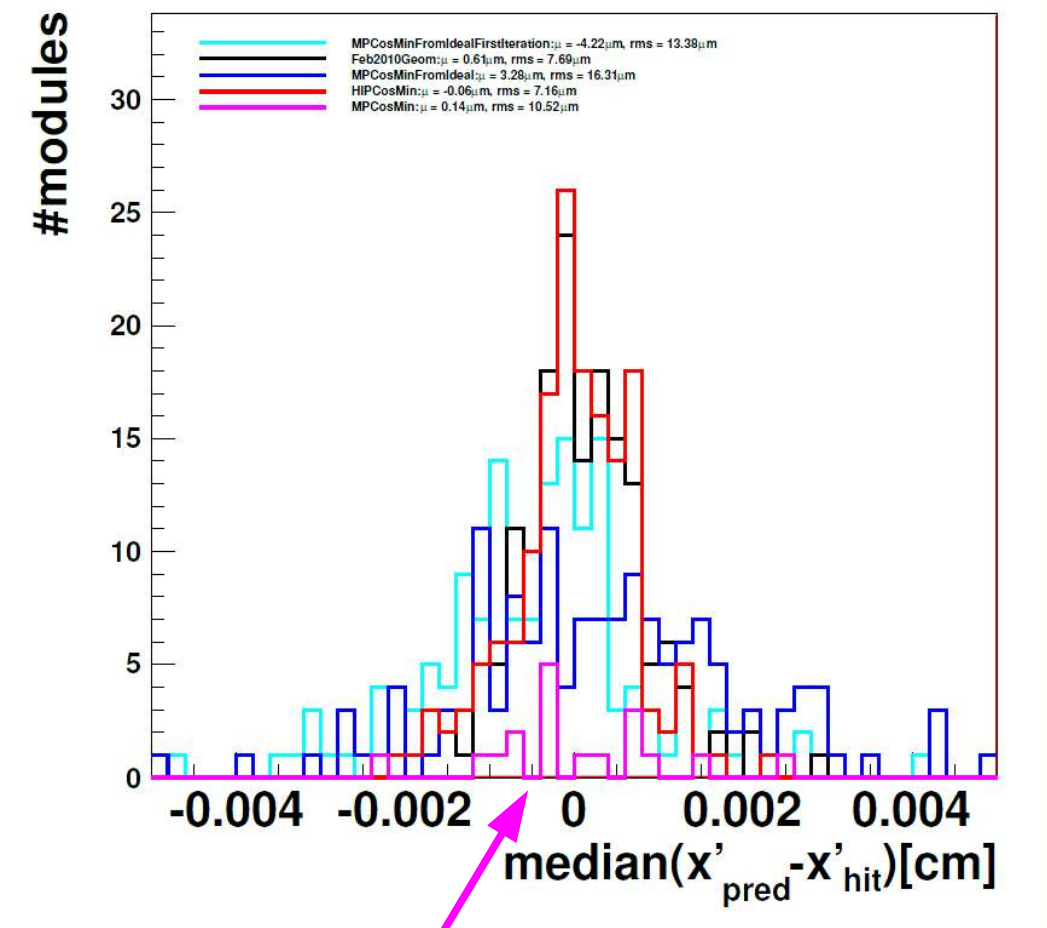
Distribution of the median of the residuals in TPE



Distribution of the median of the residuals in TID

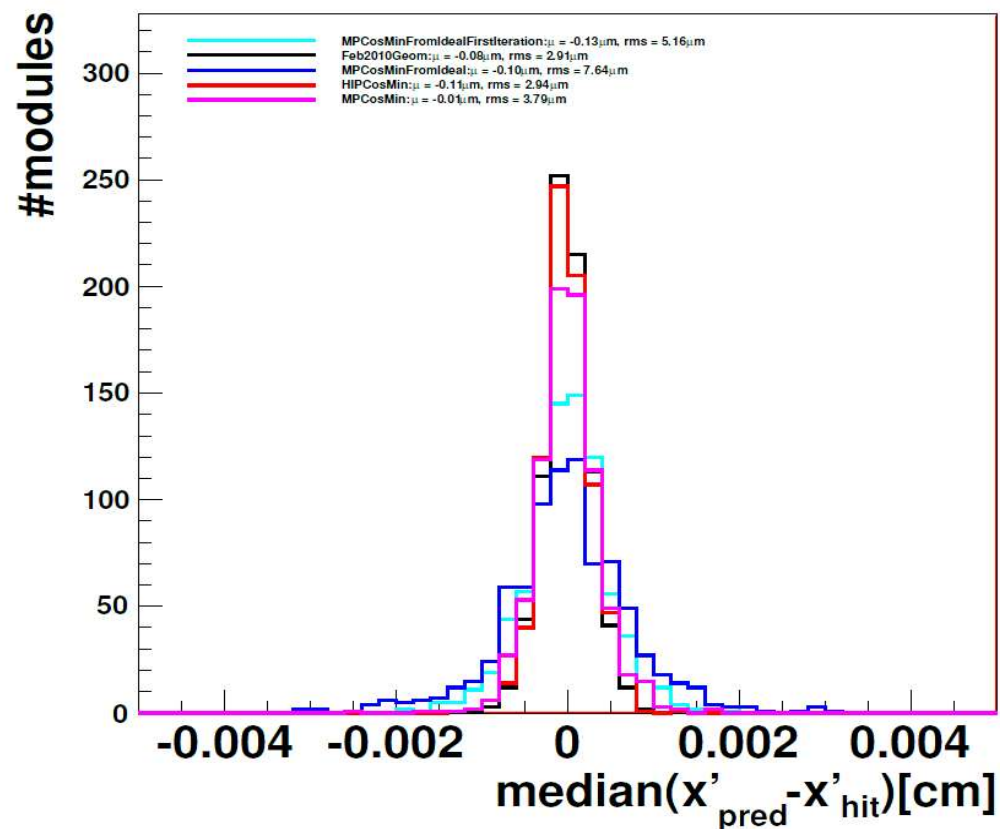


Distribution of the median of the residuals in TPE

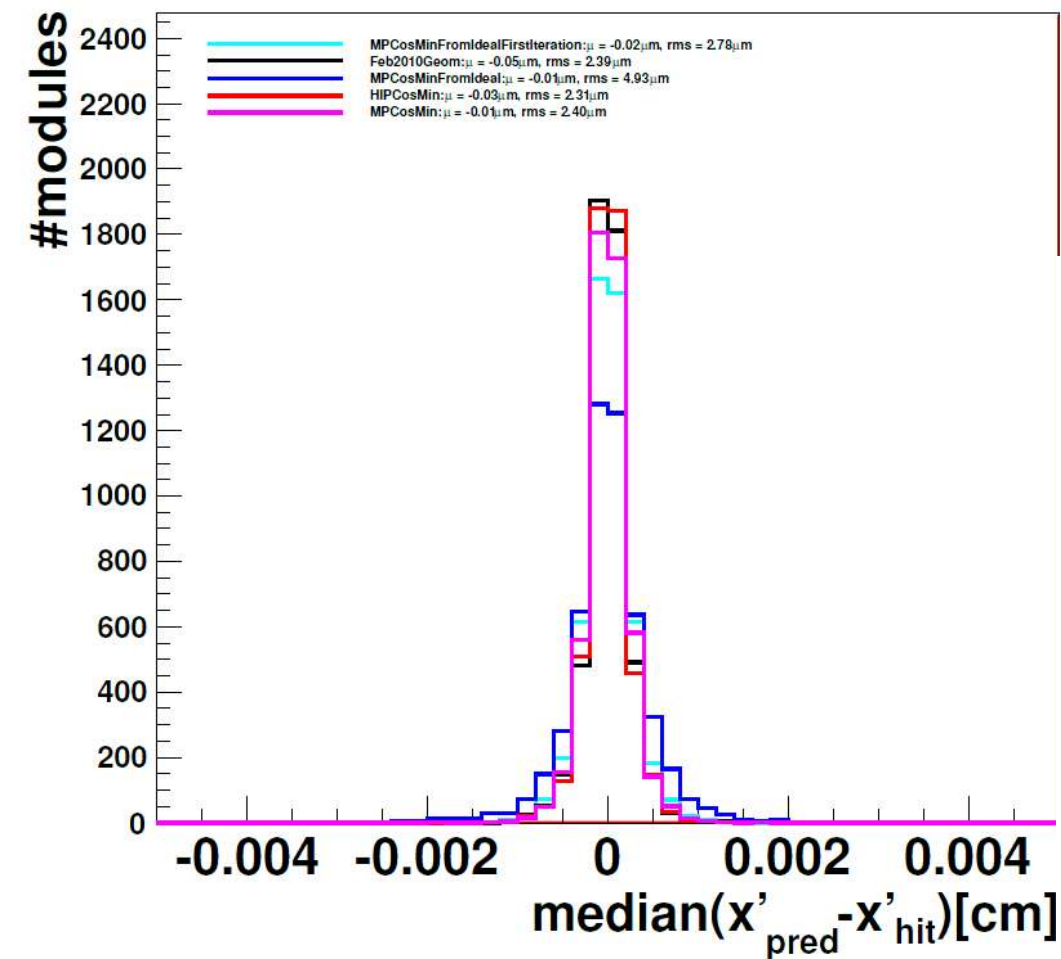


strongest degradation in TPE!!!

Distribution of the median of the residuals in TID



Distribution of the median of the residuals in TOB



Distribution of the median of the residuals in TEC

