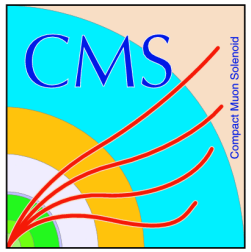


WM studies: twist, sagitta

Status report

Nazar Stefaniuk, Matthias Schröder

Outline:

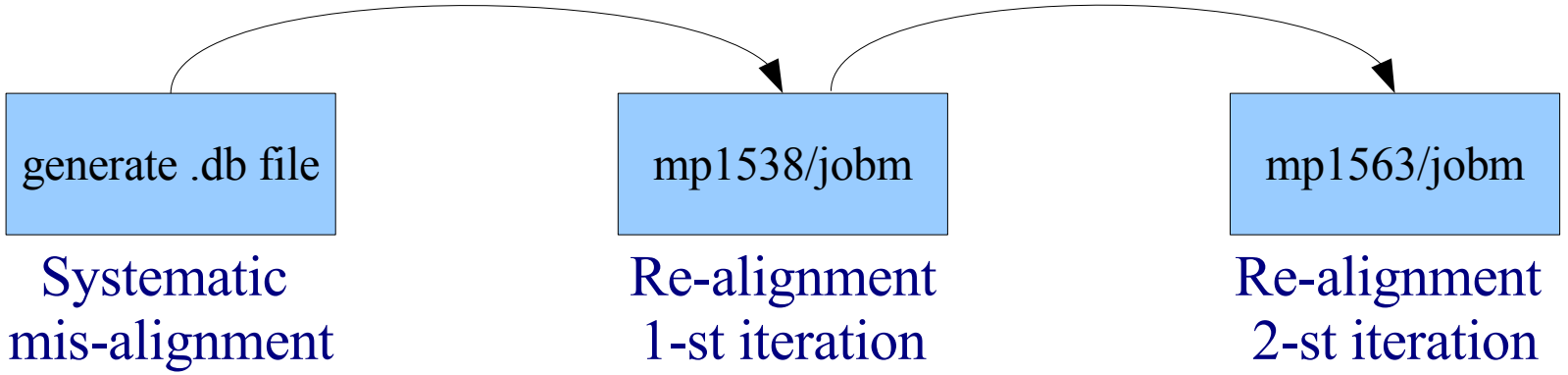
- Mis-alignment for Sagitta , Twist
- Re-alignment, first + second iteration

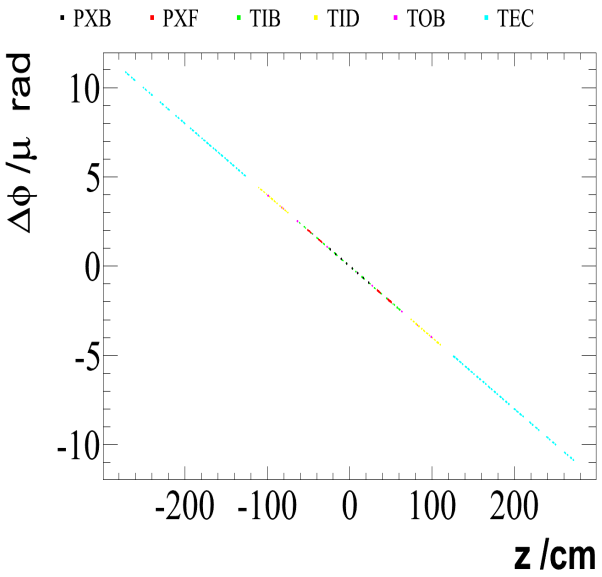
Hamburg, DESY, 23.02.2015

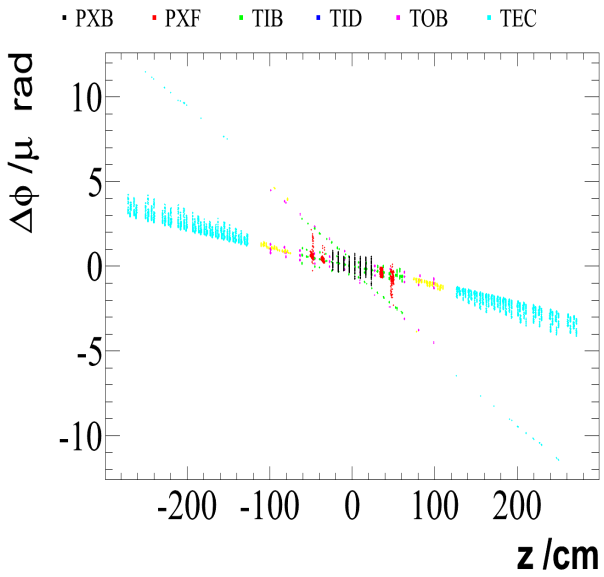
Twist, (Mis-alignment & Re-alignment vs 2012LA)

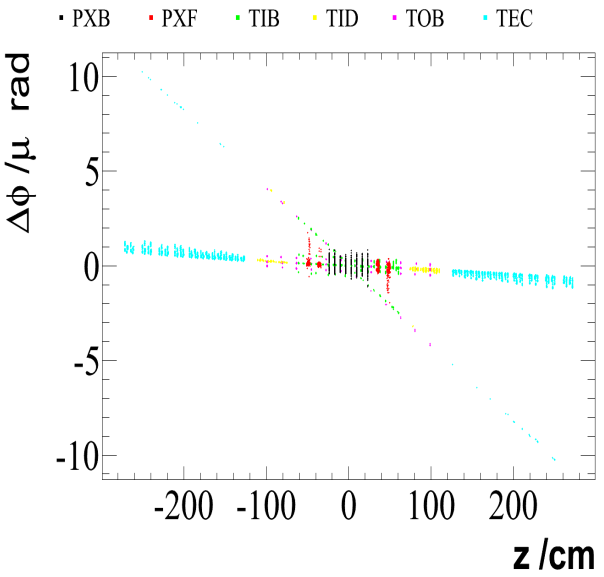
See some improvements after first iteration → possible need a second iteration

Twist ($\Delta\varphi = c \cdot z$)



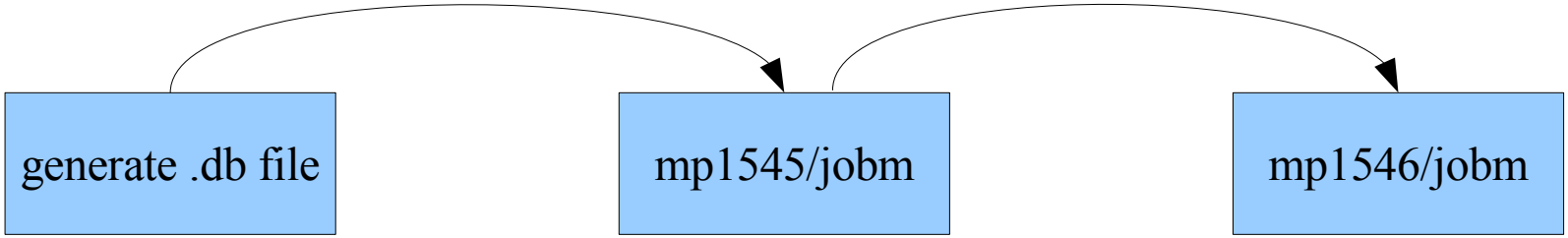




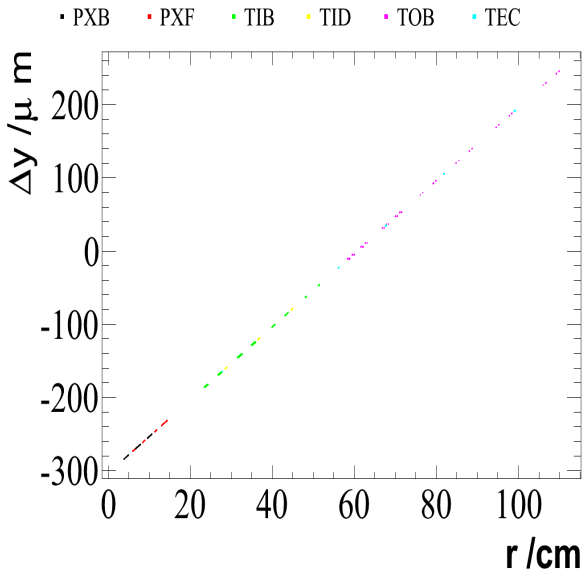


Sagitta, (Mis-alignment & Re-alignment vs 2012LA)

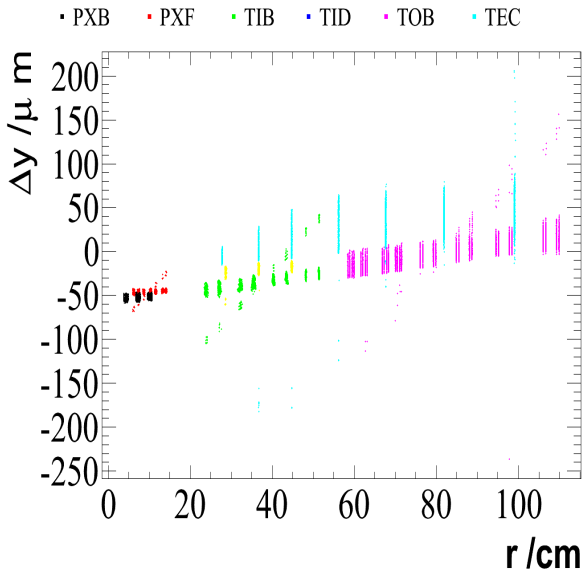
Sagitta ($\Delta y = c \cdot r$)



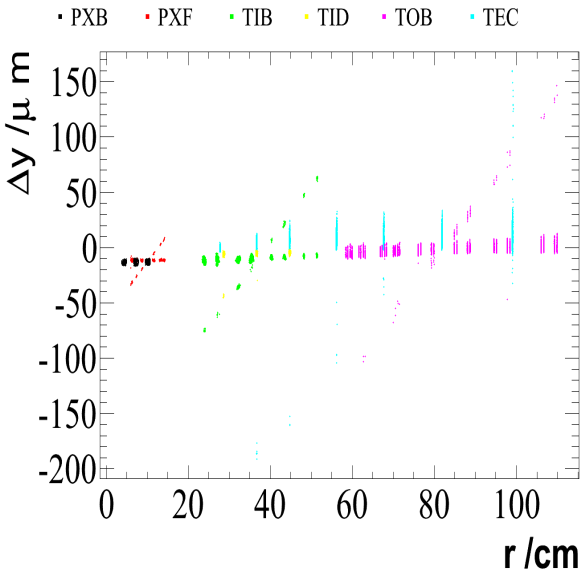
Systematic mis-alignment



Re-alignment 1-st iteration



Re-alignment 2-st iteration



Conclusions & Plans

Conclusions

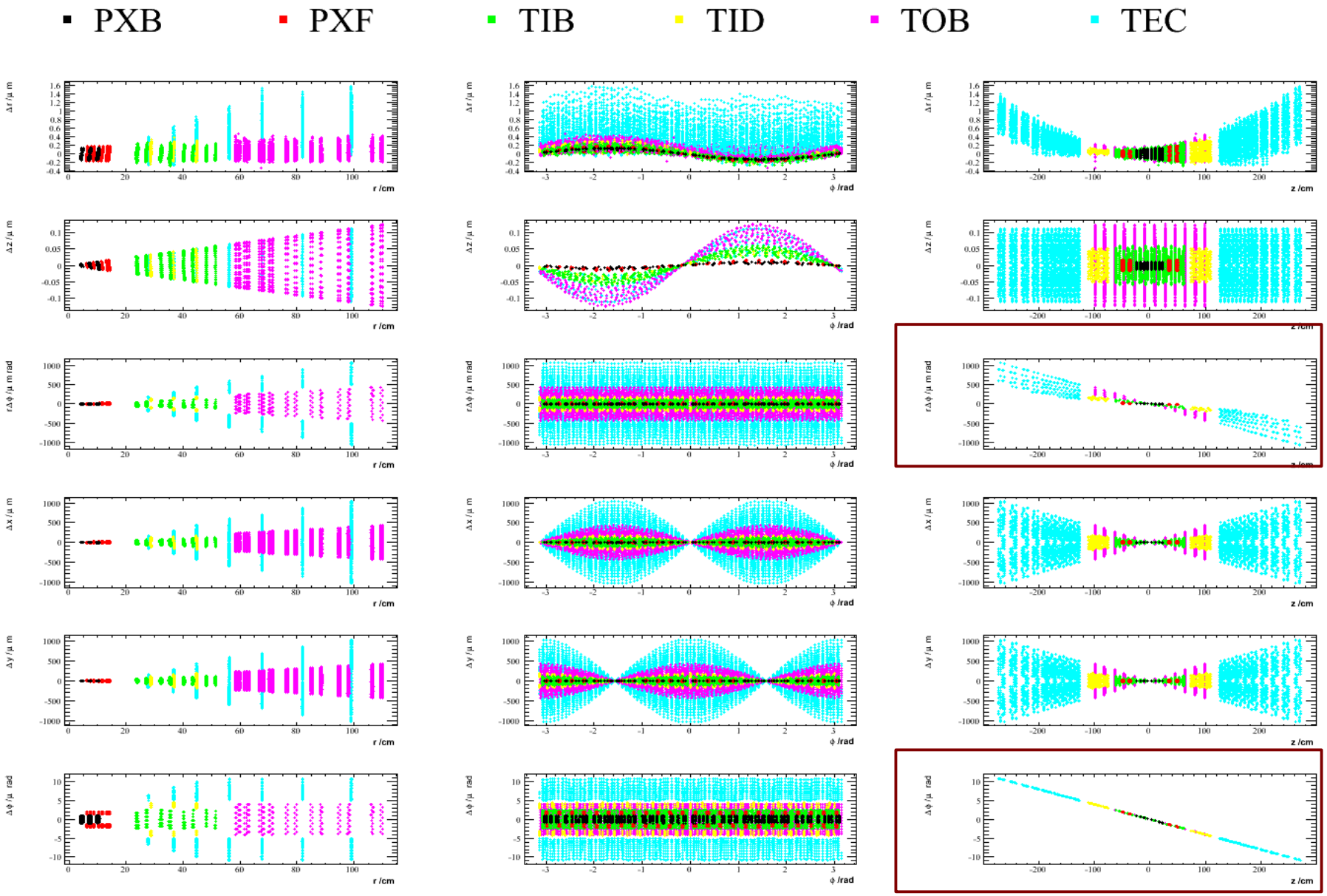
- created re-alignment for Sagitta and Twist mis-alignments
- good recovery after second iteration
- similar behavior as for 2011-13 alignment
- not moved modules:
  - dead or not enough track hits
  - could be blind to certain movements

Plans

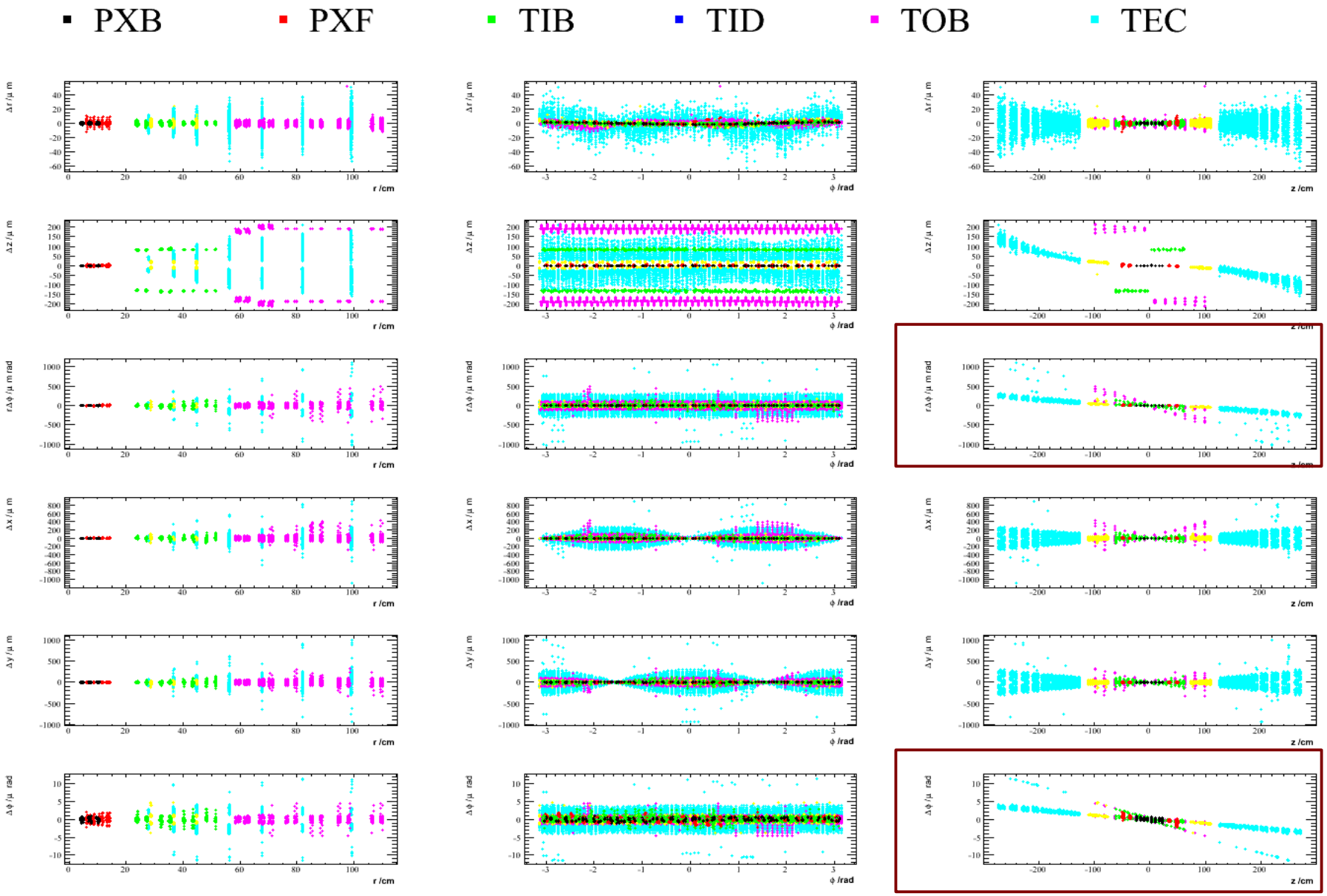
- clean not moved modules from a distributions
- telescope ($\Delta z \sim c \cdot r$) misalignment under calculations

Back Up

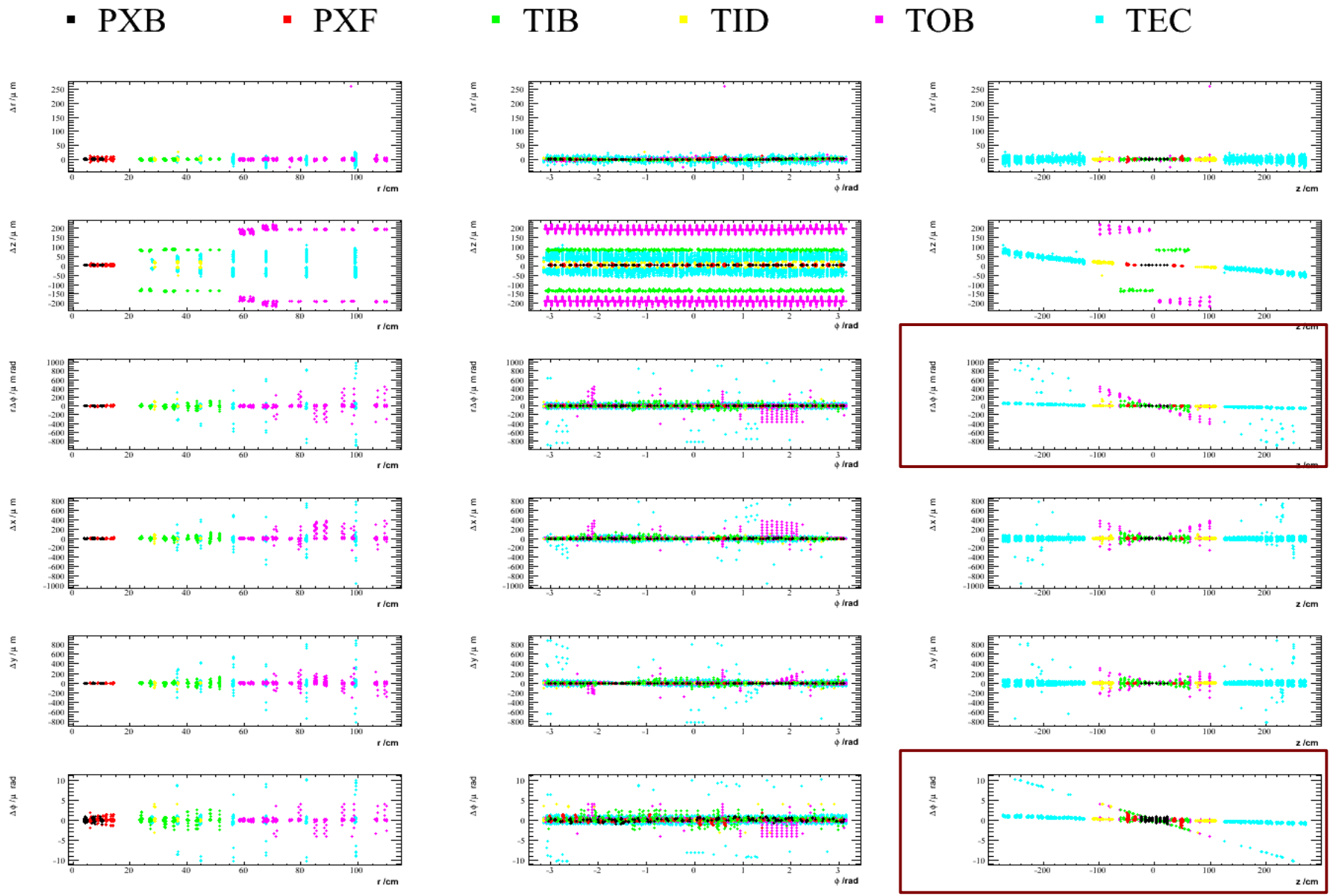
Twist, (mis-alignment vs 2012LA)



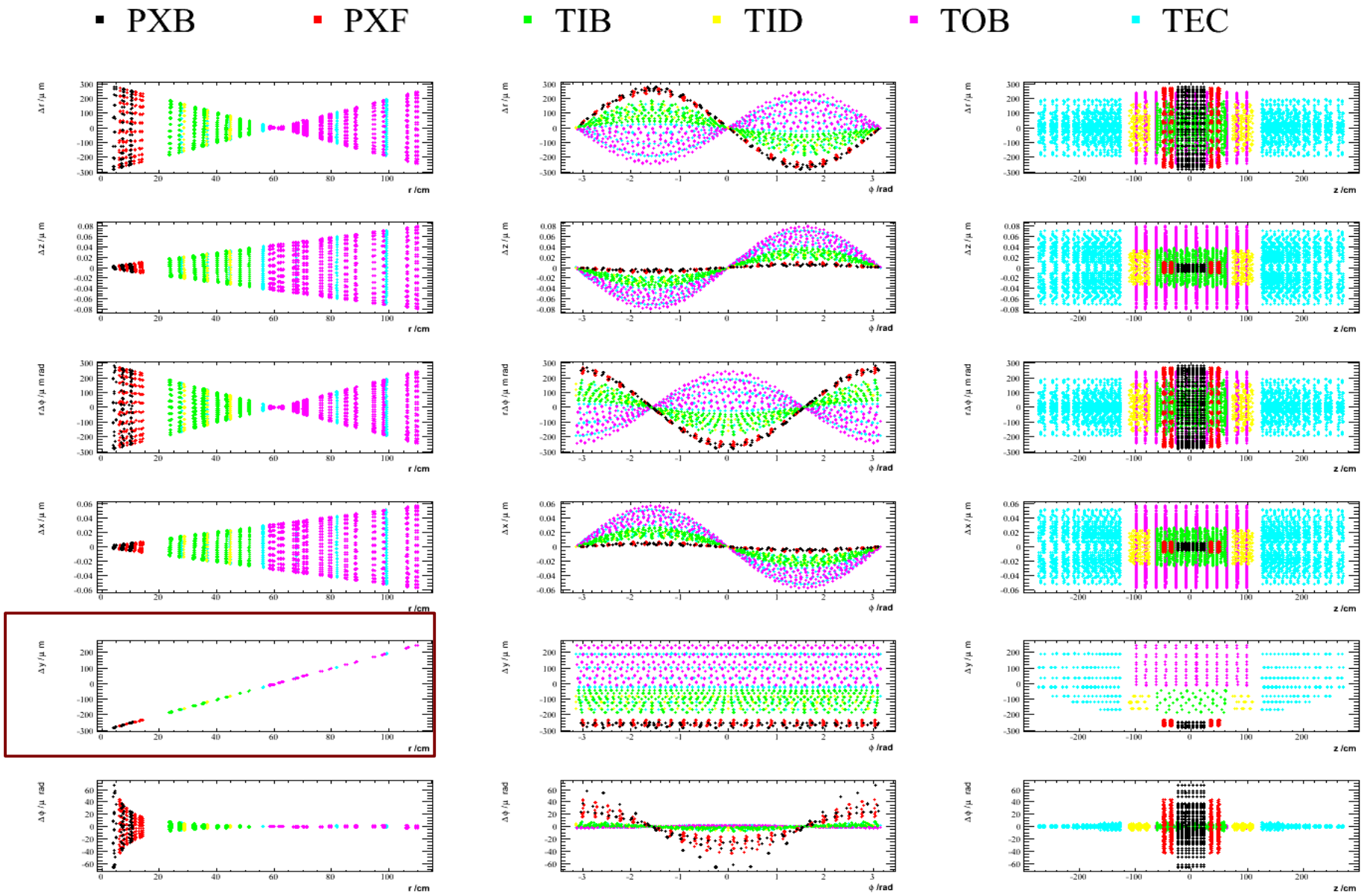
Twist, iteration I, (Re-alignment vs 2012LA)



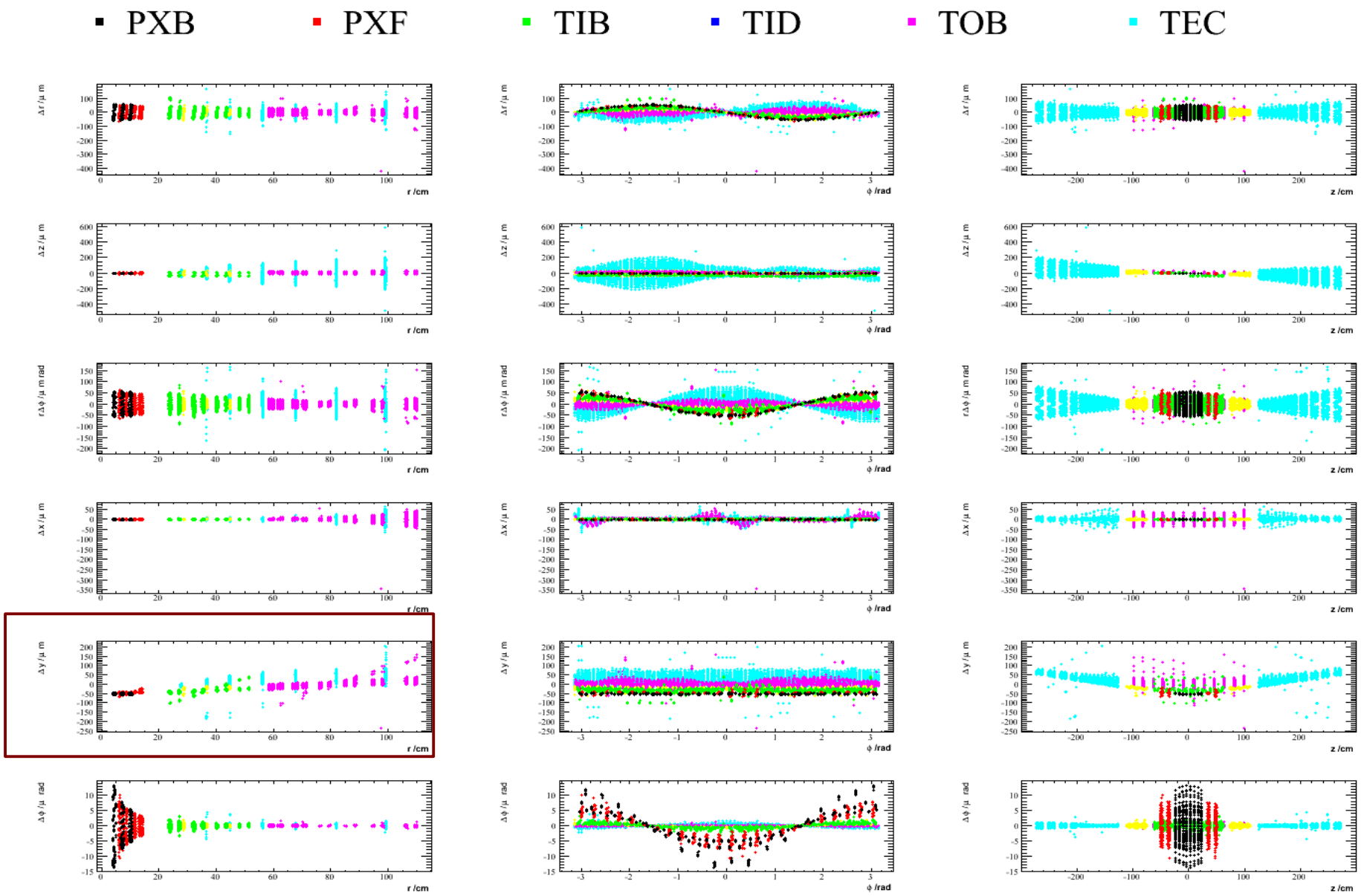
Twist, iteration II, (Re-alignment vs 2012LA)



Sagitta, (mis-alignment vs 2012LA)

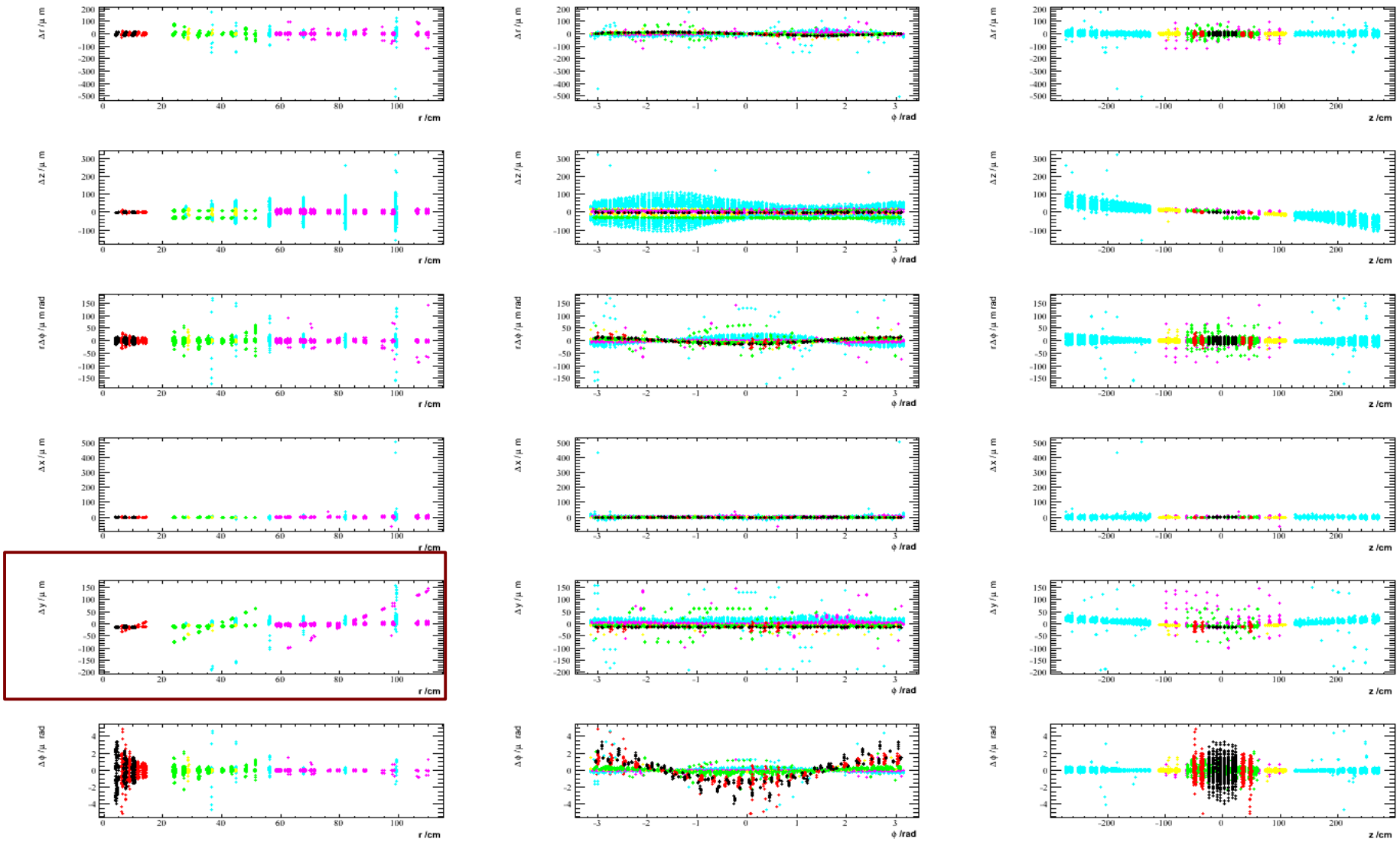


Sagitta, iteration I, (Re-alignment vs 2012LA)



Sagitta, iteration II, (Re-alignment vs 2012LA)

PXB PXF TIB TID TOB TEC

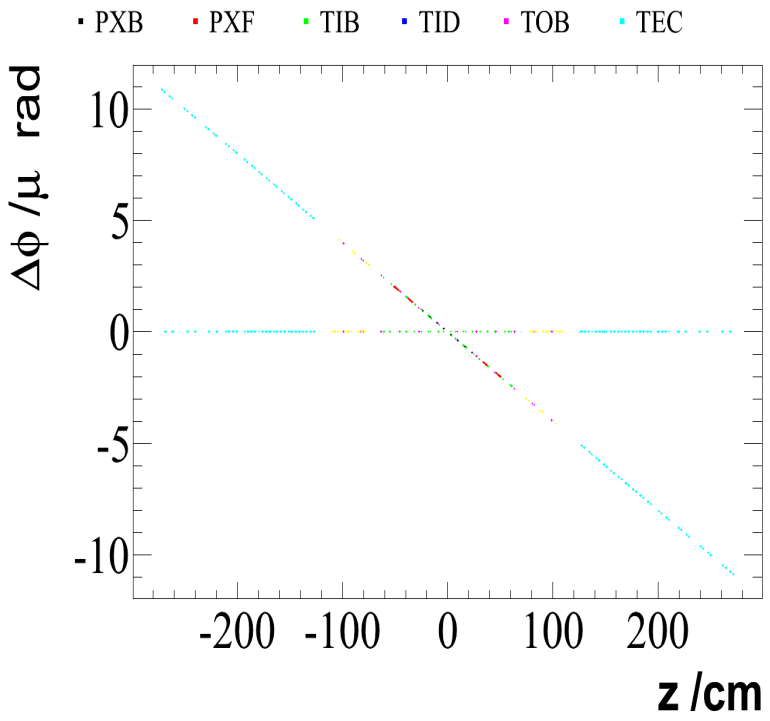


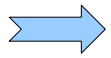
Fixes

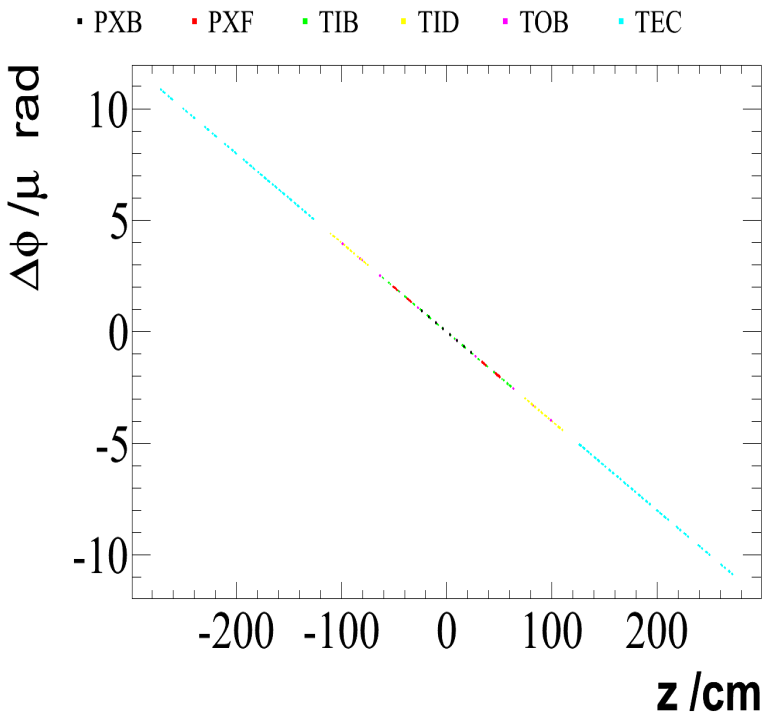
Problem was in the configuration file for the geometry comparison:

```
[compare:DetUnits]
levels="Det","DetUnit"
dbOutput=false
jobmode = interactive
```

```
[compare:Tracker]
levels="Tracker","DetUnit"
dbOutput=false
jobmode = interactive
```



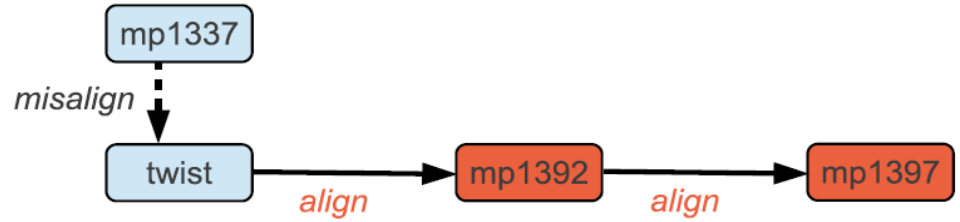




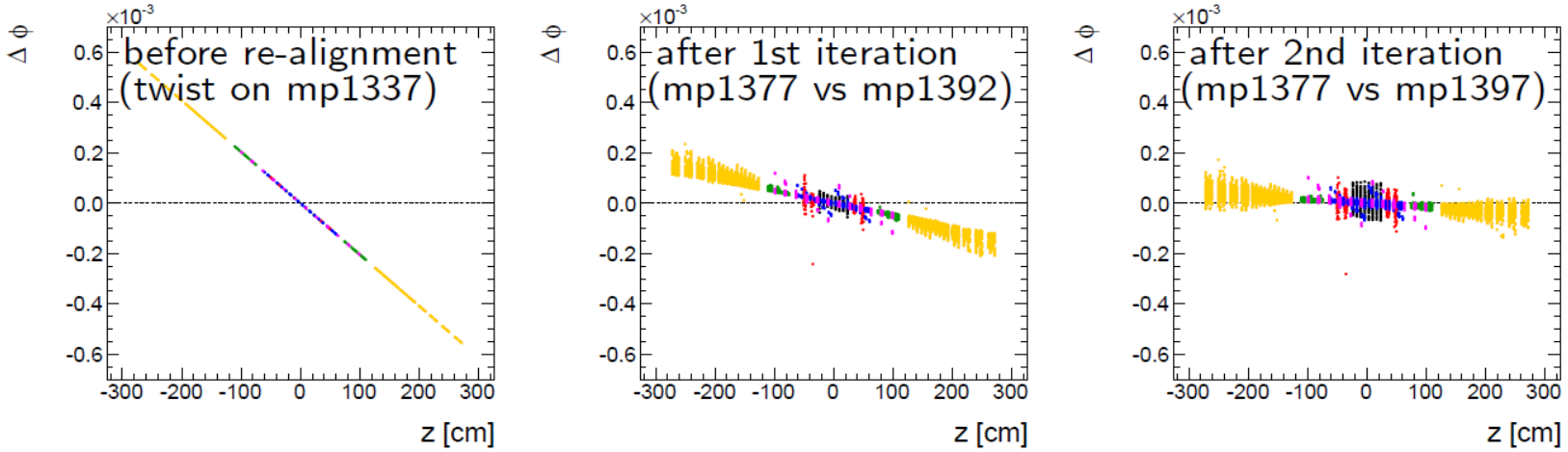
WM study in 2013, twist

Duplicate slide from Matthiases presentation *

Twist Misalignment: Summary



PXB
PXF
TIB
TID
TOB



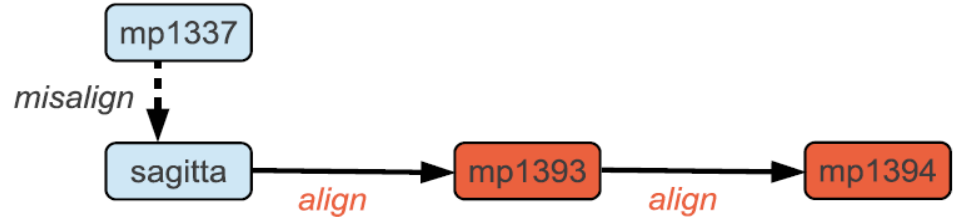
- Good recovery after second iteration in most modules
  - Similar performance as for 2011 alignment
- Some modules not moved by alignment
  - Dead or not traversed by enough tracks
  - Blind to certain movements

presentation on 05/12/2013 *

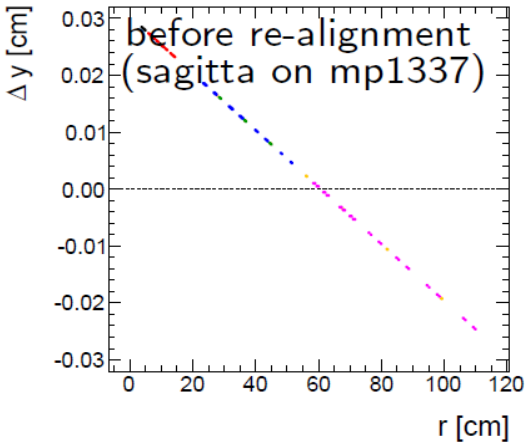
WM study in 2013, sagitta

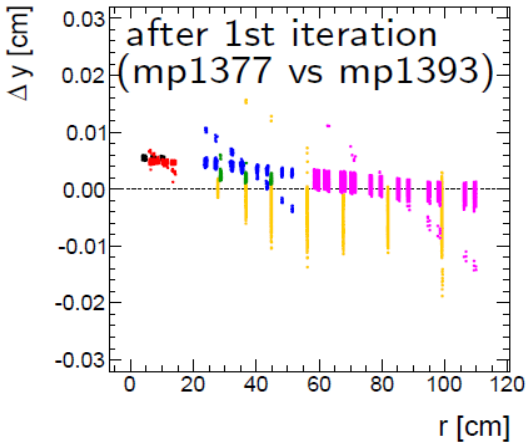
Duplicate slide from Matthiases presentation *

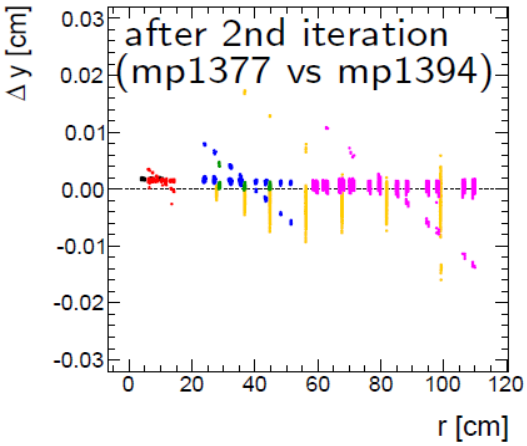
Sagitta Misalignment: Summary



PXB
PXF
TIB
TID
TOB







- Good recovery after second iteration in most modules
  - Better than for 2011 study, possibly due to free local-y in TID/TEC
- Some modules not moved by alignment
  - Dead or not traversed by enough tracks
  - Blind to certain movements

presentation on 05/12/2013 *

Motivation

- Check the possibility to make successful re-alignment with systematic mis-alignment : (at this moment Sagitta and Twist)
- Improve results on systematic mis-alignment with new data and software

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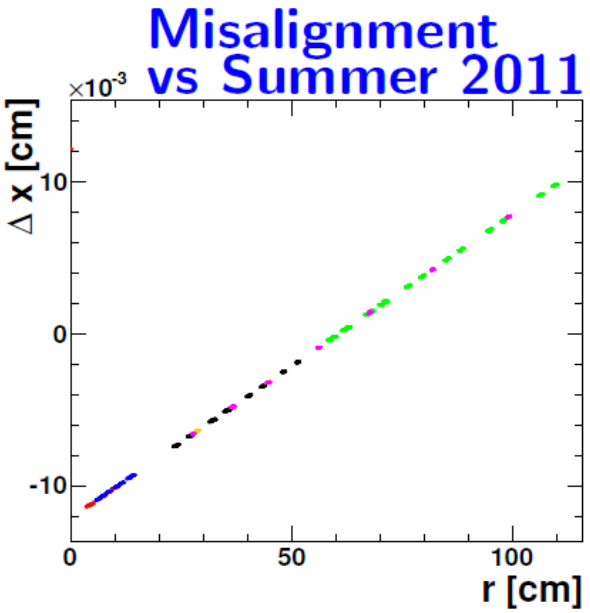
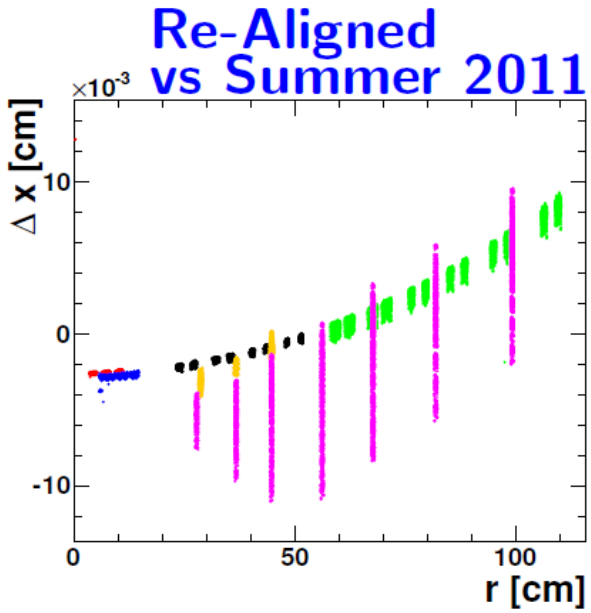
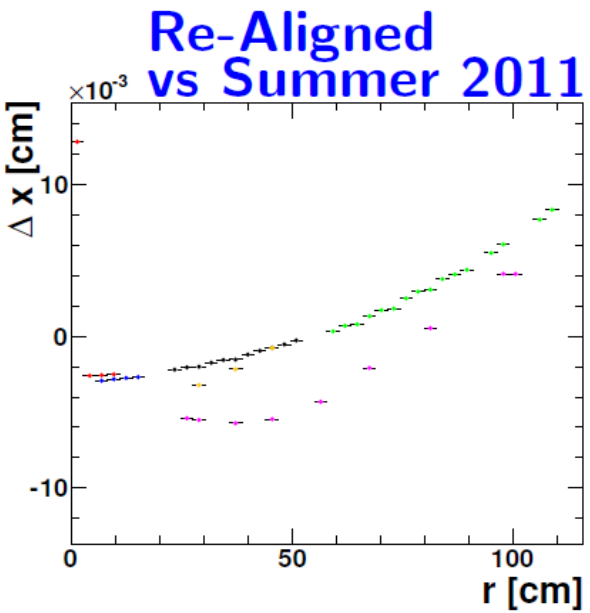
Twist ($\Delta\varphi = c \cdot z$) Sagitta ($\Delta y = c \cdot r$)

Joerg Behr results (February 16, 2012), Sagitta :







Setups

- Mis-alignment on the base of 2012 Legacy Alignment
- For MillePede running:

  /afs/cern.ch/cms/CAF/CMSALCA/ALCA_TRACKERALIGN/MP/MPproduction/CMSSW_5_3_23_2012LegacyAlignment
- For geometry comparisons :

  CMSSW_5_3_24 modificated for new geometry comparison staff
- mp1538 -Twist re-alignment, mp1545 – Sagitta re-alignment