

Welcome to the Tracker Alignment Camp!

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The alignment camp



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Agenda: <https://indico.cern.ch/event/344297/>

The alignment camp

- ▶ Started with tutorials on Monday
- ▶ Worked on different topics during the week:
 - ▶ Software readiness
 - ▶ Validate new datasets (MC, ECR)
 - ▶ PXRepair scenario: validate it, realign from it
 - ▶ Update documentation
 - ▶ Establish workflows

Will report in details on following slides.

Software readiness: Pull requests

We created a bunch of pull requests during the week:

- 6030 Add features in offline validation for 73X
 - 6085 Fixing initialization of event setup point of PR 6030
 - 6198 Ref. trajectories based on GeneralBrokenLines for MP-II
 - 6233 Fix to run $Z \rightarrow \mu\mu$ alignment validation
 - 6240 Add new global steering script for MP based tracker alignment
 - 6244 Bugfix for cosmic track splitting alignment validation
 - 6247 Bugfix for cosmic track splitting alignment validation
 - 6249 Bugfix for cosmic track splitting alignment validation
 - 6248 Bugfix for cosmic track splitting alignment validation
 - 6254 switch between hierarchy and averaging constraints in MP
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(Omitted backports. Excuse any missed PR)

Software readiness: Pull requests

- ▶ SLC5 to SLC6 still creates problems: MP cannot be run without compiling on SLC5 and invoke it on SLC6. Problem is being identified, experts are informed.
- ▶ APE code breaks in releases past 53X. Has never been in a release. Needs substantial rework. Addressed by Delhi group.
- ▶ EOS access wasn't available in time for all newcomers. One user still lacking. Escalated with IT.
- ▶ Adjustments in refitter sequence required to accommodate recent changes in tracking.
- ▶ pede executable will be updated in CMSSW and scripts will be adjusted to use the version from the release.

Look into data

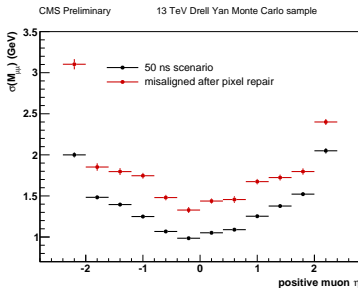
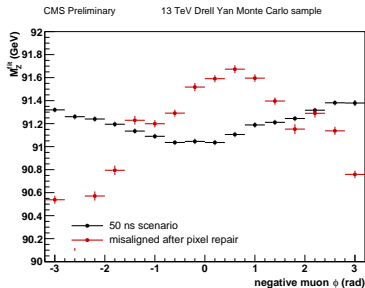
- ▶ ECR
 - ▶ First look was discouraging: only TOB hits were in. But in principle HIP and validation workflows worked
 - ▶ Later data has all available subdets in, look good
- ▶ Cosmics MC
 - ▶ Received 0 T sample yesterday, 3.8 T sample still pending
 - ▶ Data looks ok, workflows were able to run on it (MP, HIP, validation)
 - ▶ Looking forward to get remaining datasets. But the lack of them during the camp required changes to the studies. . .
- ▶ Main outcome: **All workflows can run on new data.**

Pixel Repair scenario

- ▶ A scenario mimicking the status after the BPix repair has been created and is available to the alignment group.
- ▶ We have it as a DB file, usable with MC.
- ▶ As MC Cosmics were not available, applied the scenario on the fly in the refitter for use with data (difficult to apply misalignment on db file with IOV).
- ▶ Results on following pages.

Pixel Repair scenario

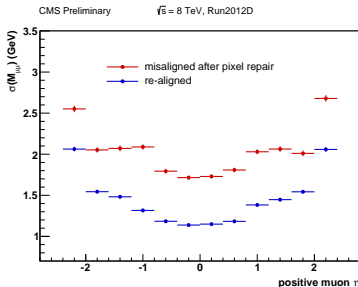
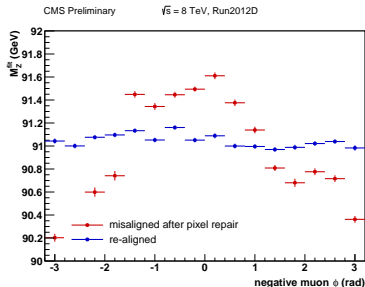
This is the situation in the $Z \rightarrow \mu\mu$ validation if we would not align:



But glad there is alignment. . .

Pixel Repair scenario

After realignment on 2012 dataset ($\approx 20 \text{ fb}^{-1}$):



Good news: We can realign. Iterating on top of this will help.
Running right now: Realigning with reduced datasets to test capabilities with promised amounts of data in 2015.

Conclusions and outlook

- ▶ Camp was a success. Despite some hickups that delayed our work significantly (MC, SLC6 etc.) we were able to create a team spirit.
- ▶ People expressed confidence in what they have to do.
- ▶ We can read current data.
- ▶ Software issues are identified, workarounds exist, and solutions are imminent
- ▶ Scenario to study realignment after BPix repair exists. First results look promising, more results dropping in.
- ▶ Manpower situation improved: MP: ok, HIP: short, SW coordination: ok, Validation: ok. Thanks for the interventions!
- ▶ We plan to organize another camp next spring. To be announced.