New Alignment Code Development/Validation/Use

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NewInDetAlignment JobOptions

NewInDetAlignment.py

Script that can be run **standalone**.

Well documented.

Configures alignment job and calls NewInDetAlignAlgSetup.py

NewInDetAlignAlgSetup.py

Work horse

Setups up alignment geometry and tools needed.

Track Selection

Handled via InDetDetailedTrackSelectorTool

Allows same track collection to be used by different clients

(monitoring the same tracks aligned)

Develop tool where needed

(eg: eta dependent cut on TRT hits)

Setup/maintain ATN / RTT based off NewInDetAlignment.py

NewInDetIterator

How/where production level constants will be produced.

Completely and Arbitrarily configurable:

Reconstruction and Alignment jobOptions are ***inputs***.

That said,

the defaults will be tied to throughly commissioned/extensively used jobOptions

Reconstruction

- jobOptions.py and jobOptions_cosmics.py from InDetRecExample

Alignment

- NewInDetAlignAlgSetup.py

NewInDetAlignmentLevels.py

- Allows the alignment DoFs at different levels to be easily custumized

Features:

Handles Parallelization, combination, iteration.

Combines data from different samples (Cosmics/Collisons/Single Beam)

Merging of monitoring files ...

Solving Developments

Brief Laundry list of recent improvements and additions:

- Ordered eigenvalues from CLHEP
- Modcut with CLHEP, now allows N modes to be removed.
- LAPACK added, commissioned
  (first tests show much better performance with ~1000 DoF
  compared to CLHEP)
- . . .

TRT Alignment Validation

Work started this summer by Ahmet Bingul.

Recently finished.

Compared **digit by digit** output of Old Code and New Code

Configurations Compared:

L1 – local, Barrel only, Barrel + EC
global, global w/ Diagionalization.

L2 – same as above

Everything checked out.

- Issue with numeric stability of Alignable Transforms?
  New/Old give same transform, transform.GetTranslation() differs.
- New L2 Endcap scheme added to new code, (needs validation)

TRT Alignment with InDetCosmic_2008_5

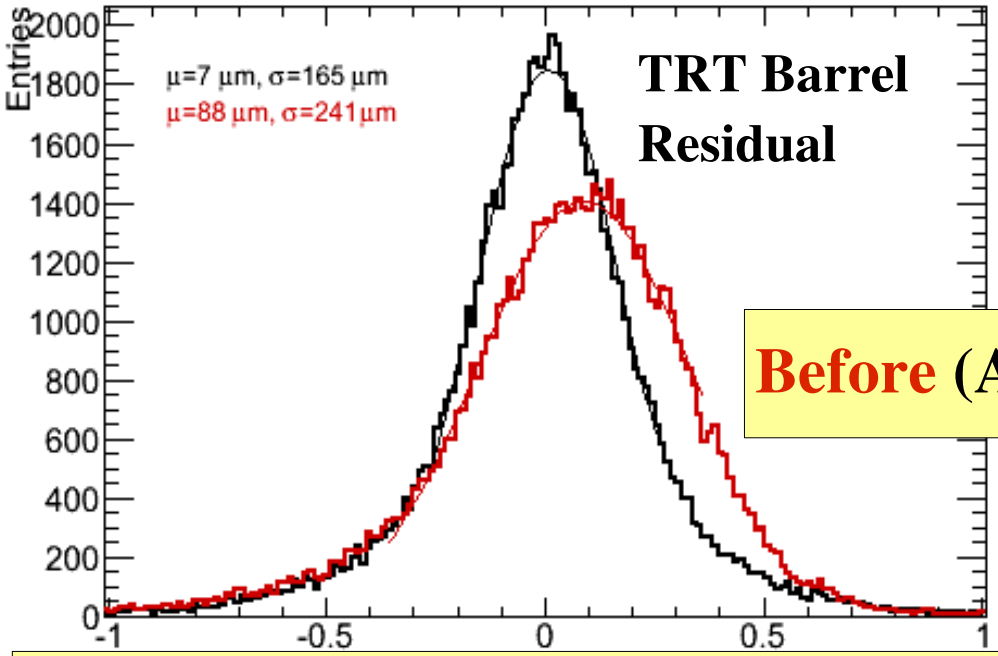
Tag **TRT_12** compatible with **InDet_5**.

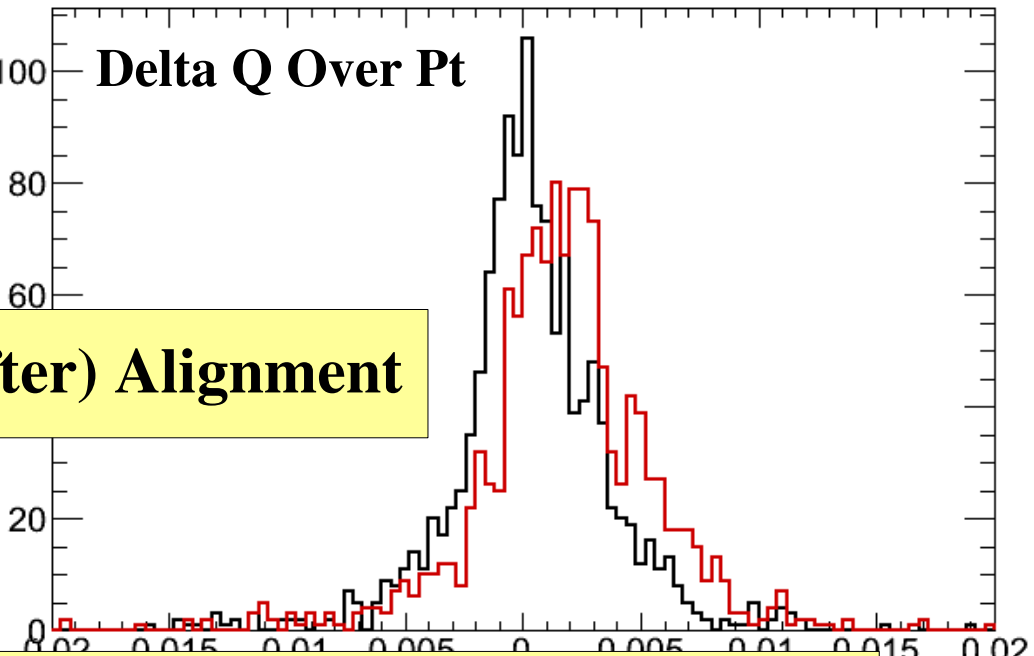
Includes: L1 Barrel + Endcap

L2 Barrel (TRT-Only Tracks)

Tag **TRT_13** compatible with **InDet_6** also included **L2 Endcap**

Aligned **TRT_13** wrt **InDet_5** (CoG difference) using the New Code.





Before (After) Alignment

First Alignment constants for Real Data in Db with new code !