Table of Contents

Alignment open issues and tasks

This is an incomplete list of open issues in detector alignment. Please add whatever you think is missing. Or assign yourself to a task.

Stripping for alignment

We would like to have a set of dedicated dsts with tracks suitable for alignment. The best would be to create a selection for the stripping. We want to select **events** with

- high momentum tracks, e.g. tracks above 20 GeV
- tracks through velo overlap regions. Use the VeloTrackSelector.
- velo halo tracks. Use the TrackSelector, or eventually VeloTrackSelector
- tracks through IT overlap regions. Use the ITTrackSelector.
- clean J/psis
- clean Ks
- unbiased selected muon tracks of high momentum (use muon-stand alone track reconstruction)

Some of these are already in the express stream. The Ks dst probably exist, but I don't know how clean it is.

To speed up the processing of these events, it would be useful to store the tracks in a separate Track container. I don't know if that is possible in the stripping.

Who: ?

Date entered: 2010-05-17

Tool to display differences between databases

We would like to have a tool to display the difference between alignment databases.

There is now a tool to create a database as the difference between two databases(DBDiff.py) and a tool to plot the contents of databases (plots.py). Both live in /Alignment/Escher/scripts and are tagged with bursche_20100527 . See PlotAlignmentDB for details and email me any problems. The code is new so there are probably bugs.

Who: Albert

Date entered: 2010-05-17

Field-on / field-off difference in T station alignment

The alignment constants extracted with field-on and field-off data are not compatible with each other and also not compatible with survey, in particular in the first T stations. Part of the problem is the alignment in 'z': movements in z of several mm are obtained with respect to the survey. These movements are not physical and have lead to a severe curvature bias, which was at some point wrongly attributed to the field. However, even if those z movements are fixed, the field-on and field-off alignment are not compatible. A futher complication here is the internal alignment of IT: the z-position and rotations of the layers inside an IT box are actually not that well constrained.

For a brief overview, see the first few slides of this talk.

To solve this issue several studies have been proposed, a.o. * align the detector with very high momentum tracks (e.g. > 30 GeV). * revive the RASNIK system to get a handle on the true momevents between field-on and field-off

Who: everybody

Date entered: 2010-05-17

Velo-TT to T matching

There are significant biases left in the matching of Velo-TT to T segments are seen by the TrckFitMatchMonitor. See e.g. slide 4 of this talk.

This is probably just another symptom of the lack in understanding of field-on and field-off alignment.

TT scaling problem

Even after fixing the pitch there are still some remaining problems with scaling in TT. See recent talks by Christophe.

Who: Christophe, ...

Date entered: 2010-05-17

OT/IT alignment versus time

The OT and IT have been opened several times, in the wintershutdown but also at least once this spring. We need to know how stable the alignment is.

From Fred and Dirk:

intervention	opened	closed	frames
1	15:00h, 13 Jan 2010	17:00h, 11 Feb 2010	all C-frames
2	09:00h, 8 Apr 2010	12:50h, 8 Apr 2010	T2L01Q02 (C-side T2 first C-frame)
3	12:30h, 26 Apr 2010	13:00h, 28 Apr 2010	T2 and T3 on A-side, T2 C-side
4	10:15h, 20 May 2010	14:30h, 20 May 2010	T2L01Q02 (C-side T2 first C-frame)

Matt: In run numbers:

period	begin data	end data	first run	last run
2010-1	March 30	April8		69845
2010-2	April 8	April 27	69845	70832
2010-3	April 27	May 20	70832	72060
2010-4	May 20		72060	

Who:

Date entered: 2010-05-18

Ks mass studies, J/psi mass studies

Study invariant mass as function of kinematic, such as

- phi, Matt's phi: azimuthal asymmetries
- eta, momentum: material
- p(pi+) - p(pi-): q/p bias

These studies would greatly benefit from a dst with a clean selection.

Track-Calo alignment

There is a known displacements of a few (up to 7?) mm of the ECAL C-side with respect to the tracker. See e.g. slide 9 of this talk. Olivier Deschamps thinks that 7mm is not physical.

Who: ?

Date entered: 2010-05-17

Track-RICH alignment

The RICH group is doing a great job aligning the RICH, however, it is still unclear (to Wouter) how sensitive the RICH actually is to changes in the alignment of the tracker. Some plots illustrating that would be very useful. In the meantime, Sam and Chris are working on intergarting the RICH in the track fit

Who: ?

Date entered: 2010-06-02

Strange tail in residual distribution of hits in Velo overlap regions

See slide 16-19 of this talk.

Note that there is a real problem in simulation as well.

Who: David

Date entered: 2010-05-17

-- WouterHulsbergen - 17-May-2010

This topic: LHCb > AlignmentOpenIssues
Topic revision: r8 - 2010-06-02 - WouterHulsbergen