

Tracker Alignment Issues

Notes on the meeting on alignment that took place in Udine on June 1.

Sara's recent discovery that the distribution of ThetaMS is quite different for MC and real data seems to point to the need to incorporate an internal tower alignment into the generation and reconstruction.

As a start in this direction, Tracy will modify TkrRecon so that ThetaMS is the "real" ThetaMS, rather than the one that incorporates a minimum scattering angle. After this modification, the data used for Sara's plots will need to be reconstructed again. This will not fix the problem that Sara found, but should modify the shape of the lower edge of the ThetaMS plot.

Michael will convert his list of measured tracker displacements/rotations into a format which can be read into a Gleam job. The information about this format can be found on the mainpage of TkrUtil under TkrAlignmentSvc. In particular, the current units for the constants are microns and milliradians.

Once this is done, a definitive test would be to introduce the alignment constants into the reconstruction of the real data, and watch the problem go away:

```
TkrAlignmentSvc.recFile = "myAlignmentConsts.txt";
```

Unfortunately, I just discovered that the code to do the alignment in reconstruction was **removed** during the restructuring of TkrRecon. This was done because the new classes require a bit of rewiring, and it got put on a list!

I will restart this effort when I get back on June 13.

In the meantime, the next best thing is to introduce the alignment constants into the **digitization**.

```
TkrAlignmentSvc.simFile = "myAlignmentConsts.txt";
```

Now rather than fixing the real data, we unfix the generated data. The hope is that the generated ThetaMS will agree with that of the data.