



Tracker Software Update

A. Dobbs

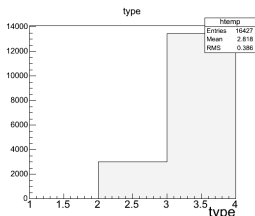
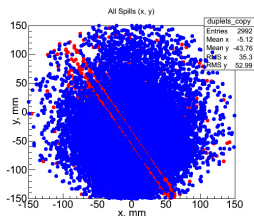
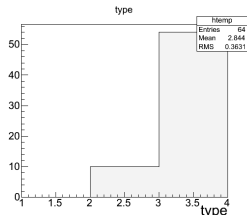
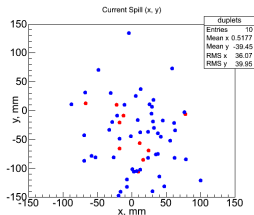
Imperial College London

6th June 2011



- ▶ Personnel changes at UChicago
- ▶ Single station test - great success, described thoroughly by D. Adey at last VC
- ▶ Data structure: merge with MAUS 2.4 successful, just some odds and ends left to do
- ▶ Monte Carlo: C. Heidt making progress, working on a reducer to perform analysis, should be ready next week
- ▶ Pattern Recognition:
 - ▶ Reducer in place to visualise straight tracks
 - ▶ First helices being produced by S. Blot
 - ▶ Issues remain with singularities in the helix parameterisation
 - ▶ Residual plots still difficult to produce
- ▶ Full track fit: E. Santos continuing to work on, currently adding multiple scattering to the fit

Single station test



- ▶ Able to perform real time reconstruction of spacepoints
- ▶ Duplets are Red, Triplets are Blue, (sugar is sweet and the results are too...)
- ▶ Red lines are dead channels in the electronics
- ▶ Lots more in D. Adey VC talk of 31/05/12.

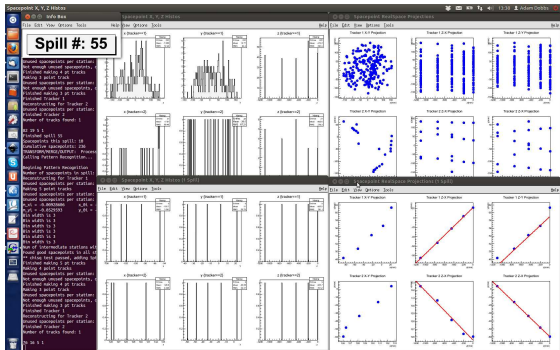
Plots by E. Santos.



Work by C. Heidt:

- ▶ Solved why were not seeing Hits (fibre length parameter was set wrong)
- ▶ Reducer in progress:
 - ▶ Stage 4 geometry (though could use any)
 - ▶ Basic beam emittance for both MC truth and reconstructed, both before and after absorber
 - ▶ Energy loss and total energy of the particle as a function of z
 - ▶ Efficiency of space point reconstruction
 - ▶ Truth and reconstructed x,y,z spacepoint positions
 - ▶ Expected early next week
- ▶ Should let us identify if the strange magnetic field effect previously observed is still an issue
- ▶ Analysis also to be done by new UChicago students

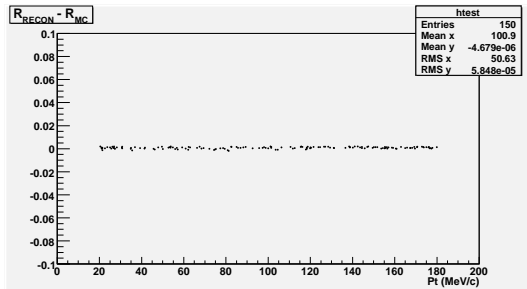
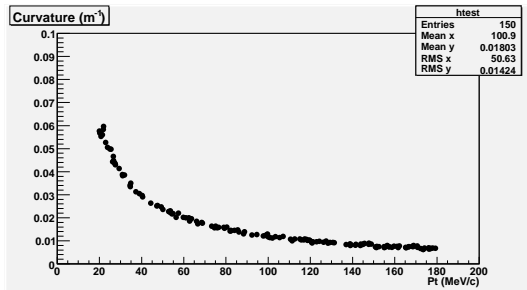
Pattern Recognition: Reducer for Visualisation



- ▶ Reducer to visualise tracks and spacepoints offline
- ▶ Current spill and cumulative output
- ▶ Both trackers, displayed separately
- ▶ X-Y, Z-X, Z-Y projections

Still struggling to form histos of the track residuals
→ roadcuts and chisq cuts not yet optimised.

Pattern Recognition: Helices



- ▶ Initial results look promising
- ▶ Need to resolve issue with singularities
- ▶ Need to make a base track class so functions can behave polymorphically
- ▶ Needs to be merged with latest release
- ▶ Again, need to form residual histograms to optimise cuts