

tracking software thoughts

- what i've been working on
 - ▶ trajectory class
 - ▶ fitter class
- what our current goals should be
- what we need to do for the technology review
- what we need to do for the drift chamber review

trajectory class

- swimming (straight, helix, general B)
- distance-of-closest-approach services
 - ▶ to a line
 - ▶ to a point
 - ▶ et cetera
- energy loss (not started)
 - ▶ read in HDDS
 - ▶ put in dE/dx

fitter class

- takes as input:
 - ▶ trajectory generator
 - ▶ residual function
- uses GNU Scientific library
- uses Levenberg-Marquardt algorithm
- works on general set of statistically independent residuals
 - ▶ pseudo-points
 - ▶ drift distances
 - ▶ cathode center-of-gravity's
- works with general trajectory (in progress)

what our current goals should be

- robust general track finder and fitter
 - ▶ good efficiency
 - ▶ good resolution
 - ▶ not necessarily great on either, may not include
 - ★ correlations of hits due to multiple scattering
 - ★ microscopic energy loss correction
- usable for studies of other detectors
- usable for studying effect of background
- usable for studying efficiencies of signals
- combine CDC and FDC
- fitter should be quasi-independent of chamber geometry/configuration
- track finder necessarily geometry dependent

what we need to do for technology review

- FDC design well-advanced
- tests on this technology have been done
- that cathodes help with pattern recognition should be stipulated
- need to find a reason it won't work at this point
 - ▶ too much multiple scattering?
 - ▶ Lorentz effect correction intractable?
- variations on current theme are do-able
- what if we make the “wrong” technology decision?
 - ▶ change request post-CD3?
 - ▶ build it and live with it?

what we need to do for the drift chamber review

- robust tracker as mentioned above under goals
- demonstrates a complete handle on the fundamentals of the problem
- enables better context for other studies