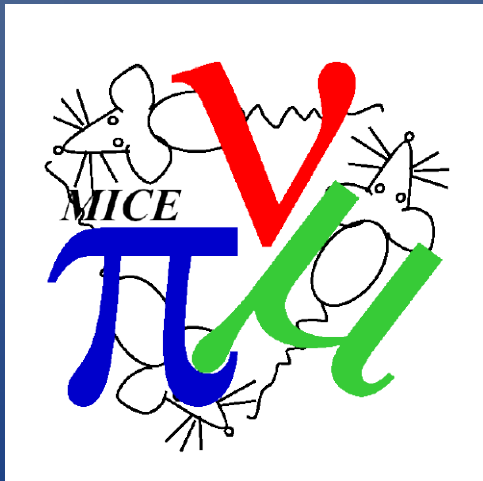


Global Reconstruction Update

Peter Lane

Illinois Institute of Technology

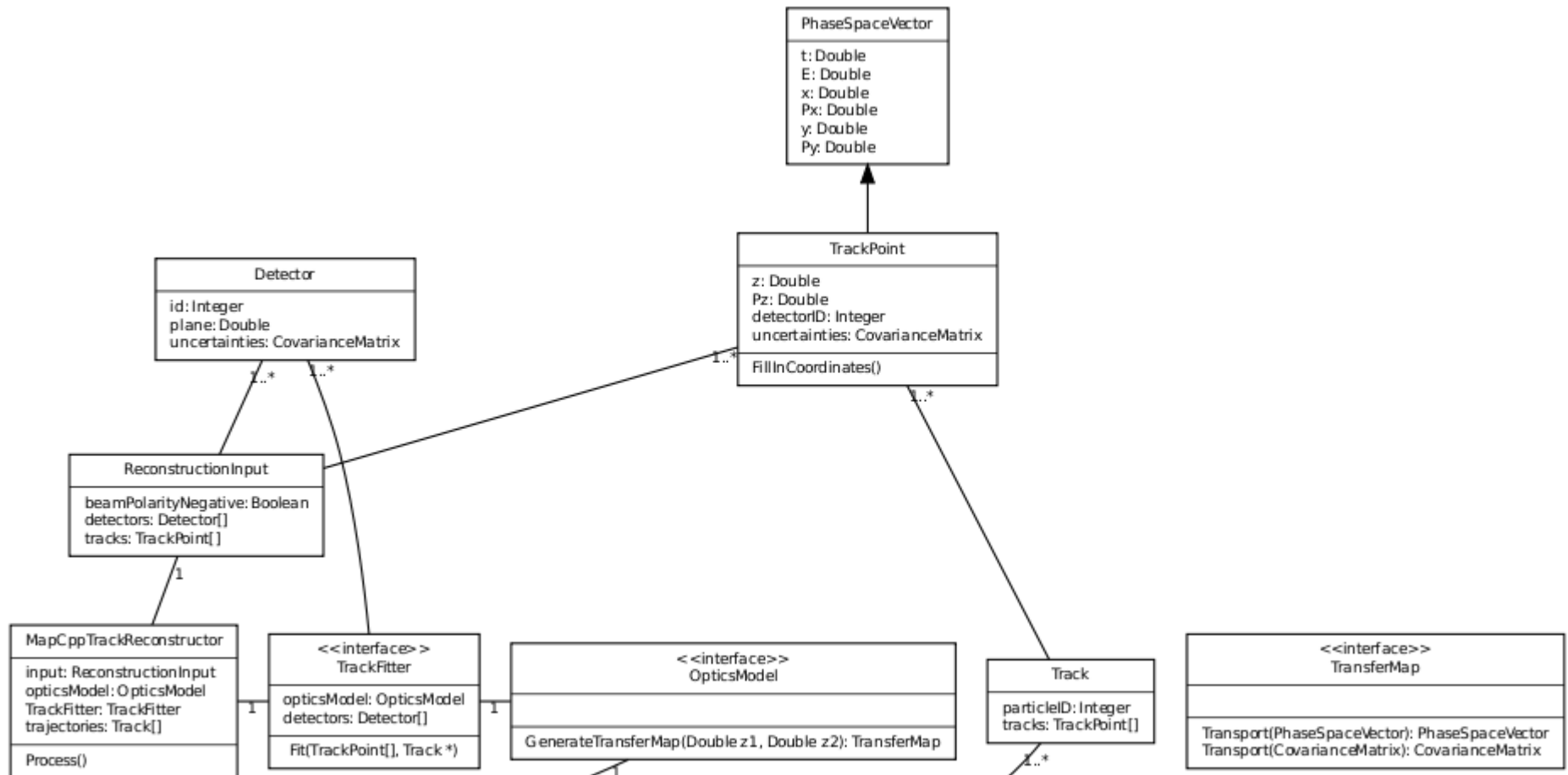


ILLINOIS INSTITUTE
OF TECHNOLOGY 

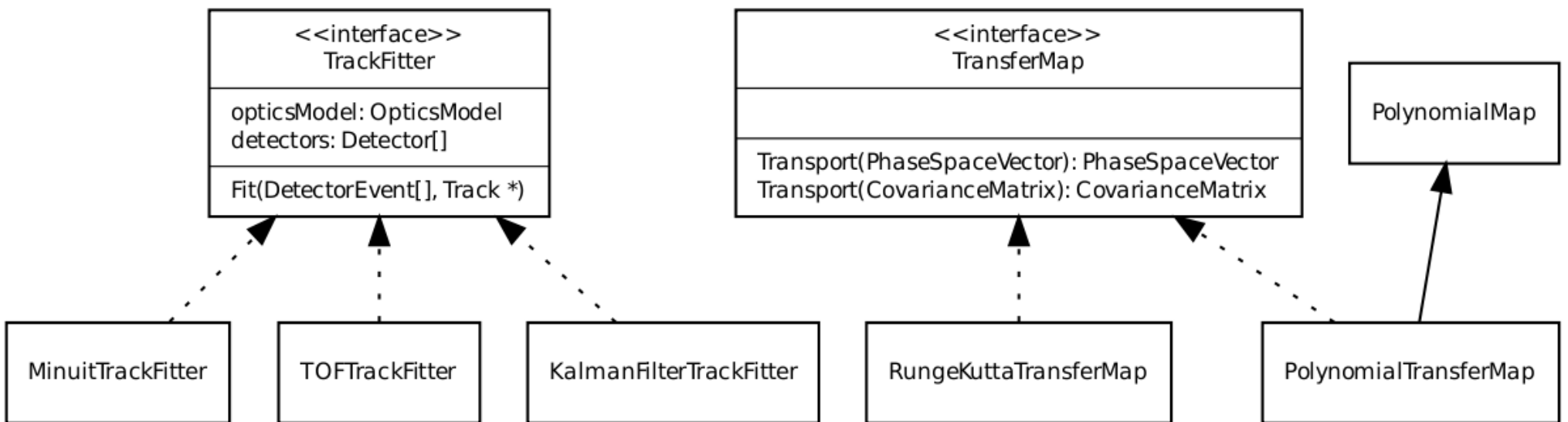
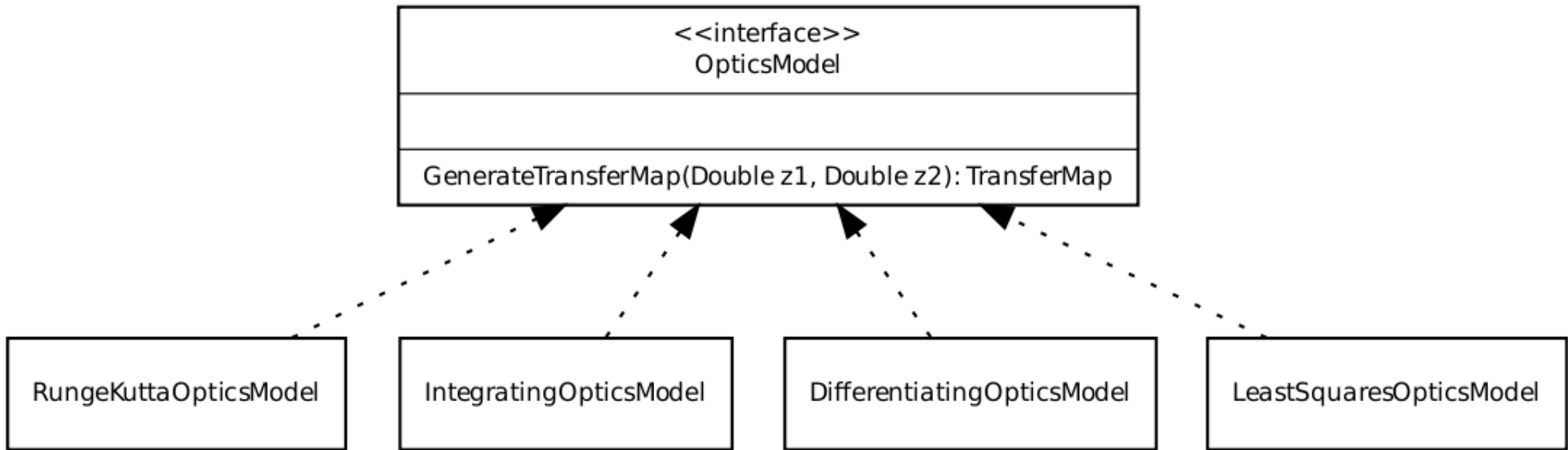
Current Global Reconstruction Tasks

- Designed abstract framework for using multiple optics models and fitting algorithms.
- Testing framework with crude linear approximation reconstruction implementation

Framework Class Hierarchy



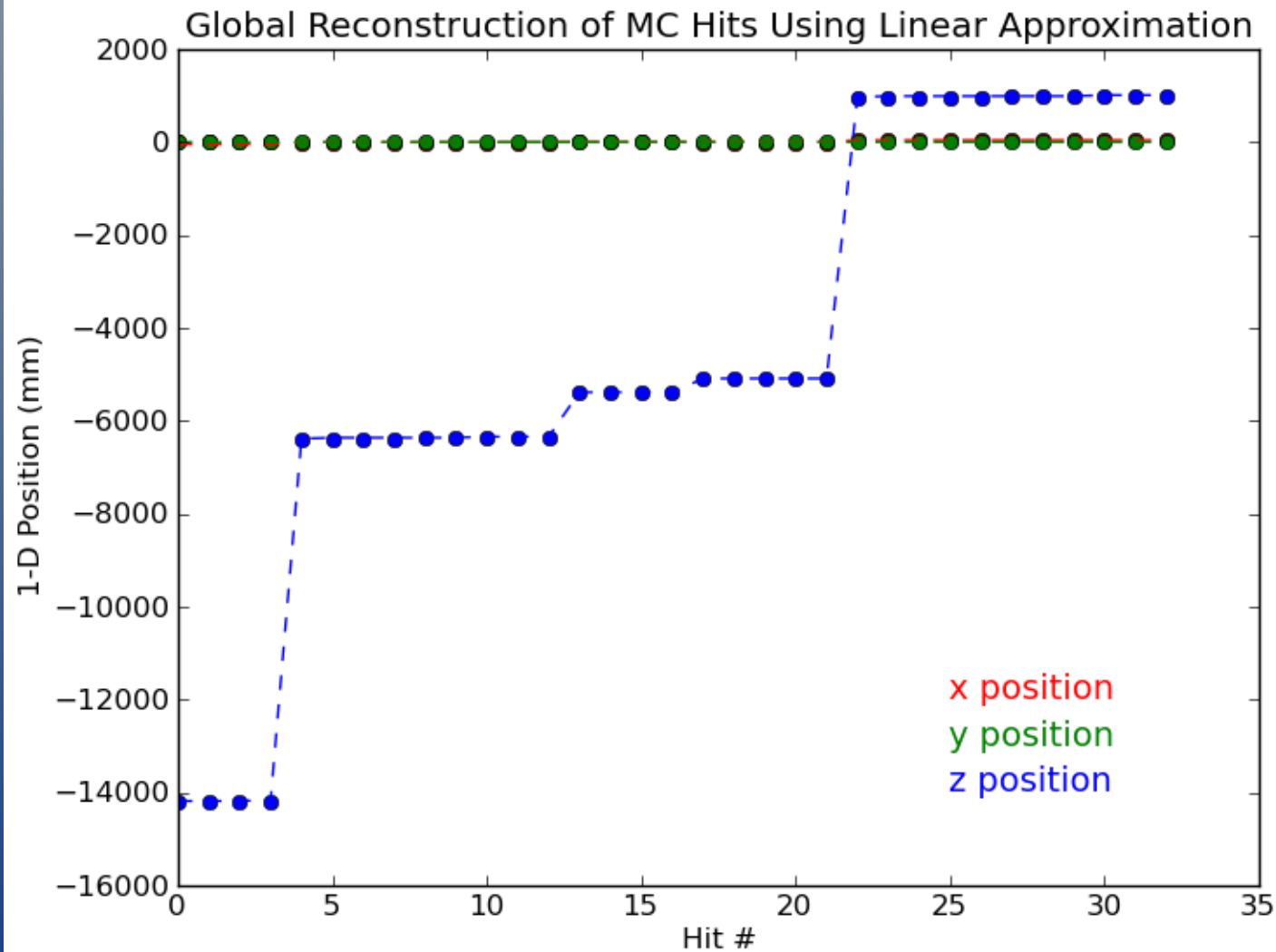
Framework Interface Hierarchy



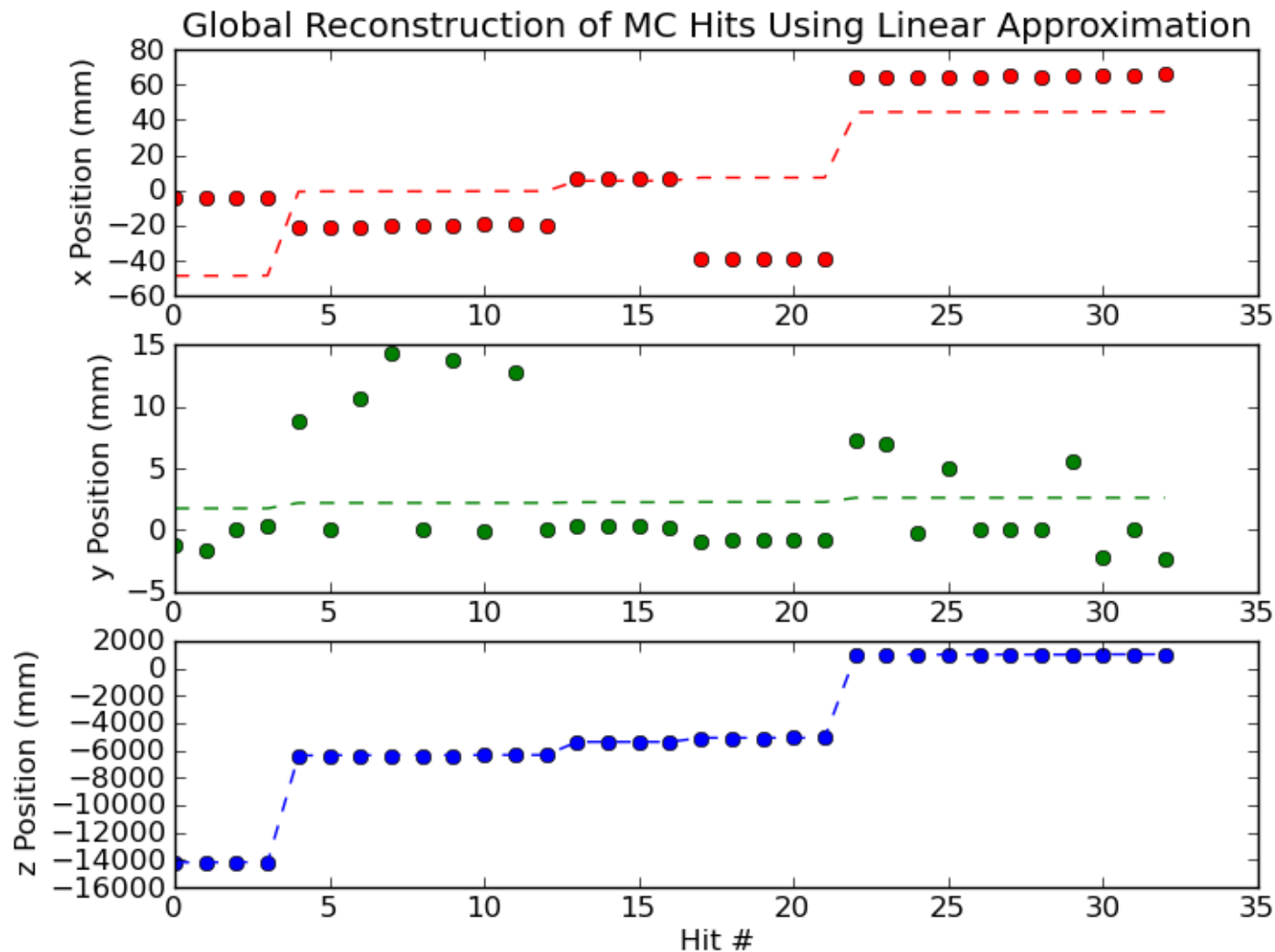
Global Reconstruction of MC Hits Using Linear Approximation

- Perform linear approximation between start plane and desired end plane using momenta of input particle as slopes
- Use TMinuit to minimize the sum of the expected residual errors
 - $(v_m - v_c)^T * M_E * (v_m - v_c)$
- Having problems with geometry and generating MC SciFi hits
 - <http://micewww.pp.rl.ac.uk/issues/995>
 - <http://micewww.pp.rl.ac.uk/issues/996>

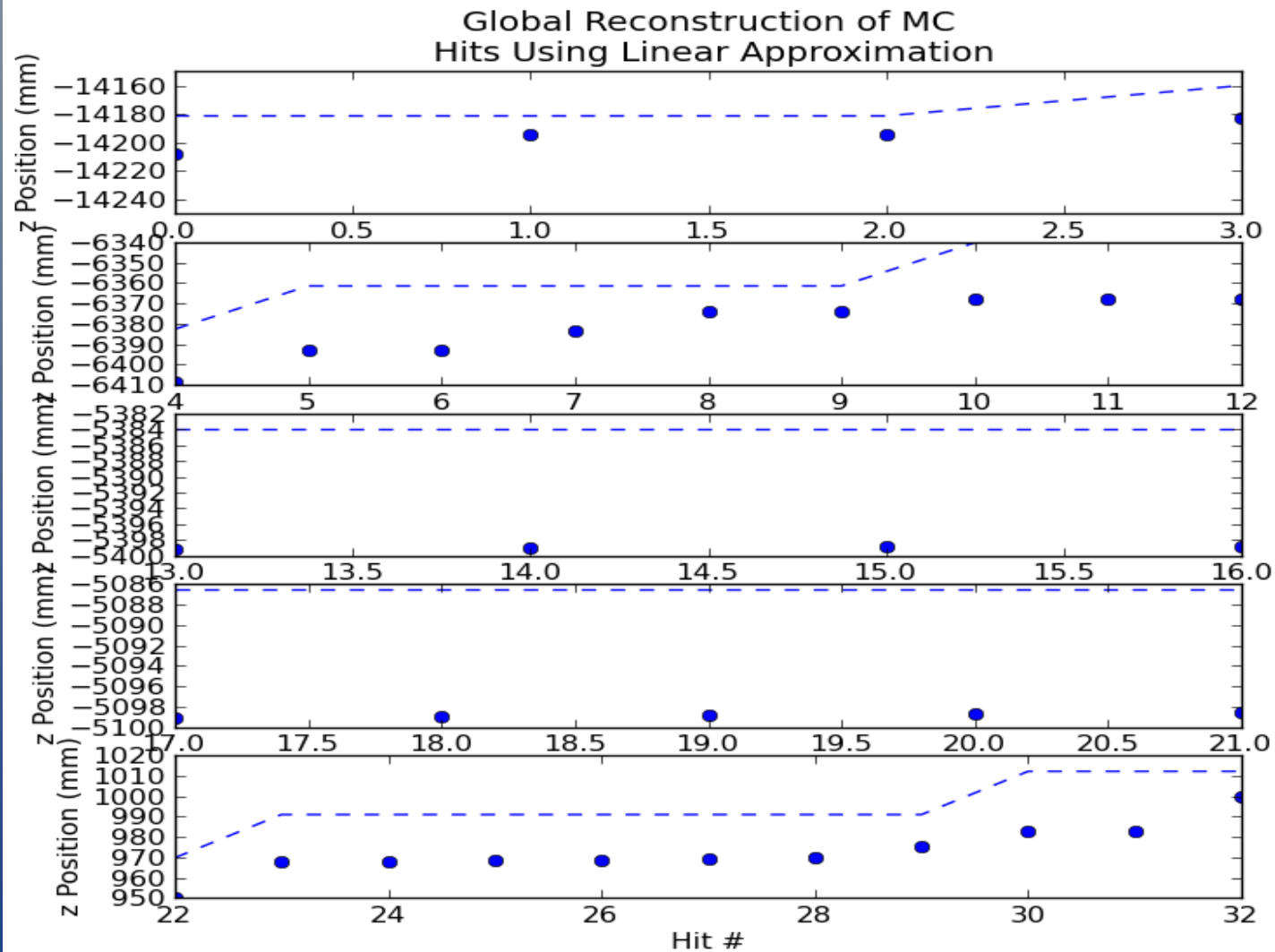
X, Y, Z: Same Scale



X, Y, Z: Independent Scales



Z Broken Into Segments



What I had planned for today

- Generate multi-particle MC data
 - MC hit generation problems
 - Generated just TOF hits
- Smear multi-particle MC data
 - Can't figure out how to generate MC and reconstruction virtual hits in the same process
- Load and reconstruct multi-particle MC data
- Plots of MC truth, smear, reconstructed, and residuals

Next Steps

- Need to get more help with SciFi hit generation
- Finish linear approximation “proof of concept”
- Incorporate tracker group's Kalman Filter into global reconstruction framework

Supplementary Slides

(post presentation results)

The code was upgraded to handle multi-particle reconstruction. What follows are residual plots for t , E , x , P_x , y , P_y , z , P_z

