



FIAS Frankfurt Institute
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HGS-HIRe for FAIR
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Status on FTS CA Tracking

I.Kisel, M.Pugach, M.Zyzak

FIAS, Frankfurt am Main
GSI, Darmstadt

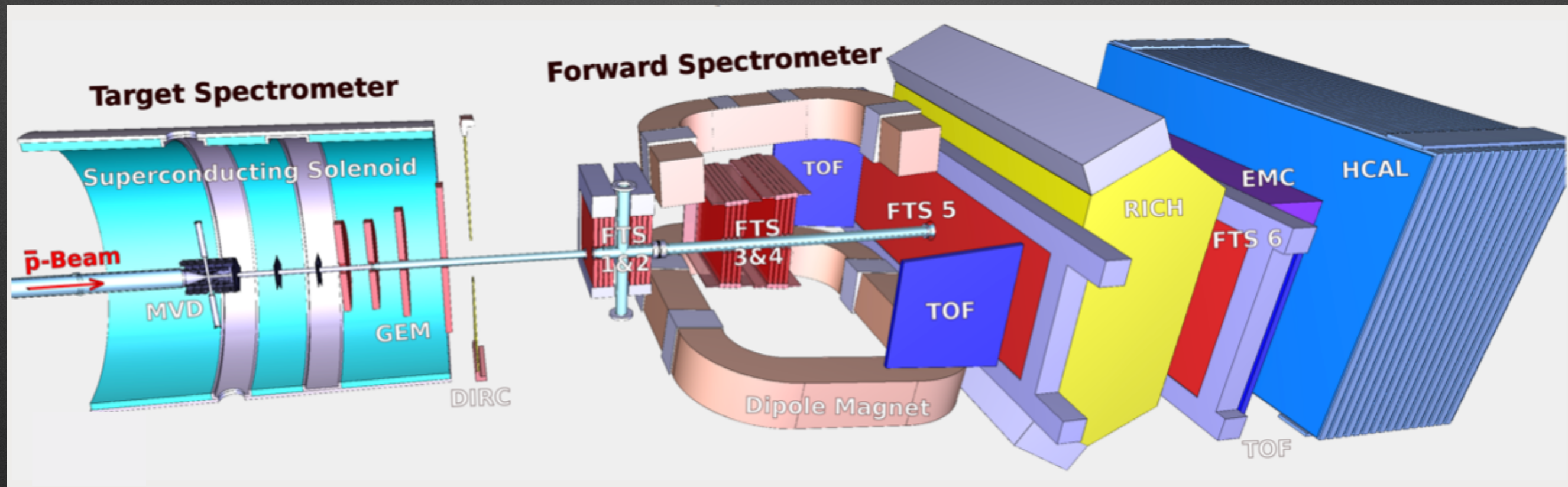
PANDA Collaboration Meeting
Darmstadt, 6 December 2016

Outline

- Introduction
- Cellular Automaton Tracking
- Standalone FTS track finder >>> PandaRoot
- Summary

Introduction

- Tracking in the forward tracking spectrometer (FTS) is considered in this presentation.
- FTS structure similar to STT.
- Tracking has to be similar to Fwd MVD.



Cellular Automaton Tracking

- * Input/Initialisation

- * Tracklet construction

 - * Singlets

 - * Doublets

 - * Triplets

- * Evolution

 - Neighbour Search

 - Track Construction

- * Performance evaluation

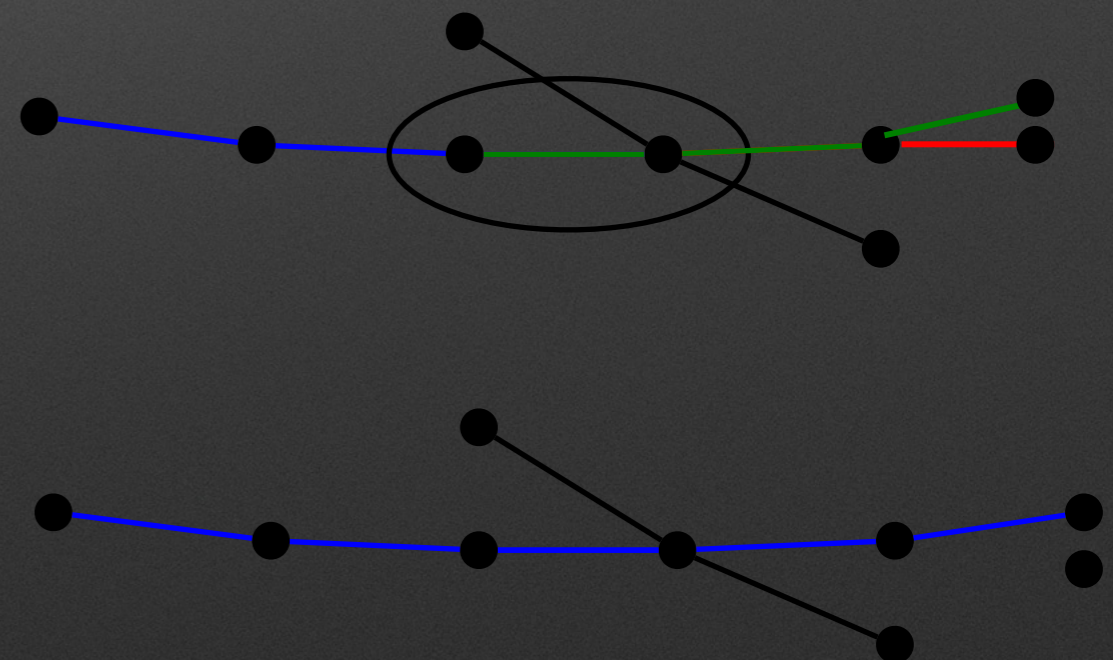
- * Estimation of Track Parameters

 - * Initial Approximation

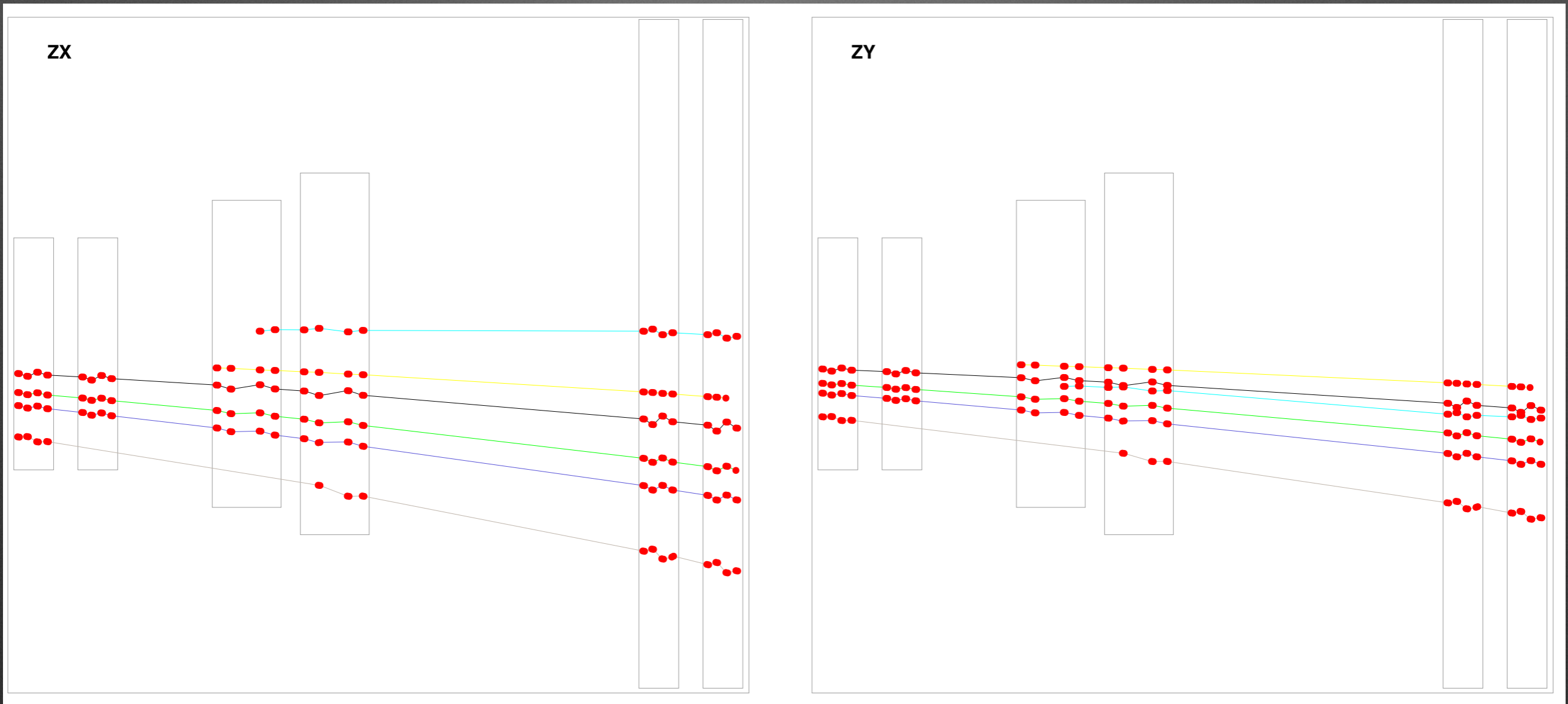
 - * Kalman Filter

 - * Extrapolation (Runge-Kutta 4th order method)

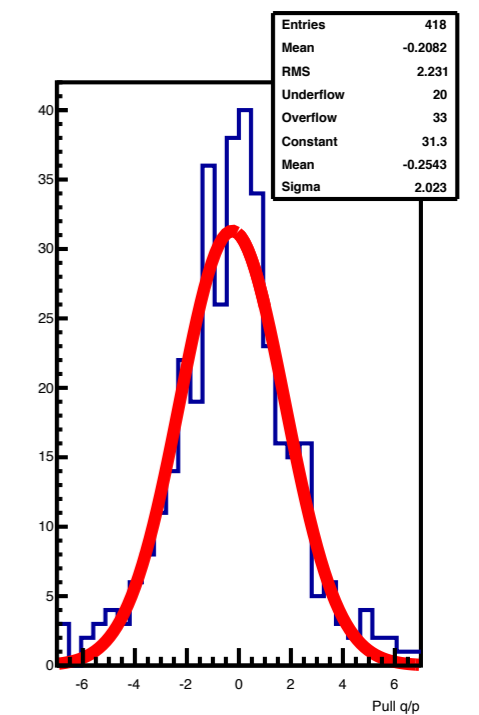
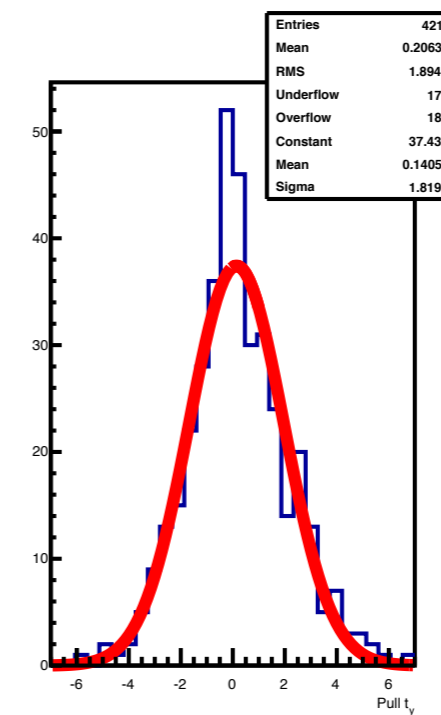
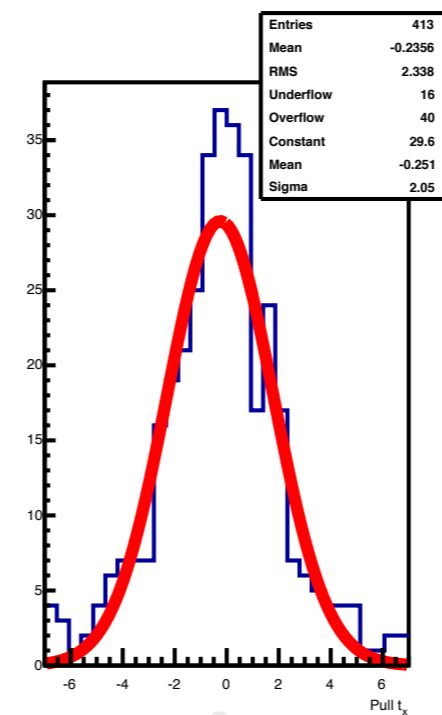
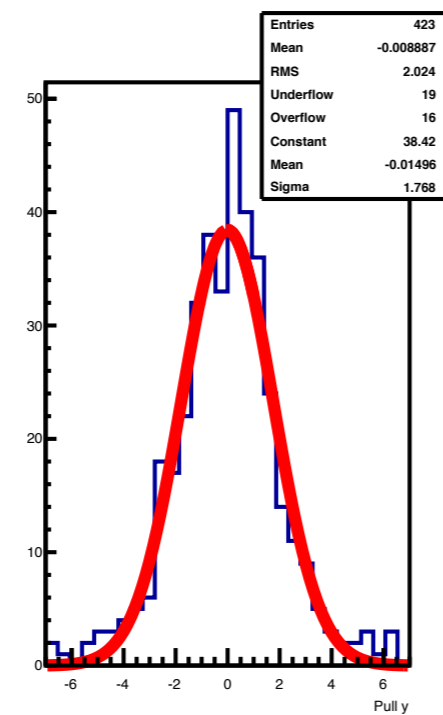
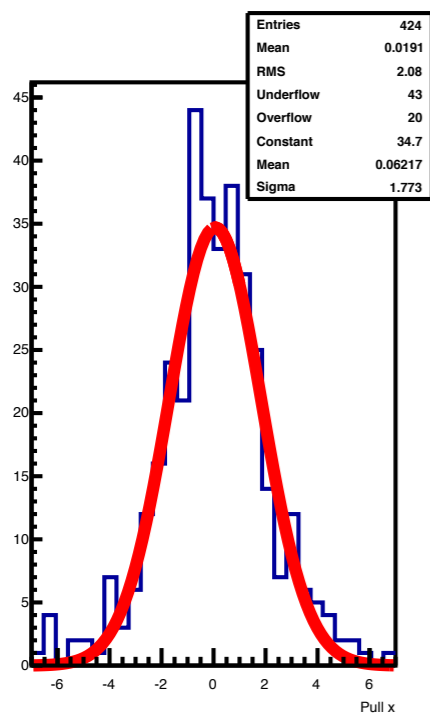
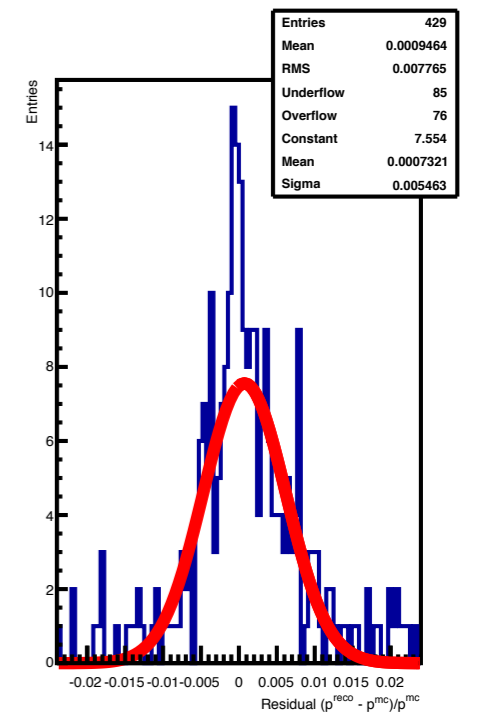
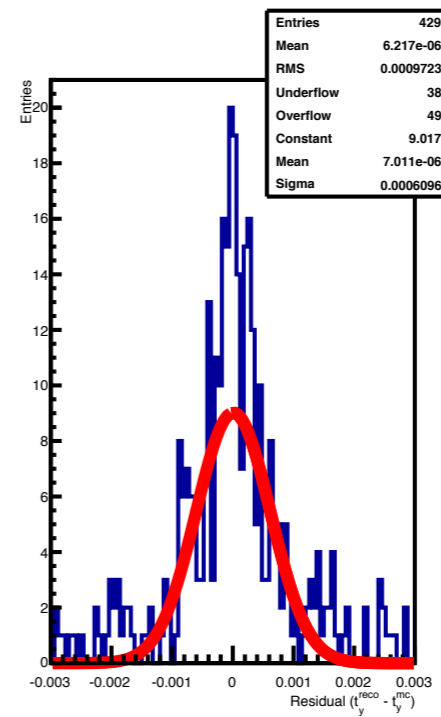
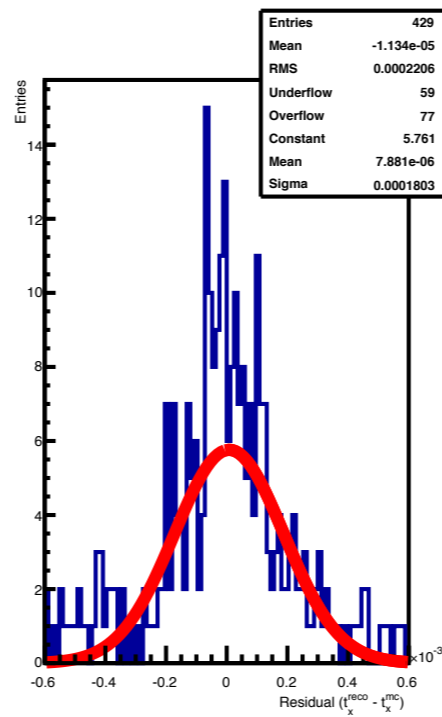
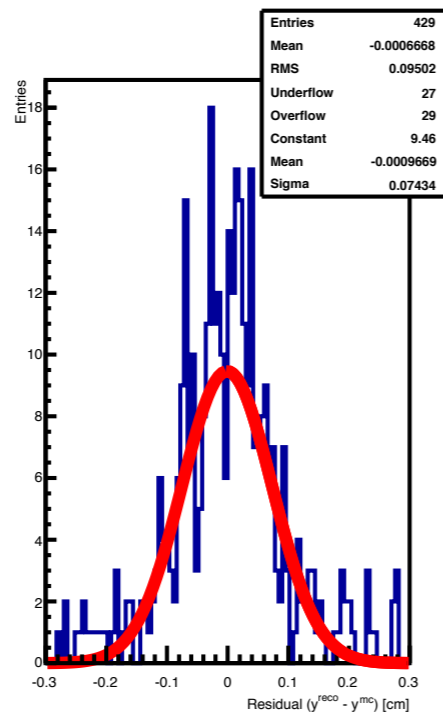
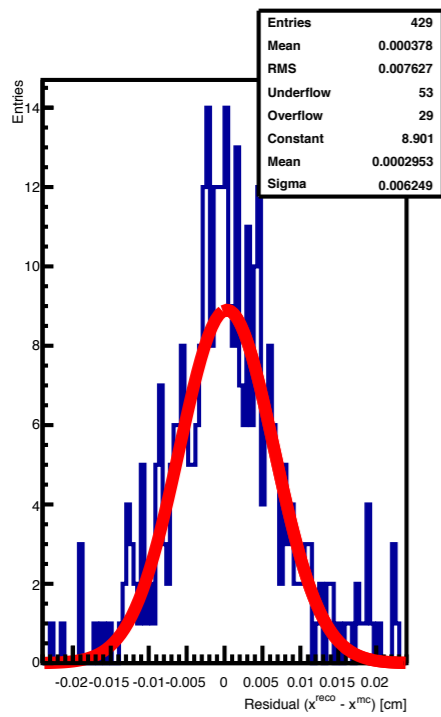
 - * Update (using measurement information)



Event Display for Standalone

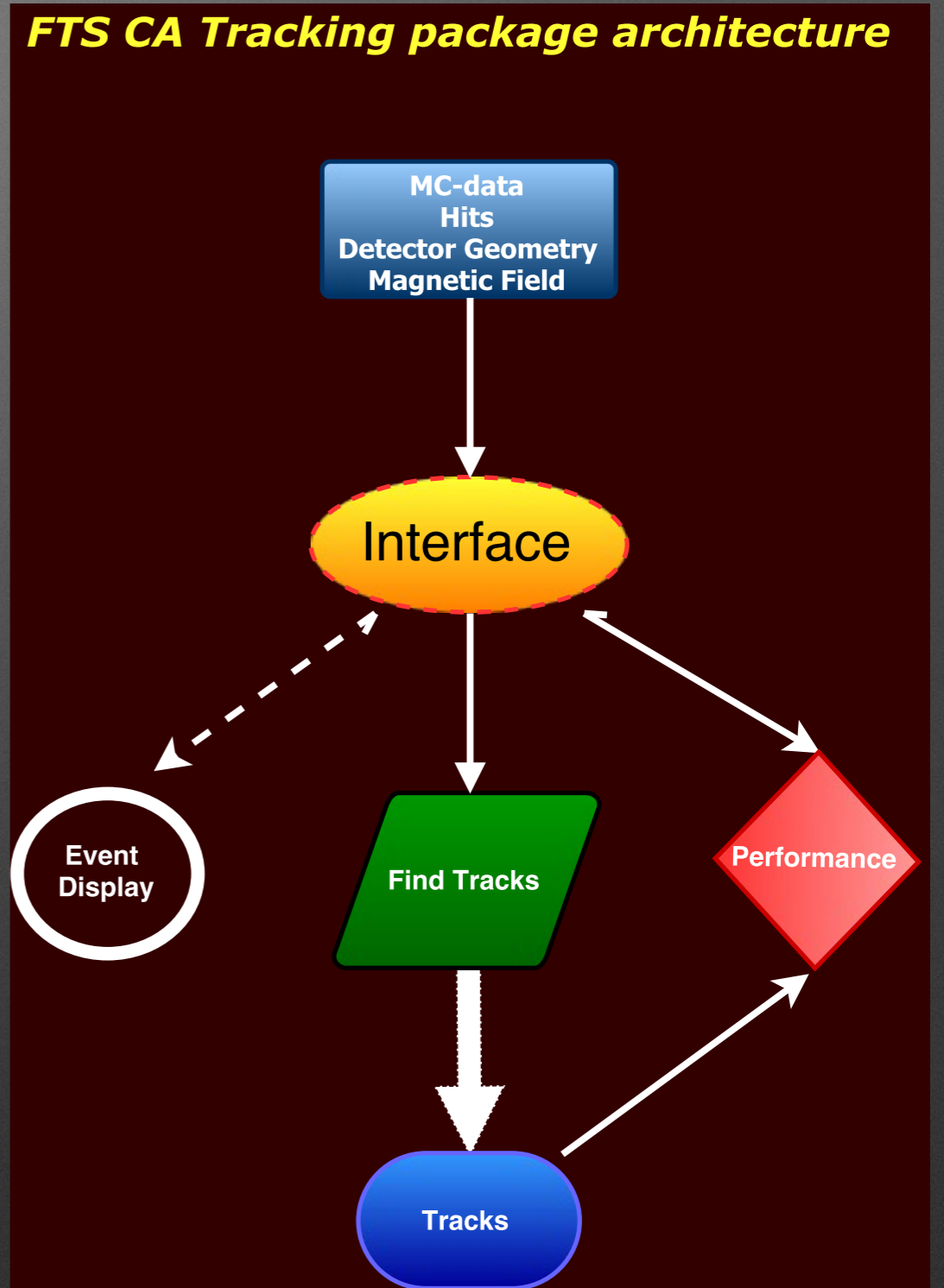


Residuals & Pulls for Standalone



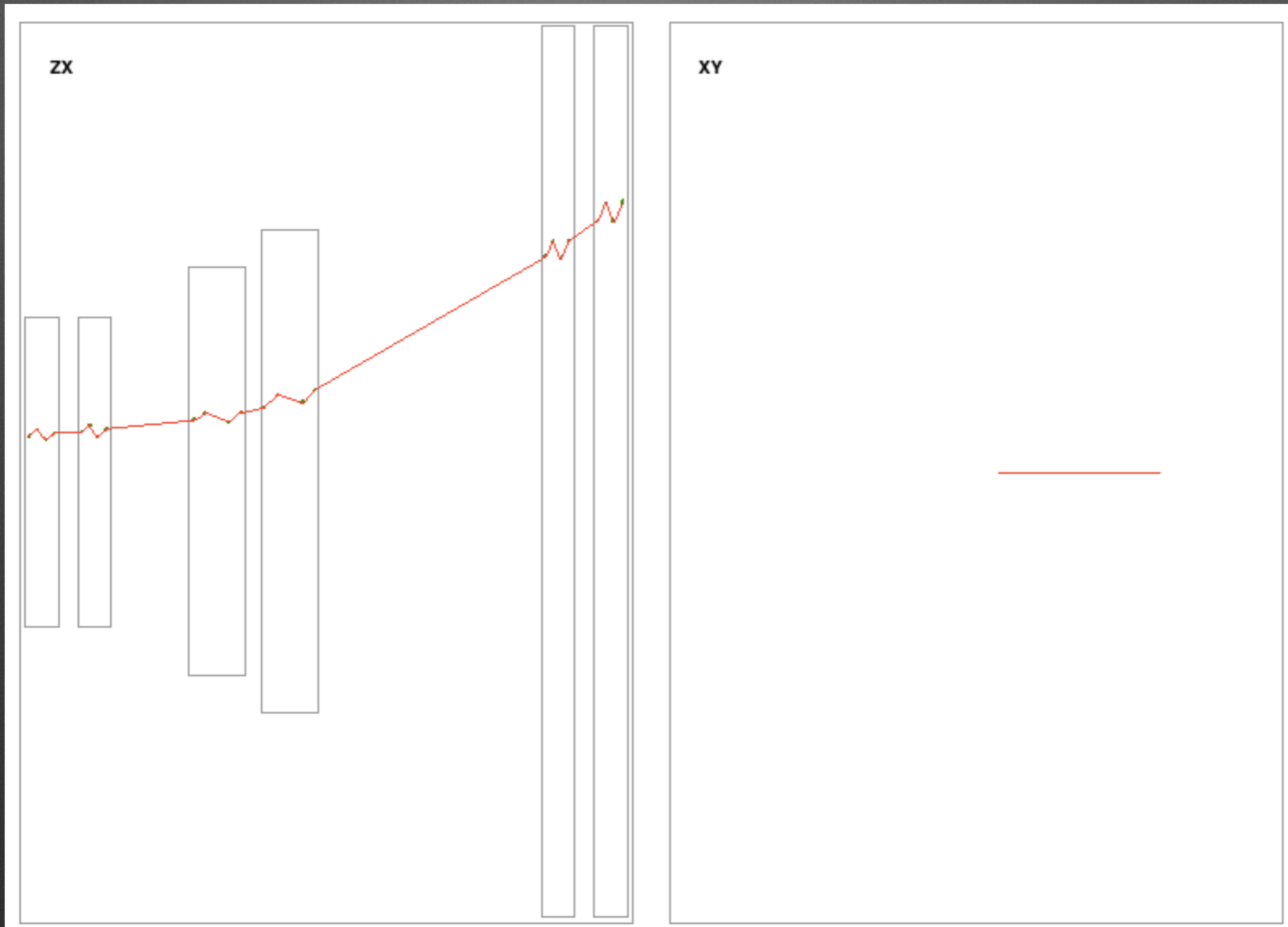
Standalone >>> PandaRoot

- Milestones of FTS Standalone package integration into PandaRoot:
 - Interfaces to run the CA track finder + QA inside the PandaRoot-framework.
 - Adaptation to Vc-library in PandaRoot (data types correspondences, reduction/replacement of internal functions, etc.)



Event Display for PandaRoot

(BoxGenerator, 1 simulated muon)



Current Status

| Functionality | Standalone | PandaRoot |
|---------------------------|------------|-----------|
| Interface | + | + |
| Event display | + | + |
| Reconstructed tracks | + | + |
| Performance analysis | + | |
| Fit (inhomogeneous field) | + | |

Summary

- The FTS standalone track finder was adapted to the PandaRoot framework.
- Interfaces to run the integrated into PandaRoot CA package + QA are developed.
- Work on the track fitting in inhomogeneous magnetic field is in progress.