

CA Tracking in the FTS

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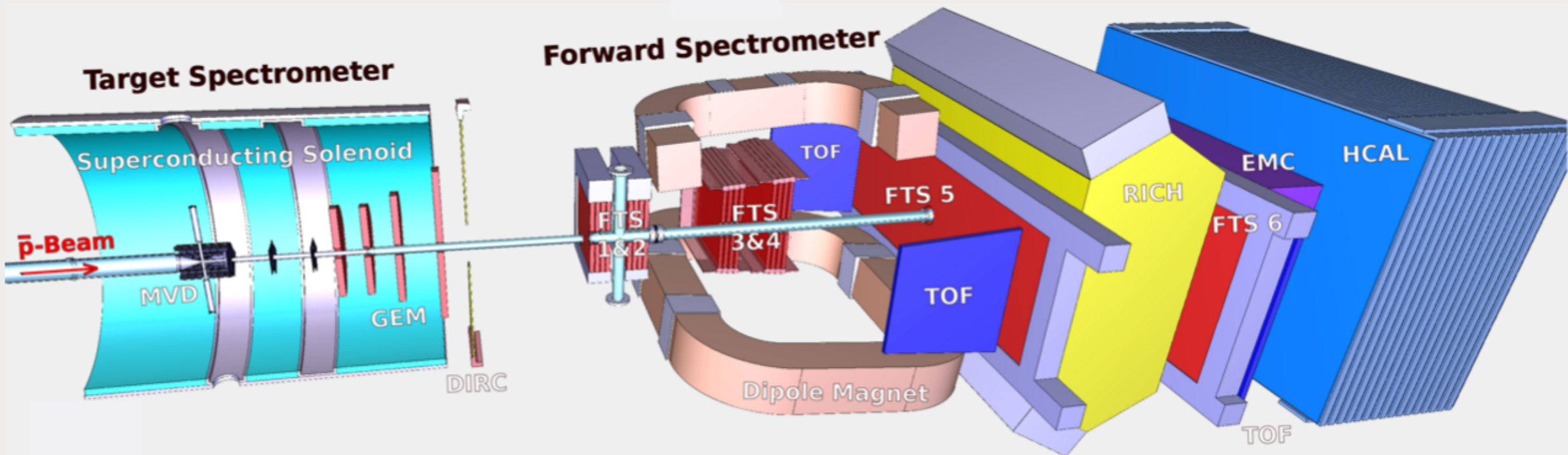
PANDA Collaboration Meeting
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Outline

- Introduction
- Cellular Automaton Tracking
- Current Status & Activity
- Summary

Introduction

- Tracking in the forward tracking spectrometer (FTS) is considered in this presentation.
- Features, results and perspectives of the CA approach are discussed.



Cellular Automaton Tracking

- * **Input/Initialisation**

- * **Tracklet construction**

 - * **Singlets**

 - * **Doublets**

 - * **Triplets**

- * **Evolution**

 - **Neighbour Search**

 - **Track Construction**

- * **Performance evaluation**

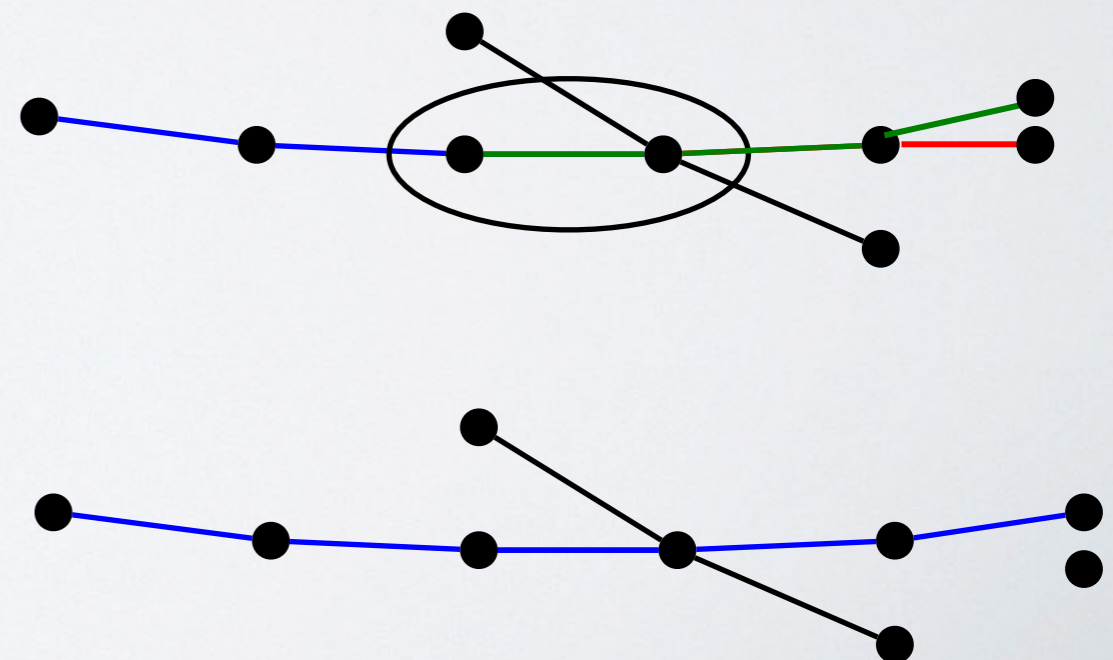
- * **Parameters**

 - * **Initial Approximation**

 - * **Kalman Filter**

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

 - **Update (using measurement information)**



Tracking specifics for FTS

Track model



$z, \{x, y, t_x, t_y, q/p\}$

Magnetic Field



Dipole magnet

Energy losses



Only in stations material

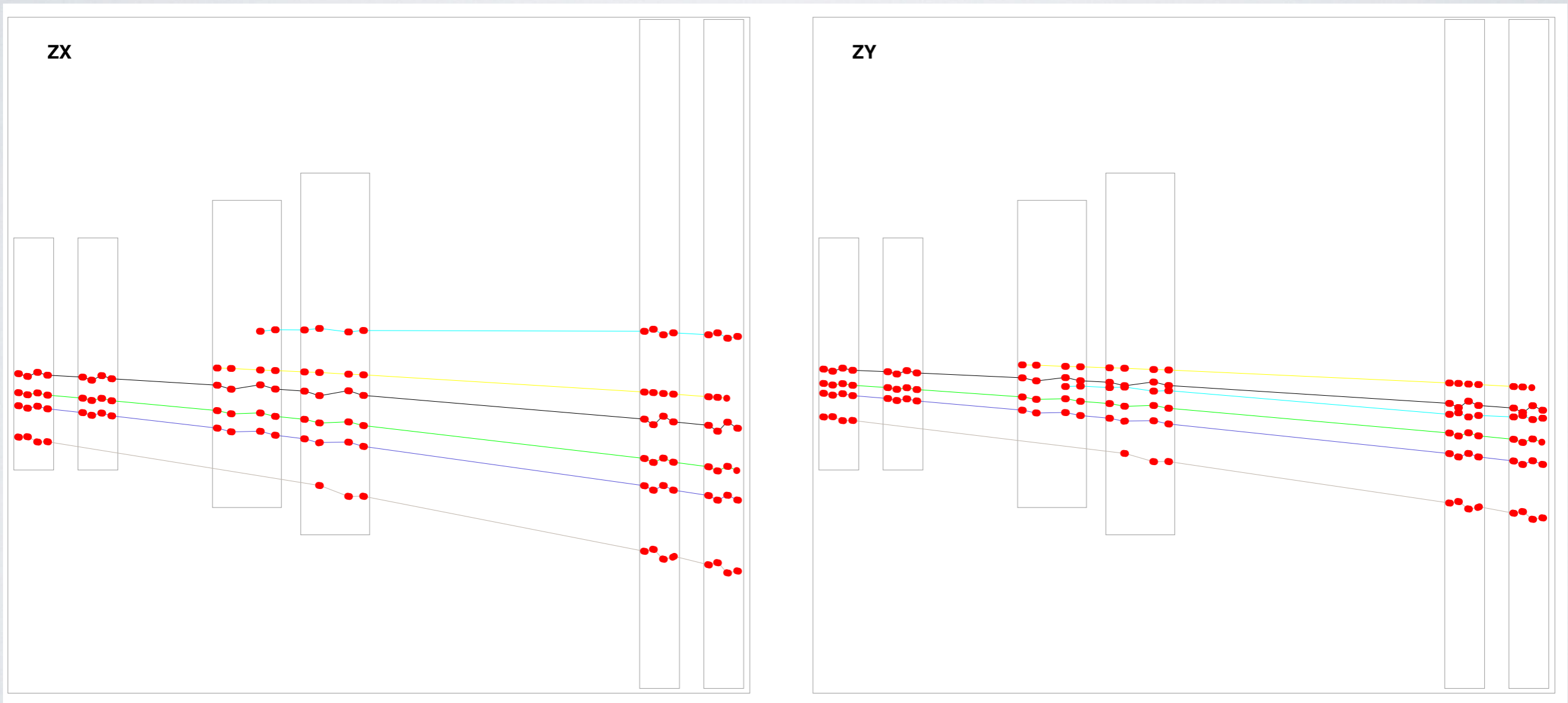
Track multiplicity



max. 10 tracks/event

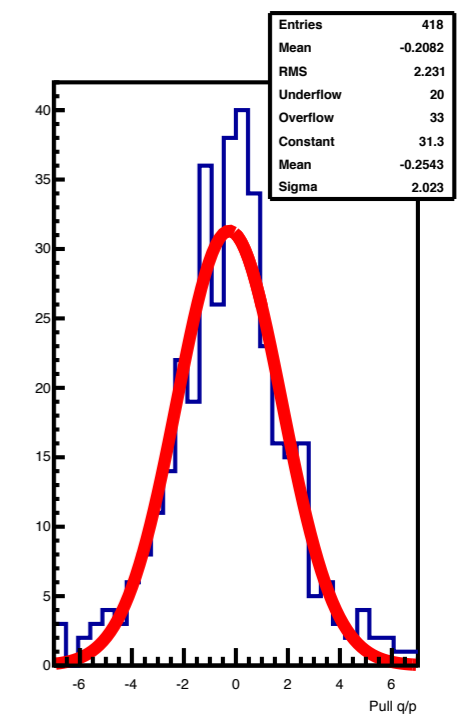
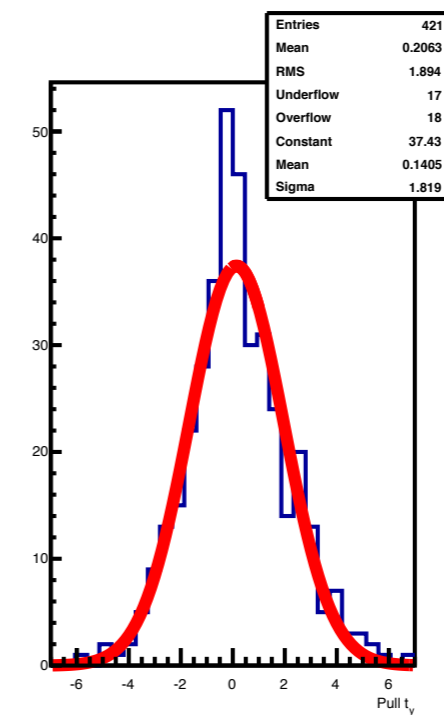
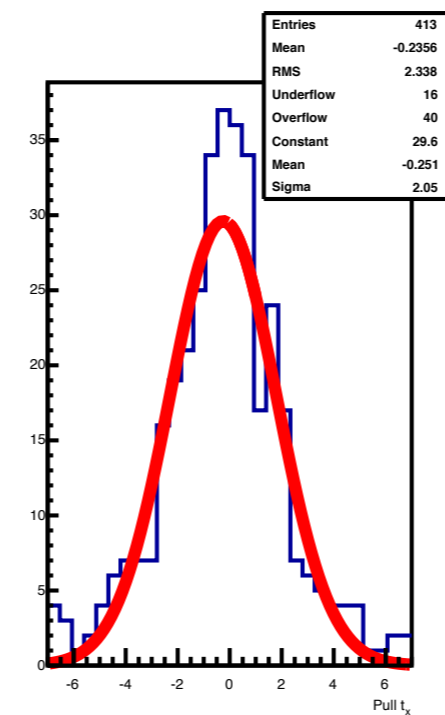
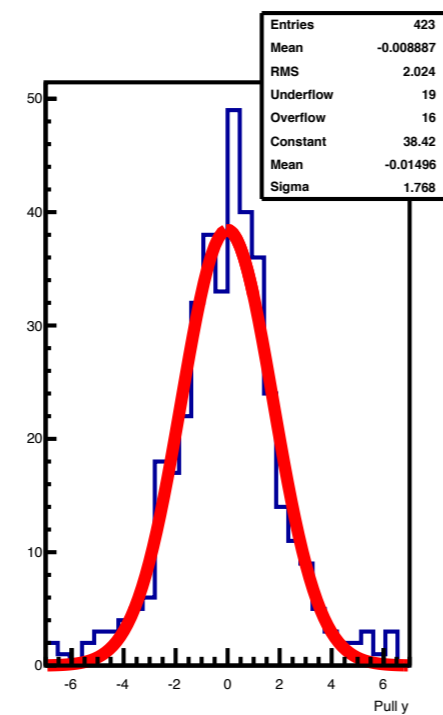
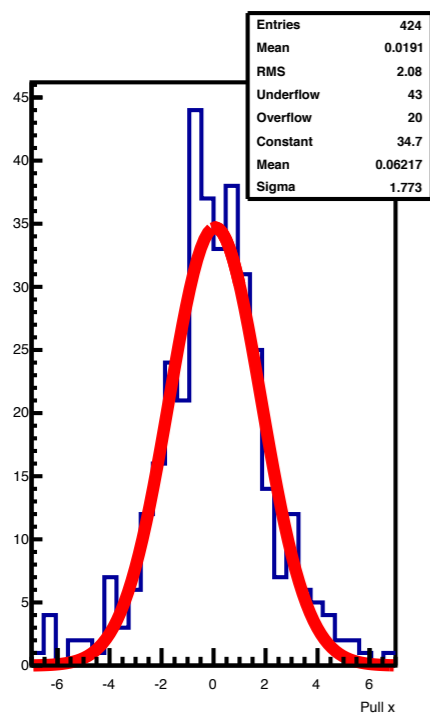
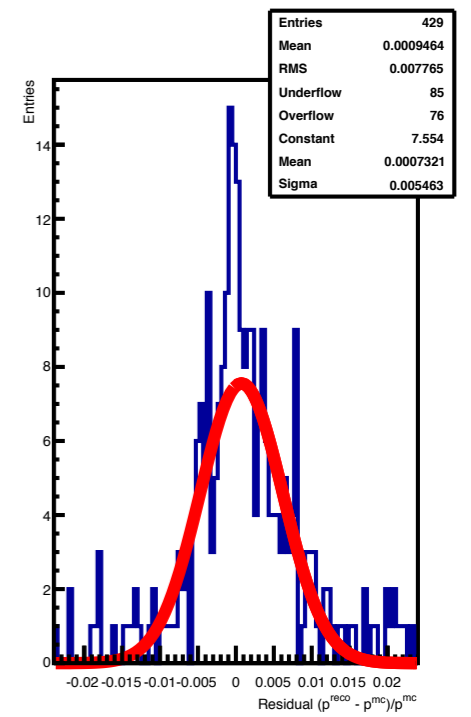
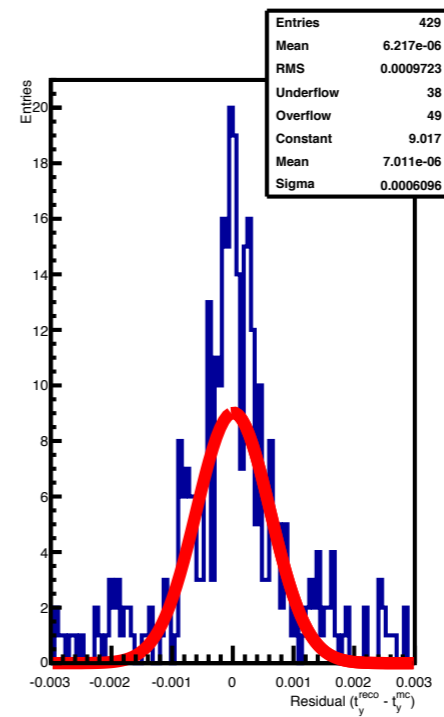
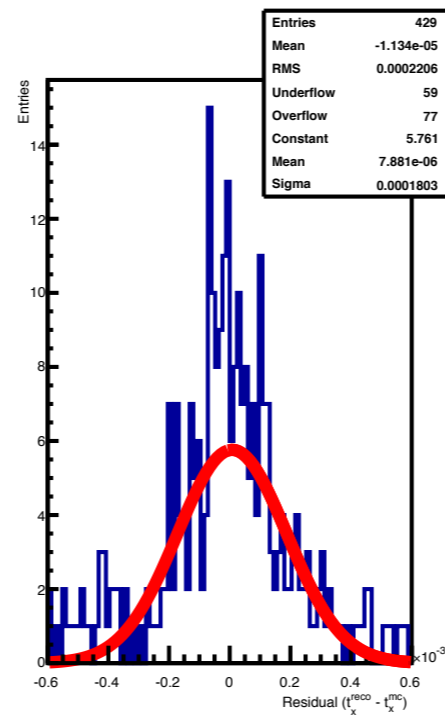
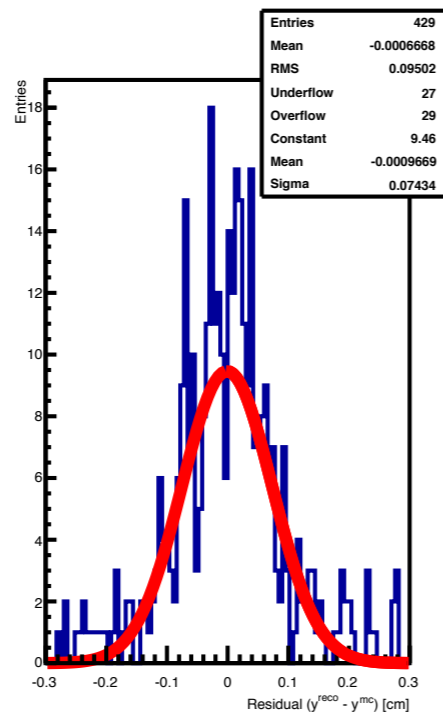
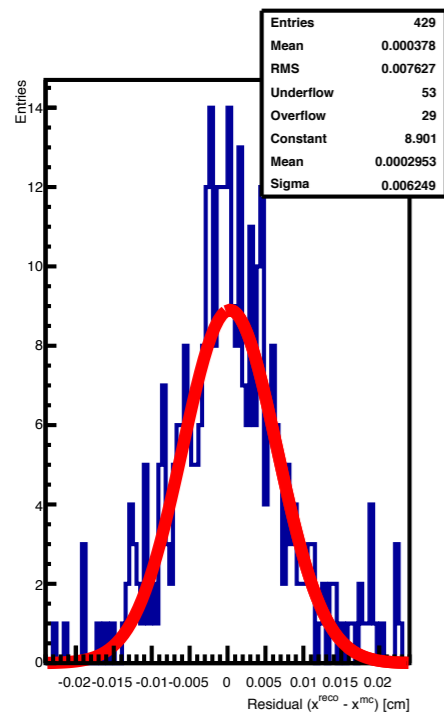
Current Status & Activity

Event Display



Current Status & Activity

Residuals and Pulls



Current Status & Activity

Efficiency

100 box generator events
purity=100%

Reconstructable track:
>= 3 consecutive MC points

	<i>Efficiency,%</i>	<i>Ghost,%</i>	<i>Clone,%</i>	<i>Tracks/ev</i>
<i>tracks</i>	<i>96.7</i>	<i>4.1</i>	<i>25.8</i>	<i>4</i>

Summary

- Standalone version implemented and debugged.
 - Efficiency ~96.7%
 - Event Display shows that the algorithm is working properly.
- Final stages of the package adaptation for *pandaroot*.
 - ✓ Vc-library versions compatibility achieved.
 - ✓ pandaroot data structures bindings done.
 - ✓ interface implemented.
 - ✓ debugging in progress.