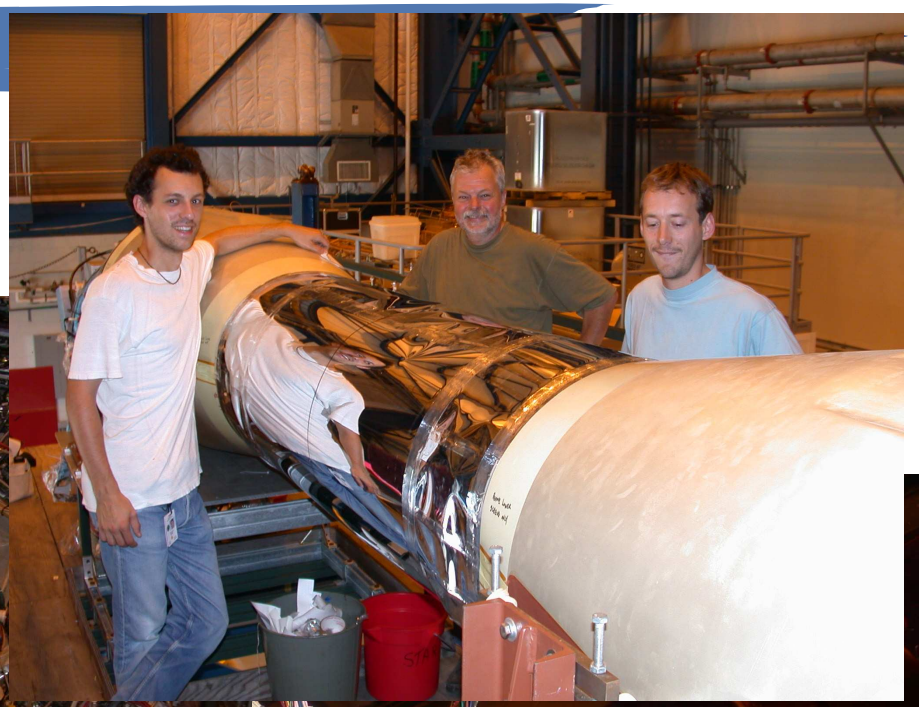
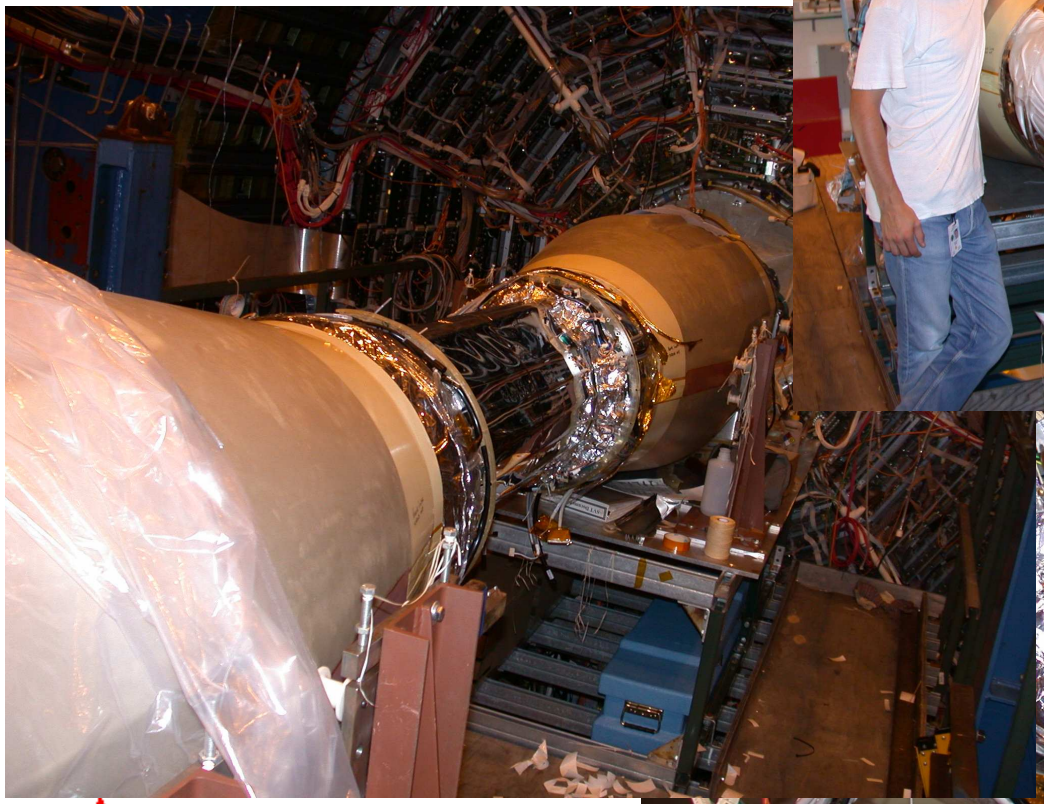
SVT SOFTWARE STATUS AND PLANS

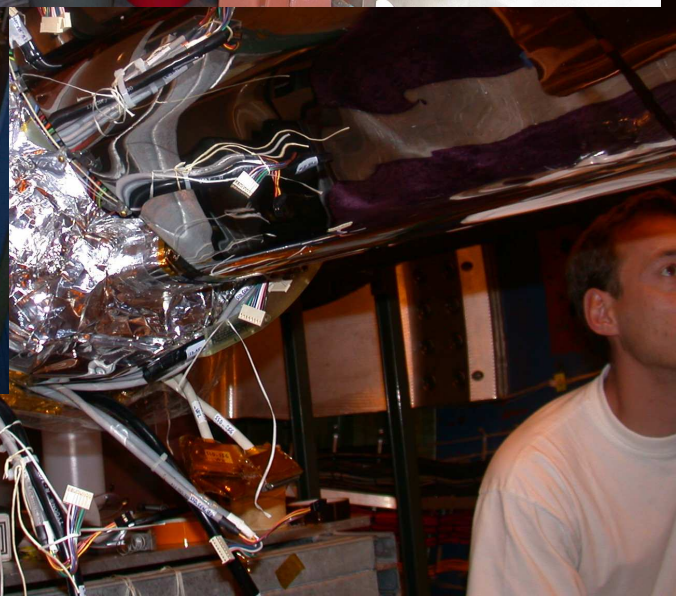
Planning – Much work remains to be done before we can announce our total failure to make any progress.

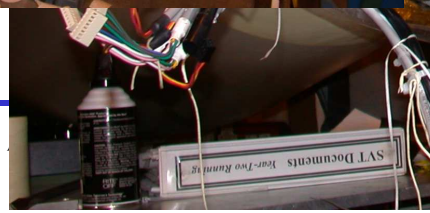
-despair.com

SVT Installation





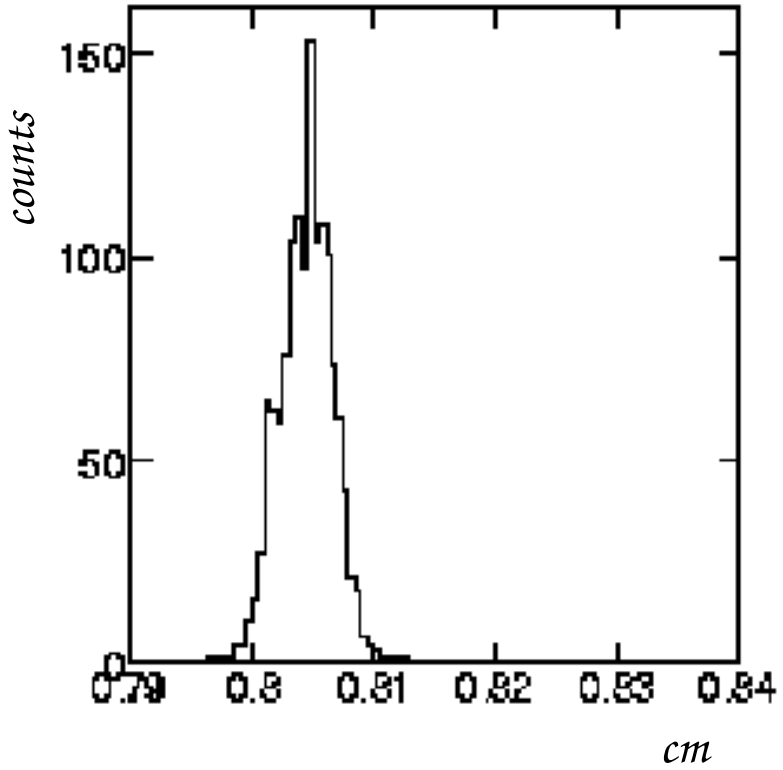




Hardware Improvements

- *SVT partially disassembled and water fittings (4 per ladder) replaced on entire SVT*
- *Upgraded vacuum-pressure water system monitoring and controls*
- *Replaced some analog driver boards (Transition boards).*
- *2 outer ladders removed and had some wire bonds repaired (only possible to access outer layer without full SVT disassembly).*
- *All 24 RDOs were removed for a number of repairs/improvements*
  - *-Replace with new circuit old thermal cutoff switches that failed in magnetic field*
  - *-Replace failed ADCs*
  - *-Fix monitoring failures on HDLC link*
  - *-Fix shifting of pedestals during calibration injection.*
  - *-Reprogram for Level-2 accept/aborts.*
- *Re-designed shielding to accommodate future SSD as well as prototype SSD ladder for this year.*
- *Re-packaged cabling to accommodate future SSD*

SVT Performance



91.2% of 103,680 channels operational

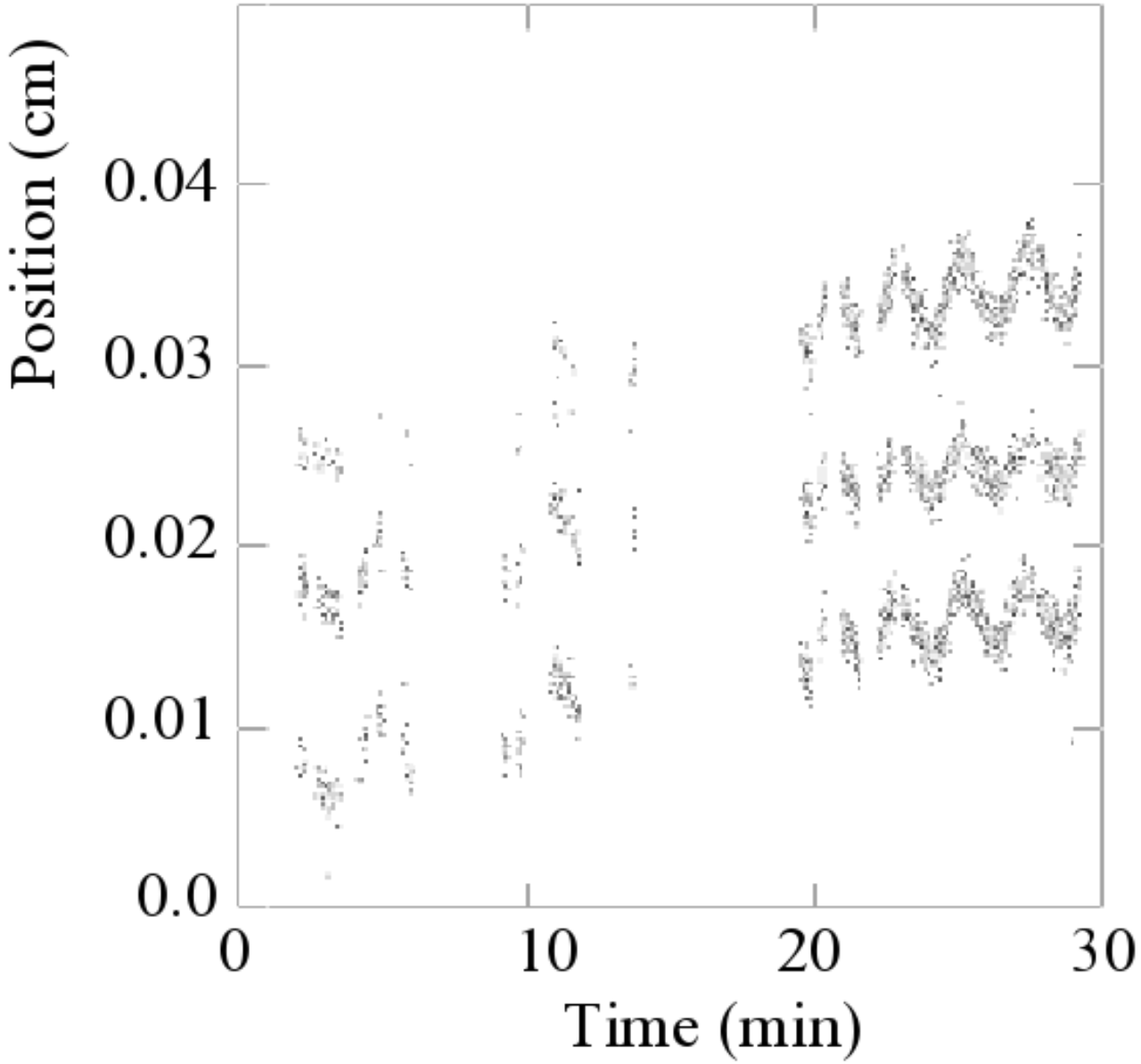
Noise

12 mV for Au+Au

7 mV for pp

~30 μm resolution reproducibility

SVT Heat Up



Au-Au

Charge vs Drift

Some evidence of "charge loss" ~20%

Probably trouble in cl analysis.
We "correct" for this currently by scaling to make flat.
On ladder by ladder ba Should really do this ladder by ladder – Ev better fix software

Center of wafer

cm

Anode by Anode calibration

Better dE/dx and better position resolution

Can see edges of PASA (not sure why)

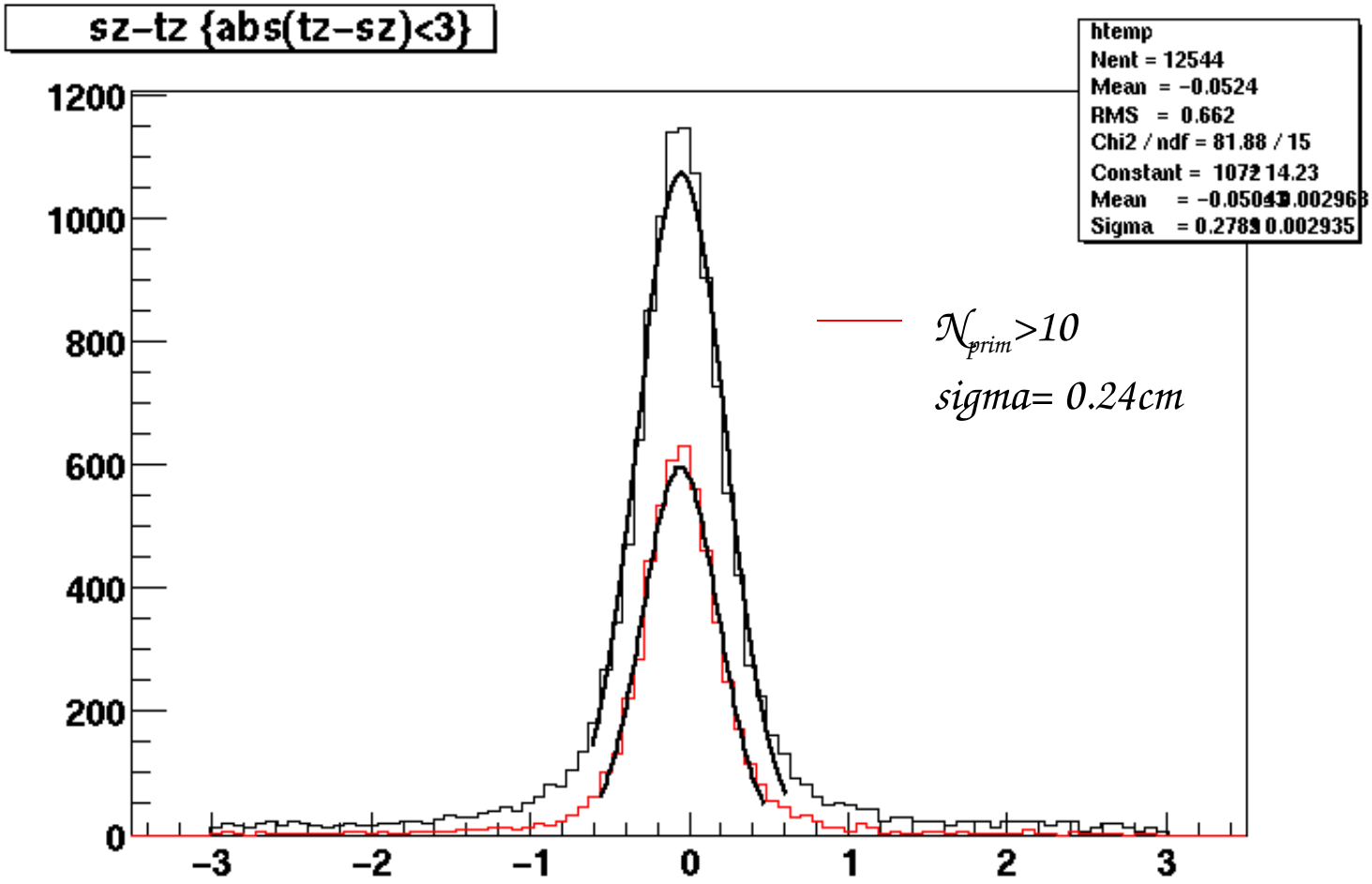
Performed by recoding mean charge on Anode

Of many events assume min-ionising and force

Each to a common mean

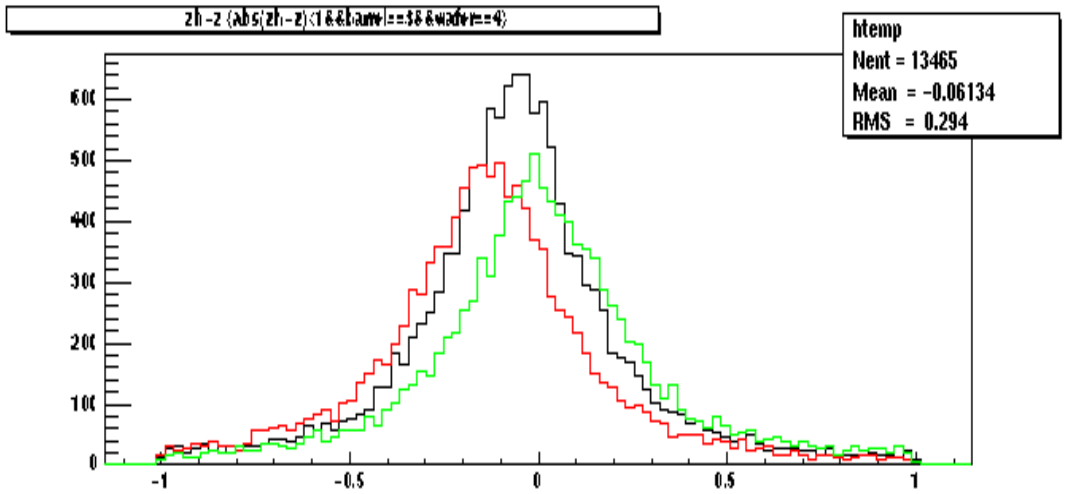
Vertex Finding - Resolution

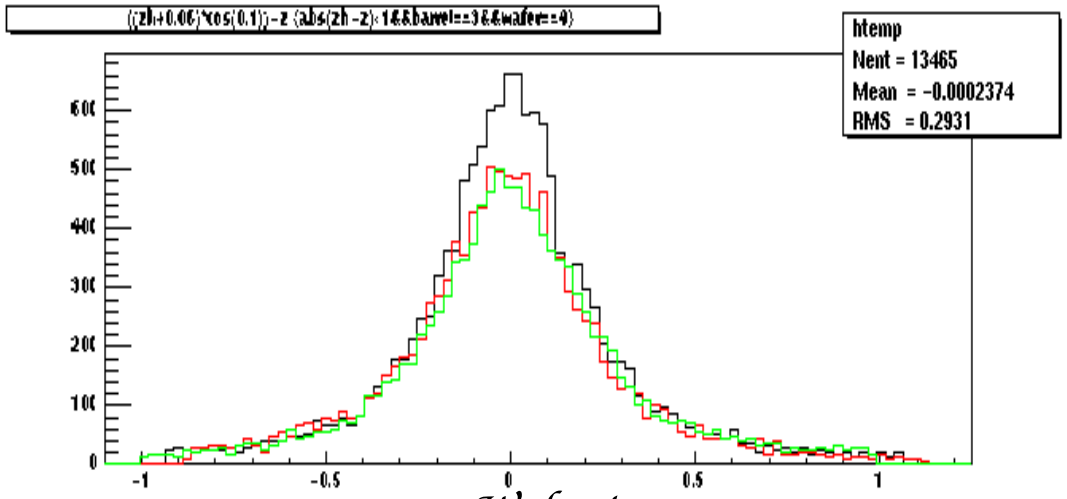
p-p



Still slight offset of 0.05cm (agrees with residuals)

Anode residuals





Wafer 4

Wafer 2

Wafer 6

BUT!!!

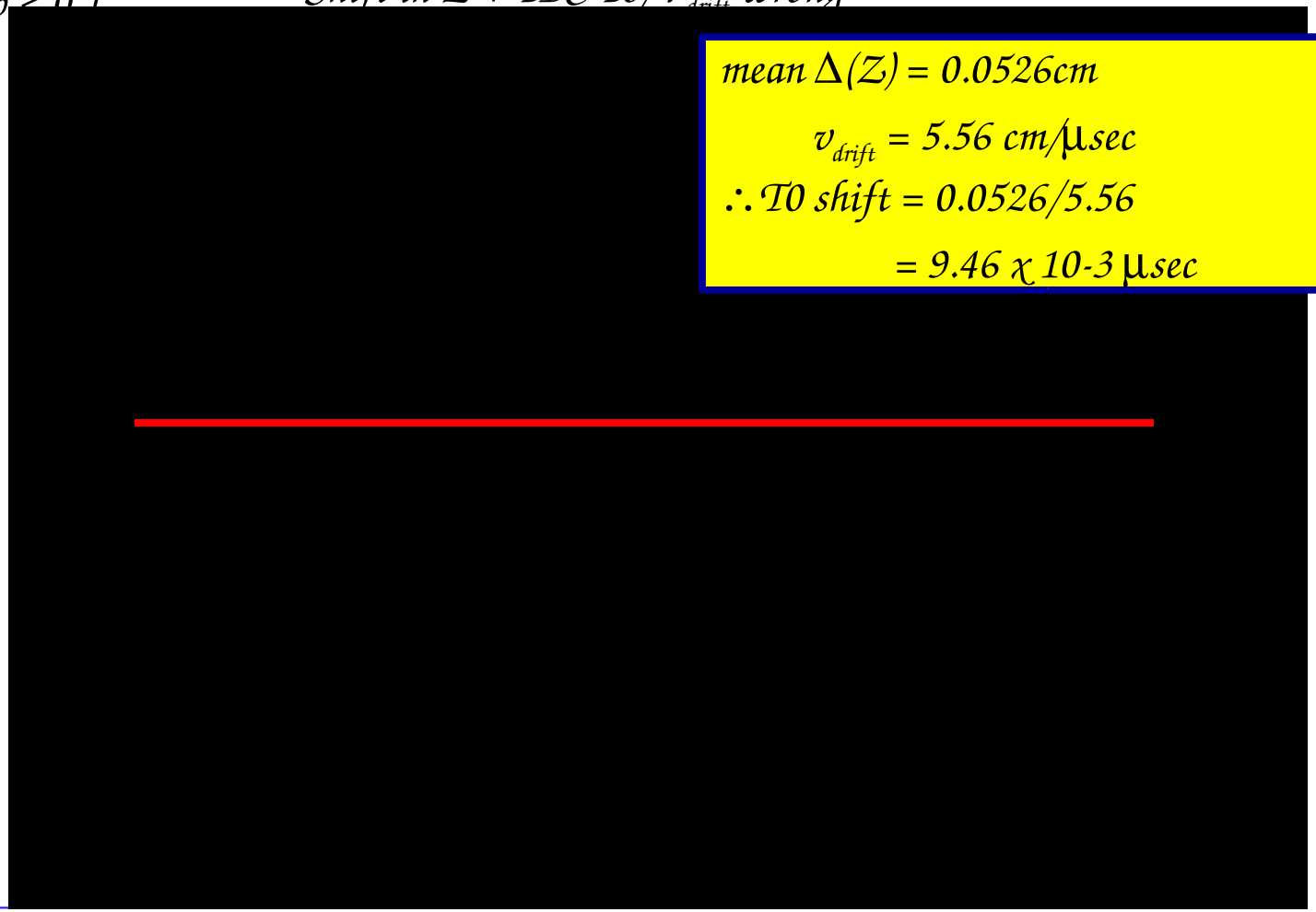
Tilt would have to be 0.1 radians!

Could be that separation of wafers is not correct but that requires a squeezing of 300 microns!!

MUST! Be TPC problem

Z RES VS DIP ANGLE

Dip < 0.1 *Shift in Z + TPC T0/V_{drift} wrong*



mean Δ(Z) = 0.0526cm

v_{drift} = 5.56 cm/μsec

∴ T0 shift = 0.0526/5.56

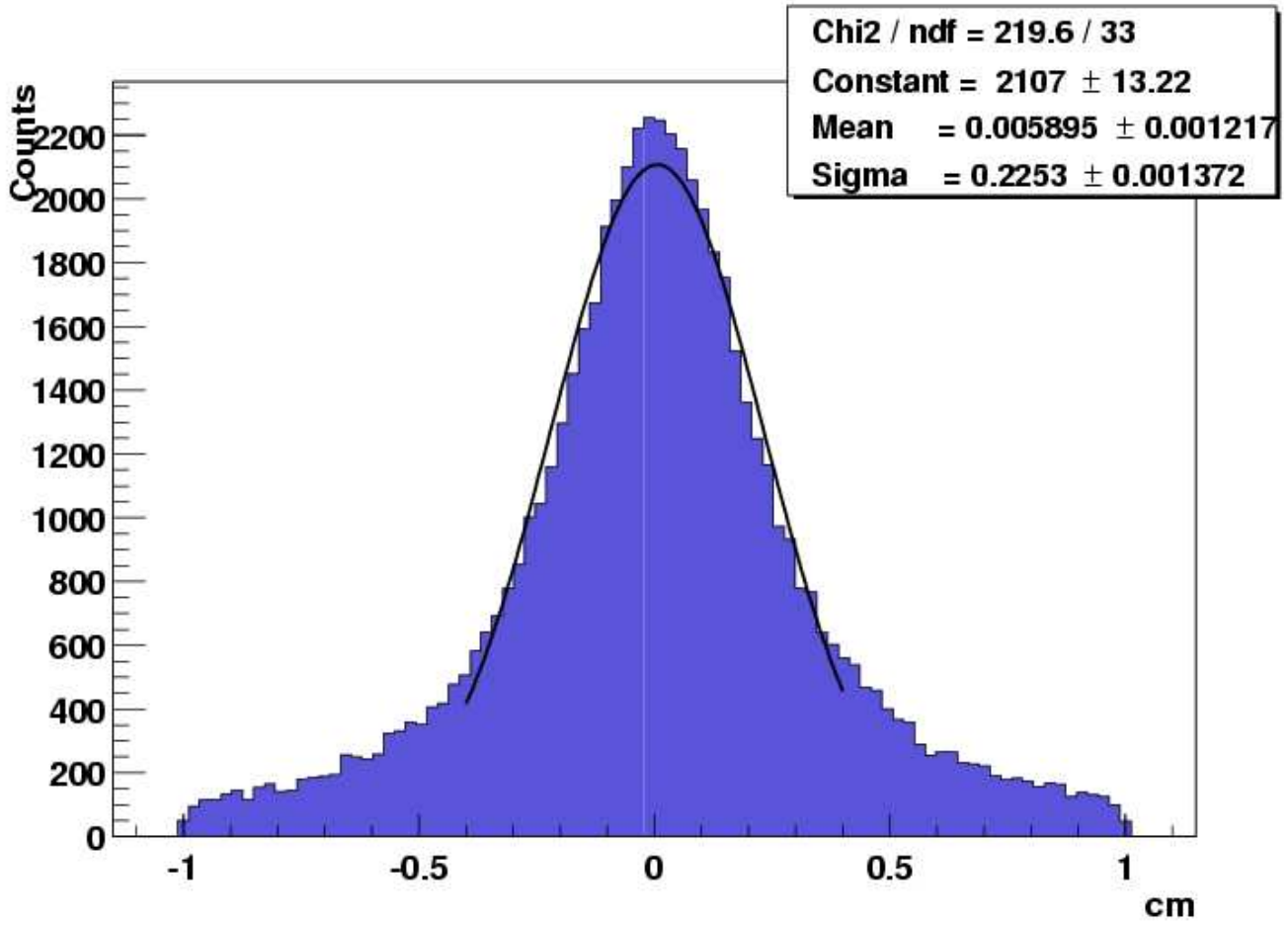
= 9.46 χ 10-3 μsec

Vertex Finding - Data

p-p

Vertex Finding - Resolution

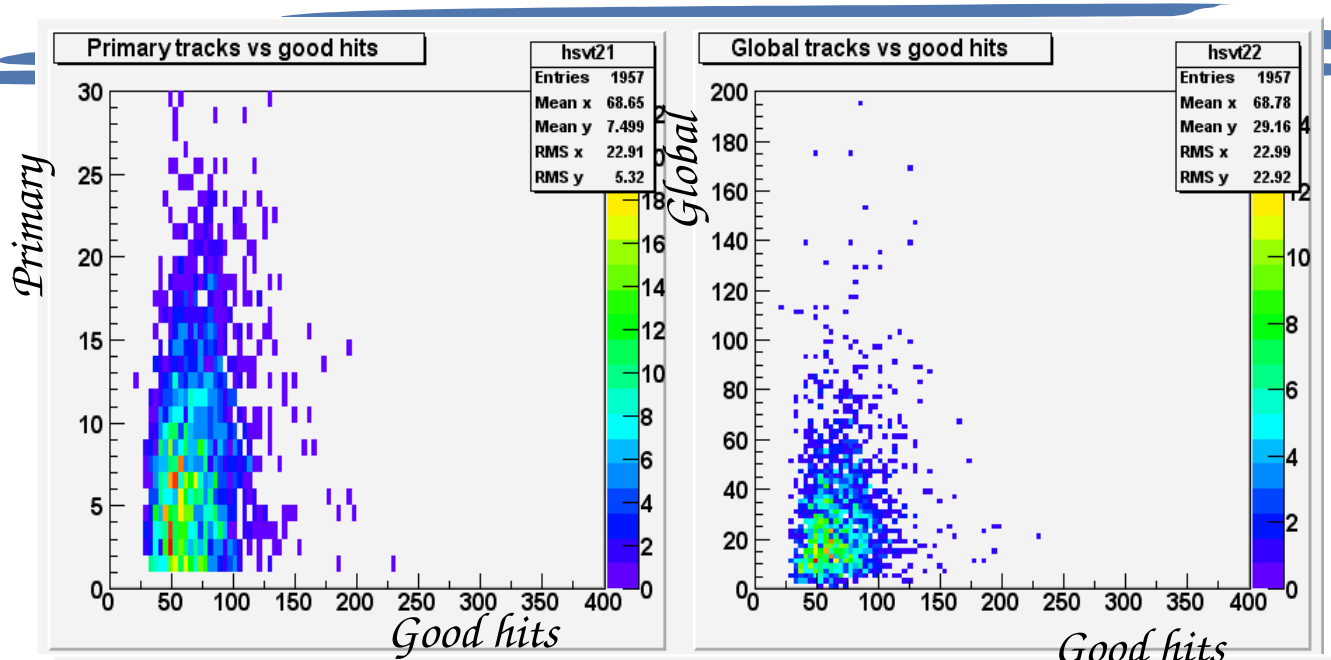
p-p



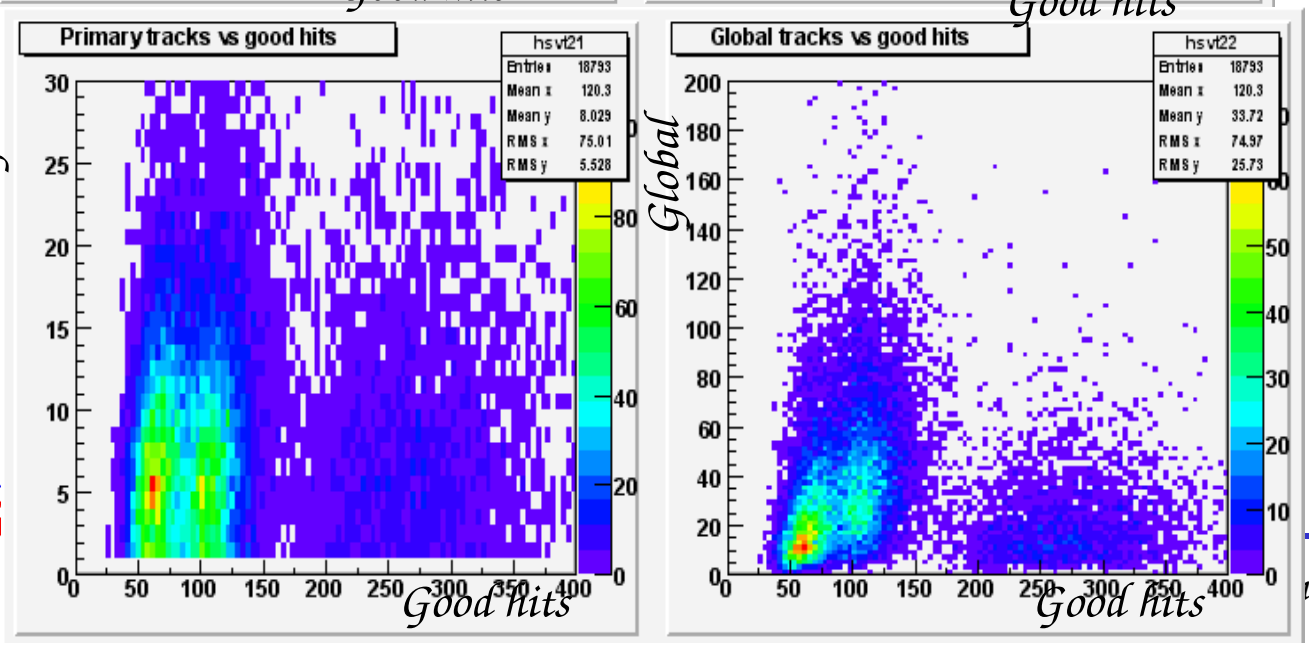
Z offset of 0.005cm – Aligned in Z

Occupancy – Pile-up

RFF



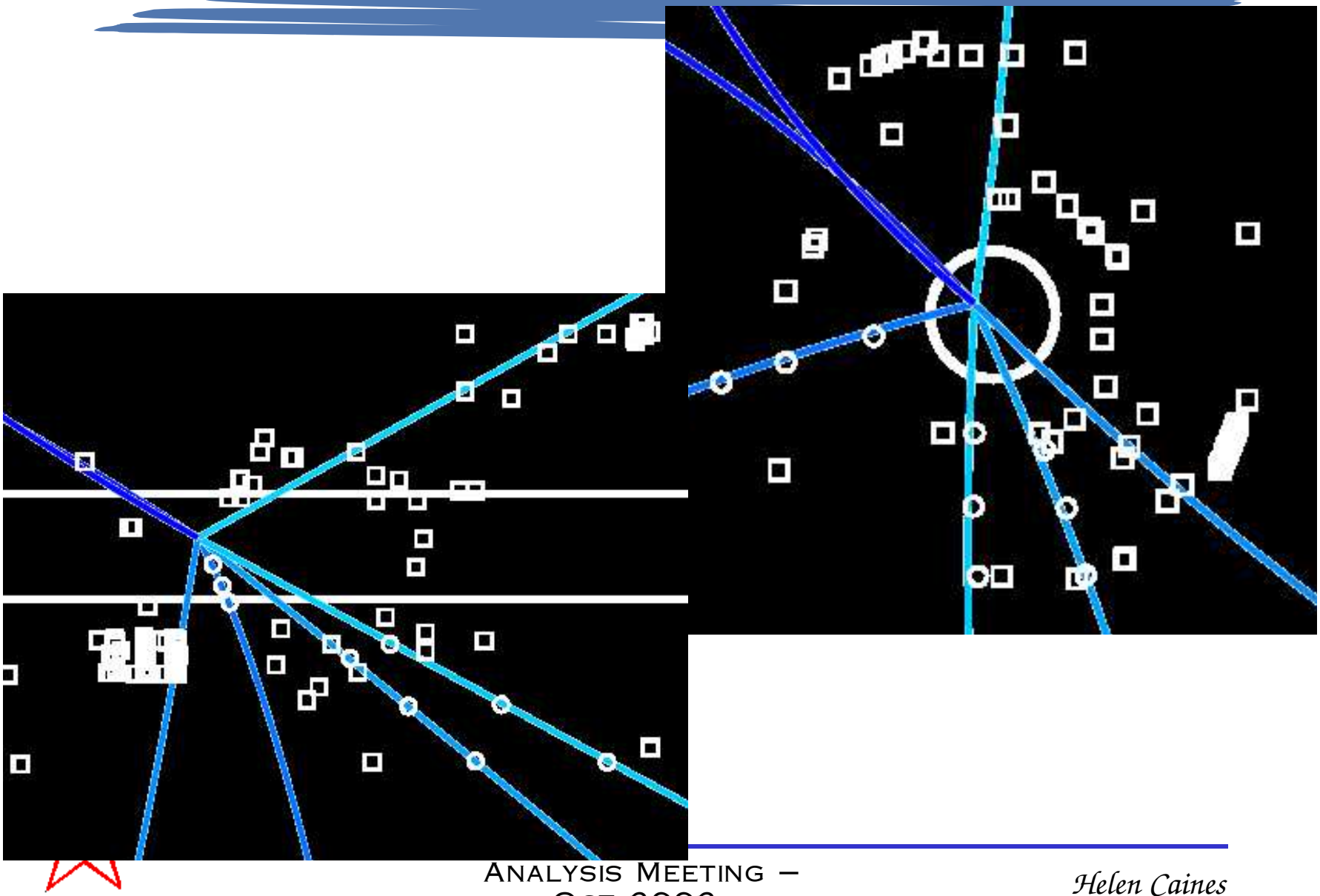
FF

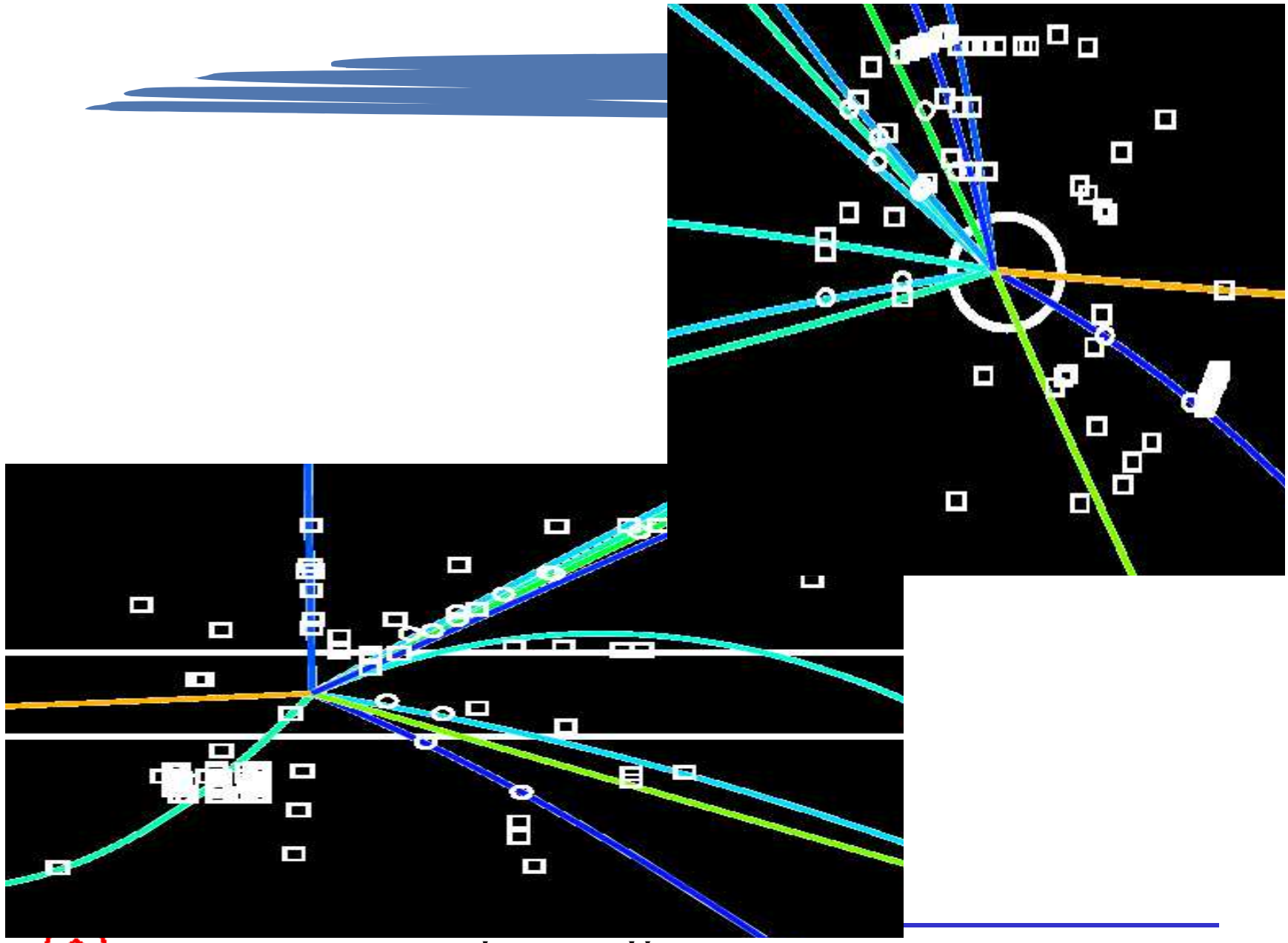


SVT STAR

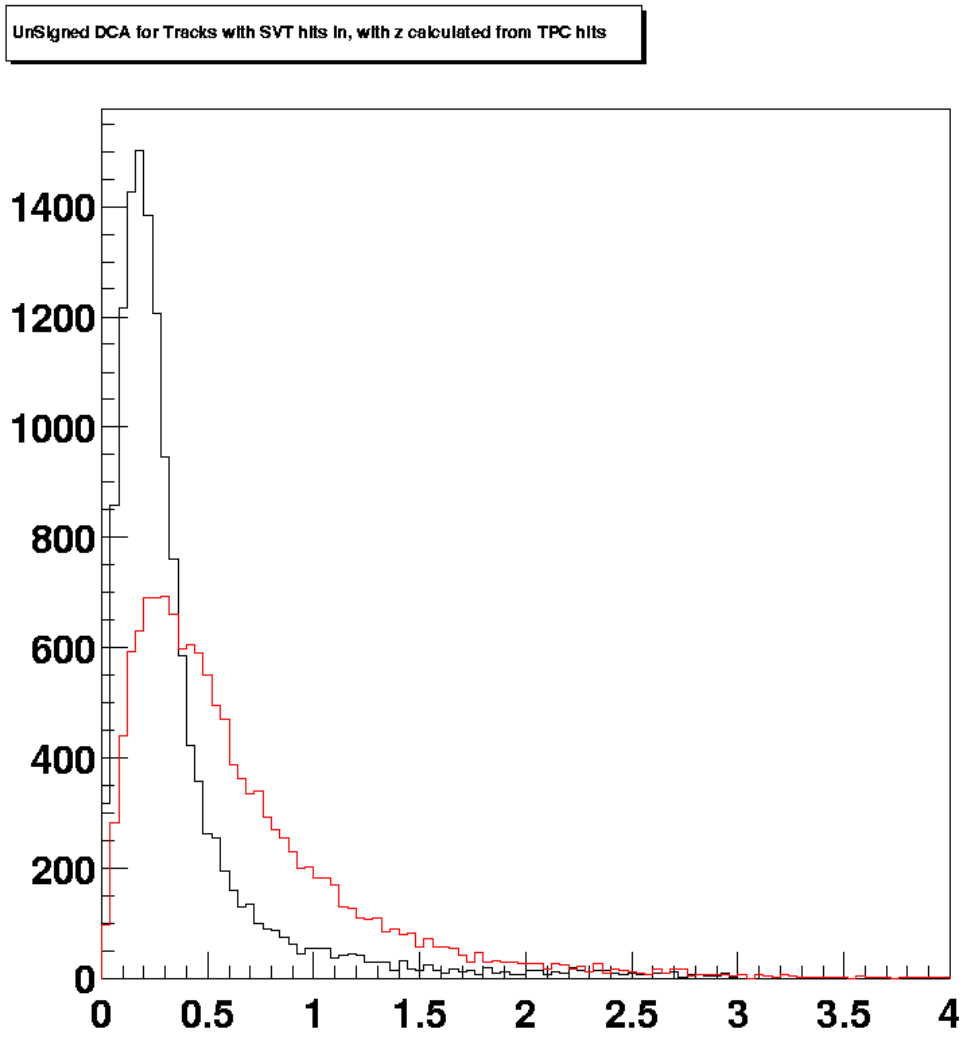
Pile-up?

Track Matching





Impact Parameter



3D impact parameters global track associated to primary

pp

Mean 0.7->0.51 cm

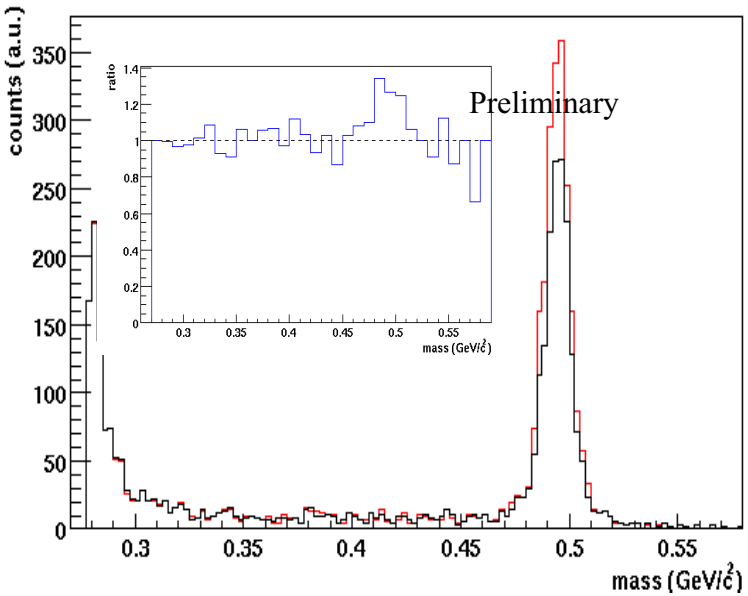
RMS 0.59->0.48 cm

TPC

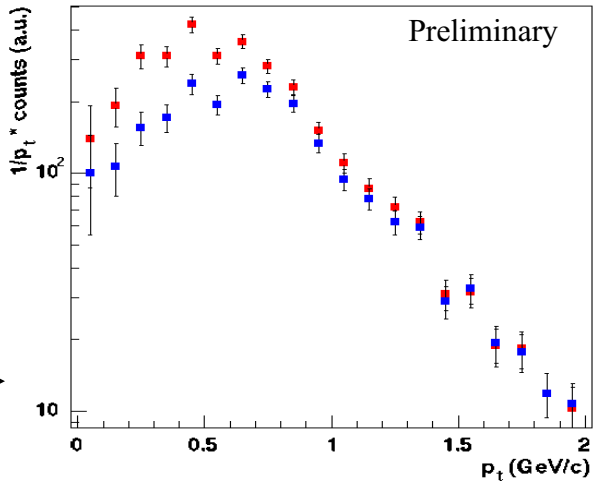
TPC+SVT

Strange Particle Decays

- Black is TPC only
- Red is TPC+SVT
- ~35-40% greater yield in K^0_s region



- Blue is TPC only
- Red is TPC+SVT
- Mostly low p_T



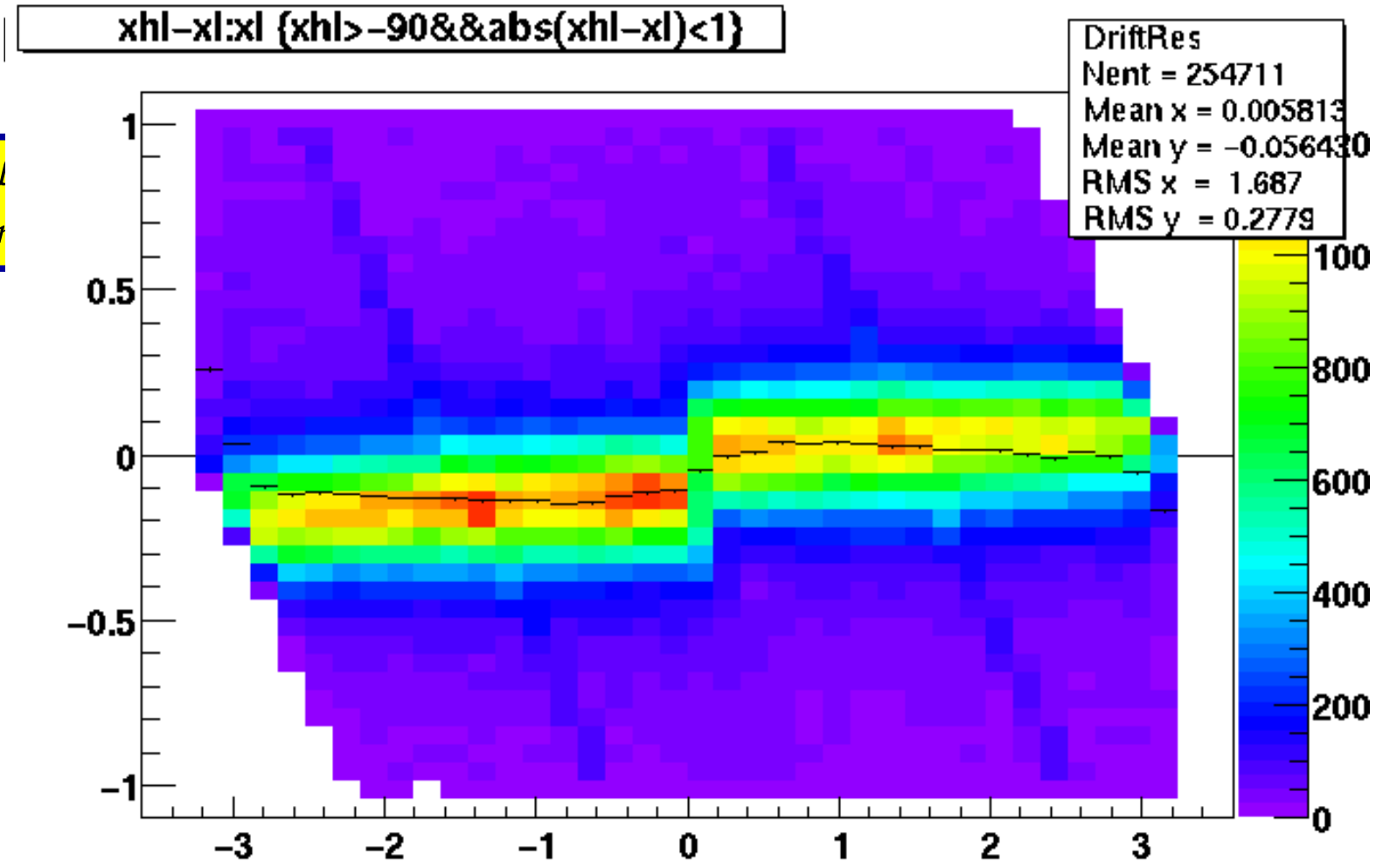
Plans for Year 3

Run!

Use ITTF

Global calibration between TPC & SVT

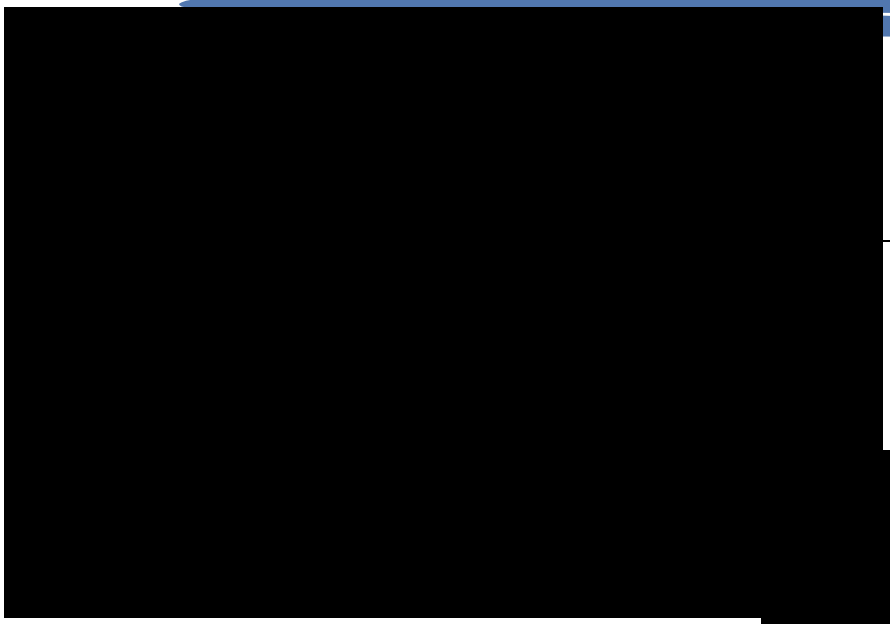
Drift Residuals



T0 wrong

~3 time bi

Drift Residuals vs Wafer



Before Alignment

Shifted to x=-0.276cm

y=-0.82cm

z=-0.192cm

After Alignment

Magnitudes agree with survey results

Anode Residuals vs pt

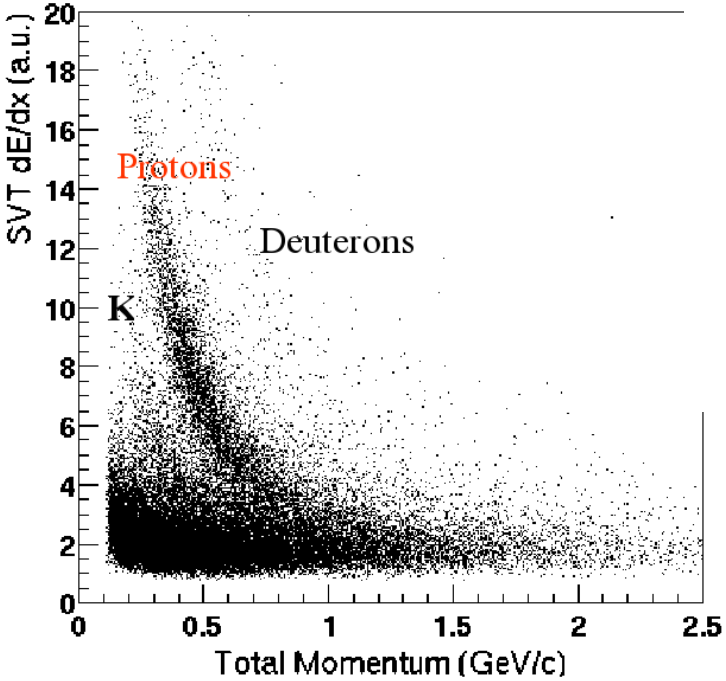
Au-Au

After correction

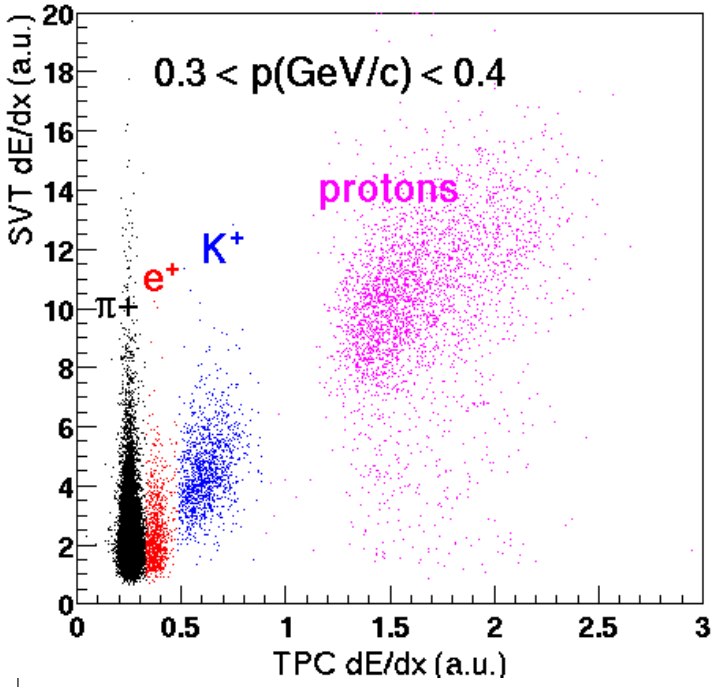
Energy Loss in the SVT Layers

- 3 sample maximum
- Higher energy resolution
- Good for low momentum

Preliminary



Preliminary



- Independent measure of dE/dx
- Allows 2D cut