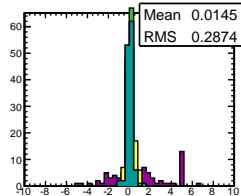
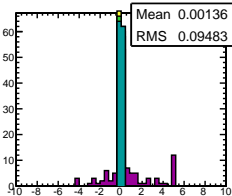
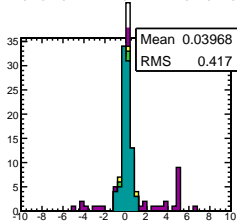
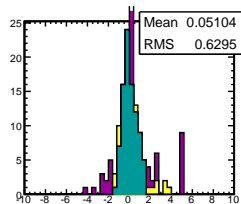
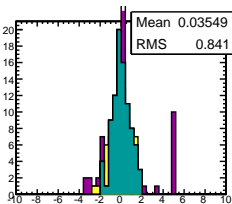
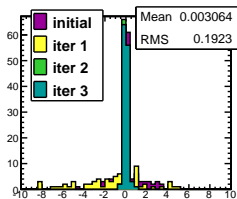


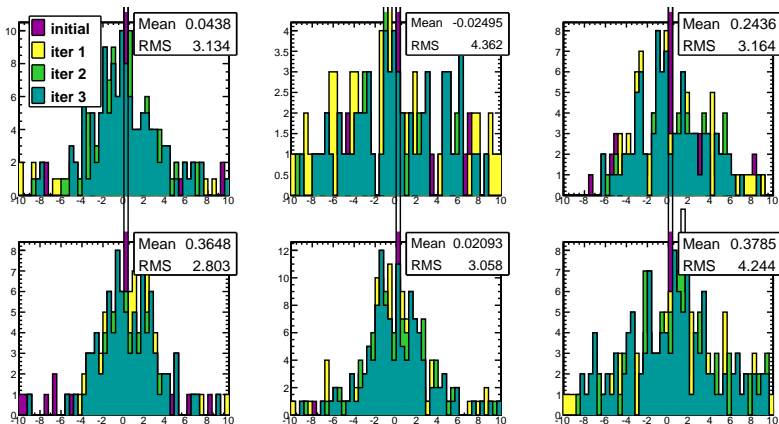
# Parameters of this alignment

- ▶ Monte Carlo with ideal tracker, magnetic field, and local DT alignment
- ▶ TIB and TOB only
- ▶  $100 < p_T < 200$  GeV
- ▶ CMSSW\_2.2.11
- ▶ only wheels  $-1, 0, +1$ , all sectors except 1 and 7
- ▶ stations 1–3: 6 degrees of freedom (station 4 was not synchronized)
- ▶ no treatment of B-field/material effects: one big residuals bin for each chamber
- ▶ residuals from refit with large muon APEs
- ▶ tracker track has at least 15 hits, normalized  $\chi^2/N_{dof} < 10$
- ▶ excluding very large residuals (1000 cm)
- ▶ Voigt residuals fit; the unbinned fit *is* the matrix inversion: fitting 4-D residuals space to 6 alignment parameters + 10 residuals shape parameters (sigmas, gammas, and correlation parameters), what is shown here are projections
- ▶ residuals weighted by  $(\chi^2/N_{dof})^{-1}$

# Difference between aligned and MC-truth

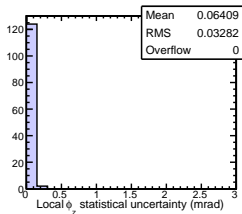
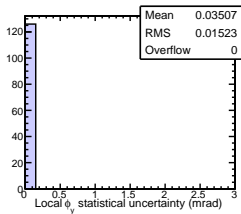
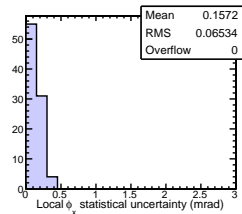
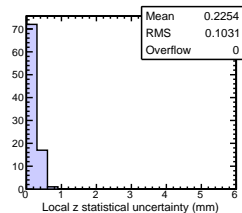
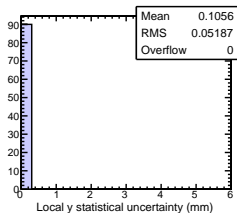
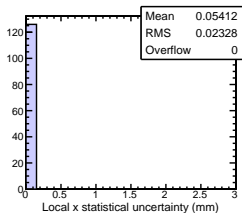


# Normalized differences



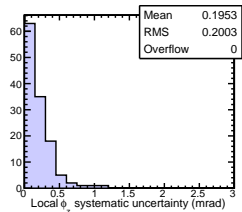
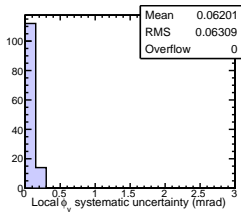
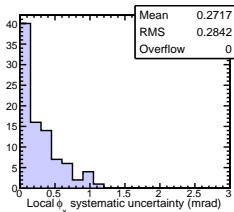
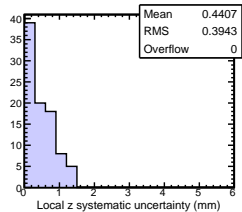
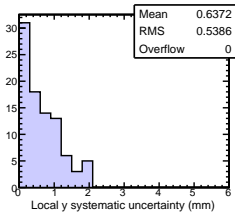
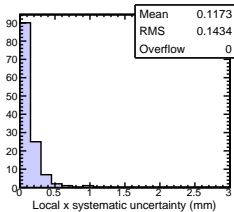
This implies that true uncertainties are 3–4 times larger than statistical uncertainties

# Statistical uncertainties



Statistical uncertainties in this large sample are almost zero

# Systematic errors



Systematic errors are estimated from

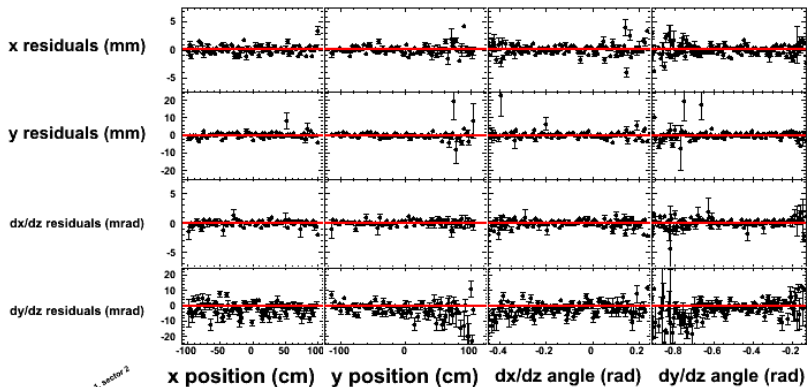
$$\text{systematic} = \sqrt{(\text{aligned} - \text{MC-truth})^2 - \text{statistical}^2}$$

Doesn't include systematic errors from tracker misalignment, magnetic field errors, and DT internal misalignment

## Fit failures

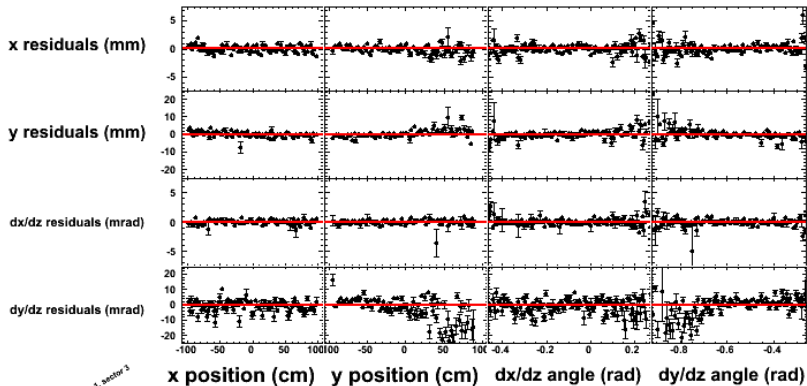
- ▶ None
- ▶ But there is a double-peak  $\Delta \frac{dy}{dz}$  of sectors 8 and 12 of some wheel/stations (and only those sectors)
  - ▶ would ordinarily be cancelled by  $\vec{B}$ -error suppression, which has been turned off for a more apples-to-apples comparison with MillePede
  - ▶ not observed in real data

# Wheel -1, station 1, sector 2



DT wheel -1, station 1, sector 2

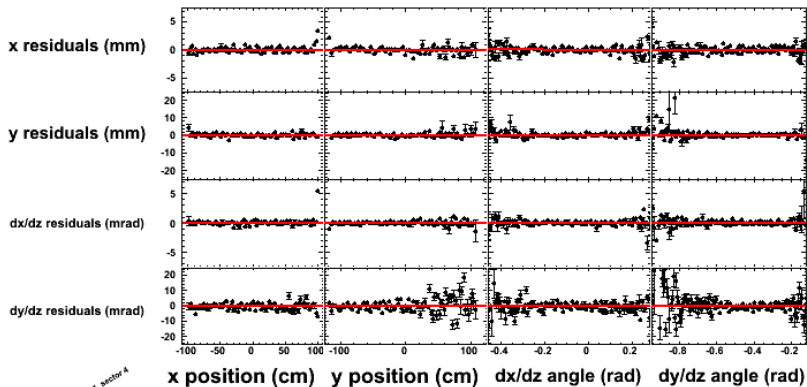
# Wheel -1, station 1, sector 3



DT wheel -1, station 1, sector 3

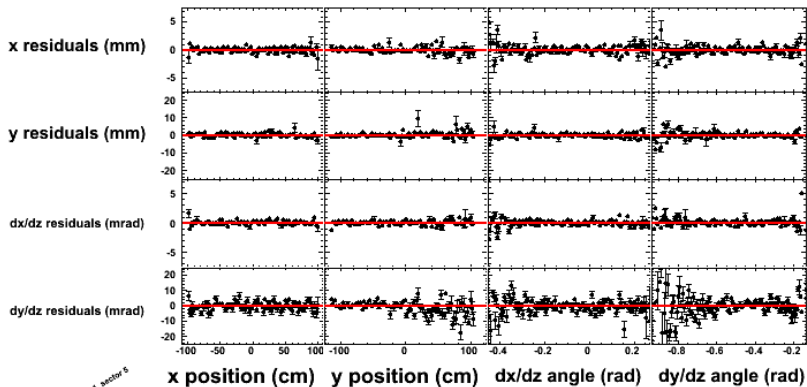


# Wheel -1, station 1, sector 4



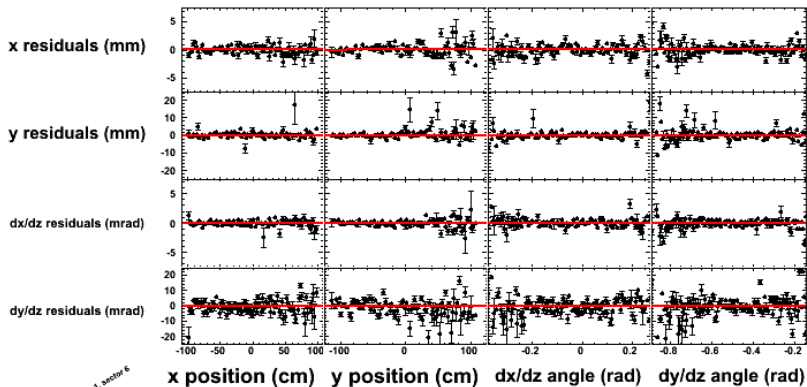
DT wheel -1, station 1, sector 4

# Wheel -1, station 1, sector 5



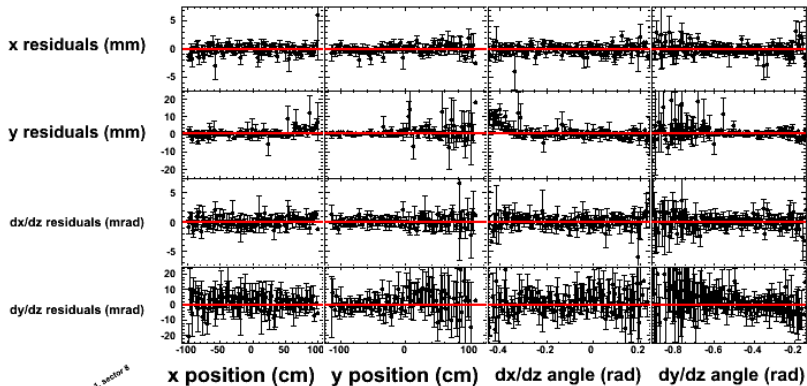
DT wheel -1, station 1, sector 5

# Wheel -1, station 1, sector 6



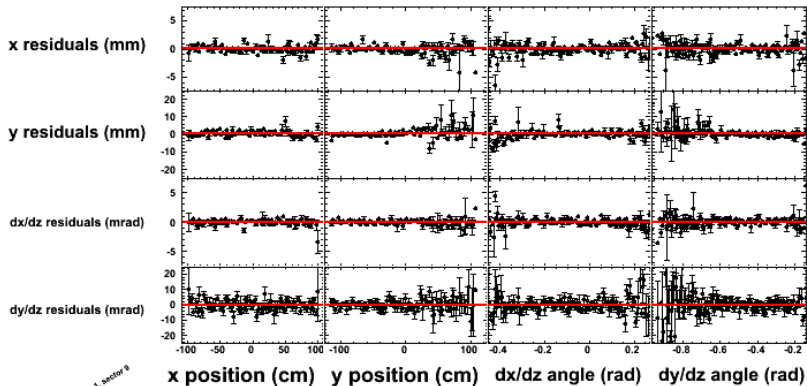
DT wheel -1, station 1, sector 6

# Wheel -1, station 1, sector 8



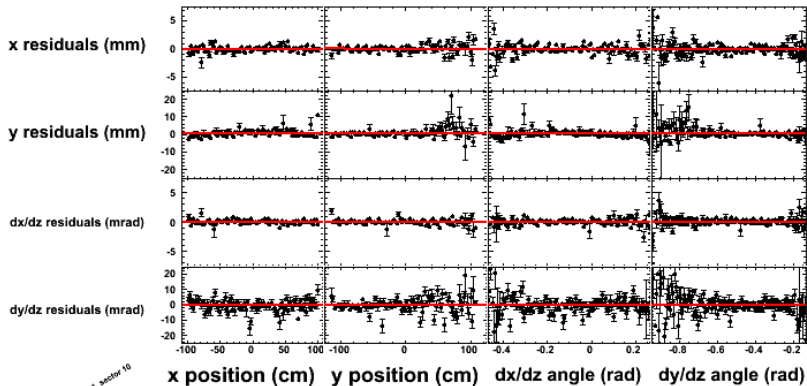
DT wheel -1, station 1, sector 8

# Wheel -1, station 1, sector 9



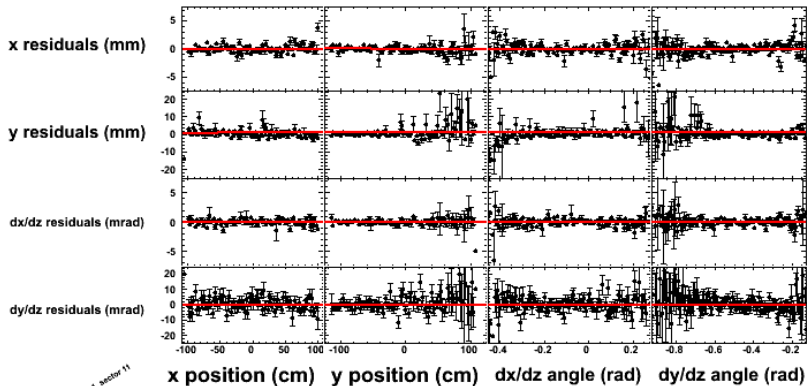
DT wheel -1, station 1, sector 9

# Wheel -1, station 1, sector 10



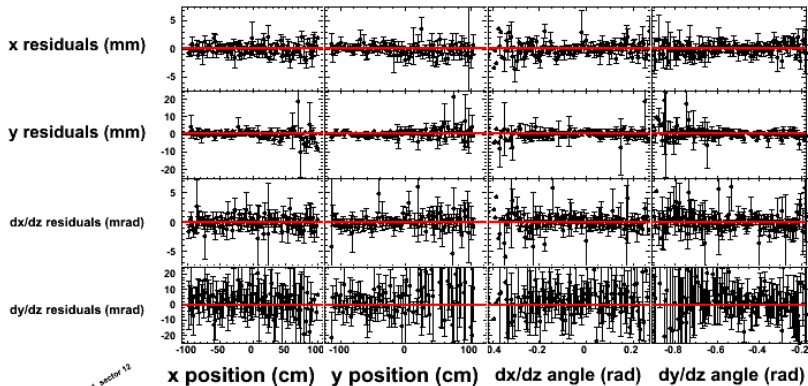
DT wheel -1, station 1, sector 10

# Wheel -1, station 1, sector 11



DT wheel -1, station 1, sector 11

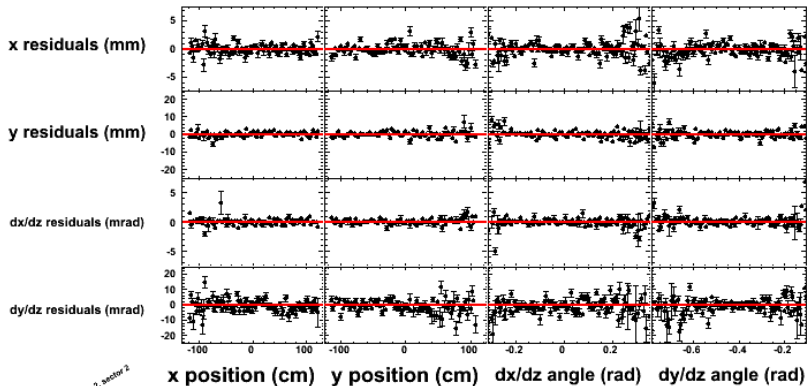
# Wheel -1, station 1, sector 12



DT wheel -1, station 1, sector 12

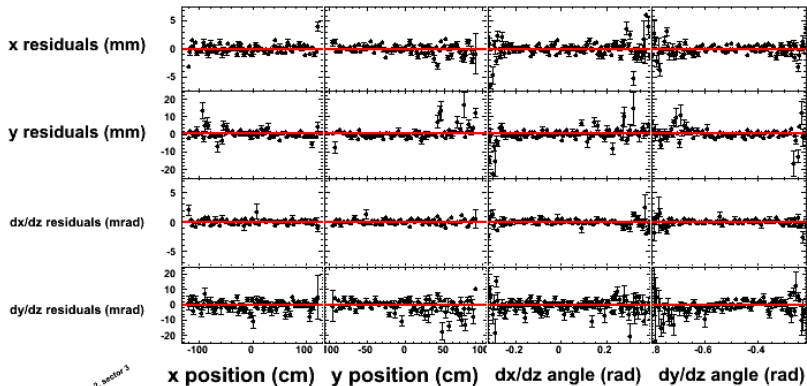


# Wheel -1, station 2, sector 2



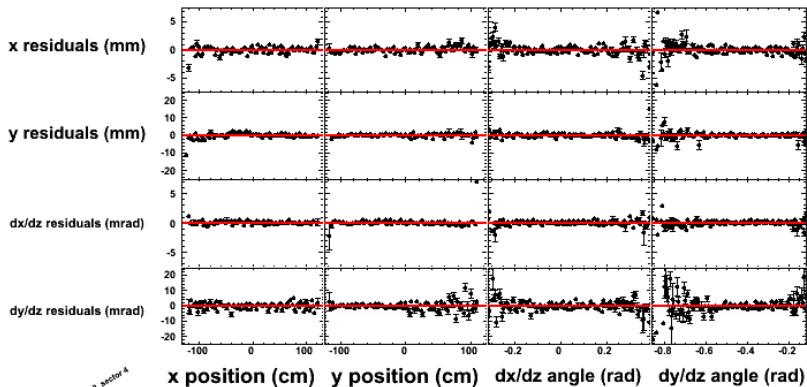
DT wheel -1, station 2, sector 2

# Wheel -1, station 2, sector 3



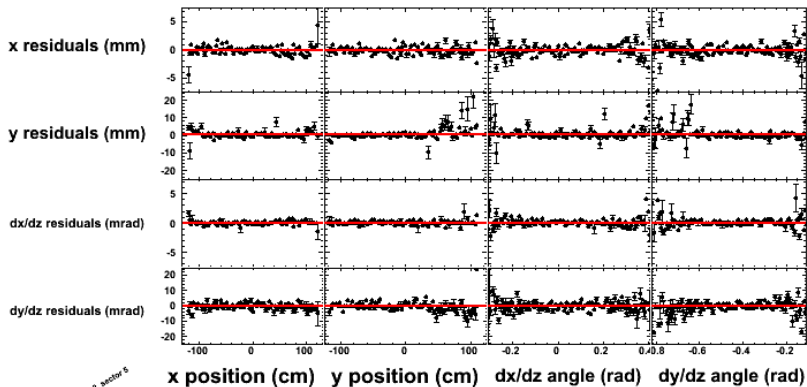
DT wheel -1, station 2, sector 3

# Wheel -1, station 2, sector 4



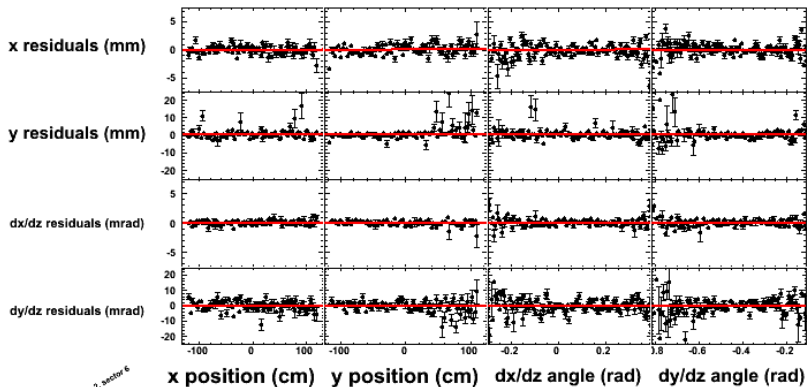
DT wheel -1, station 2, sector 4

# Wheel -1, station 2, sector 5



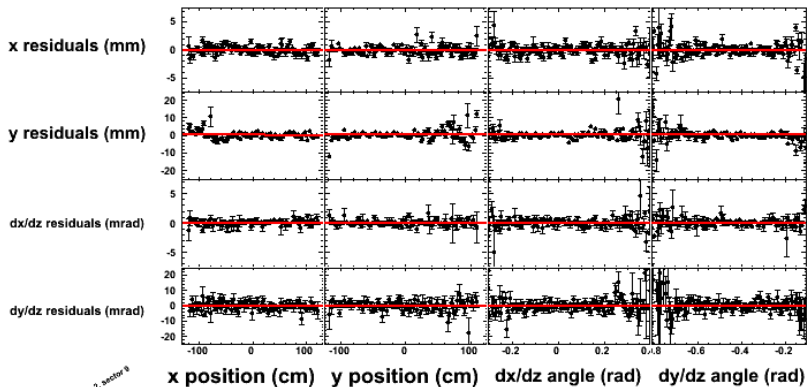
DT wheel -1, station 2, sector 5

# Wheel -1, station 2, sector 6



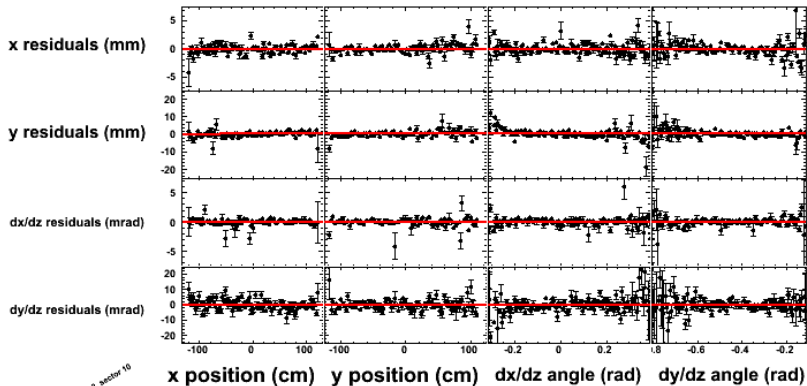
DT wheel -1, station 2, sector 6

# Wheel -1, station 2, sector 9



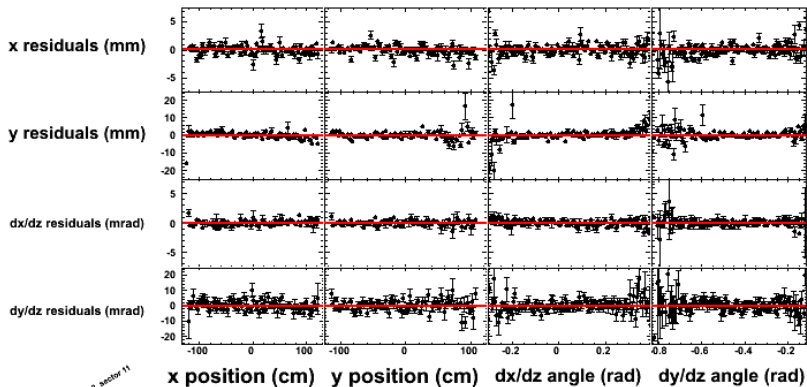
DT wheel -1, station 2, sector 9

# Wheel -1, station 2, sector 10



DT wheel -1, station 2, sector 10

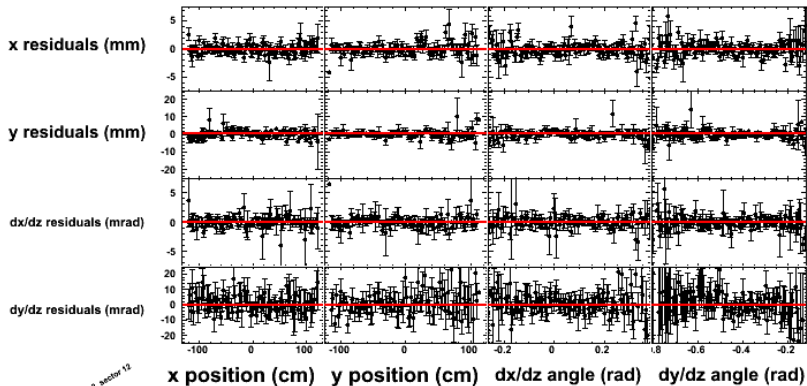
# Wheel -1, station 2, sector 11



DT wheel -1, station 2, sector 11

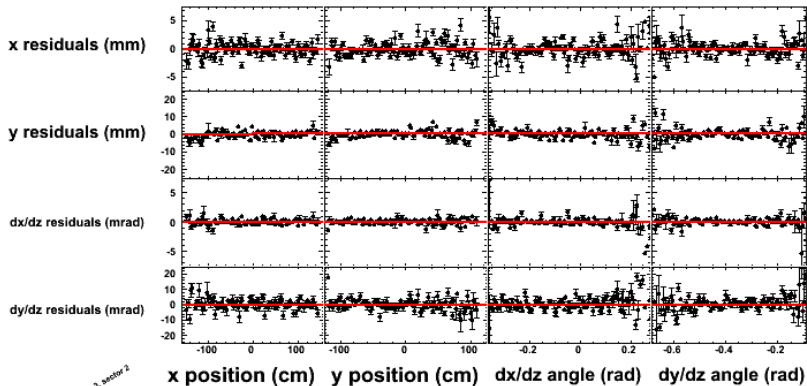


# Wheel -1, station 2, sector 12



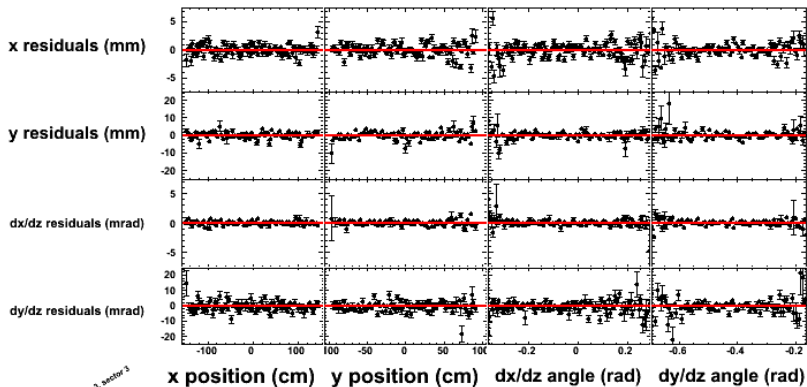
DT wheel -1, station 2, sector 12

# Wheel -1, station 3, sector 2



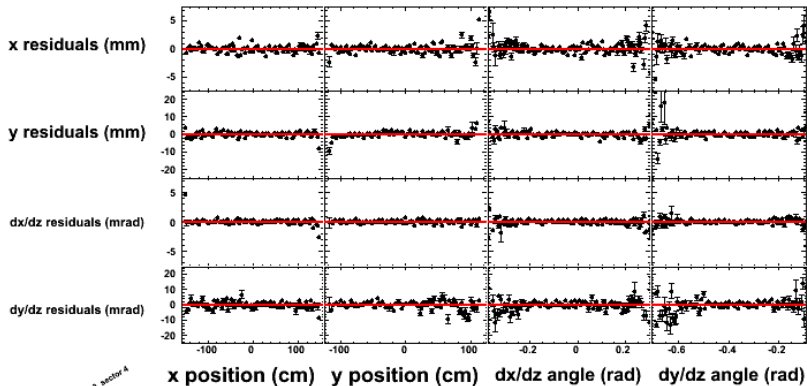
DT wheel -1, station 3, sector 2

# Wheel -1, station 3, sector 3



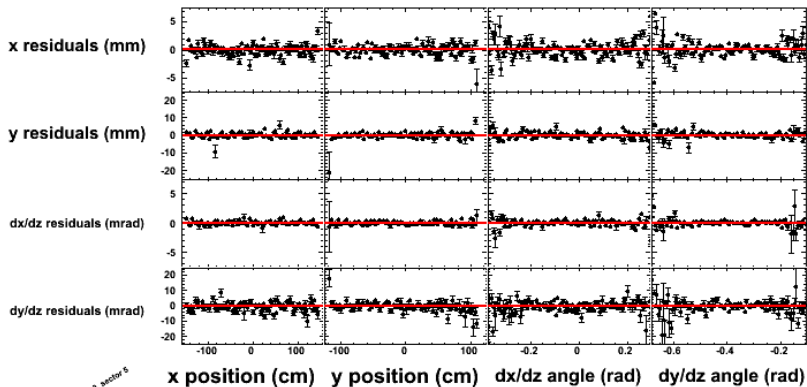
DT wheel -1, station 3, sector 3

# Wheel -1, station 3, sector 4



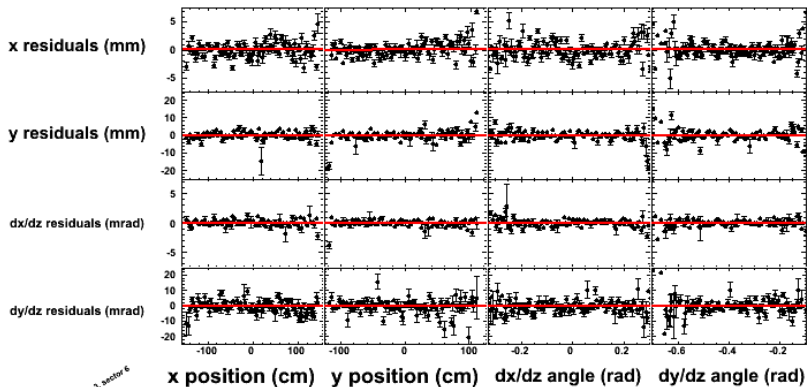
DT wheel -1, station 3, sector 4

# Wheel -1, station 3, sector 5



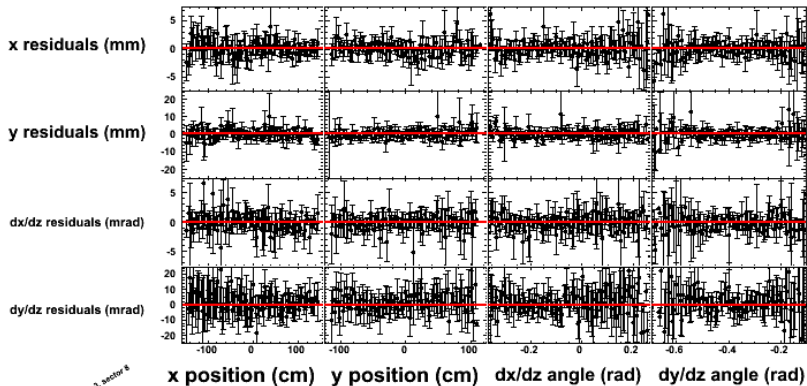
DT wheel -1, station 3, sector 5

# Wheel -1, station 3, sector 6



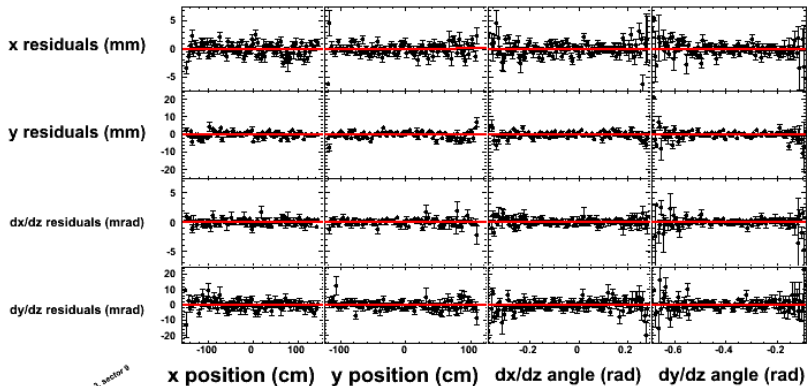
DT wheel -1, station 3, sector 6

# Wheel -1, station 3, sector 8



DT wheel -1, station 3, sector 8

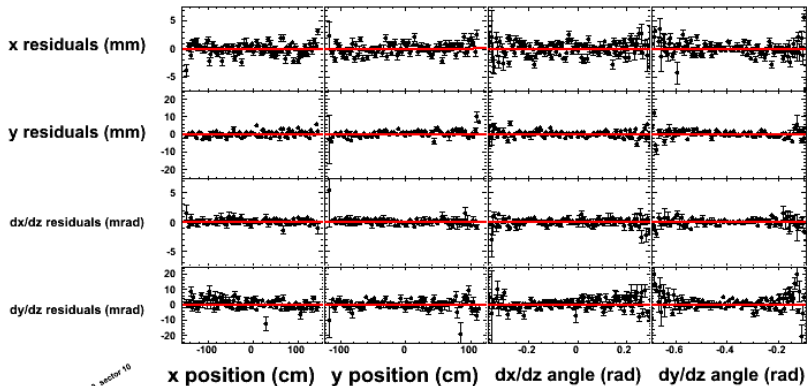
# Wheel -1, station 3, sector 9



DT wheel -1, station 3, sector 9

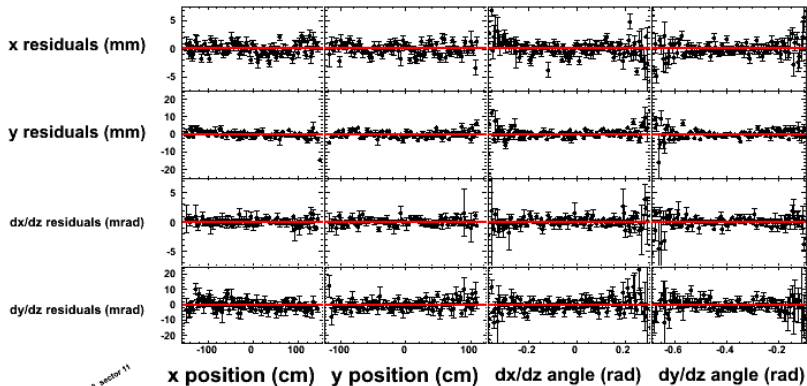


# Wheel -1, station 3, sector 10



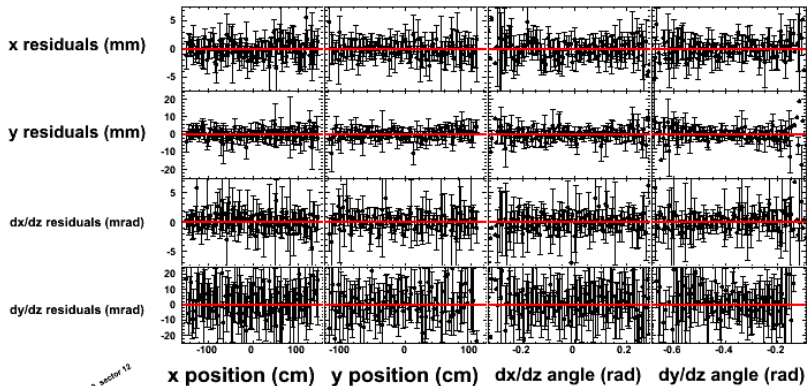
DT wheel -1, station 3, sector 10

# Wheel -1, station 3, sector 11



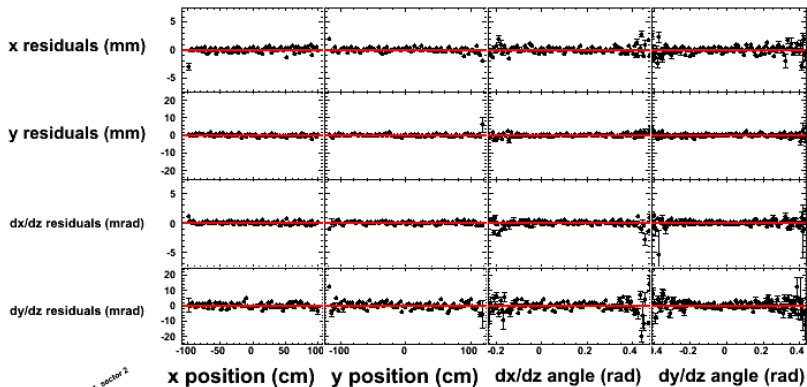
DT wheel -1, station 3, sector 11

# Wheel -1, station 3, sector 12



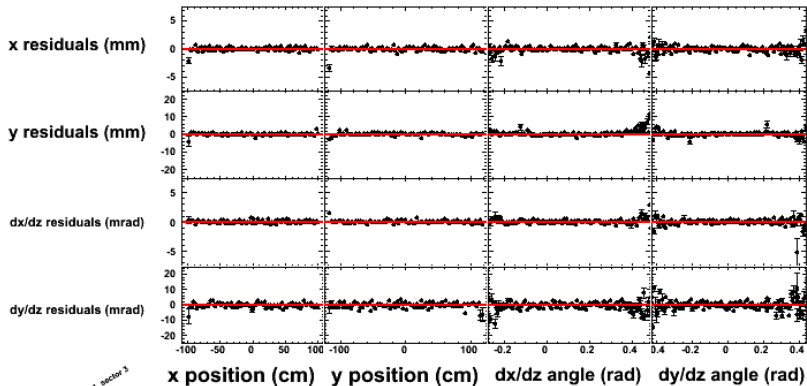
DT wheel -1, station 3, sector 12

# Wheel 0, station 1, sector 2



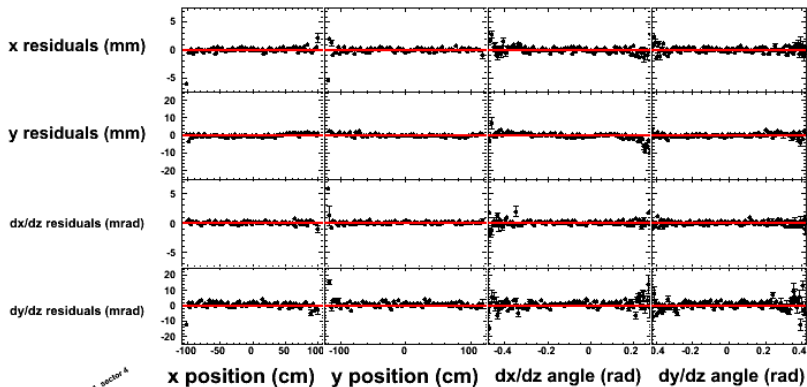
DT wheel 0, station 1, sector 2

# Wheel 0, station 1, sector 3



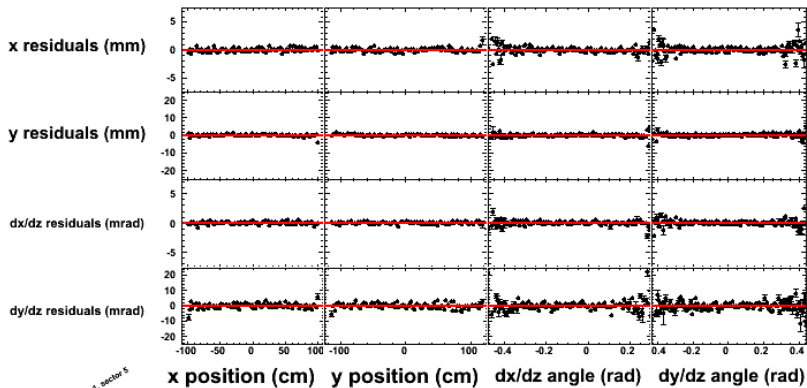
DT wheel 0, station 1, sector 3

# Wheel 0, station 1, sector 4



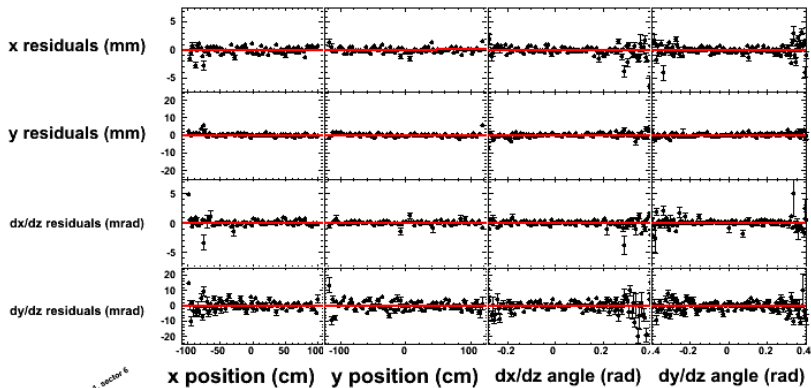
DT wheel 0, station 1, sector 4

# Wheel 0, station 1, sector 5



DT wheel 0, station 1, sector 5

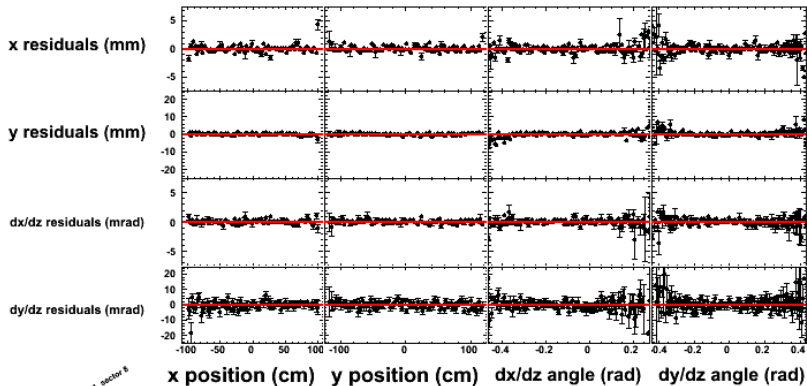
# Wheel 0, station 1, sector 6



DT wheel 0, station 1, sector 6

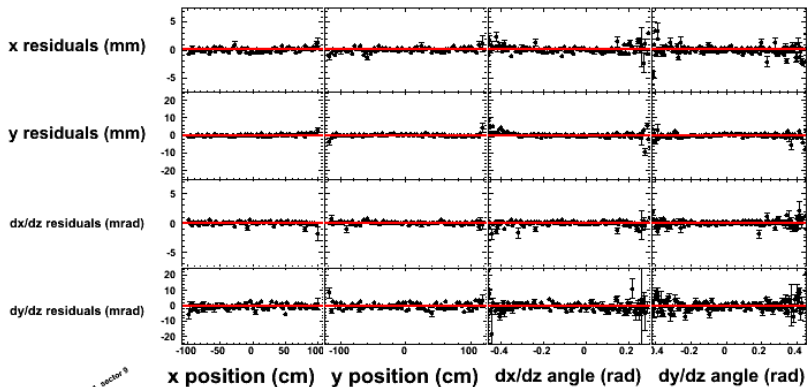


# Wheel 0, station 1, sector 8



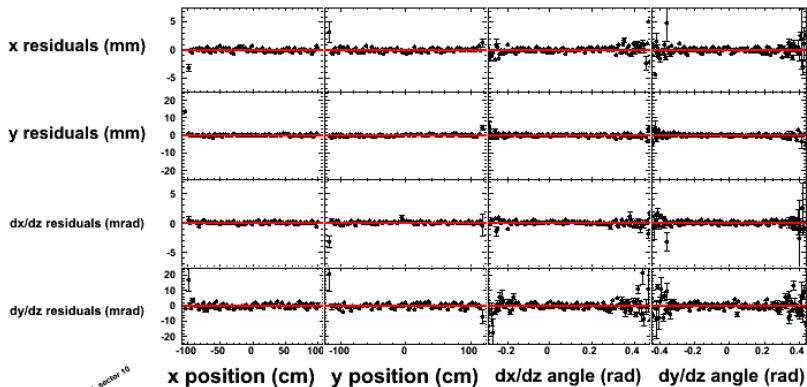
DT wheel 0, station 1, sector 8

# Wheel 0, station 1, sector 9



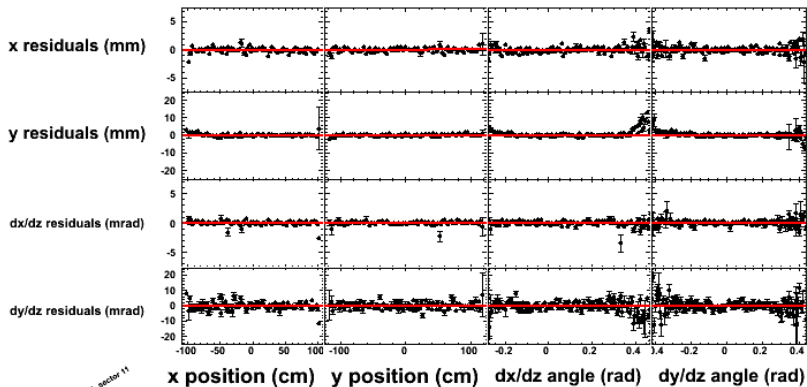
DT wheel 0, station 1, sector 9

# Wheel 0, station 1, sector 10



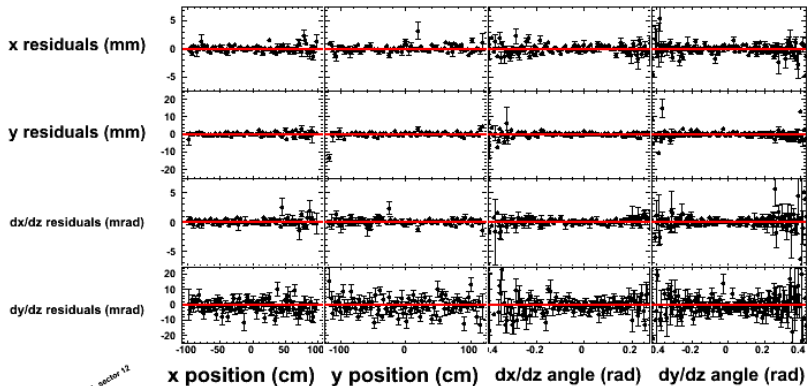
DT wheel 0, station 1, sector 10

# Wheel 0, station 1, sector 11



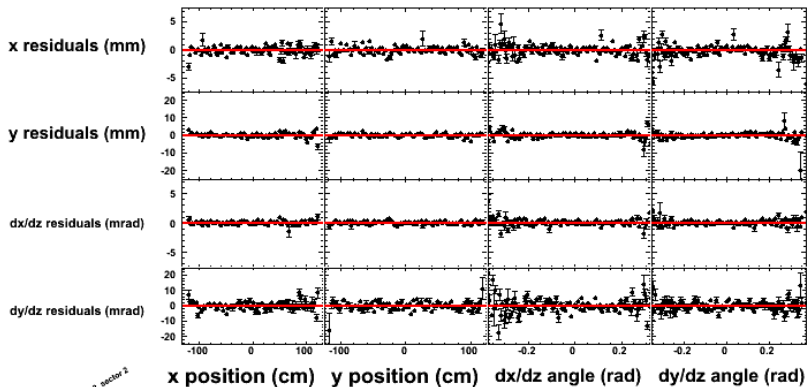
DT wheel 0, station 1, sector 11

# Wheel 0, station 1, sector 12



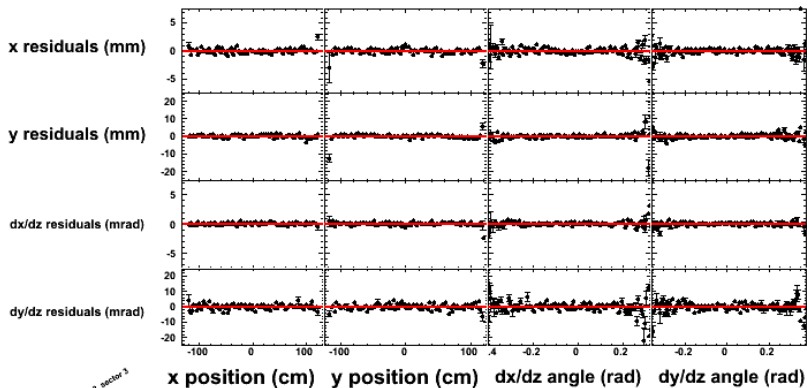
DT wheel 0, station 1, sector 12

# Wheel 0, station 2, sector 2



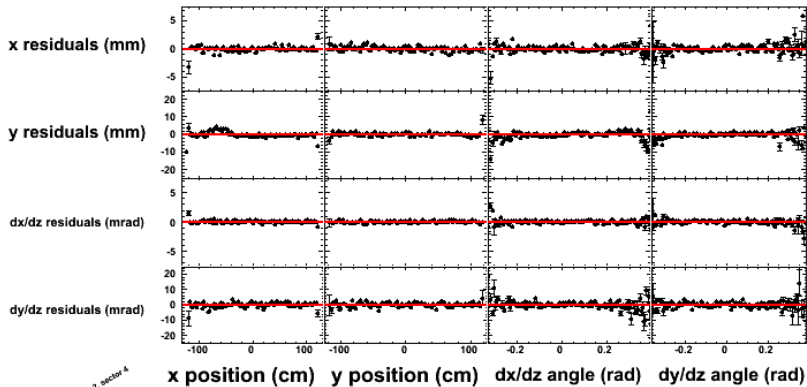
DT wheel 0, station 2, sector 2

# Wheel 0, station 2, sector 3



DT wheel 0, station 2, sector 3

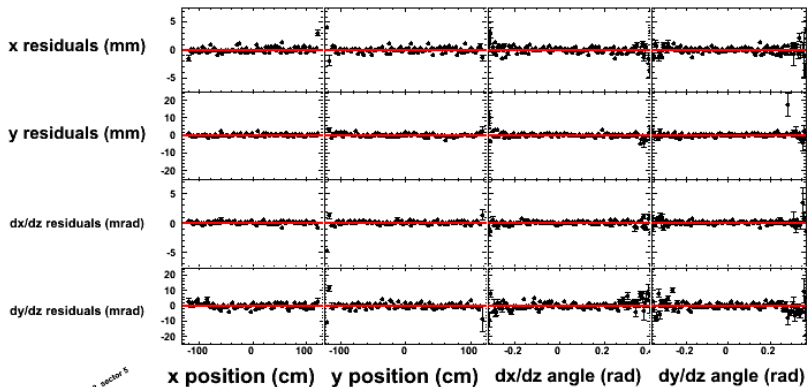
# Wheel 0, station 2, sector 4



DT wheel 0, station 2, sector 4

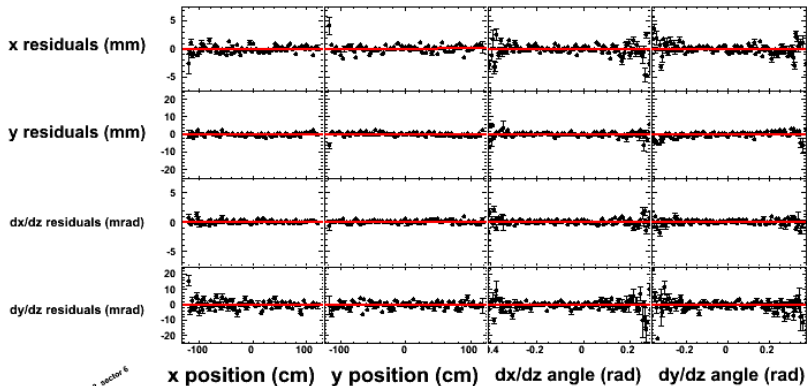


# Wheel 0, station 2, sector 5



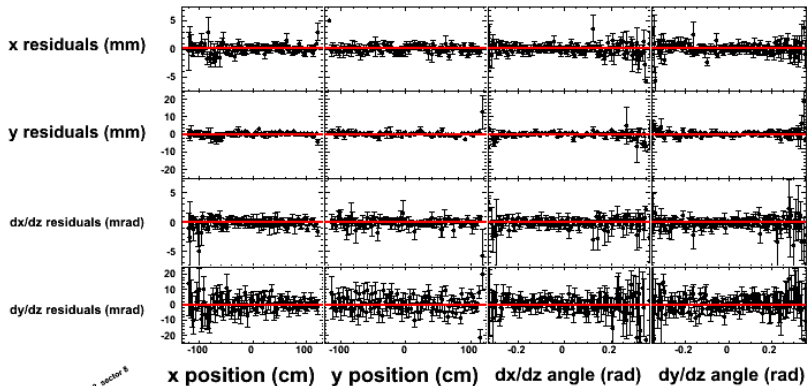
DT wheel 0, station 2, sector 5

# Wheel 0, station 2, sector 6



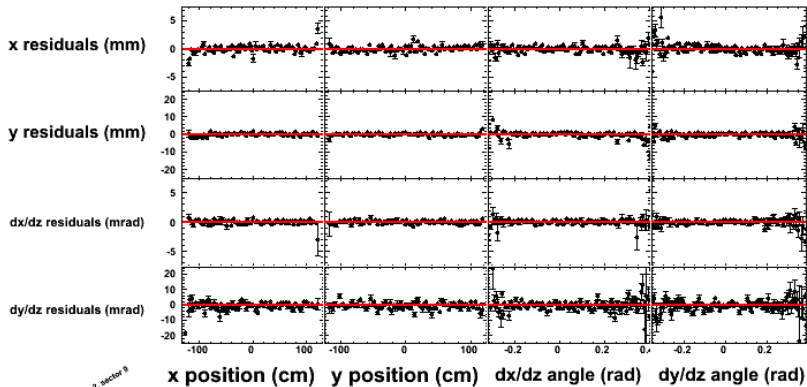
DT wheel 0, station 2, sector 6

# Wheel 0, station 2, sector 8



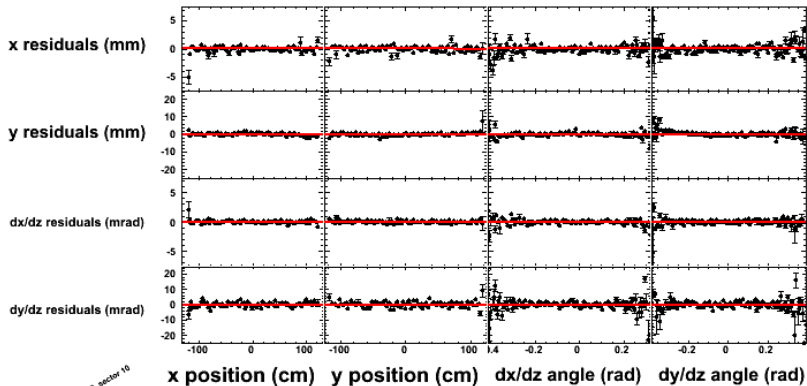
DT wheel 0, station 2, sector 8

# Wheel 0, station 2, sector 9



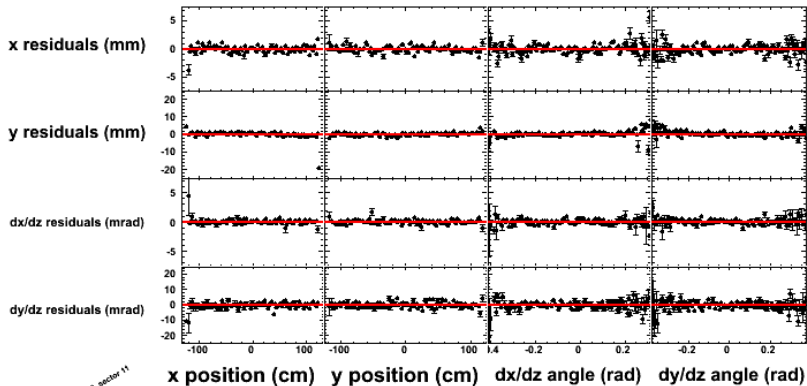
DT wheel 0, station 2, sector 9

# Wheel 0, station 2, sector 10



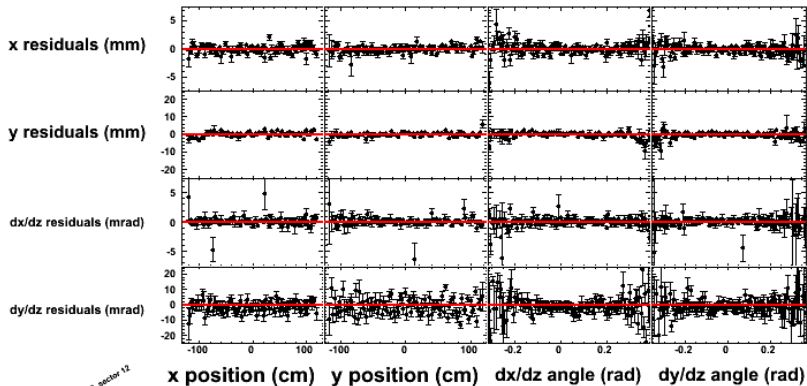
DT wheel 0, station 2, sector 10

# Wheel 0, station 2, sector 11



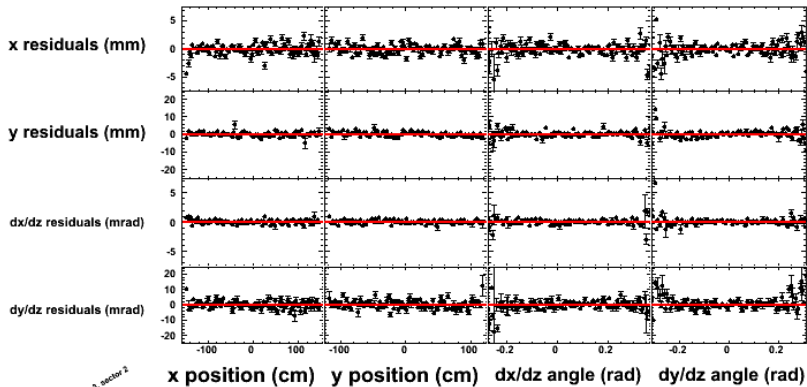
DT wheel 0, station 2, sector 11

# Wheel 0, station 2, sector 12



DT wheel 0, station 2, sector 12

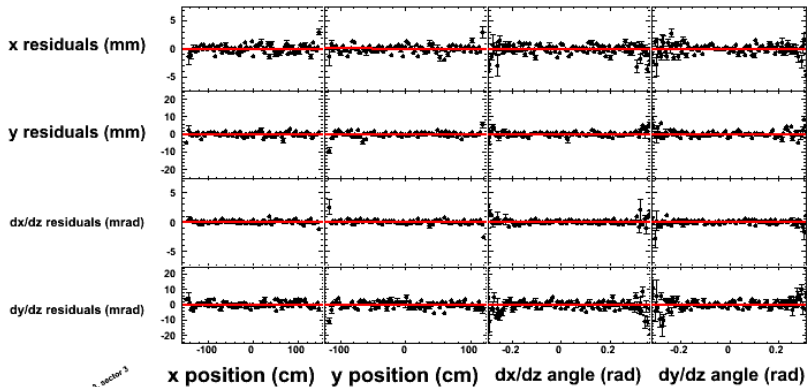
# Wheel 0, station 3, sector 2



DT wheel 0, station 3, sector 2

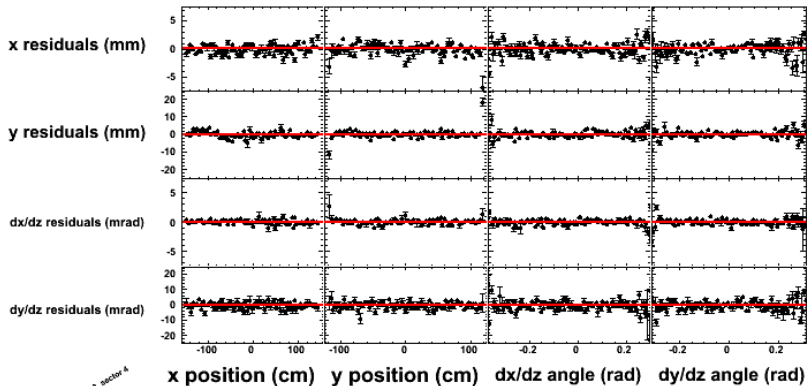


# Wheel 0, station 3, sector 3



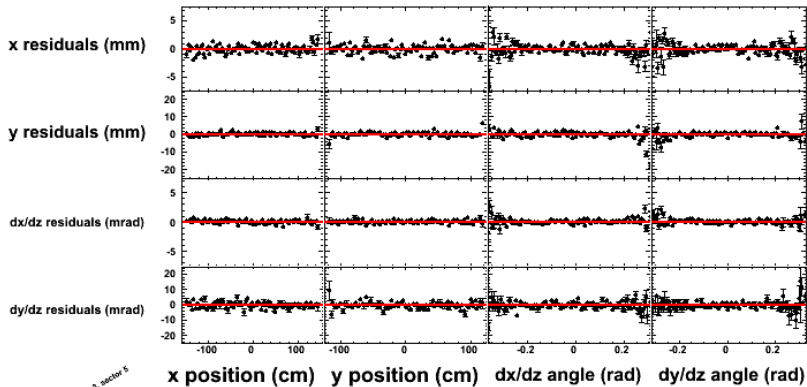
DT wheel 0, station 3, sector 3

# Wheel 0, station 3, sector 4



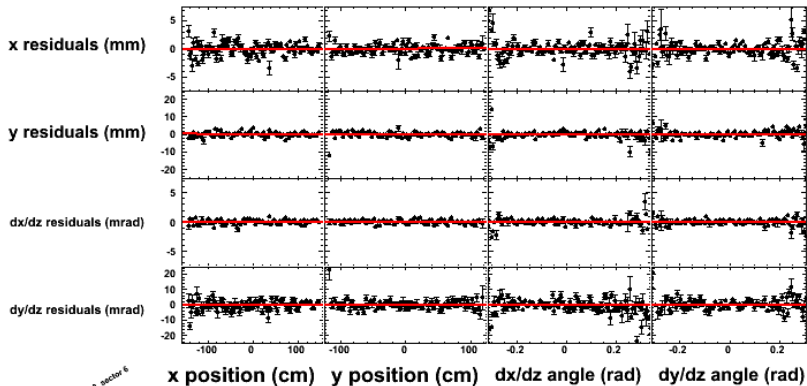
DT wheel 0, station 3, sector 4

# Wheel 0, station 3, sector 5



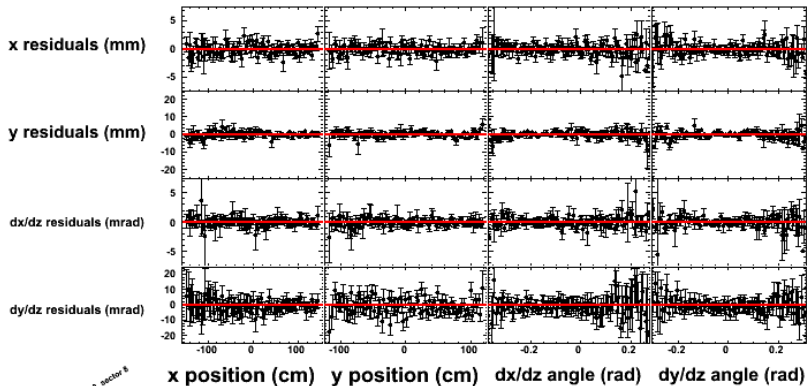
DT wheel 0, station 3, sector 5

# Wheel 0, station 3, sector 6



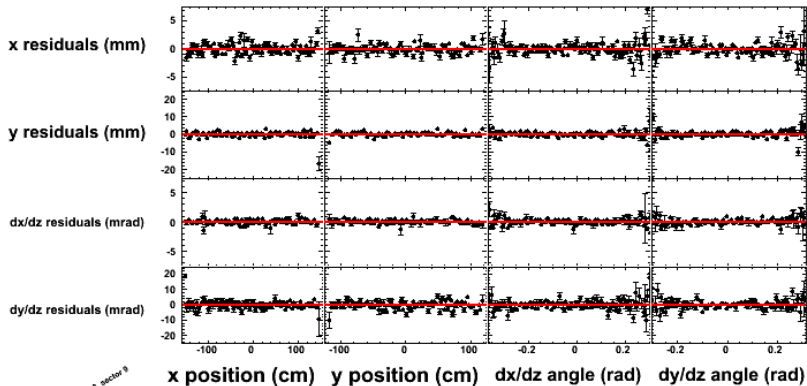
DT wheel 0, station 3, sector 6

# Wheel 0, station 3, sector 8



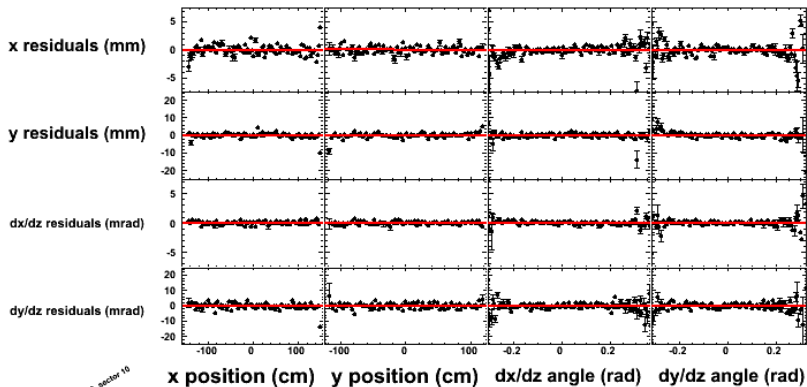
DT wheel 0, station 3, sector 8

# Wheel 0, station 3, sector 9



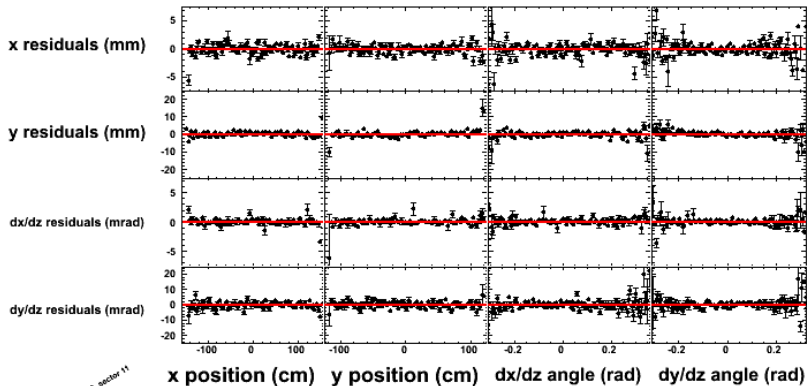
DT wheel 0, station 3, sector 9

# Wheel 0, station 3, sector 10



DT wheel 0, station 3, sector 10

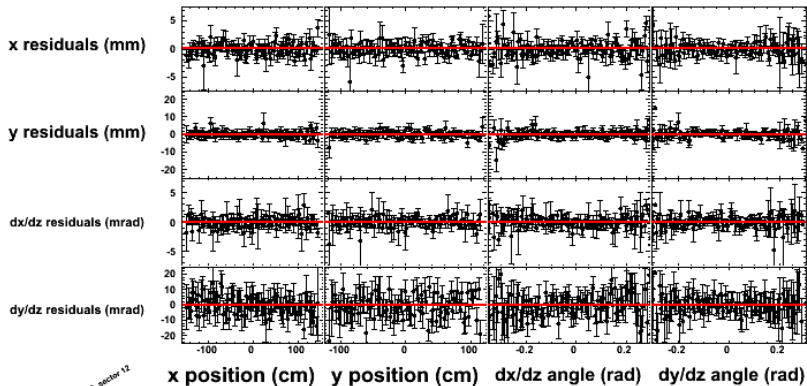
# Wheel 0, station 3, sector 11



DT wheel 0, station 3, sector 11

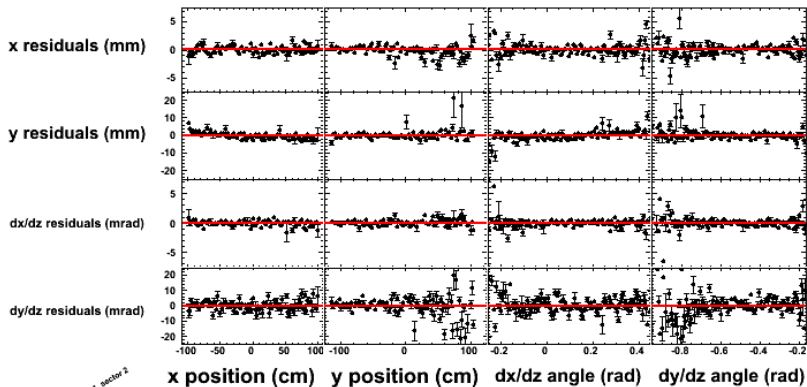


# Wheel 0, station 3, sector 12



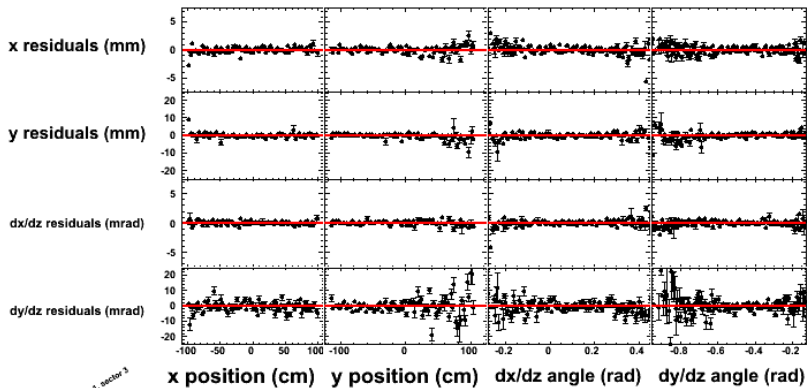
DT wheel 0, station 3, sector 12

# Wheel +1, station 1, sector 2



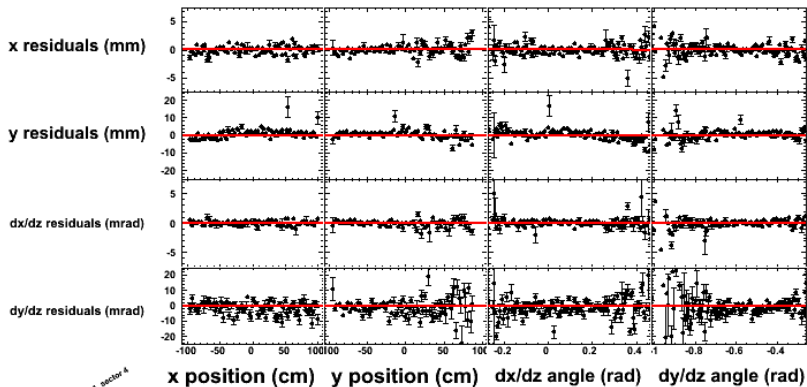
DT wheel 1, station 1, sector 2

# Wheel +1, station 1, sector 3



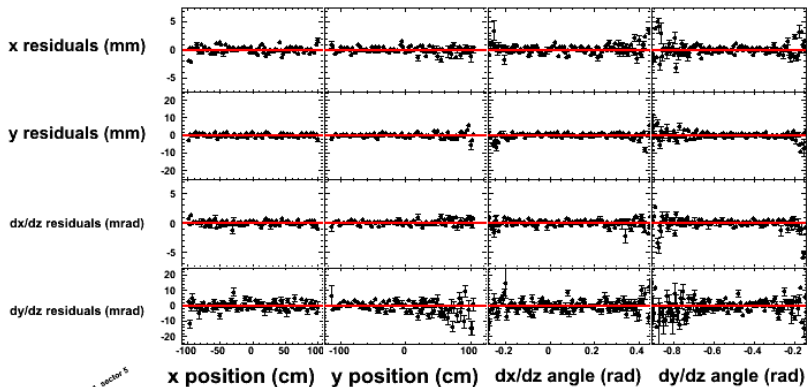
DT wheel 1, station 1, sector 3

# Wheel +1, station 1, sector 4



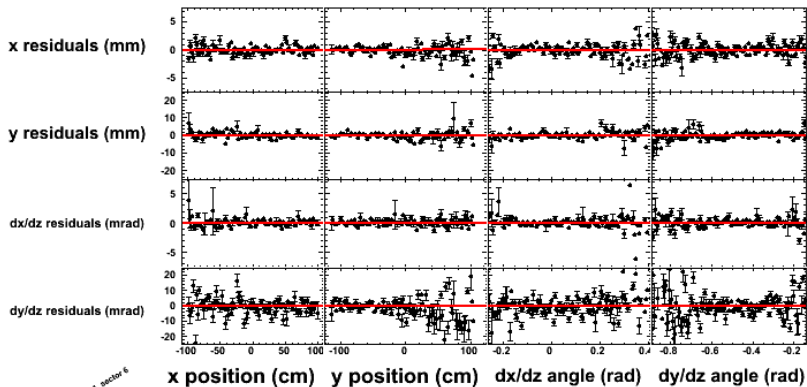
DT wheel 1, station 1, sector 4

# Wheel +1, station 1, sector 5



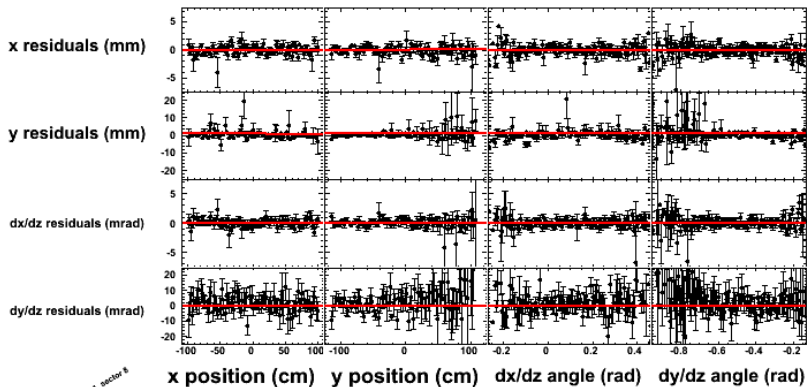
DT wheel 1, station 1, sector 5

# Wheel +1, station 1, sector 6



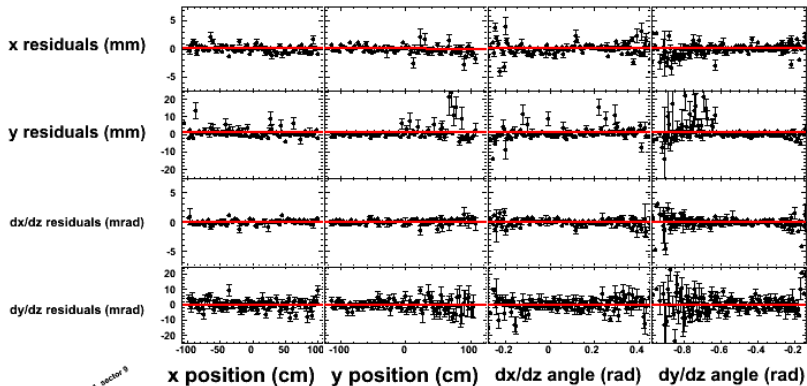
DT wheel 1, station 1, sector 6

# Wheel +1, station 1, sector 8



DT wheel 1, station 1, sector 8

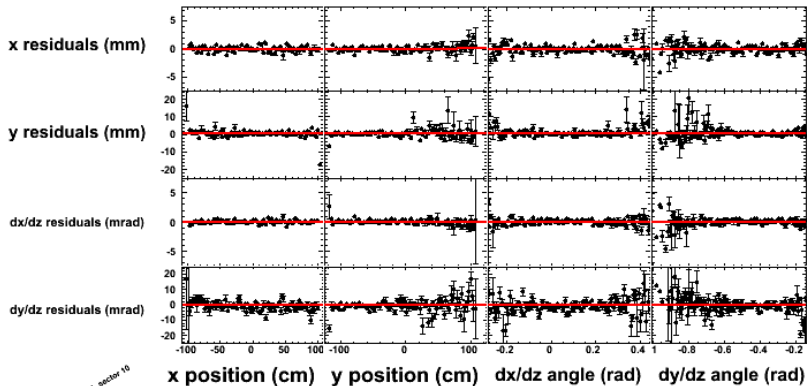
# Wheel +1, station 1, sector 9



DT wheel 1, station 1, sector 9

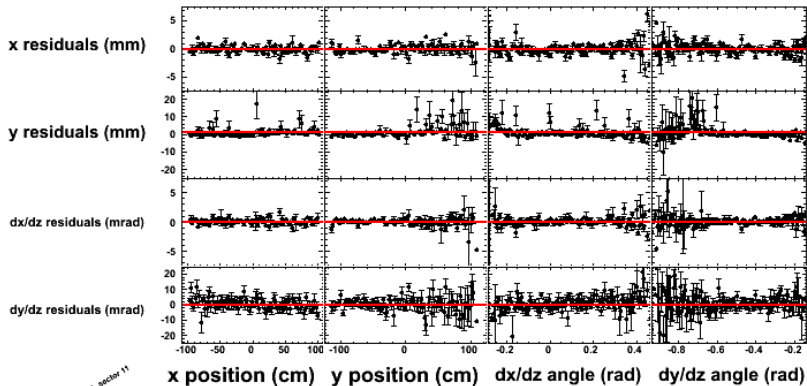


# Wheel +1, station 1, sector 10



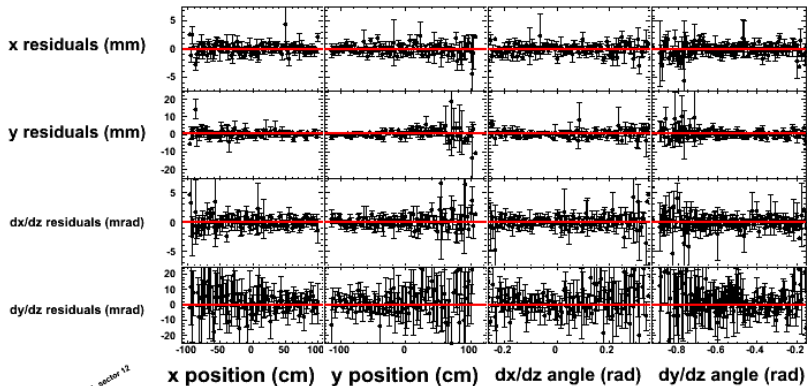
DT wheel 1, station 1, sector 10

# Wheel +1, station 1, sector 11



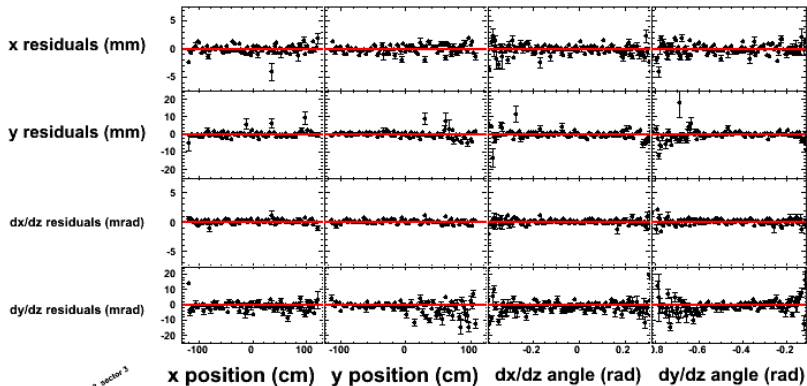
DT wheel 1, station 1, sector 11

# Wheel +1, station 1, sector 12



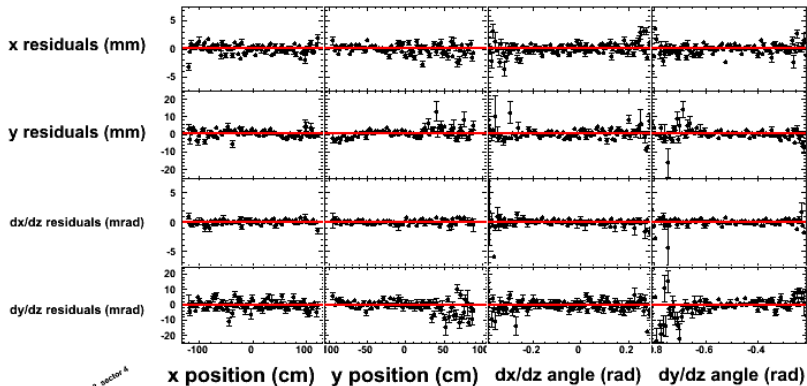
DT wheel 1, station 1, sector 12

# Wheel +1, station 2, sector 3



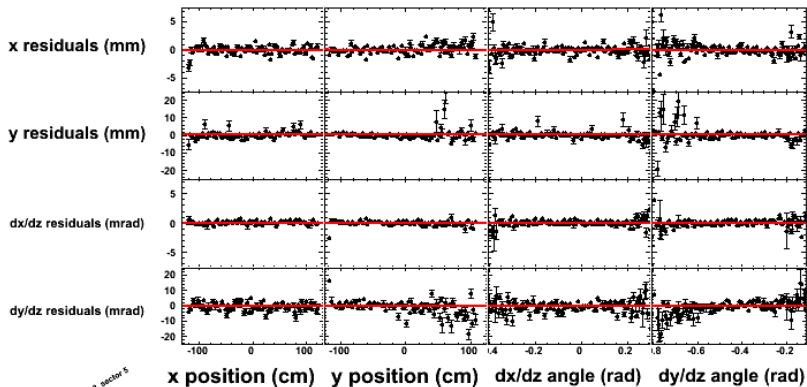
DT wheel 1, station 2, sector 3

# Wheel +1, station 2, sector 4



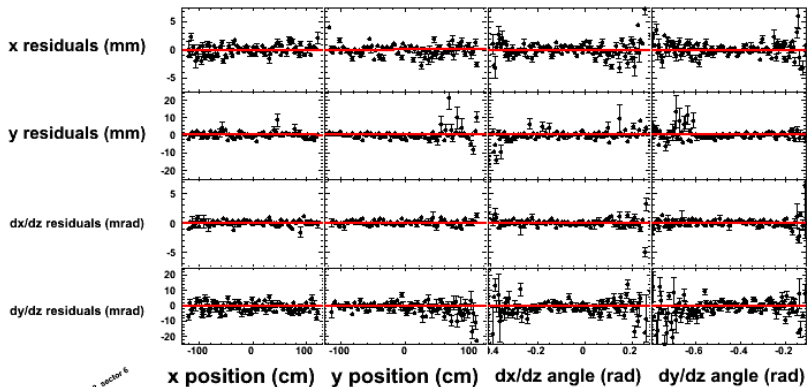
DT wheel 1, station 2, sector 4

# Wheel +1, station 2, sector 5



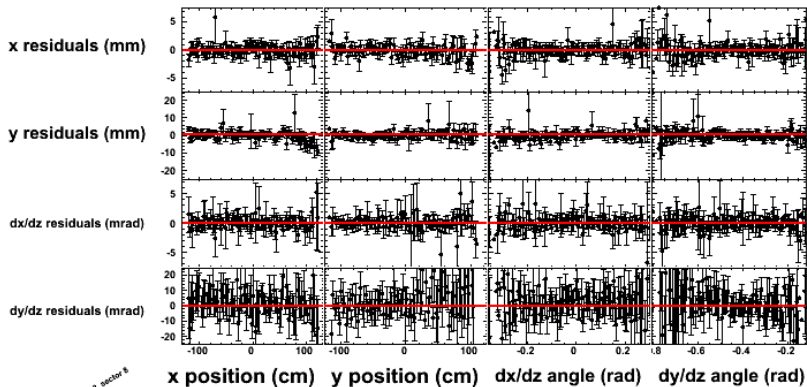
DT wheel 1, station 2, sector 5

# Wheel +1, station 2, sector 6



DT wheel 1, station 2, sector 6

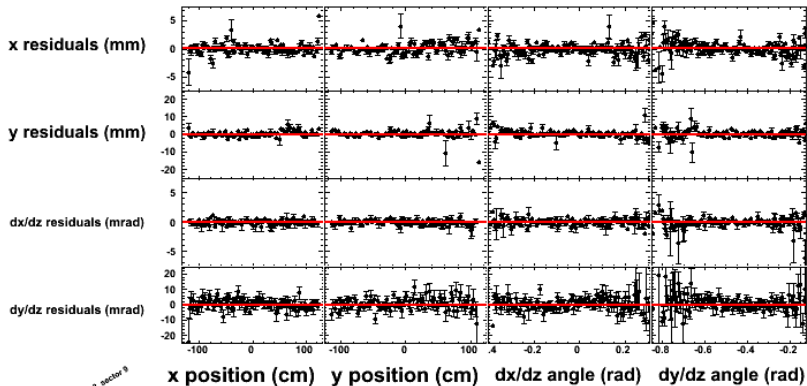
# Wheel +1, station 2, sector 8



DT wheel 1, station 2, sector 8

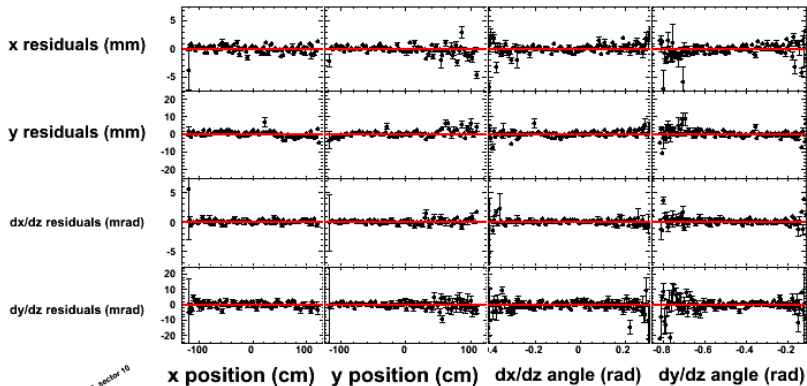


# Wheel +1, station 2, sector 9



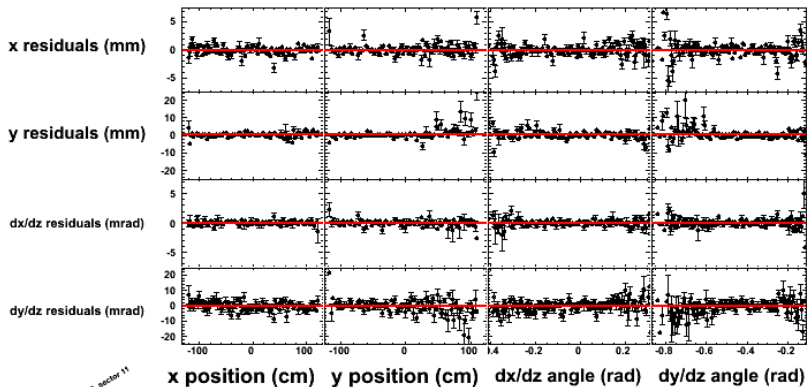
DT wheel 1, station 2, sector 9

# Wheel +1, station 2, sector 10



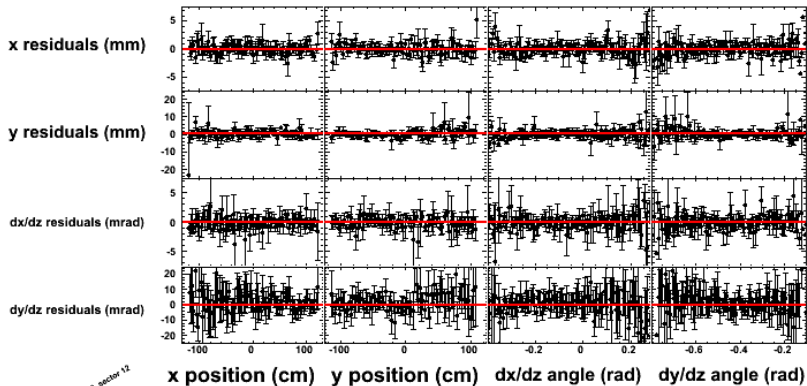
DT wheel 1, station 2, sector 10

# Wheel +1, station 2, sector 11



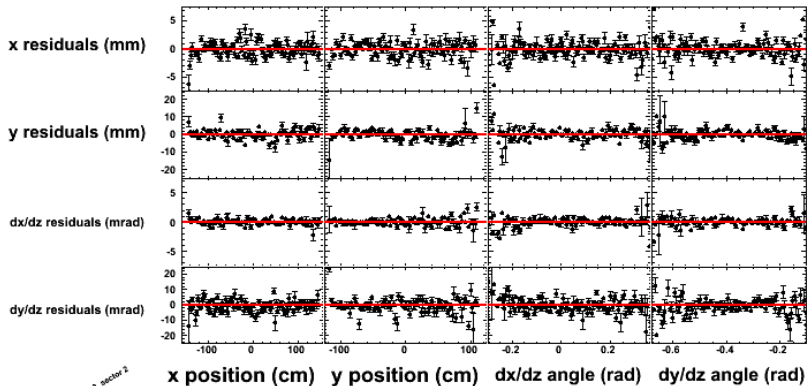
DT wheel 1, station 2, sector 11

# Wheel +1, station 2, sector 12



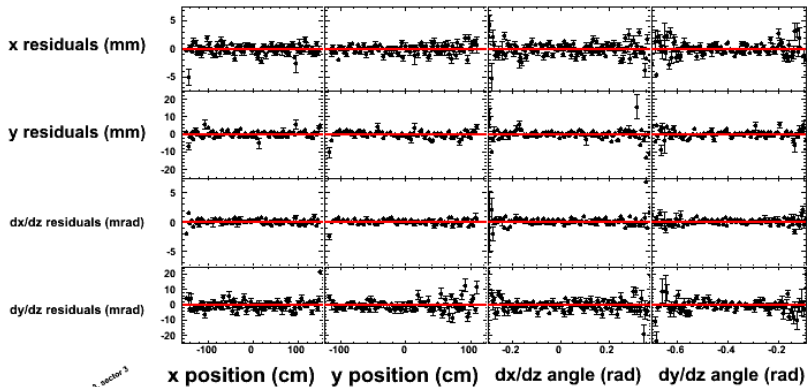
DT wheel 1, station 2, sector 12

# Wheel +1, station 3, sector 2



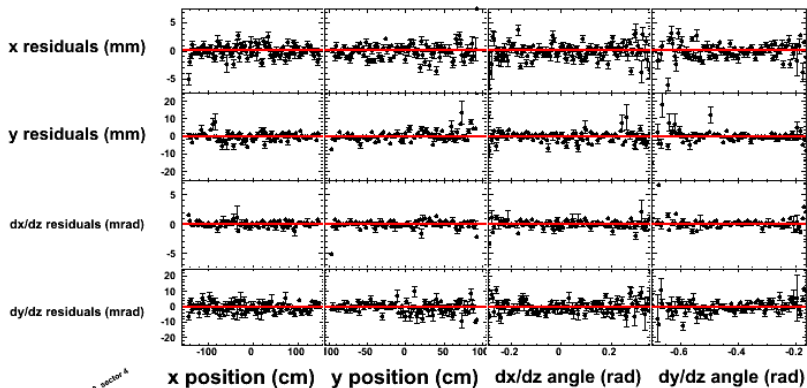
DT wheel 1, station 3, sector 2

# Wheel +1, station 3, sector 3



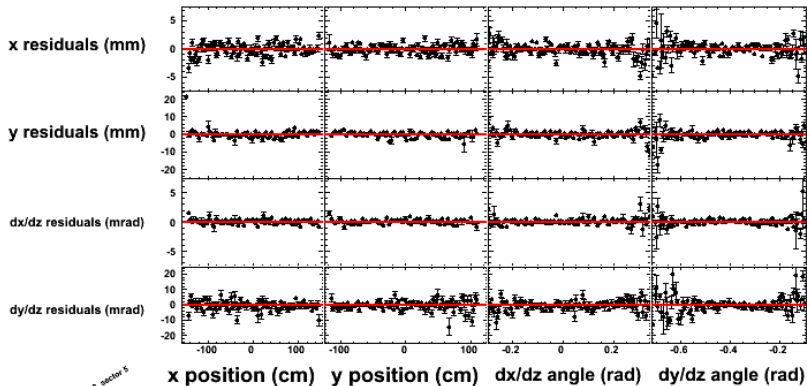
DT wheel 1, station 3, sector 3

# Wheel +1, station 3, sector 4



DT wheel 1, station 3, sector 4

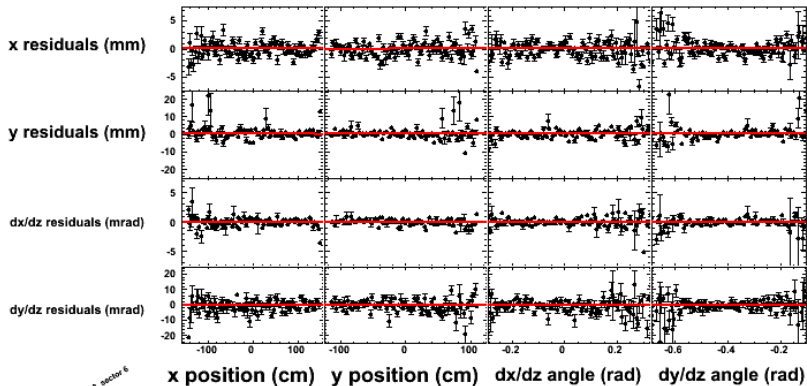
# Wheel +1, station 3, sector 5



DT wheel 1, station 3, sector 5

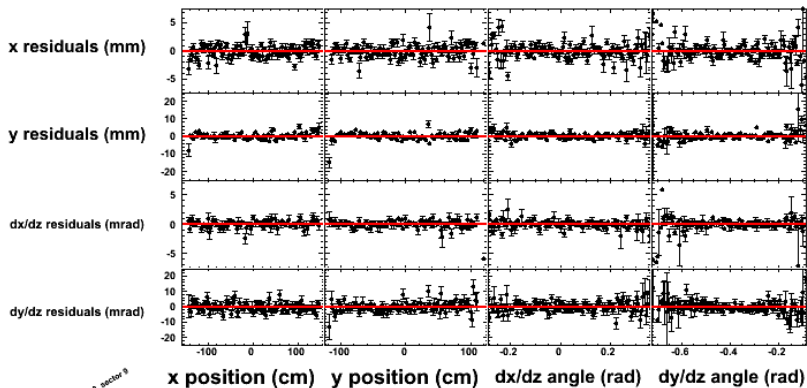


# Wheel +1, station 3, sector 6



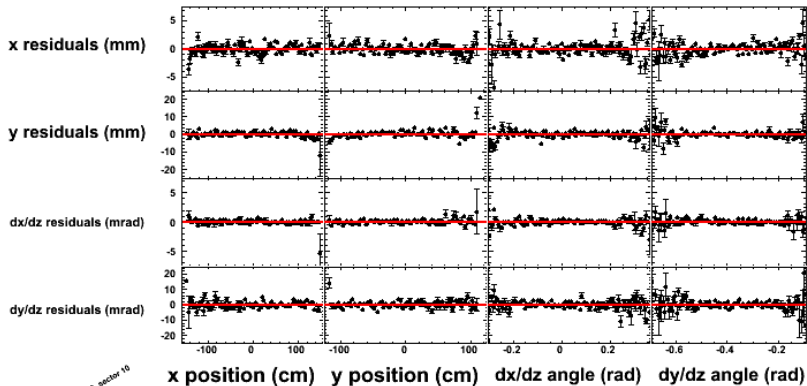
DT wheel 1, station 3, sector 6

# Wheel +1, station 3, sector 9



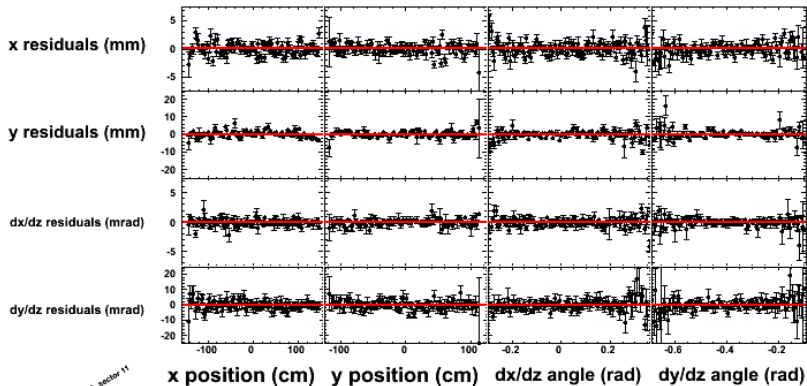
DT wheel 1, station 3, sector 9

# Wheel +1, station 3, sector 10



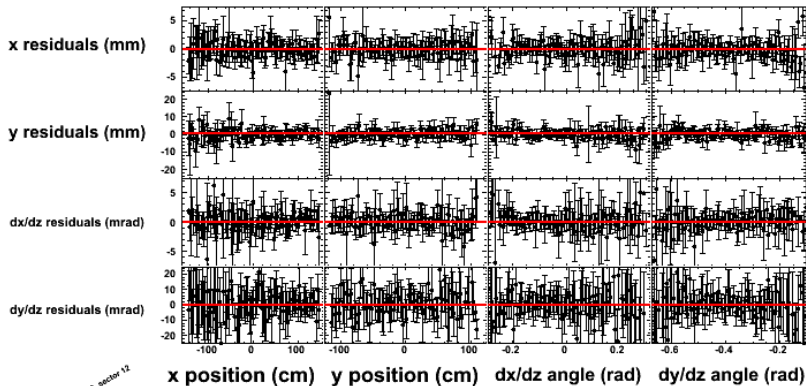
DT wheel 1, station 3, sector 10

# Wheel +1, station 3, sector 11



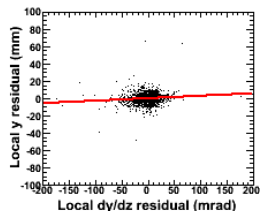
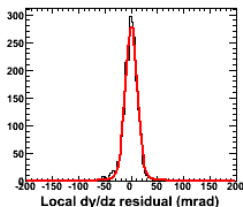
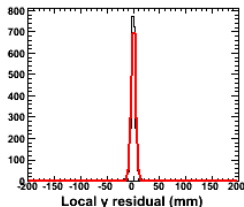
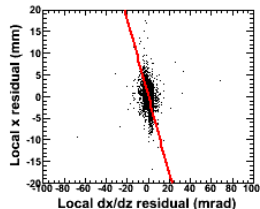
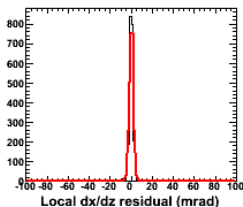
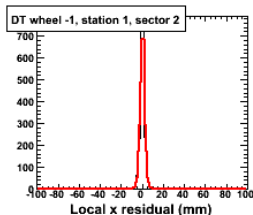
DT wheel 1, station 3, sector 11

# Wheel +1, station 3, sector 12

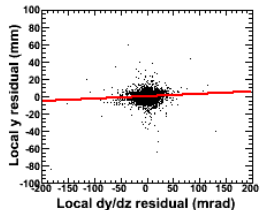
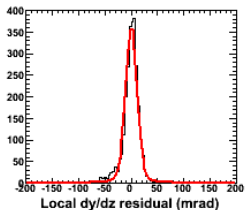
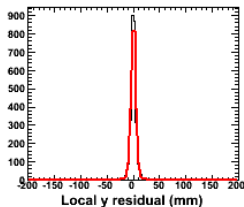
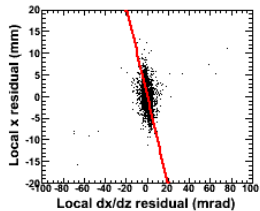
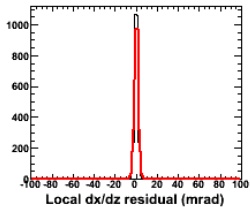
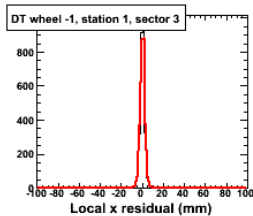


DT wheel 1, station 3, sector 12

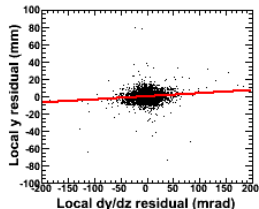
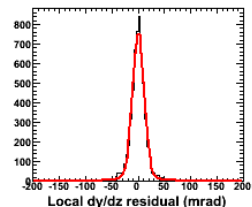
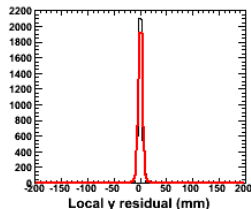
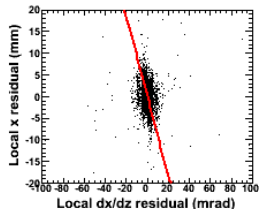
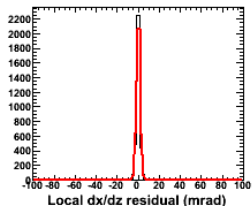
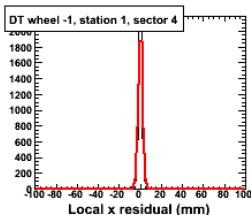
# Wheel +1, station 1, sector 2



# Wheel -1, station 1, sector 3

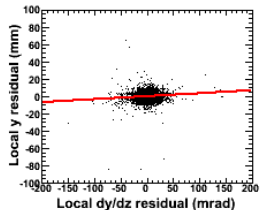
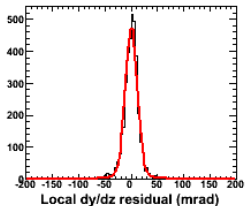
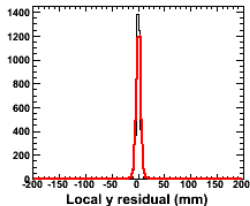
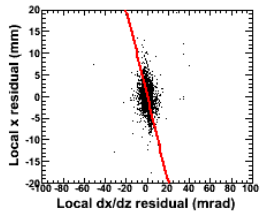
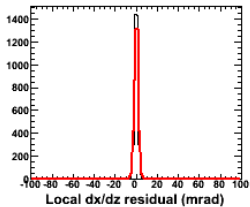
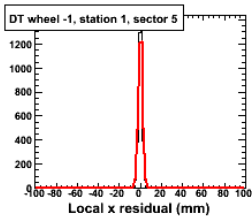


# Wheel -1, station 1, sector 4

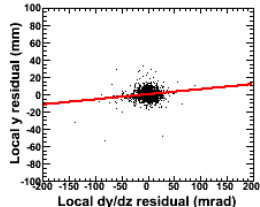
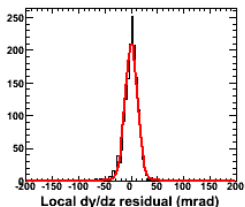
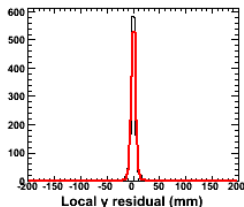
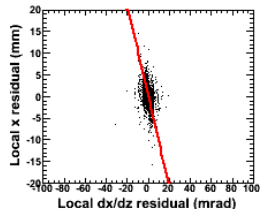
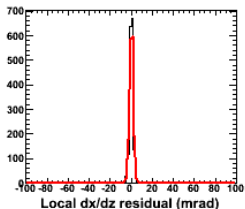
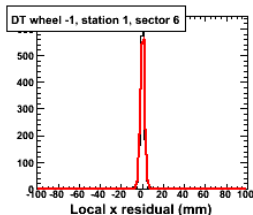




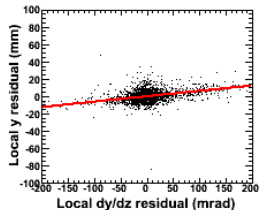
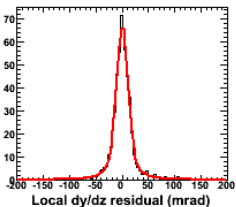
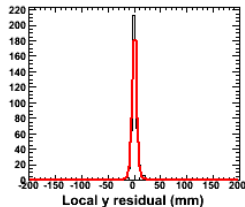
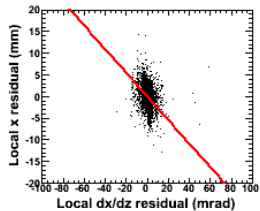
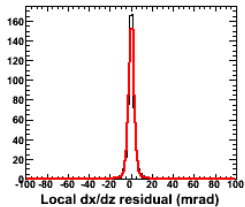
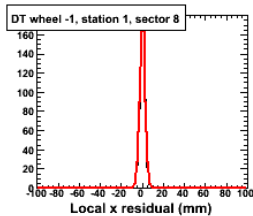
# Wheel -1, station 1, sector 5



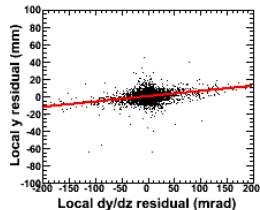
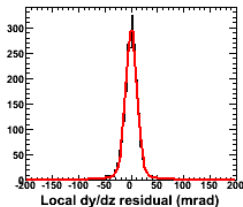
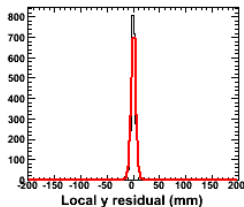
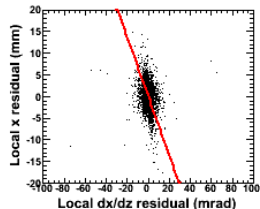
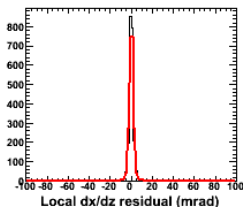
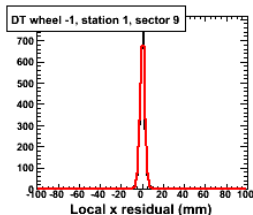
# Wheel -1, station 1, sector 6



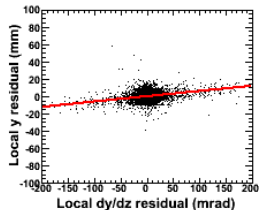
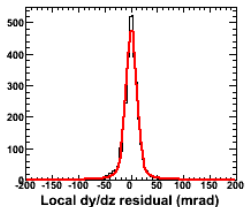
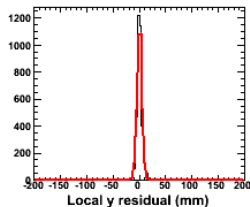
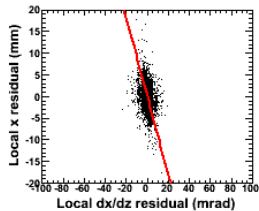
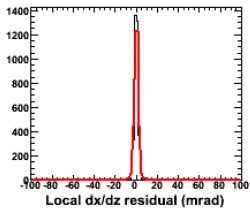
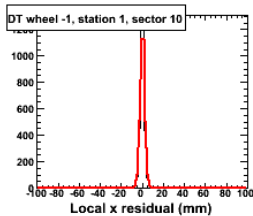
# Wheel -1, station 1, sector 8



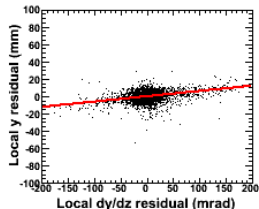
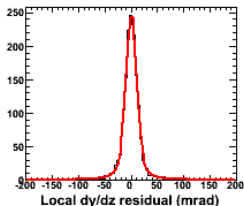
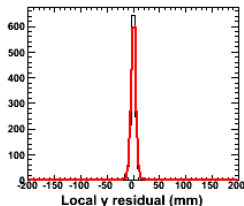
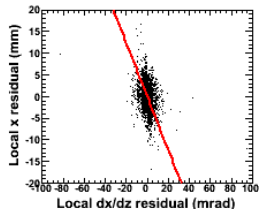
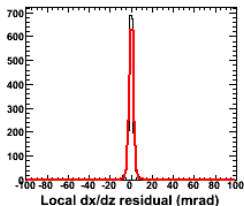
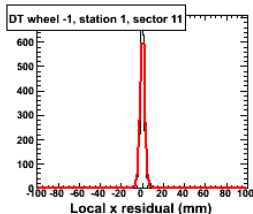
# Wheel -1, station 1, sector 9



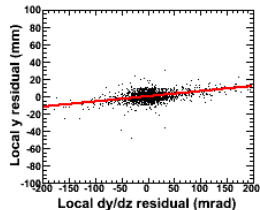
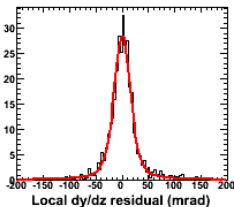
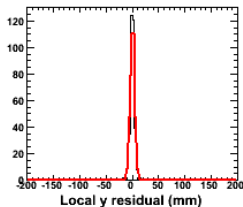
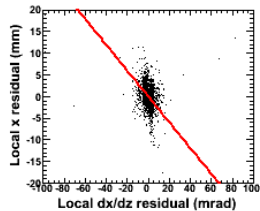
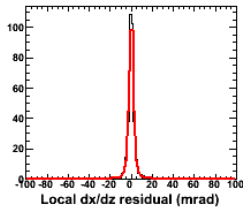
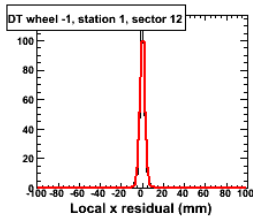
# Wheel -1, station 1, sector 10



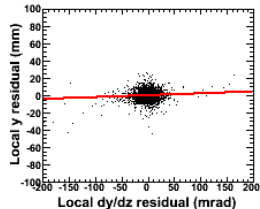
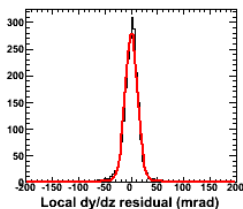
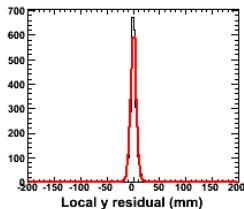
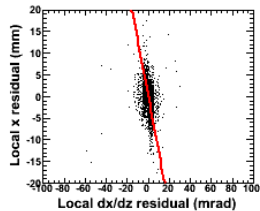
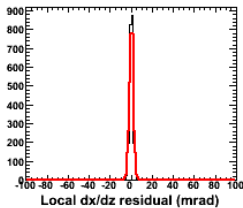
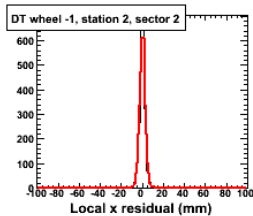
# Wheel -1, station 1, sector 11



# Wheel -1, station 1, sector 12

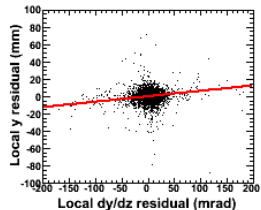
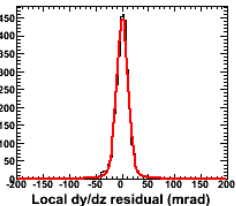
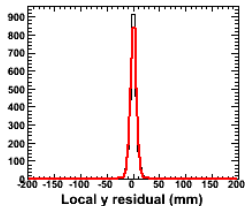
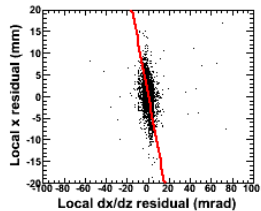
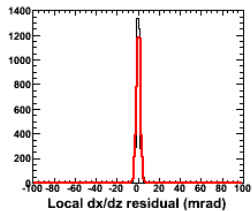
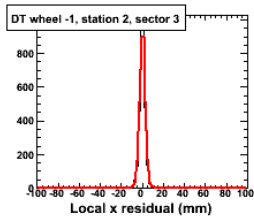


## Wheel -1, station 2, sector 2

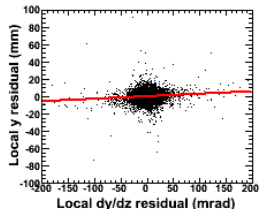
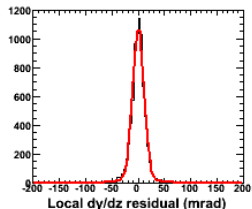
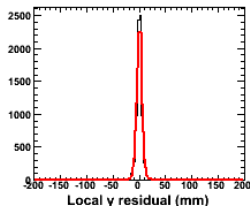
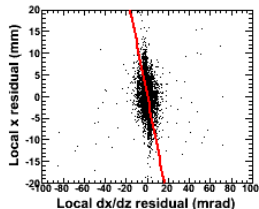
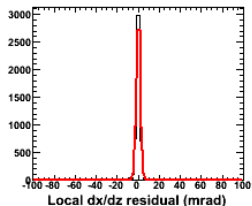
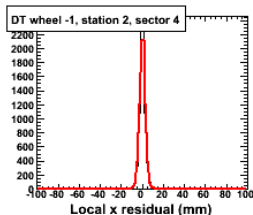




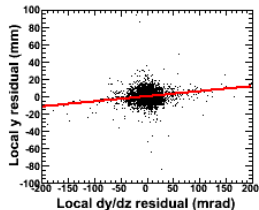
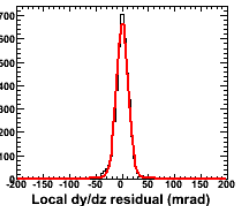
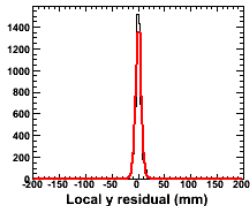
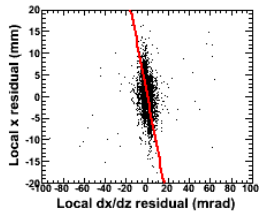
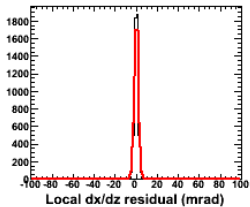
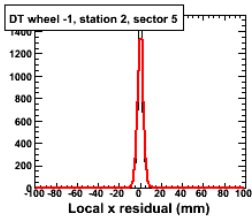
# Wheel -1, station 2, sector 3



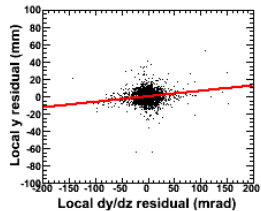
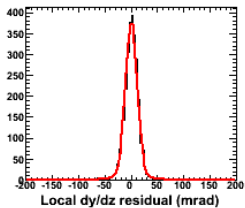
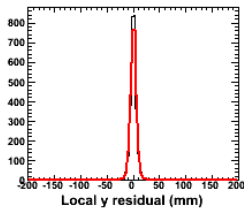
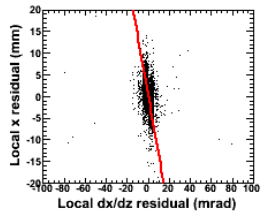
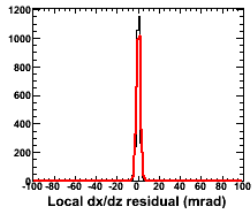
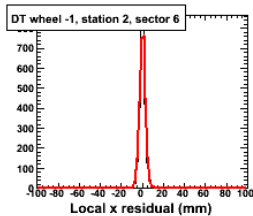
# Wheel -1, station 2, sector 4



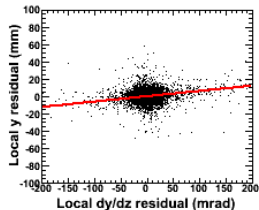
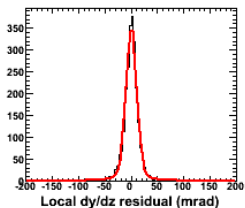
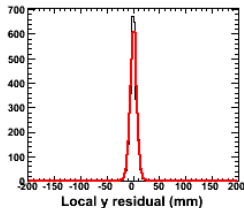
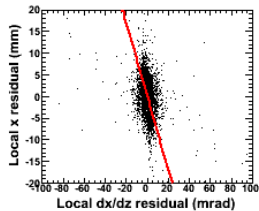
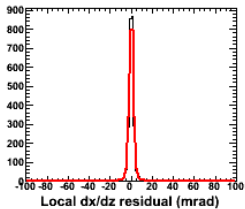
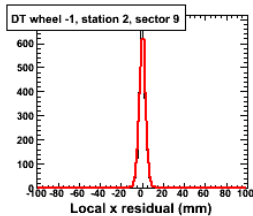
# Wheel -1, station 2, sector 5



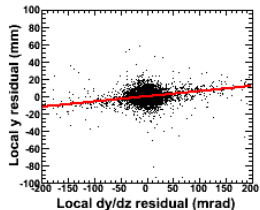
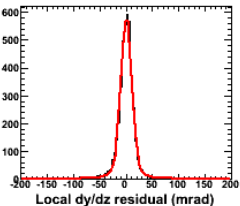
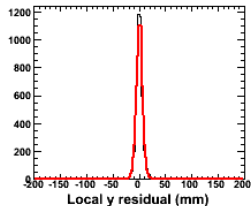
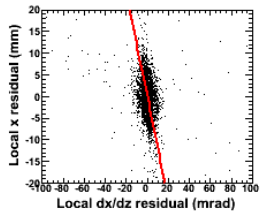
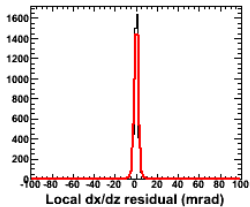
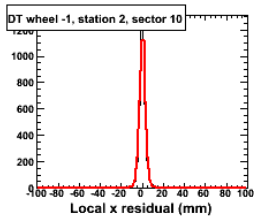
# Wheel -1, station 2, sector 6



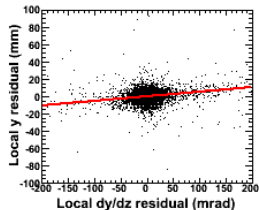
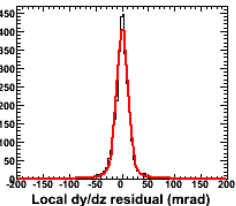
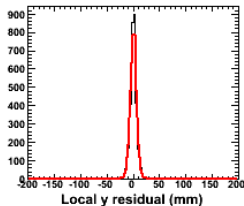
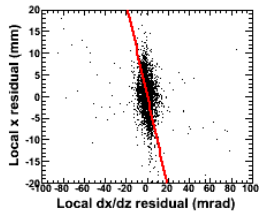
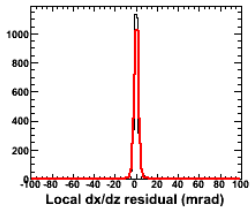
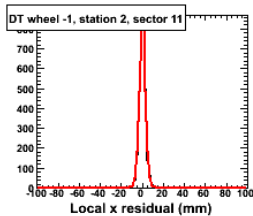
# Wheel -1, station 2, sector 9



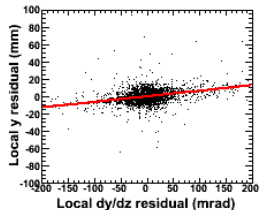
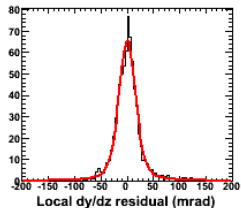
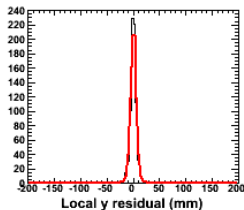
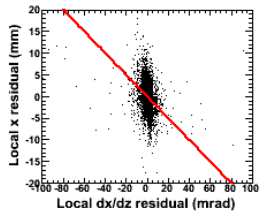
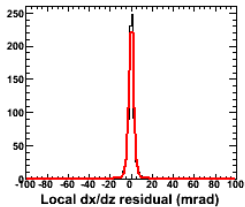
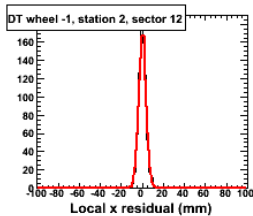
# Wheel -1, station 2, sector 10



# Wheel -1, station 2, sector 11

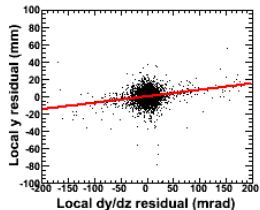
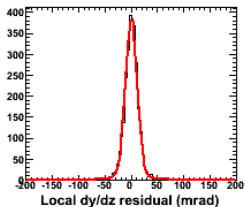
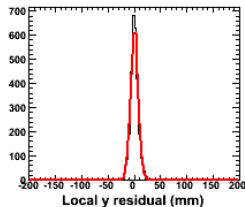
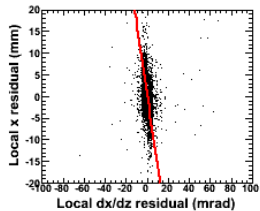
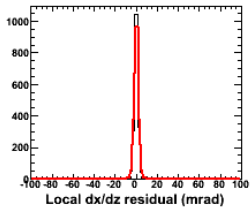
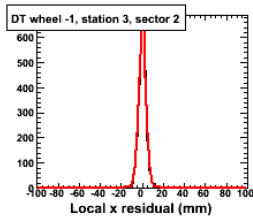


# Wheel -1, station 2, sector 12

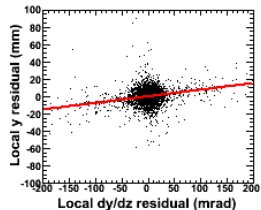
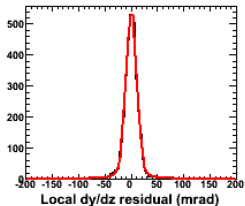
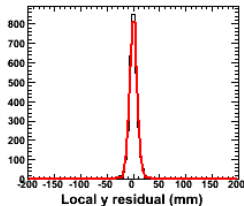
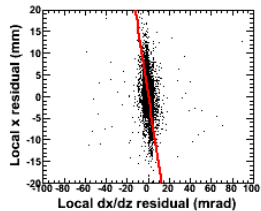
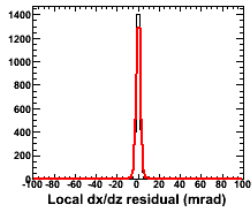
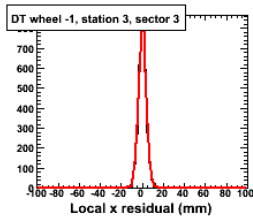




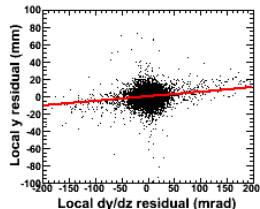
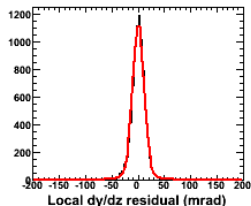
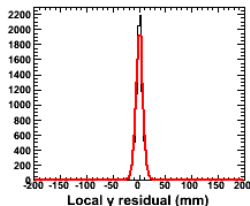
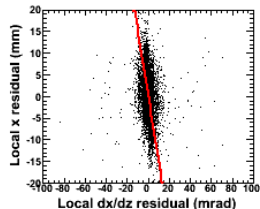
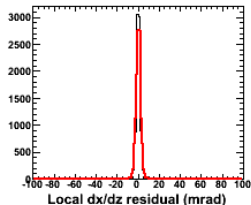
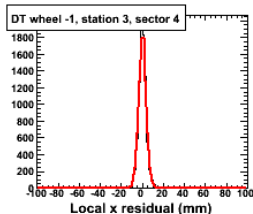
# Wheel -1, station 3, sector 2



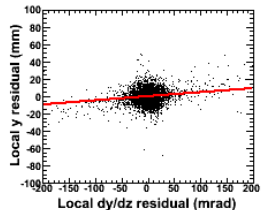
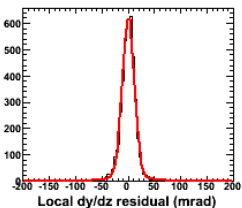
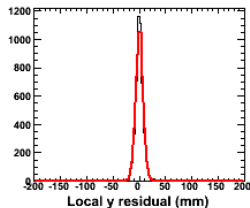
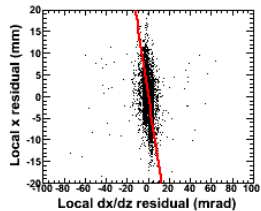
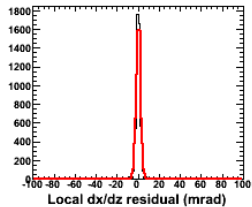
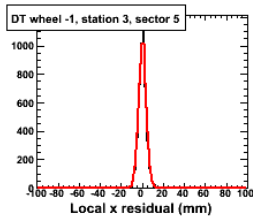
# Wheel -1, station 3, sector 3



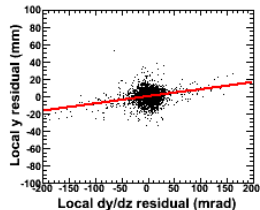
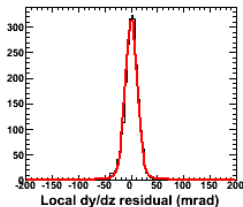
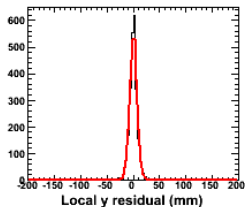
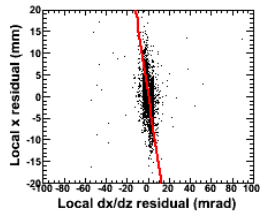
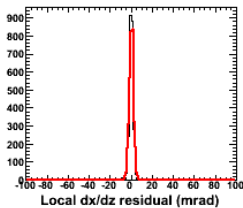
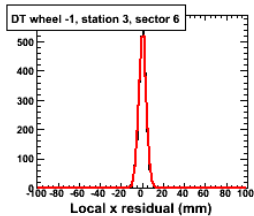
# Wheel -1, station 3, sector 4



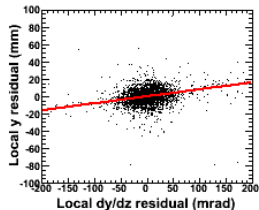
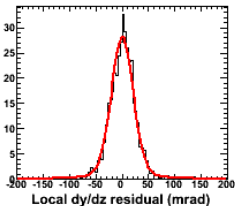
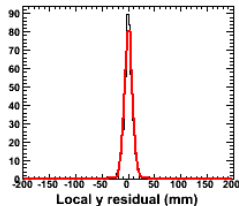
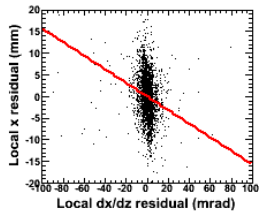
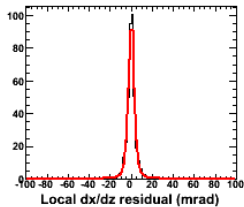
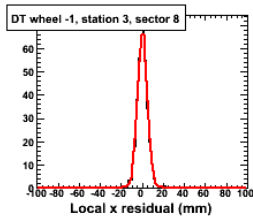
# Wheel -1, station 3, sector 5



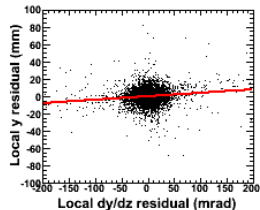
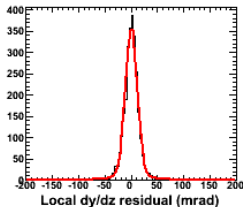
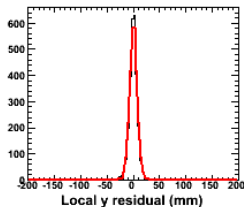
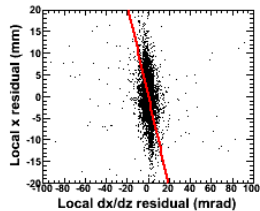
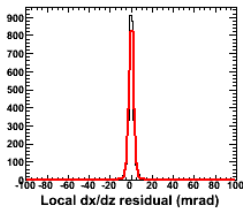
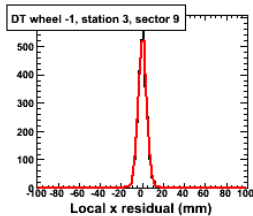
# Wheel -1, station 3, sector 6



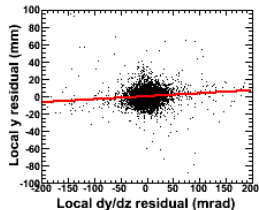
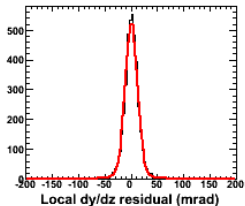
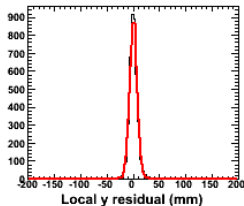
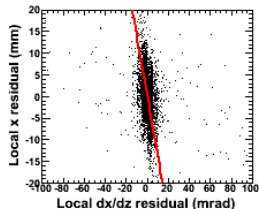
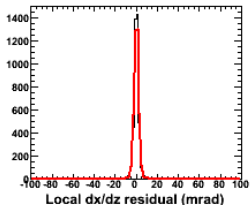
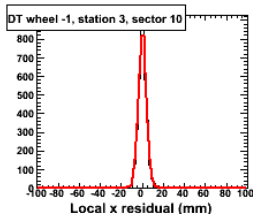
# Wheel -1, station 3, sector 8



# Wheel -1, station 3, sector 9

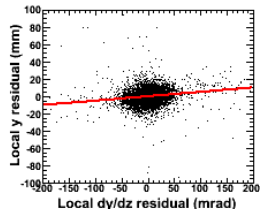
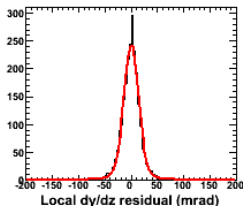
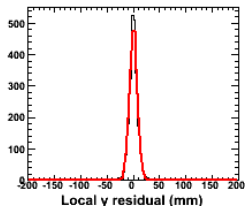
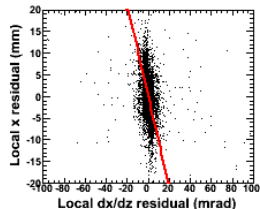
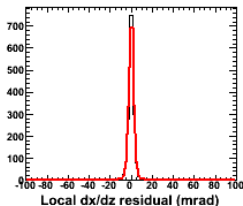
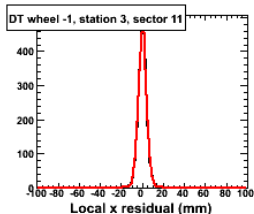


# Wheel -1, station 3, sector 10

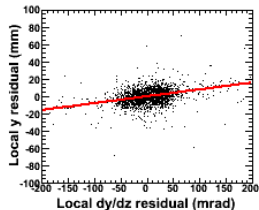
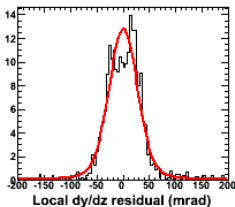
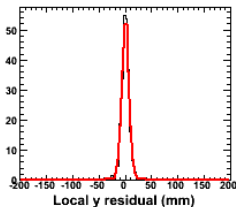
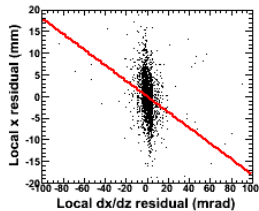
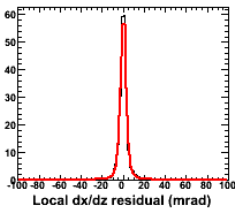
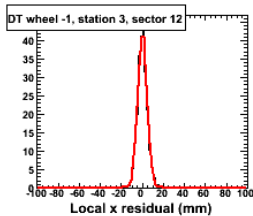




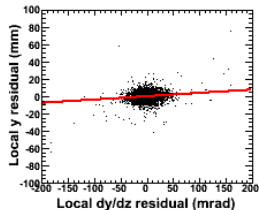
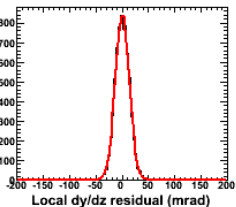
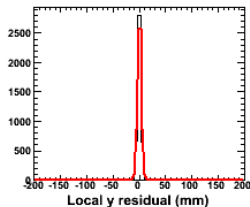
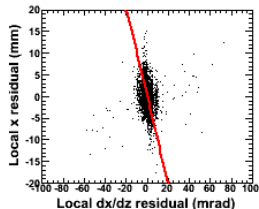
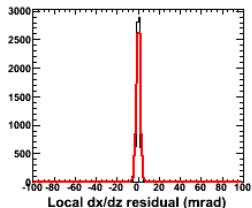
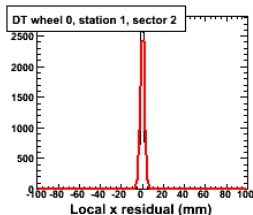
# Wheel -1, station 3, sector 11



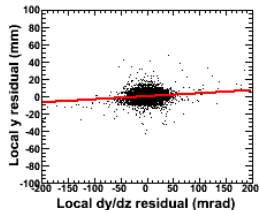
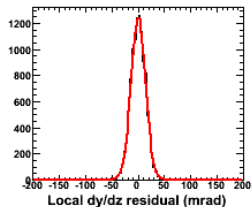
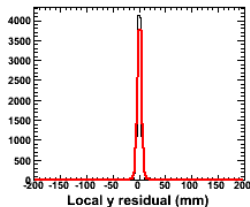
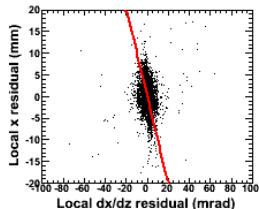
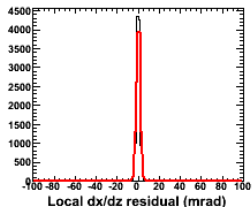
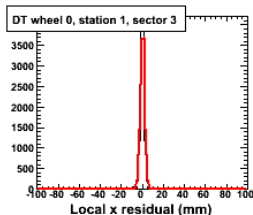
# Wheel -1, station 3, sector 12



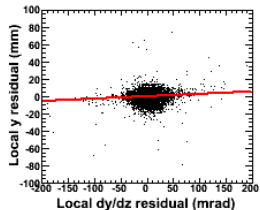
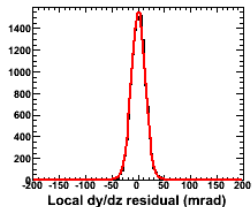
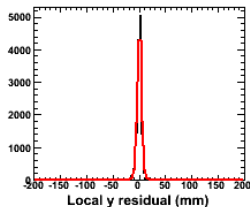
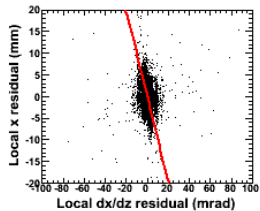
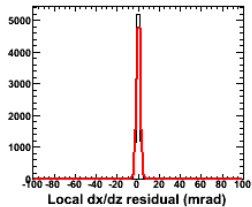
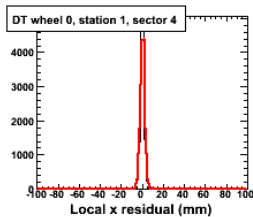
# Wheel 0, station 1, sector 2



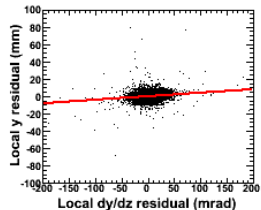
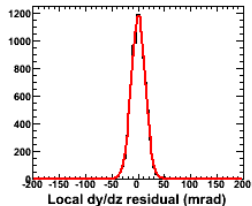
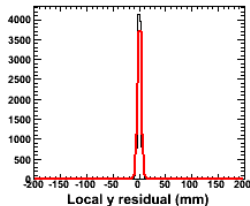
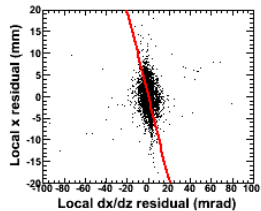
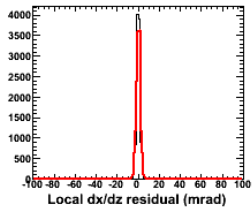
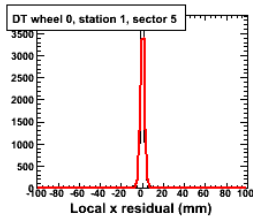
# Wheel 0, station 1, sector 3



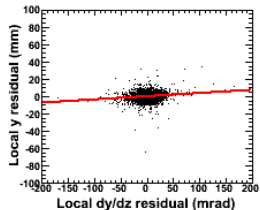
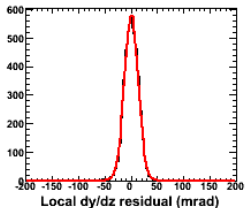
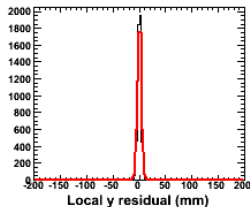
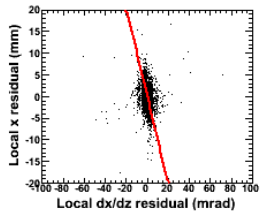
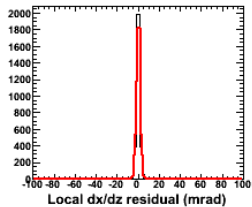
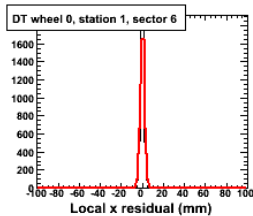
# Wheel 0, station 1, sector 4



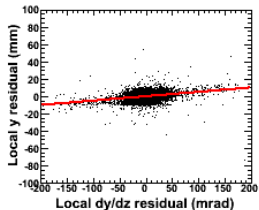
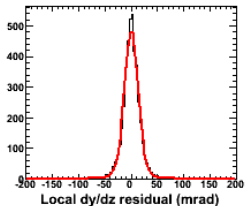
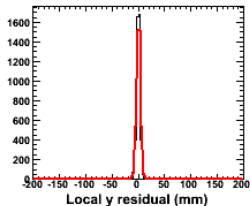
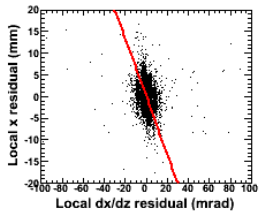
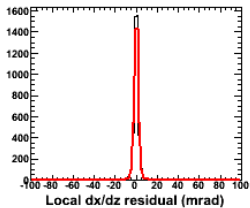
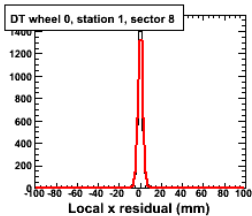
# Wheel 0, station 1, sector 5



# Wheel 0, station 1, sector 6

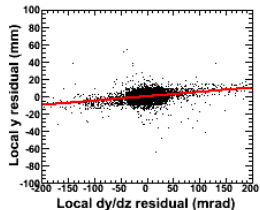
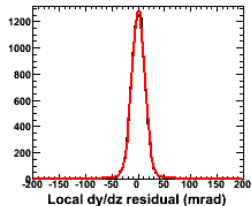
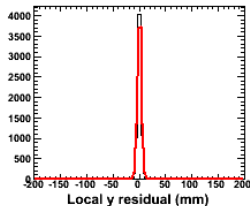
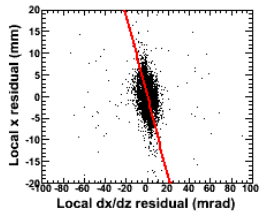
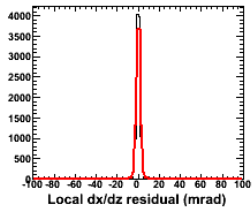
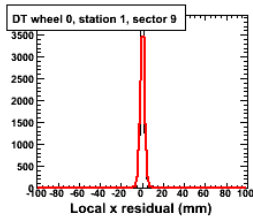


# Wheel 0, station 1, sector 8

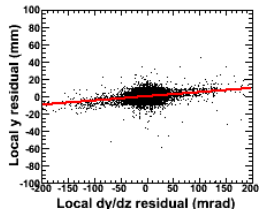
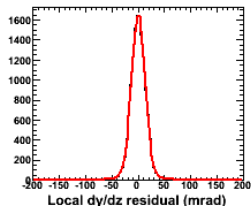
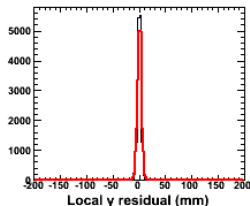
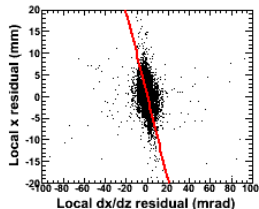
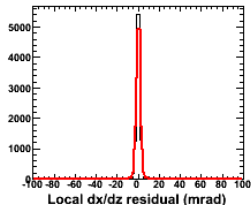
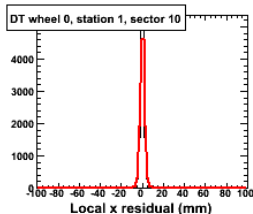




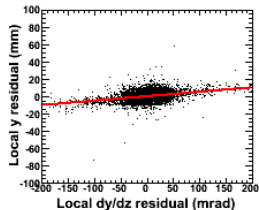
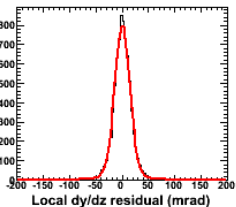
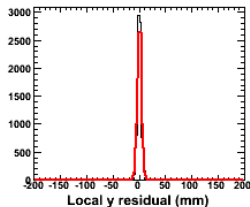
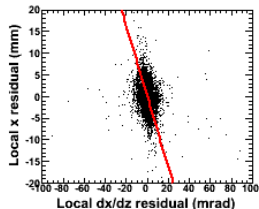
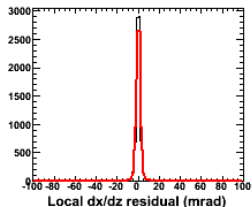
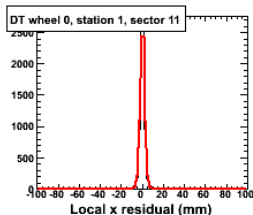
# Wheel 0, station 1, sector 9



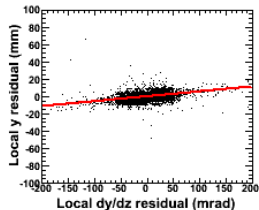
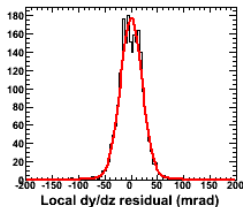
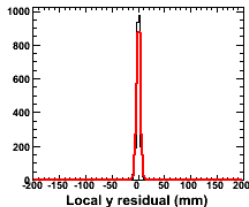
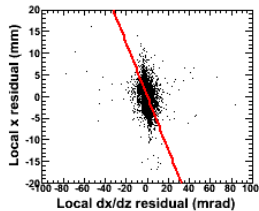
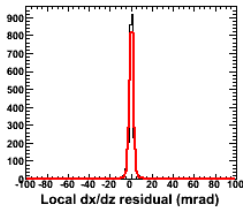
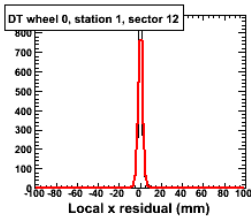
# Wheel 0, station 1, sector 10



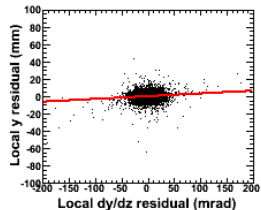
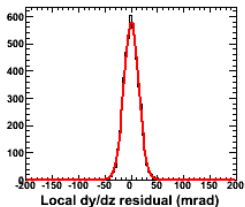
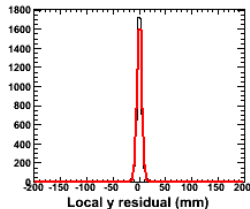
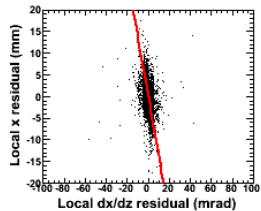
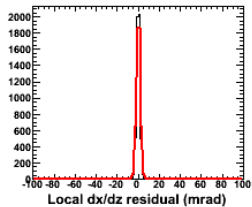
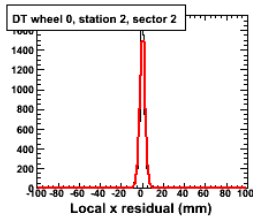
# Wheel 0, station 1, sector 11



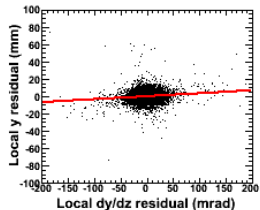
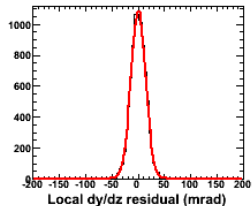
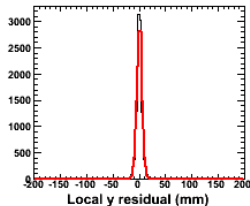
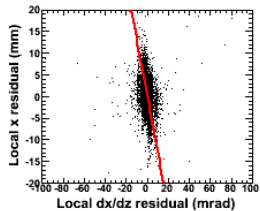
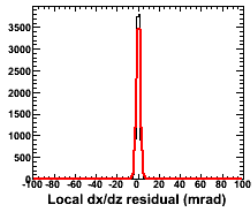
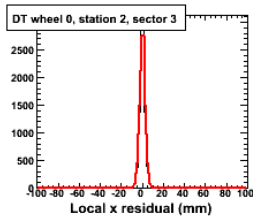
# Wheel 0, station 1, sector 12



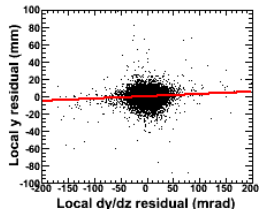
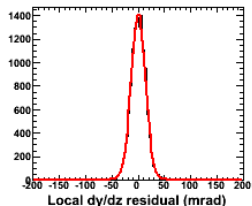
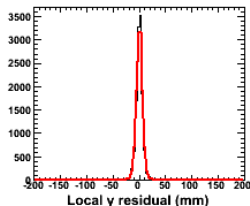
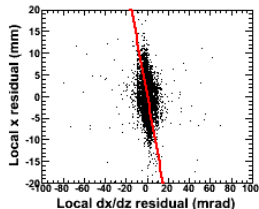
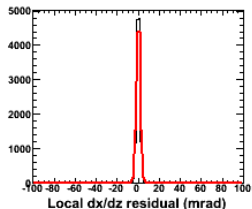
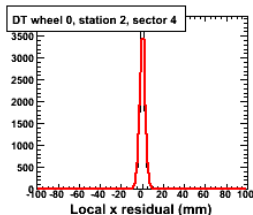
# Wheel 0, station 2, sector 2



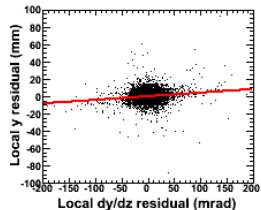
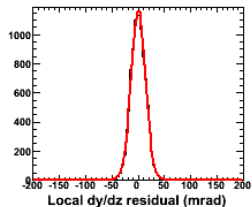
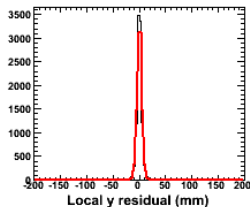
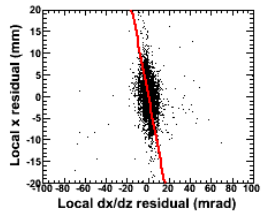
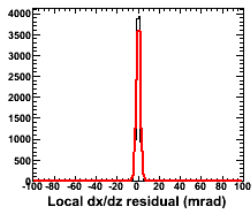
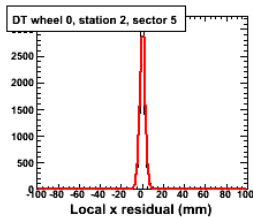
# Wheel 0, station 2, sector 3



# Wheel 0, station 2, sector 4

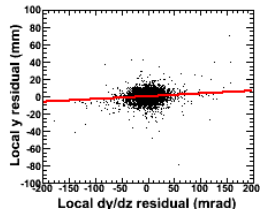
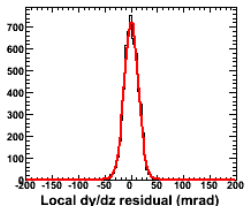
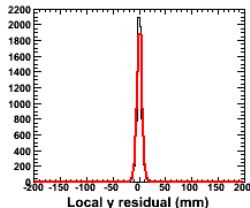
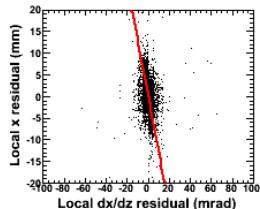
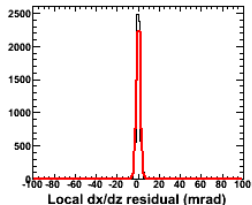
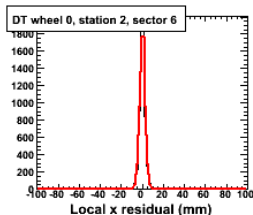


# Wheel 0, station 2, sector 5

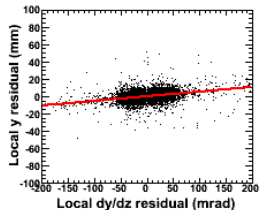
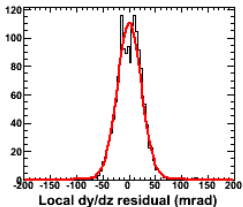
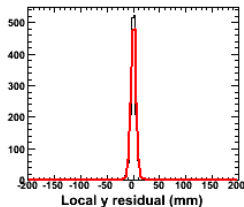
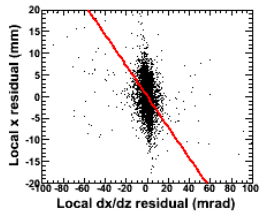
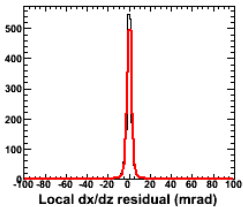
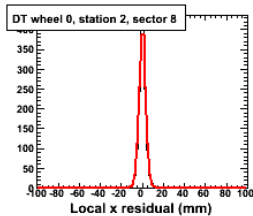




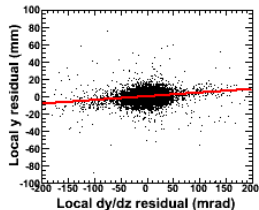
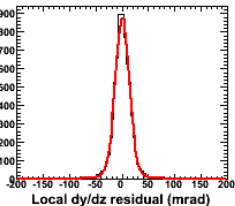
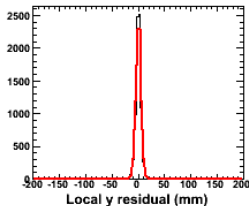
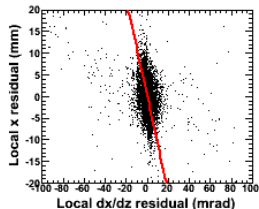
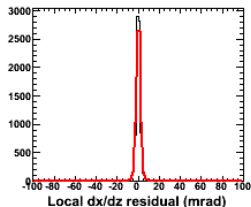
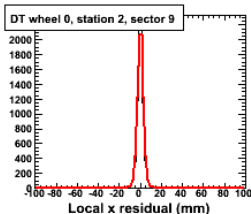
# Wheel 0, station 2, sector 6



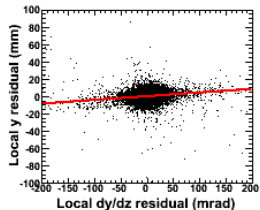
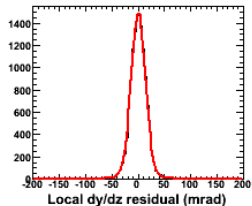
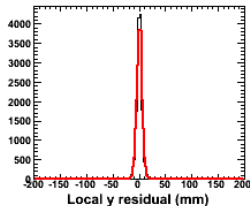
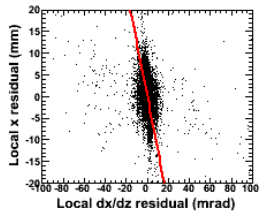
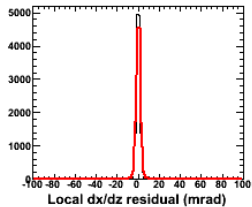
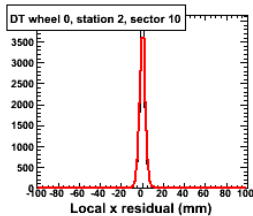
# Wheel 0, station 2, sector 8



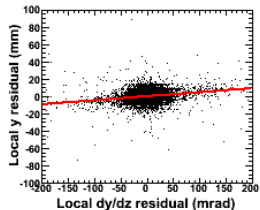
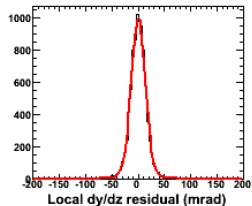
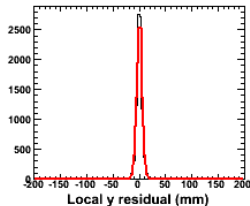
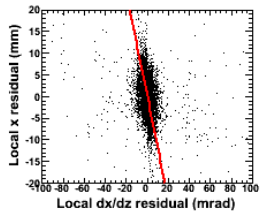
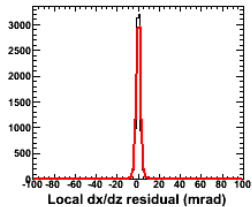
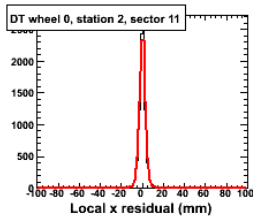
# Wheel 0, station 2, sector 9



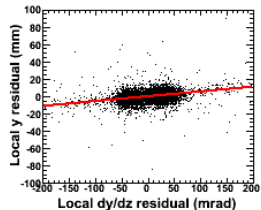
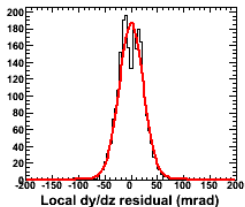
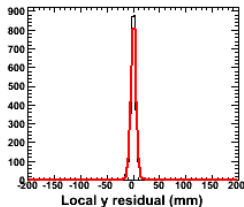
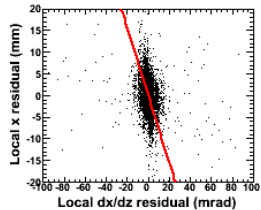
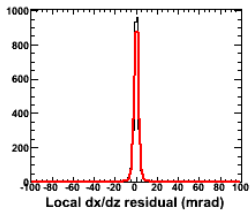
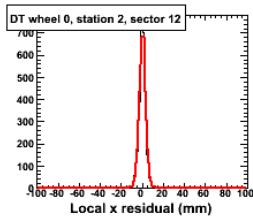
# Wheel 0, station 2, sector 10



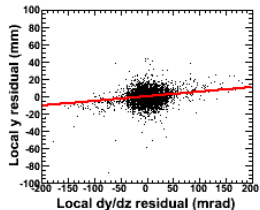
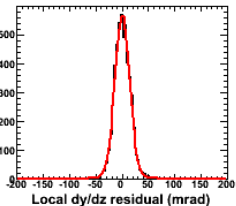
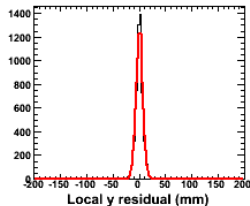
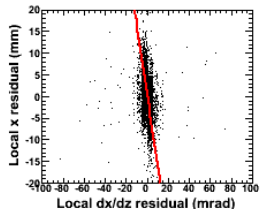
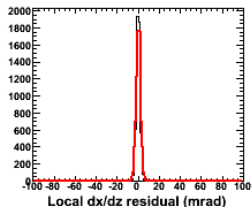
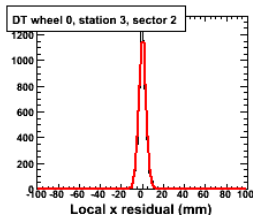
# Wheel 0, station 2, sector 11



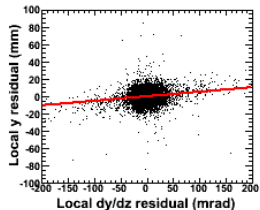
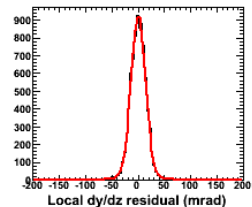
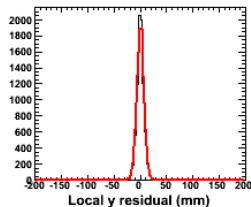
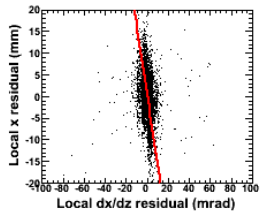
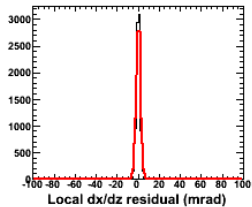
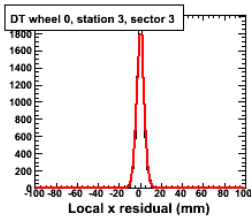
# Wheel 0, station 2, sector 12



# Wheel 0, station 3, sector 2

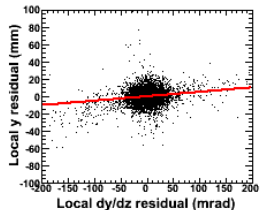
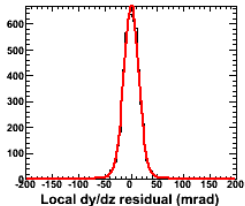
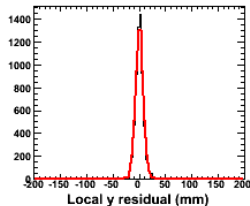
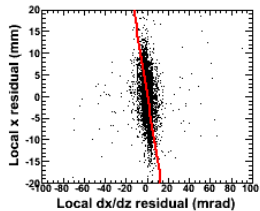
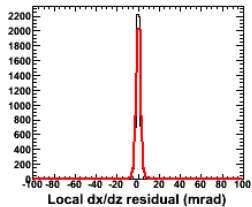
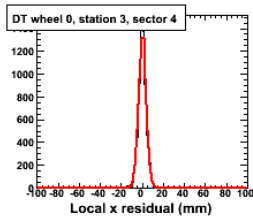


# Wheel 0, station 3, sector 3

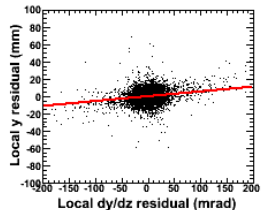
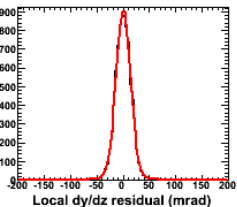
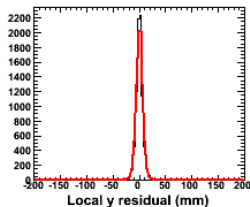
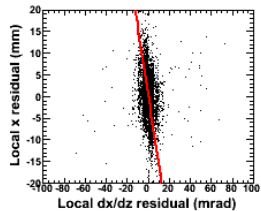
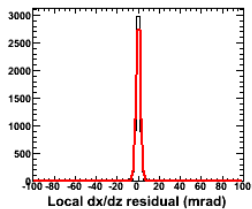
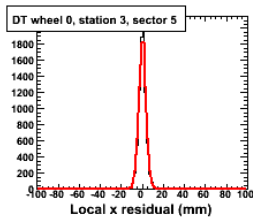




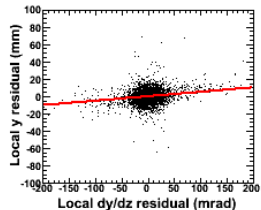
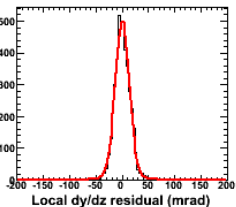
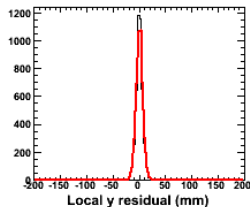
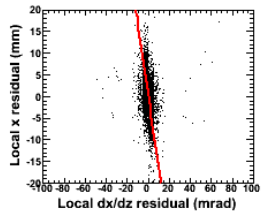
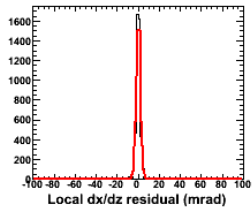
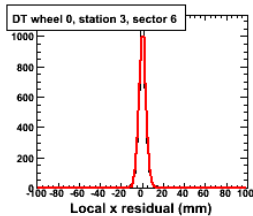
# Wheel 0, station 3, sector 4



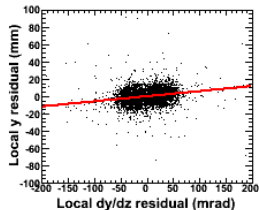
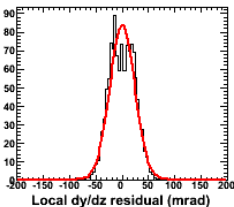
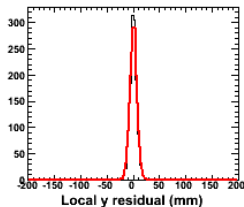
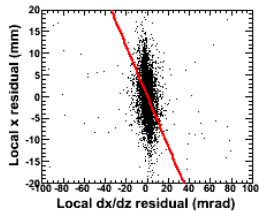
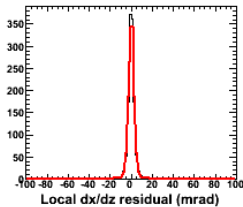
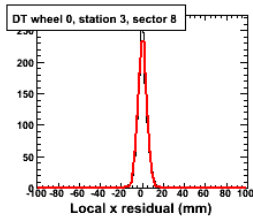
# Wheel 0, station 3, sector 5



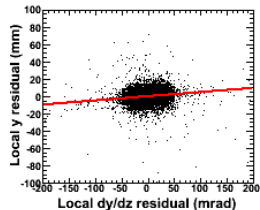
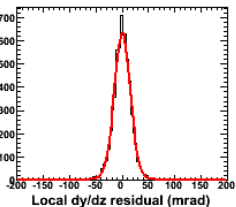
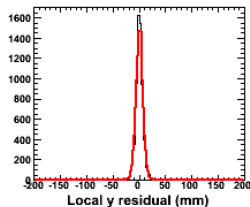
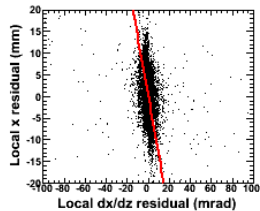
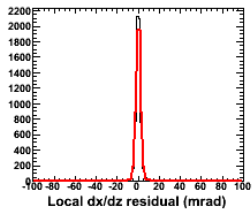
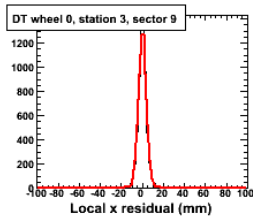
# Wheel 0, station 3, sector 6



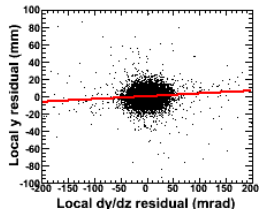
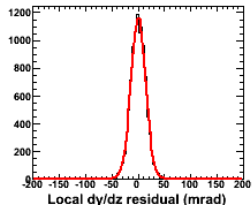
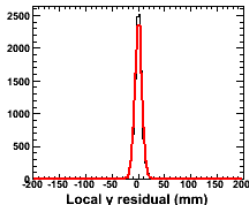
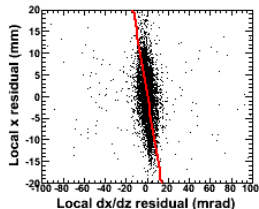
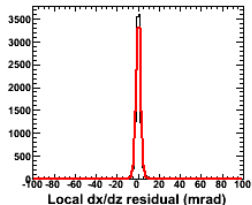
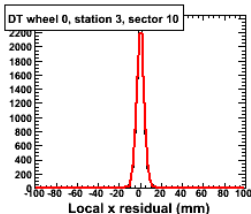
# Wheel 0, station 3, sector 8



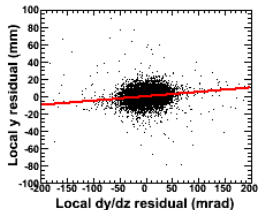
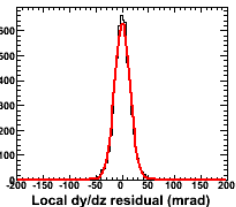
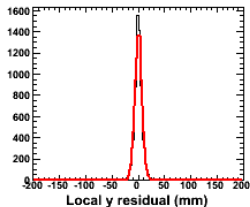
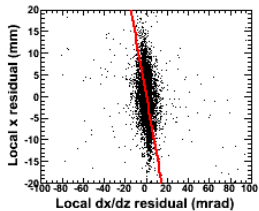
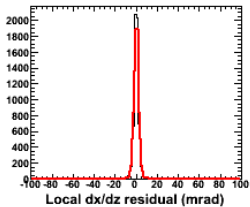
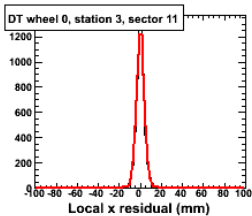
# Wheel 0, station 3, sector 9



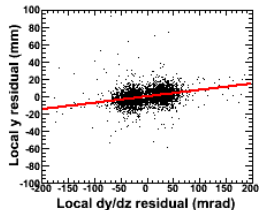
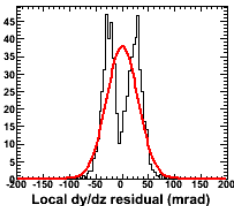
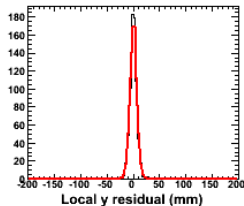
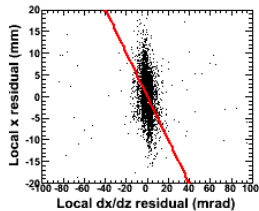
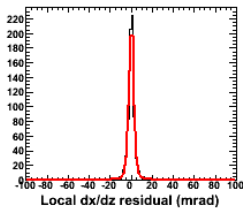
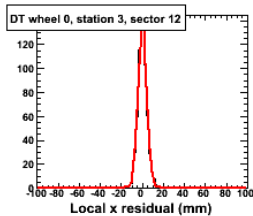
# Wheel 0, station 3, sector 10



# Wheel 0, station 3, sector 11

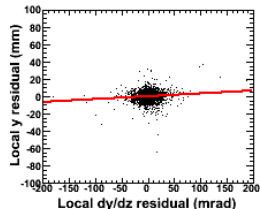
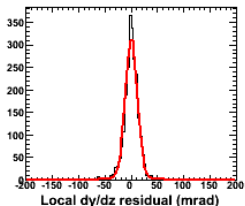
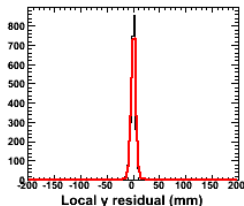
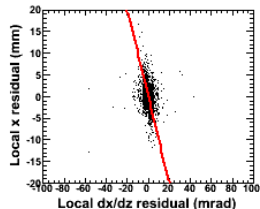
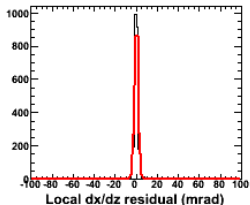
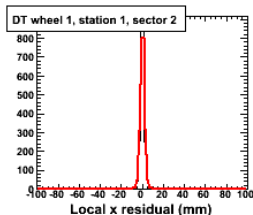


# Wheel 0, station 3, sector 12

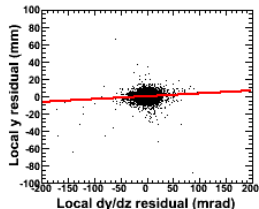
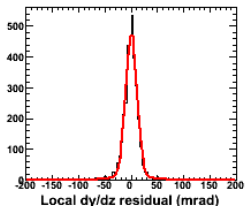
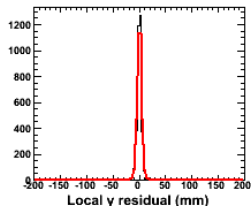
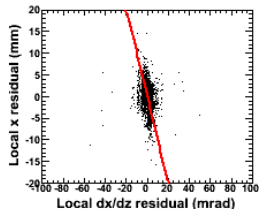
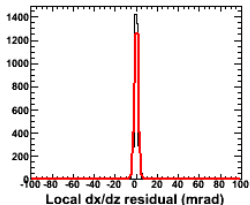
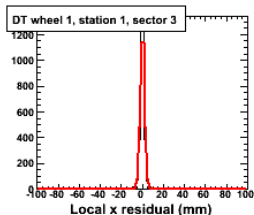




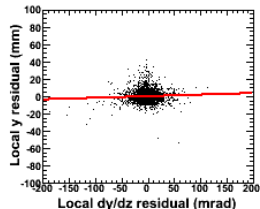
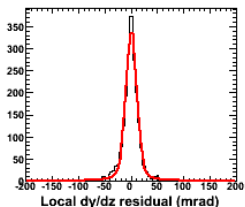
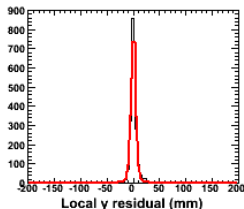
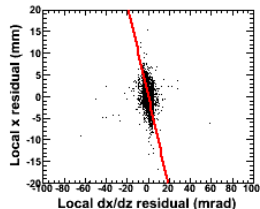
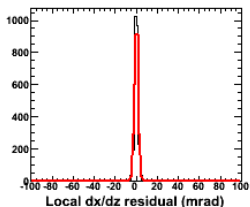
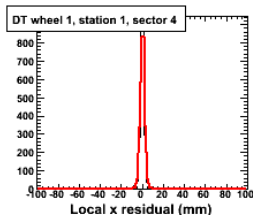
## Wheel +1, station 1, sector 2



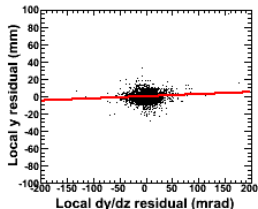
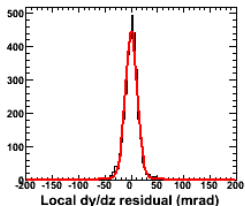
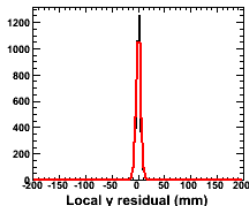
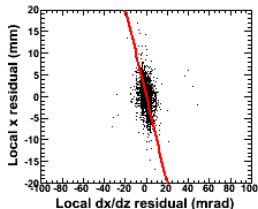
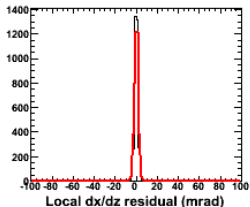
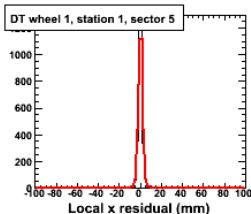
# Wheel +1, station 1, sector 3



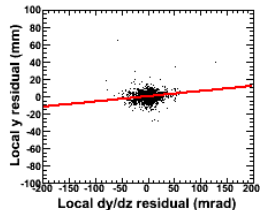
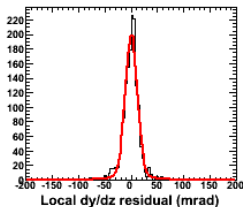
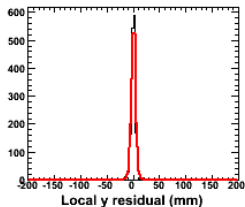
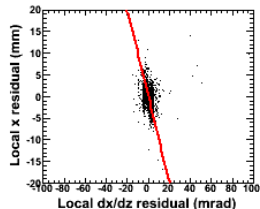
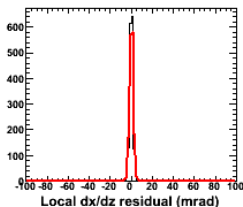
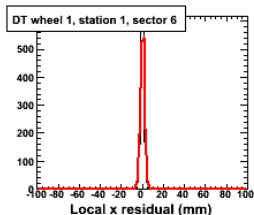
# Wheel +1, station 1, sector 4



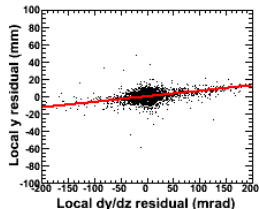
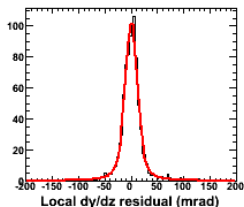
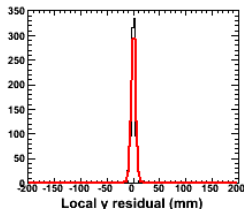
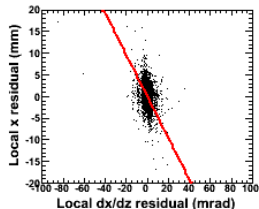
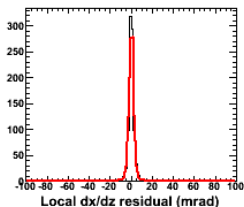
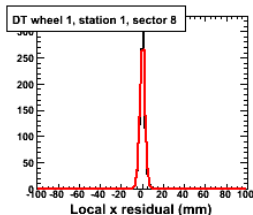
# Wheel +1, station 1, sector 5



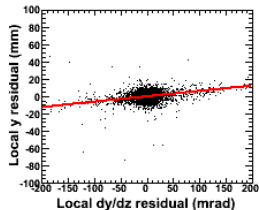
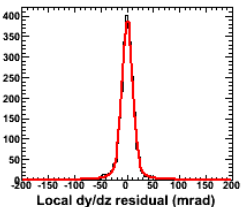
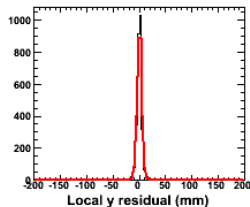
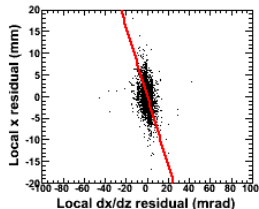
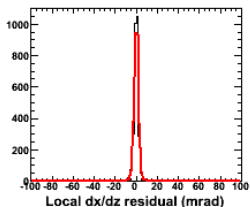
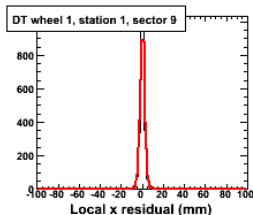
# Wheel +1, station 1, sector 6



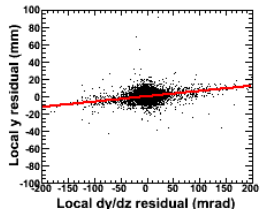
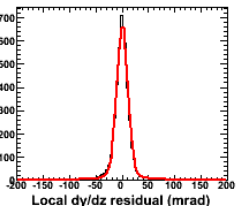
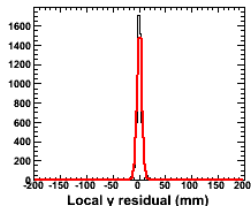
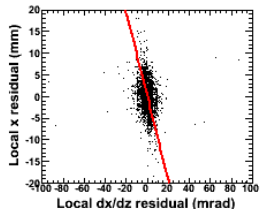
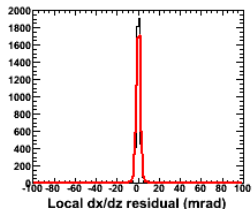
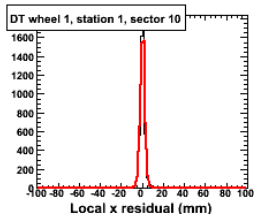
# Wheel +1, station 1, sector 8



# Wheel +1, station 1, sector 9

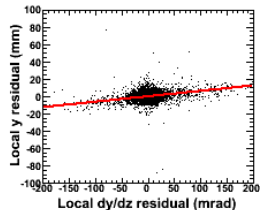
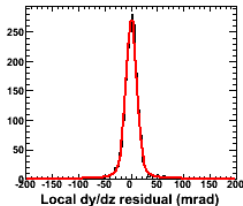
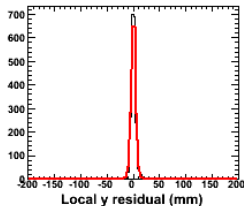
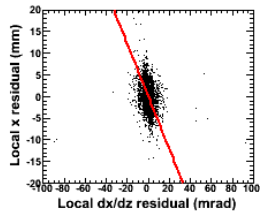
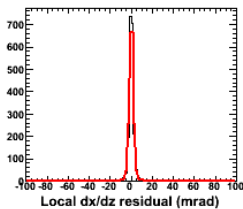
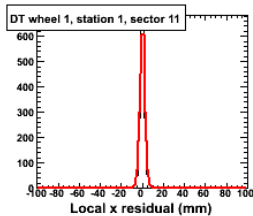


# Wheel +1, station 1, sector 10

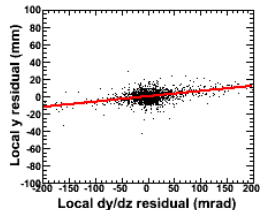
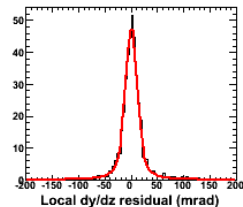
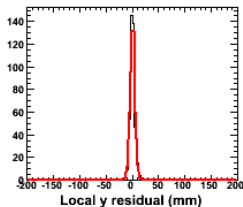
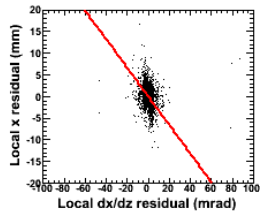
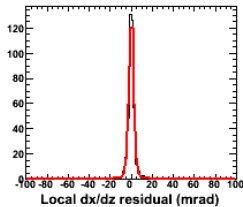
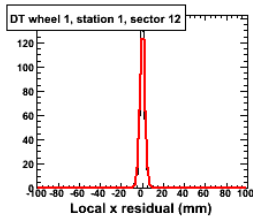




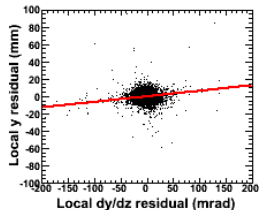
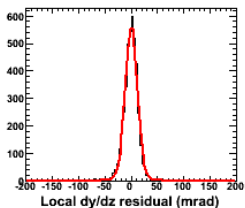
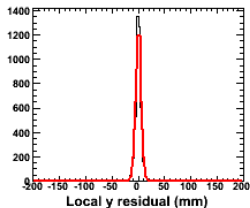
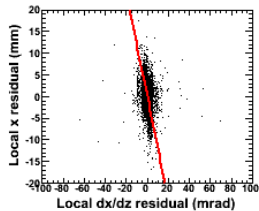
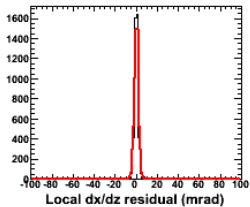
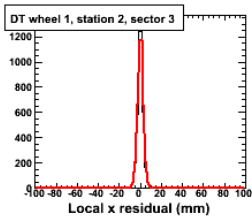
# Wheel +1, station 1, sector 11



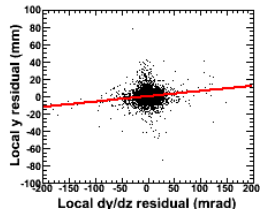
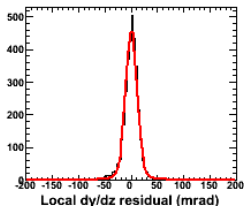
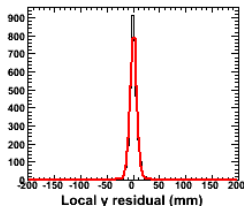
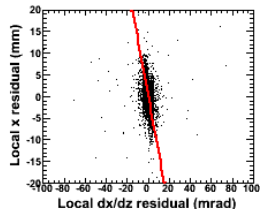
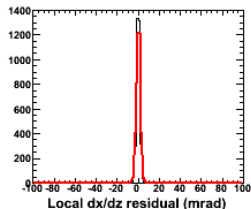
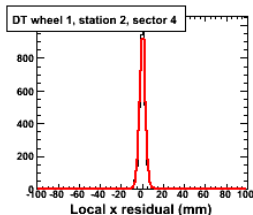
# Wheel +1, station 1, sector 12



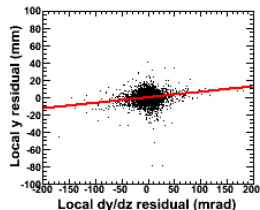
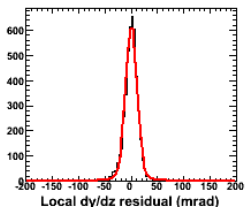
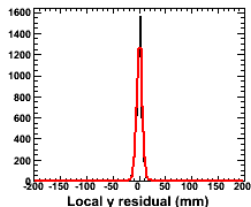
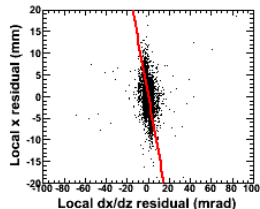
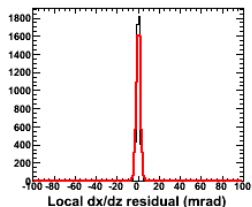
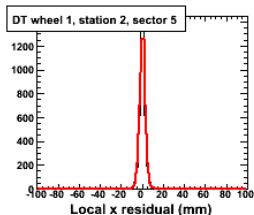
# Wheel +1, station 2, sector 3



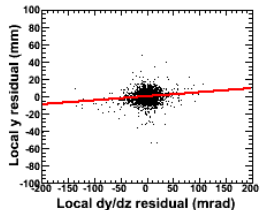
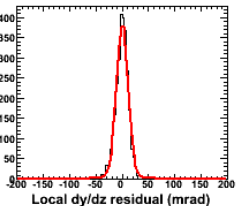
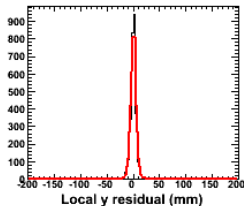
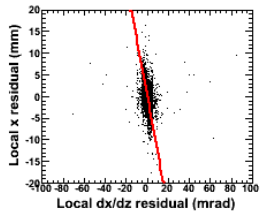
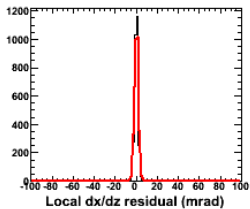
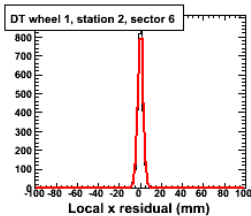
# Wheel +1, station 2, sector 4



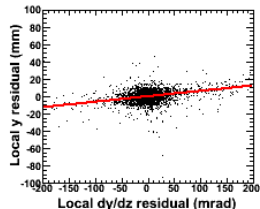
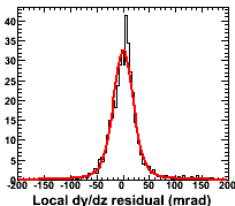
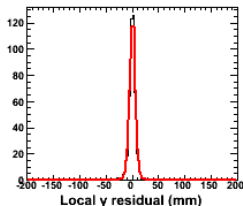
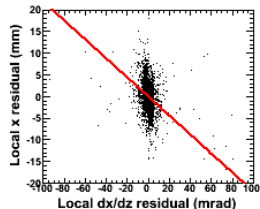
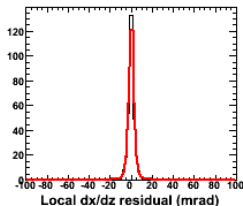
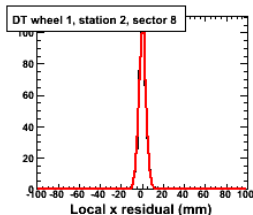
# Wheel +1, station 2, sector 5



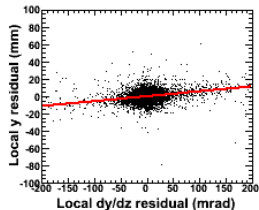
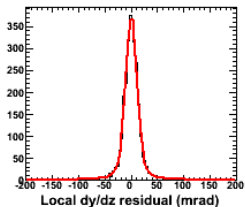
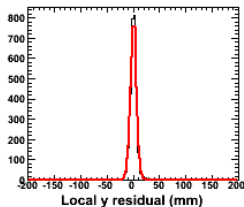
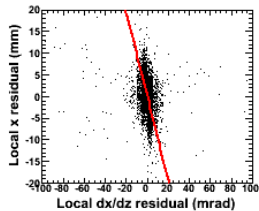
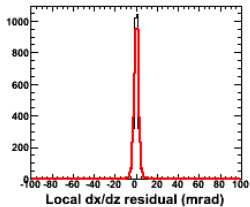
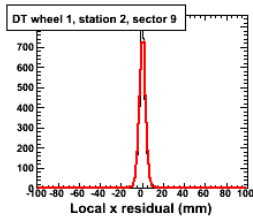
# Wheel +1, station 2, sector 6



# Wheel +1, station 2, sector 8

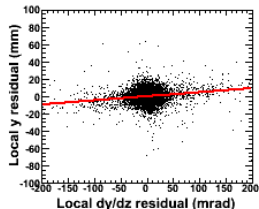
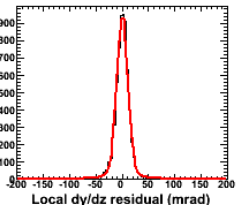
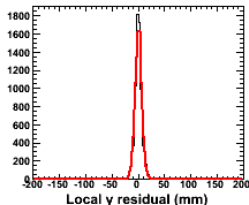
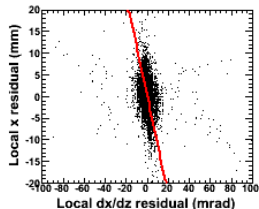
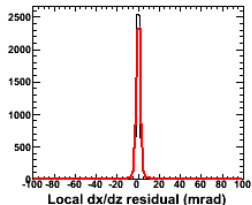
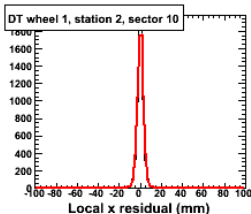


# Wheel +1, station 2, sector 9

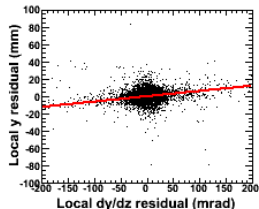
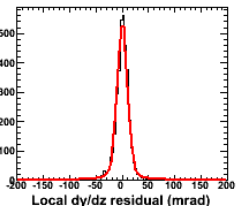
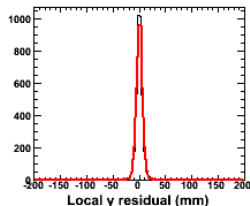
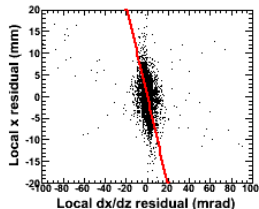
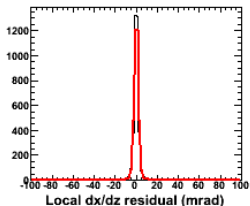
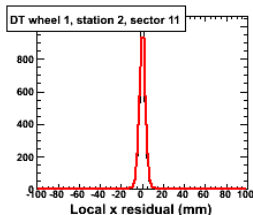




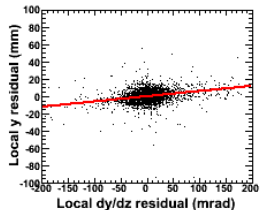
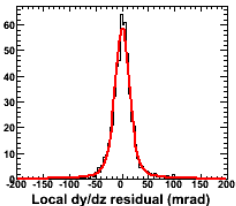
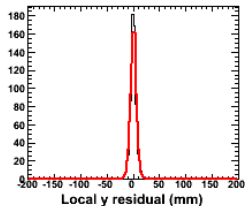
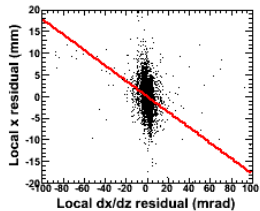
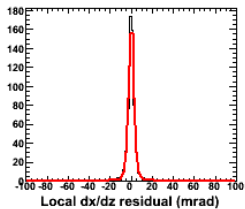
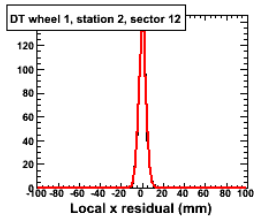
# Wheel +1, station 2, sector 10



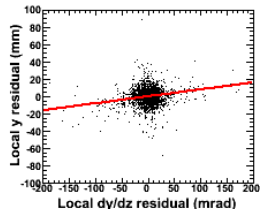
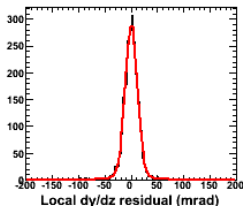
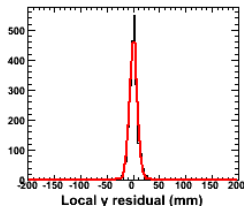
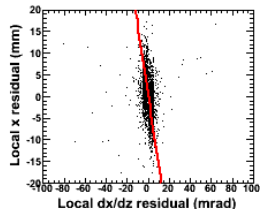
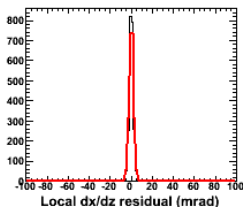
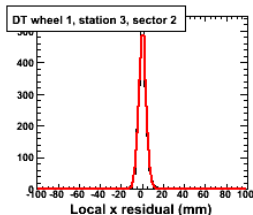
# Wheel +1, station 2, sector 11



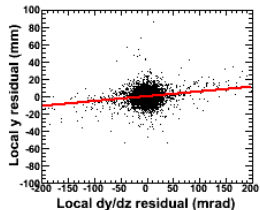
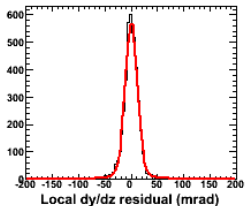
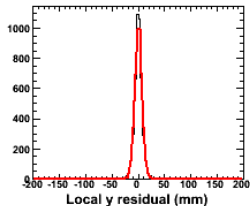
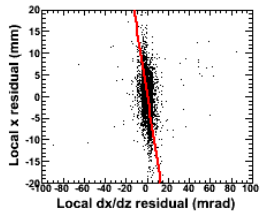
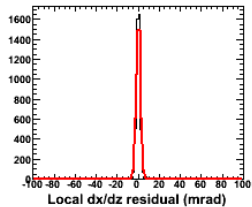
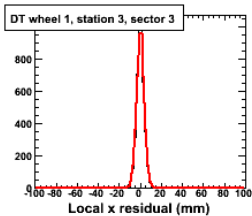
# Wheel +1, station 2, sector 12



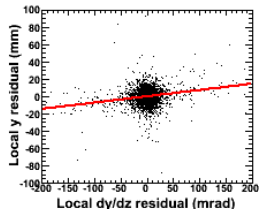
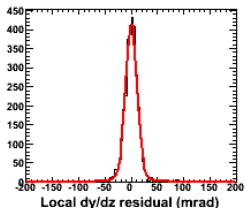
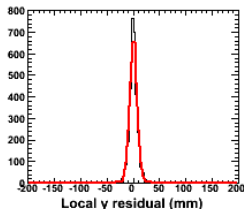
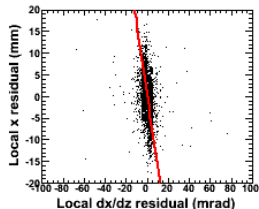
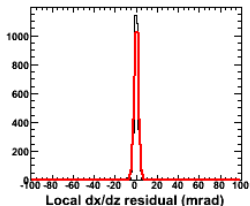
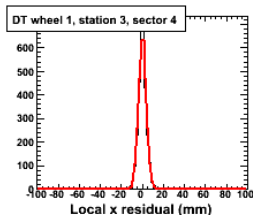
# Wheel +1, station 3, sector 2



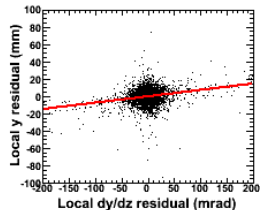
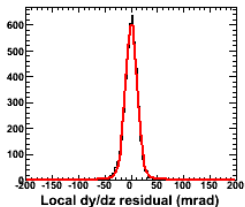
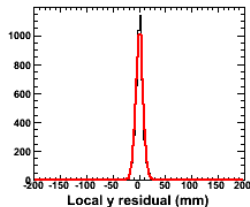
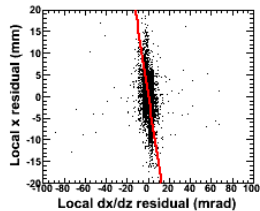
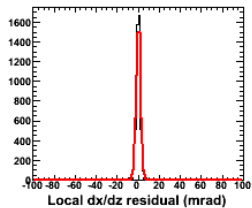
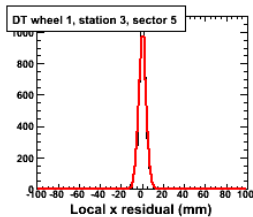
# Wheel +1, station 3, sector 3



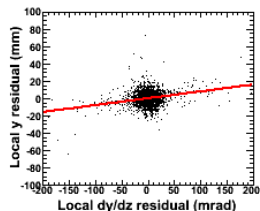
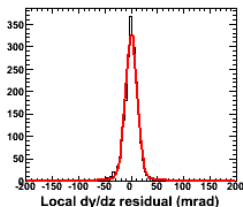
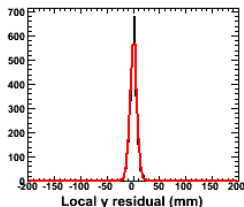
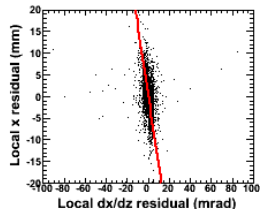
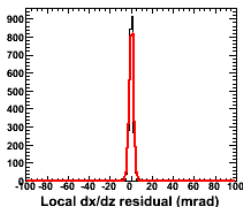
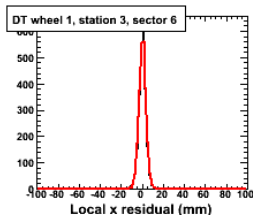
# Wheel +1, station 3, sector 4



# Wheel +1, station 3, sector 5

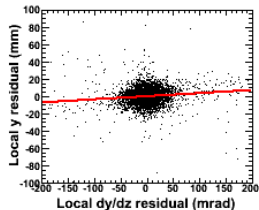
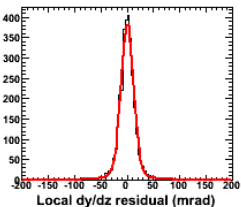
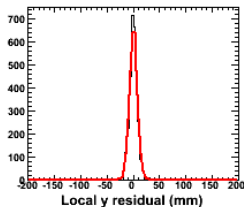
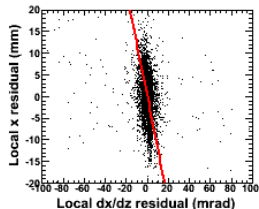
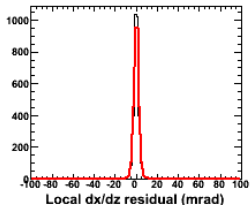
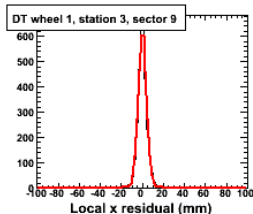


# Wheel +1, station 3, sector 6

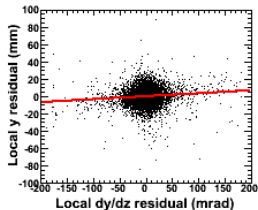
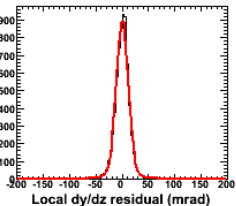
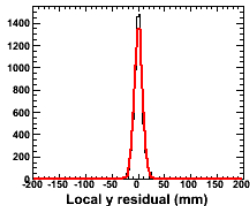
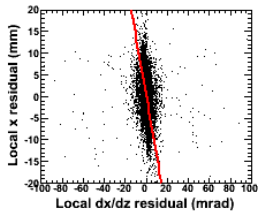
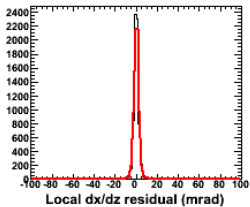
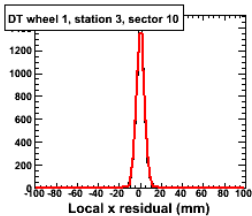




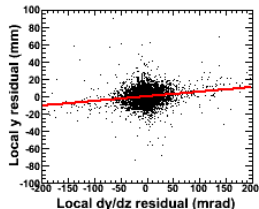
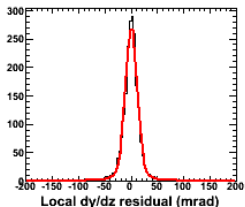
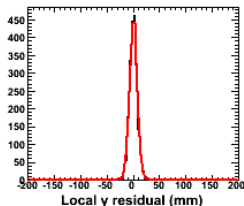
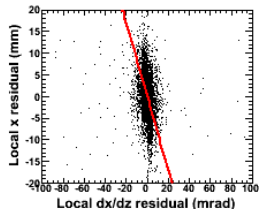
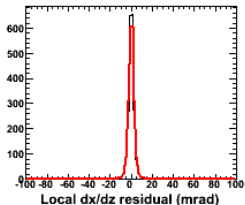
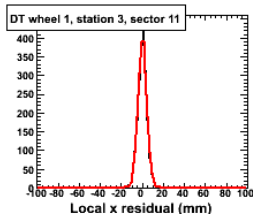
# Wheel +1, station 3, sector 9



# Wheel +1, station 3, sector 10



# Wheel +1, station 3, sector 11



# Wheel +1, station 3, sector 12

