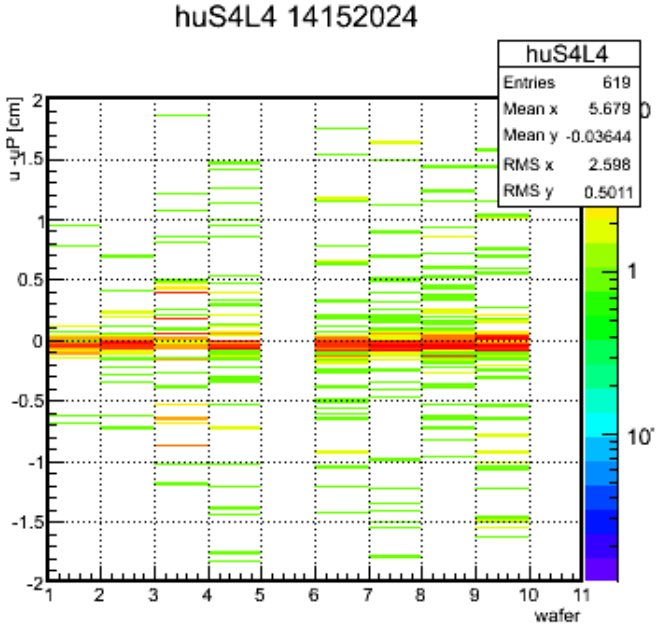
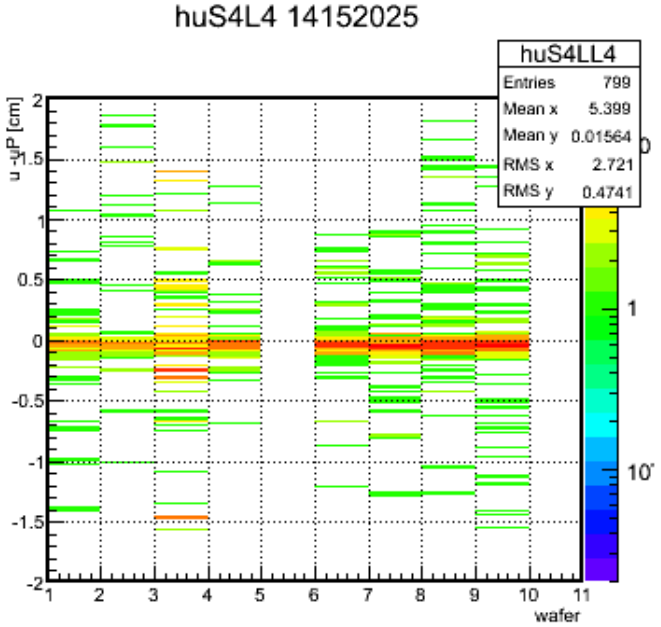
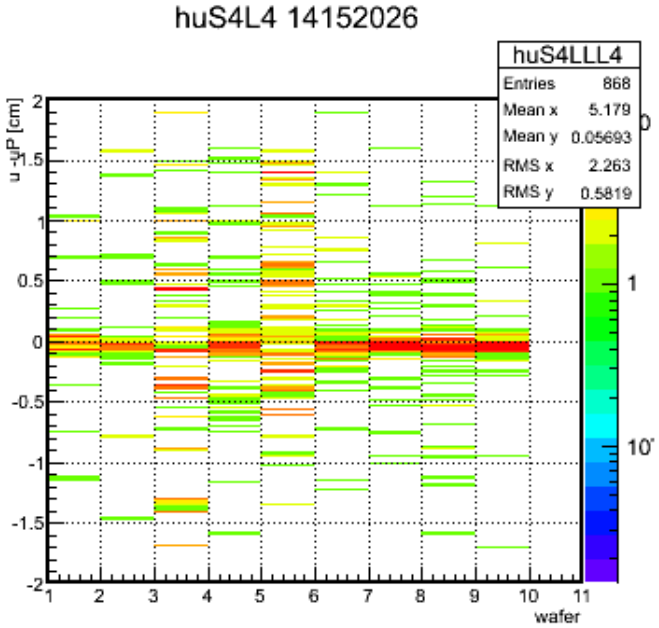
Day 152

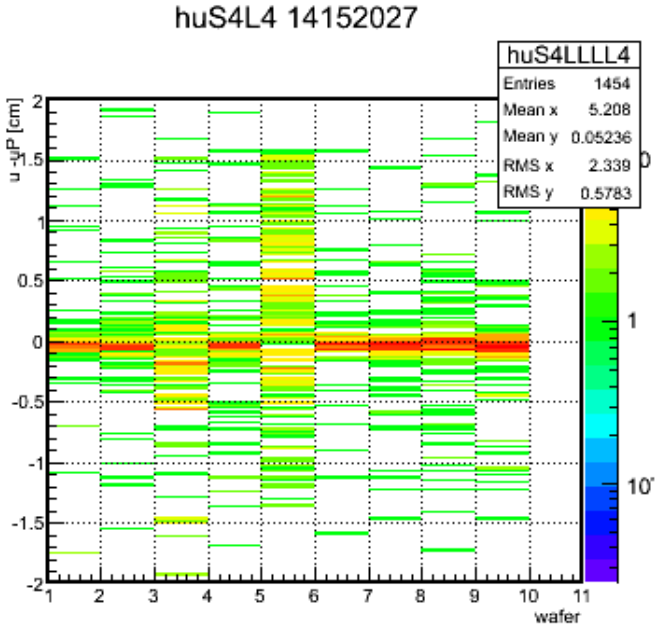
- Alignment :
  - Day 152, run 14152025-27 (run over ~40K events)
  - Used only Sector-4 Ladder-4 and
  - Sector-7 Ladder-2 (see next 2 slides) with bad sensors masked out (but bad pixels still in).

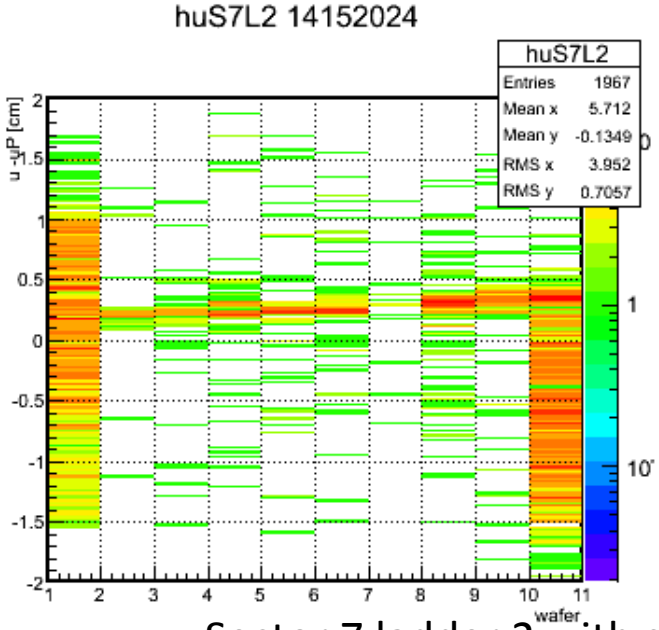


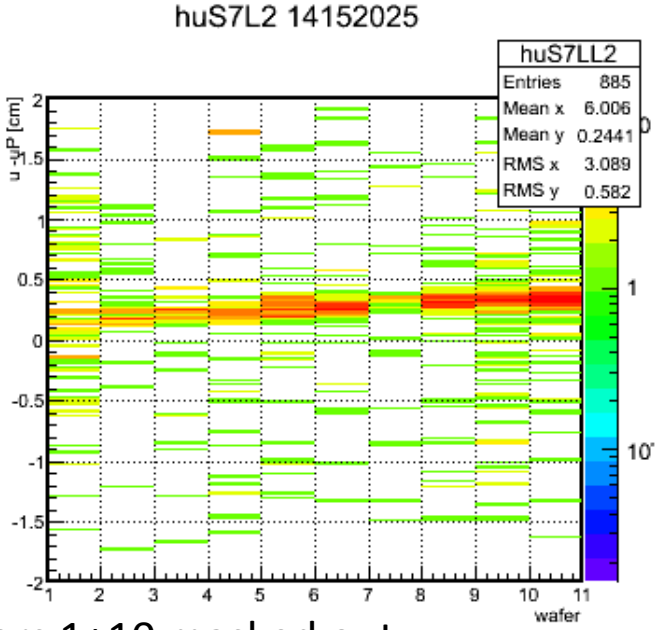


Sector 4 ladder 4 (sensors 3+5 masked out)



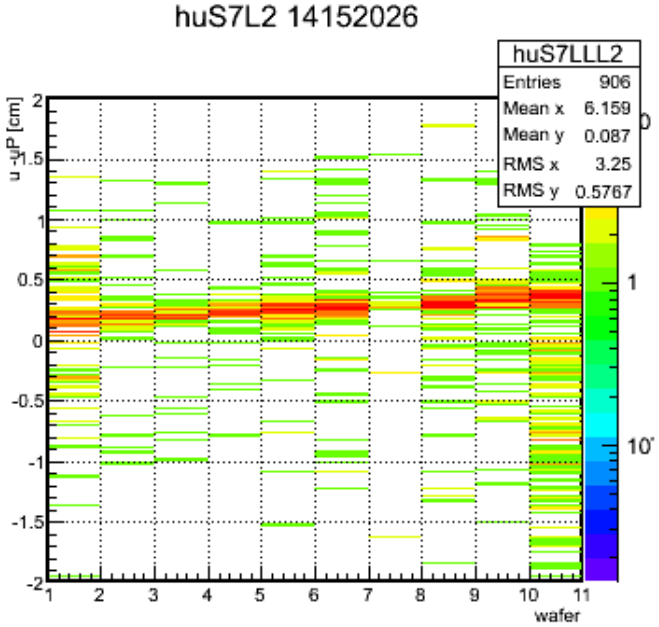


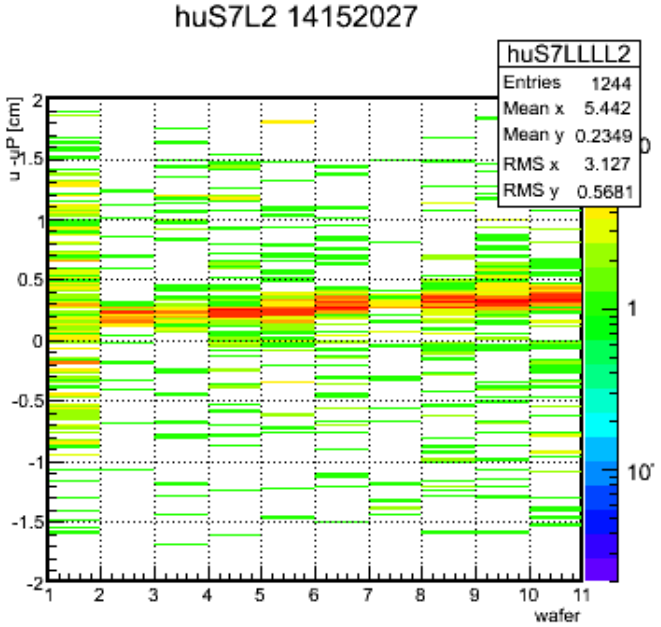


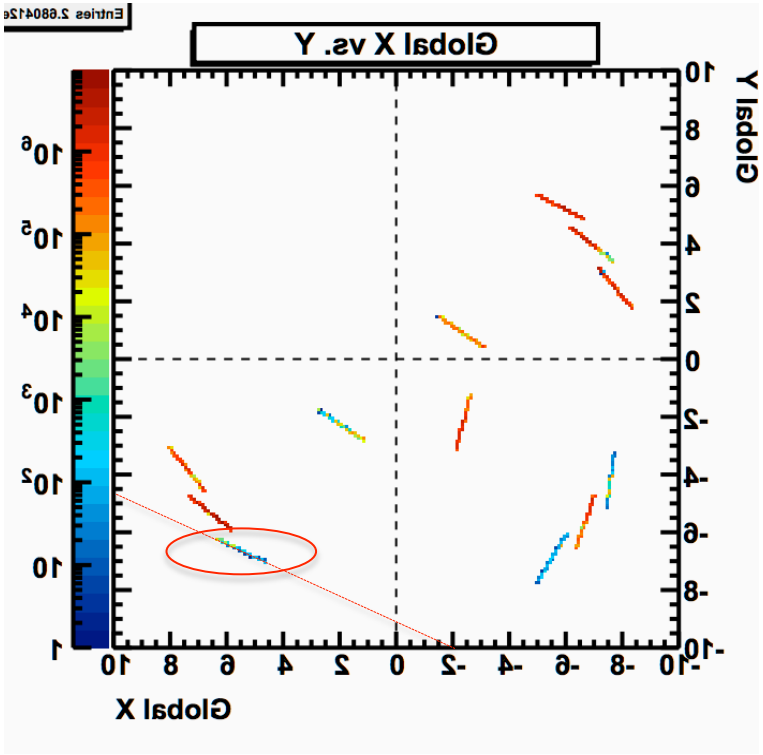


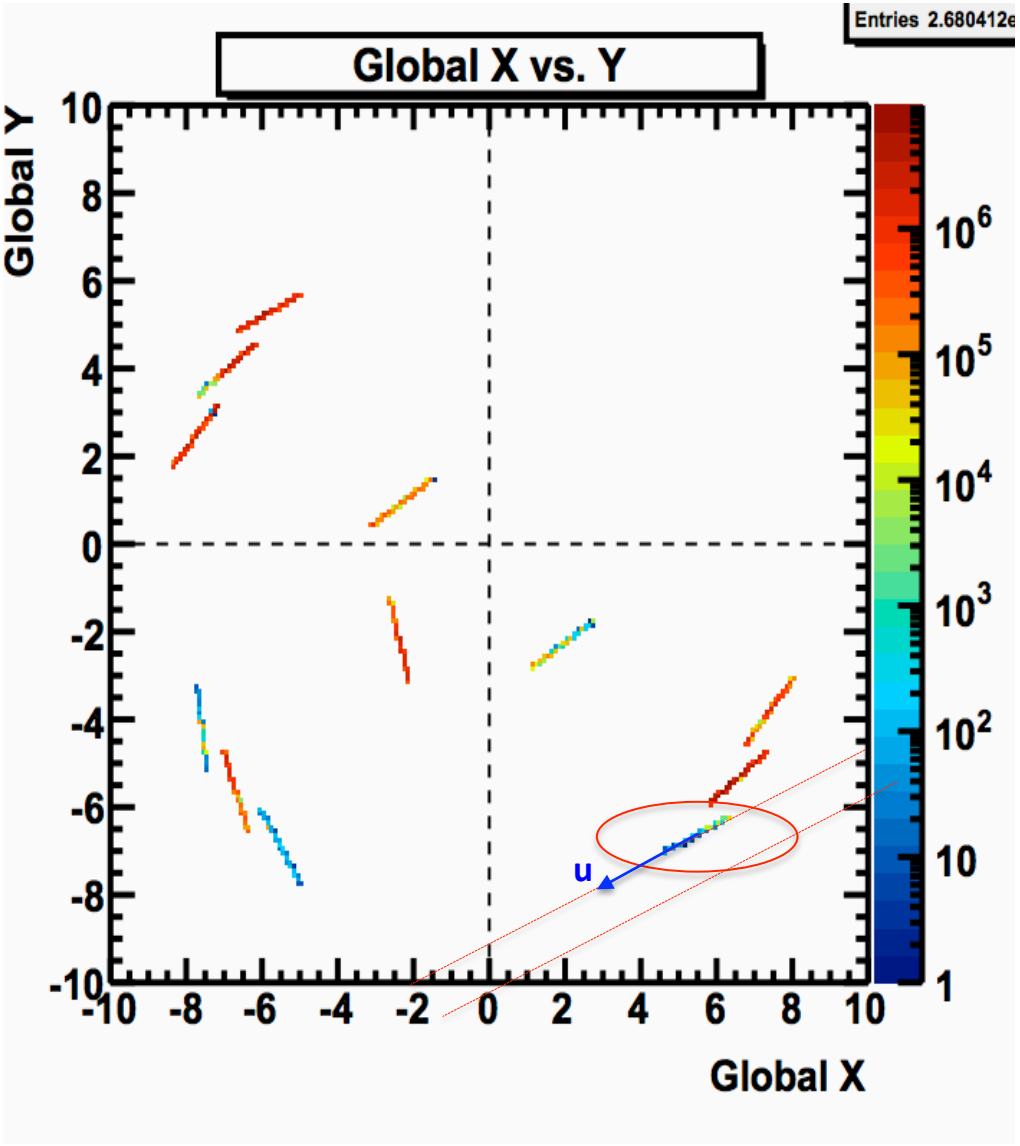
Sector 7 ladder 2 with sensors 1+10 masked out

du at ladder center ~ 2.5mm



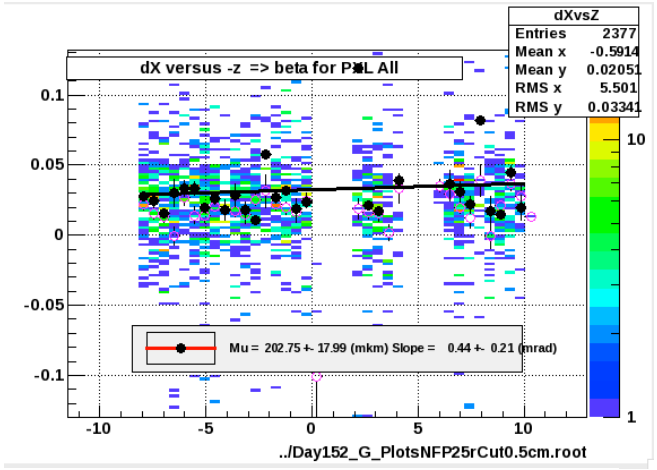


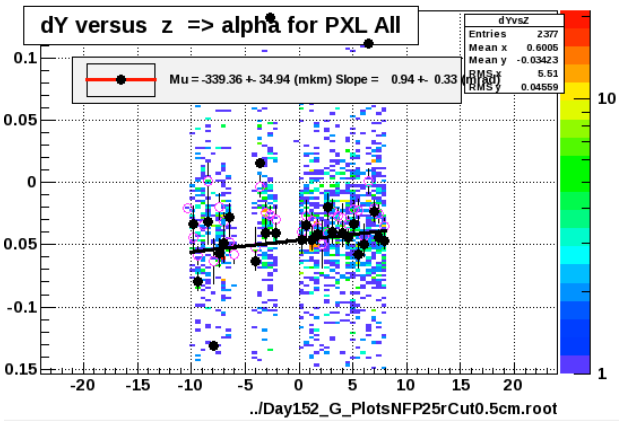


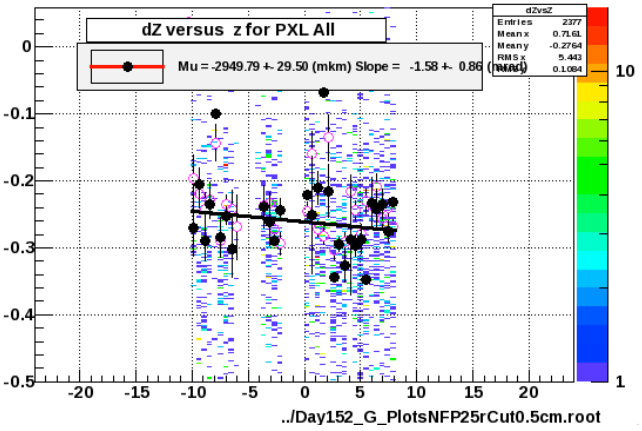


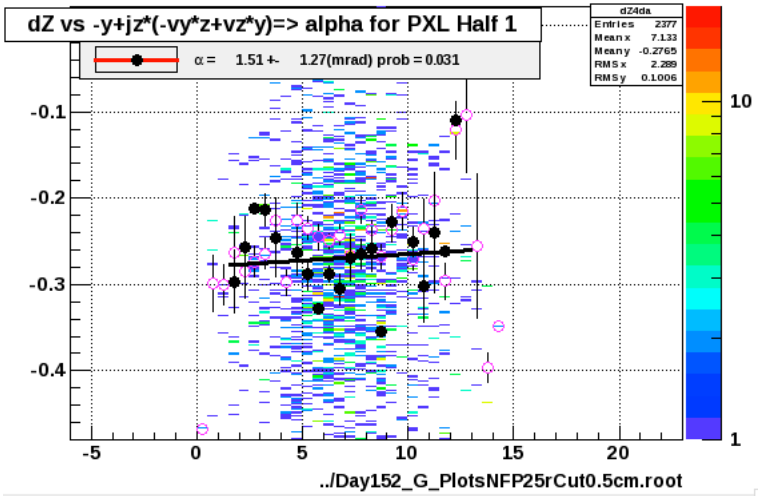
u-x angle ~200 degrees

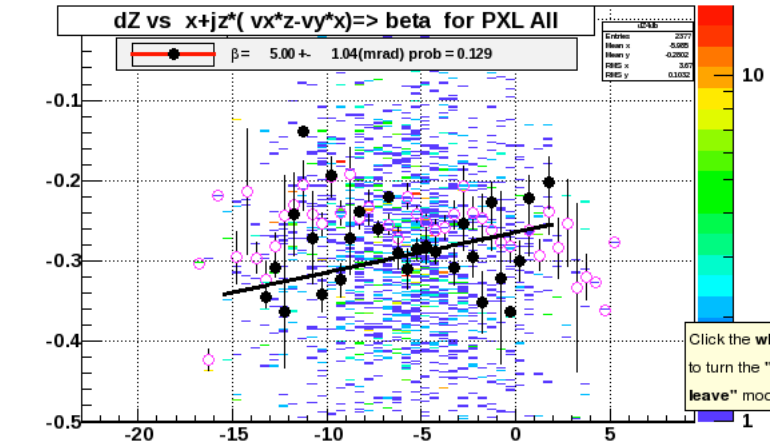
Sector 4

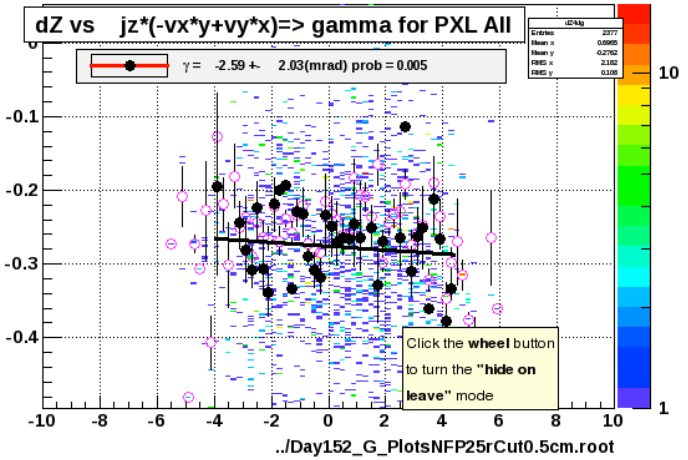

dXvsZ
Entries 2377
Mean x -0.5914
Mean y 0.02051
RMS x 5.501
RMS y 0.03341
dX versus -z => beta for PXL All
Mu = 202.75 +- 17.99 (mkm) Slope = 0.44 +- 0.21 (mrad)
../Day152_G_PlotsNFP25rCut0.5cm.root


dY versus z => alpha for PXL All
Mu = -339.36 +- 34.94 (mkm) Slope = 0.94 +- 0.33 (mrad)
../Day152_G_PlotsNFP25rCut0.5cm.root

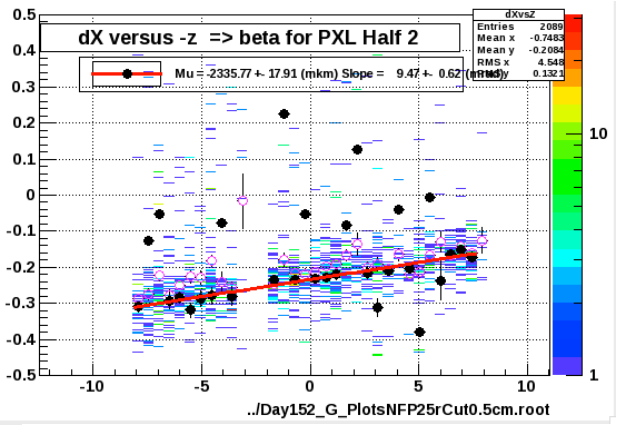

dZ versus z for PXL All
Mu = -2949.79 +- 29.50 (mkm) Slope = -1.58 +- 0.86 (mrad)
../Day152_G_PlotsNFP25rCut0.5cm.root

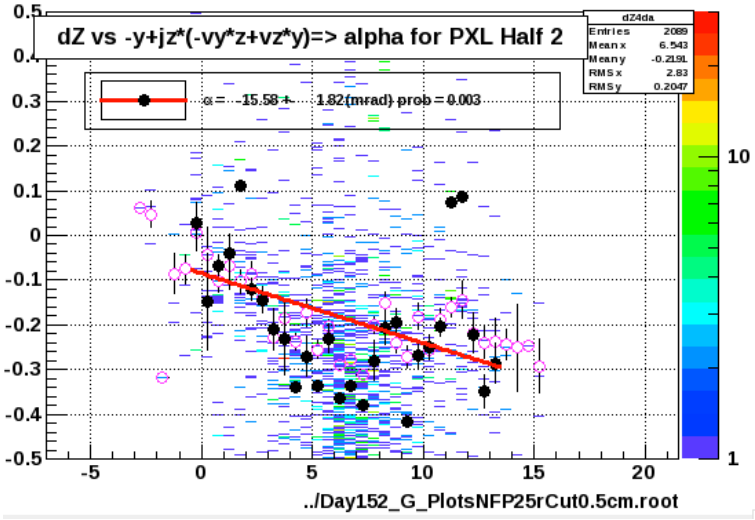

dZ vs -y+jz*(-vy*z+vz*y)=> alpha for PXL Half 1
α = 1.51 +- 1.27(mrad) prob = 0.031
../Day152_G_PlotsNFP25rCut0.5cm.root

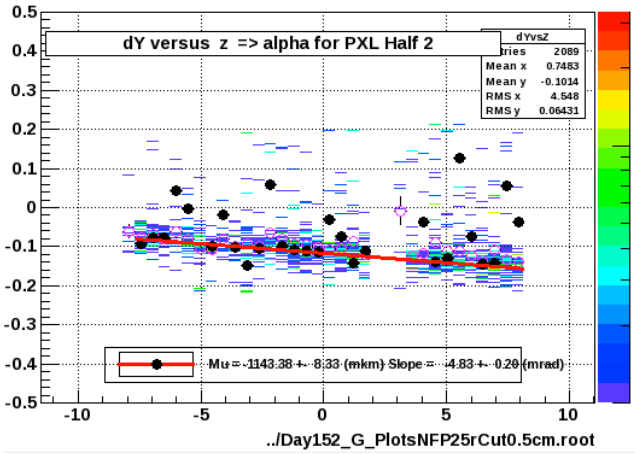

dZ vs x+jz*(vx*z-vy*x)=> beta for PXL All
β= 5.00 +- 1.04(mrad) prob = 0.129

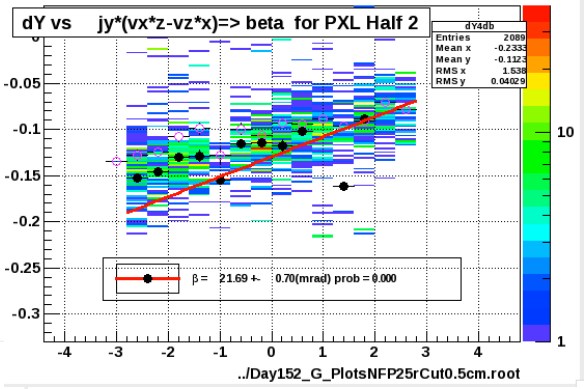

dZ vs jz*(-vx*y+vy*x)=> gamma for PXL All
γ = -2.59 +- 2.03(mrad) prob = 0.005
Click the wheel button
to turn the "hide on
leave" mode
../Day152_G_PlotsNFP25rCut0.5cm.root

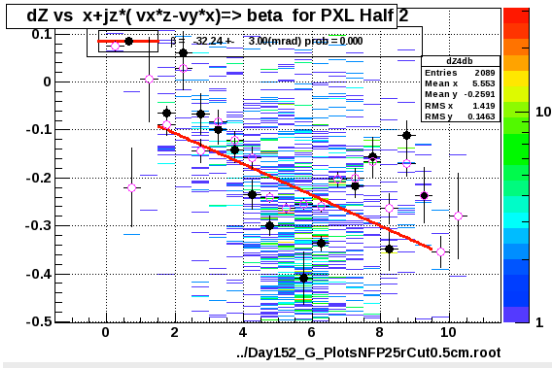
Sector 7, Ld-2

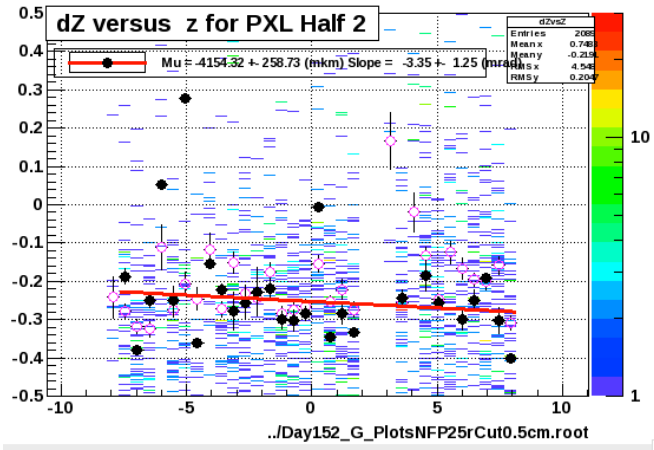




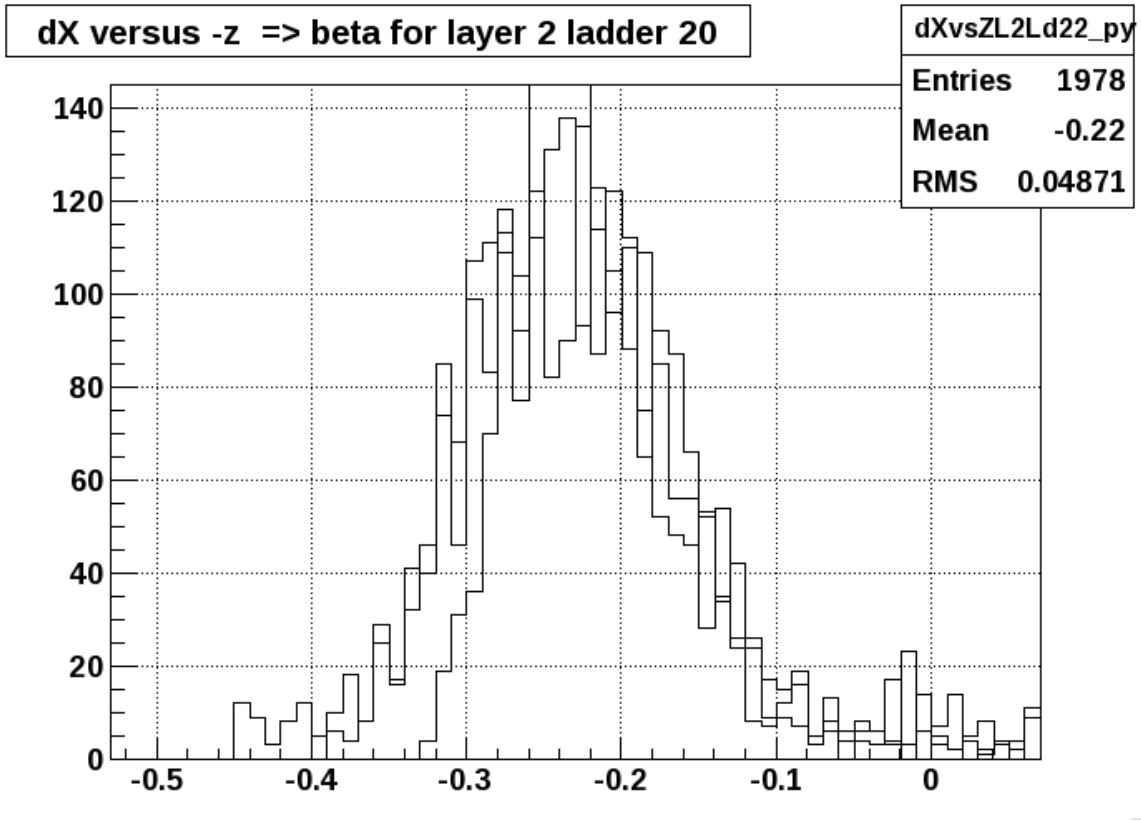








- Ladder has an angle of about 203 degrees with x-axis
- du= 2.5mm this should give an effective shift of
- x=2.5*cos200 **= -2.3 mm** , y = 2.5*sin200**= -1mm**
- This is exactly what is seen in the dX, dY reports
- As Xin pointed out dw will have an effect too which we kind of see in the spread of values in the next slide
- There are signs of rotations present. The du slope indicates alpha and/or beta rots



DATA : Day152

- "Demonstrating" that Global DX, DY common to all ladders in sector

- Sector-4 Global dX ~0. (~100+-50 microns)
- Sector-7 Global dX -2.3 +-0.01 mm

- Sector-4 Global dY -200 to -400 microns
- Sector-7 Global dY -1.1 to -2.8 mm

Summary

- Sector 4 looks healty in rots….minor shifts
- Sector 7 looks unhealthy in rots
  - need to check correctness of Db entries
  - I estimated (by hand for now) 0.5 degree rots
  - Jonathan runs a correction loop right now (z-shift) to see if we can correct … correctly !
  - Details to follow on Friday

- Histograms are low statistics and very noisy. Need to process more and better data!