Final DC Survey (?)

- Survey results at the KTeV Hall in March 2002 were confusing:
  - differed greatly from previous surveys, 2⑨, and ⑥ data.

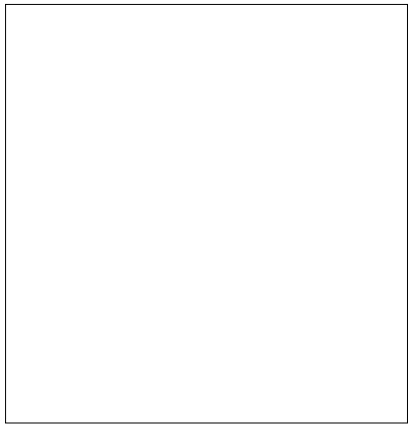
- Extensive survey at Lab 3 of both Cathode and Anode Wires

- New effect found to be important

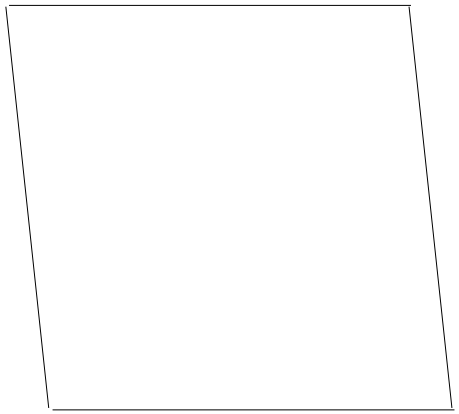
- Next Steps

KTeV Collaboration Meeting Sept. 28−2002
S. Glazov, J. Krider, H. Nguyen, B. Pritchard

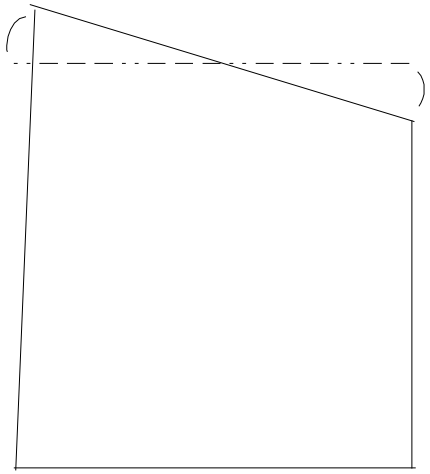
Chamber Distortions



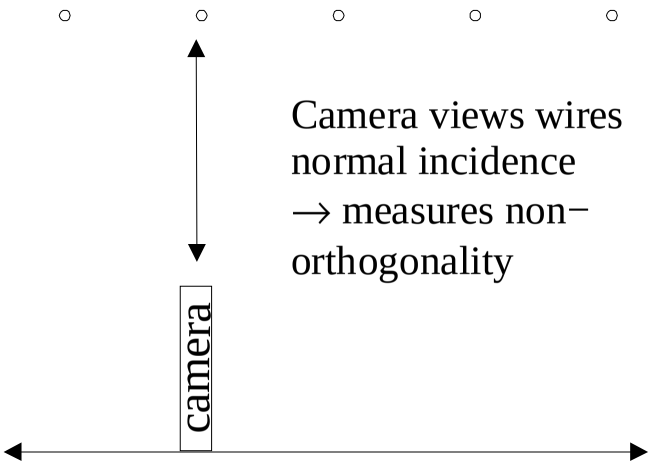
Good chamber



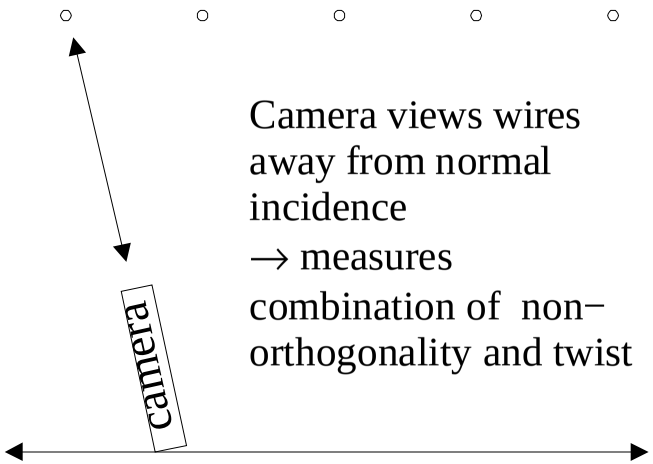
Non−orthogonal



Non−planar
(twist)



Camera views wires
normal incidence
→ measures non−
orthogonality

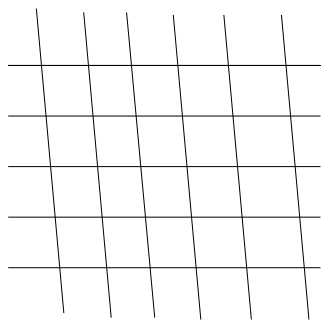


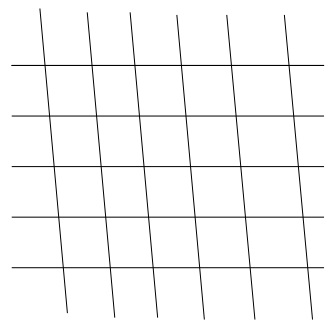
Camera views wires
away from normal
incidence
→ measures
combination of non−
orthogonality and twist

Normal Viewing Angle

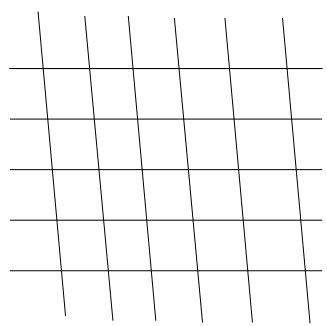
Off−normal viewing angle

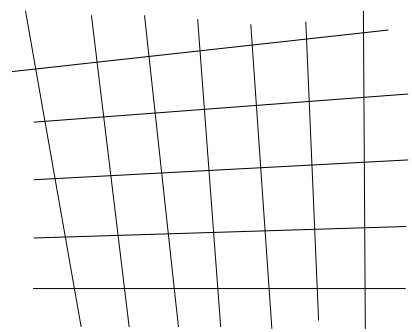
Non−orthogonal chamber





Non−orthogonal and twisted chamber

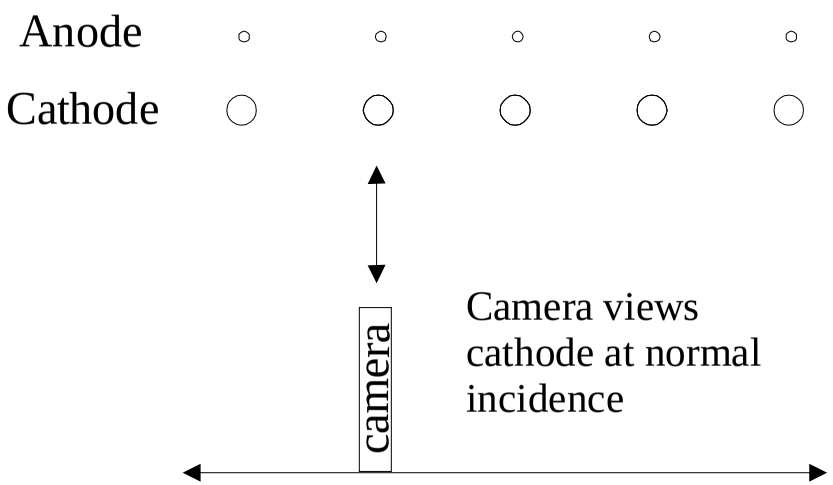




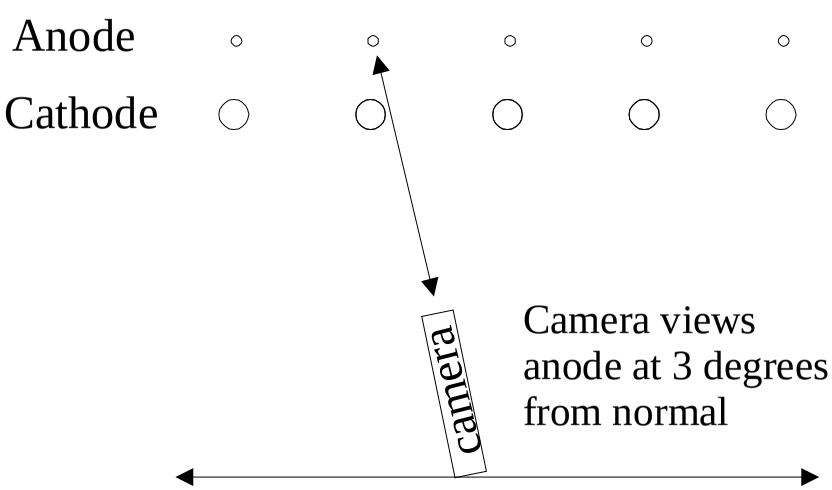
Observed Wire Slope (x) = (True Wire Slope) + sin(viewing angle)*(twist angle/distance)*X

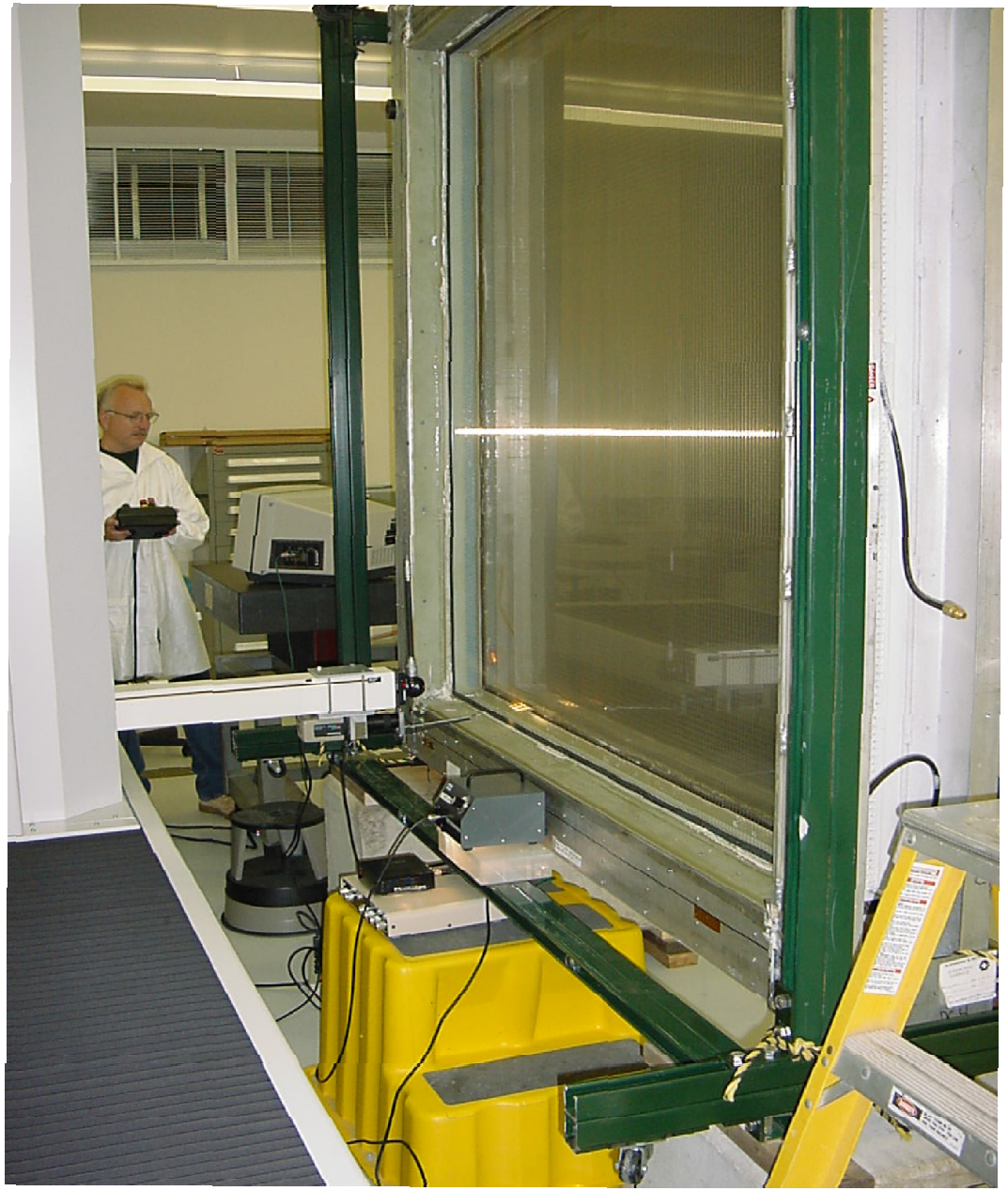
similar for Y

Measures non−orthogonality



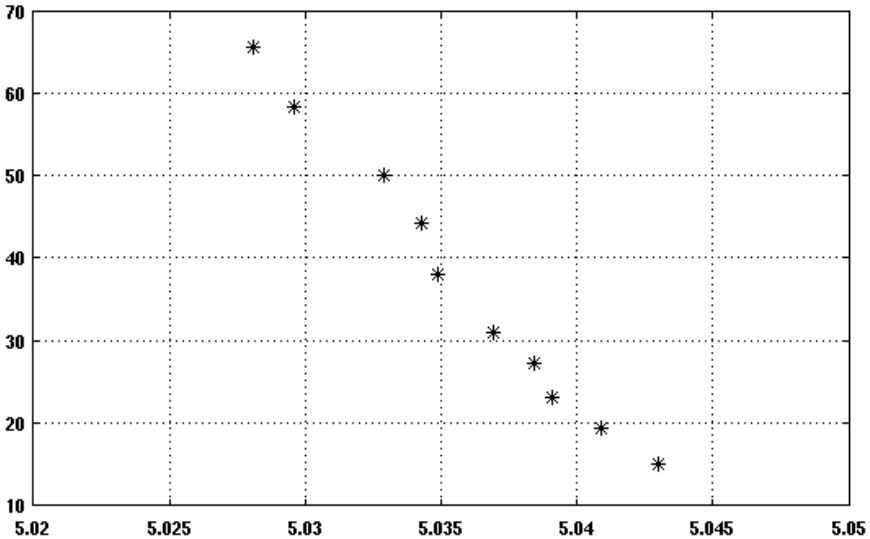
Measures non−orthogonality and twist

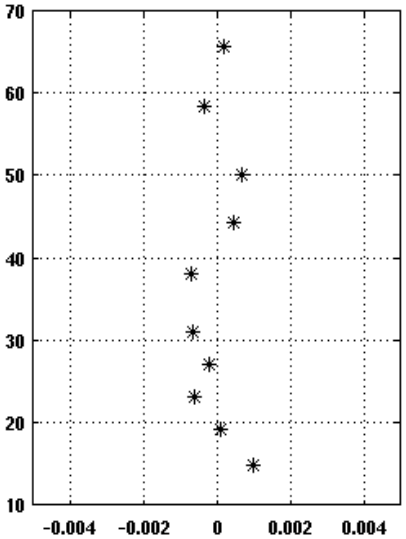


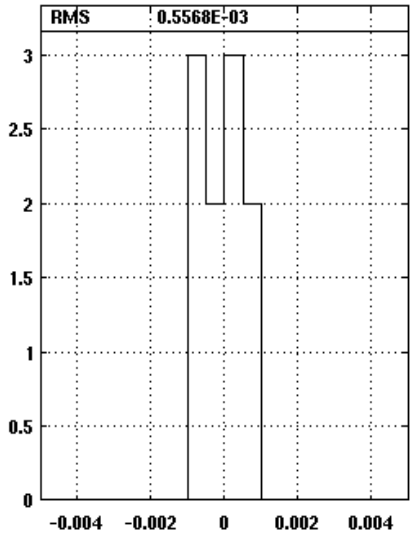


Measurement Precision ~ ½ mil per point

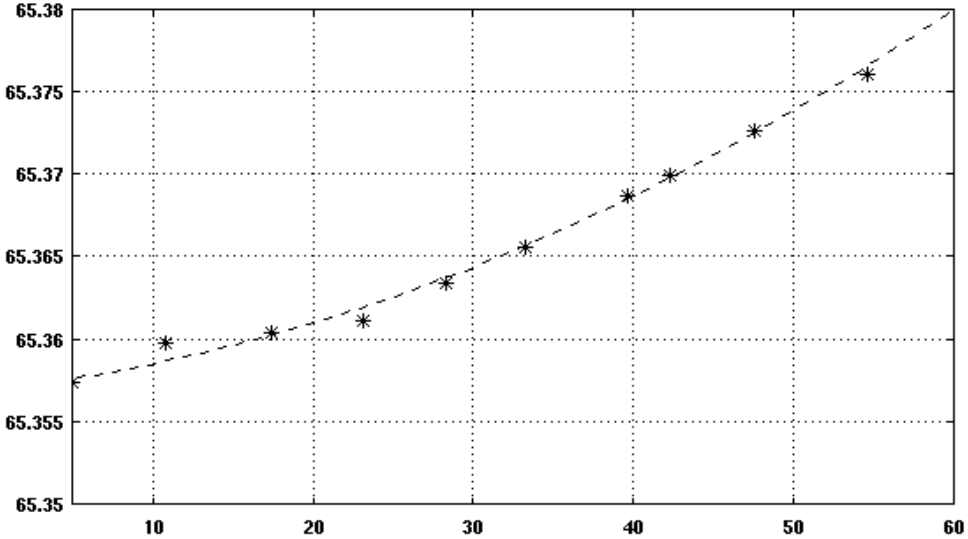
10 points along a vertical wire

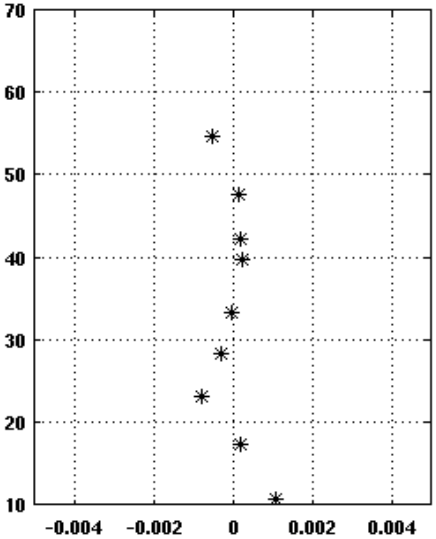


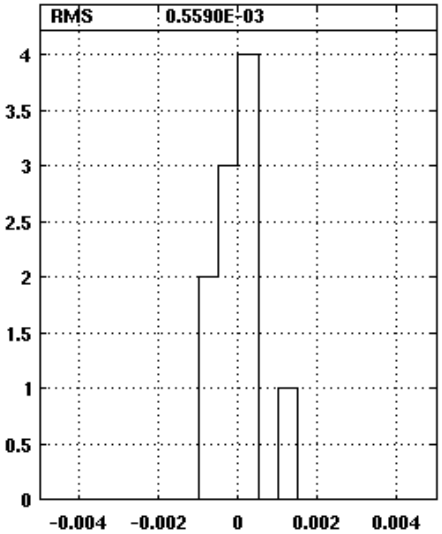




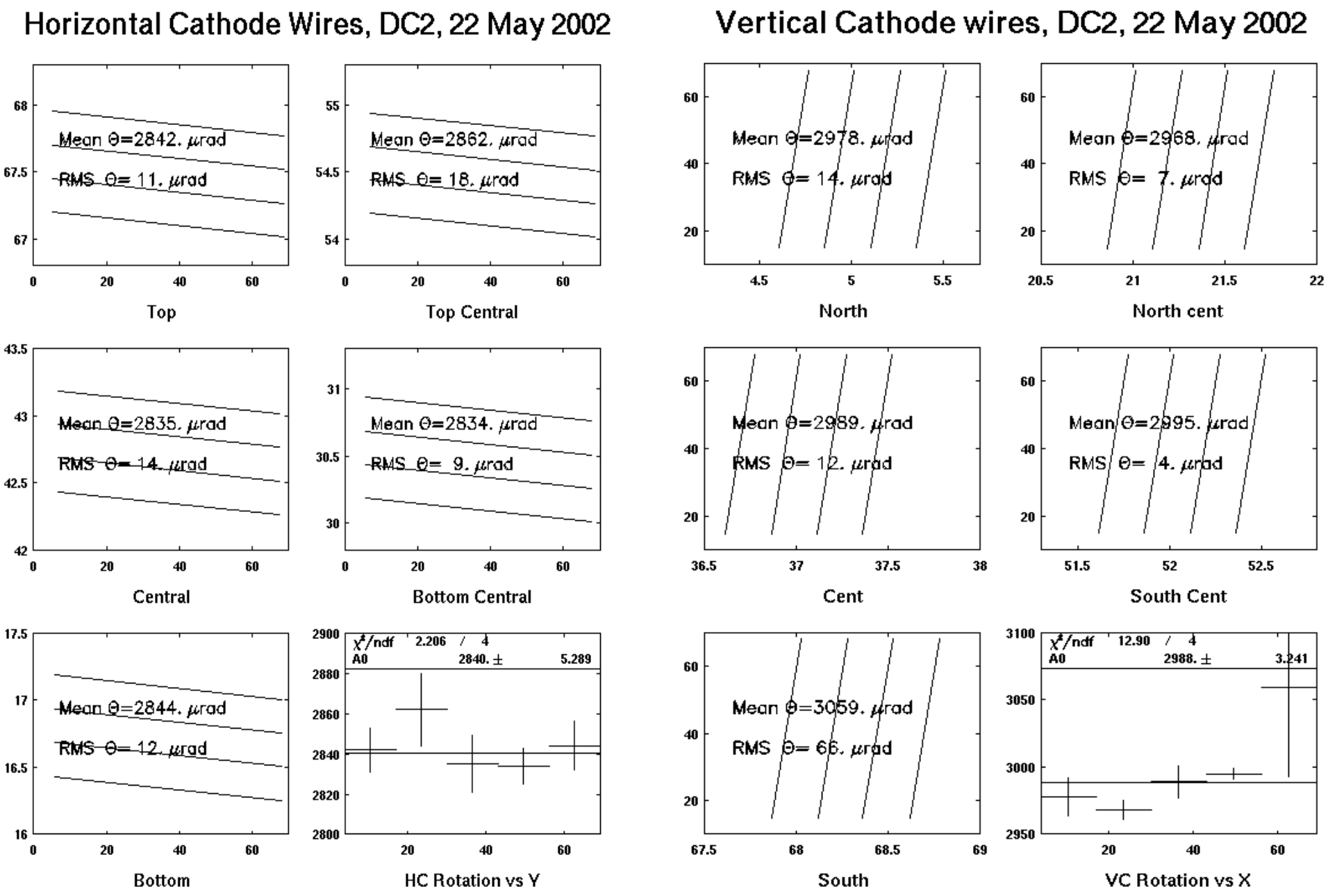
10 points along a horizontal wire





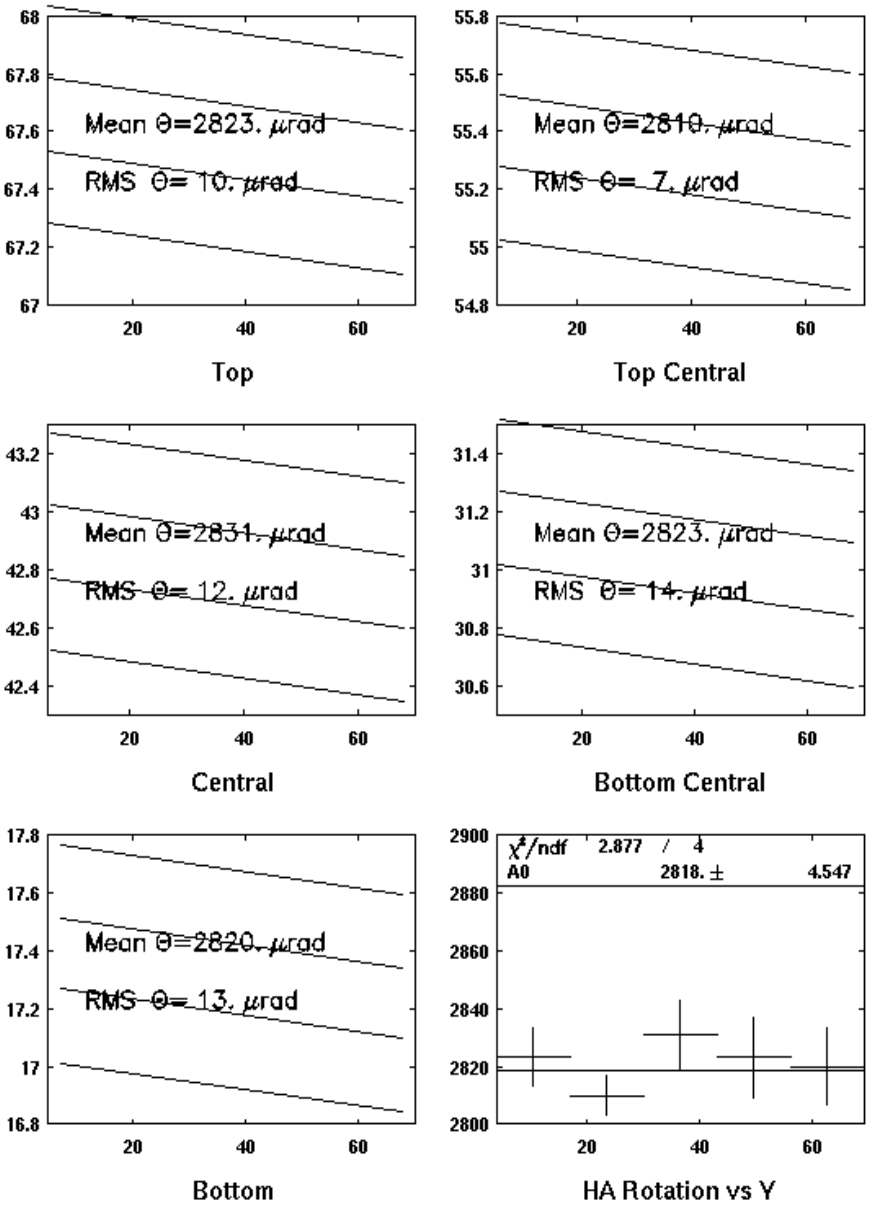


Normal Viewing Angle

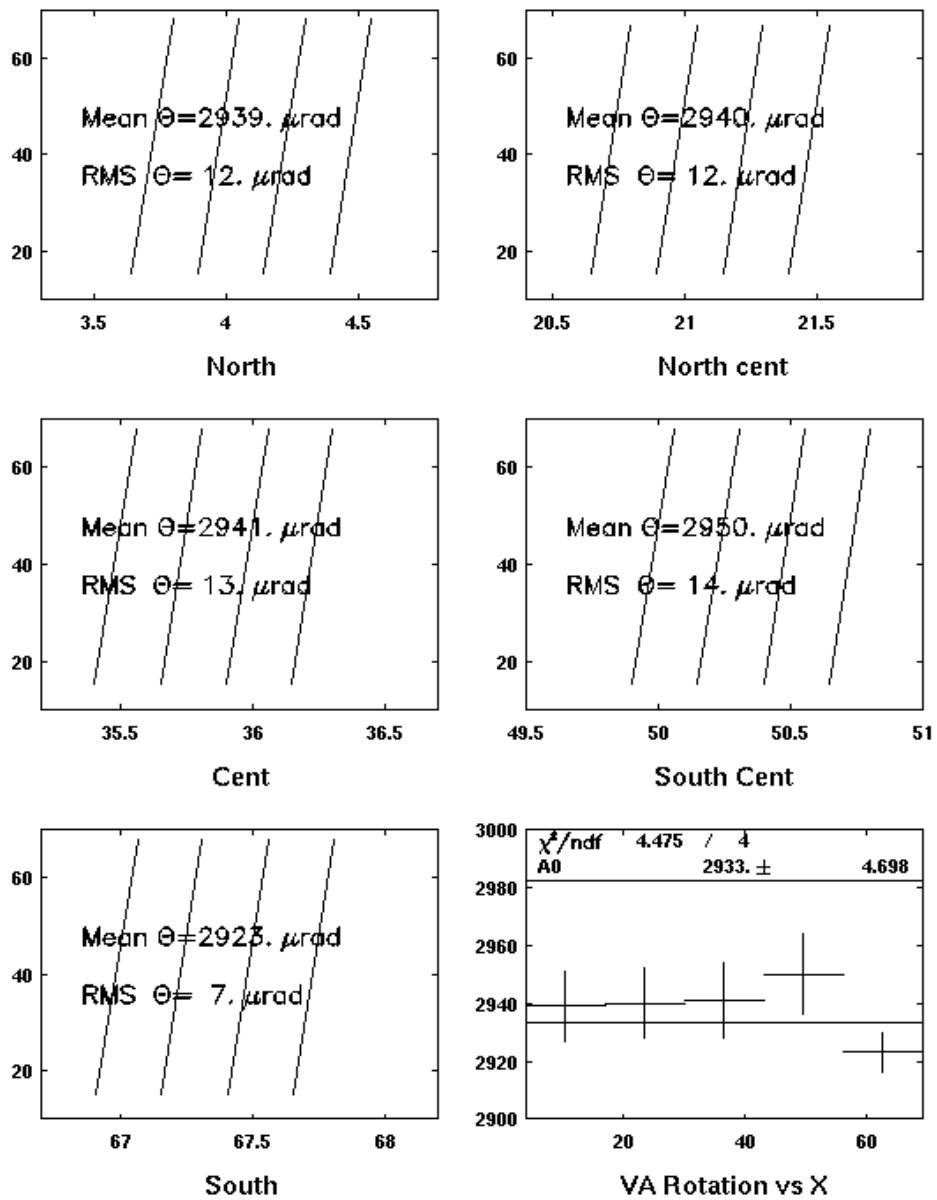


3 degree Off−Normal Viewing Angle

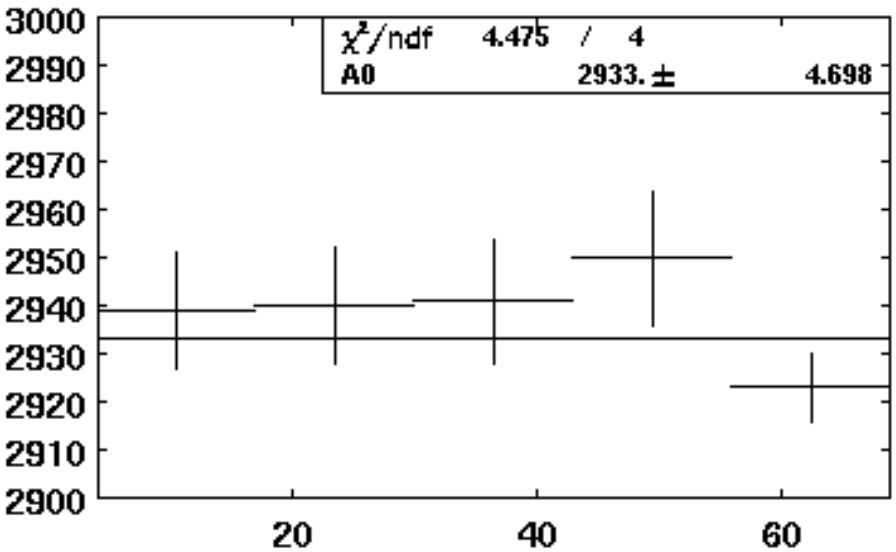
Horizontal Anode Wires, DC2, 24 May 2002



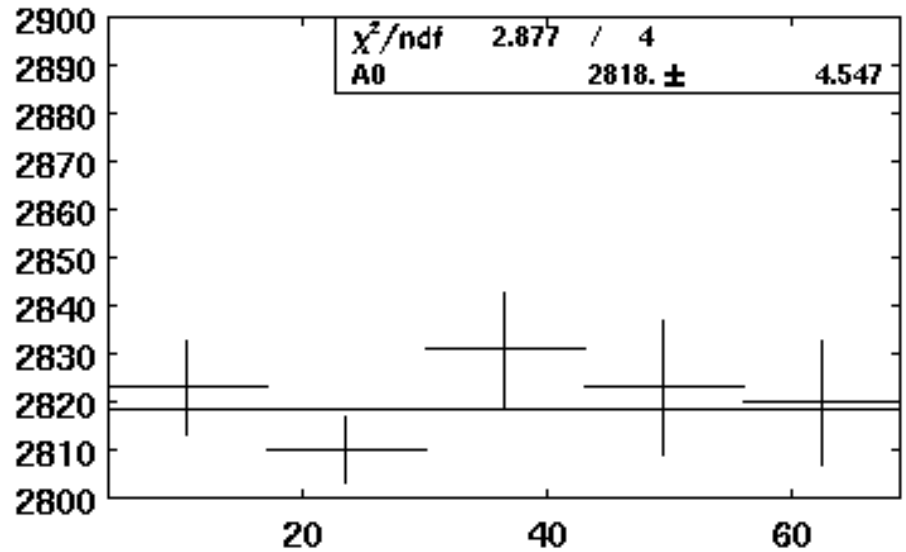
Vertical Anode wires, DC2, 29 May 2002



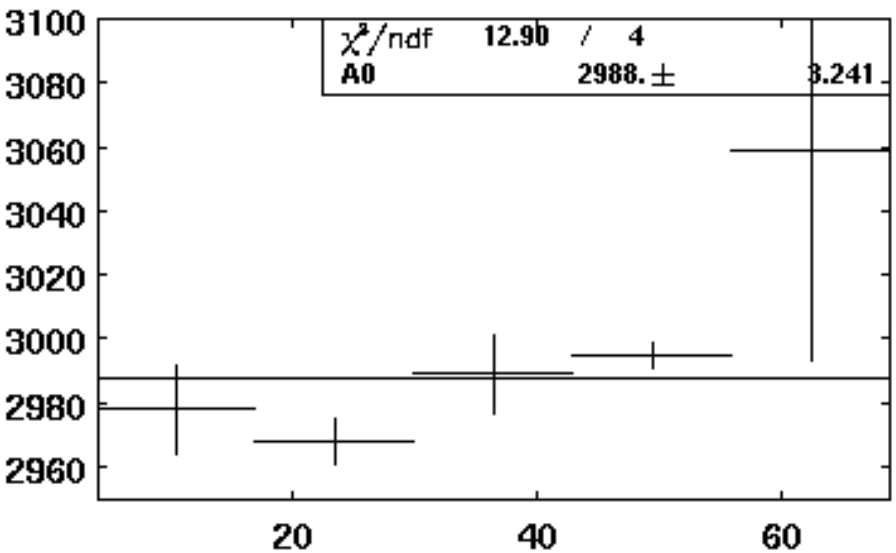
DC2



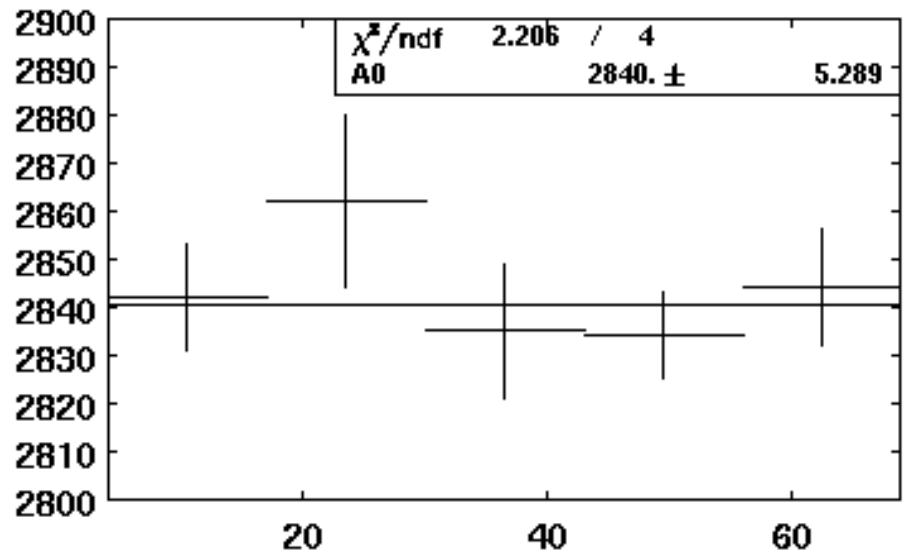
Vertical Anode Rotation (urad) vs X (inches)



Horizontal Anode Rotation (urad) vs Y (inches)

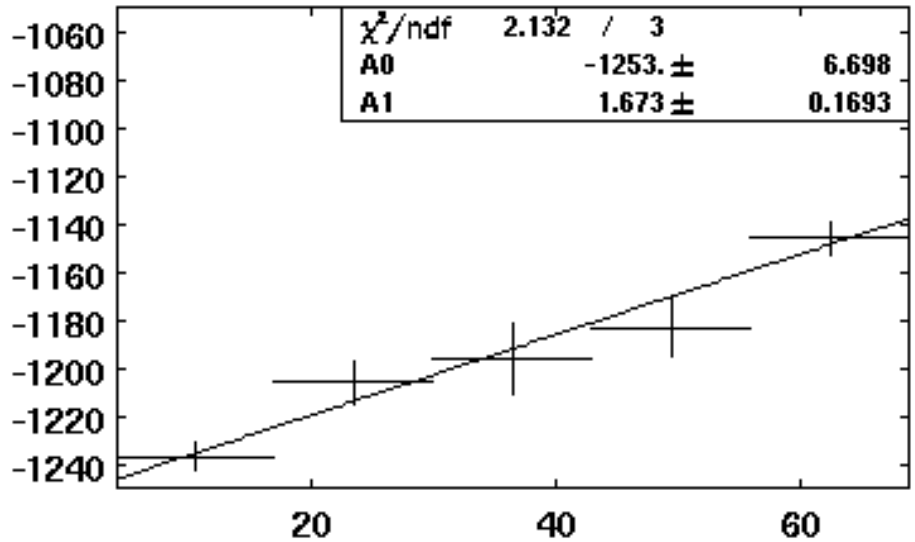


Vertical Cathode Rotation (urad) vs X (inches)

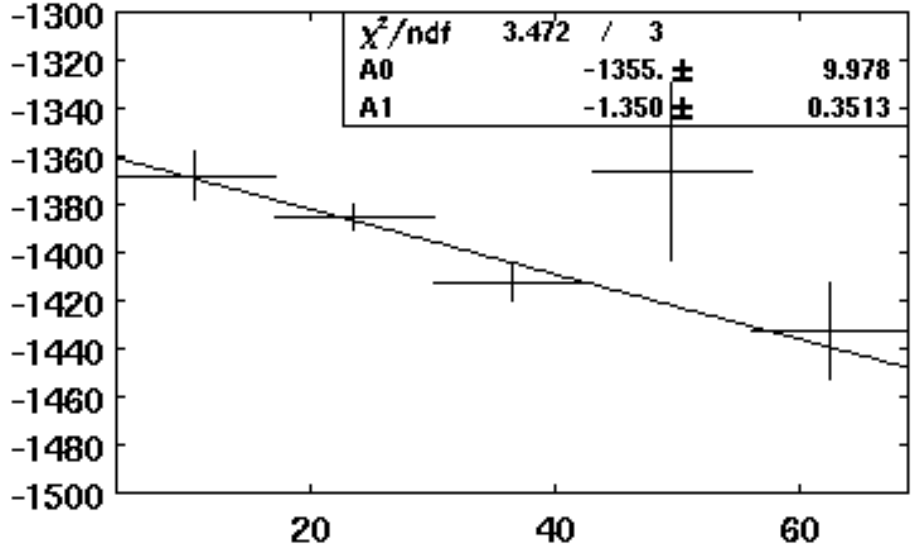


Horizontal Cathode Rotation (urad) vs Y (inches)

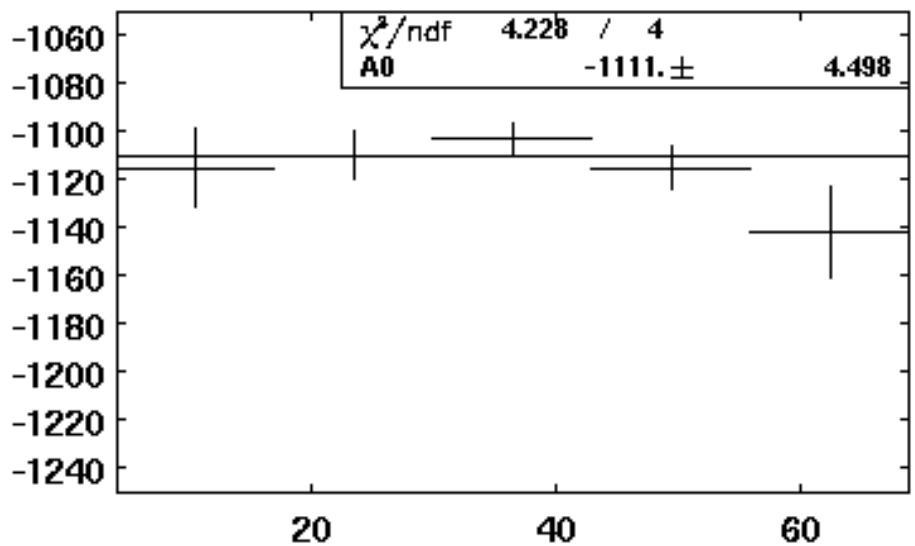
DC3



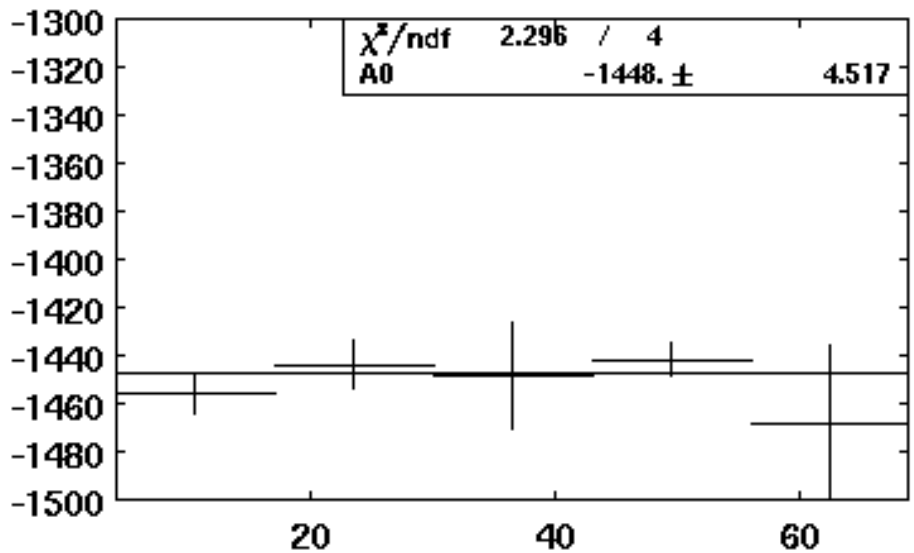
Vertical Anode Rotation (urad) vs X (inches)



Horizontal Anode Rotation (urad) vs Y (inches)



Vertical Cathode Rotation (urad) vs X (inches)



Horizontal Cathode Rotation (urad) vs Y (inches)

Non−orthogonality Surveys

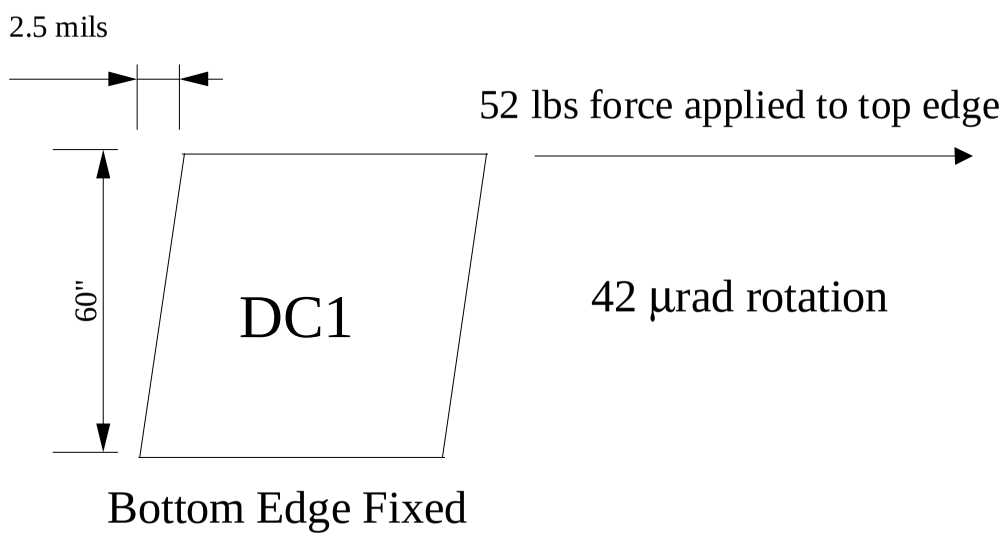
Angle in μrad	DC1	DC2	DC3	DC4
LKG Survey	0 (30)	−47(30)	−198(30)	150(30)
95 DC2 Survey		−86		
Lab 3 CMM Survey from cathode wires	−40	−148	−337	141
Lab3 survey configuration	standing	standing	standing	hanging
March 2002 Survey in KTeV Hall (huge off−axis viewing angle)	−195	−327	−264 to 229	860 −1036

- Large twist seen in DC3 at lab 3:
  one chamber corner is out−of−plane by ¼"

- Twists in DC1,2,4 at lab 3:
  4 chamber corners within 1 mm of planarity

- Chamber twist could have been different in KTeV hall.

- Measured DC1 resistance against non−orthogonality:



- Lab 3 survey is ~95% complete. A lot of internal cross checks were done.

- Unlikely to make sense of March 2002 survey in the hall

- Track angles at chambers are 0−3 degrees. They will be sensitive to chamber twists, if twists are at the level of DC3.

- Don’t have survey data on twists at the hall. We surveyed only 3 out of 4 chamber corners (helium bag in the way).

- S. Glazov will try to reconcile the lab 3 survey of non−orthogonality and data, given an unknown level of chamber twist.