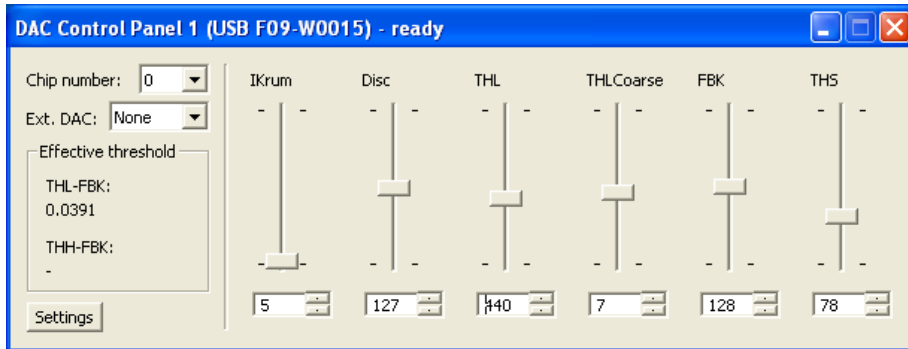


Dima & Aaron

2:21

Previous Scan has finished.

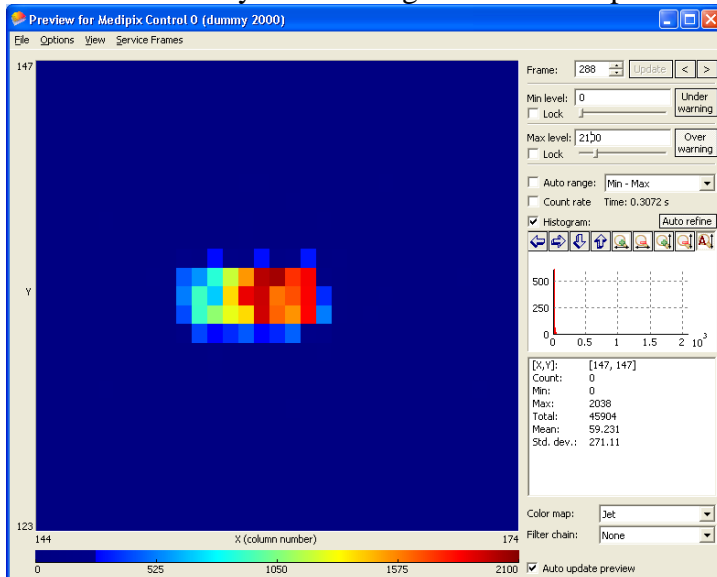
We are changing to Timepix mode of the 3DPtype
We set up the scan for quarter of the pixel single frame.
Data is saved here: C:\3DMedipixMay09\day4\F09-
W0015_3DP_TPIX\tpx_mode_quarter

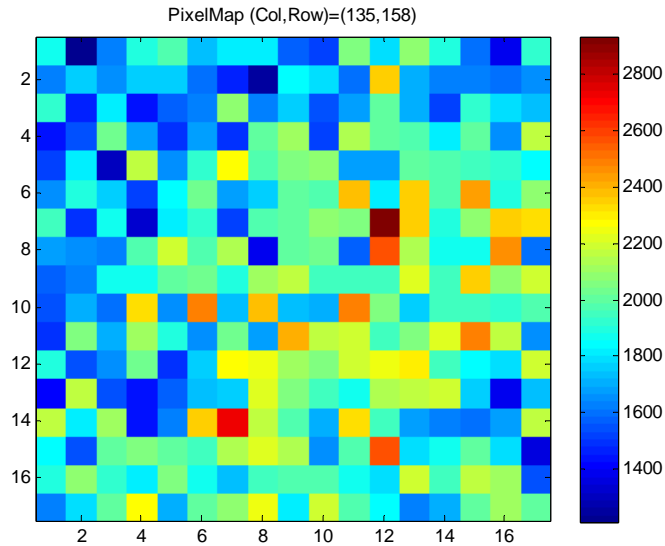


Beam intensity is too high to run acquisition in timepix mode. To avoid pile up we put extra Al foil to reduce the beam intensity (in theory we should see more scattering. To be checked later). Also we reduce integration time to 0.1 sec/frame.

3:02

Quarter scan has finished. Picture reconstruction doesn't look OK. We think it is due to scattering. The amount of hits in neighboring pixels is very high and the pixel reconstruction only shows a vague outline of a possible pixel matrix





3:17

We remove the Al foils and reduce the acquisition scan to 0.01s

Looked similar. Figured out that we only have one photon in each frames therefore the statistics are terrible. Will take 9 hours to do a scan with even remotely reasonable scans. Therefore we will set it running tonight if possible.

4.04 breaktime

4.34 Checking alignment:

Positions

:

X=-5.0075

Y= 16.09

Theta= 4.9350

Phi= -0.8388

7:58

Alignment was not consistent. Recalculation showed that we are off by Theta = 2.775 and Phi = 0.807.

This could be due our misunderstanding of the alignment process or due to the fact that the beam was lost and restarted off for some time (N.B (Celeste) – first reason. See below at 9:21)

We realigned the detector in Theta and get that we are off by 0.272.

Results are saved in **Record of positions_day4_F09.xls**

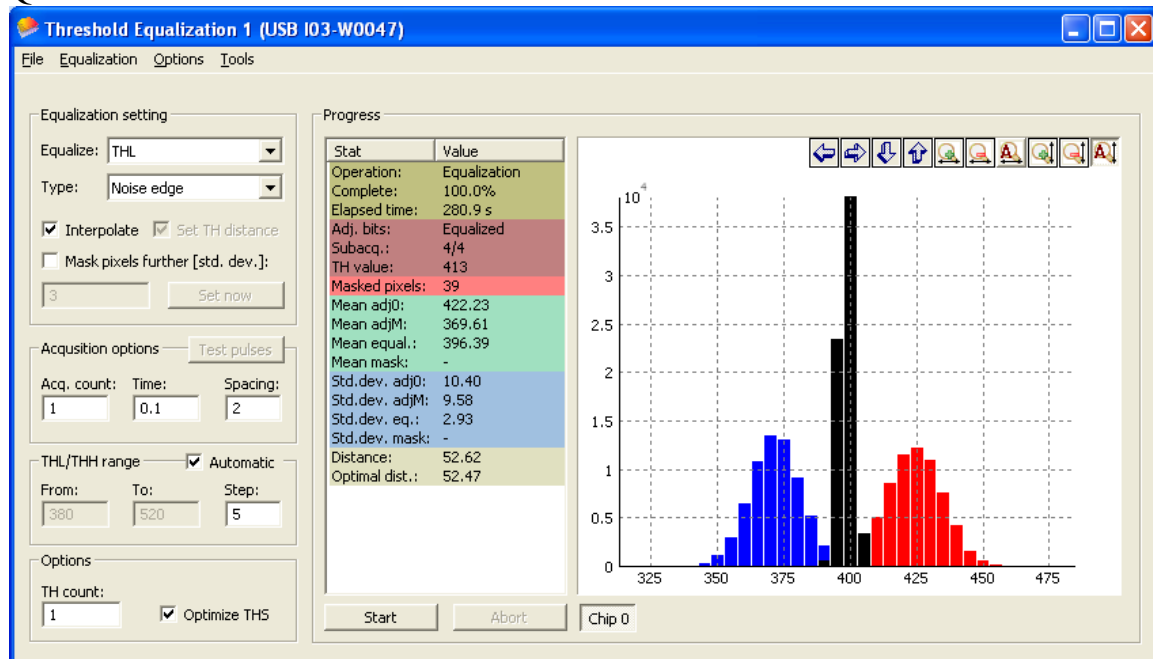
Might help to have these results checked at a later date when someone is not so tired. We got conflicting results when we tried to repeat the same measurements for different pixel position and were out by ~0.5degrees.

Also in the day-or two day old Record of positions there is a note that the Phi angle was corrected on the 17/5, "as recalculated at 16:00 on 17/5". We are not sure who wrote this.

8.21: Aaron, Dima Nicola, Celeste

Put in the planar device Ntype, I03-W0047

Quick Threshold scan



Distributions are here: C:\3DMedipixMay09\day4\I03-W0047_PlanarN_MXR\eq

08:40

Put new power supply K238 – safer for higher bias
Apply 100V, reads 0.10uA

9:21

We figured out that our alignment calculation was wrong. We did not keep the distance between runs for positive and negative angles constant (referred to as L in Fig. in Alignment.doc)

9.30

Nicola and Celeste take over

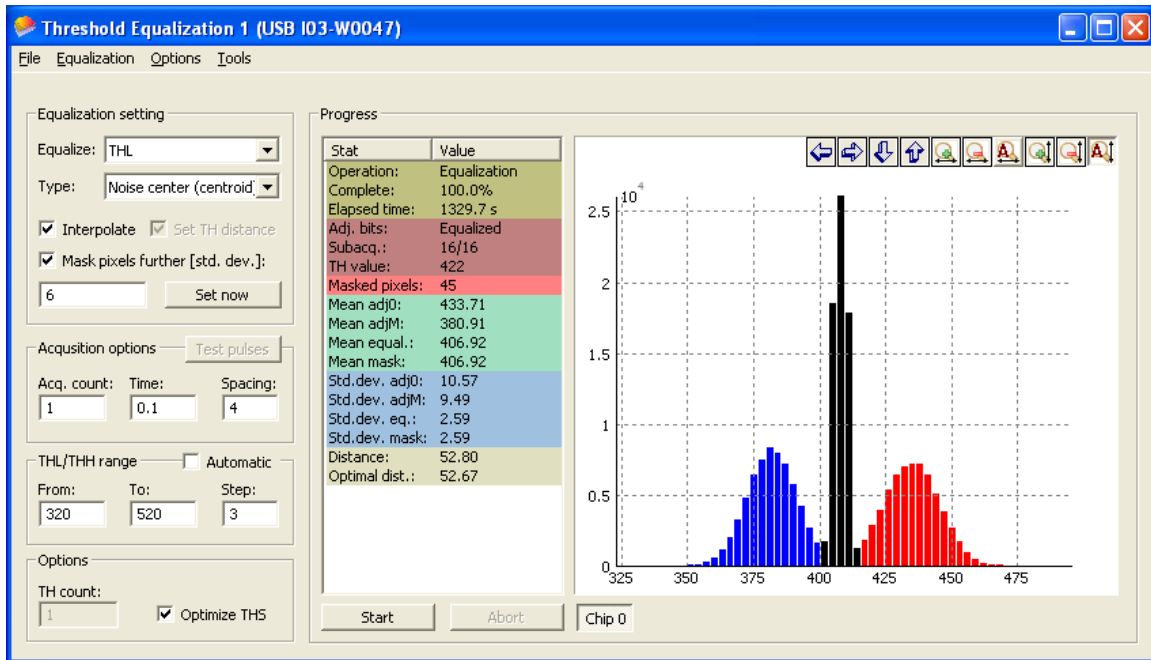
The theta angle of alignment is 5.623.

The phi angle is 0.418
Check of Phi alignment misalignment is -0.009 degrees.
Check of Theta Alignment misalignment -0.002 degrees.

Data in C:\3DMedipixMay09\day4\AlignmentCalculation_day4_Planar.xls

11:10 New threshold equalization with noise centroid. Datafiles in:
C:\3DMedipixMay09\day4\I03-W0047_PlanarN_MXR\THL_eq_noisecentroid

Noise centroid is located at THL 407



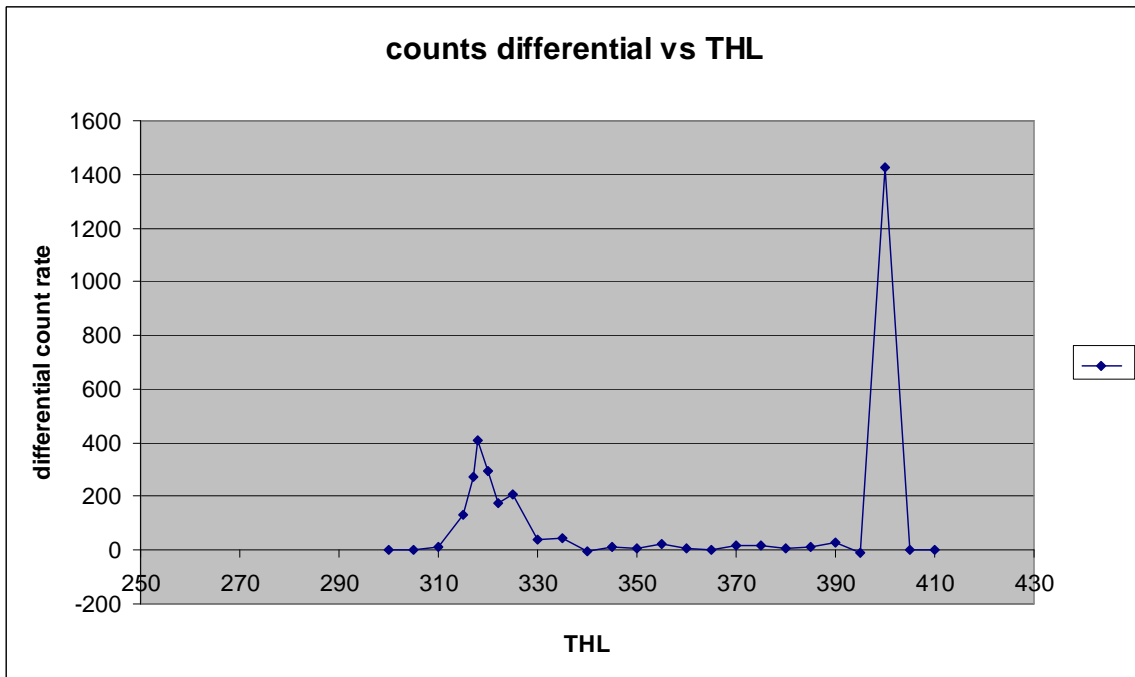
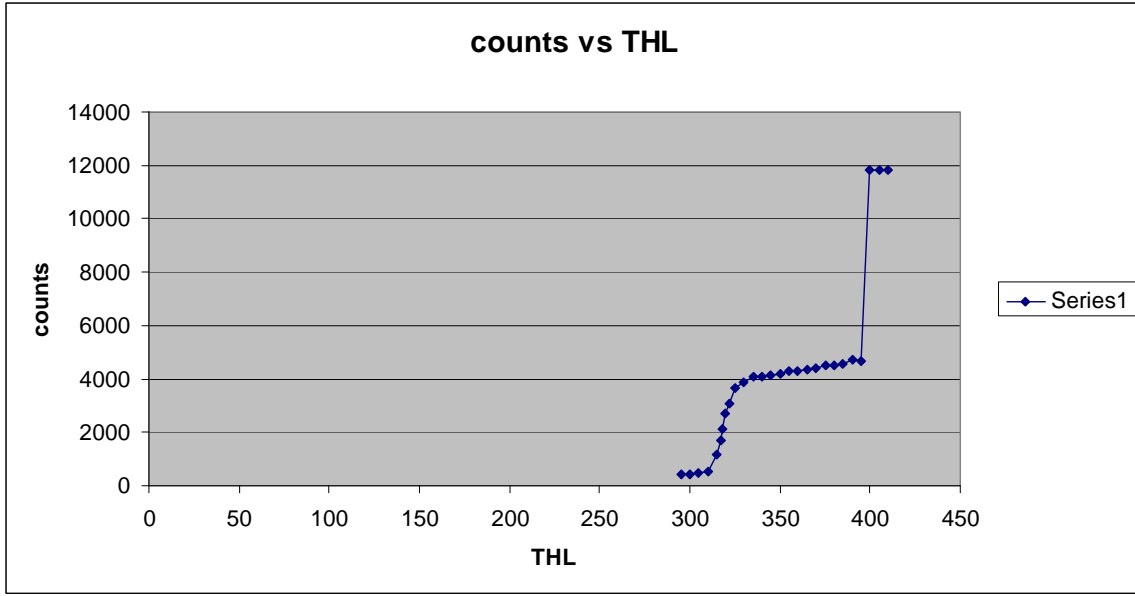
Open shutter and perform manual DAC scan of THL to find energy calibration. The pixel considered is (126,133)

The 15keV peak is at ~318

50% energy point is THL=363

25% energy point (low threshold) is THL=385

75% energy point (high threshold) is THL=340



12:25

Planar, V= 100V, THL= 363 (50%)

Set THL to 363. Start scan in full pixel of planar detector, V=100V

Get max ~6000 counts/pixel

C:\3DMedipixMay09\day4\I03-

W0047_PlanarN_MXR\PixelScans\1stPixelScan_5aq_70ms_100V_THL363_full_Planar

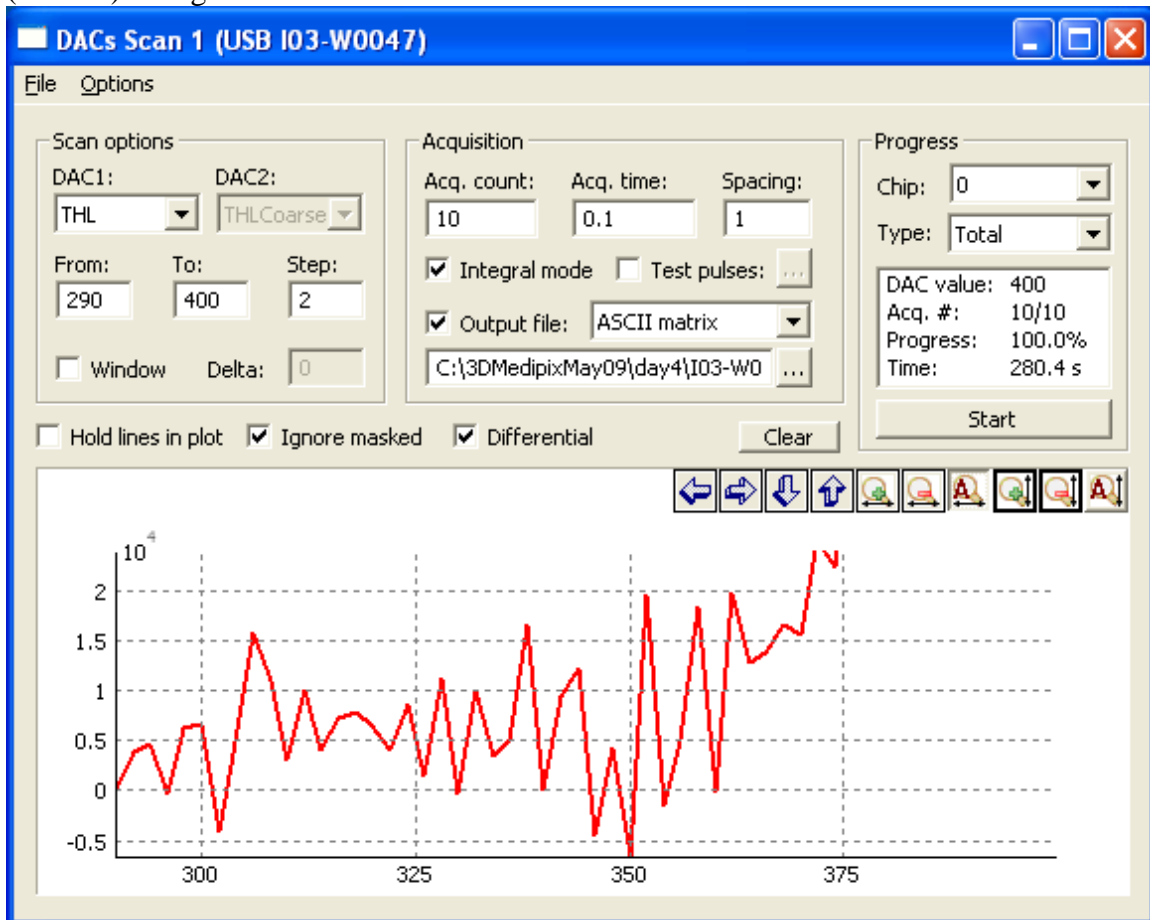
N\1stPixelScan.txt

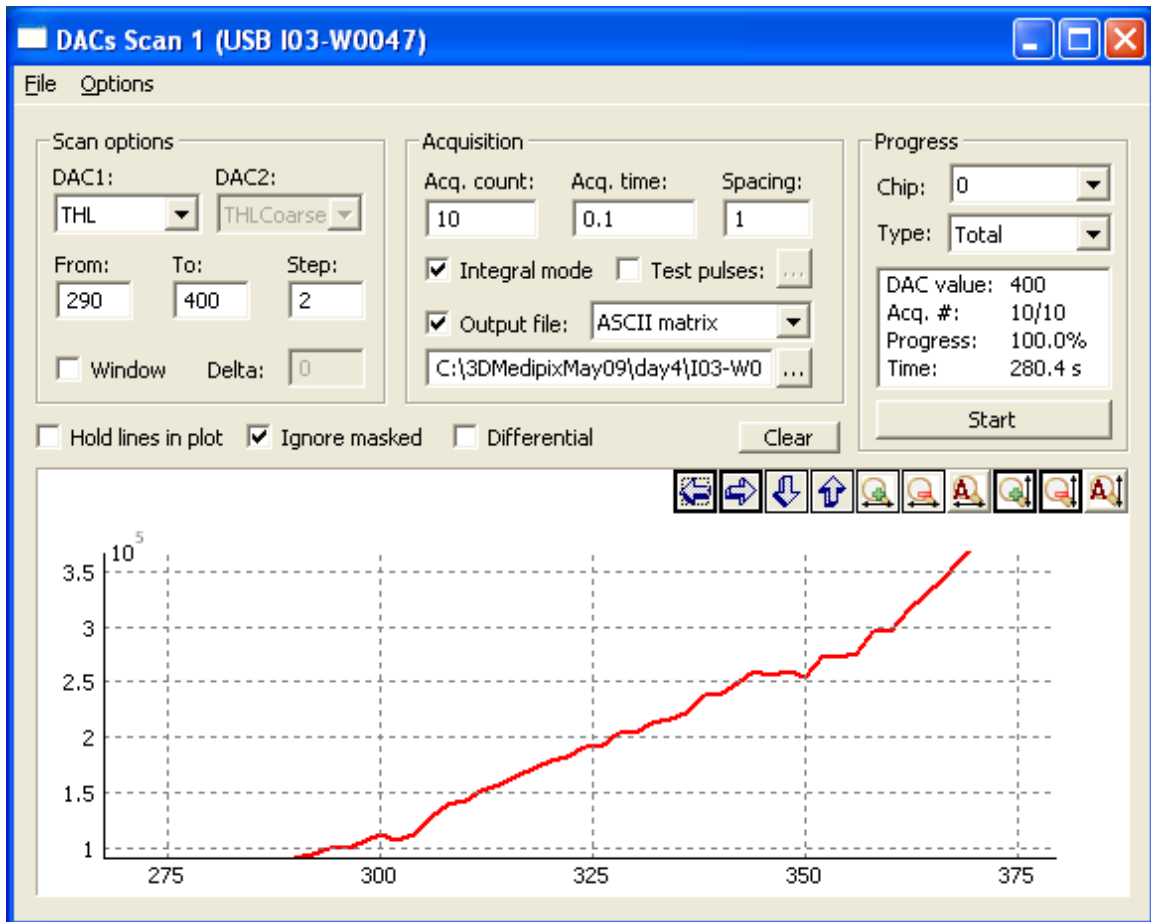
Datafile 12455.dat

New GDA command: scan tboptX -6.575 -6.50 0.0025 tboptY 17.4825 17.5575 0.0025
tbdiagX 8.0 8.21 0.2 w 0.2 pcotrig 1 rc t

Scan ends 15:54

(Celeste) – forgot to do automatic THL scan and save datafiles – we do it now





16:30 Eva, Aaron, Nicola, Celeste

17:36

Planar, V= 100V, THL= 385 (25%, low)

Set THL to 385. Scan quarter of a pixel

THL-FBK=.0055

New scan parameters. 16 steps, start +7 steps further both in X and Y (from scan of full pixel) As before, take 5 acquisitions in each position

????? New GDA command: scan tboptX -6.5575 -6.535 0.0025 tboptY 17.4825 17.5225 0.0025 tbdiaX 8.0 8.21 0.2 w 0.2 pcotrig 1 rc t

C:\3DMedipixMay09\day4\I03-W0047_PlanarN_MXR\PixelScans\2ndPixelScan_5aq_70ms_100V_THL385_quarter_PlanarN\2ndPixelScan.txt
Datafile 12457.dat

18:44

Planar, V= 100V, THL= 340 (75%, high)

Set THL to 340. Scan quarter of a pixel

THL-FBK=-0.0098

Same GDA command as previously and scan parameter

C:\3DMedipixMay09\day4\I03-

W0047_PlanarN_MXR\PixelScans\3rdPixelScan_5aq_70ms_100V_THL340_quarter_PlanarN\3rdPixelScan.txt

Datafile 12458.dat

Have a look at 25% datafile – we weren't getting the full corner of the pixel.

Stop this acquisition (75%) and repeat the 25% one, going back to the first origin of coordinates + 5 in both axis (this one was origin + 7)

New GDA command: scan tboptX -6.5625 -6.5225 0.0025 tboptY 17.495 17.535 0.0025 tbdiaX 8.0 8.21 0.2 w 0.2 pcotrig 1 rc t

19:00

Planar, V= 100V, THL= 340 (75%, high), REPEAT

C:\3DMedipixMay09\day4\I03-

W0047_PlanarN_MXR\PixelScans\4thPixelScan_5aq_70ms_100V_THL340_quarter_PlanarN_repeat\4thPixelScan

Datafile 12459.dat

End 20:14

20:20 Add the 3 extra rows to the low THL scan

Planar, V= 100V, THL= 385 (25%, low) REPEAT. We scan 3 extra rows to add to the top of the 2nd scan of day4

New GDA command: scan tboptX -6.565 -6.5575 0.0025 tboptY 17.495 17.535 0.0025 tbdiaX 8.0 8.21 0.2 w 0.2 pcotrig 1 rc t

C:\3DMedipixMay09\day4\I03-

W0047_PlanarN_MXR\PixelScans\5thPixelScan_5aq_70ms_100V_THL385_quarter_PlanarN_3rows\5thPixelScan.txt

Datafile 12460.dat

20:46 Add the 3 extra columns to the low THL scan

Planar, V= 100V, THL= 385 (25%, low) REPEAT X2. We scan 3 extra columns to add to the top of the 2nd scan of day4

New GDA command: scan tboptX -6.565 -6.5575 0.0025 tboptY 17.495 17.535 0.0025
tbdiagX 8.0 8.21 0.2 w 0.2 pcotrig 1 rc t

C:\3DMedipixMay09\day4\I03-
W0047_PlanarN_MXR\PixelScans\6thPixelScan_5aq_70ms_100V_THL385_quarter_Pl
anarN_3columns\6thPixelScan

Datafile 12461.dat

New GDA command: scan tboptX -6.565 -6.5225 0.0025 tboptY 17.4925 17.5 0.0025
tbdiagX 8.0 8.21 0.2 w 0.2 pcotrig 1 rc t

21:04 End of scans in planar 3D (yay!)

Disconnect detector. Leakage current in sensor is 0.60uA (was 0.10uA when we connected it at 08:40)

21:10 Kawal arrives to check beam size

FWHM 4.8 μ m in Y and 6.7 μ m in X (plus/minus 0.5um)

The data files used by Kawal for the beam alignment/measurements were 12462-12471.dat

The file containing the FWHM information are 12470.dat and 12471.dat in X and Y respectively.

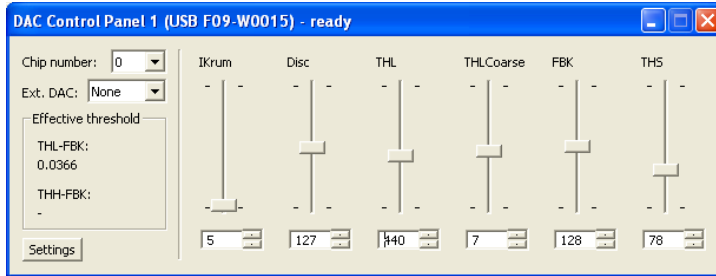
23:37

Aaron, Dima, Eva

Mounted P-type timepix. Applied -20V from Keithley 237.

The log file used 12472.dat was used just to try the trigger

TimePix mode;



Placed more Al in the beam to attenuate to a count rate of 2kHz(in Medipix mode); this gave counts of ~3-4kHz in TOT mode.

Checked the positions of everything

$tboptX = -6.5675$ $tbpotY = 17.4925$ $tboptXcoarse = 552$ $tboptZcoarse = 4.5$

$tboptChi = 0.0$ $tboptPhi = -0.41760$ $tboptTheta = 5.623$

$tbbaseY1 = -8$ $tbbaseY2 = -8$

9:00 Beam Shutter close

Scan aborted

Last scan: tpxScan_13708 (of 30000)

The data was taken at the angle of 9 degrees. Dima and Aaron have forgotten to return it to initial position after the alignment☹.

The distance from the lens to the detector surface is 2.35m.