

Useful links:

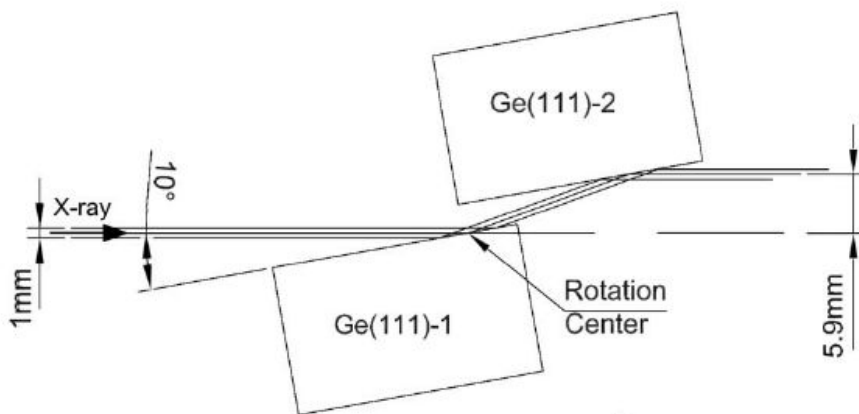
<http://8id.xray.aps.anl.gov/specplots/8idi/2017/06/MonochromatorComm20170601/>

<http://dx.doi.org/10.1107/S090904950705340X> (8-ID-I JSR mono paper)

June 1, 2017

We started operation a day late after a ID straight section leak at 27-ID. From the image below, you want to center the pink beam on the center of rotation which is 5 mm from the downstream end of the 1st crystal. The channel cut offset is $h=3.2$ mm, and the mono beam offset is $2h\cos(\theta)$. The Ge (111) crystals are 25 mm x 25 mm x 20 mm (thickness). The transverse distance from the downstream edge of the crystal is $5\text{mm}\sin(\theta)$.

We first observed the pink beam in pind1 by running at 60 mm ID gap. This has very little power. For example, the total power of one UA at 40 mm is 18 W, most of it absorbed the the FE. The first crystal alignment is done by scanning $ti1_x$ in the beam and passing the pink beam between the two crystals. Then one lines up Table 2 on the pink beam, and then rescans $ti1_x$ to find the edge of the first crystal near the plateau of the transmission. For the working Bragg angle, one can compute the monochromatic offset, move $ti2_x$ relative to the pink beam to this new position.



We struggle with the alignment on June 1st because the $ti2_x$ motion was reversed, so we moved in the opposite direction... We fixed the motor set up screens on both $ti2xu$ and $ti2xd$ by multiplying by -1 the mm/Rev field in the setup screens. We found the beam quickly after realizing this.

June 2, 2017 10h am

Eric Dufresne, Suresh Narayanan, Alec Sandy

Suresh moved the table down by 6 mm per the email below:

Date: Thu, 1 Jun 2017 22:00:33 -0500
From: "Narayanan, Suresh" <sureshn@anl.gov>
To: "Sandy, Alec R." <asandy@anl.gov>,
"Dufresne, Eric" <dufresne@aps.anl.gov>
Subject: Re: alignment

Now thinking about it, we should adjust the table so that the slit blades are not down by 6-7 mm else the window before the sample might become a problem. So I would like to do this quickly (hopefully) tomorrow.

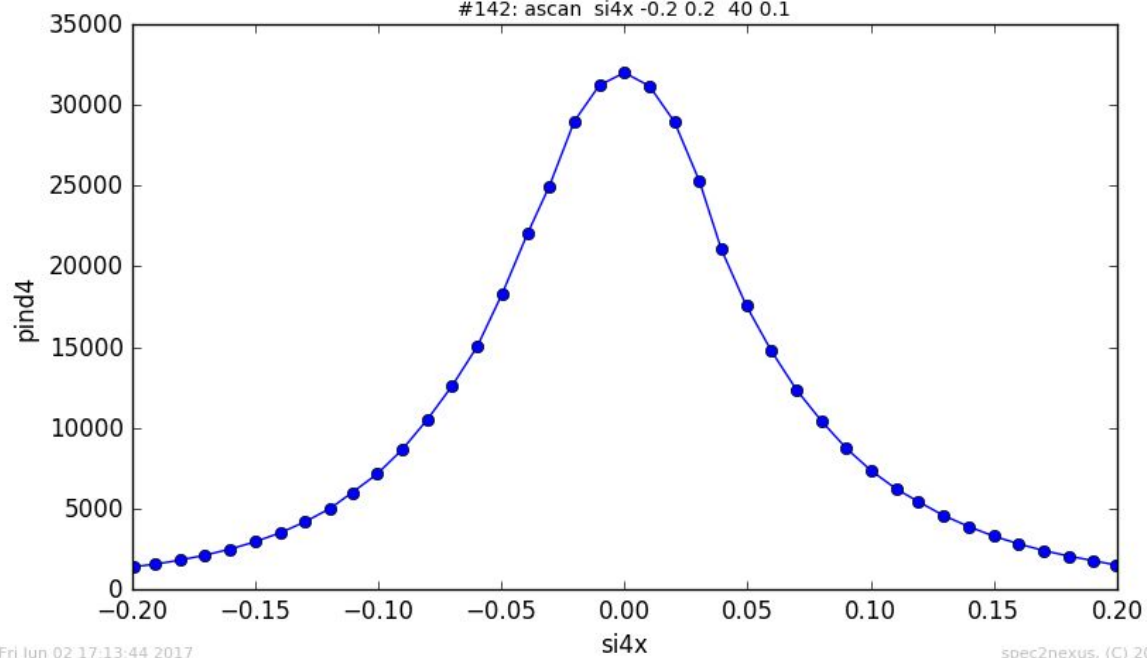
Suresh

This morning, he and Alec realigned the mirror as we had lost intensity in si2. The flux in (250 um)² beam is **1.73 x 10¹² ph/s** at 11 keV. For hours we could not get the beam through to pind2. Eric mounted N=16 lenses in the lens mount and with Suresh's help lifted up the CRL mount by 1/4" with Al plates. We also lifted the filter unit and realigned the shutter but nothing made sense until mid afternoon. We ran into the **crlz top motor limit and it needs to be rewired** as the limit was enabled when moving down, a typical symptom. We moved crlz manually down with the knob in the end. After opening si2 to 20 mm H by 17 mm V, we found the beam on pind2 and restarted the alignment. **With the new table height, we should take a beam height from the table** too. We fixed also an air leak on ccdx, cutting the pipe shorter.

We ran into problem with si2hgap, particularly the **si2i** blade (Vertical blades were fine). It wasn't fixed by a VME crate reboot and power cycle of the slit motors. We gave up and are using si3 instead. (si2o scans 132-133 reproduce). The scans of si3 were fine. Slit si4 has soft Si single crystal blades so it is challenging to calibrate the opening. We moved the si4x and si4z stages to center the opening on the beam and the scan below shows a typical looking scan. We typically calibrate the opening from the FWHM of the scan when the incident beam is much smaller than the opening. The 3 mm beamstop is mounted. Its alignment worked well. We ended the day with problems to align the reflectivity APD. It doesn't count what it should (2500 cps without filters) so Suresh thinks the in-vacuum amplifier is broken. Something to follow up on Monday.

/home/beams/8IDIUSER/spec_data/2017/June2017/MonochromatorComm20170601

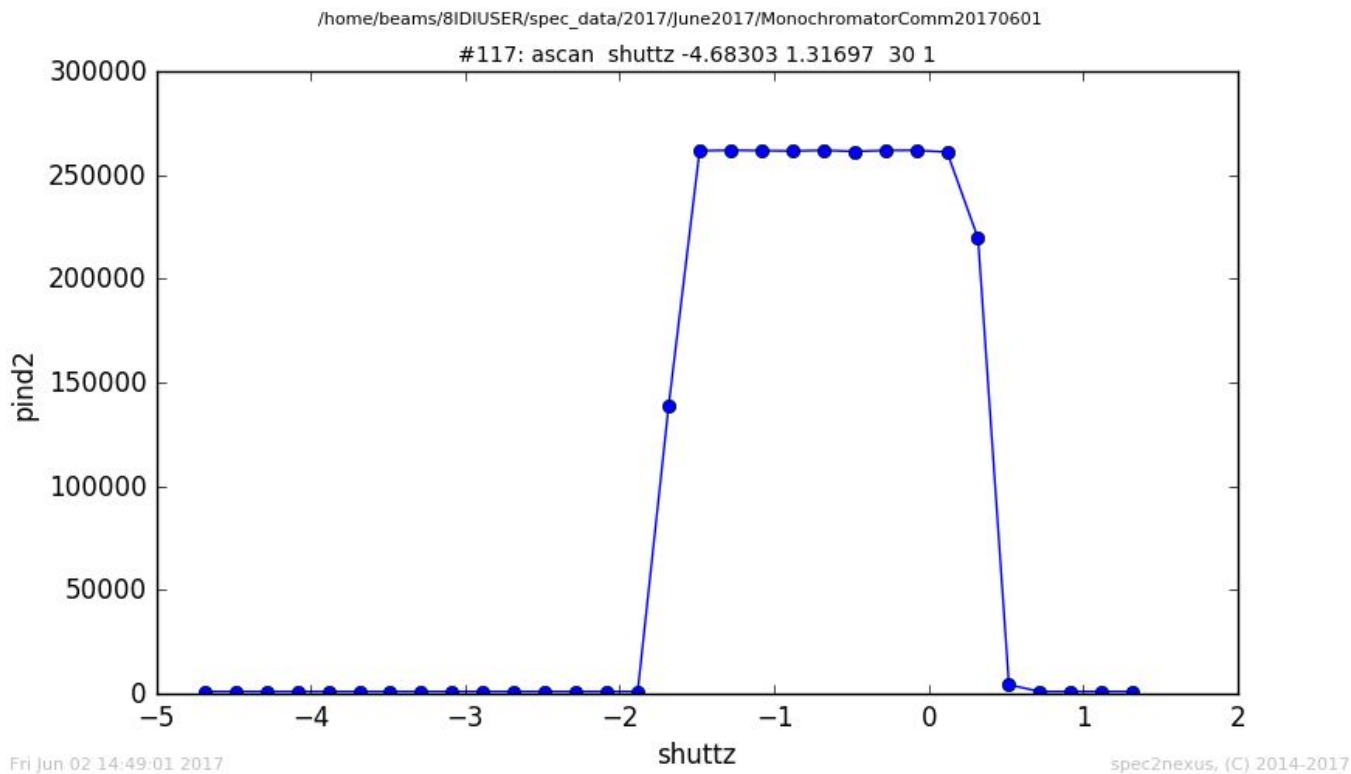
#142: ascan si4x -0.2 0.2 40 0.1



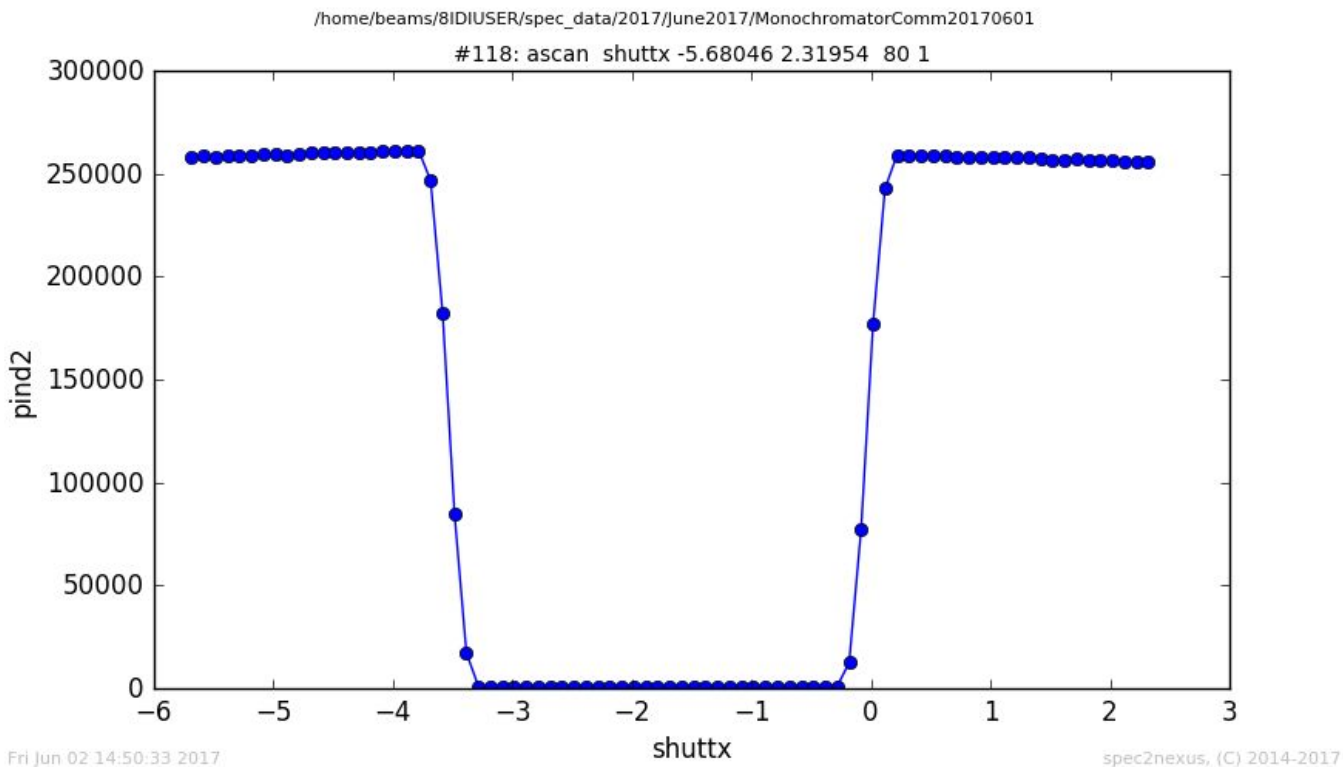
Fri Jun 02 17:13:44 2017

spec2nexus, (C) 2014-2017

Shutter alignment notes:



Suresh first scanned shutterz (see scan 117), (shutter left in the open state) moved to CEN.
Then moved down shutztz by **3 mm**.



He then scanned shuttx (see Scan 118), moving to CEN.
Remember to move shuttz back up by +3 mm

June 3, 2017

10PM ED came in to test the focus at 10.915 keV with a knife edge. Flux is still good.

Si1vgap = si1hgap = 250 microns

flux pind1 387426-963

Detector = 1

Amps_per_Volt(pind1) = 0.0002 A/V

CtpV = 100000

Length = 0.0400 cm

Element = Si

Ephot = 10915 eV

Si Elength = 0.018 cm

386463 cps is a current of 77.4852 Amps

1.79e+12 photons per second

Doing lens alignment with si1hgap = 50

Si3 gaps were 50 um, si4 gaps were 150 um, si5 gaps 350 um. Lens through hole at crlx=2.833 mm, crlz = 9.6688 mm.

Move the lens in. **Open all slits to 0.5 mm.**

#153 lup crlz -1 1 80 1 -looks good. FWHM 0.559 mm with si1vgap =250. Move to CEN.

#154 lup crlpit -1 1 50 1. Go to crlpit 0. Broad smooth peak.

#155 lup crlyaw -1 1 40 1. Very flat, stay as is.

#156 lup crlx -2 2 80 1 Edges at -2.37, and 0.33 mm, little dip at -0.81. FWHM =2.75 mm center at **-1.028 mm, go to CEN.**

#157 lup crlz -1 1 80 1 (repeat 153). Looks good as is.

Loaded sample cell. No knife edge, first check **ti3** alignment.

#158-junk, #159 lup ti3_z -5 5 40 1 Found beam, go to CEN=-1.729 mm so down ~2mm.

#160 lup ti3_z -3 3 60 1 (finer scan) , move to CEN=-1.622mm. **FWHM=3.92 mm.**

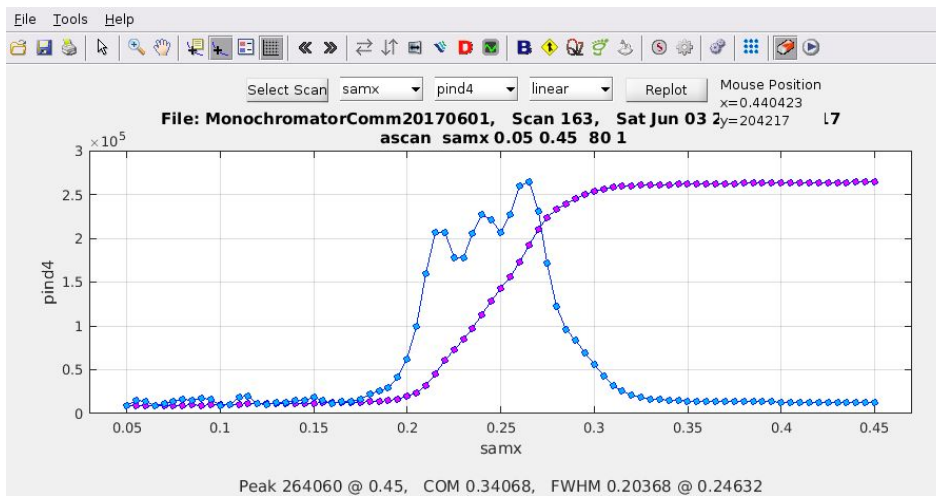
#161 lup ti3_x -5 5 50 .5 move to CEN=1.283 mm **FWHM=6.1 mm.**

Load knife edge now. Moving up cuts the beam, moving samx + cuts the beam.

With samz = 1, samx bissects the beam at 0.25 mm.

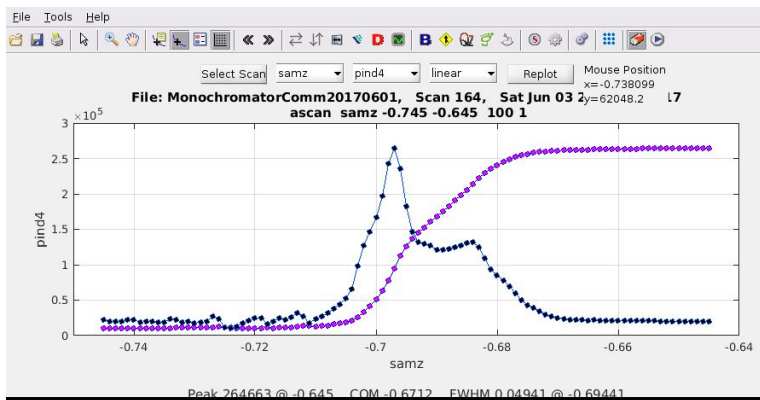
#162, 163 samx scans #163 lup samx -.2 .2 80 1. Derivative is 0.208-0.278 = **70 microns.**

Should be 50 microns + diffraction. See below negative **derivative.**



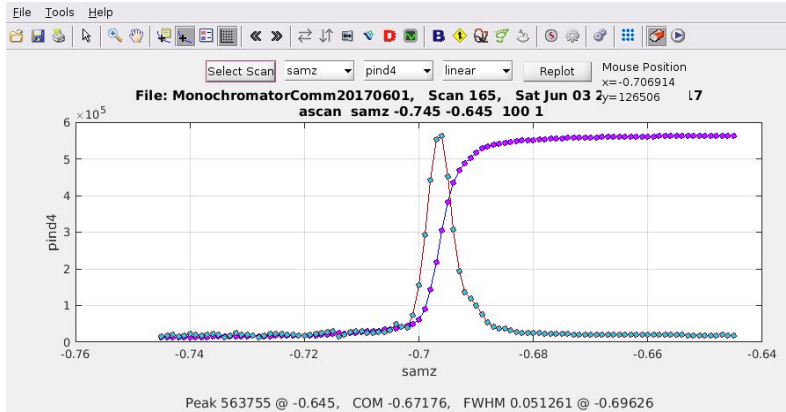
#164 lup samz -.05 .05 100 1

Not a good focus with 250 microns si1vgap. -.702 to -.683 so 19 microns wide



Let's see if we can focus with a small beam. 50 microns beam should diffract about 5 microns at 2.29 m. **Set si1vgap = 50.**

#165 lup samz -.05 .05 100 1 Much sharper. Get about **5 micron** wide focus.

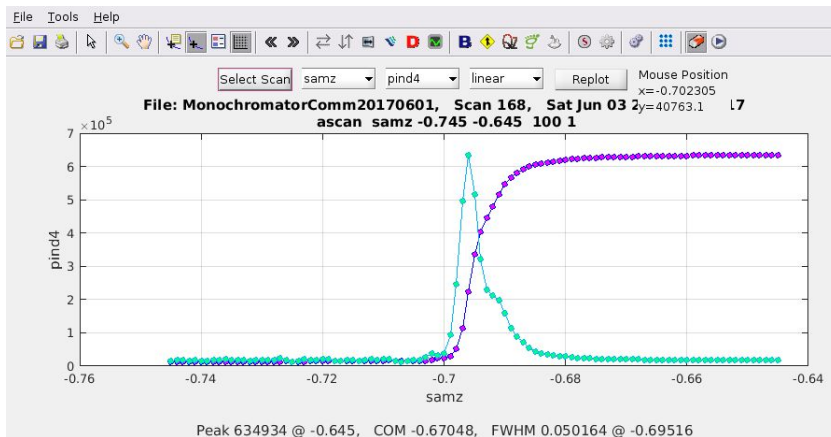


Set si1vgap=75

#166 lup samz -.05 .05 100 1 Need to add filters or change gain setting.

#167 repeat with att 3 instead of 2. Focus about **4 microns** wide, with more assymetric tail on RHS. Set si1vgap = **100** microns.

#168 lup samz -.05 .05 100 1, focus about a little less than **4 microns**, sitting on a broader background of 8 microns.



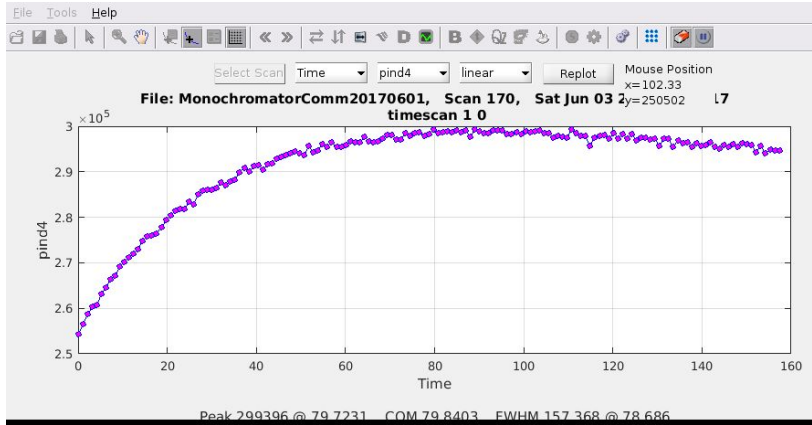
Next set si1vgap **125** microns.

#169 needs more filter

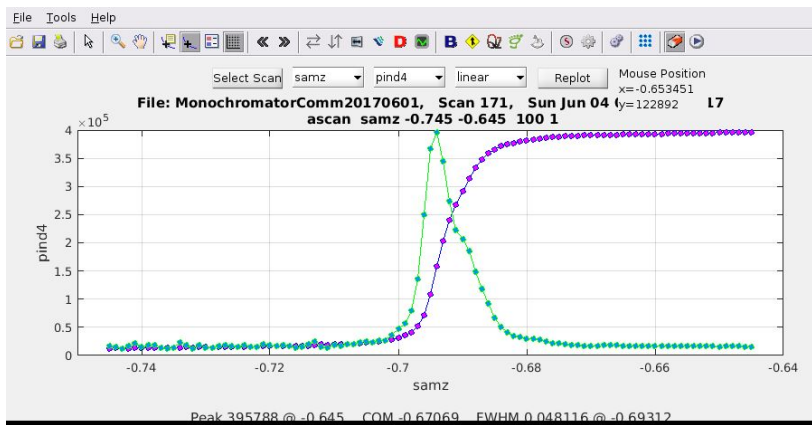
pind4 doesn't respond in EPICS? Set at 1 uA/V.

After accessing the hutch, I noticed the flux changing quite fast. I took a time scan, so knife edge is IN.

#170 timescan. Intensity rose from 2.5 to 3×10^5 cps in 80 seconds.

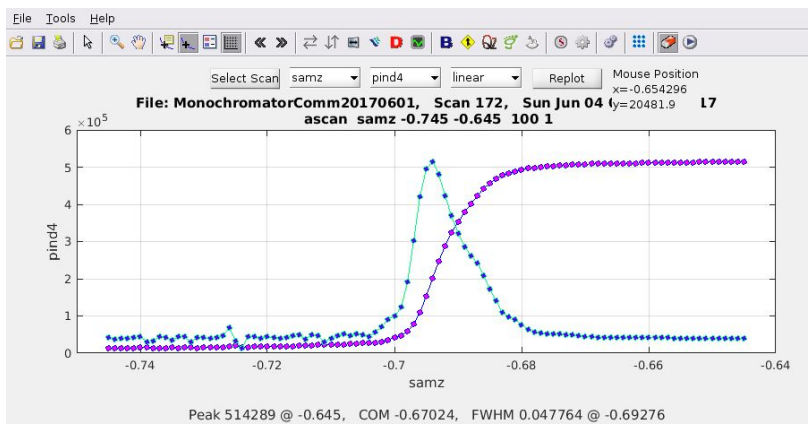


#171 lup samz -.05 .05 100 1, with **si1vgap=125**. The beam tails are becoming more important. FWHM=6.5 microns (see below).



So go to **si1vgap=150** microns.

#172 lup samz -.05 .05 100 1 ~**9.5** microns wide.



si1vgap	FWHM (microns)	Scan #
50	5	165

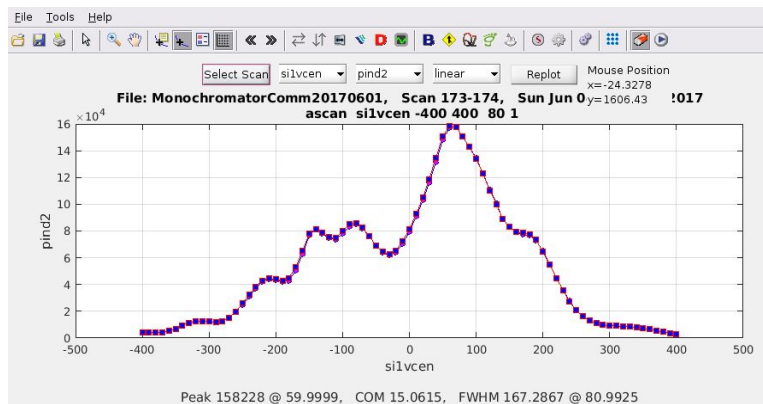
75	4	167
100	4	168
125	6.5	171
150	9.5	172
250	19	164

Decided to scan the incident beam profile with narrow si1vgap slit using pind2

#173 lup si1vcen -250 250 50 1 with **si1vgap=20** um Repeat, wider...

#174 lup si1vcen -400 400 50 1

si1vcen reproduces nicely in scan 173-174.



Summary:

At small NA, we seem to get diffraction limited performance til 100 micron opening of si1vgap. Beyond this, aberration in the lens or the main beam (maybe vertical profile?) broaden the focal spot. I'd say it looks promising though as I didn't fully optimize at every step. Main beam is suspicious with factor 2 in intensity on RHS.

Suresh; Resuming on Sunday 3 pm

Beam on slit-5 was +6 mm above the center. So decided to move the table ti2 up and lower the slit centers by 6 mm

dials:

Zu: 1689 to 1924

Zdo: 1732 to 1968

Zdi: 1714 to 1949.5

Table stayed very levelled, had to tweak on the scale of 100 um

Aligned the heights of si1, shutter, crl

Now moving table ti2 -5 mm to bring beam back in the middle

8-ID-I Slit/Optics Table (8idi:table2)

Fixed point: Default Refresh menu

Translate mm		Rotate degrees		Motors mm			
X	11.307	AX	-0.094	MOX	-10.3989	M2X	-10.3984
Y	32.510	AY	-0.000	MOY	31.84942	M2Y	33.51041
Z	-13.718	AZ	0.075	M1Y	31.17029	M2Z	14.85395

Use Set Zero Sync Init Done Stop Table Less More

Record version:5.14

All the components and slits are aligned. Si-2 is still wide open, has issues (si2i)

APD on tth is working fine too.

ED in 10h30pm June 4.

Top of crlpit rotation stage is 330 mm from table, lens at 390 mm from bottom of table. The lens is centered 60 mm above the stage (<http://8id.xray.aps.anl.gov/elog/8-ID/456>).

flux pind1 295414

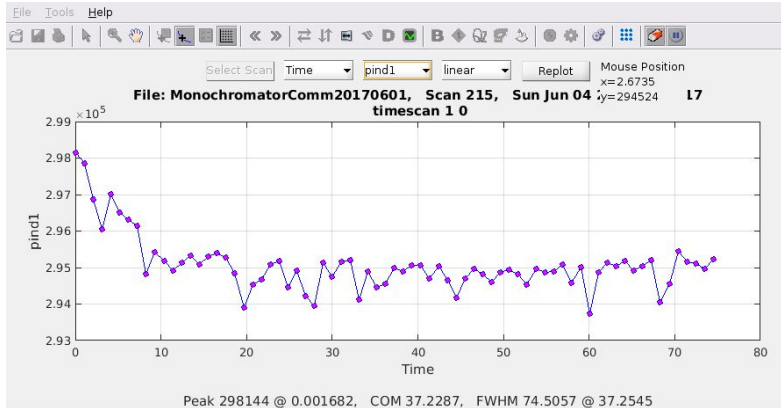
Amps_per_Volt(pind1) = 0.0002 A/V

Ephot = 10915 eV

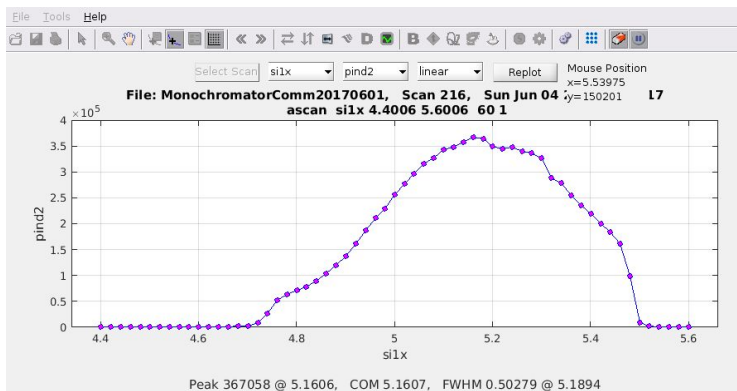
295414 cps is a current of 0.000590828 Amps

1.37e+12 photons per second

Did a time scan #215 below. Much faster to stabilize on pind1



#216 lup si1x -.6 .6 60 1 with si1hgap=20um. We need to *reset it to zero* or we're going to confuse the beamline alignment as we normally go to si1x=0 when we align the beamline.



IMHO, the negative side should have a sharp edge from diamx, and the RHS should be smooth. There is an edge at 5.5 mm. Not sure why. FWHM = 0.5 mm, seems reasonable.

#217 lup si1vcen -400 400 80 1 with si1vgap=20 um, si1hgap=50um. Scan looks similar to previous scan #174 earlier.

crlx = 7.6275 crlz=3.7116 for through hole. Go to lens (-3.8 mm)

#218, lup crlz. -1 1 80 1. Moved to CEN. Was done with 50 um x 50 um si1gaps

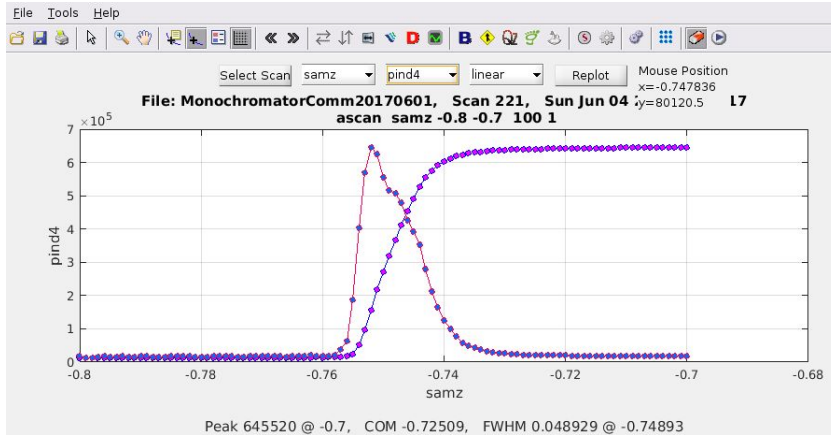
#219 crlx scan looks good. Go to 3.7mm

Slits are si3=20x20, si4=200x200, si5=300x300. Opened them all to 500x500

#220 crlz -.05 .05 100 1 (focus csan, **FWHM=6 um**) with si1vap=50.

#221 crlz -.05 -.05 100 1 (**FWHM=10um**) with si1vgap =100

#222 crlz -.05 -.05 100 1 (**FWHM=13.5um**) with si1vgap =150



Overall, worse than yesterday but still focusing.

Decided to sample lower part of beam, moving si1vcen down by 170 um, as well as lens and knife edge

#223 crlz -.05 -.05 100 1 (FWHM=7.5um), with si1vgap =150um.

Moving down made a big difference.

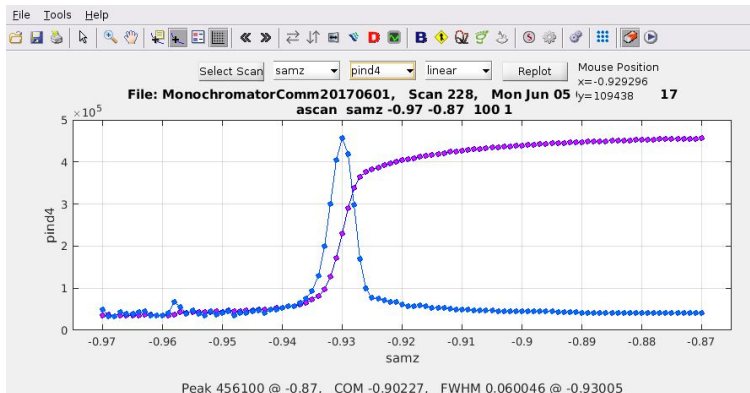
#224 crlz -.05 -.05 100 1 (FWHM=8um), with si1vgap =200um.

#225 crlz -.05 -.05 100 1 (FWHM=8um), with si1vgap =250um

#226 crlz -.05 -.05 100 1 (FWHM=7um), with si1vgap =50um

#227 crlz -.05 -.05 100 1 (FWHM=6um), with si1vgap =50um (redo with att 0)

#228 crlz -.05 -.05 100 1 (FWHM=5um), with si1vgap =100um (with att 0)



Returned motors up afterwards(crlz, si1vcen,samz) and si1 gaps to 250x250

Summary: Moving down on the upstream beam profile helped the focusing with large gap significantly. Scans 223-228 seem to have much better focuses, though I've noticed backgrounds on the tail that extend over large distances. We should look into the vertical beam profile issue next week. Should summarize in a table tomorrow including intensities.

June 6, 2017

After the shutdown day:

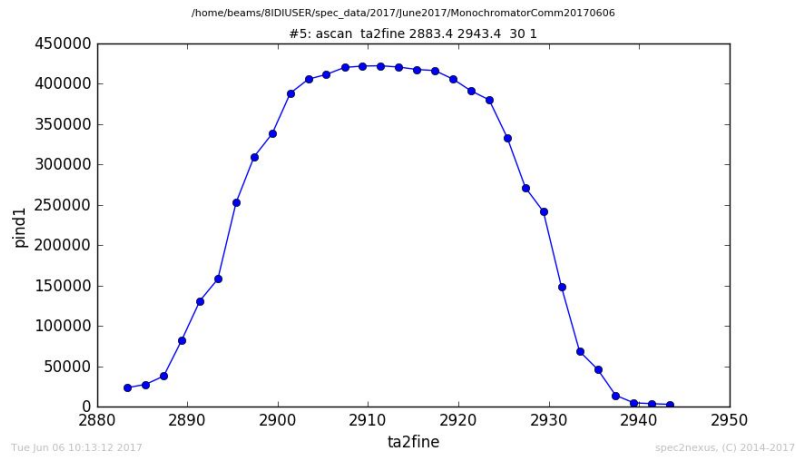
Started a new spec file:

MonochromatorComm20170606

Slit-2 was opened and cleaned and motion was tested to be ok. Gap si set to 5 mm x 5 mm and fairly centered, has to be realigned.

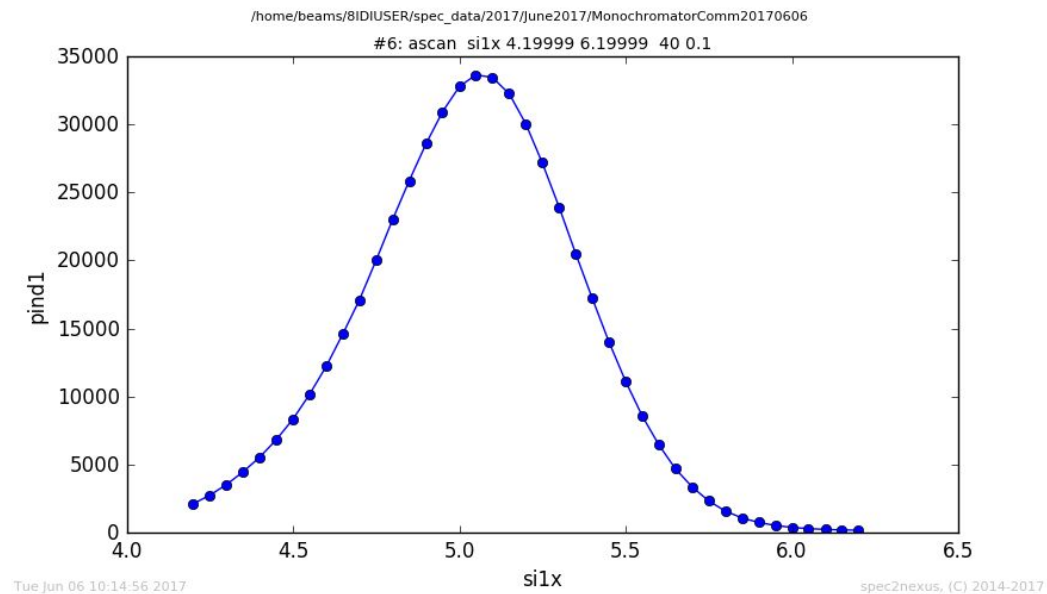
Lined up reflected beam on mirror through the pinhole with si1hgap=si1vgap=2000 um.

Scan 5 ta2fine

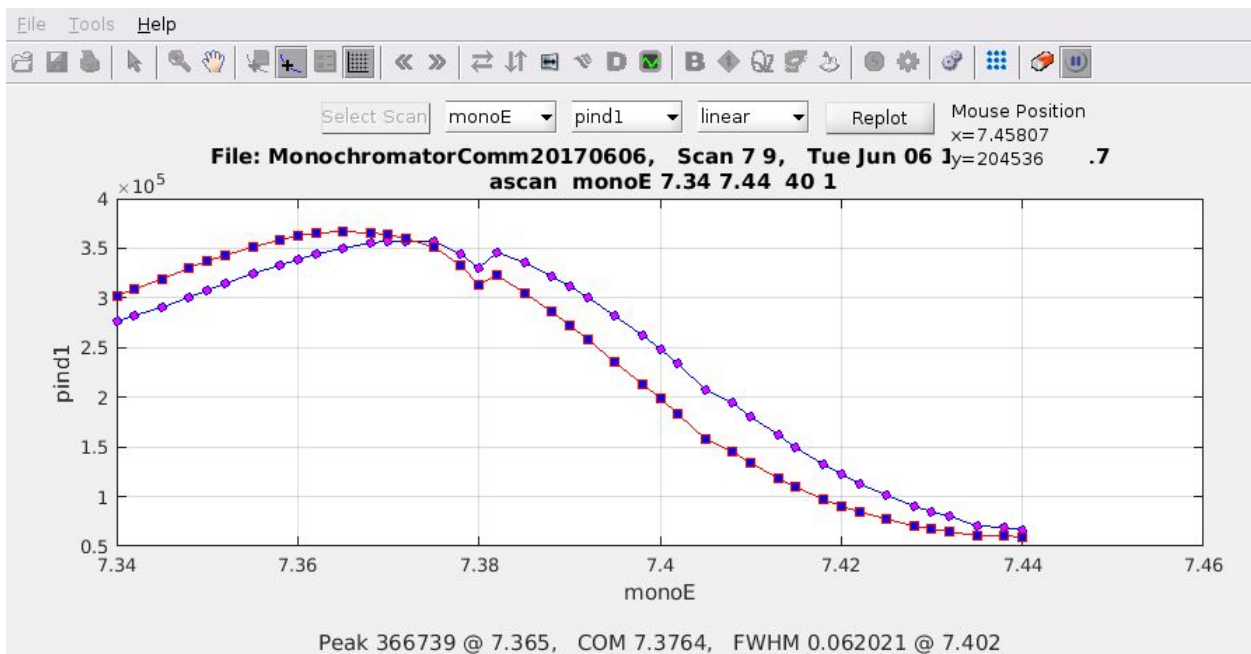


Then Suresh closed si1hgap and vgap to 250x250 um and checked the alignment of si1x

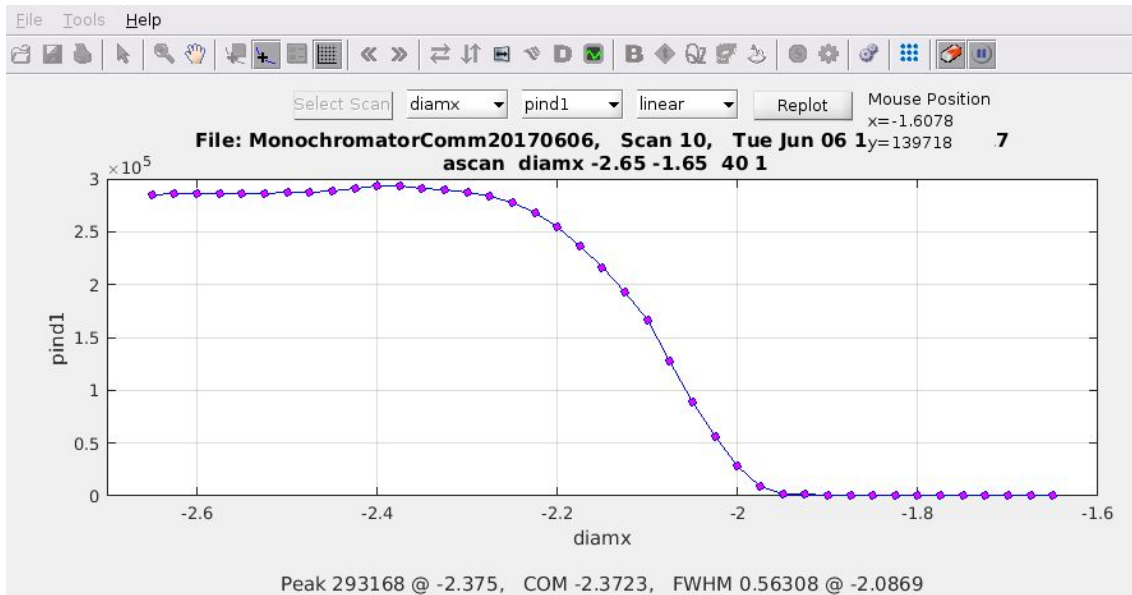
#6 lup si1x



monoE scans taken with 2 undulators at two energies, 10 eV apart

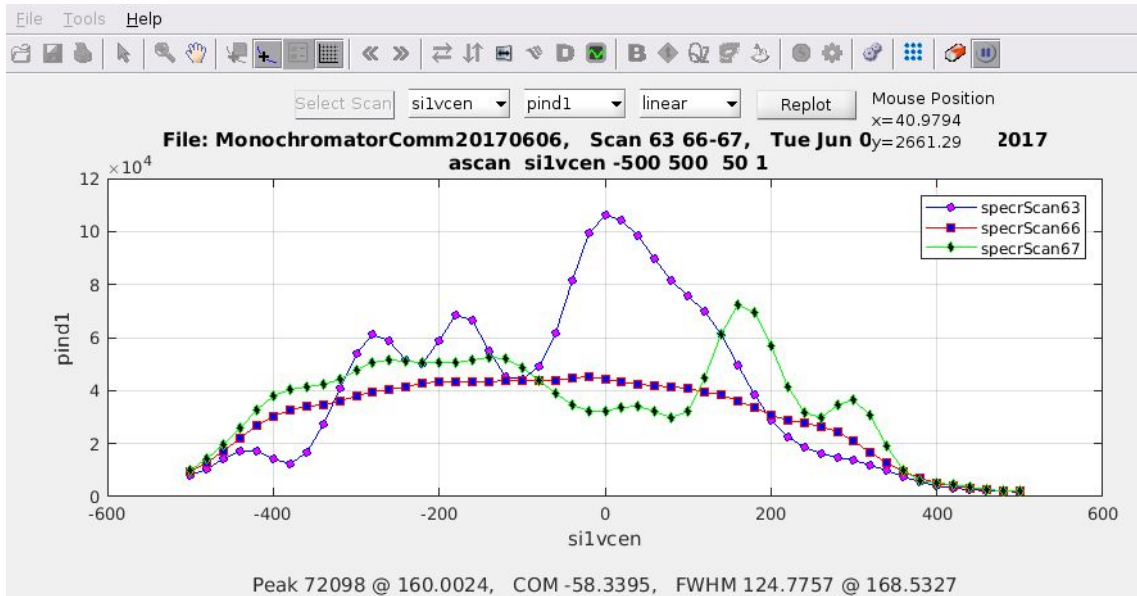


Diamx scan with Si(220), undulator is 10 eV softer than the last cycle



Trying a new position on mirror
Scanning si1vcen with 50 um hole
Ta2_z is at 0.5 mm

Moving ta2_z to 1.5 mm and 1.0 mm, si1vgap set to 250 um
Realigned ta2fine and scanned the beam profile with si1vcen with 50 um aperture
Scans 63,66 and 67 are at ta2_z of 0.5, 1.5 mm and 1.0 respectively



We decided to move to 1.5 mm where beam looks better.

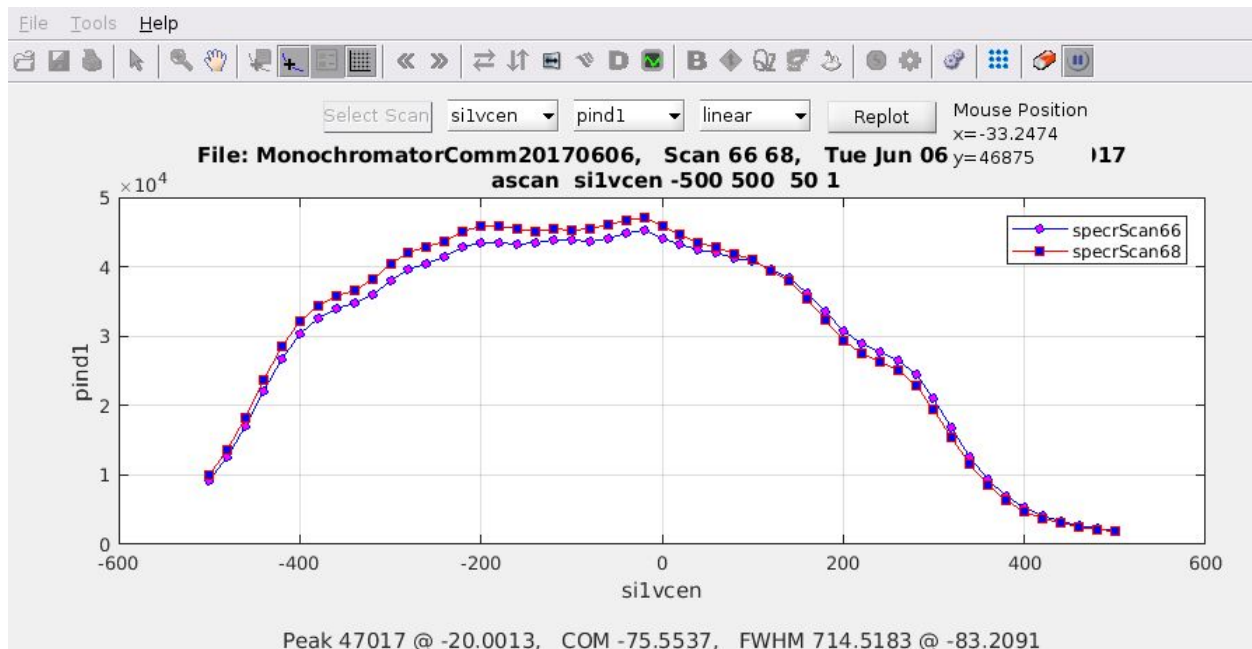
A-Mirror Optical Table (8ida:table2)

Fixed point: Default Refresh menu

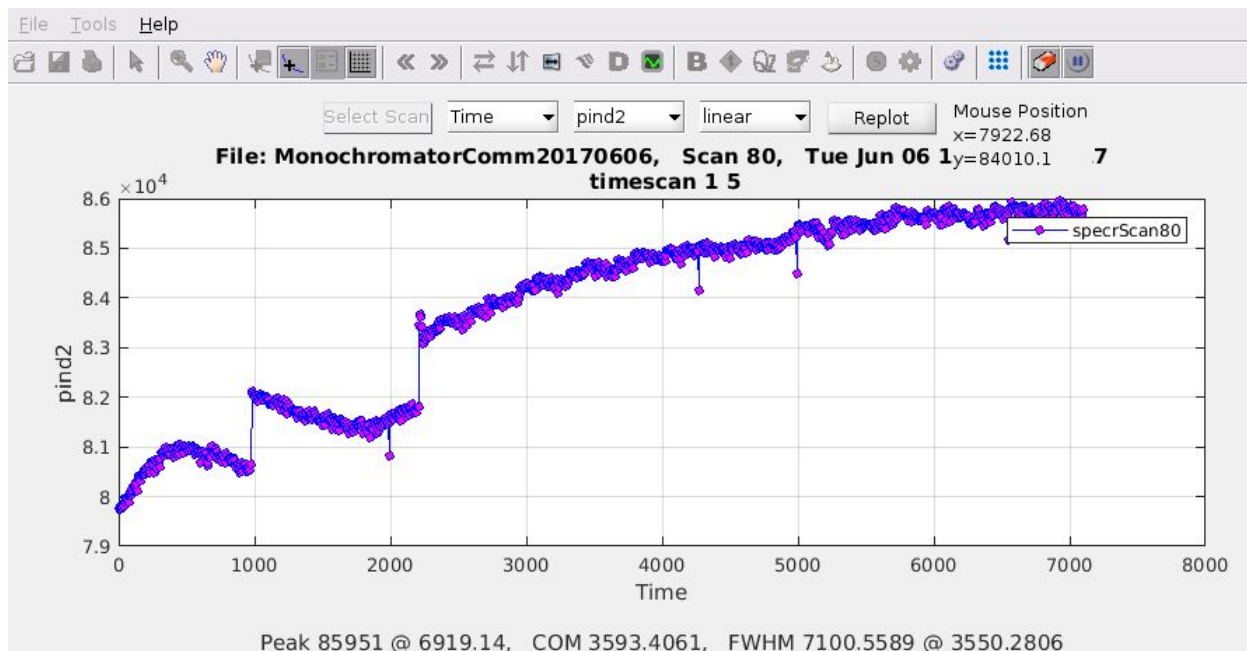
Translate mm		Rotate degrees		Motors mm	
X	-2.0001	AX	-0.0000	MOX	0.376122
Y	1.4999	AY	0.2524	M2X	-4.37870
Z	0.0053	AZ	0.0000	M1Y	1.499940
				M2Y	1.499810
				M1Z	0.0000
				M2Z	0.0000

Use Set Zero Sync Init Done Stop Table Less More

Record version:5.14



Flux with time on pind2 through a 20x20 aperture



June 9, 2017 Testing focusing

Joe reports 3rd harmonics contamination. Decided to see if it is as bad by returning mirror to its original position.

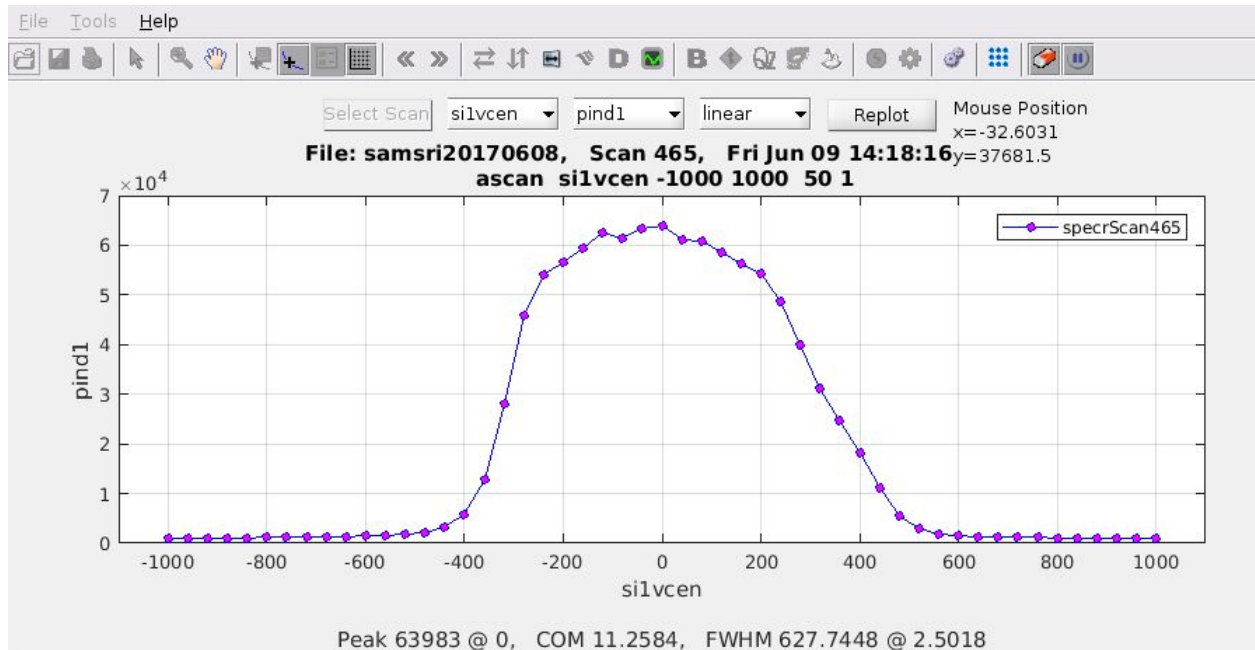
Flux on pind1 is 1.32×10^{12} ph/s

Moved down ta2_z down to 0.5 mm from 1.5 mm

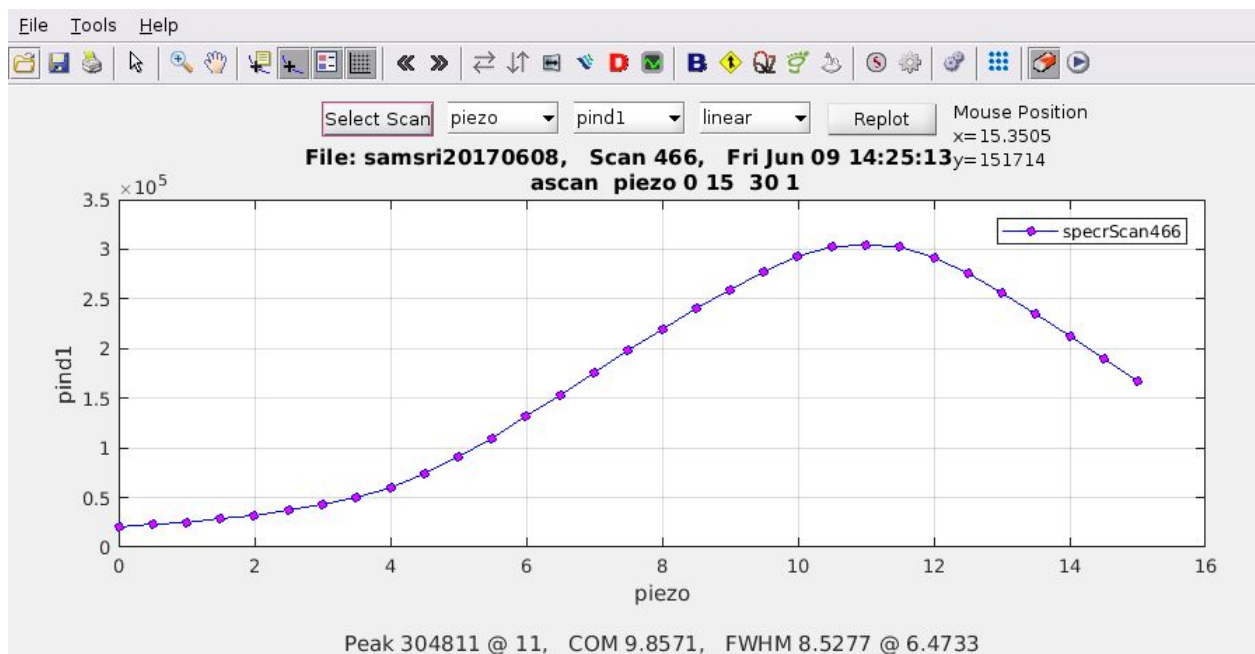
#463 lup ta2fine -30 30 30 1

Moved mirror down -1 mm to -0.5 mm

Si1vcen gap with si1vgap=50 um looks good



Scanning piezo with 2 mm vertical slit- **FWHM about 8.85 V. Expect 67 urad, we measure 88 urad.**



```
1637.SPEC8ID1> flux pind1 300e3
Amps_per_Volt(pind1) = 0.0002 A/V
CtpV = 100000
Length = 0.0400 cm
Element = Si
```

Ephot = 10922 eV
Si Elength = 0.018 cm
300000 cps is a current of 0.0006 Amps
1.39e+12 ph/s

Lining up the lens next.

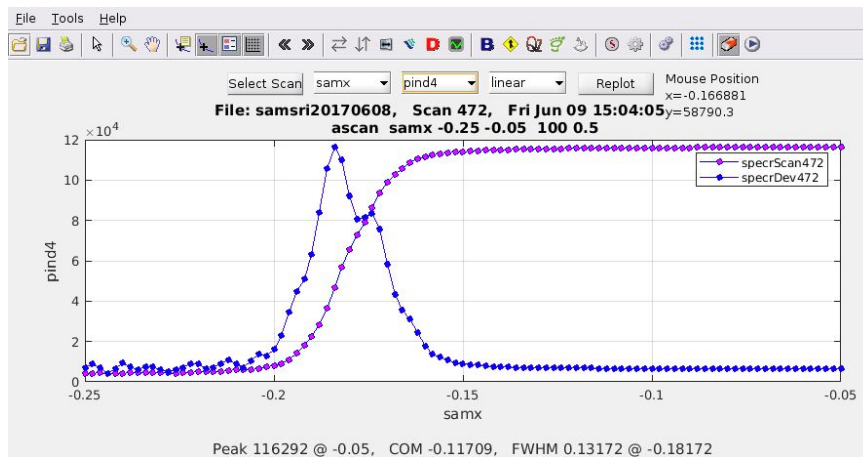
crlx=7.9 crlz=3.7 Through hole

#468 crlz with si1vgap 250 um on lens position

#469 crlz scan with si1vgap 50 um, more sensitive to lens shape FWHM=0.52 mm

#470 crlx looks good, #471 crlpit looks good. Mounted GaAs edge, cuts moving samz up, and samx+

#472 samx scan with 2 um steps to measure hor. Beam size. Beam size on sample **21 um** FWHM!



Move umvr samx 1 to block beam #473 lup samz to find center. Nice focus!

#474 lup samz -.05 .05 100 1 (1 um step) si1vgap=50 FWHM ~ 5 um

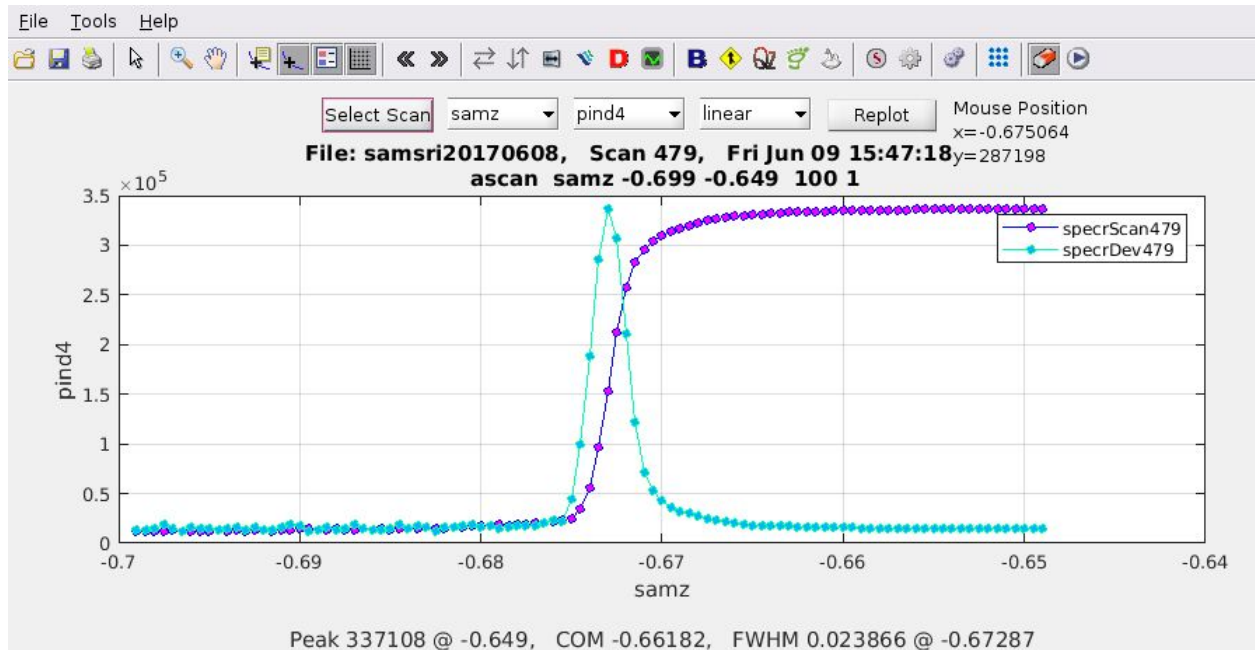
#475 lup samz w si1vgap =75 um FWHM ~ 4 um

#476 samz with 0.5 um steps, same si1vgap FWHM **3.5 um**. All above with att 1

#477 samz w/si1vgap=100um. FWHM=**3 um**. Att 2 below

#478 samz w/si1vgap=125um. FWHM= **2.4 um**.

#479 samz w/si1vgap=150 um. FWHM= **2.2 um**. N.B. **Dark** is 7600 cps on pind4



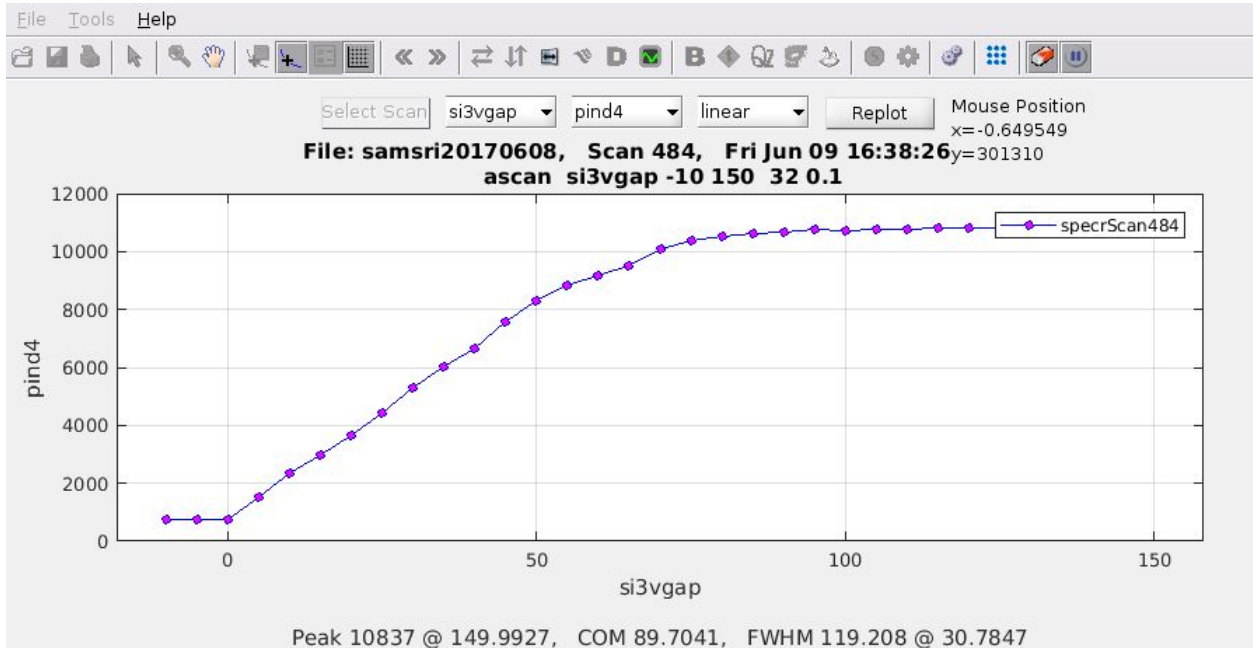
#481 (480 junk) repeat with **0.25 um** step now below. Confirm 2.2 um fwhm.

#482 samz w/si1vgap=175 um. FWHM= **2.0 um**. Starting to pick +samz tail

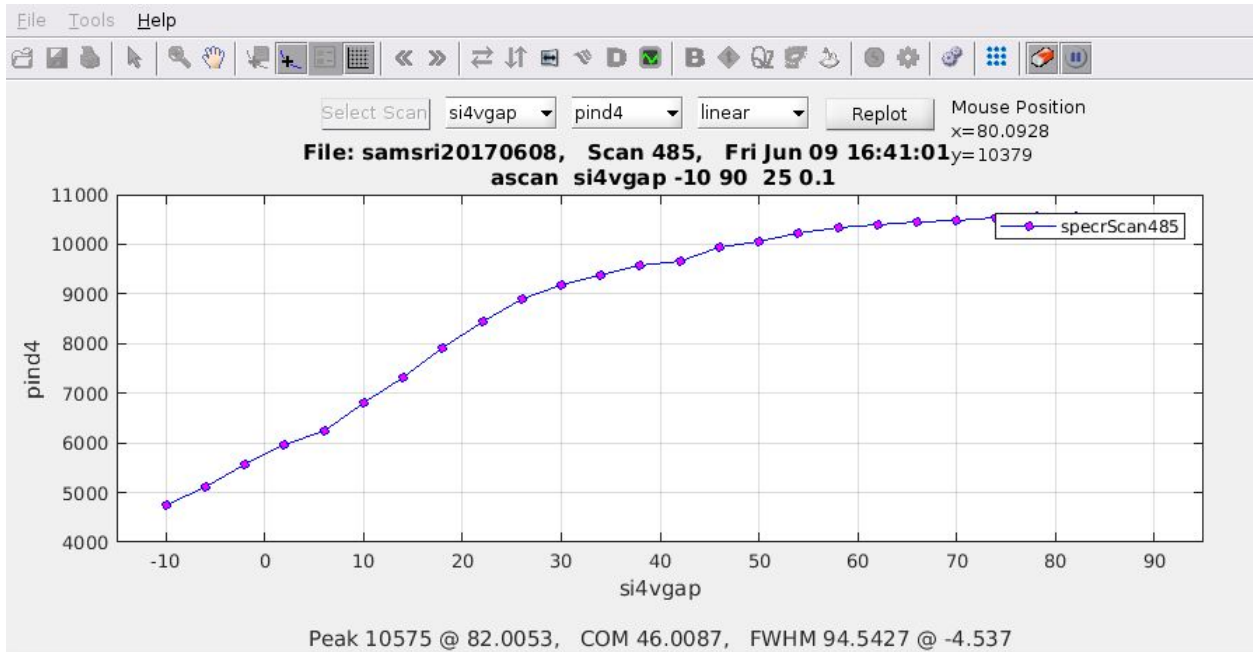
#483 samz w/si1vgap=200 um. FWHM= **2.1 um**.

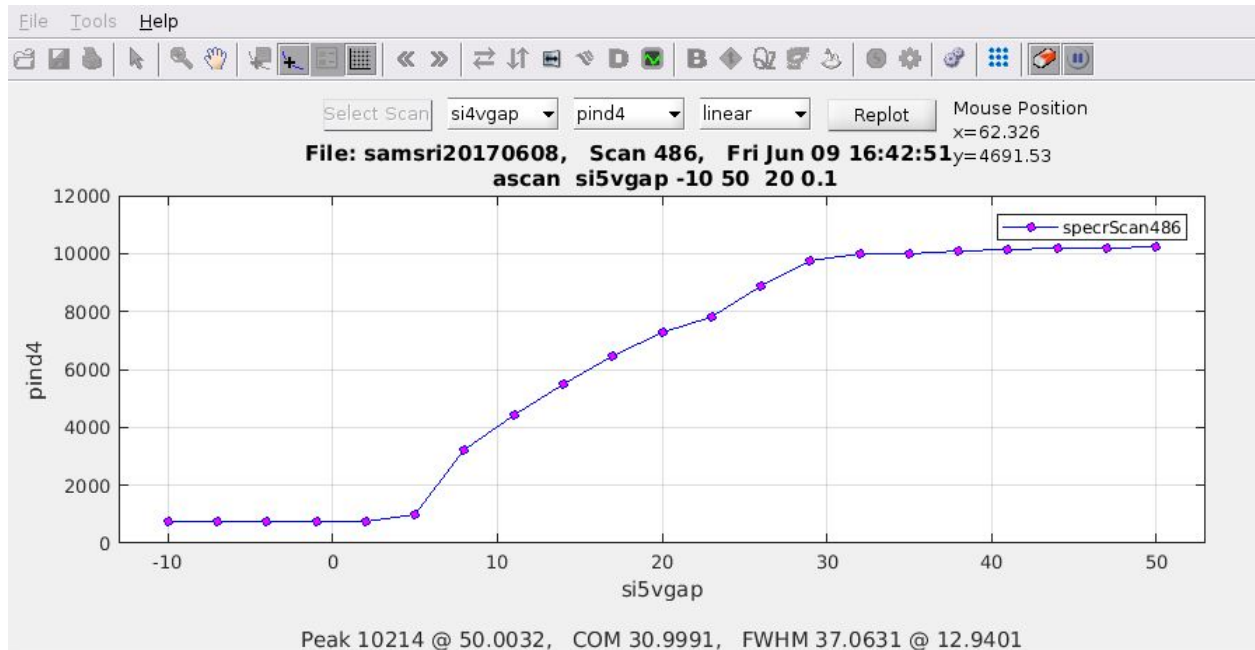
Decide to do aerogel.

Closing slits now.



Si3vgap at 100
 This is the soft silicon slit, setting at 80





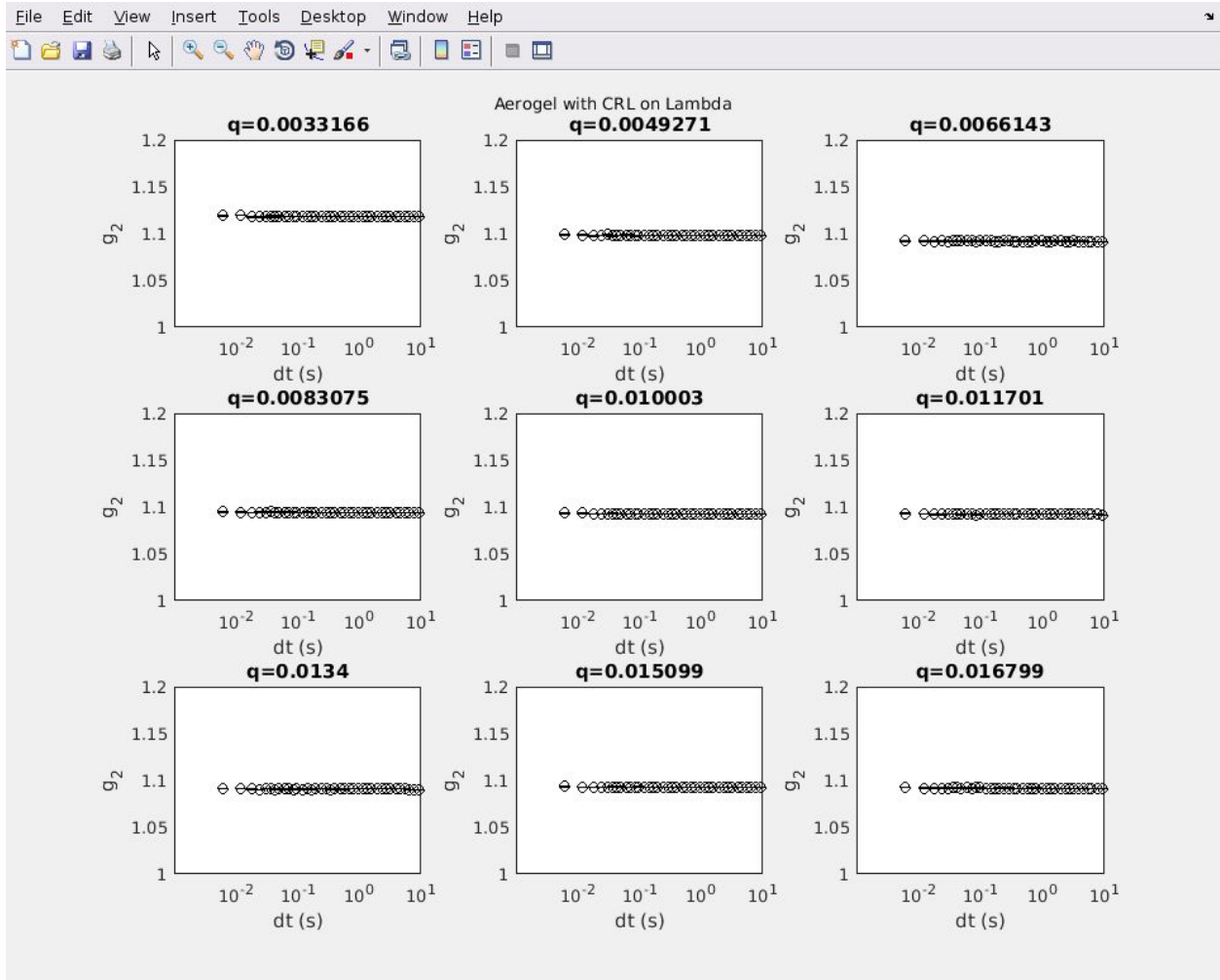
Setting at 50 um, can go down to 40 or 30

Contrast measurements:

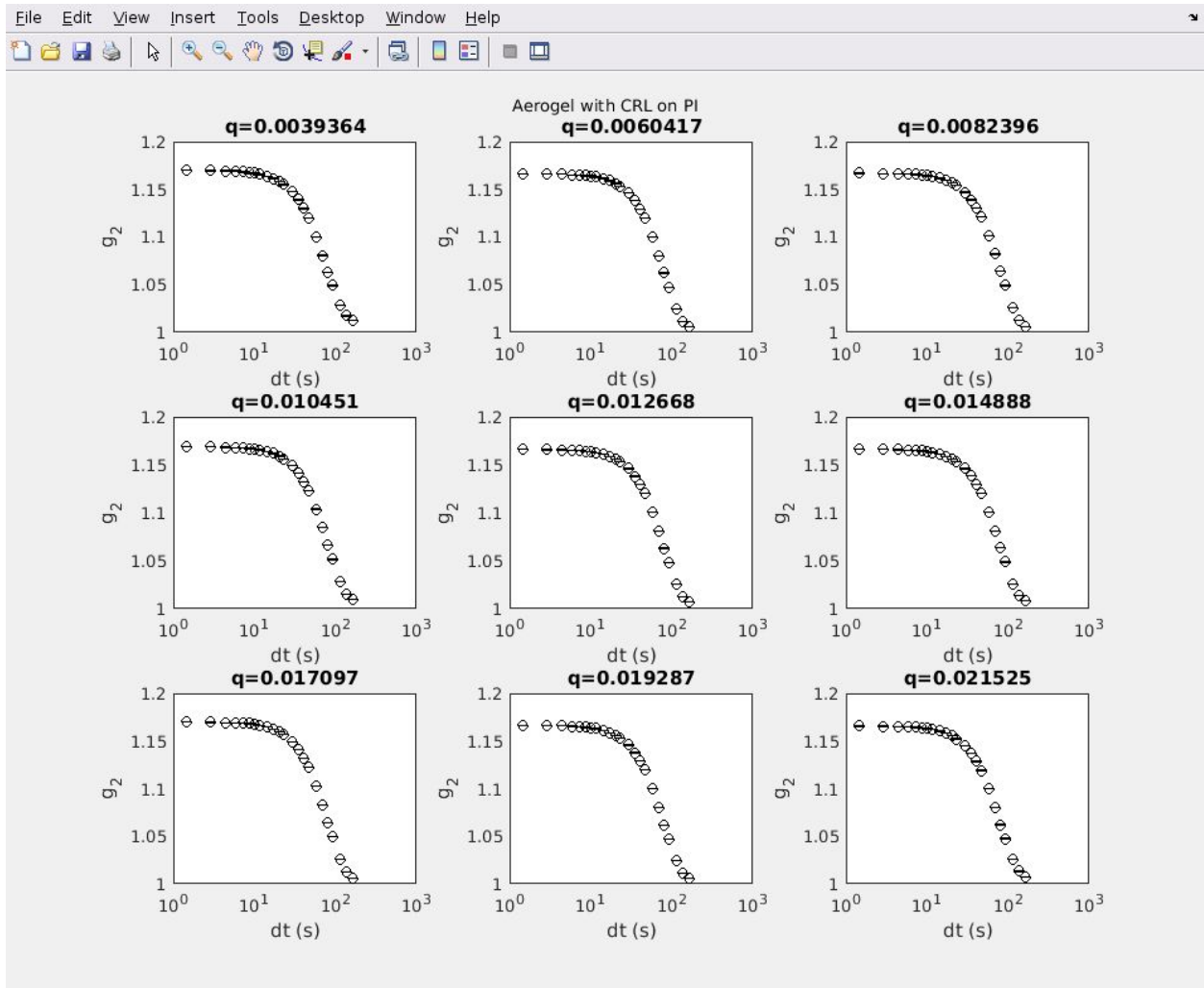
Looks very good. Slit 1 set to 150 um vertical

Still feels like we need to tweak the energy and see if the speckles get bigger

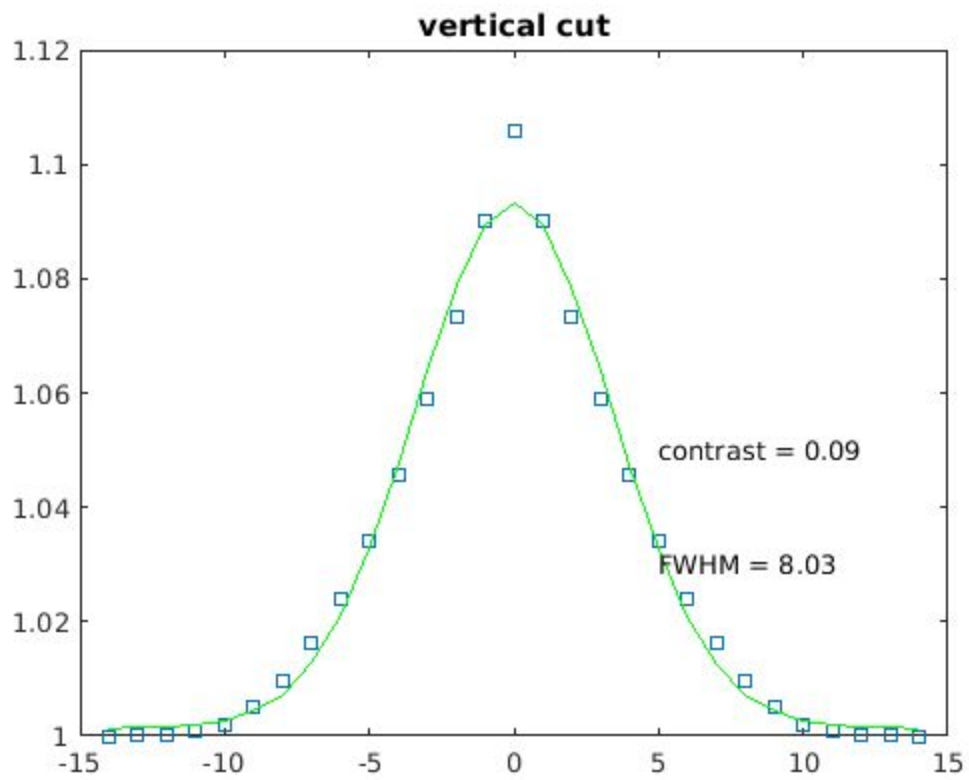
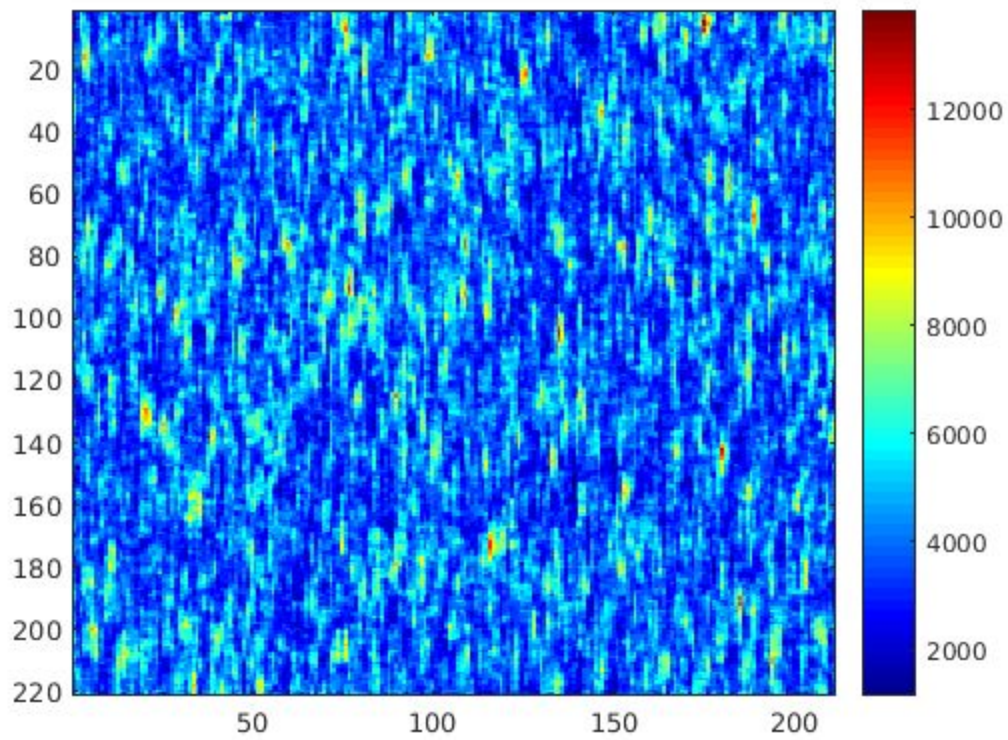
With 20x 20, lambda contrast at 11 keV used to be 6% (need to check again)



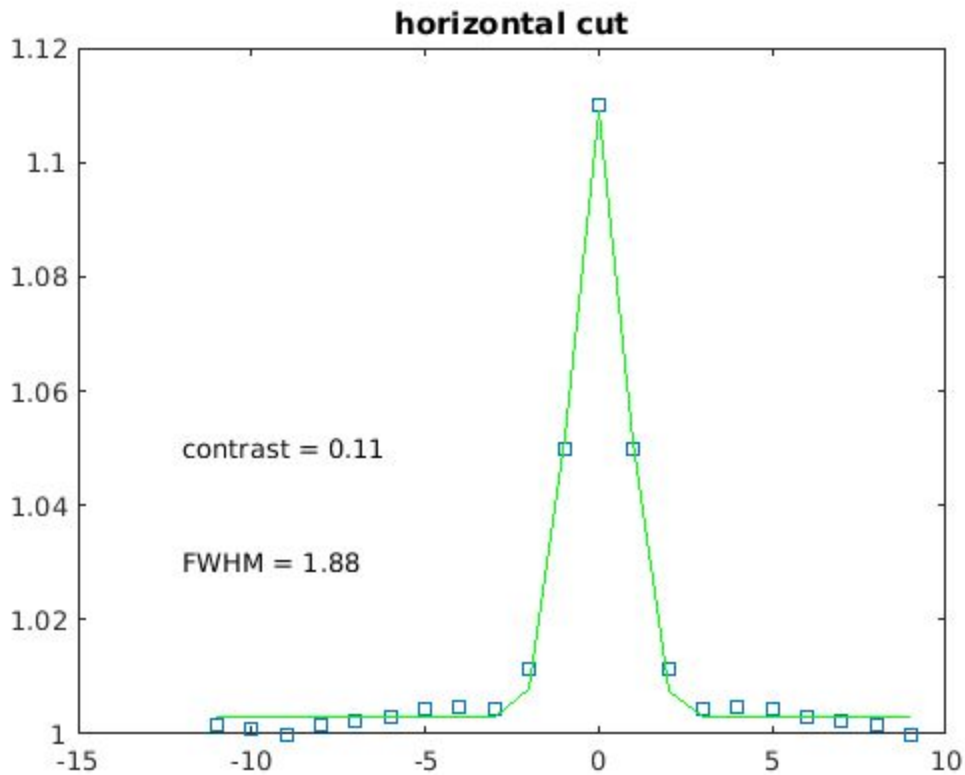
With 20x 20, PI contrast at 11 keV used to be 15% (need to check again)



Eric analyzed the PI data with Larry's code, using code `getcorfun.m` in [~/Dufresne/Lurio-SpatialCorrelation/2017-2-June9](#)



Consistent with Feb. 2015 data taken with 2D Be lens. We measured 8 pixels there too.



The horizontal speckle size is also nicely measured.

June 9 summary:

We had a good day at the beamlines. Joe identified a problem with us moving the mirror. It seems that moving up was the wrong direction and we were hitting a high-Z coating. Joe saw this in the high-harmonic content on the Pilatus. It caused some of my problems in 8-ID-E this week with 2nd harmonic contamination (elog 522).

This afternoon we moved the mirror 1 mm below the original position, and the beam profile looks now very nice. Joe's problem disappeared. We then focused down to about 2 um with 200 um aperture. We measured the contrast with the aerogel and speckle size with Larry's code. The FWHM is 8 pixels on the PI in the vertical and two in the horizontal (see logbook). The vertical is consistent with our 2015-1 report when we focused in 2D (**see below**). It is better because we are close to the right energy (at 10.9 while the report is at 10.6 keV).

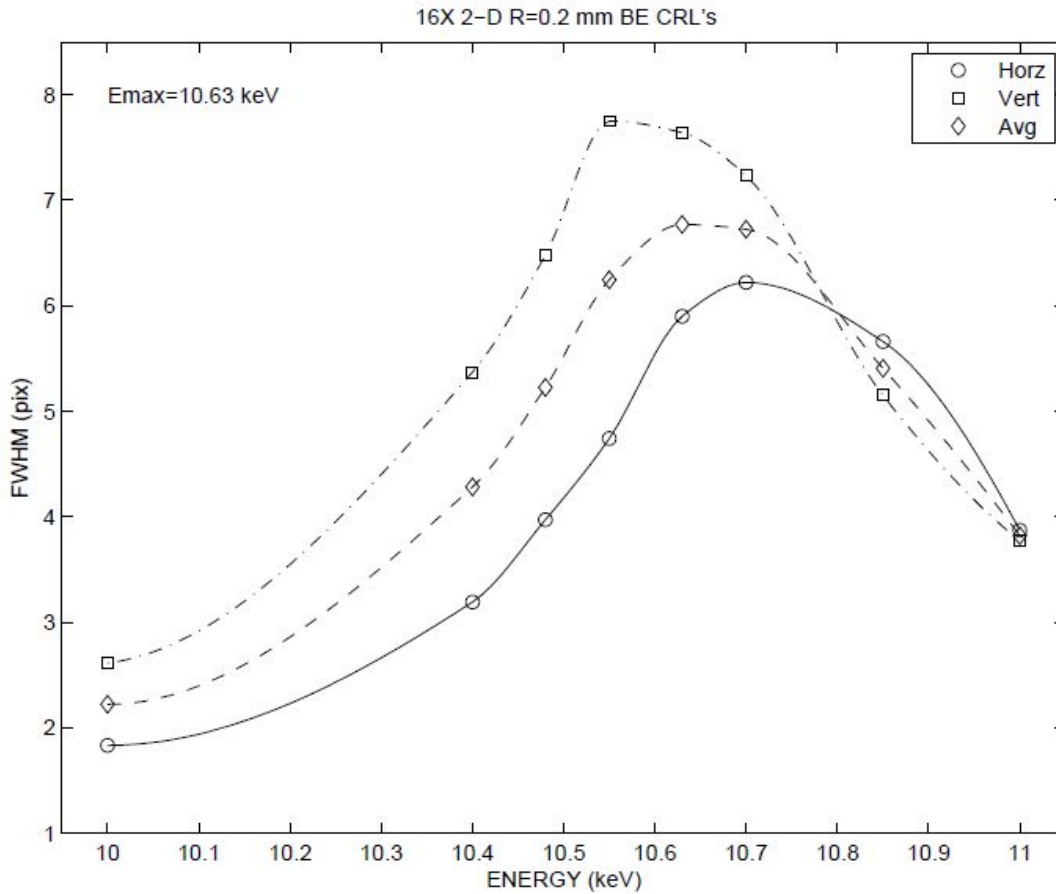


Fig. 8. Measured horizontal and vertical speckle size from an aerogel pattern located in the focal plane. A pixel is $20 \mu\text{m}$.

June 13, 2017

Spec file: CRLcomm20170613a

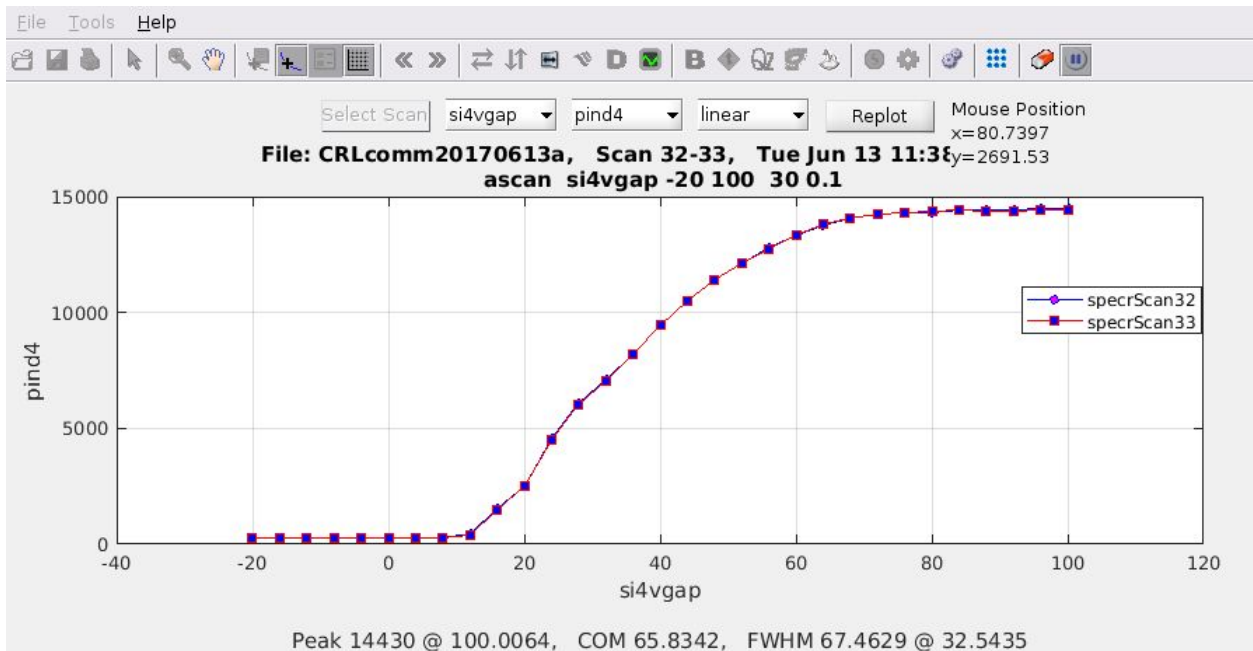
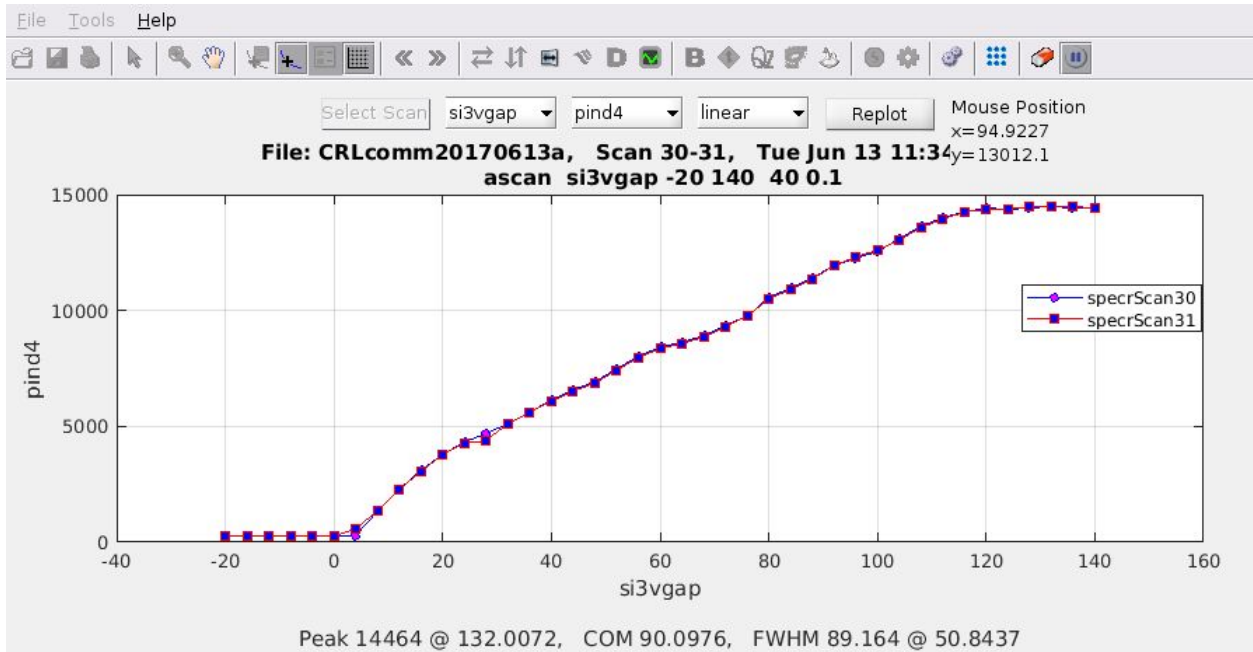
Few changes to slit locations:

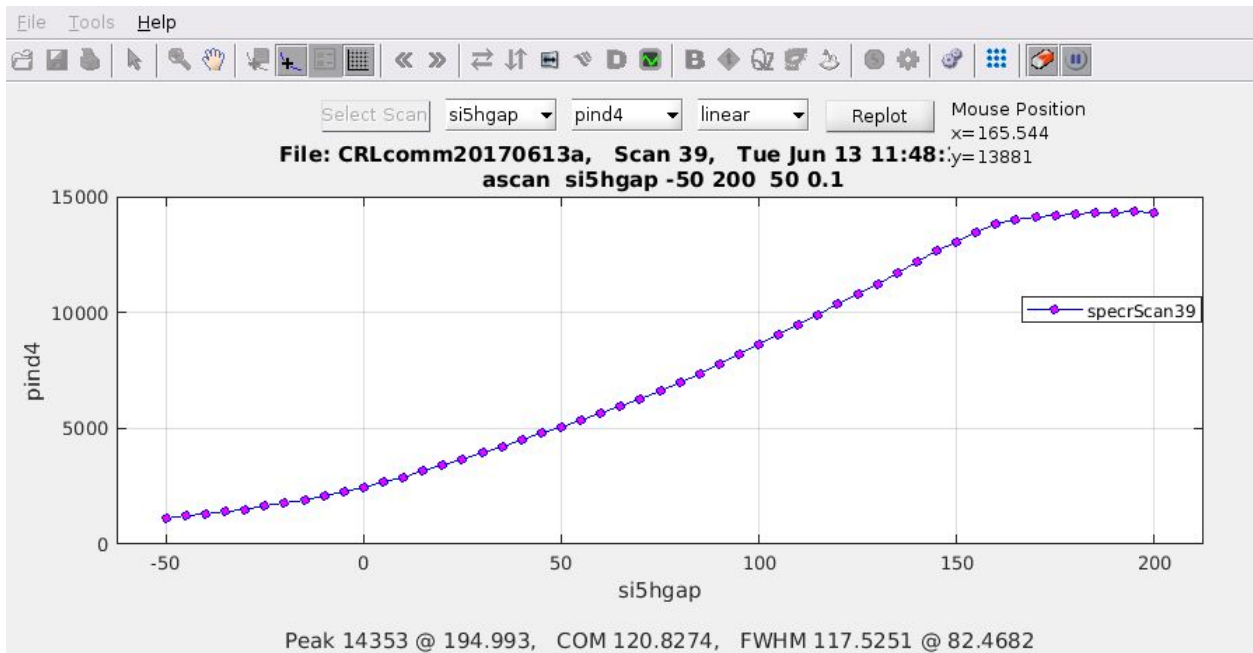
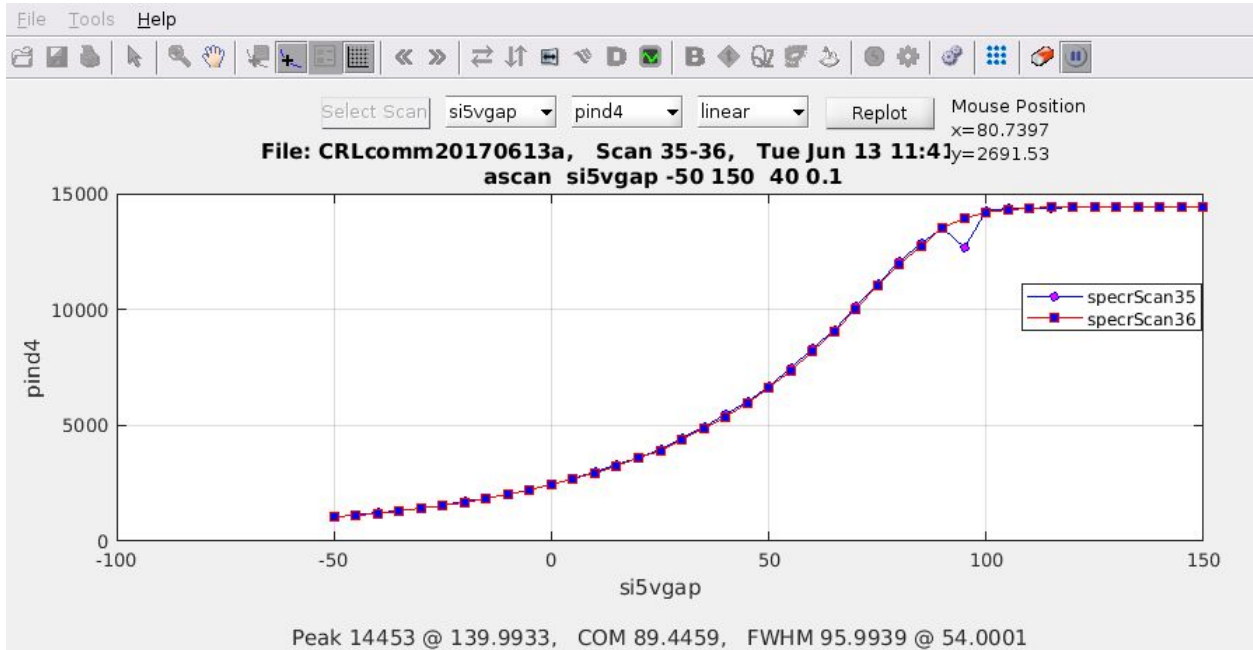
Slits 1,2 and 3 are the same as before.

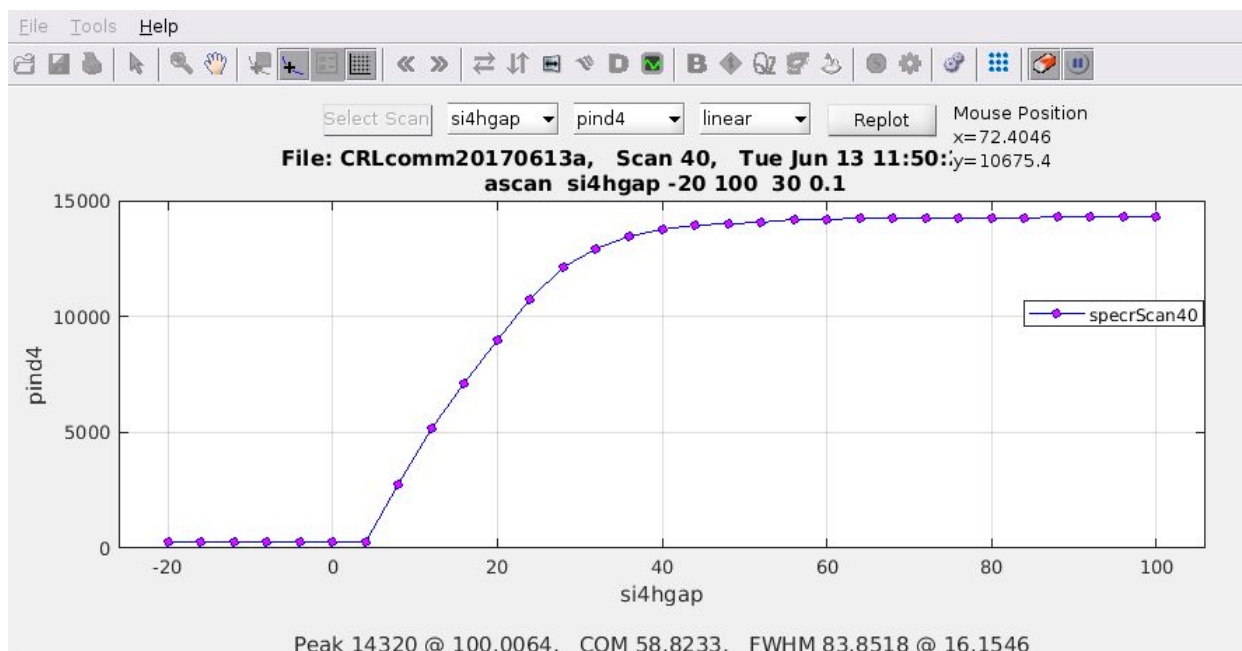
Kapton flag (0.002") is added after Slit-2, with cyberstar for now from DP.

Slits 4 and 5 are swapped, so the silicon slit is now si5. The stages underneath are called si5x and si5z

With CRL and 150 um aperture







1909.SPEC8IDI> show_si2

si2hgap si2hcn si2vgap si2vcn
 si2hgap si2hcn si2vgap si2vcn

User

High 33899.998 16435.000 26441.511 14506.150

Current 19.9987 0.0000 180.00 -0.0023

Low -26100.00 -13564.99 -49213.99 -23321.60

Dial

High 33899.998 16435.000 26441.511 14506.150

Current 19.9987 0.0000 180.00 -0.0023

Low -26100.00 -13564.99 -49213.99 -23321.60

1910.SPEC8IDI> show_si3

si3hgap si3hcn si3vgap si3vcn
 si3hgap si3hcn si3vgap si3vcn

User

High 400047.619 109970.509 399975.997 109964.997

Current 80.00422 0.00000 140.00768 0.00000

Low -39952.380 -110029.49 -40024.002 -110035.00

Dial

High 400047.619 109970.509 399975.997 109964.997

Current 80.00422 0.00000 140.00768 0.00000

Low -39952.380 -110029.49 -40024.002 -110035.00

1911.SPEC8IDI> show_si4

	si4hgap	si4hcen	si4vgap	si4vcen
User				
High	28400.0000	14100.0000	58400.0000	16100.0000
Current	100.00640	0.00000	149.99397	0.00000
Low	-28000.000	-14100.000	-28000.000	-27100.000
Dial				
High	28400.0000	14100.0000	58400.0000	16100.0000
Current	100.00640	0.00000	149.99397	0.00000
Low	-28000.000	-14100.000	-28000.000	-27100.000

1912.SPEC8IDI> show_si5

	si5hgap	si5hcen	si5vgap	si5vcen
User				
High	33487.055	5010.8755	27000.000	13500.000
Current	170.0070	0.0012	120.0077	0.0000
Low	-28000.69	-25733.00	-32000.00	-16000.00
Dial				
High	33487.055	5010.8755	27000.000	13500.000
Current	170.0070	0.0012	120.0077	0.0000
Low	-28000.69	-25733.00	-32000.00	-16000.00

1913.SPEC8IDI>

Around Noon, had problem with si3vgap. After a small move from 80 to 100 it closed...

Slit settings for 20x 20 (not great but close)

1965.SPEC8IDI> show_si1

	si1hgap	si1hcen	si1vgap	si1vcen
User				
High	34450.954	8729.9004	24239.999	7250.0059
Current	250.0025	50.0007	149.9936	0.0000
Low	-25779.80	-21385.47	-14760.00	-12249.99
Dial				

High 34450.954 8729.9004 24239.999 7250.0059
Current 250.0025 50.0007 149.9936 0.0000
Low -25779.80 -21385.47 -14760.00 -12249.99

1966.SPEC8IDI> show_si2

si2hgap si2hcen si2vgap si2vcen
si2hgap si2hcen si2vgap si2vcen

User

High 33899.998 16435.000 26441.511 14506.150
Current 19.9987 0.0000 19.9984 -0.0023
Low -26100.00 -13564.99 -49213.99 -23321.60

Dial

High 33899.998 16435.000 26441.511 14506.150
Current 19.9987 0.0000 19.9984 -0.0023
Low -26100.00 -13564.99 -49213.99 -23321.60

1967.SPEC8IDI> show_si3

si3hgap si3hcen si3vgap si3vcen
si3hgap si3hcen si3vgap si3vcen

User

High 400047.619 109970.509 399975.997 109964.997
Current 80.00422 0.00000 100.00512 0.00000
Low -39952.380 -110029.49 -40024.002 -110035.00

Dial

High 400047.619 109970.509 399975.997 109964.997
Current 80.00422 0.00000 100.00512 0.00000
Low -39952.380 -110029.49 -40024.002 -110035.00

1968.SPEC8IDI> show_si4

si4hgap si4hcen si4vgap si4vcen
si4hgap si4hcen si4vgap si4vcen

User

High 28400.0000 14100.0000 58400.0000 16100.0000
Current 199.99717 0.00000 149.99397 0.00000
Low -28000.000 -14100.000 -28000.000 -27100.000

Dial

High 28400.0000 14100.0000 58400.0000 16100.0000
Current 199.99717 0.00000 149.99397 0.00000
Low -28000.000 -14100.000 -28000.000 -27100.000


```
1969.SPEC8IDI> show_si5
```

```
si5hgap si5hcen si5vgap si5vcen  
si5hgap si5hcen si5vgap si5vcen
```

User

```
High 33487.055 5010.8755 27000.000 13500.000
```

```
Current 219.9946 0.0012 149.9940 0.0000
```

```
Low -28000.69 -25733.00 -32000.00 -16000.00
```

Dial

```
High 33487.055 5010.8755 27000.000 13500.000
```

```
Current 219.9946 0.0012 149.9940 0.0000
```

```
Low -28000.69 -25733.00 -32000.00 -16000.00
```

Switching to lens again:

Did XPCS measurements for si1vgap from 200 to 50 um in steps of 25 um

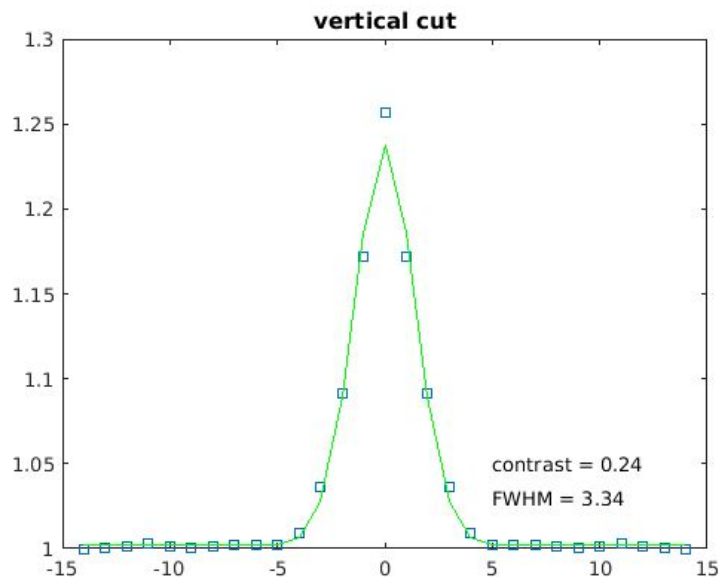
Data are in comm201706 and is in the Fseries from F010 to F016.

The guard slits were adjusted once at si1vgap=200 um and kept fixed.

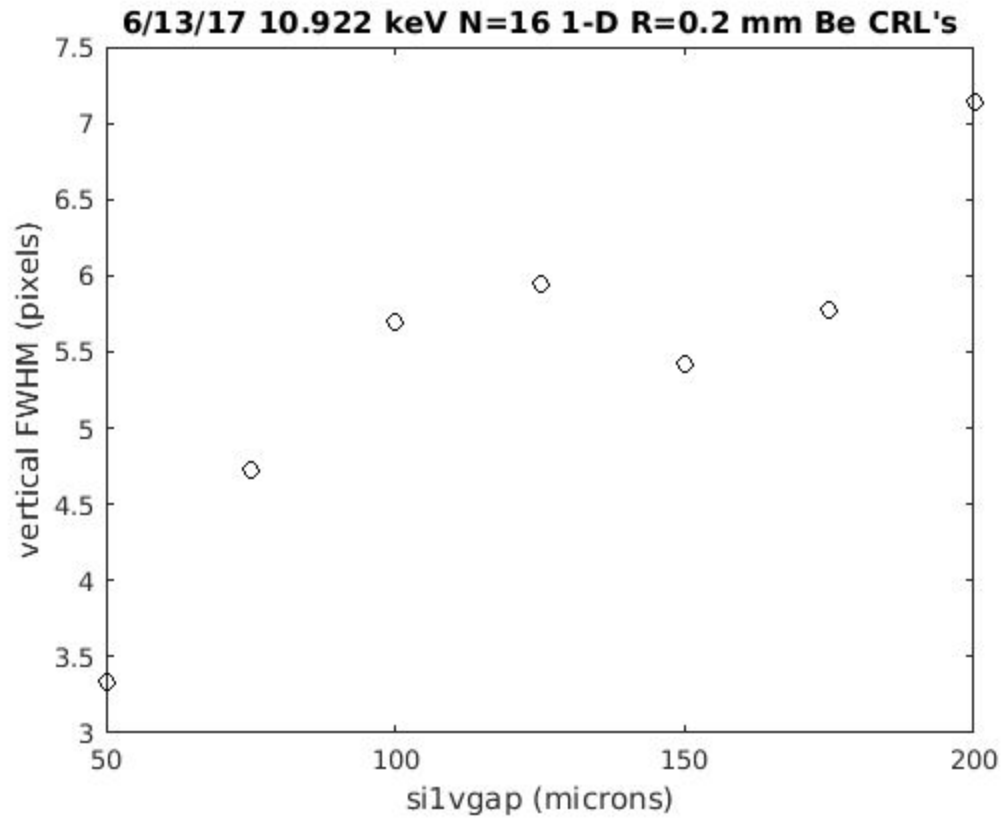
In an ideal measurement, they would be adjusted to match the incident beam size.

Below are the results using Larry Lurio's code found in

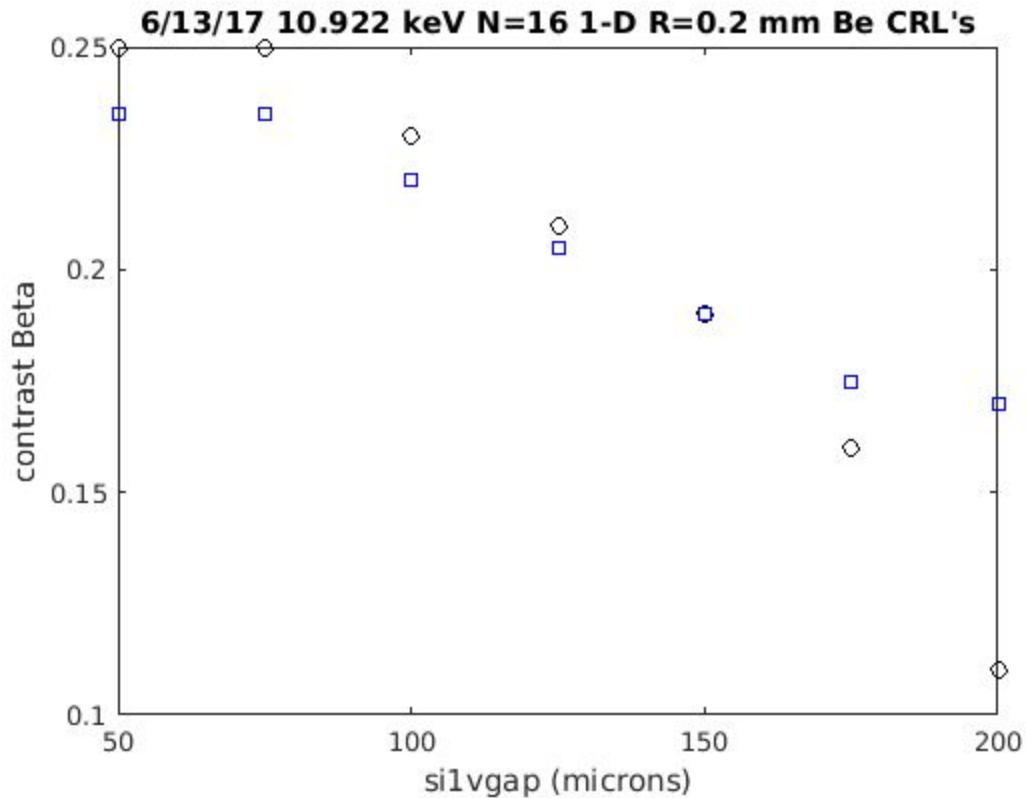
~/Dufresne/Lurio-SpatialCorrelation/2017-2-June9-13



Above si1vgap=50 um. This is the smallest speckle measured with the lens with a contrast of 25%, and FWHM of 3.34 pixels.



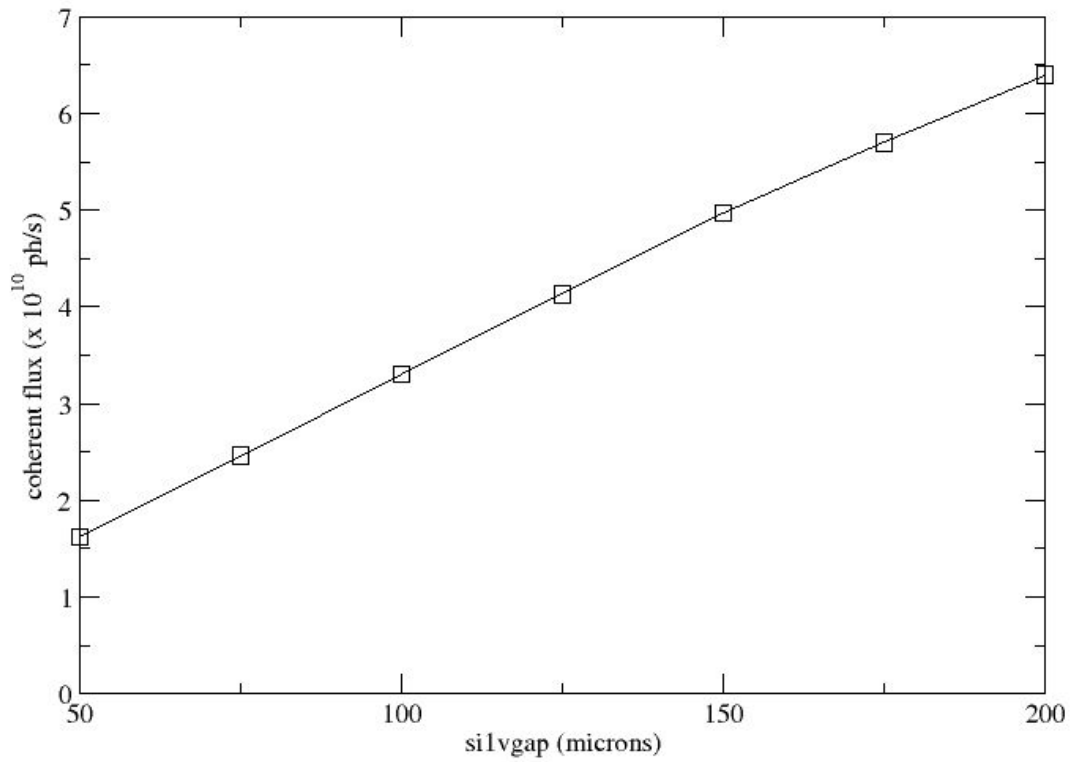
The speckle size grows from 3.3 to 7.1 by opening the si1vgap. We'd expect a factor 4, but we observe a factor 2.1. The horizontal speckle size is about 1.8, consistent with last week.



Above, maximum of g2 (squares) and contrast from horizontal cut of spatial autocorrelation function.

Suresh also measured the coherent flux as a function of si1vgap, as measured with pind2 after si2 with att. 4. It is shown in the table below.

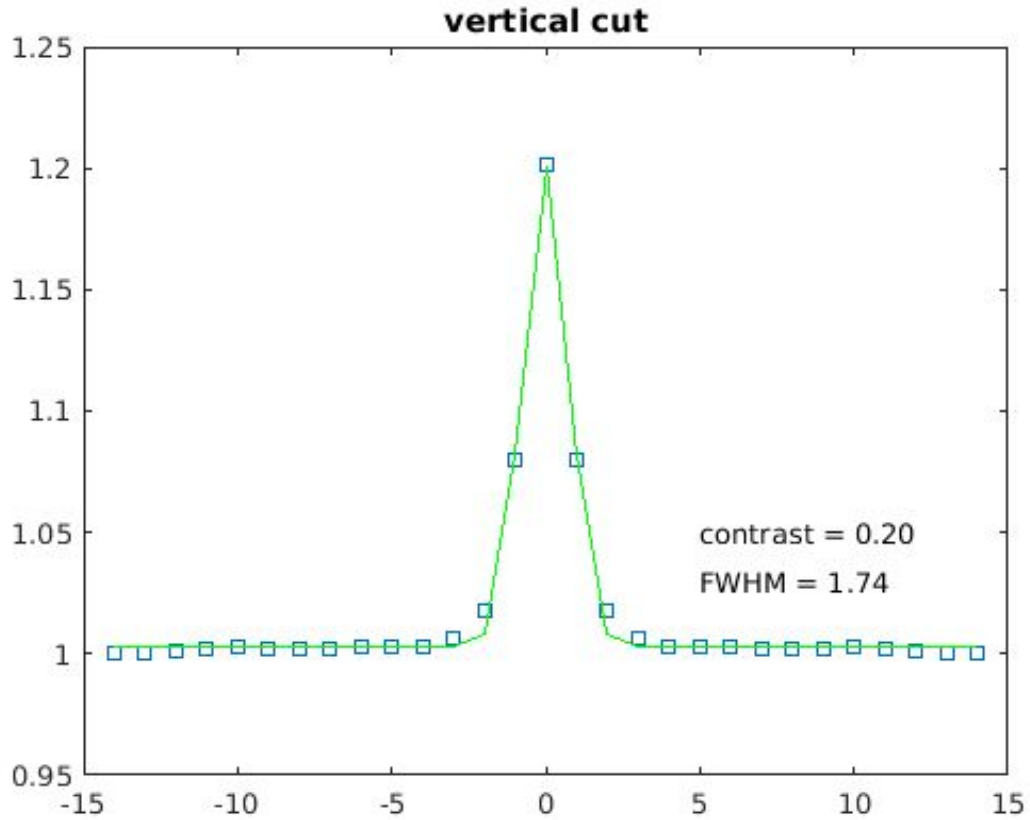
Si1vgap (microns)	Flux ($\times 10^{10}$ ph/s at 10.922 keV)
50	1.62
75	2.46
100	3.3
125	4.13
150	4.97
175	5.7
200	6.4



Above, coherent flux from above table. Looks like as one would expect.

Going back to no CRL and 20x20 for Felix's run

Suresh analyzed the aerogel data on file F017. The G2 maximum from multitaup is 0.2. The speckle size without focusing is 1.74 pixels, consistent to the horizontal speckle size and is shown below.



Vertical speckle size without focusing (see above).

June 19, 2017.

Nominal slit settings :

14.SPEC8IDI> show_si1

```

si1hgap si1hcen si1vgap si1vcen
si1hgap si1hcen si1vgap si1vcen

```

User

```

High 34450.954 8729.9004 24239.999 7250.0059
Current 250.0025 50.0007 250.0000 0.0000
Low -25779.80 -21385.47 -14760.00 -12249.99

```

Dial

```

High 34450.954 8729.9004 24239.999 7250.0059
Current 250.0025 50.0007 250.0000 0.0000
Low -25779.80 -21385.47 -14760.00 -12249.99

```

15.SPEC8IDI> show_si2

si2hgap	si2hcen	si2vgap	si2vcen
si2hgap	si2hcen	si2vgap	si2vcen

User

High	33899.998	16435.000	26441.511	14506.150
Current	19.9987	0.0000	19.9984	-0.0023
Low	-26100.00	-13564.99	-49213.99	-23321.60

Dial

High	33899.998	16435.000	26441.511	14506.150
Current	19.9987	0.0000	19.9984	-0.0023
Low	-26100.00	-13564.99	-49213.99	-23321.60

16.SPEC8IDI> show_si3

si3hgap	si3hcen	si3vgap	si3vcen
si3hgap	si3hcen	si3vgap	si3vcen

User

High	400047.619	109970.509	399975.997	109964.997
Current	80.00422	0.00000	100.00512	0.00000
Low	-39952.380	-110029.49	-40024.002	-110035.00

Dial

High	400047.619	109970.509	399975.997	109964.997
Current	80.00422	0.00000	100.00512	0.00000
Low	-39952.380	-110029.49	-40024.002	-110035.00

17.SPEC8IDI> show_si4

si4hgap	si4hcen	si4vgap	si4vcen
si4hgap	si4hcen	si4vgap	si4vcen

User

High	28400.0000	14100.0000	58400.0000	16100.0000
Current	199.99717	0.00000	149.99397	0.00000
Low	-28000.000	-14100.000	-28000.000	-27100.000

Dial

High	28400.0000	14100.0000	58400.0000	16100.0000
Current	199.99717	0.00000	149.99397	0.00000
Low	-28000.000	-14100.000	-28000.000	-27100.000

18.SPEC8IDI> show_si5

si5hgap	si5hcen	si5vgap	si5vcen
---------	---------	---------	---------

si5hgap si5hcen si5vgap si5vcen

User

High 33487.055 5010.8755 27000.000 13500.000

Current 219.9946 0.0012 120.0077 0.0000

Low -28000.69 -25733.00 -32000.00 -16000.00

Dial

High 33487.055 5010.8755 27000.000 13500.000

Current 219.9946 0.0012 120.0077 0.0000

Low -28000.69 -25733.00 -32000.00 -16000.00

19.SPEC8IDI>

Suresh gave a tour of how to run Lambda to Alec and I. The documentation is in ~/Documents

Lambda_documentation_AD3p0_NoMPI_v1.docx

Lambda_documentation_AD3p0_NoMPI_v1.pdf

Date: Mon, 19 Jun 2017 18:29:58 +0000

Pind4 was also repaired by Ray as stated below.

From: Suresh Narayanan <sureshn@aps.anl.gov>

To: "Sandy, Alec R." <asandy@anl.gov>,

"Dufresne, Eric" <dufresne@aps.anl.gov>

Subject: lambda powered off

Alec, Eric,

Vacuum is all good to go, both sides are pumping and on turbo. There was a broken wire in the middle, not on a junction, Ray put a more flexible wire on pind4.

I powered off lambda for the day just because I have been doing it that way.

The DIO is on workspace 2 for convenience.

Suresh

File is called ramanan20170619

Scans 31-32 were realignment of 8-ID-I, mirror and diamx.

Went 50 um positive in diamx from Alec's initial alignment

Flux seems low on pind1.

flux pind1 190139 **1.17e+12 ph/s** @200uAV

