Beamline 7.3.3 SAXS/WAXS Advanced training

Alexander Hexemer and Eric Schaible

Purpose: That you will be able to use the Beamline independently

WHAT NOT TO DO!!!

DO NOT EXPOSE DETECTOR TO DIRECT BEAM !!!
(Double check, then double check AGAIN)

Before opening the shutter, THINK

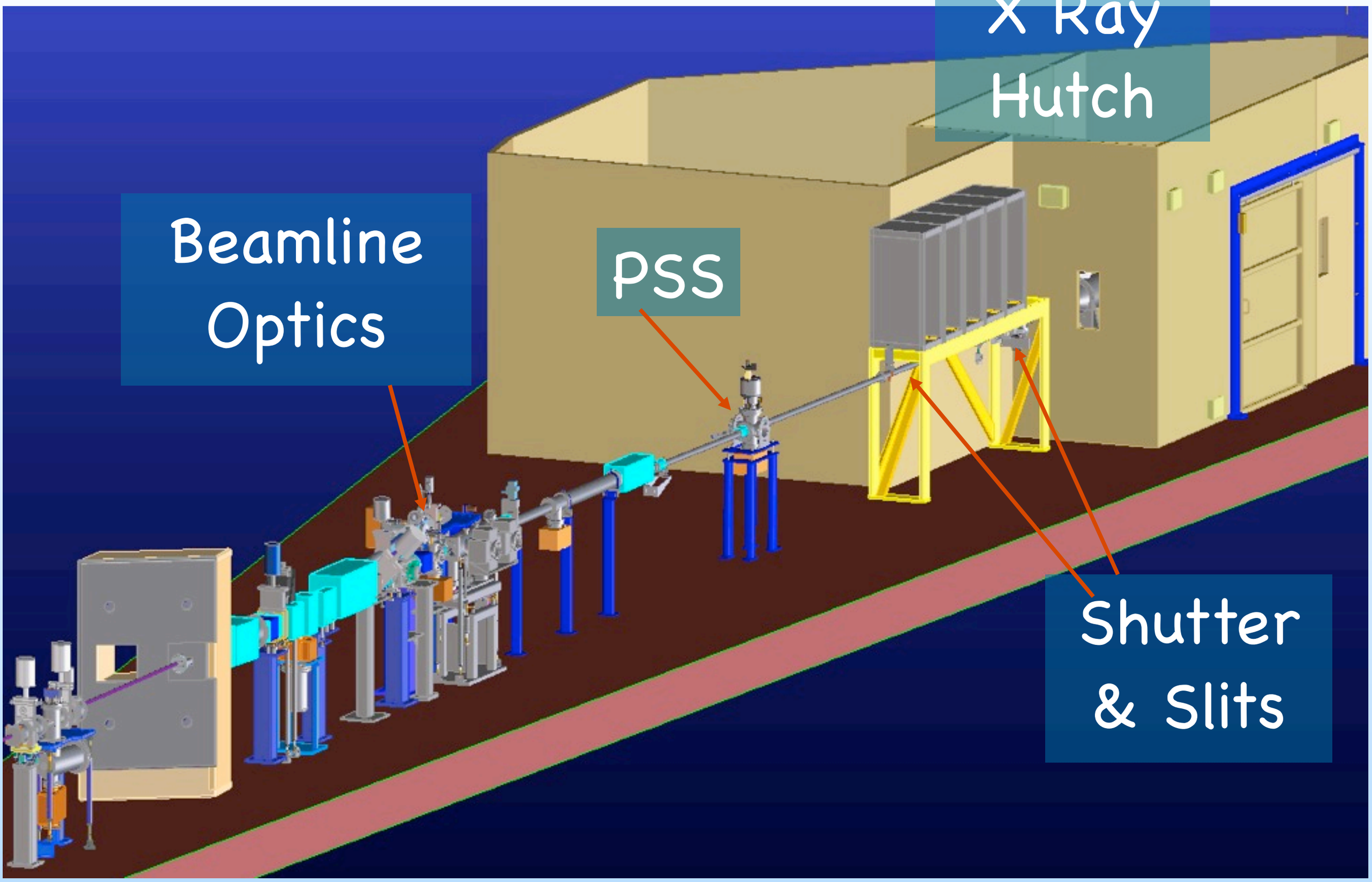
Info on Website

- www.SAXSWAXS.com
- Phone numbers
- Emails
- ESS webpage with David Malone info
- Ring Status webpage
- IgorPro webpage Nika

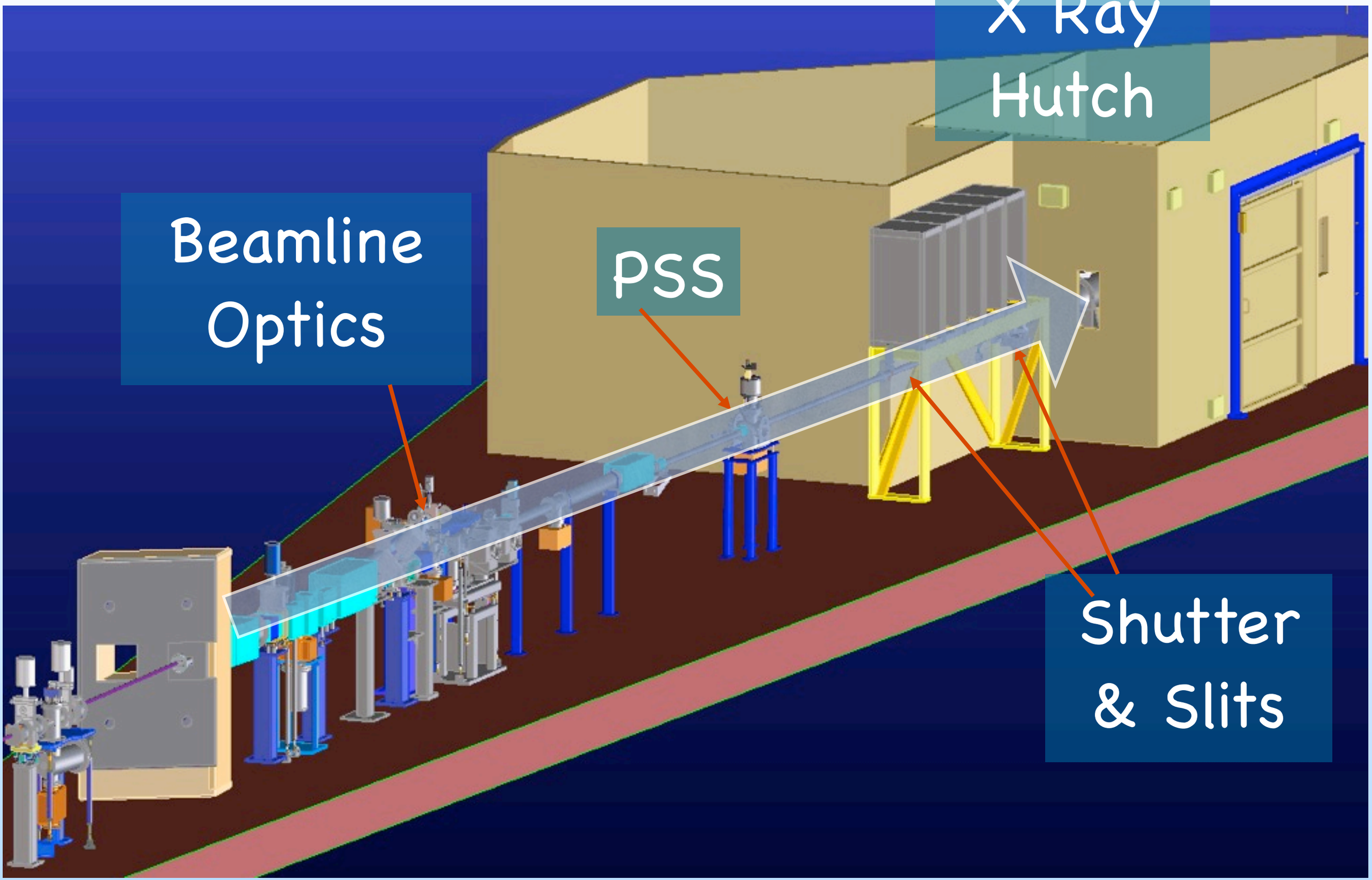
Outline

- Beamline Schematic
- Before you get to the BL
- When you get to the BL (Preparing BL)
- Performing your Experiment
- Analysis
- Leaving Beamline

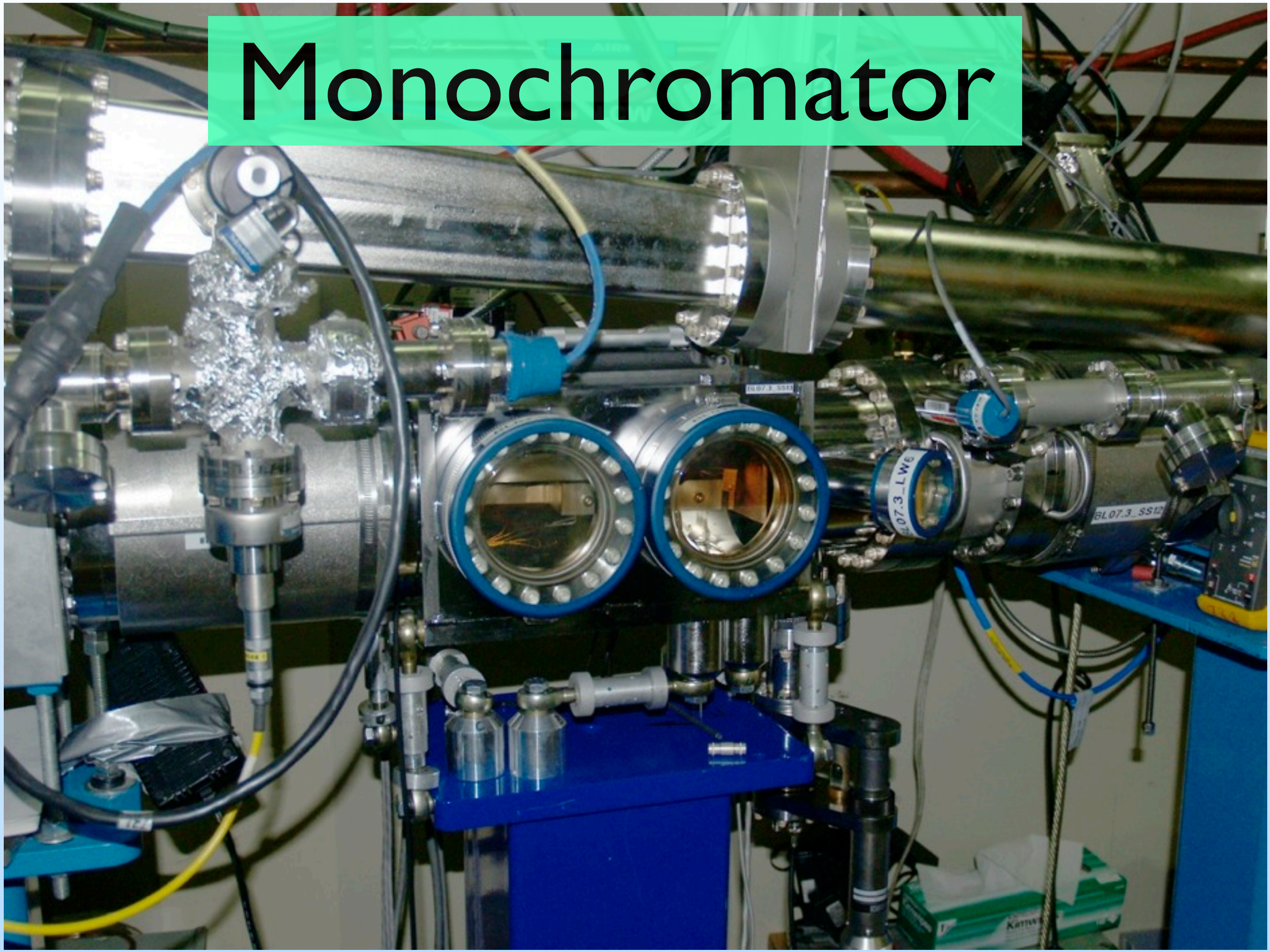
7.3.3 Beamline



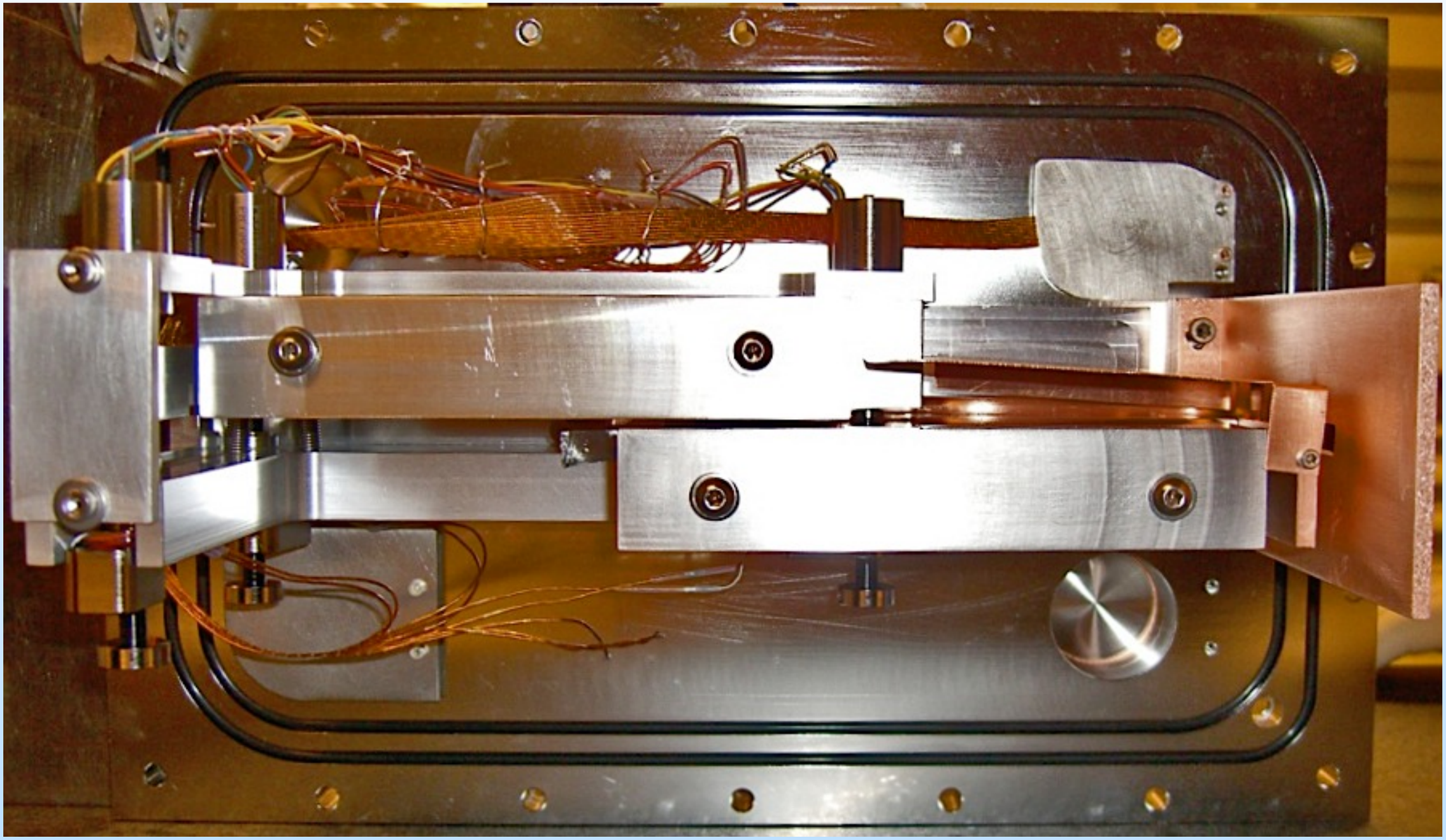
7.3.3 Beamline



Monochromator



Monochromator



Monochromator

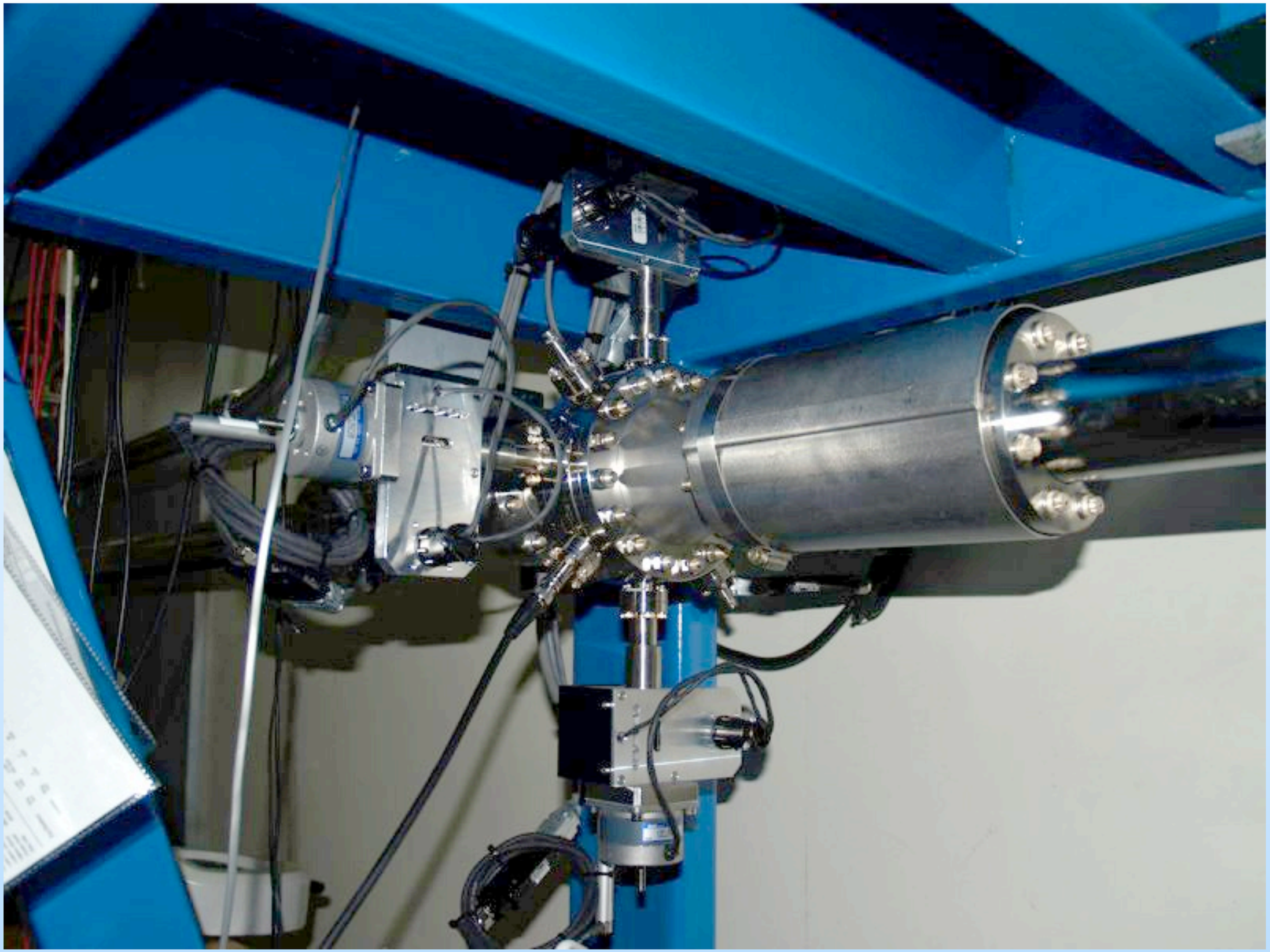
Coating:
Material pair: Mo/B_4C
d-spacing: 2.0nm +/-0.1nm
N: 250

Substrates:
Material: Silicon <100>

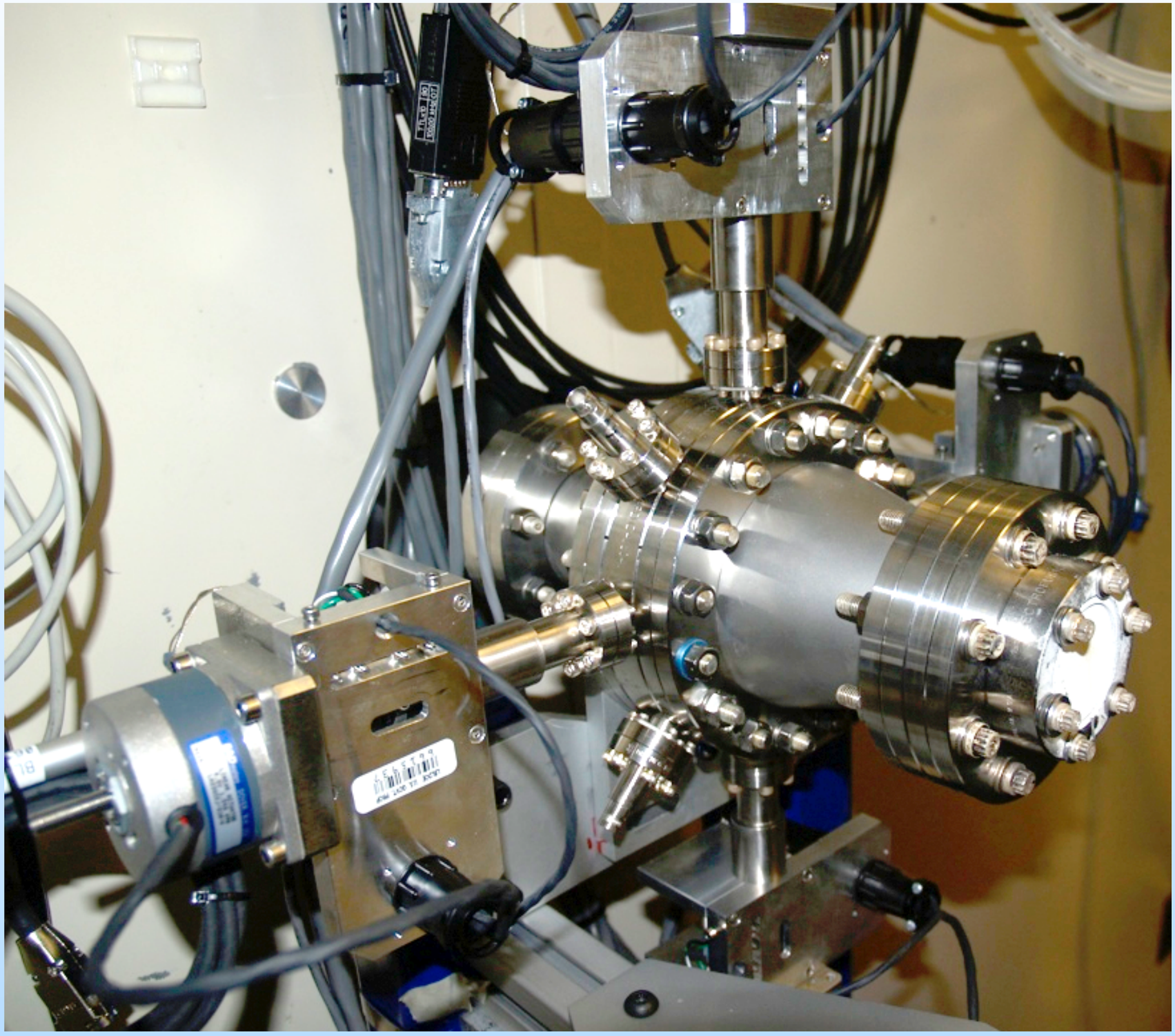
Target Energy: 10keV

$E/\Delta E = 100$

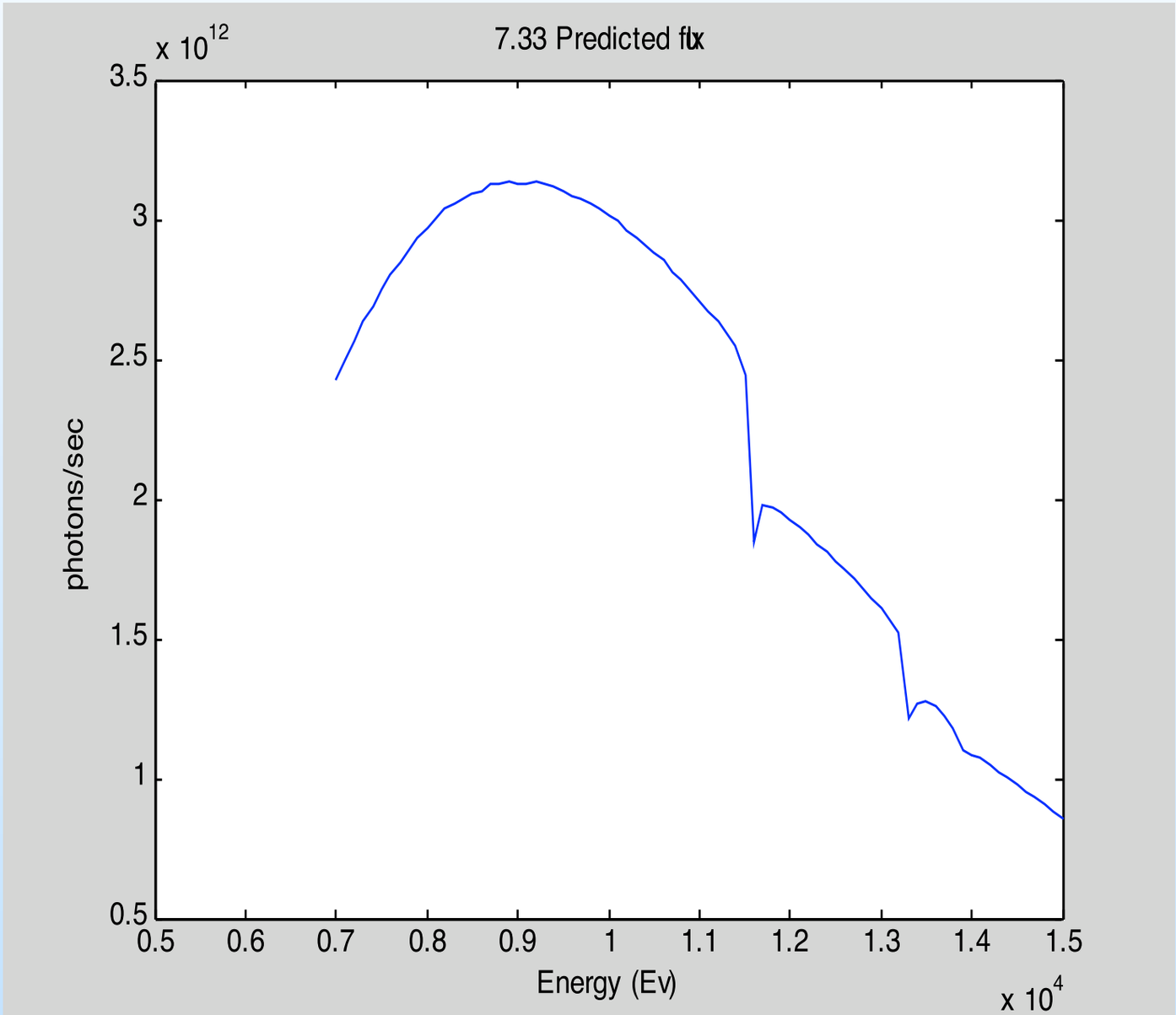
Scatter Slits



Exit Slits



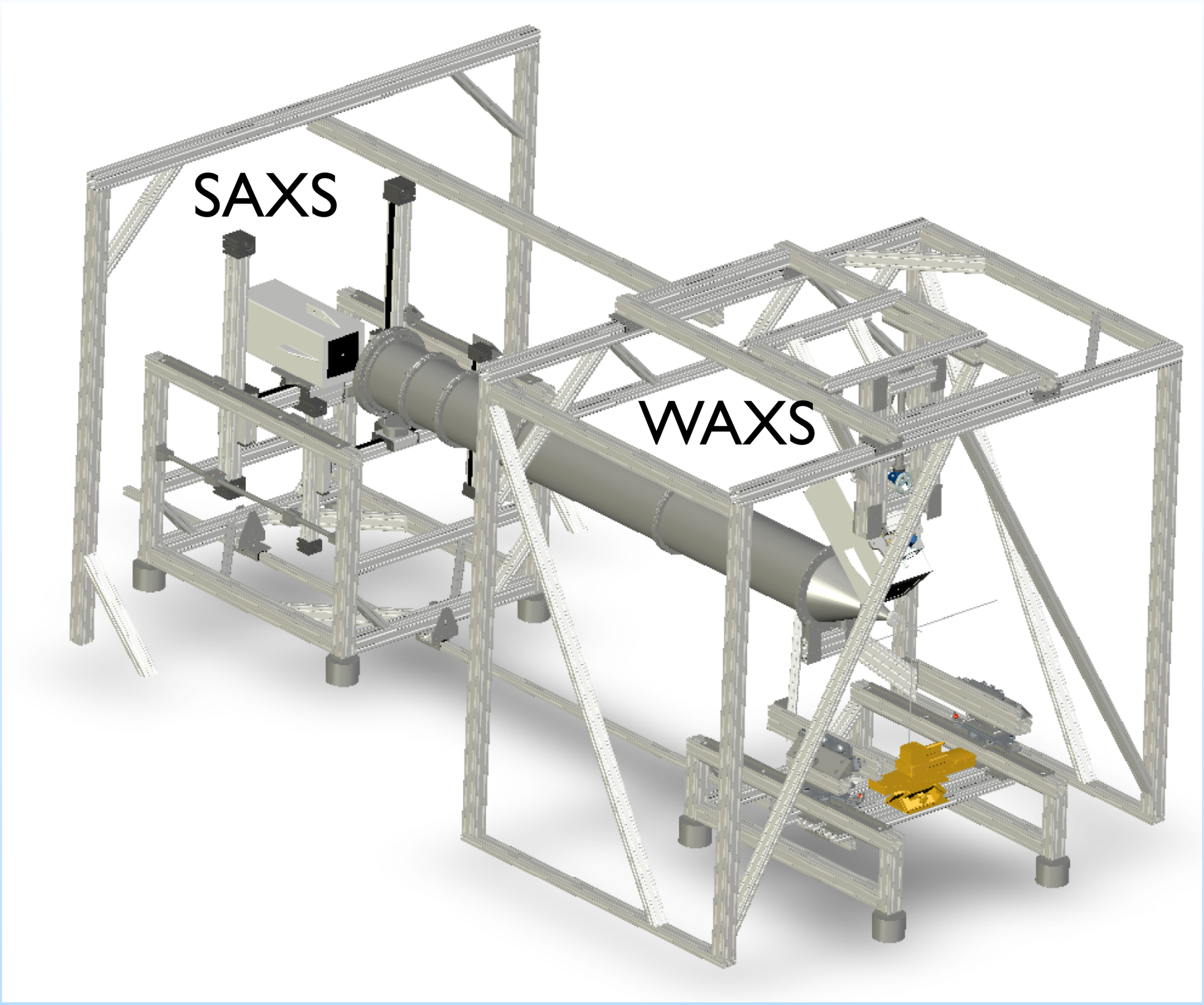
Predicted flux

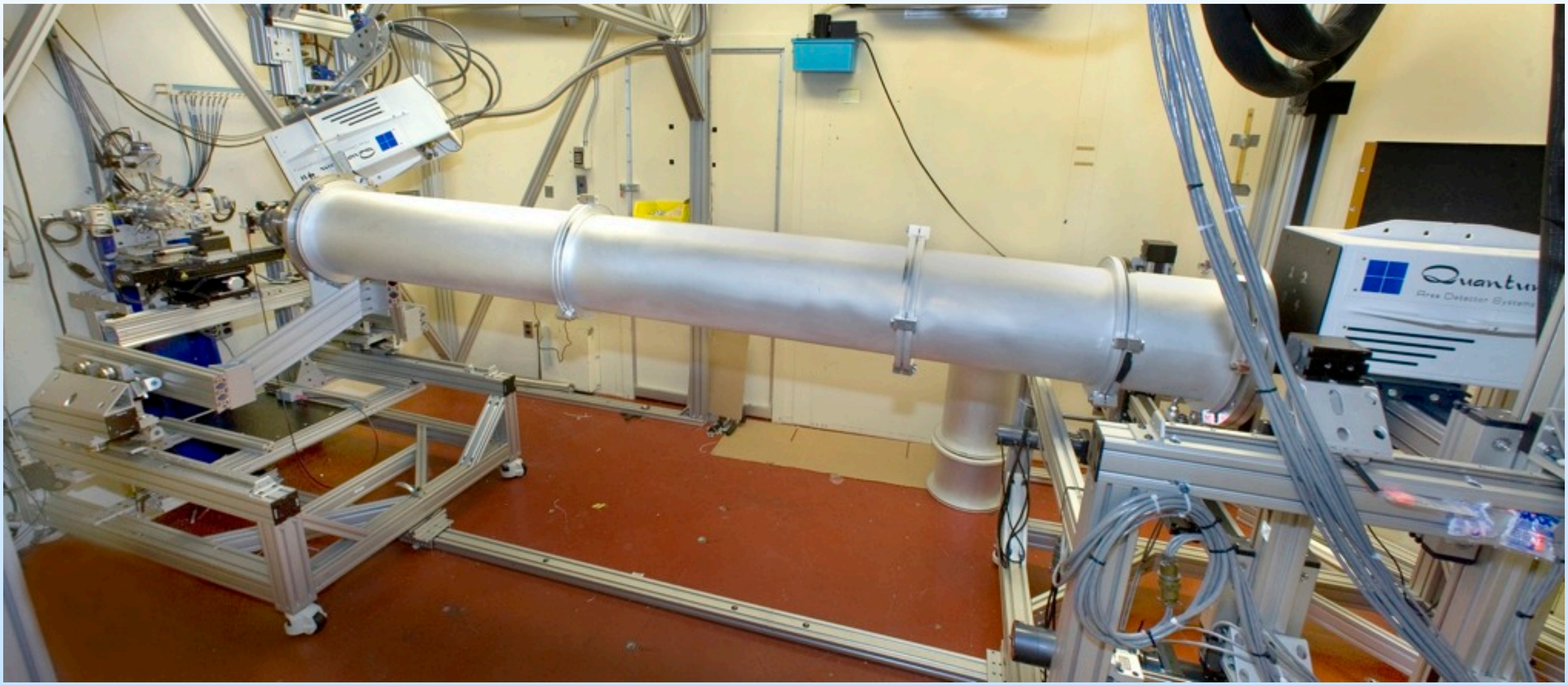


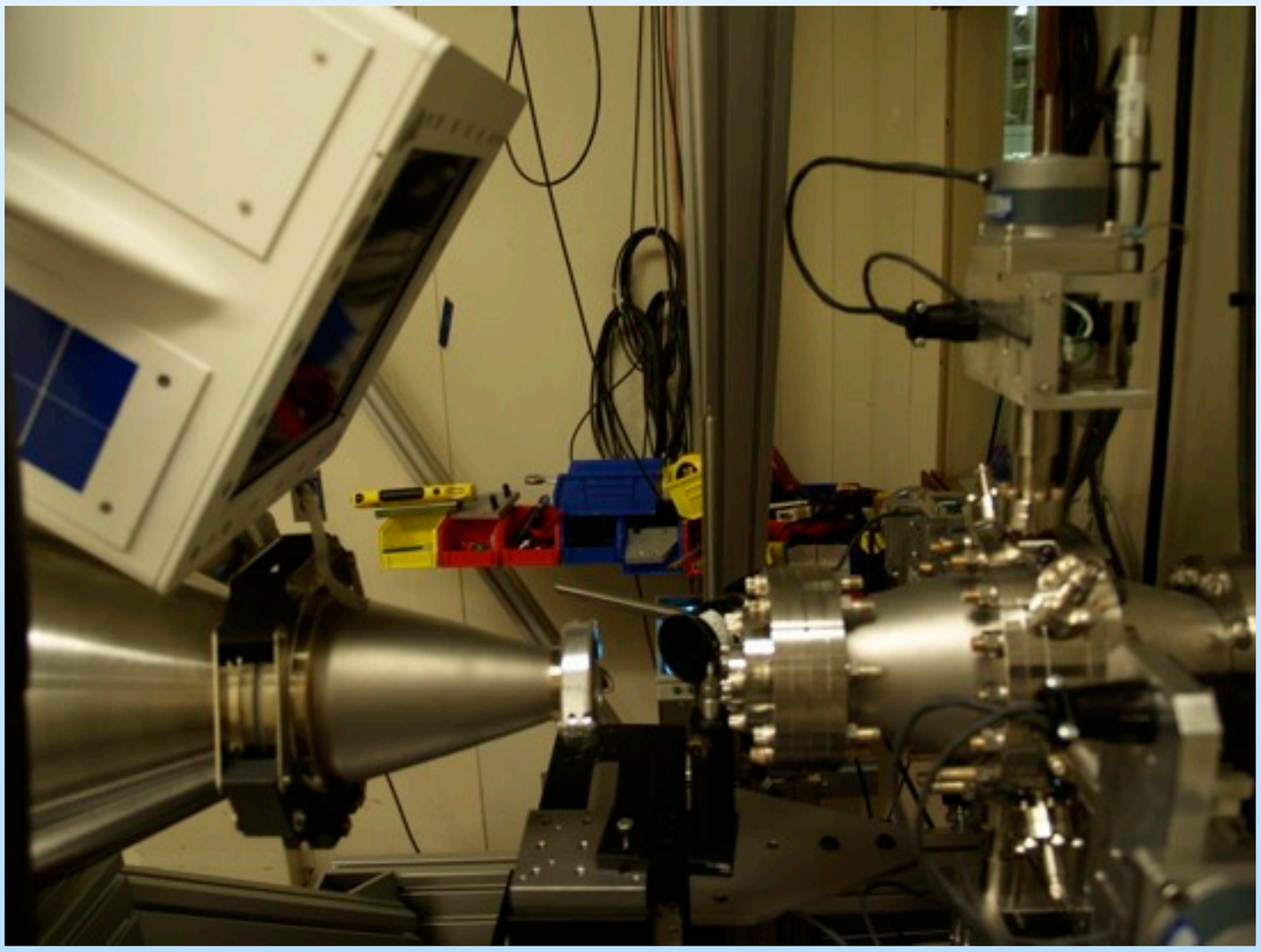
We measured 1.8 e12 ph/sec. This is 60% of predicted.

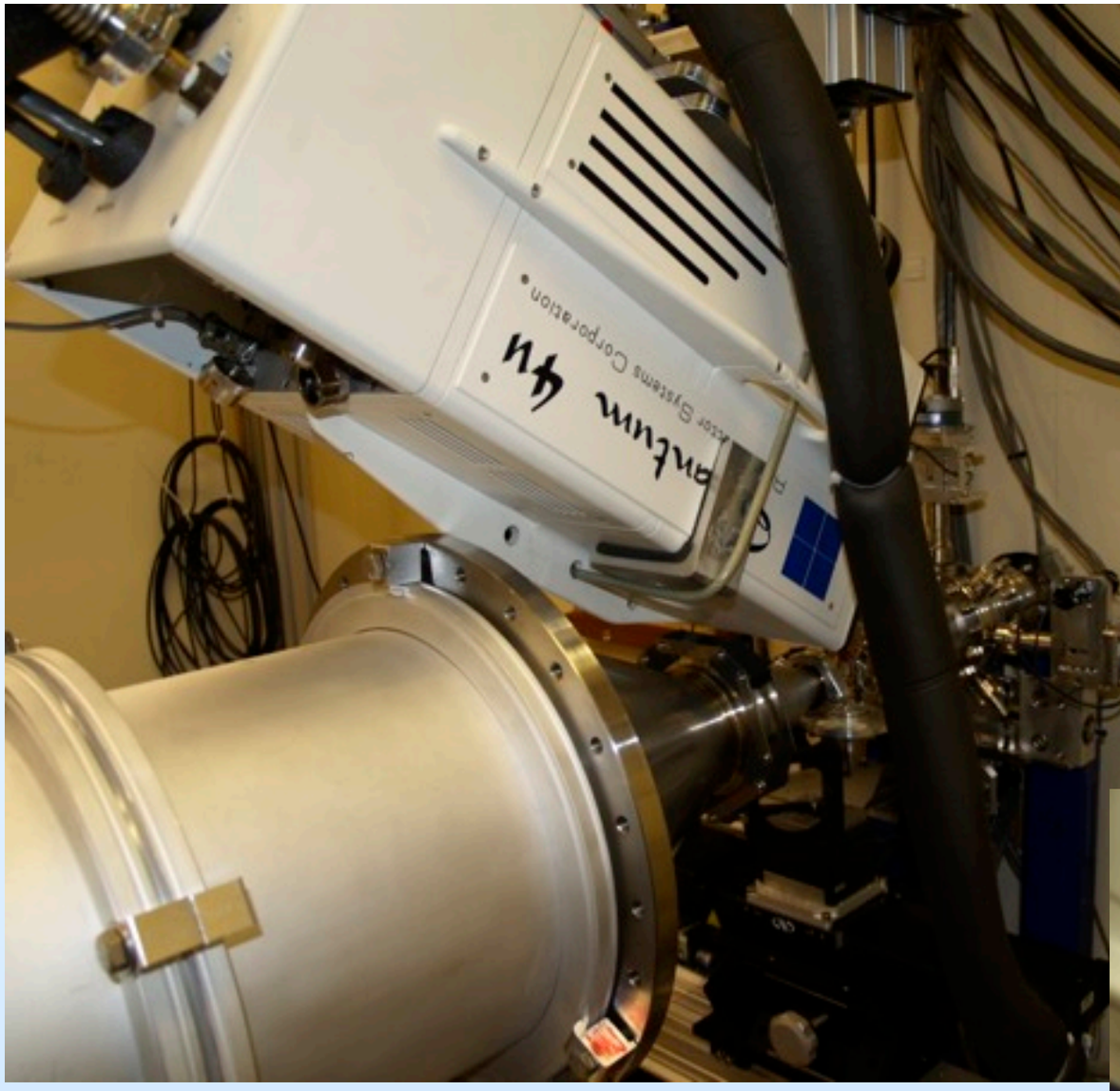
Spot size at sample position:
0.180 mm x 0.780 mm

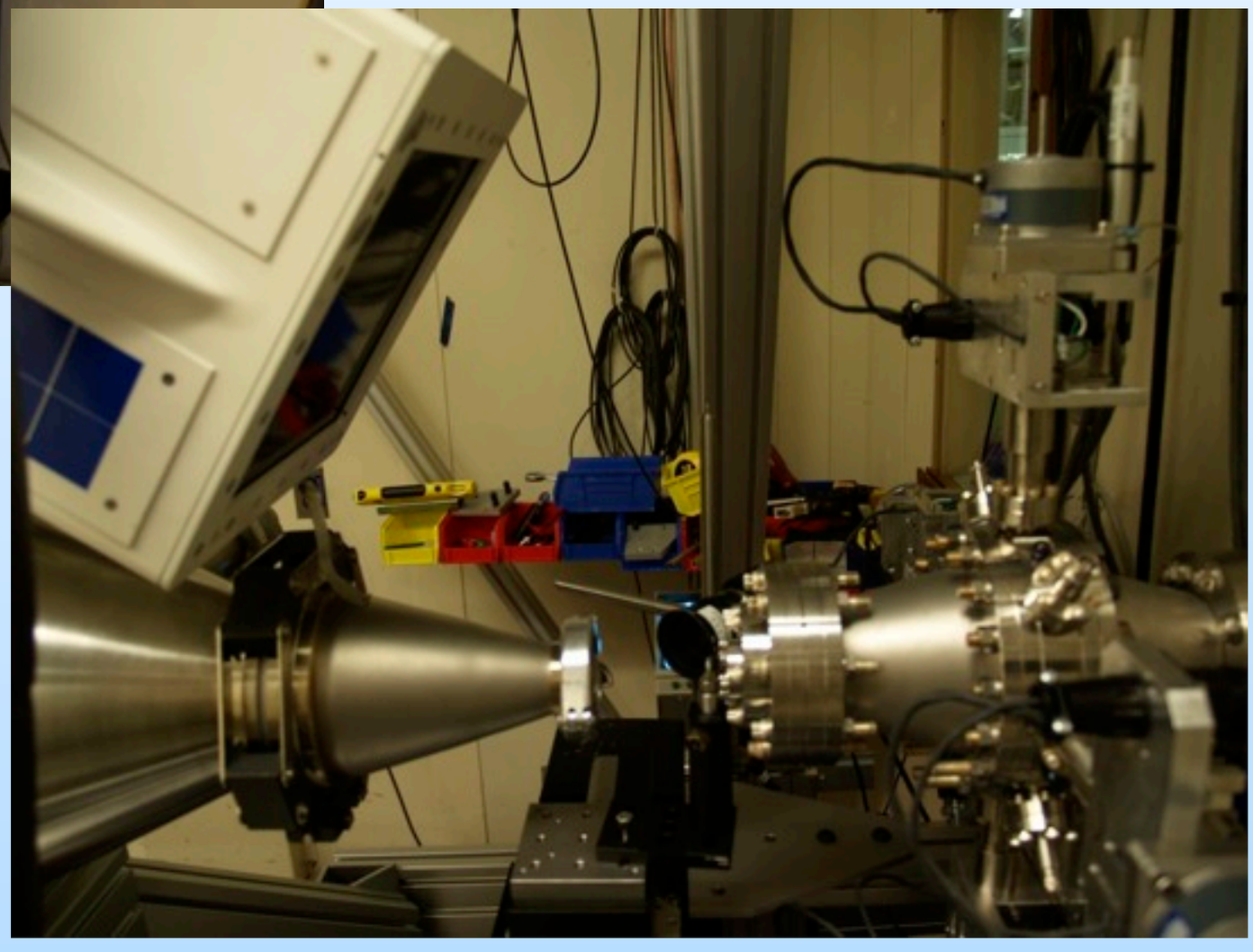
Sample Stage and Detector



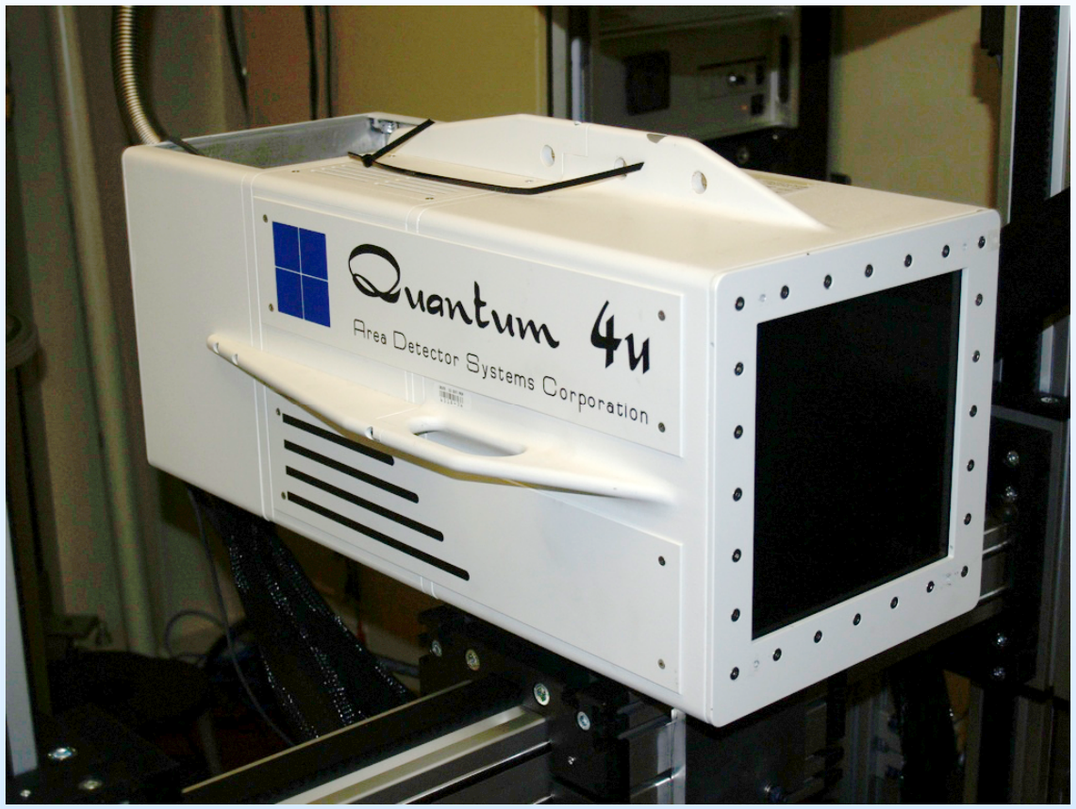

Quantum
Area Detector Systems



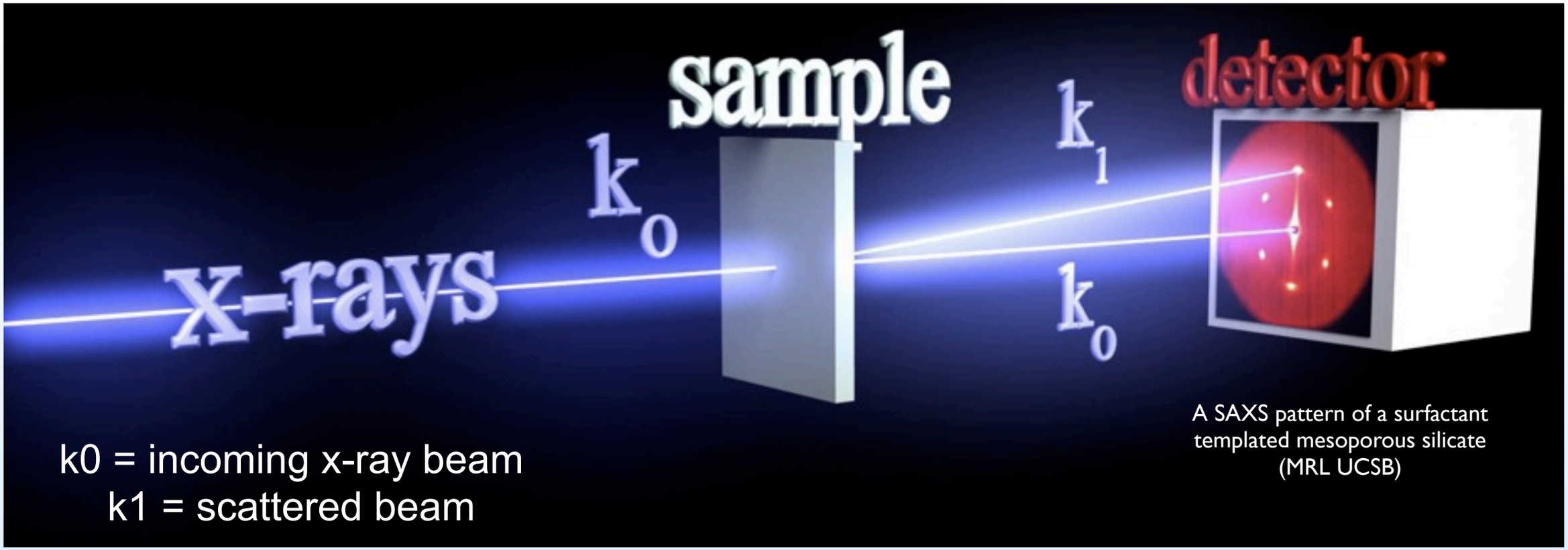




Detector Quantum 4



188mmx188mm	area
2304x2304 pixels	pixels
82um x 82um	pixels size
9 sec and 3 sec	read out time (full resolution)
1.1 ADU/photon	Front End Gain
16	Bits



SAXS (CCD detector) Sample detector distance = 0.7m - 4.3m

WAXS (CCD detector) Sample detector distance = 0 m - 1m

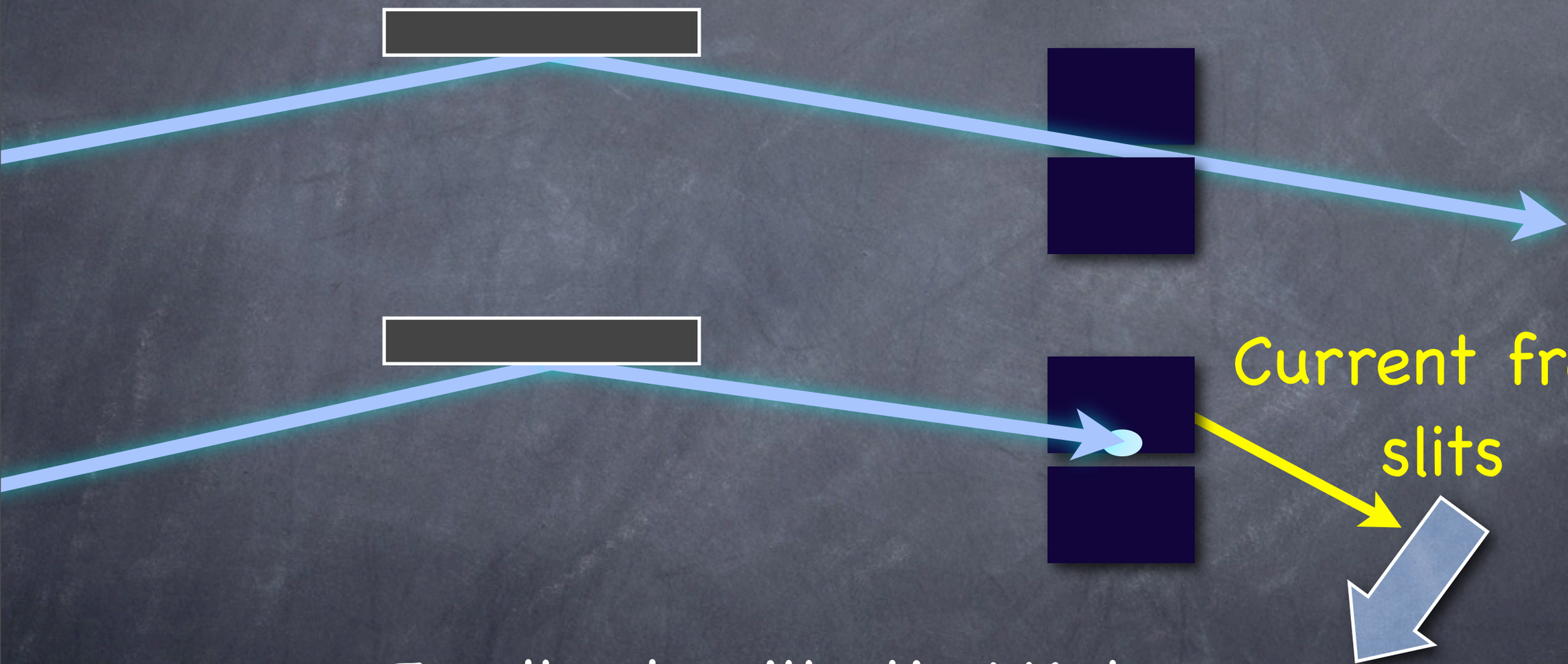
Wavelength = 1.2389 Å (10 keV)

q-range = 0.004 Å-1 - 8.7 Å-1

d-range = 1500 Å - 0.8 Å

Feedback System

Movement of Beam due to Monochromator
stirs beam into → slits to avoid this use Feedback



Feedback will stir M1 to move
beam back between slits
Screen blinking RED means feedback is not working

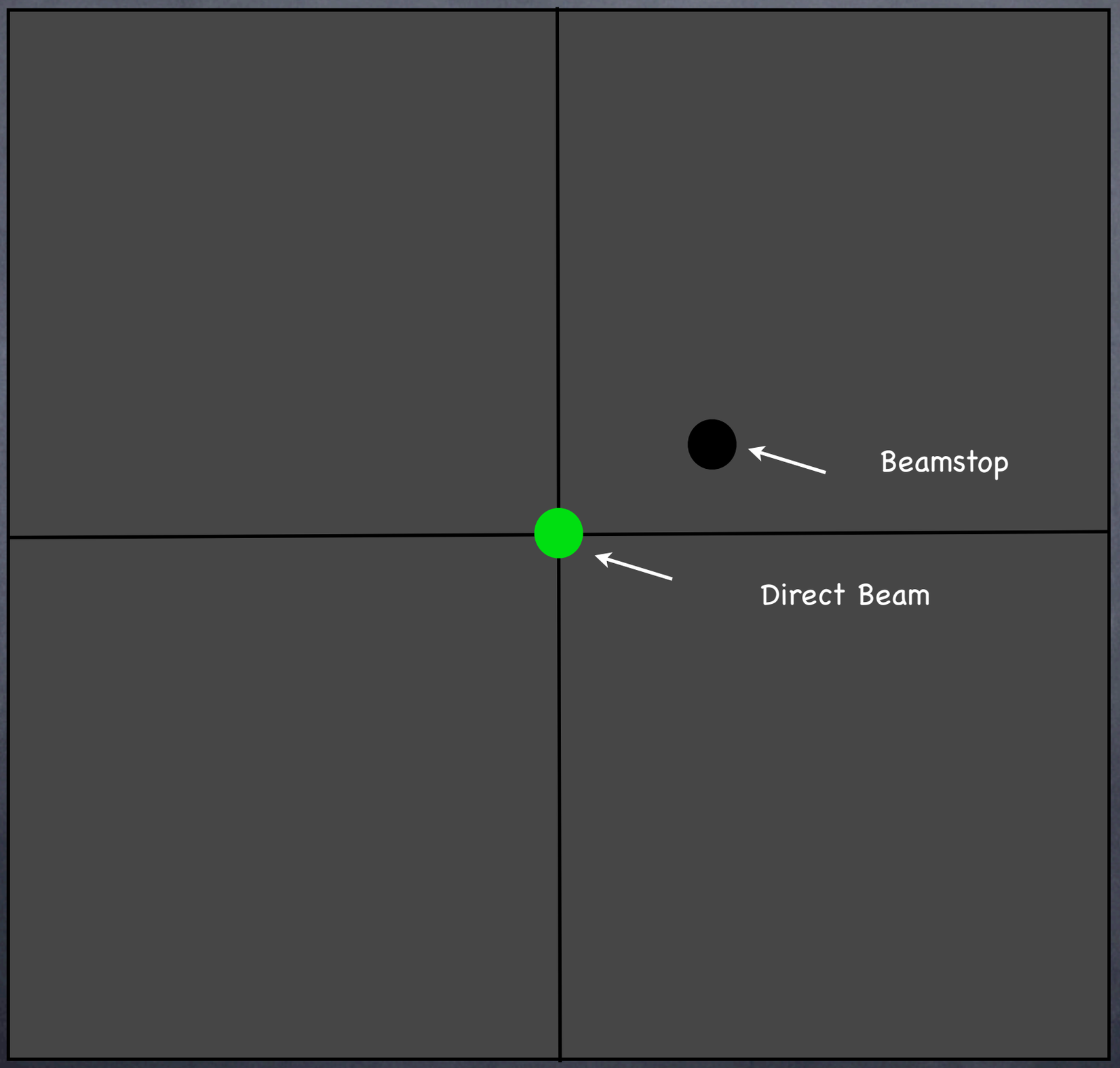
Before you get to the BL

- Fill out ESS
- Make sure everyone is an ALS user
- Take the JHQ and all training you will need including Rad safety, and Hoist, as well as anything else you will use (ie laser, cryo etc)
- Calculate q-range and sample detector distance for 10keV
- Plan experiment ahead: GISAXS then SAXS etc. (call us before)

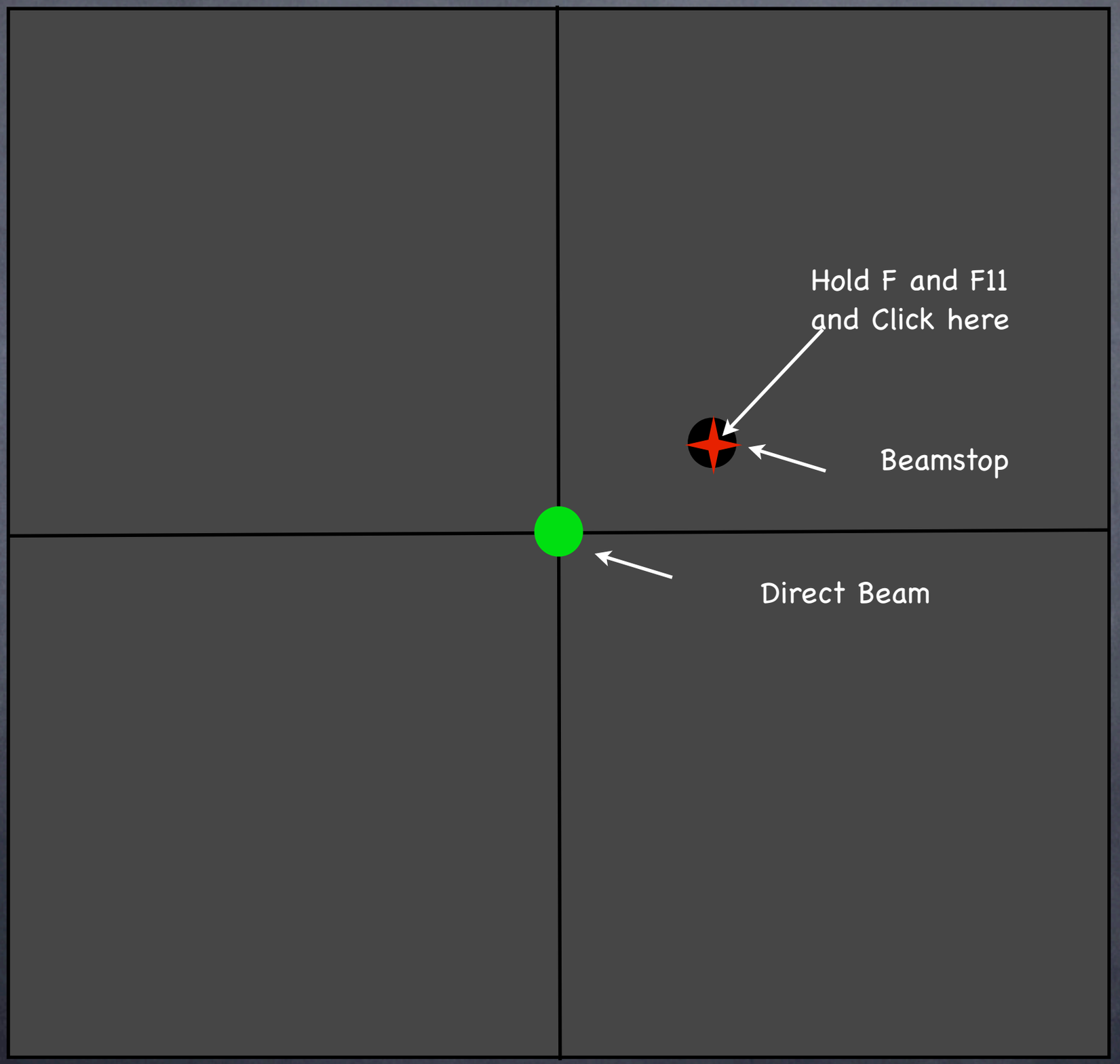
When you get to the BL

- Call or Email us, check beam status
- Check that previous user is done and cleaned up, if not call us
- Set Flight tube
- Set Length, check beam path is unobstructed
- Align beamstop (might have to change actual beamstop)
- Set up sample holder (DSC, SAXS, WAXS, GISAXS, Gas)

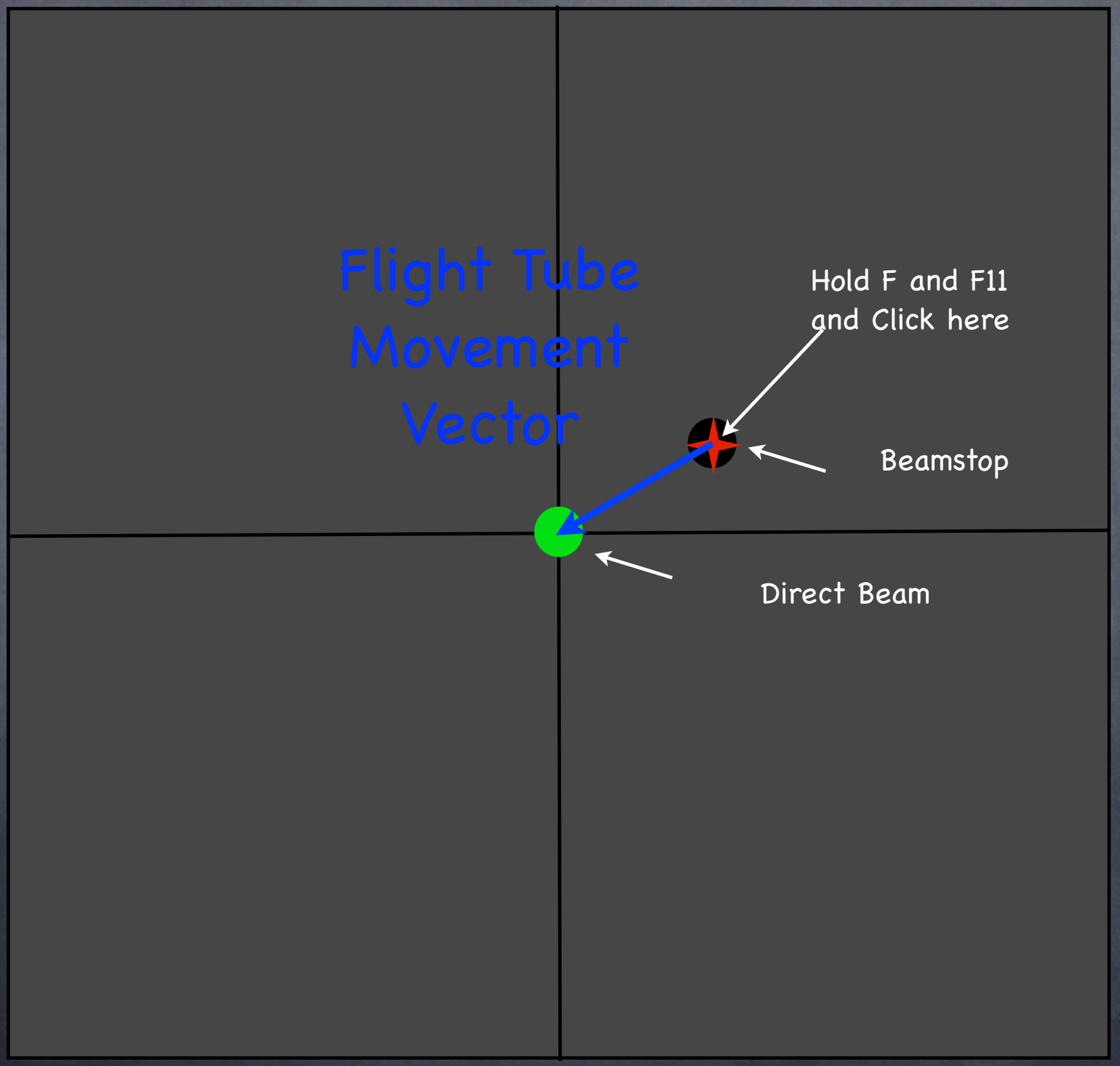
Alignment



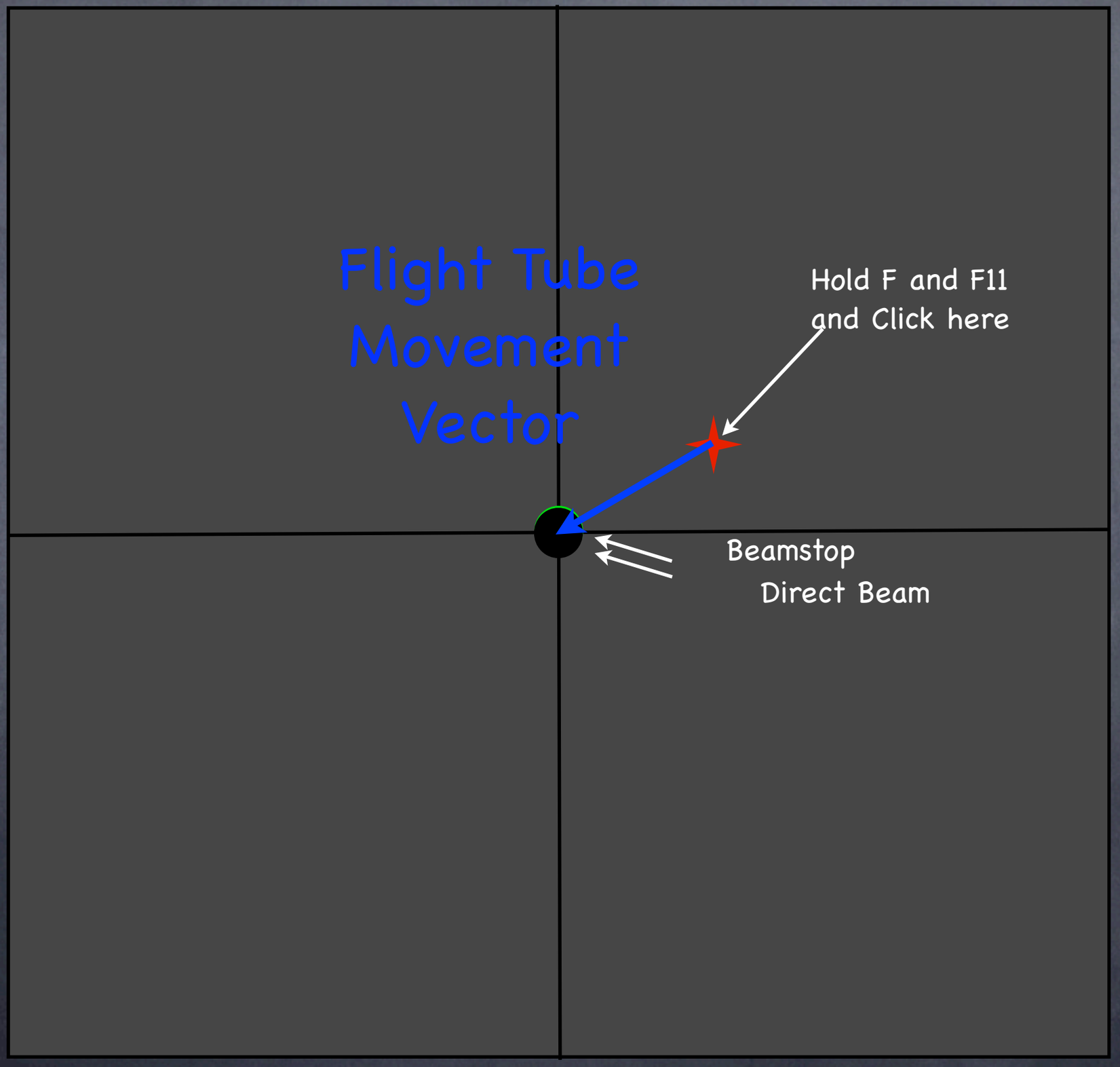
Alignment



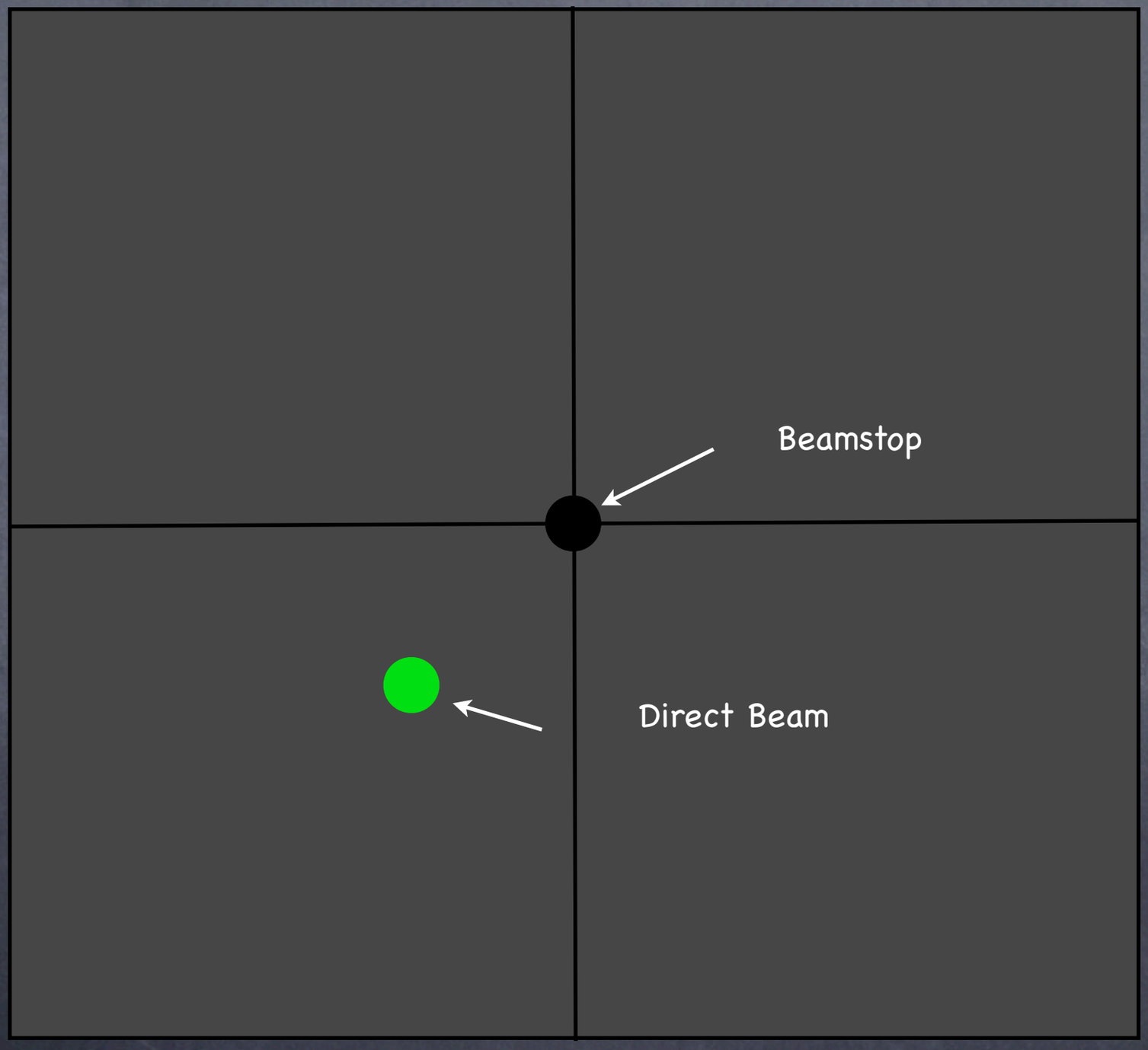
Alignment


Flight Tube
Movement
Vector
Hold F and F11
and Click here
Beamstop
Direct Beam

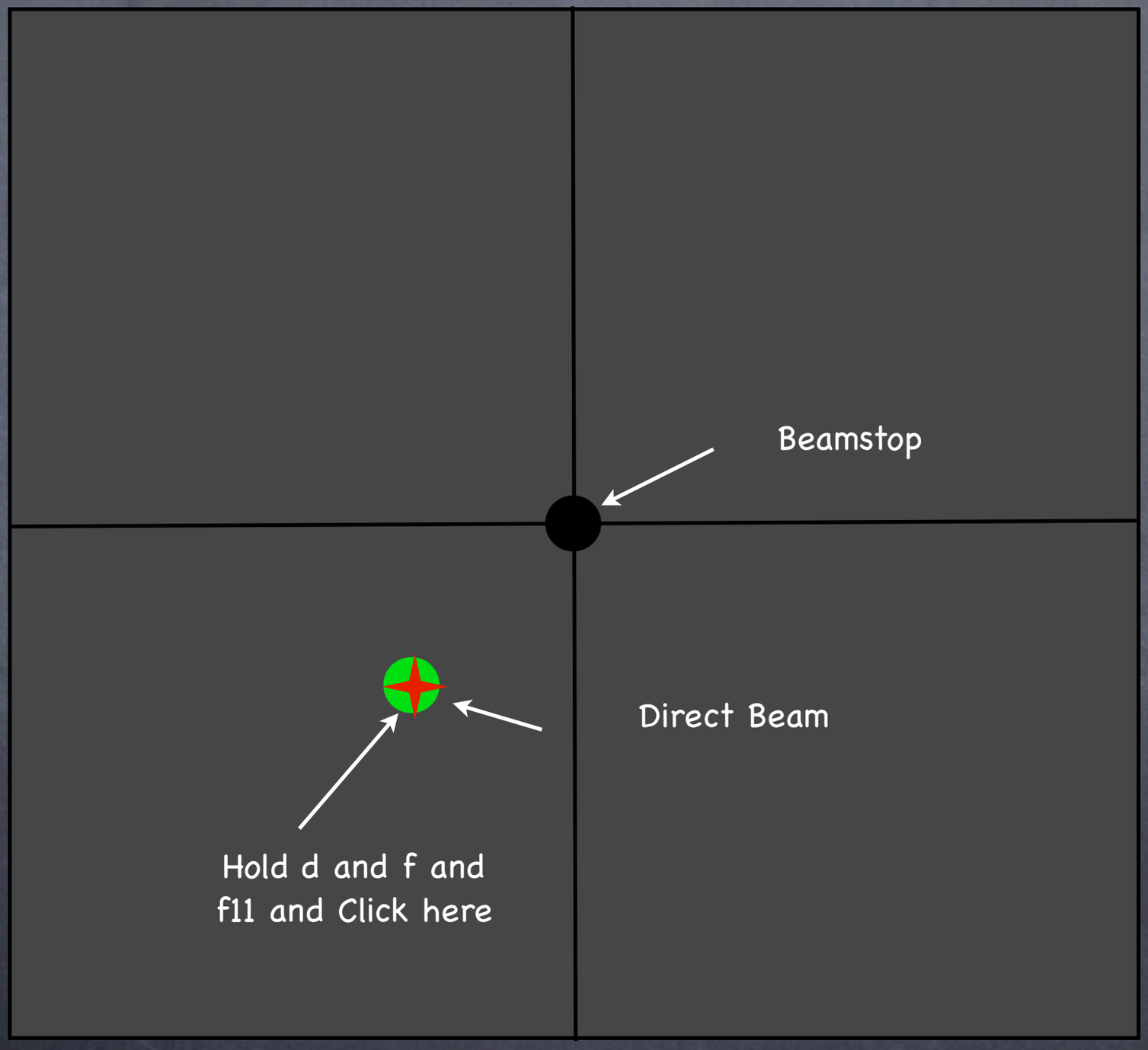
Alignment


Flight Tube
Movement
Vector
Hold F and F11
and Click here
Beamstop
Direct Beam

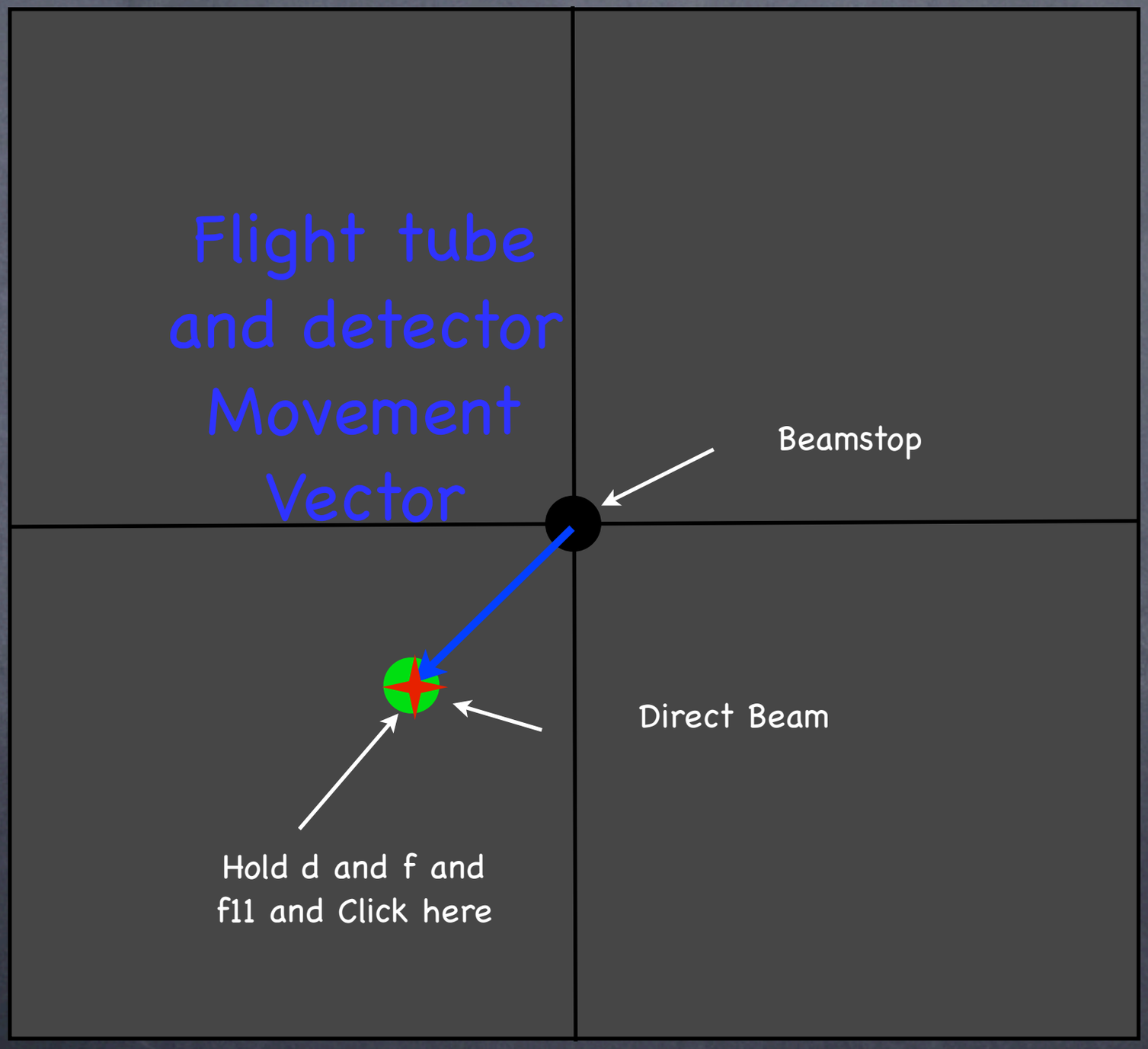
Alignment



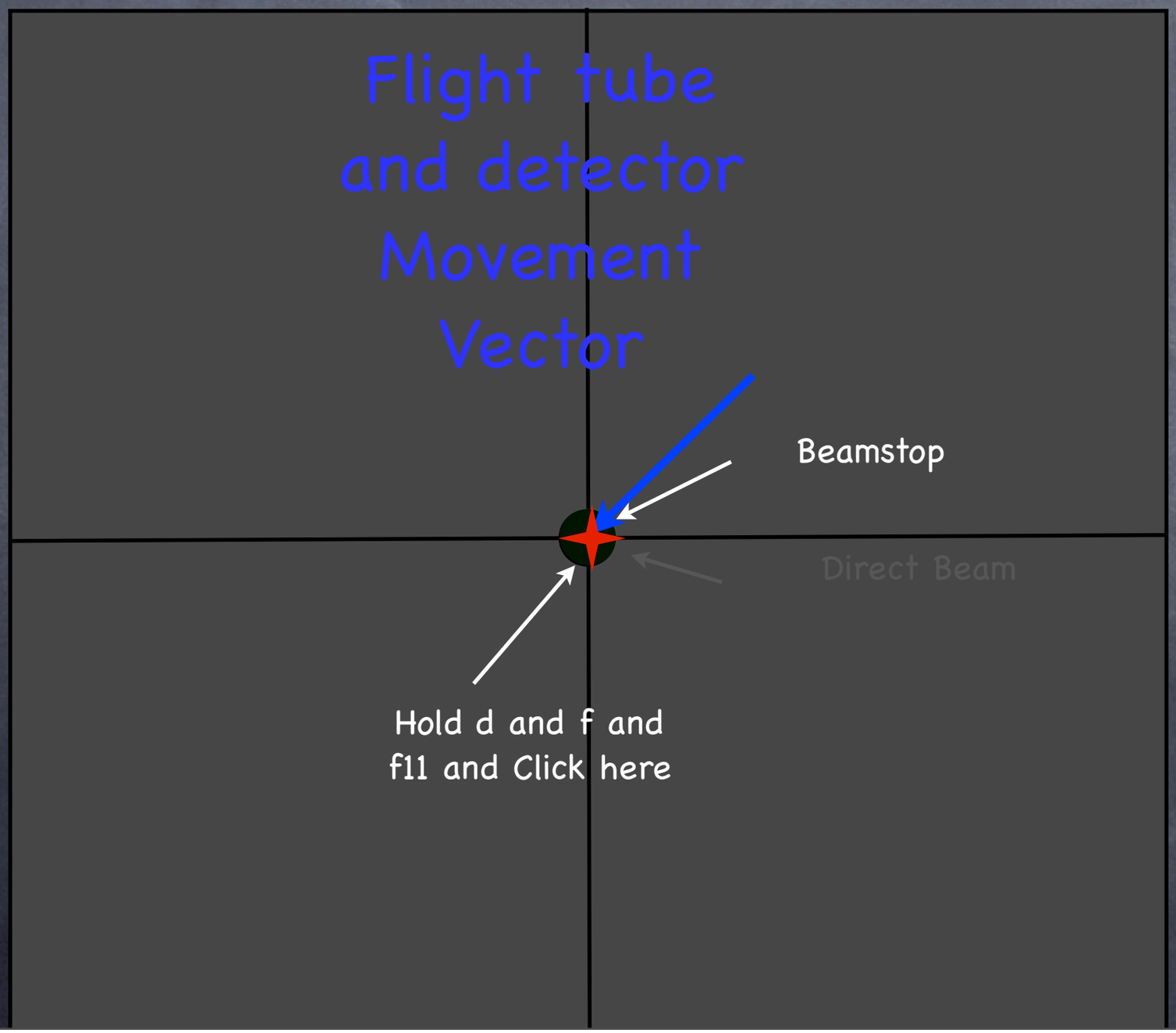
Alignment



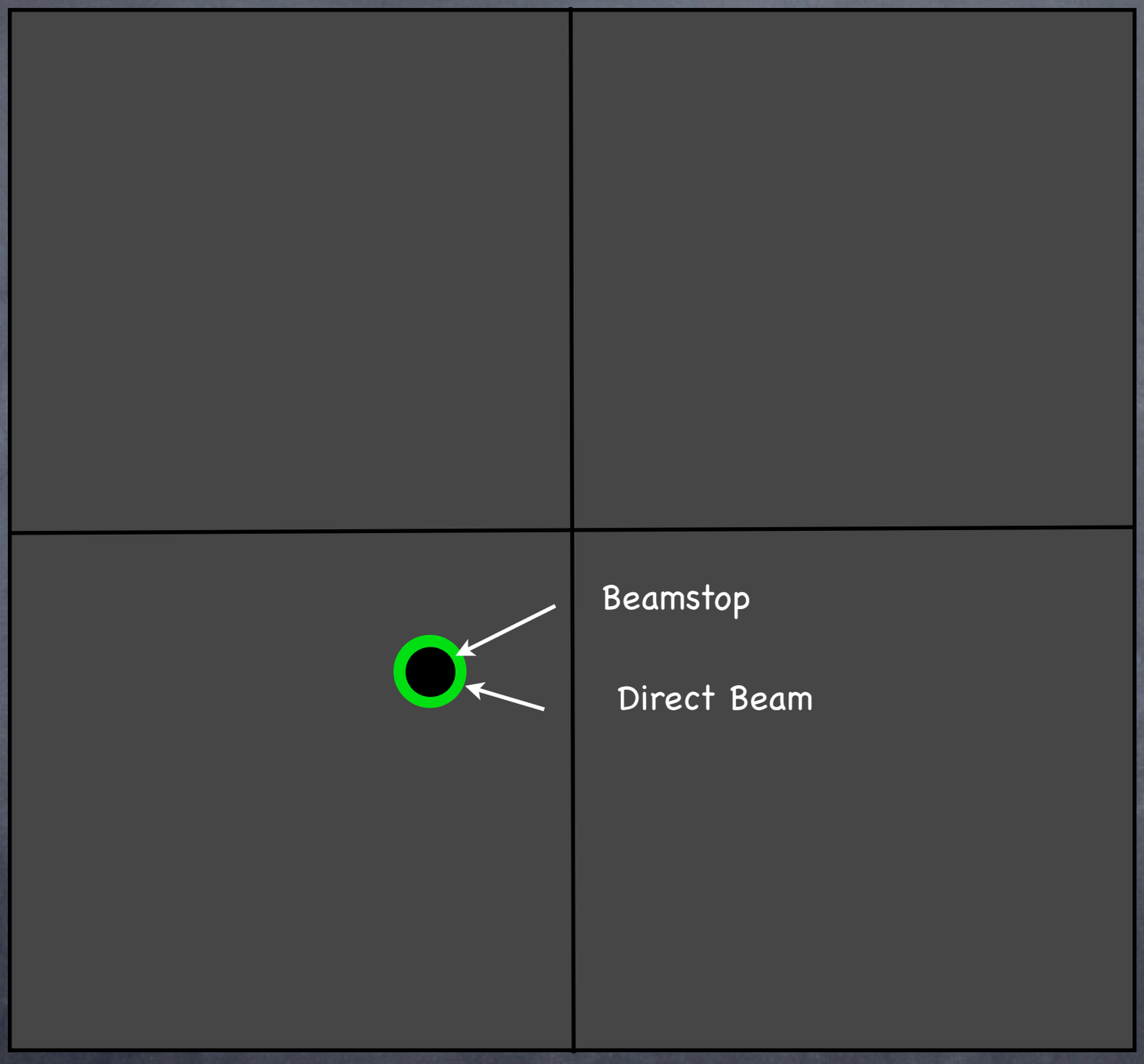
Alignment


Flight tube
and detector
Movement
Vector
Beamstop
Direct Beam
Hold d and f and
f11 and Click here

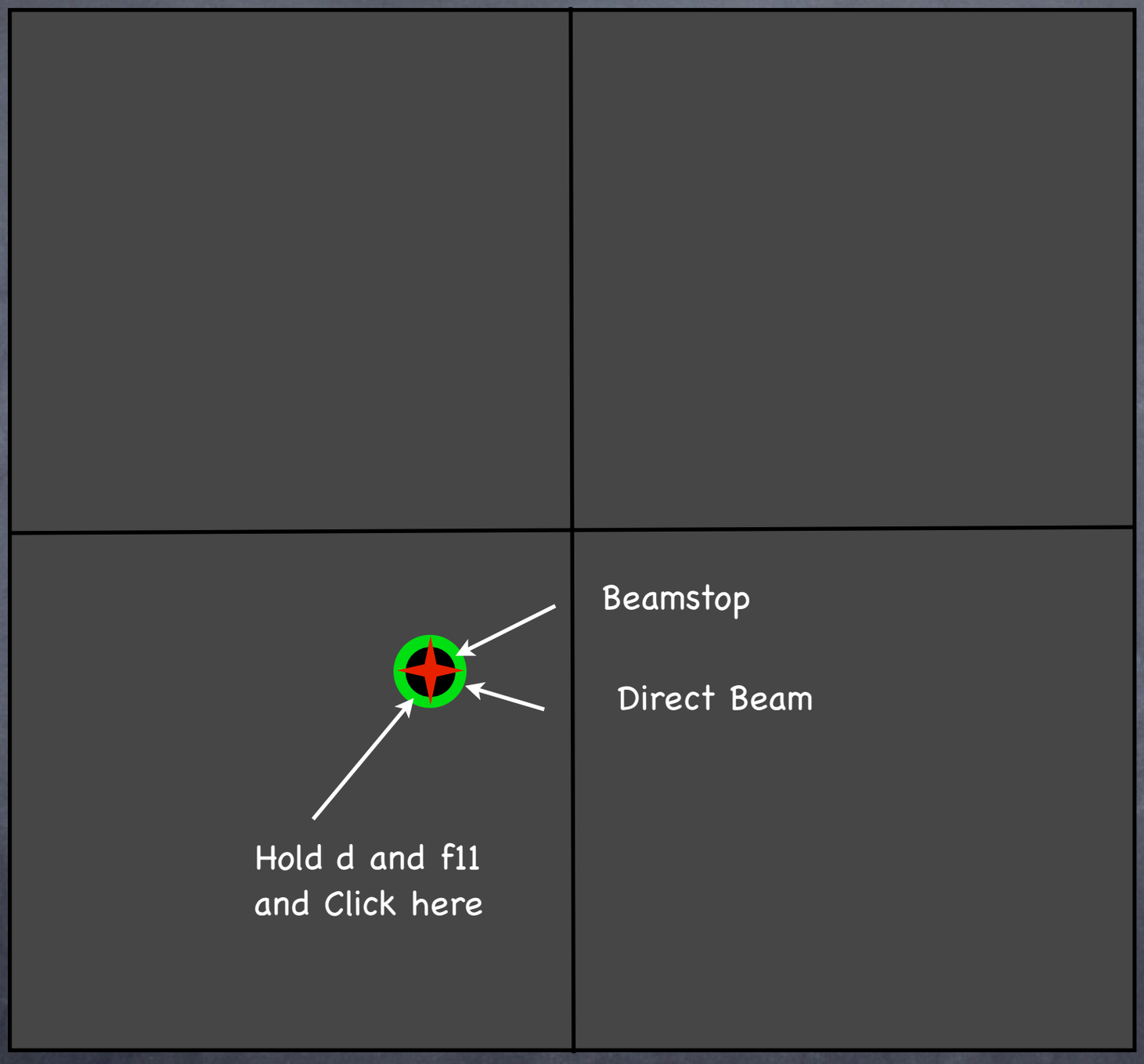
Alignment


Flight tube
and detector
Movement
Vector
Beamstop
Direct Beam
Hold d and f and
f11 and Click here

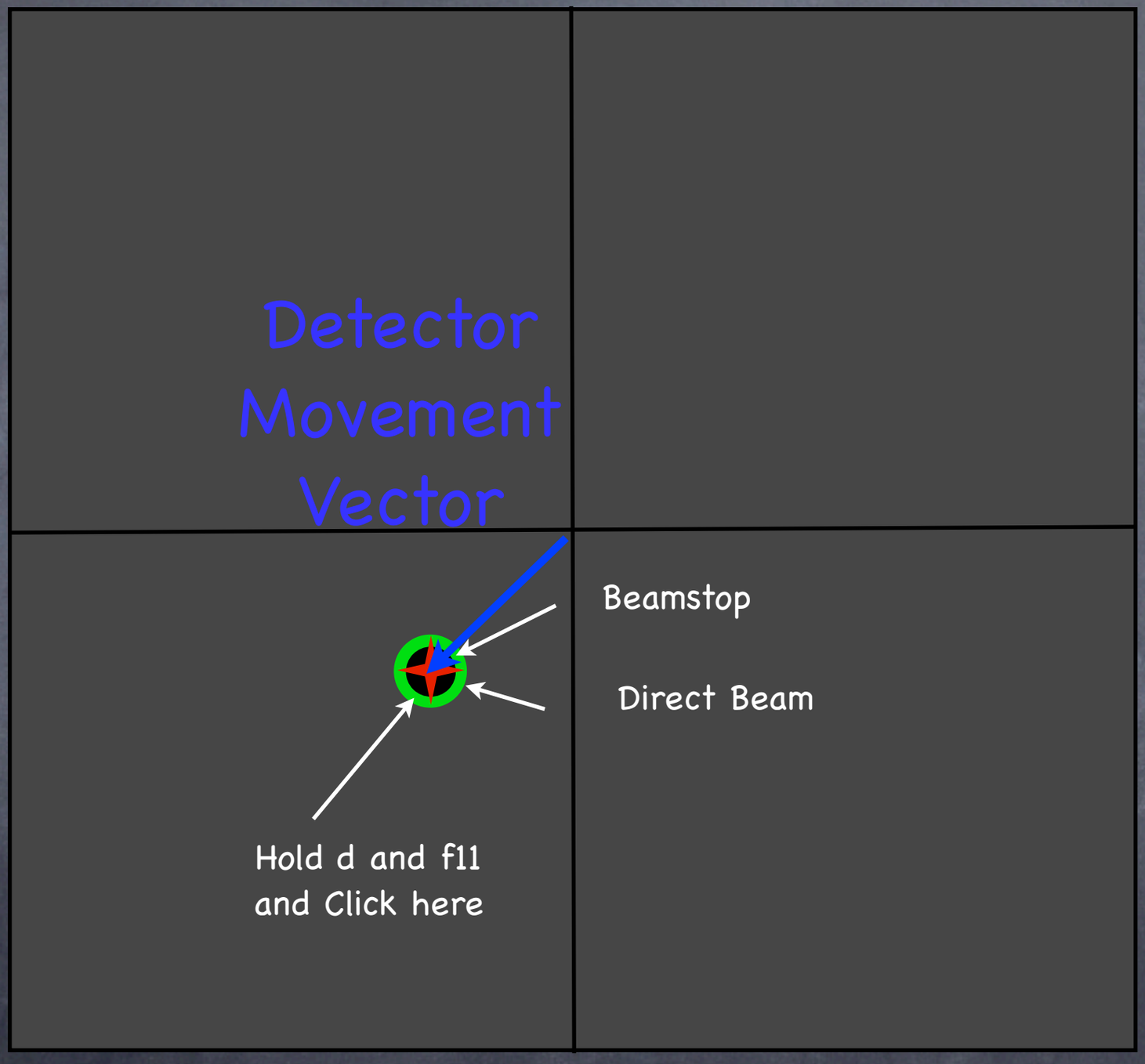
Alignment



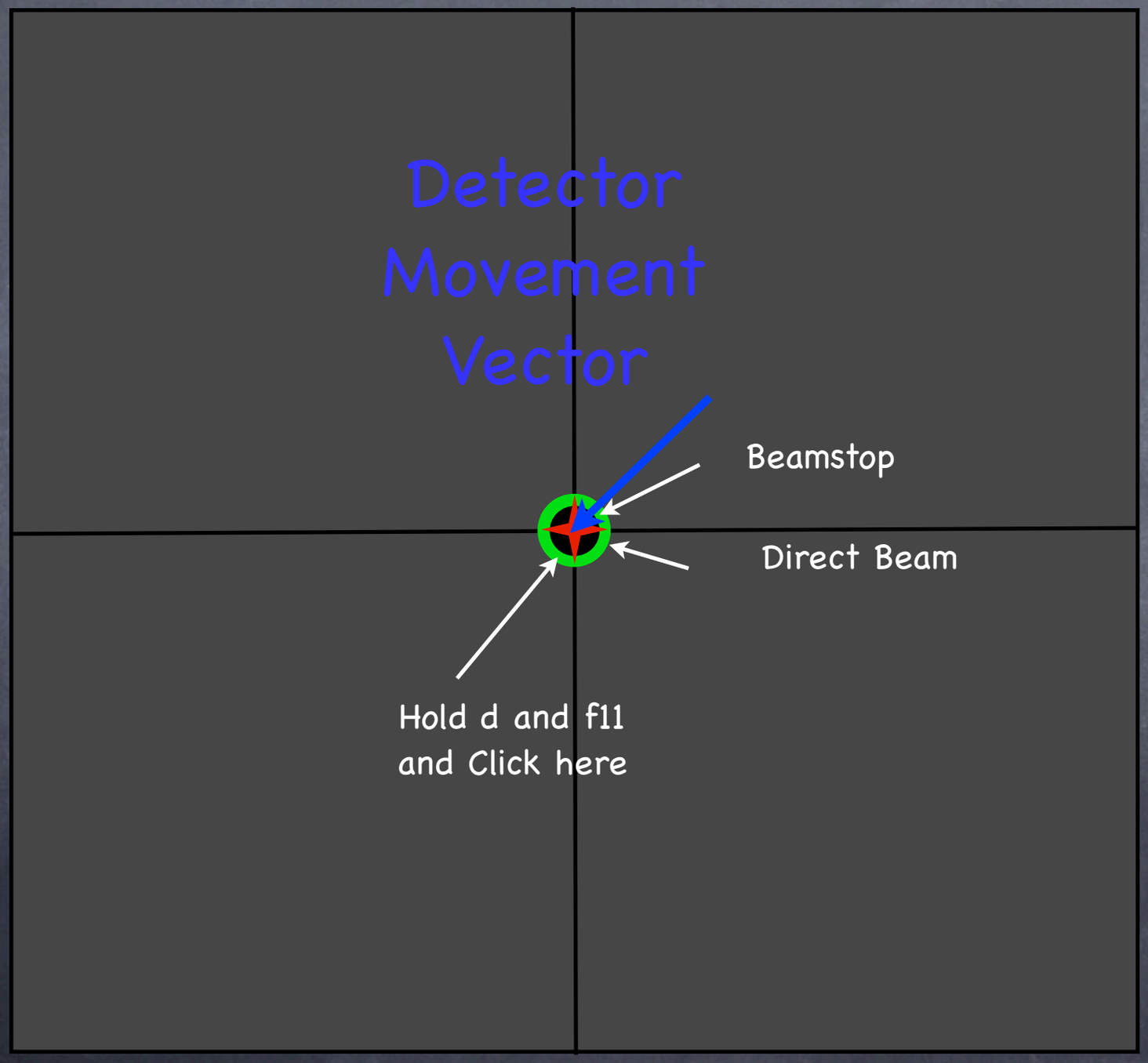
Alignment



Alignment


Detector
Movement
Vector
Beamstop
Direct Beam
Hold d and f11
and Click here

Alignment


Detector
Movement
Vector
Beamstop
Direct Beam
Hold d and f11
and Click here

Alignment

Alignment

RISKS

- There is High Risk of messing this up and hurting the detectors!
- Don't trust that the program or the motors moved correctly
- Assume the worst and DOUBLE CHECK that detectors are safe
- ALWAYS check beamstop at least once (more if you are nervous) before taking any pictures

DSC stage alignment

DSC stage

x-rays

alignment
spot (black)

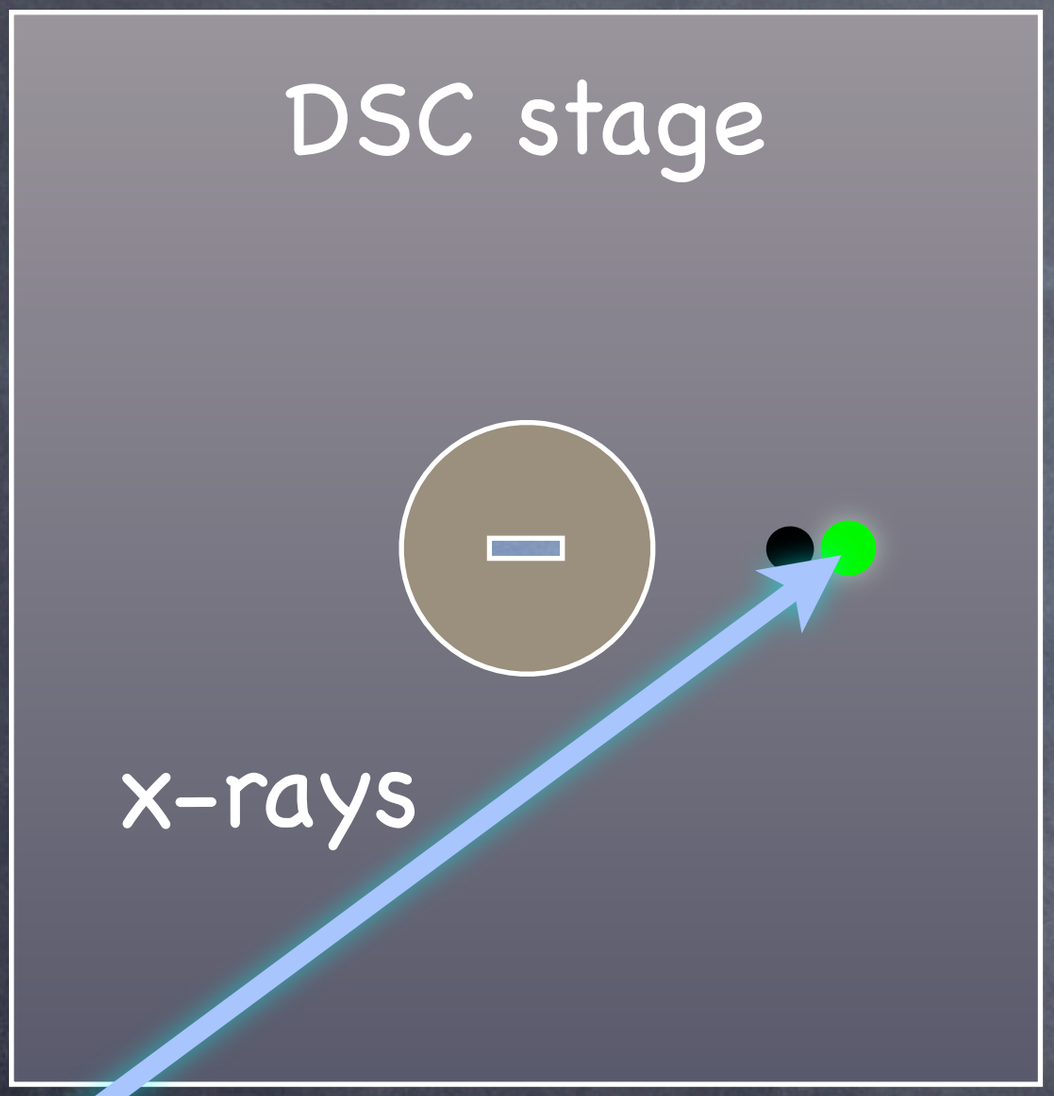
step size
1 -> 0.3 mm
2 -> 1 mm
3 -> 3 mm
4 -> 10 mm

y-axis

x-axis

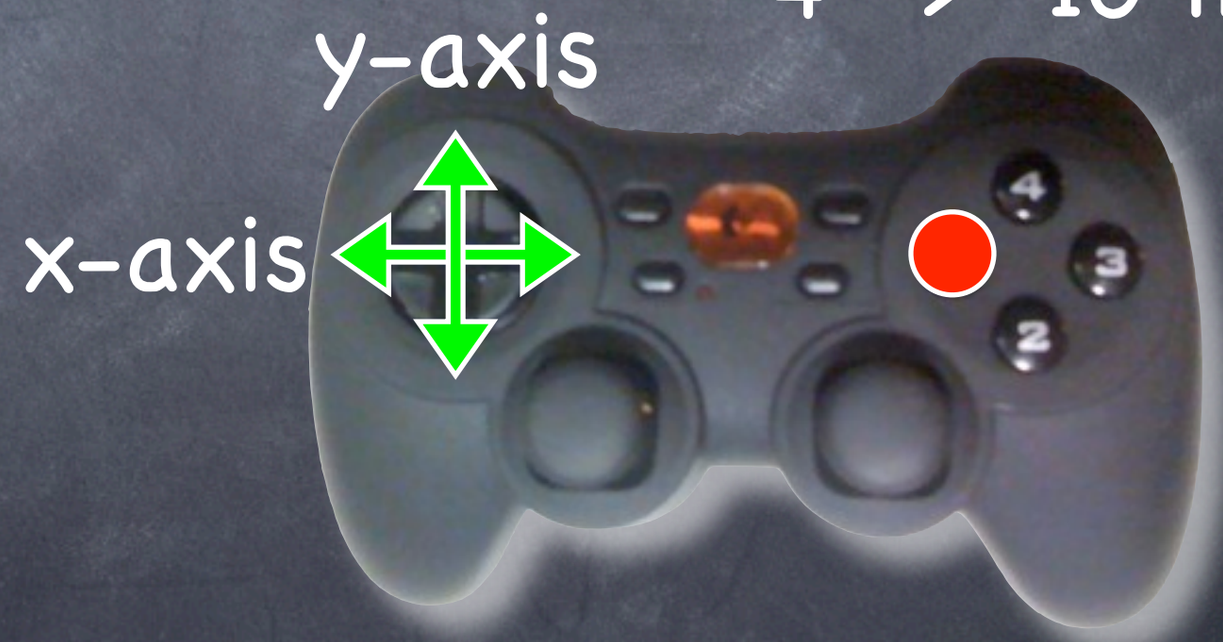
DSC stage alignment

DSC stage



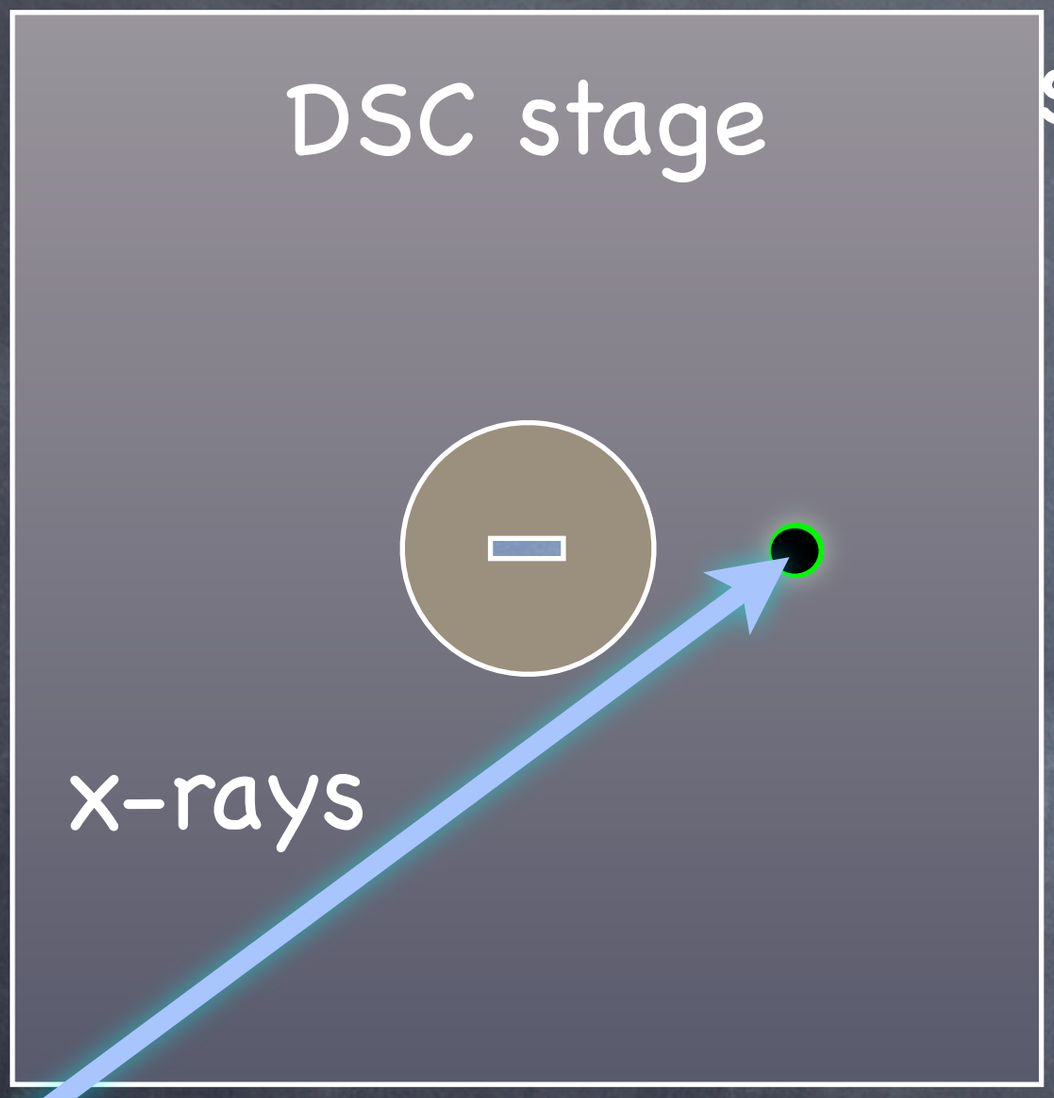
alignment
spot (black)

step size
1 -> 0.3 mm
2 -> 1 mm
3 -> 3 mm
4 -> 10 mm



DSC stage alignment

alignment
spot (black)



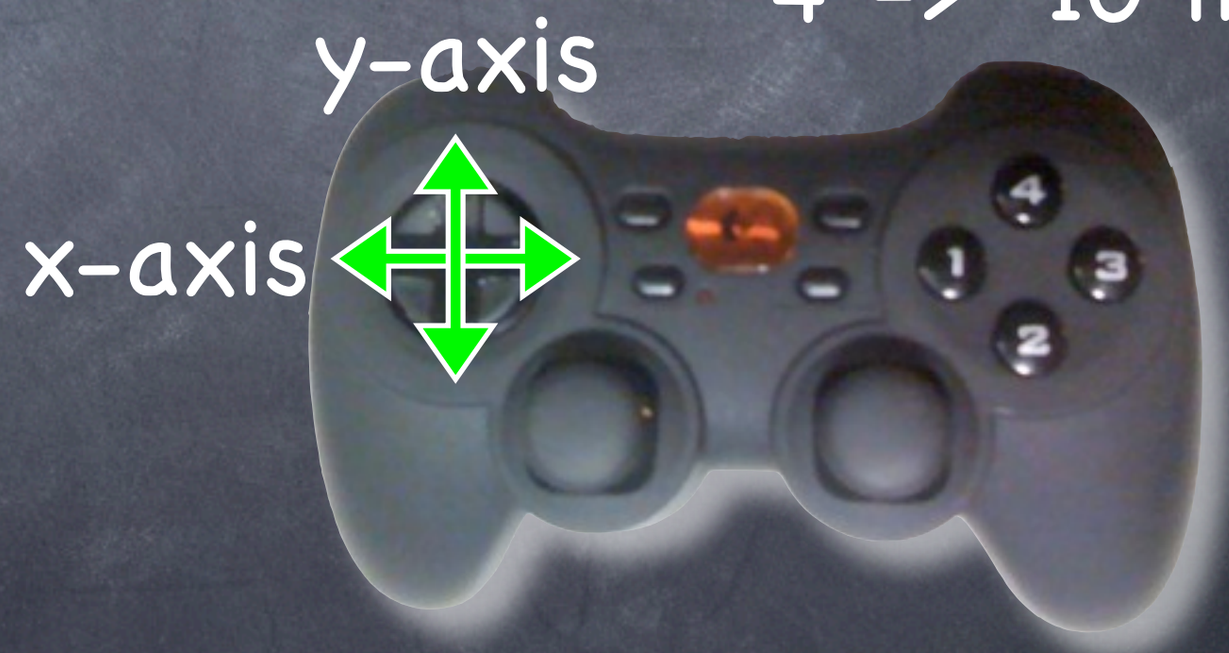
step size

1 -> 0.3 mm

2 -> 1 mm

3 -> 3 mm

4 -> 10 mm



DSC stage alignment

alignment
spot (black)

DSC stage

x-rays

then move 17.22 mm
to the right

step size

1 -> 0.3 mm

2 -> 1 mm

3 -> 3 mm

4 -> 10 mm

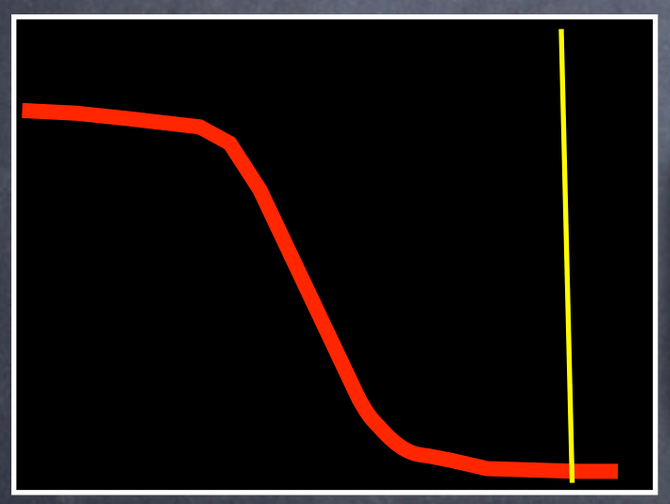
y-axis

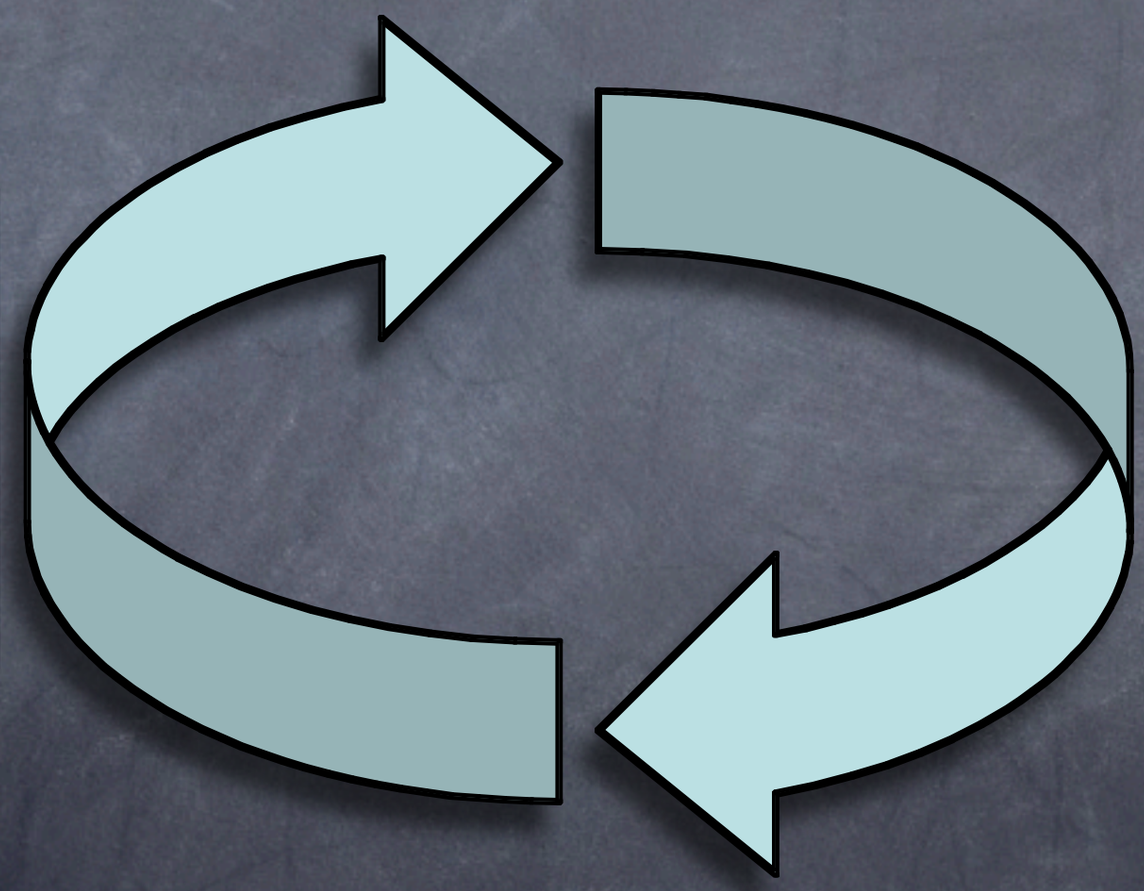
x-axis

GISAXS

adjust x to center sample in beam

scan y: set to
1/2 intensity

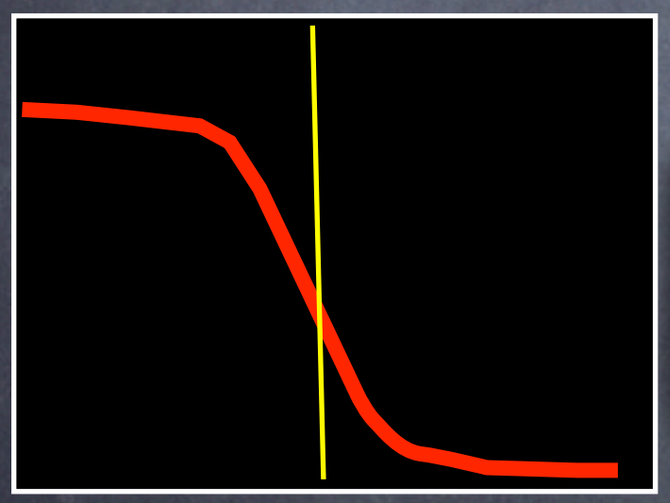


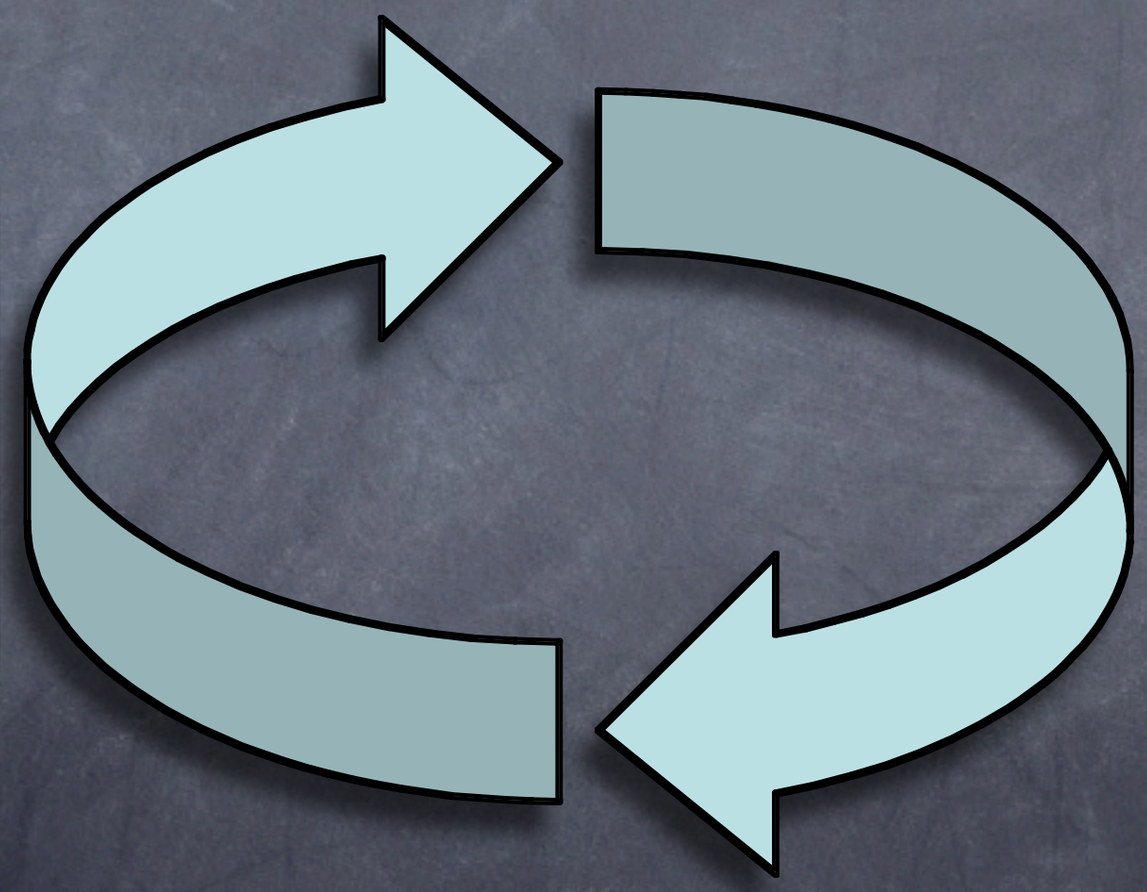


GISAXS

adjust x to center sample in beam

scan y: set to
1/2 intensity

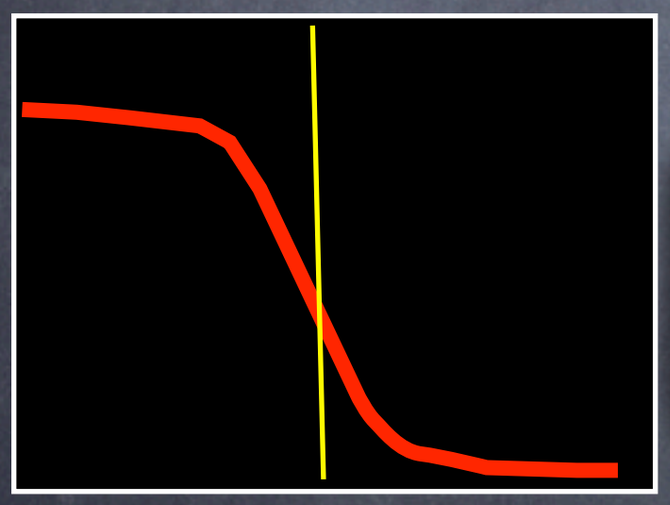




GISAXS

adjust x to center sample in beam

scan y: set to
1/2 intensity

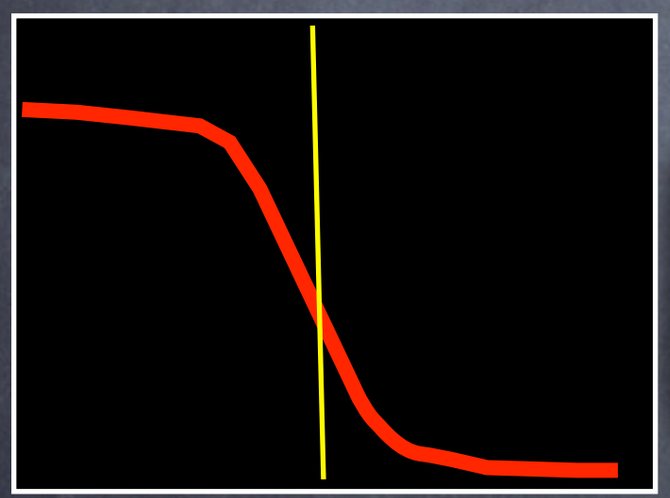


Go to Cursor

GISAXS

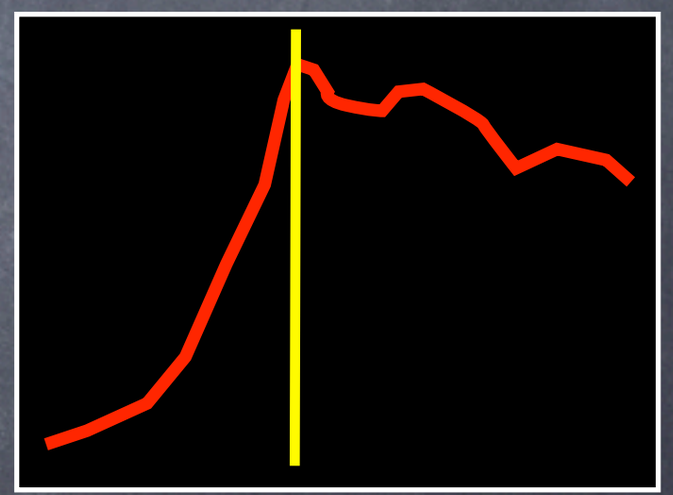
adjust x to center sample in beam

scan y: set to 1/2 intensity



Go to Cursor

scan alpha angle: set to max point

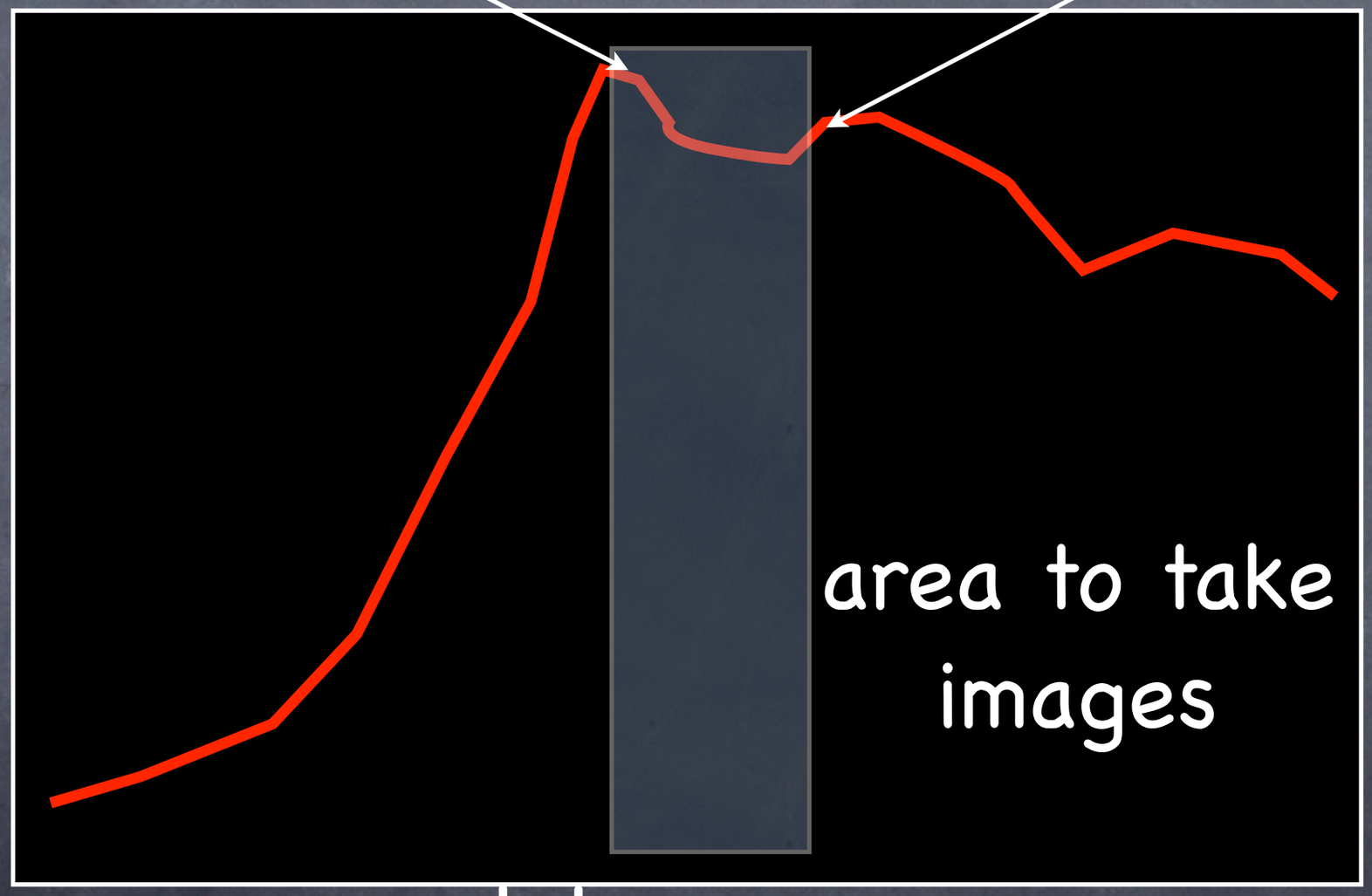


Go to Cursor

GISAXS

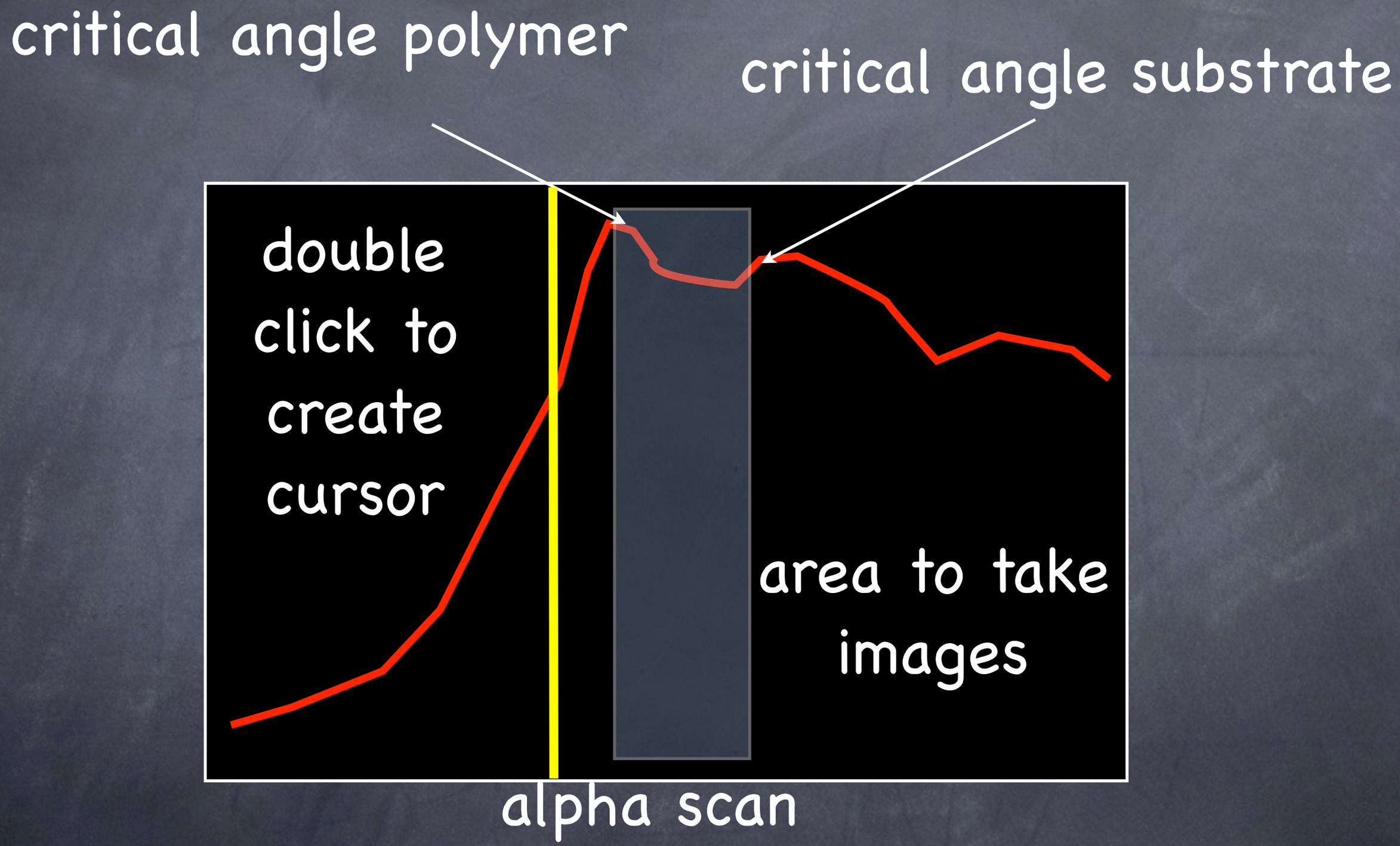
critical angle polymer

critical angle substrate

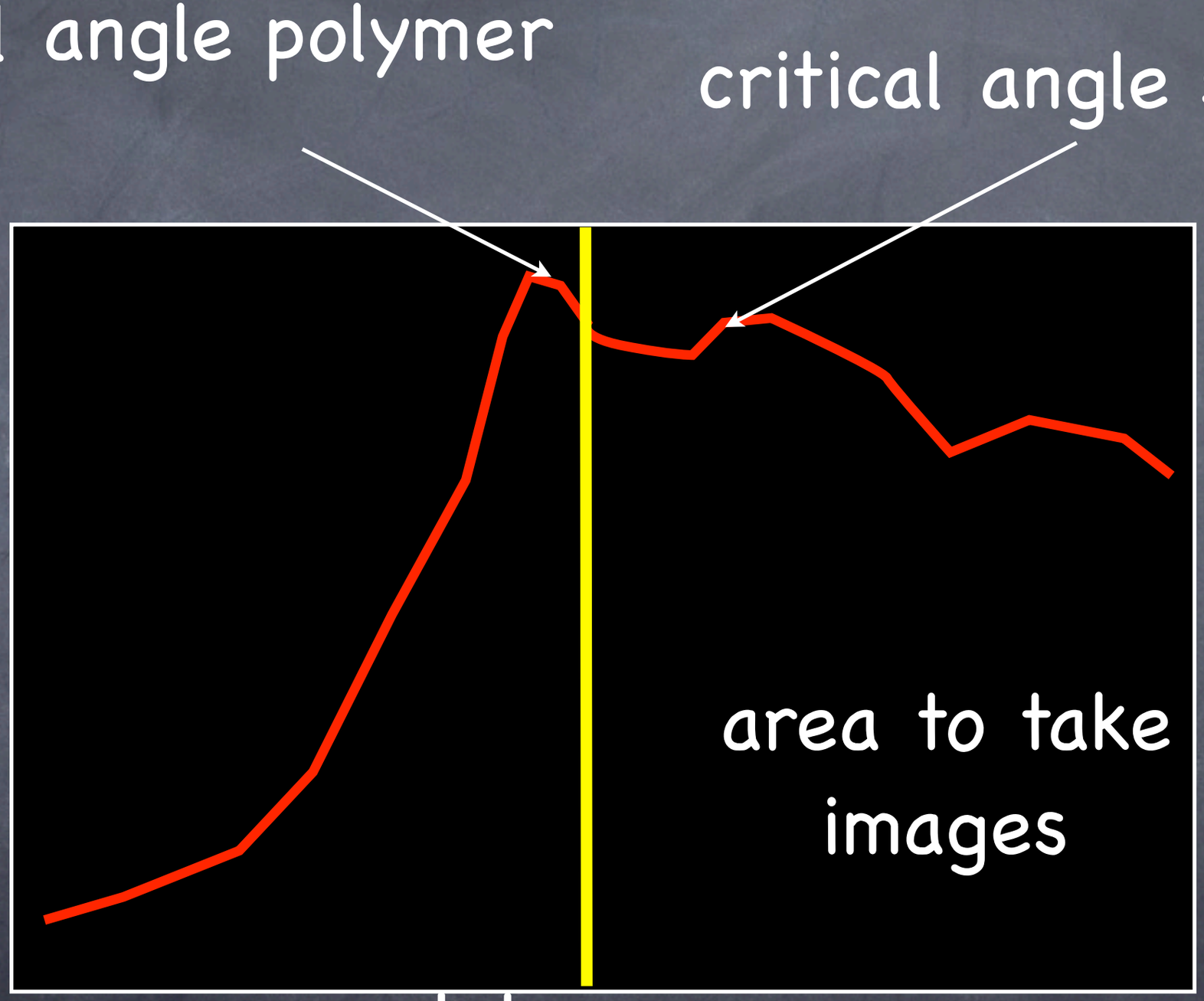


alpha scan

GISAXS


critical angle polymer
critical angle substrate
double click to create cursor
area to take images
alpha scan

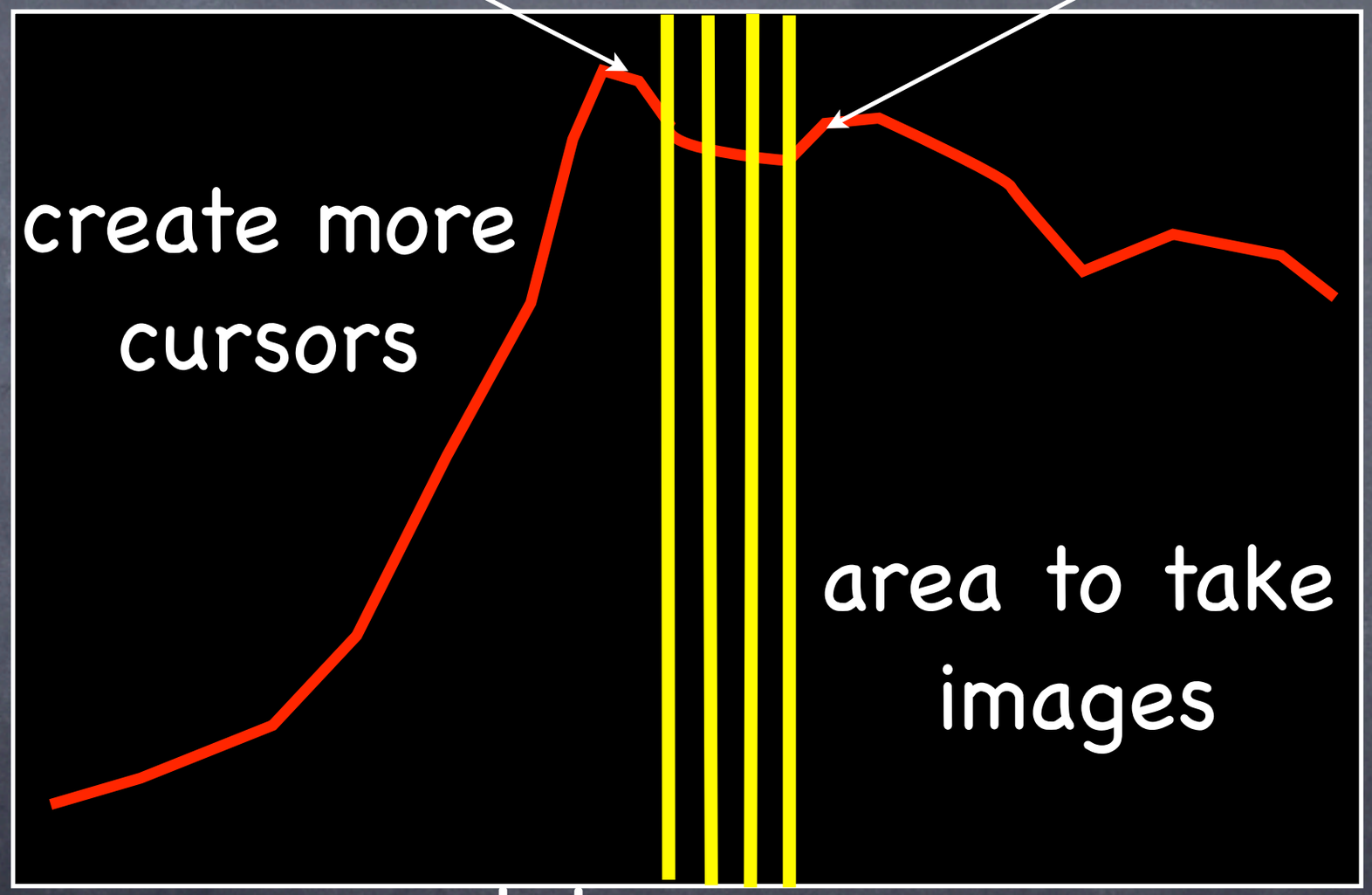
GISAXS


critical angle polymer
critical angle substrate
area to take images
alpha scan

GISAXS

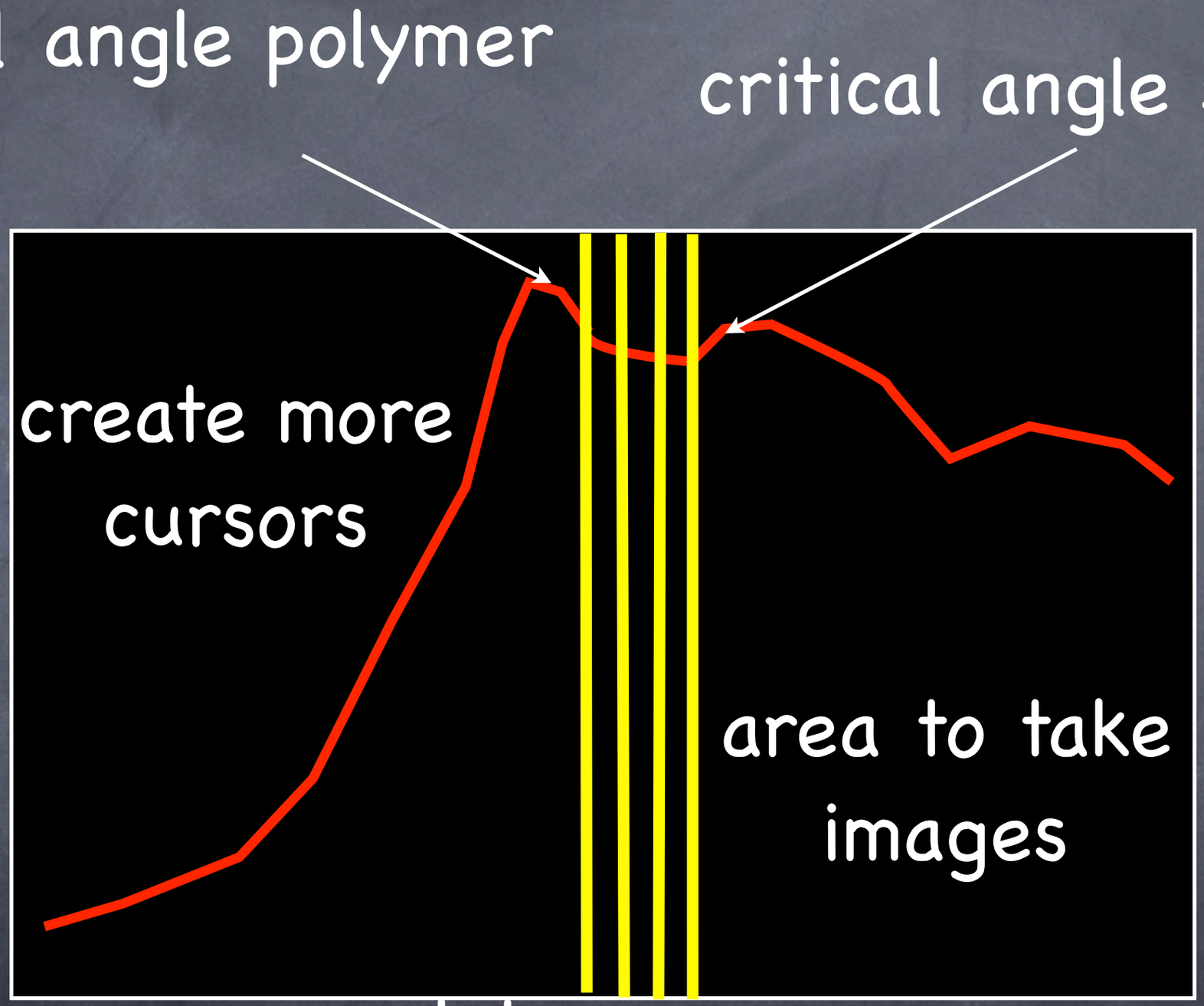
critical angle polymer

critical angle substrate



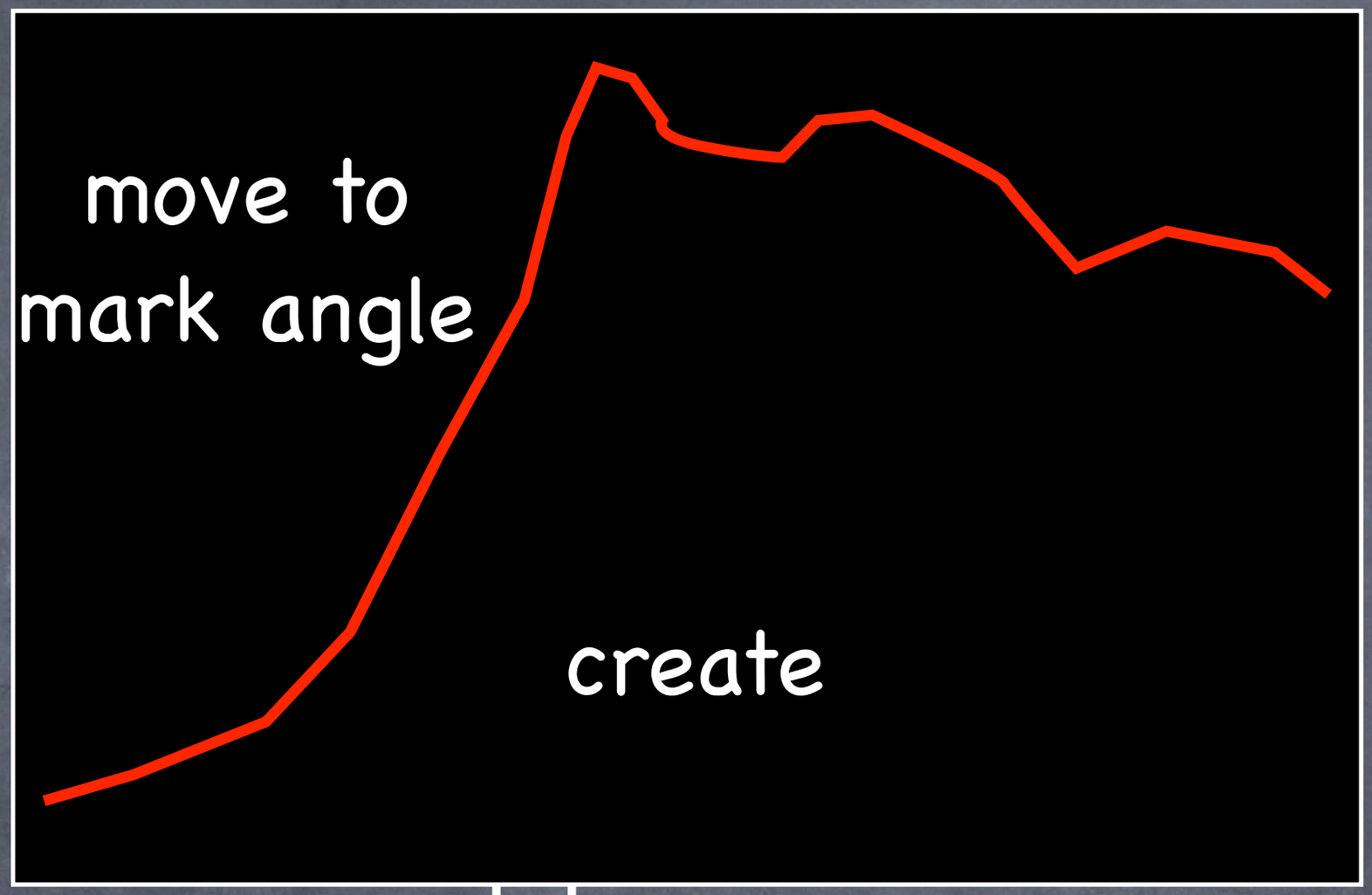
alpha scan

GISAXS



Bookmark Cursors

GISAXS

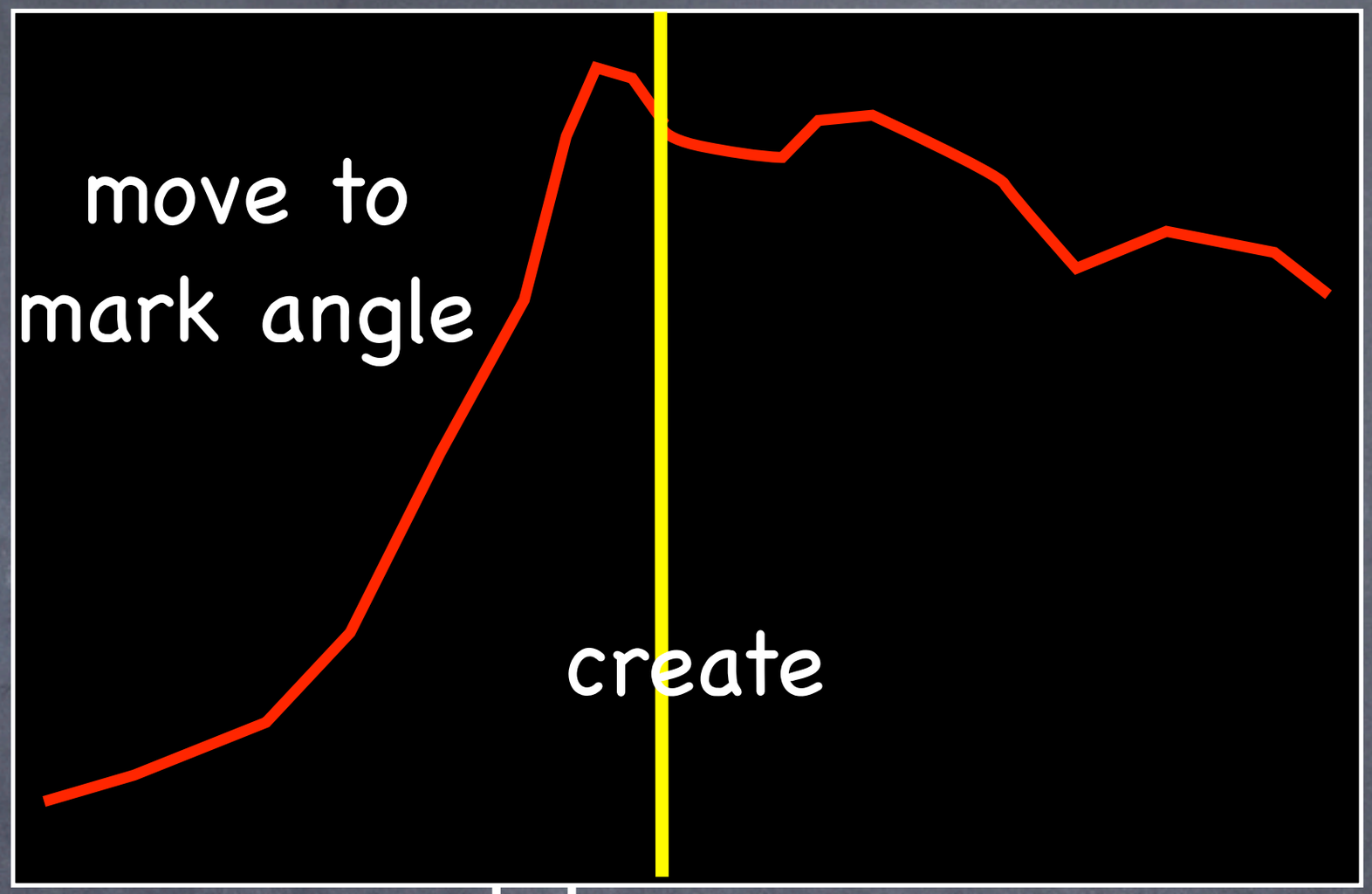


alpha scan

Bookmark cursors

Create Queue: e.g. take 15 scans between cursors

GISAXS

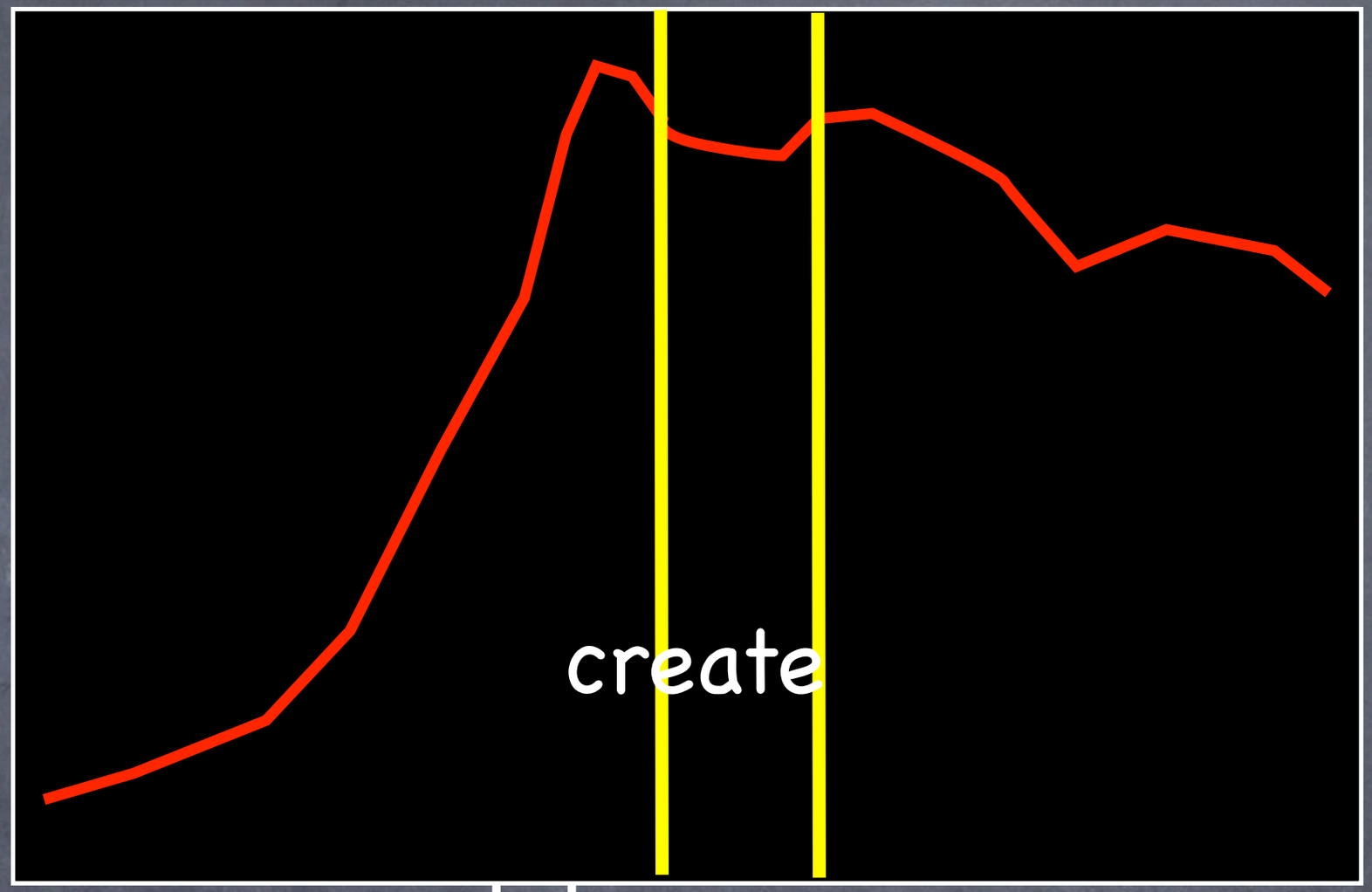


alpha scan

Bookmark cursors

Create Queue: e.g. take 15 scans between cursors

GISAXS



alpha scan

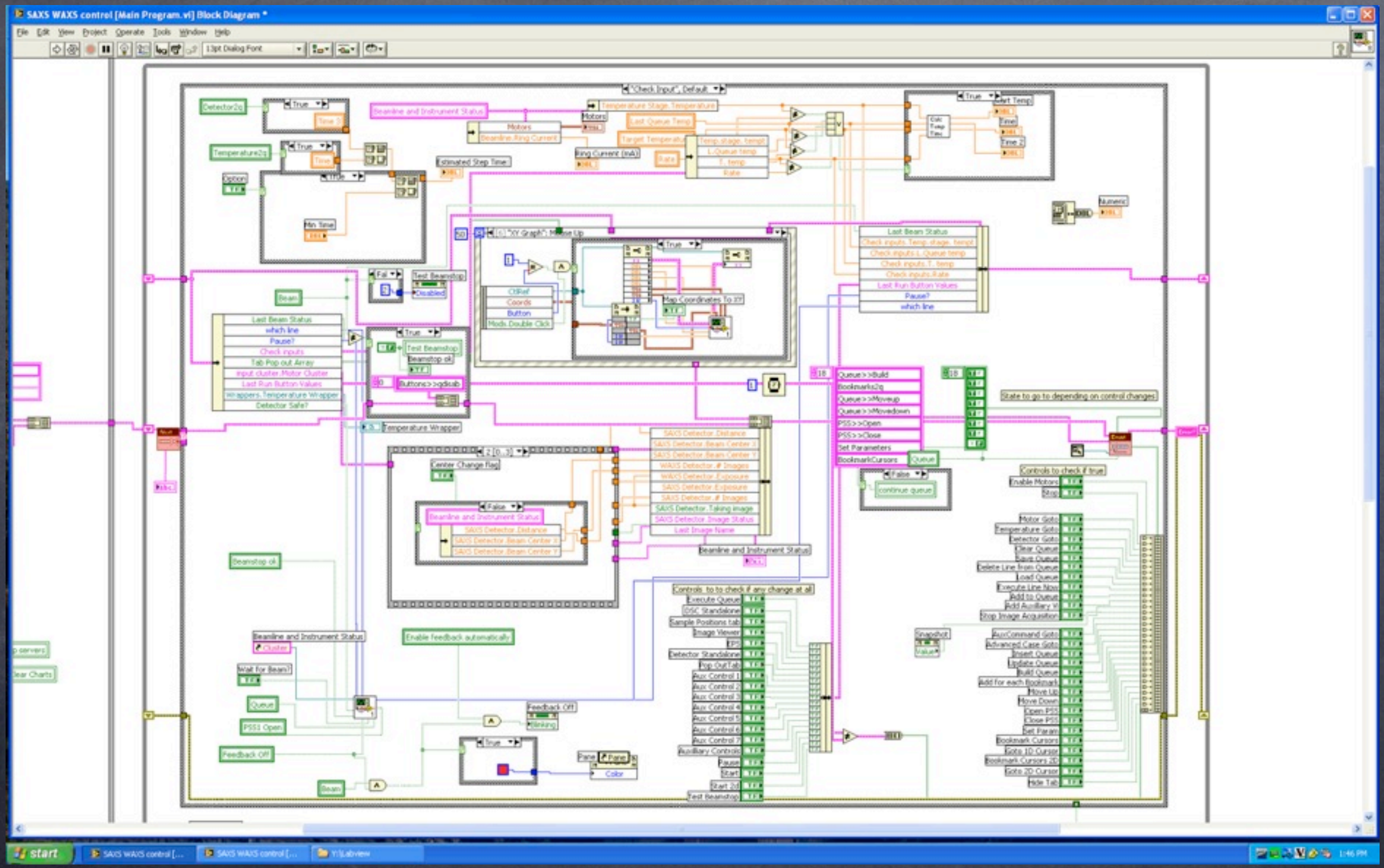
Bookmark cursors

Create Queue: e.g. take 15 scans between cursors

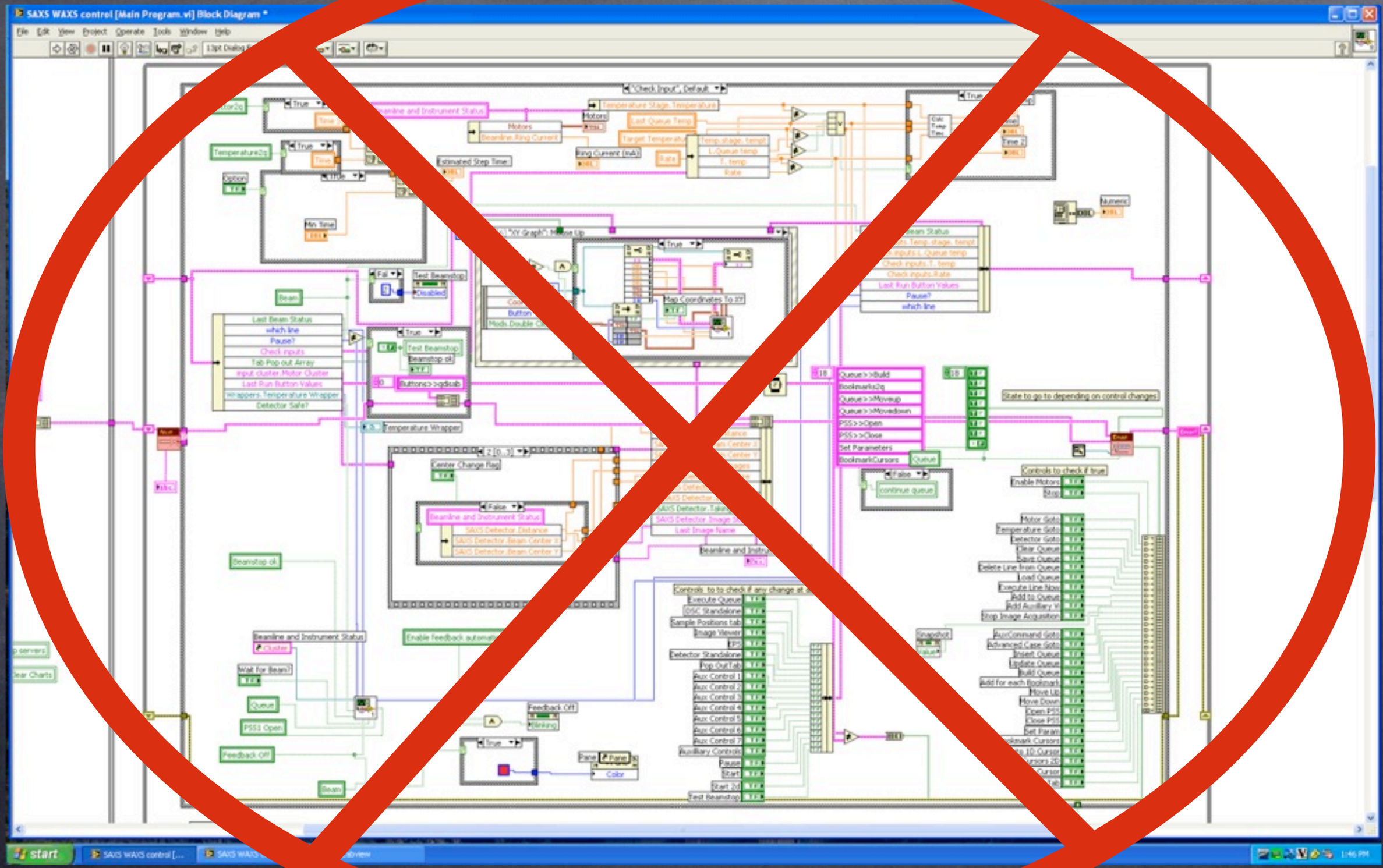
Performing Your Experiment

- Software
- When something unexpected happens
- Take Calibration!!! update header every time detector or flight tube might have moved
- Take Empty Cell
- Typical Experiments
  - SAXS
  - DSC SAXS
  - GISAXS
  - SAXS/WAXS

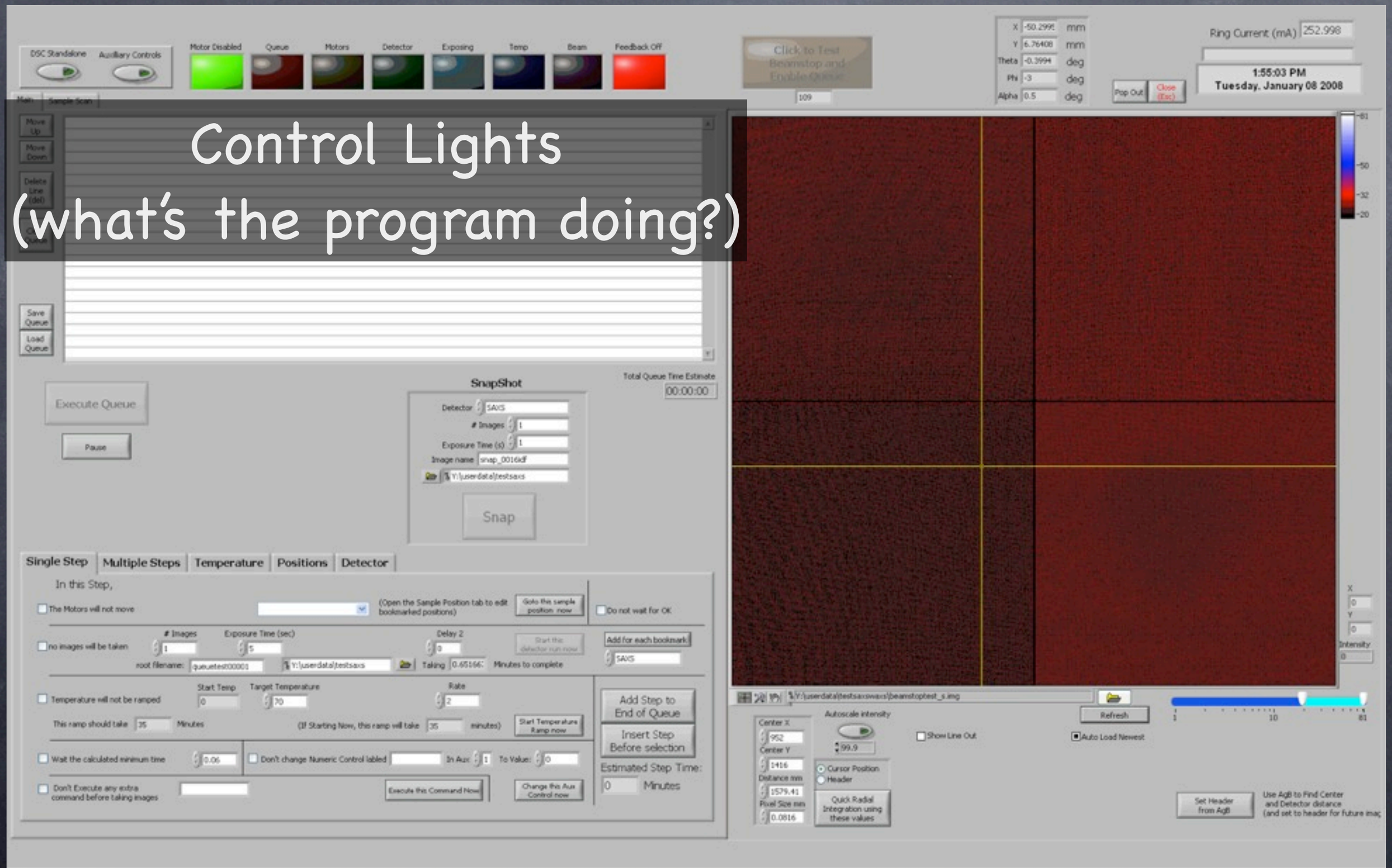
Beamline Software



Beamline Software

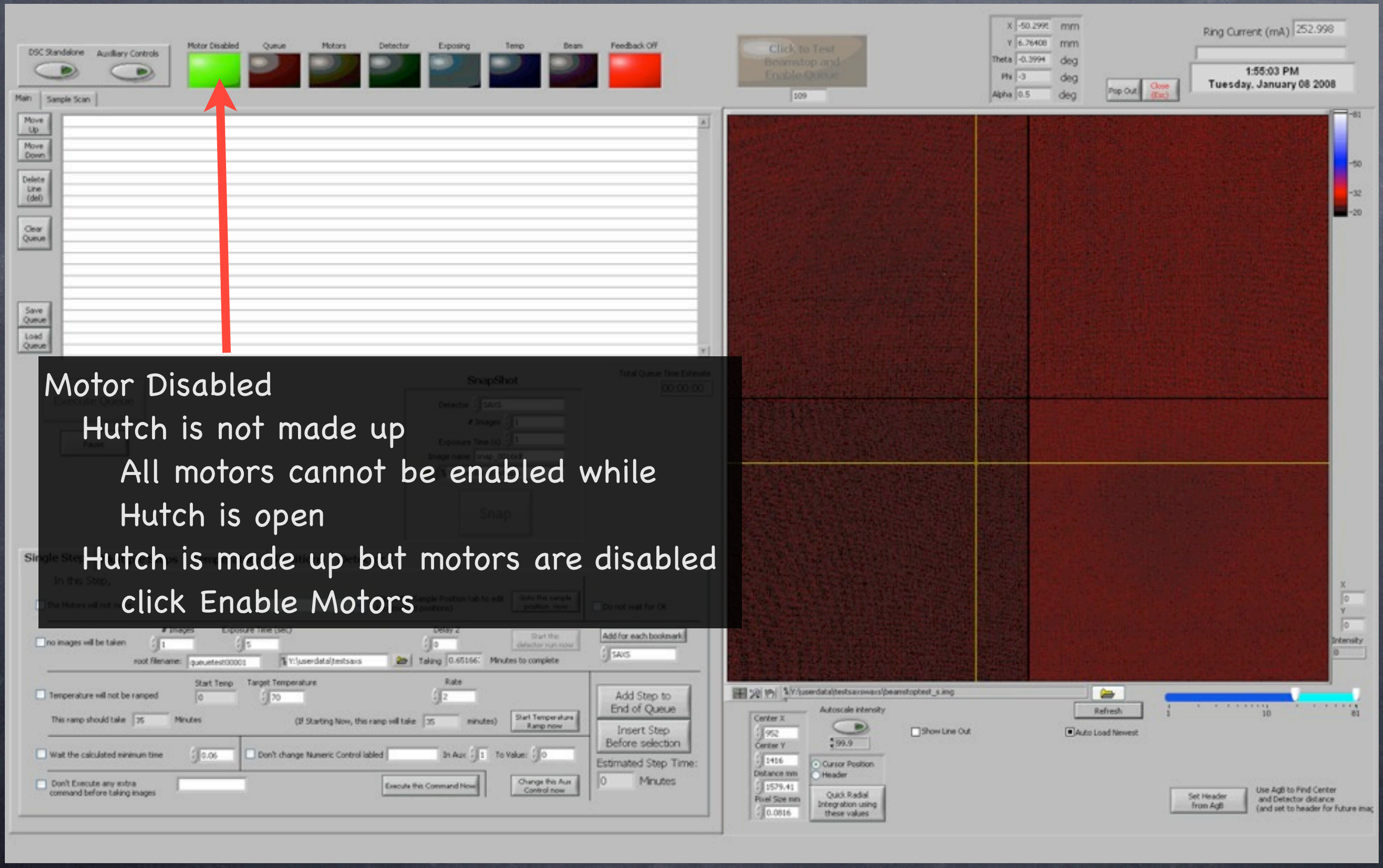


Beamline Software

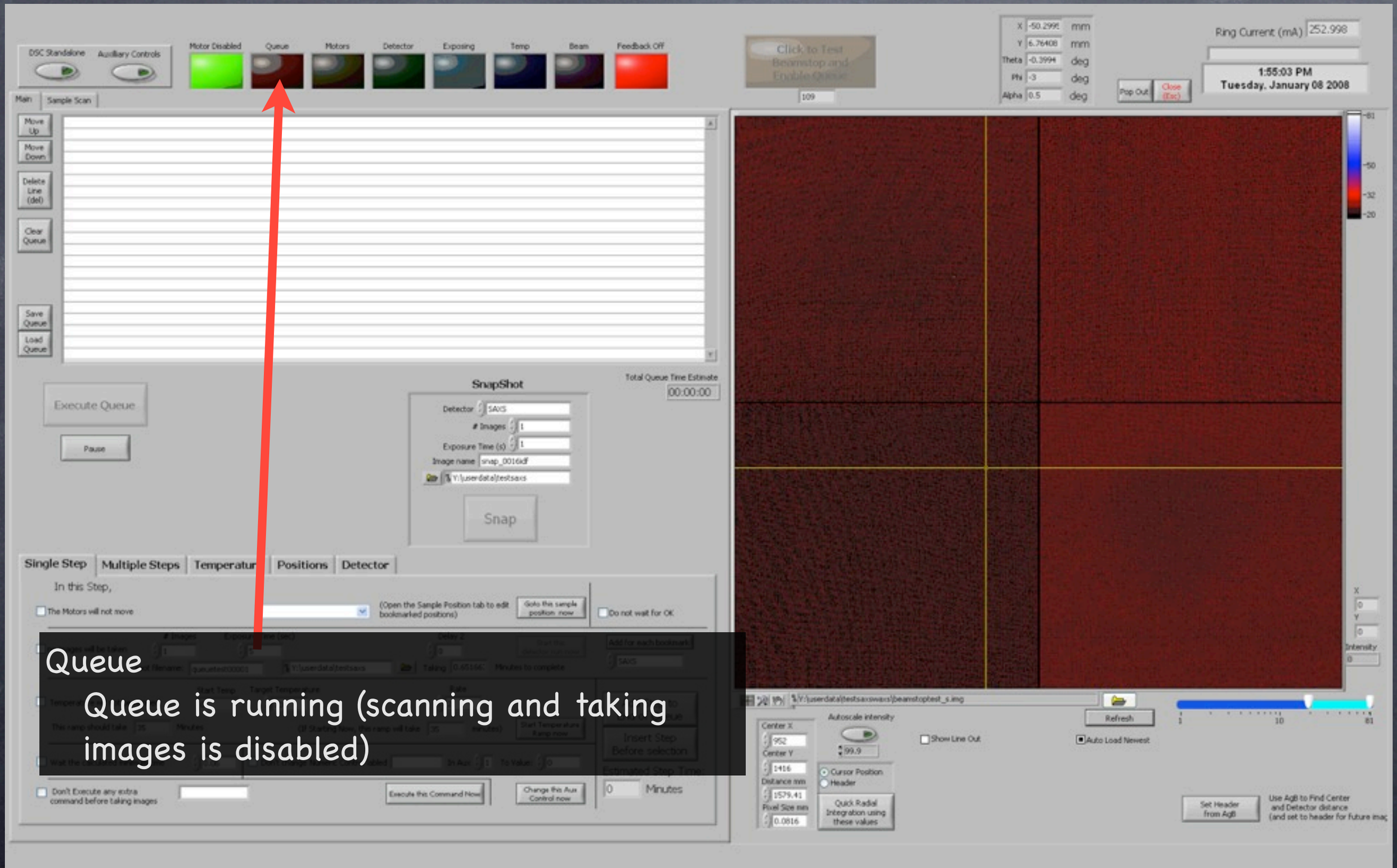


Control Lights
(what's the program doing?)

Beamline Software



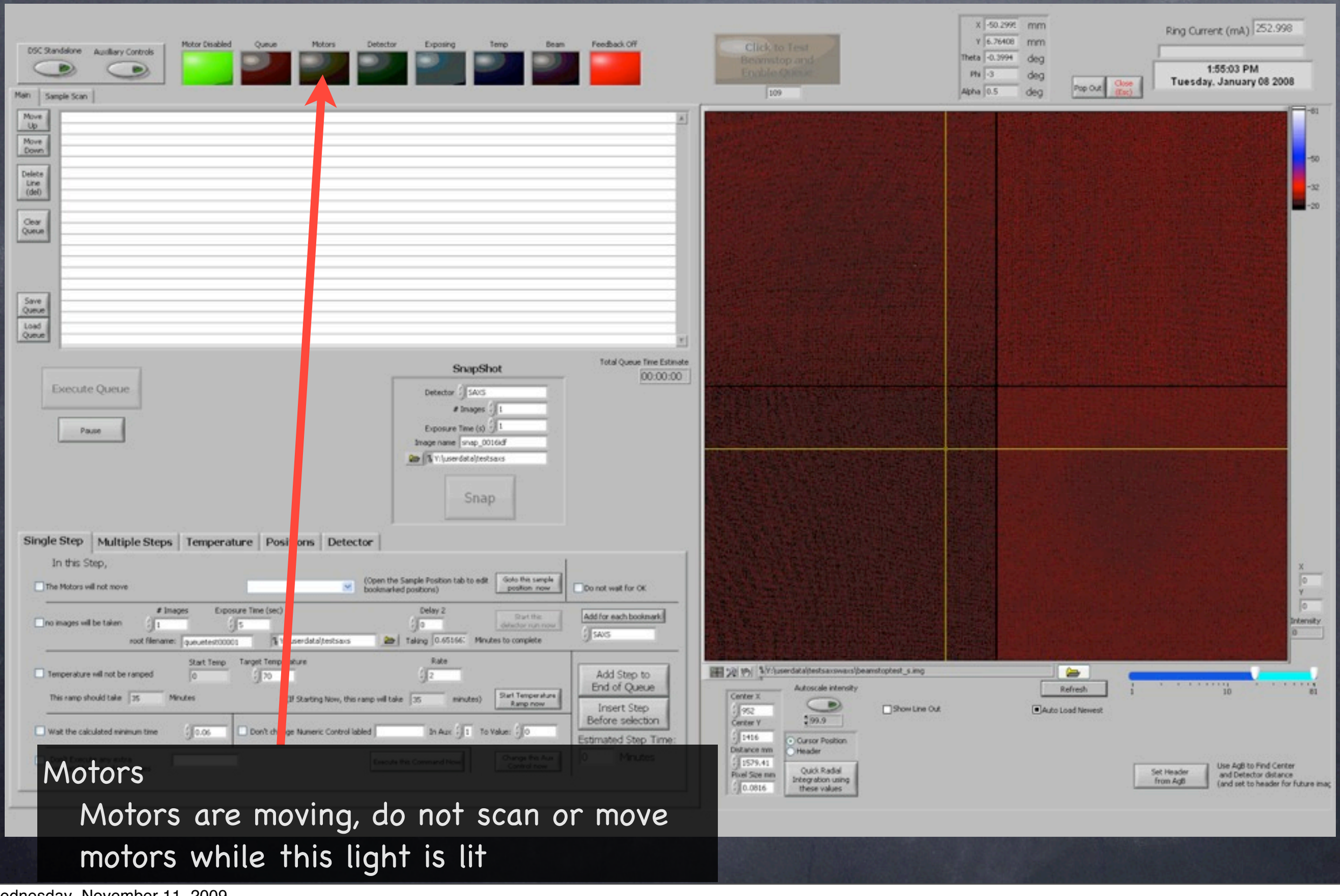
Beamline Software



Queue

Queue is running (scanning and taking images is disabled)

Beamline Software



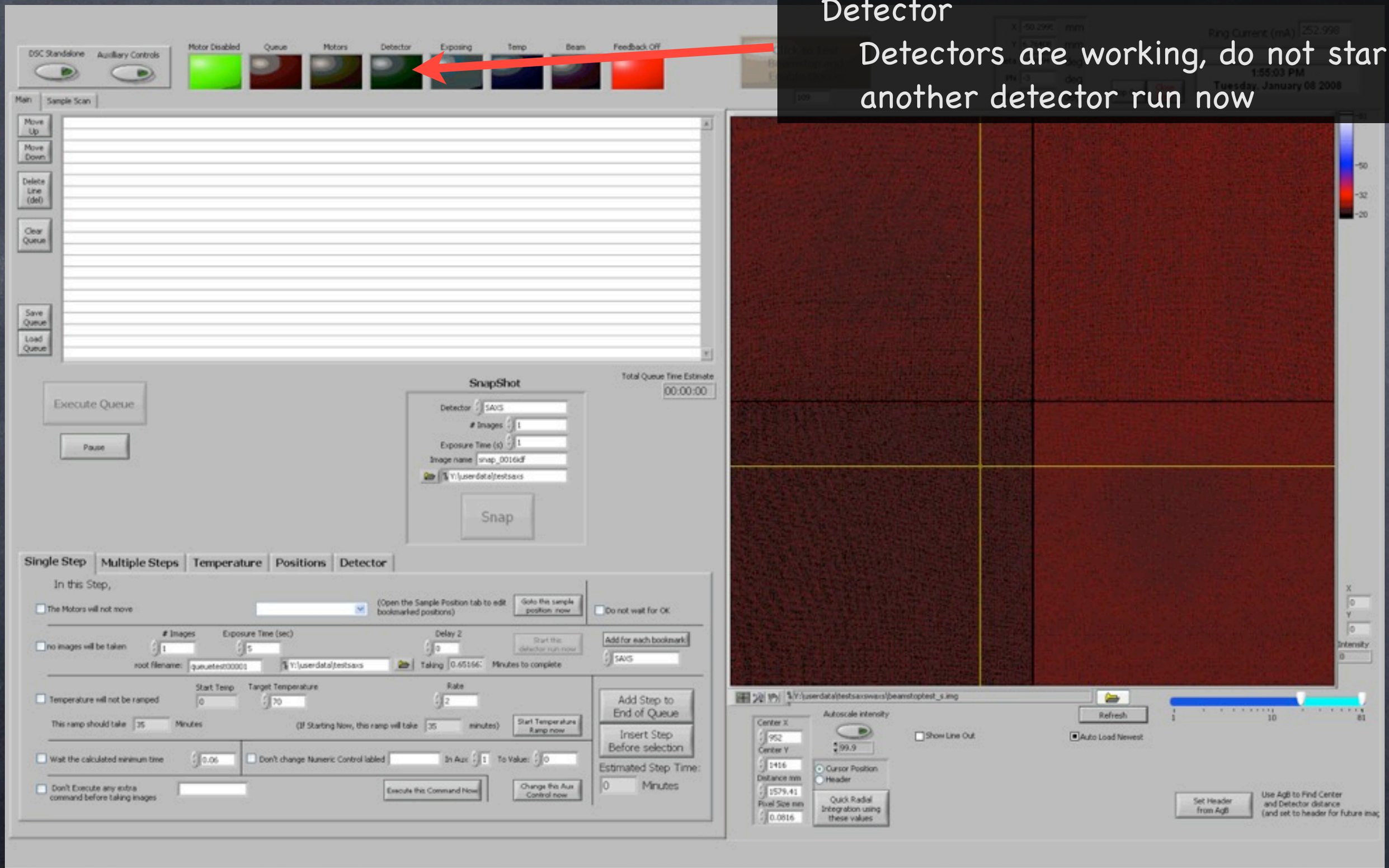
Motors

Motors are moving, do not scan or move motors while this light is lit

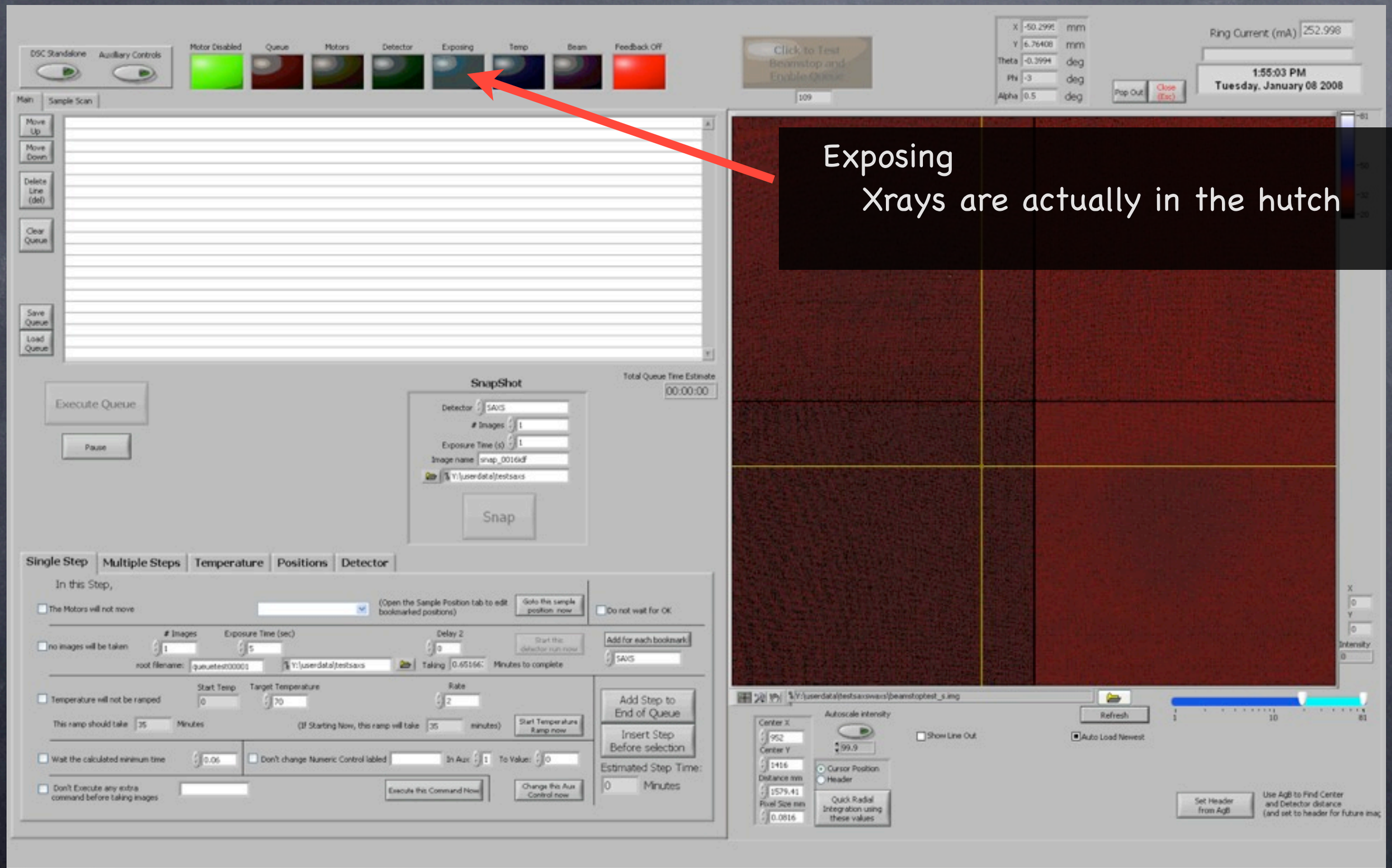
Beamline Software

Detector

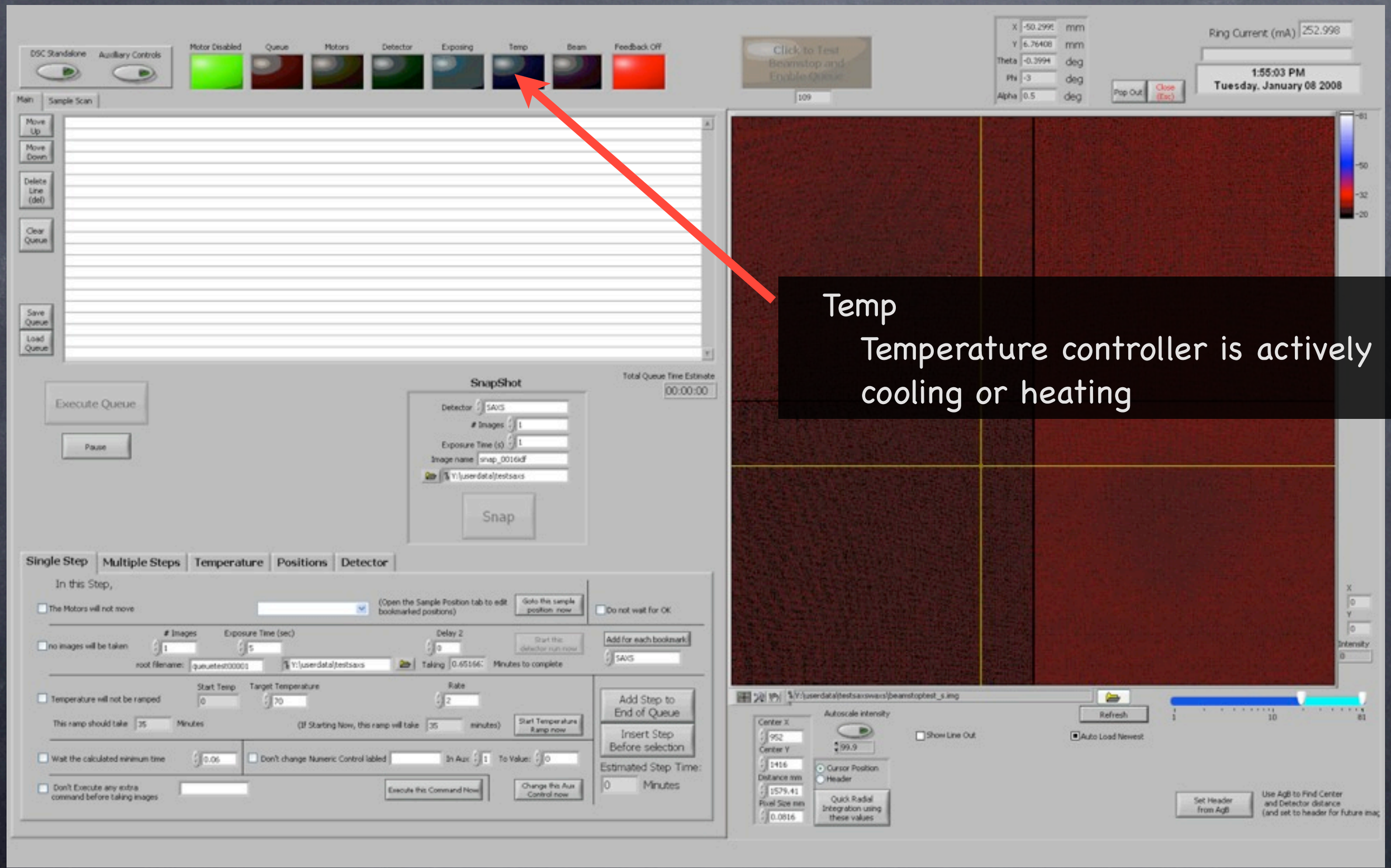
Detectors are working, do not start another detector run now



Beamline Software



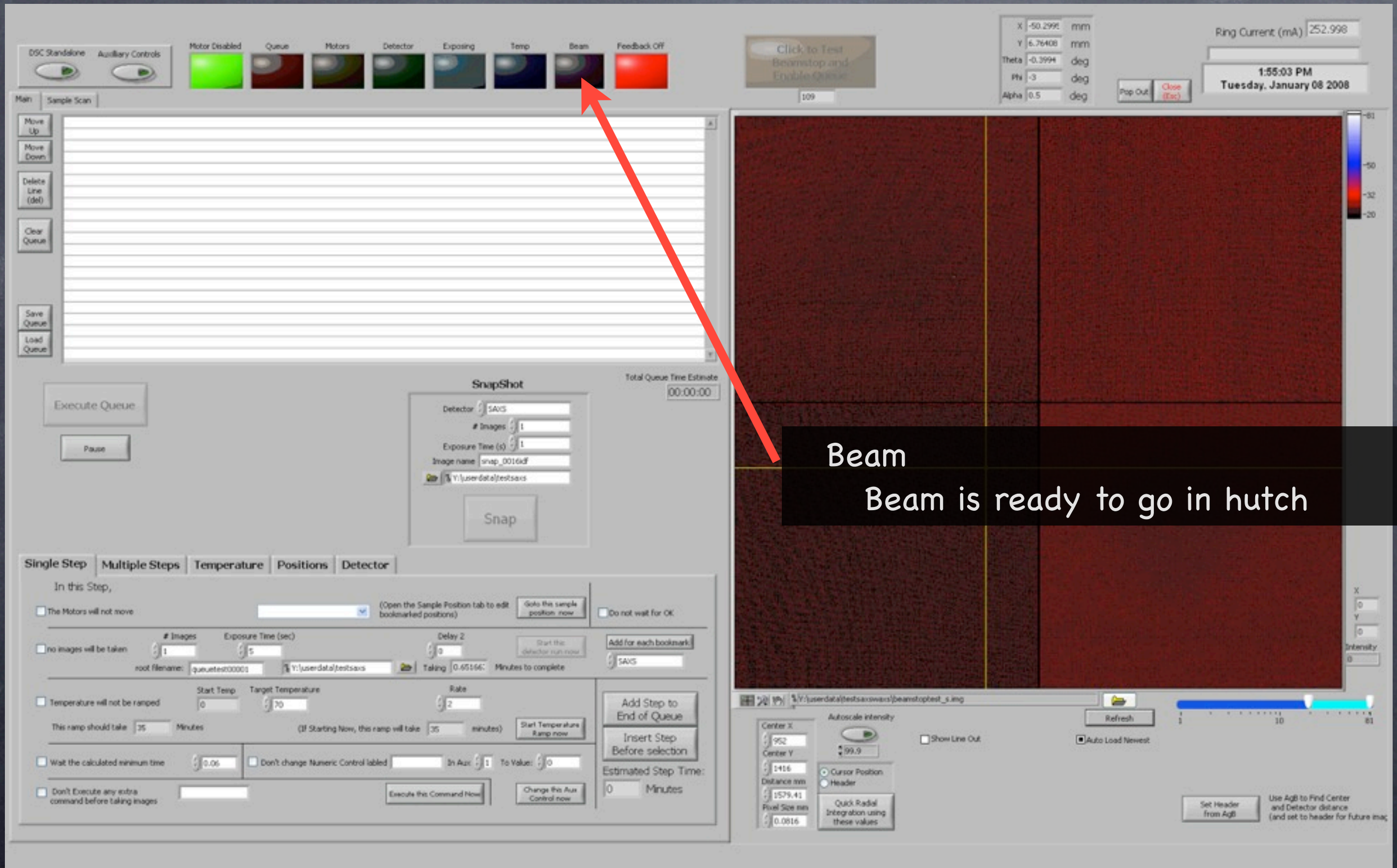
Beamline Software



Temp

Temperature controller is actively cooling or heating

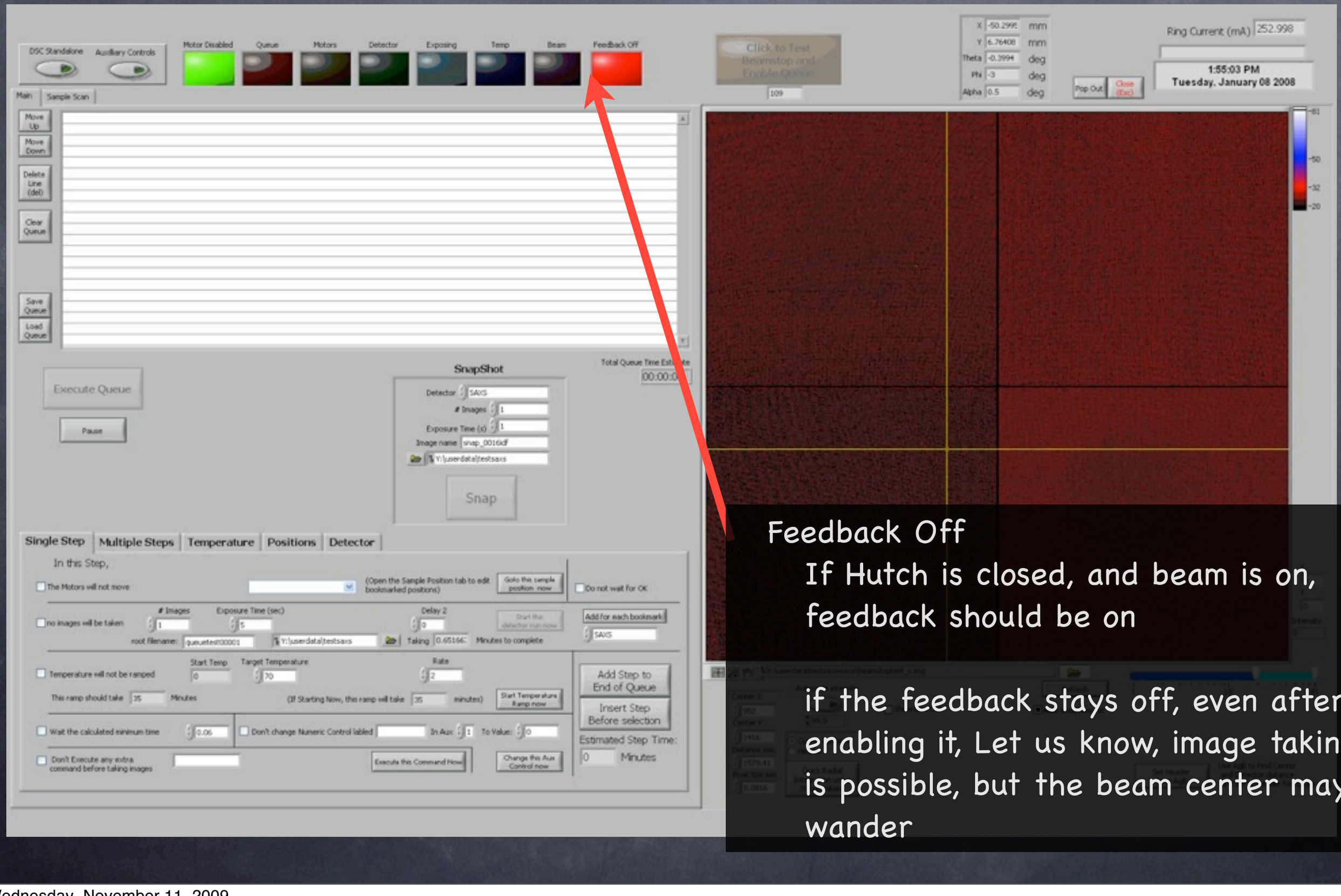
Beamline Software



Beam

Beam is ready to go in hutch

Beamline Software

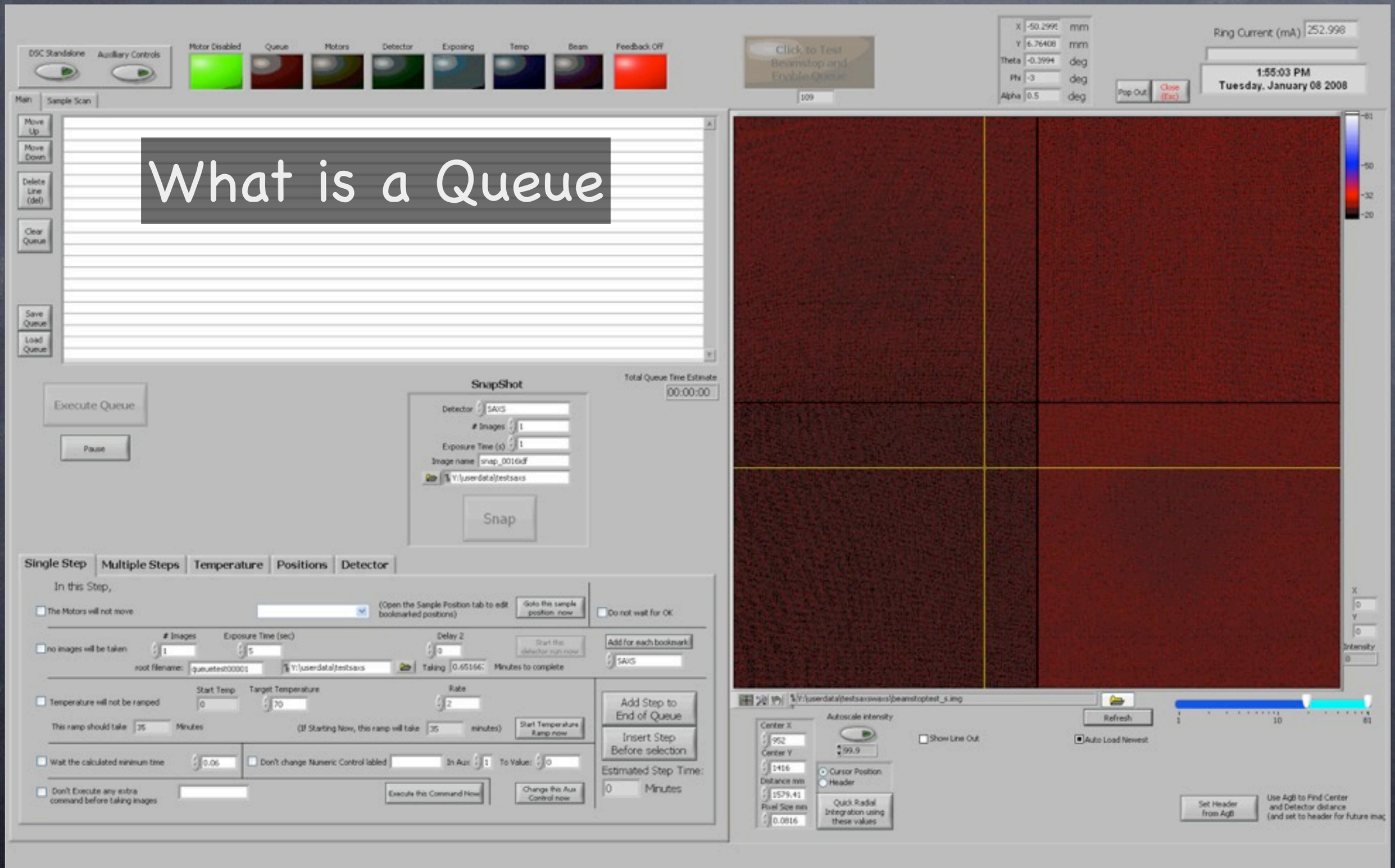


Feedback Off

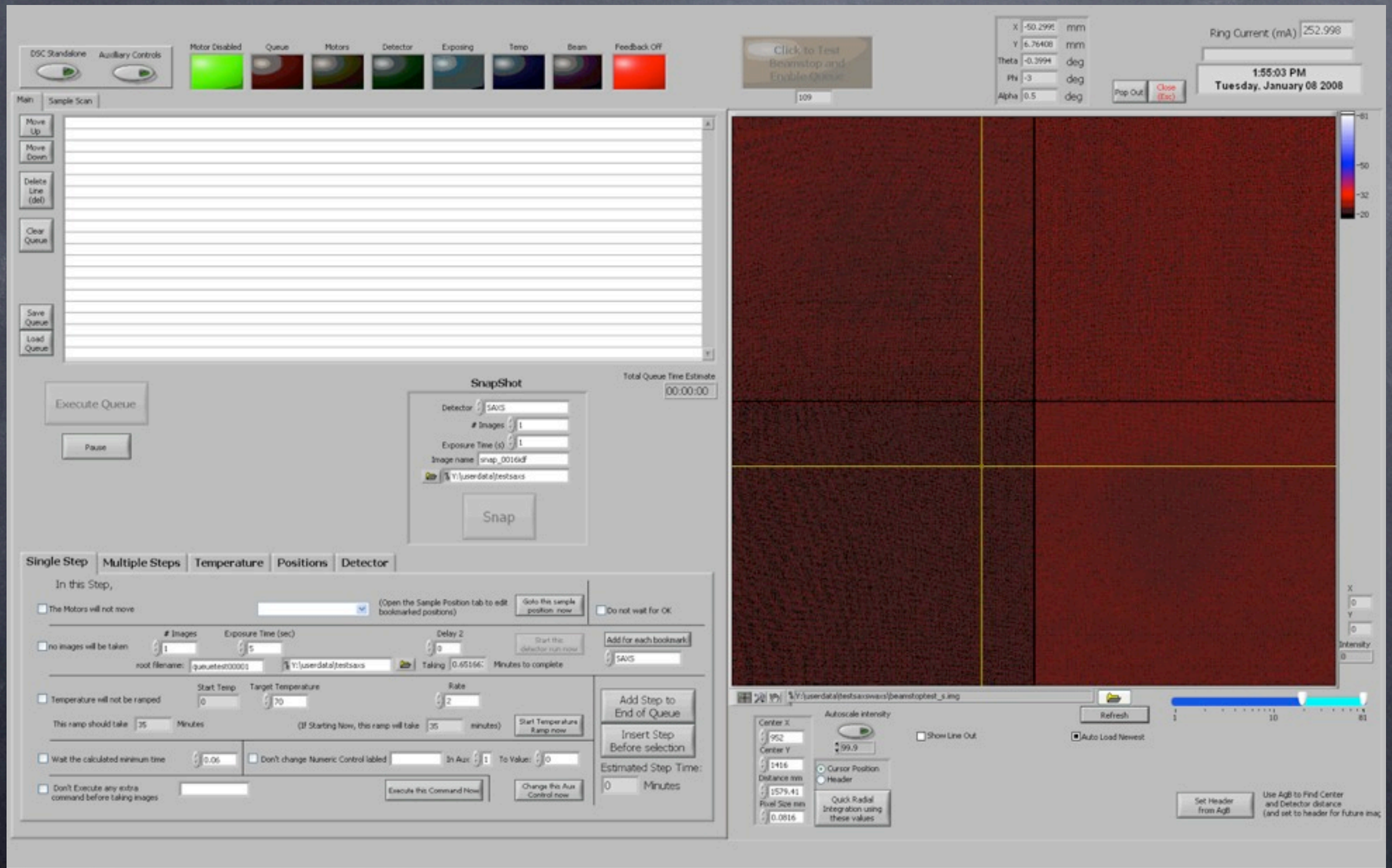
If Hutch is closed, and beam is on, feedback should be on

if the feedback stays off, even after enabling it, Let us know, image taking is possible, but the beam center may wander

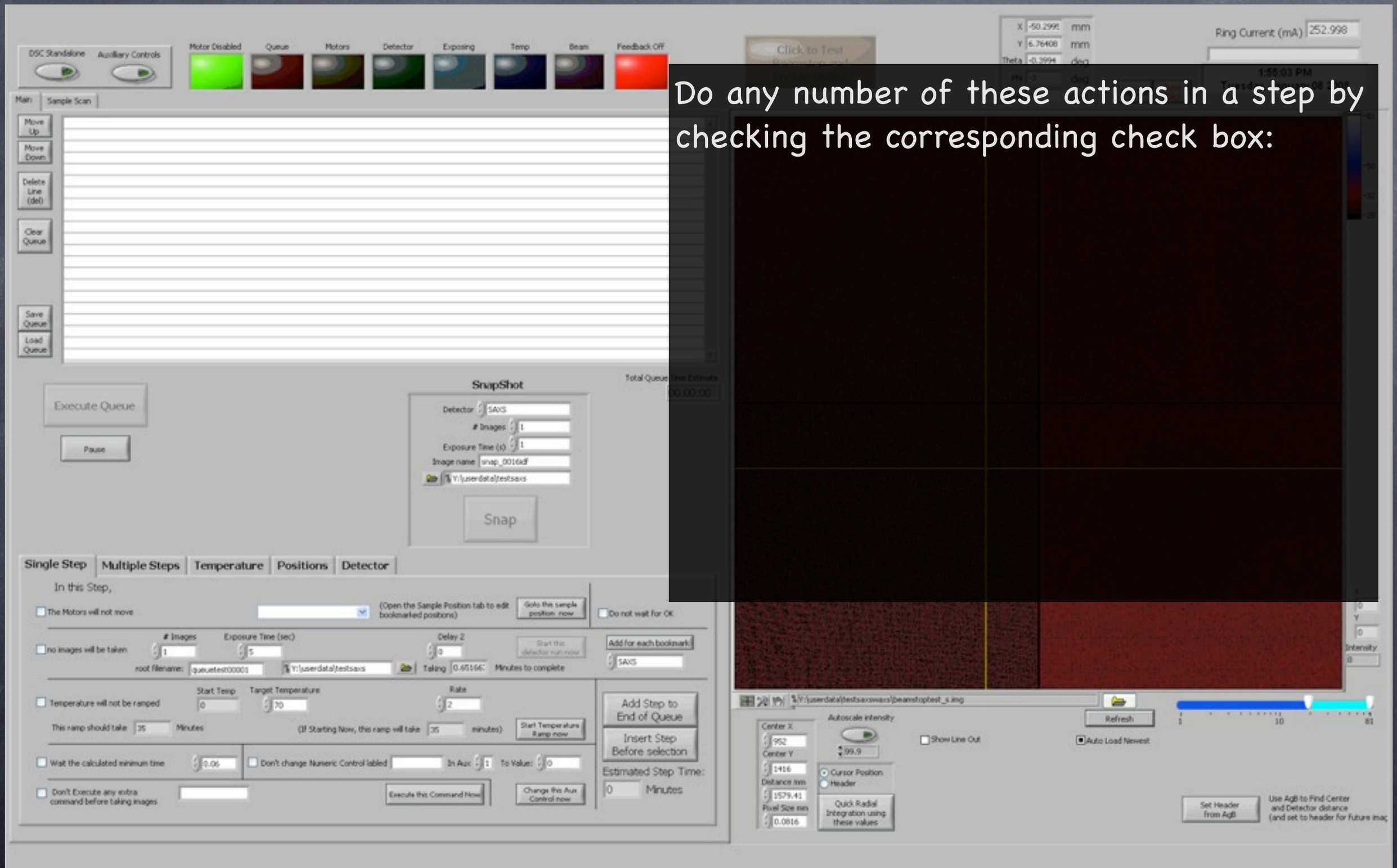
Beamline Software



Beamline Software

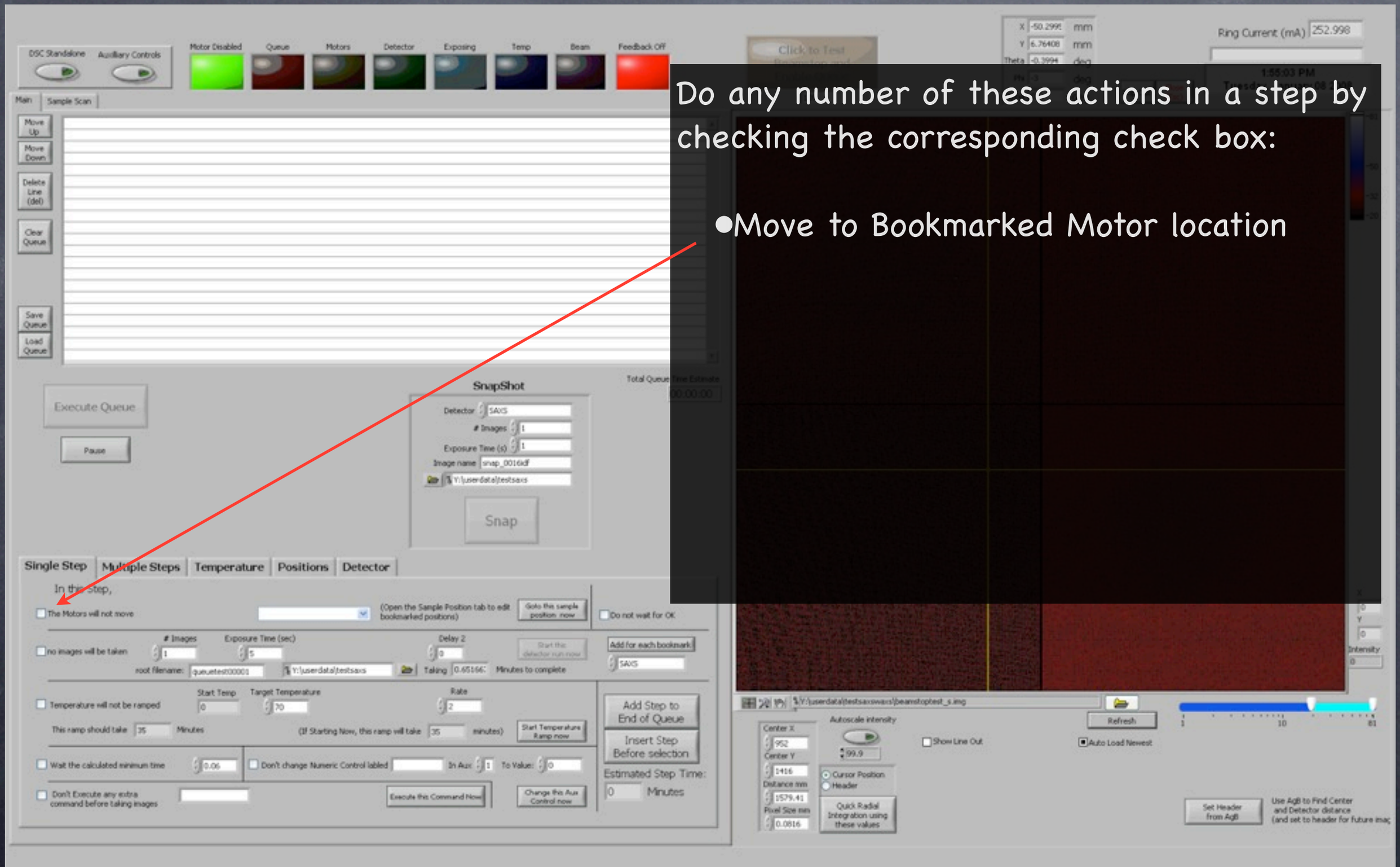


Beamline Software

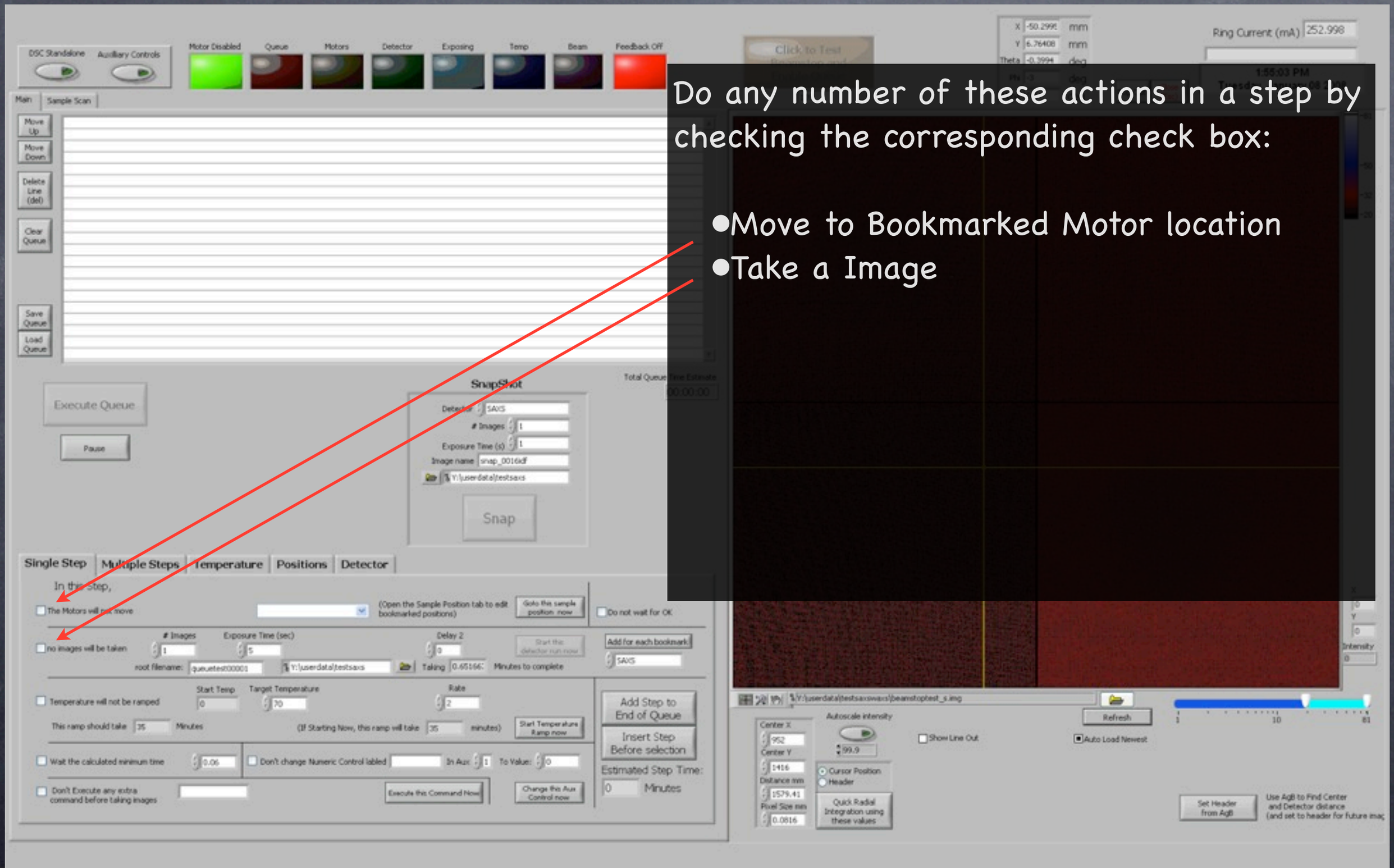


Do any number of these actions in a step by checking the corresponding check box:

Beamline Software



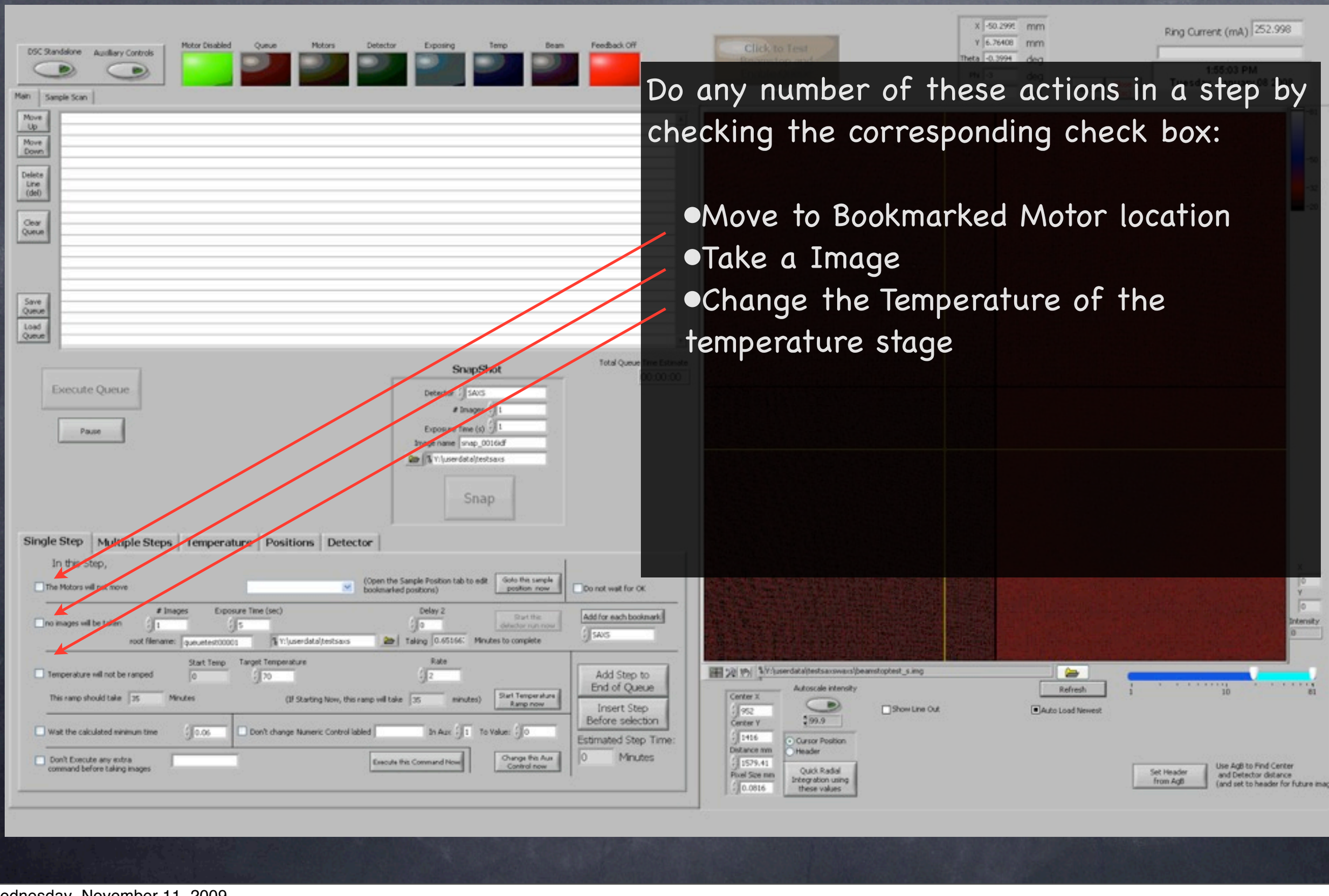
Beamline Software



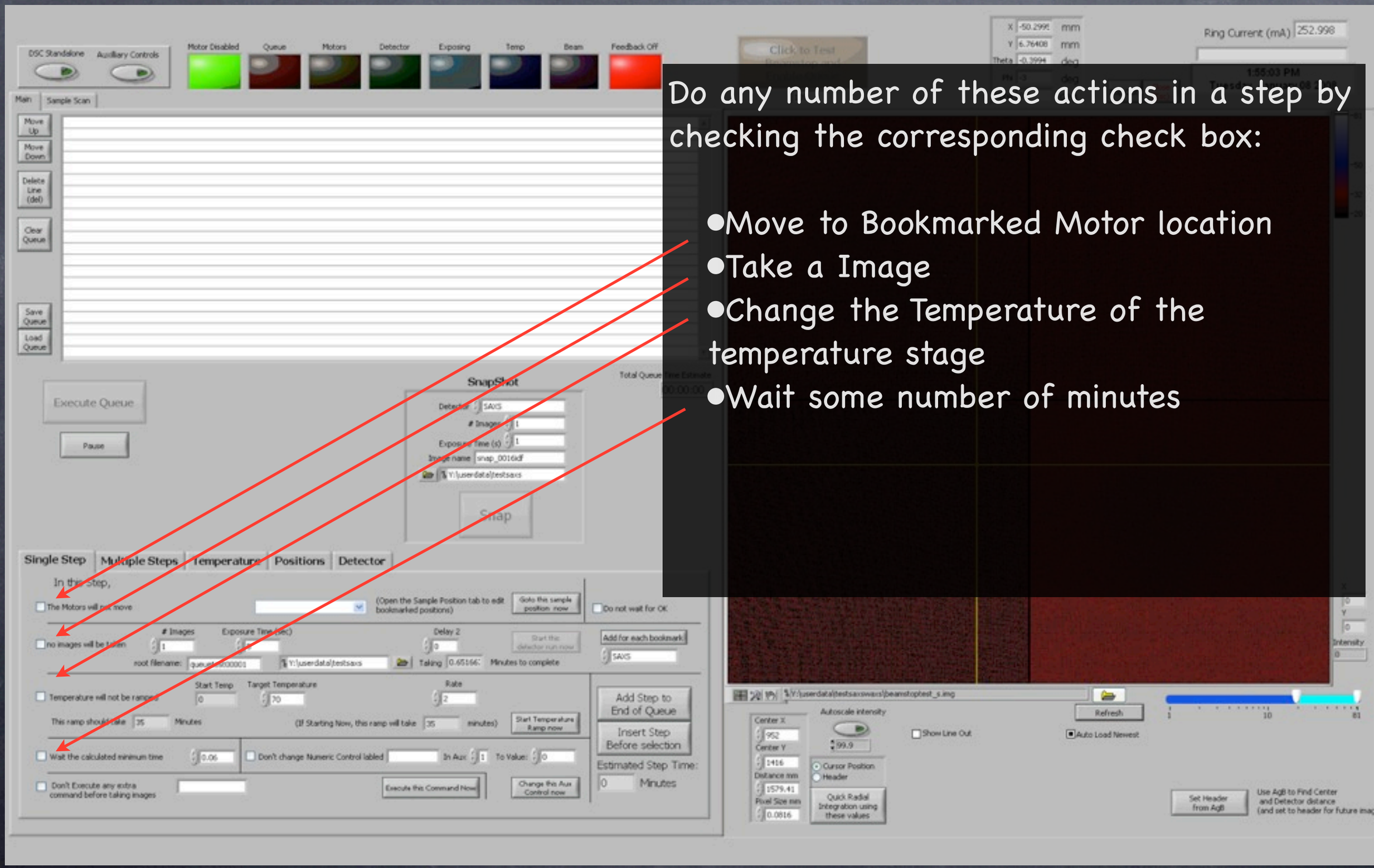
Do any number of these actions in a step by checking the corresponding check box:

- Move to Bookmarked Motor location
- Take a Image

Beamline Software



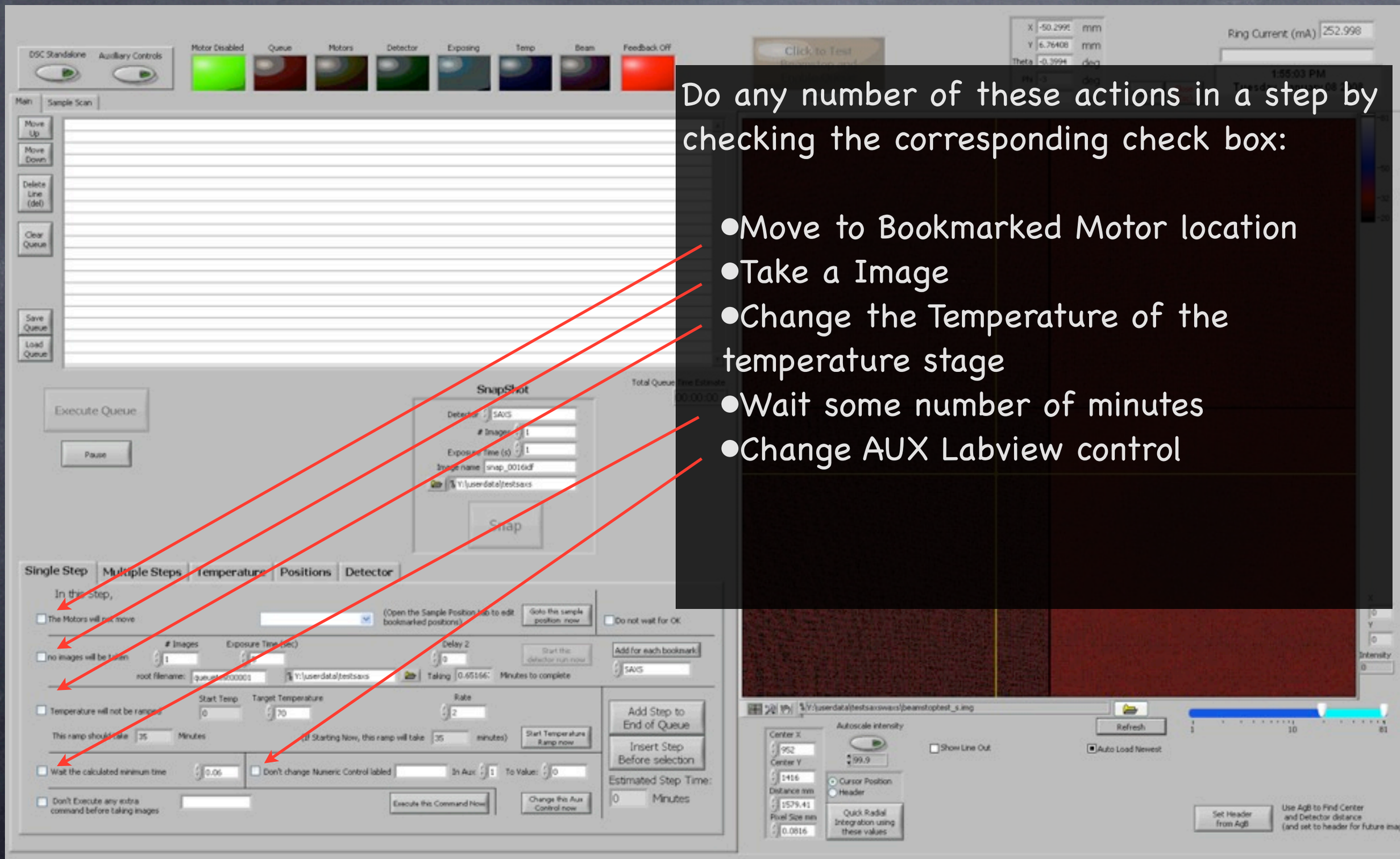
Beamline Software



Do any number of these actions in a step by checking the corresponding check box:

- Move to Bookmarked Motor location
- Take a Image
- Change the Temperature of the temperature stage
- Wait some number of minutes

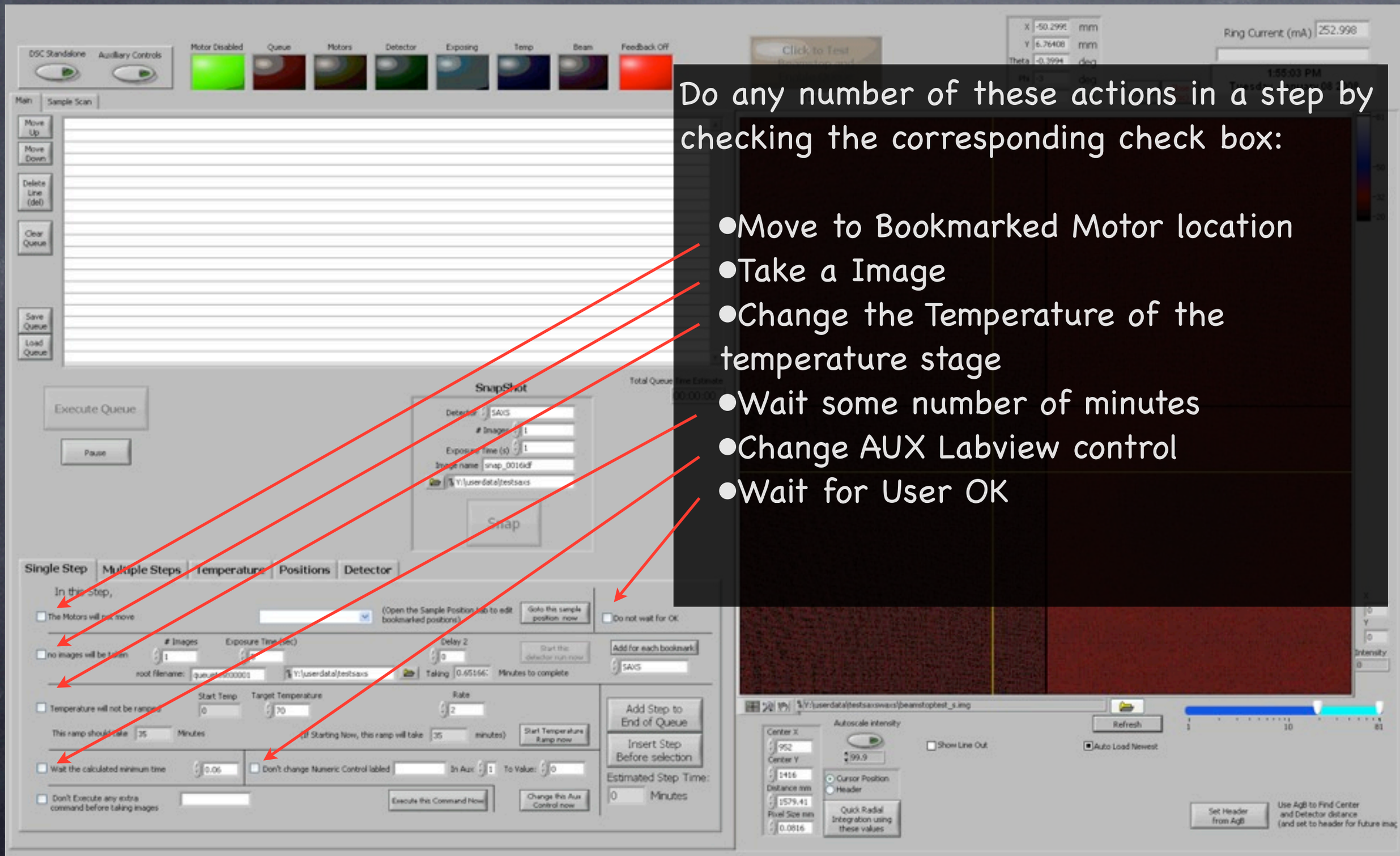
Beamline Software



Do any number of these actions in a step by checking the corresponding check box:

- Move to Bookmarked Motor location
- Take a Image
- Change the Temperature of the temperature stage
- Wait some number of minutes
- Change AUX Labview control

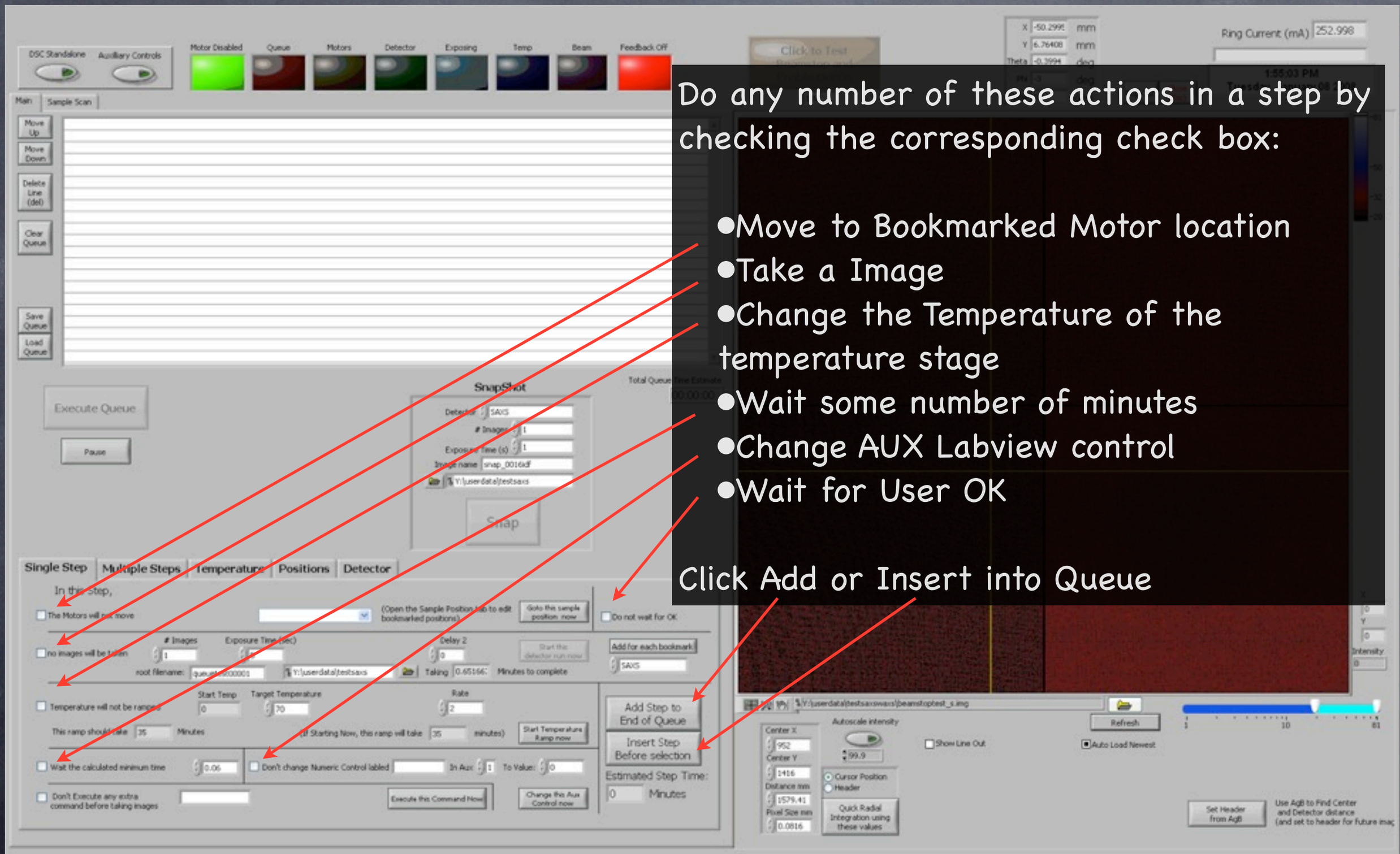
Beamline Software



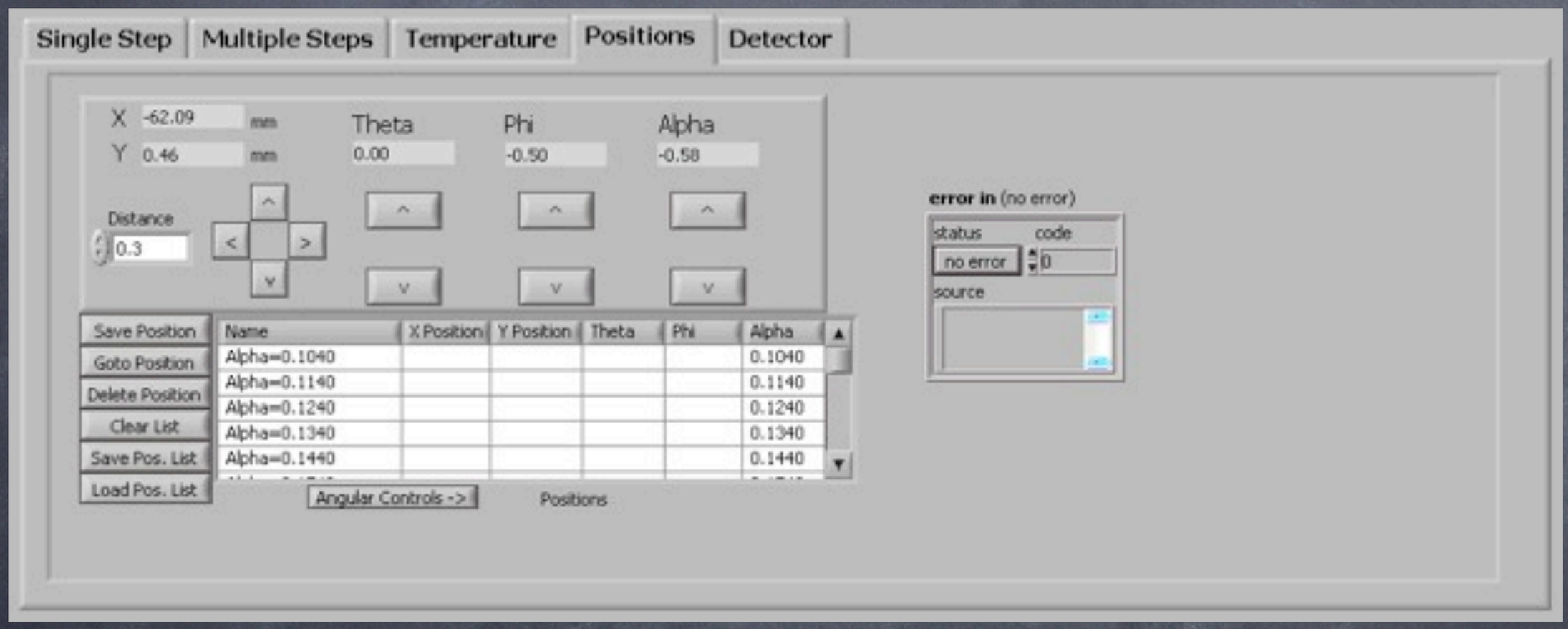
Do any number of these actions in a step by checking the corresponding check box:

- Move to Bookmarked Motor location
- Take a Image
- Change the Temperature of the temperature stage
- Wait some number of minutes
- Change AUX Labview control
- Wait for User OK

Beamline Software

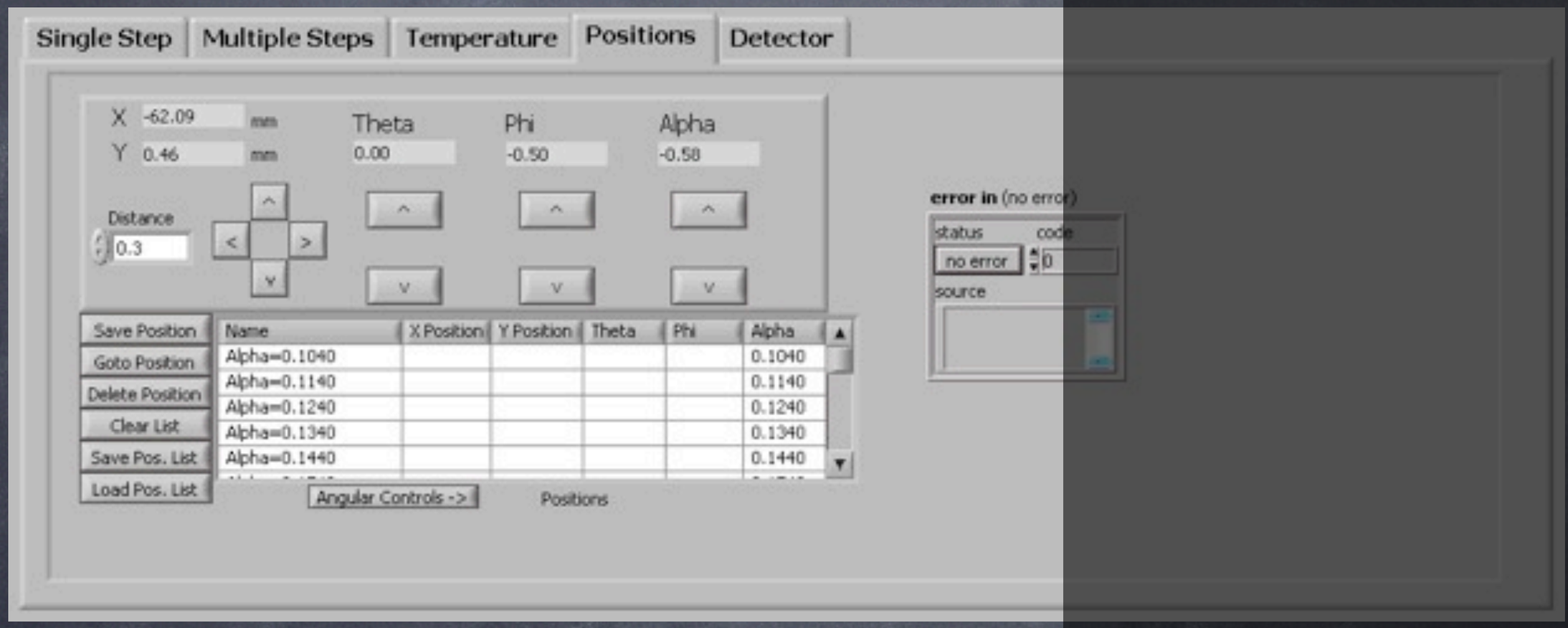


Beamline Software



Beamline Software

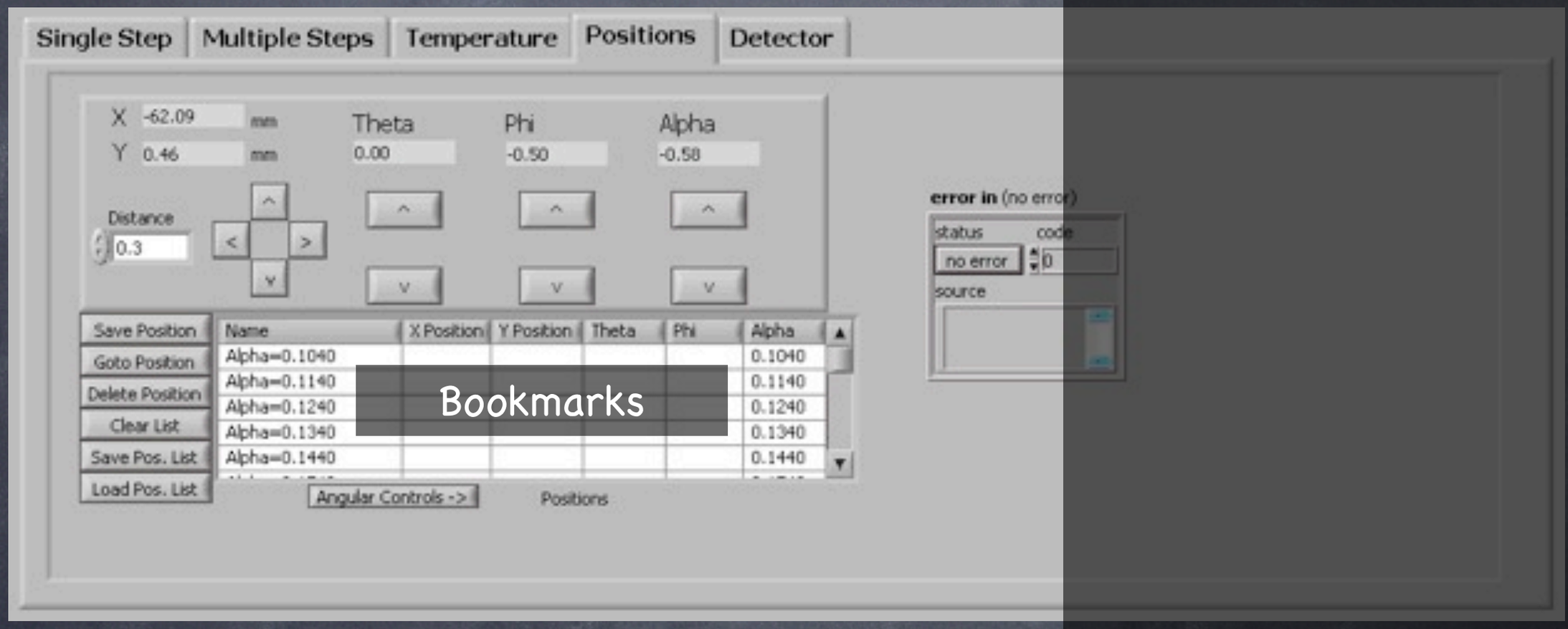
Motor control



Beamline Software

Motor control

Motor control is done through bookmarks

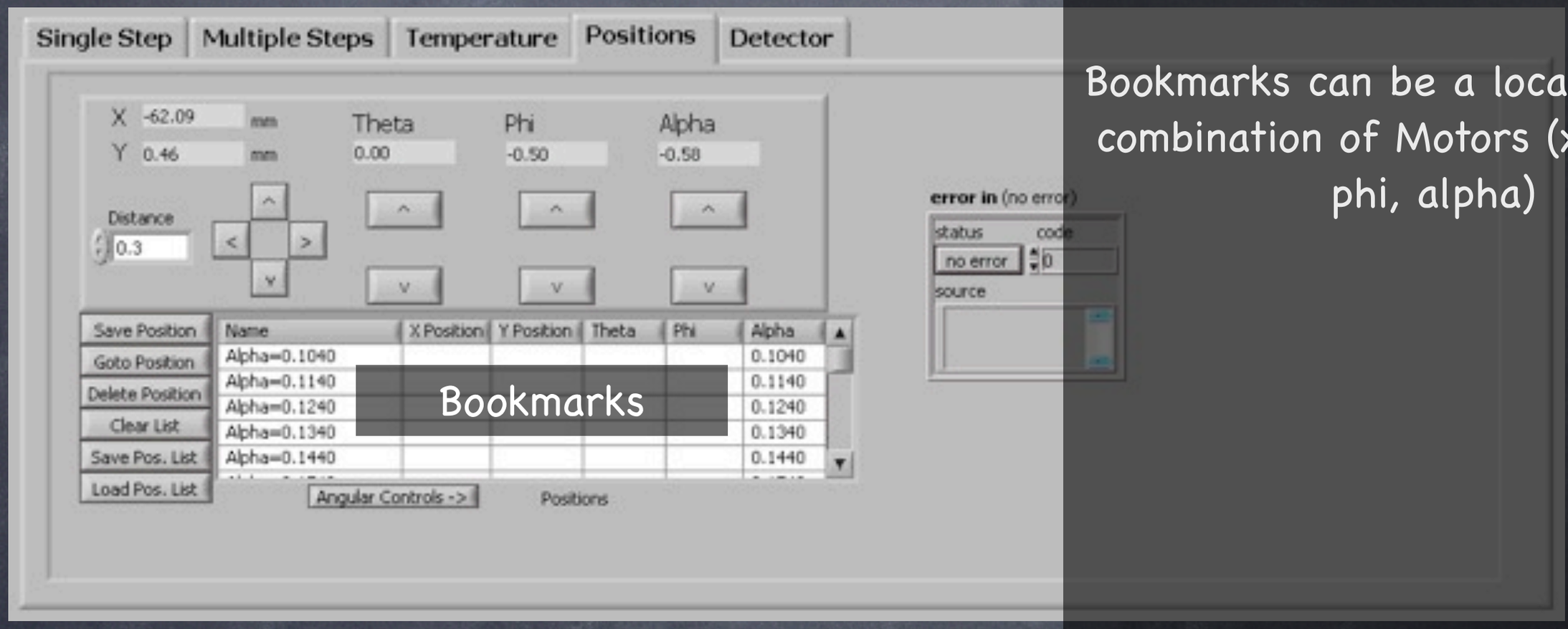


Beamline Software

Motor control

Motor control is done through bookmarks

Bookmarks can be a location of any combination of Motors (x, y, theta, phi, alpha)



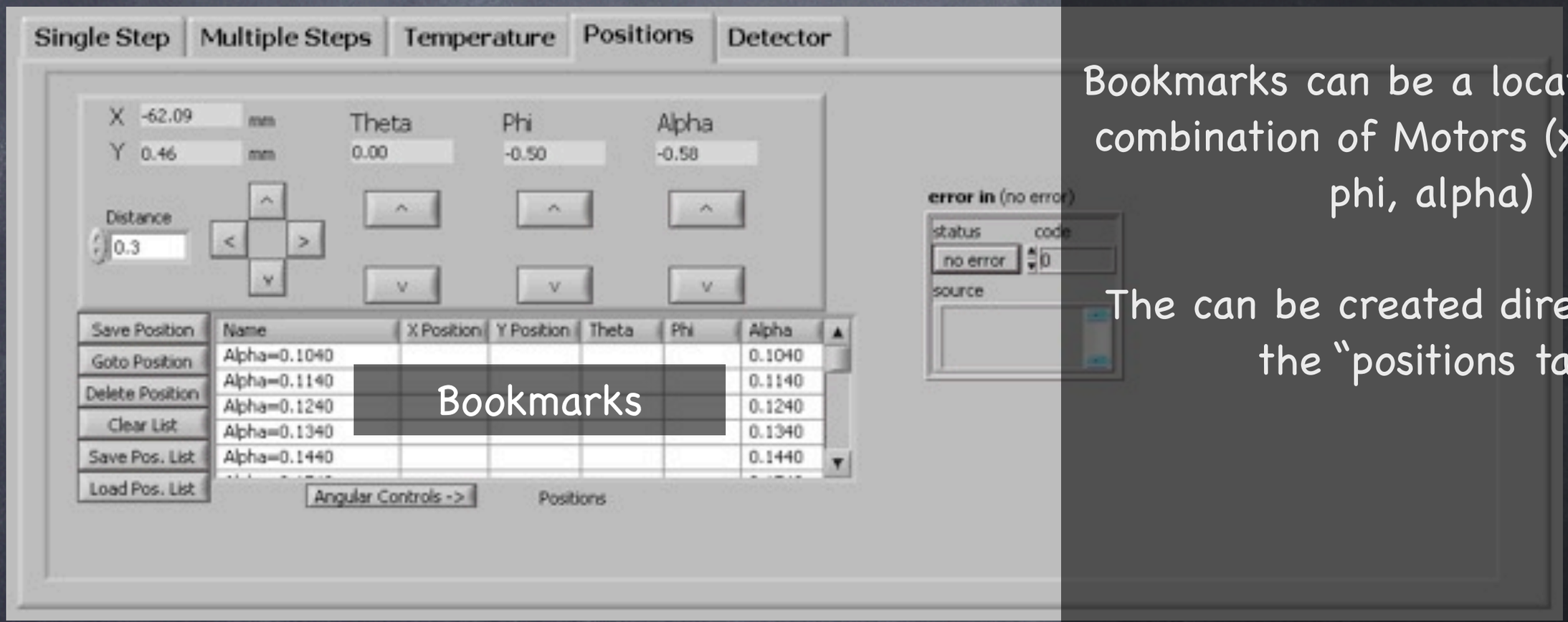
Beamline Software

Motor control

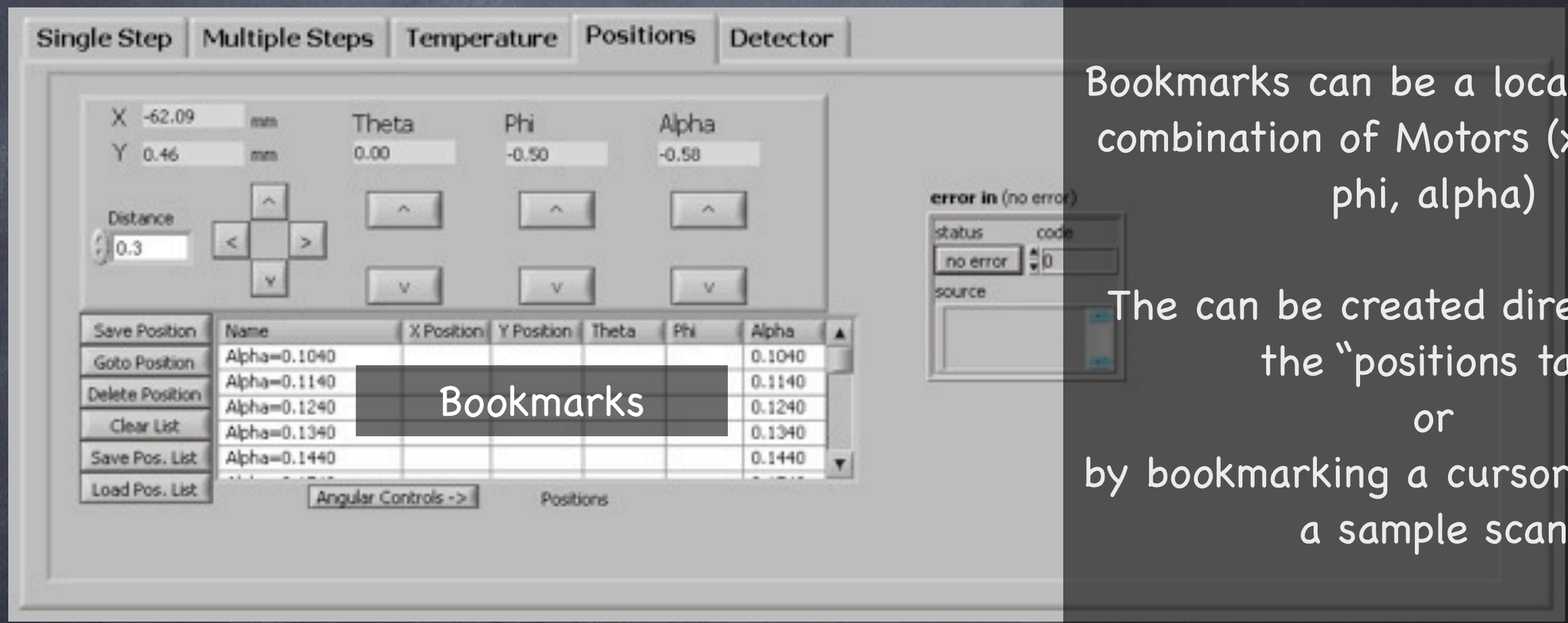
Motor control is done through bookmarks

Bookmarks can be a location of any combination of Motors (x, y, theta, phi, alpha)

The can be created directly from the "positions tab"



Beamline Software



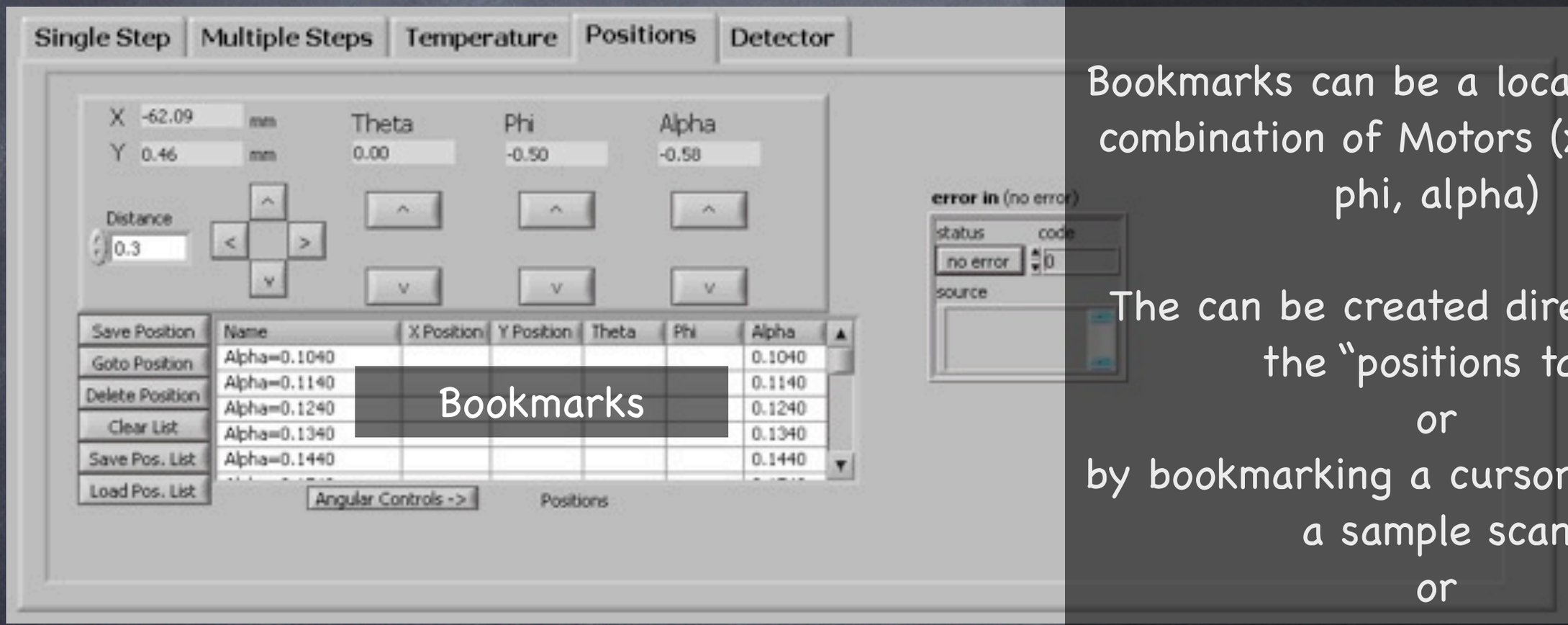
Motor control

Motor control is done through bookmarks

Bookmarks can be a location of any combination of Motors (x, y, theta, phi, alpha)

The can be created directly from the "positions tab"
or
by bookmarking a cursor location in a sample scan

Beamline Software



Motor control

Motor control is done through bookmarks

Bookmarks can be a location of any combination of Motors (x, y, theta, phi, alpha)

The can be created directly from the "positions tab"
or
by bookmarking a cursor location in a sample scan
or
automatically through "multiple steps" tab

Beamline Software

Beamline Software

Multiple steps, (Queue Builder)

Beamline Software

Multiple steps, (Queue Builder)

Dimensions : 1 or 2 dimensions

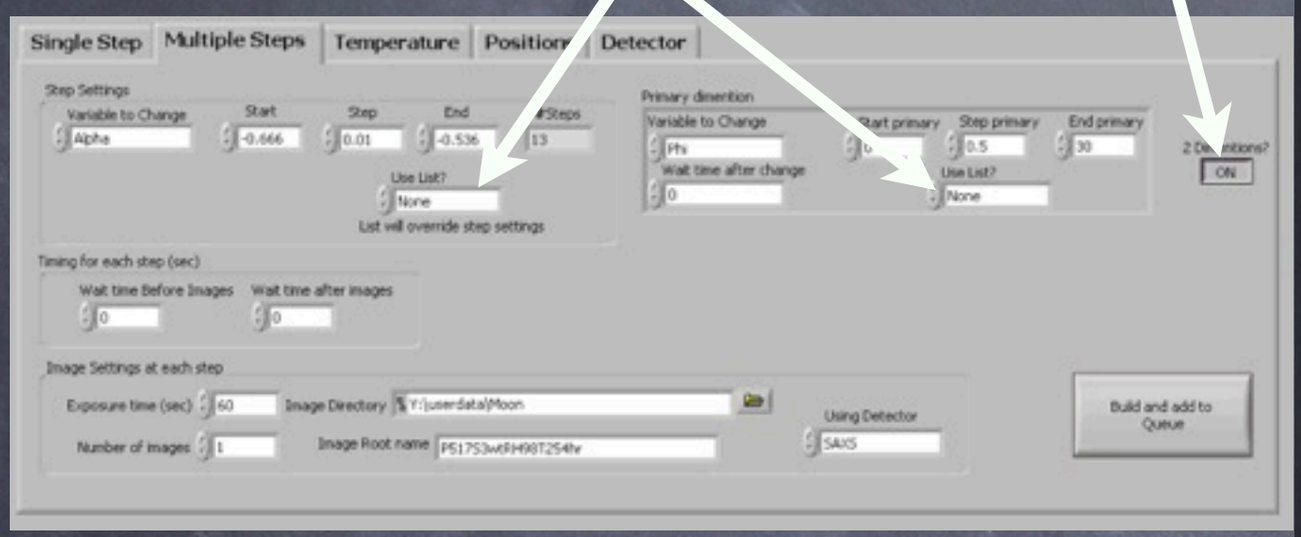
Pick Dimension

Beamline Software

Multiple steps, (Queue Builder)

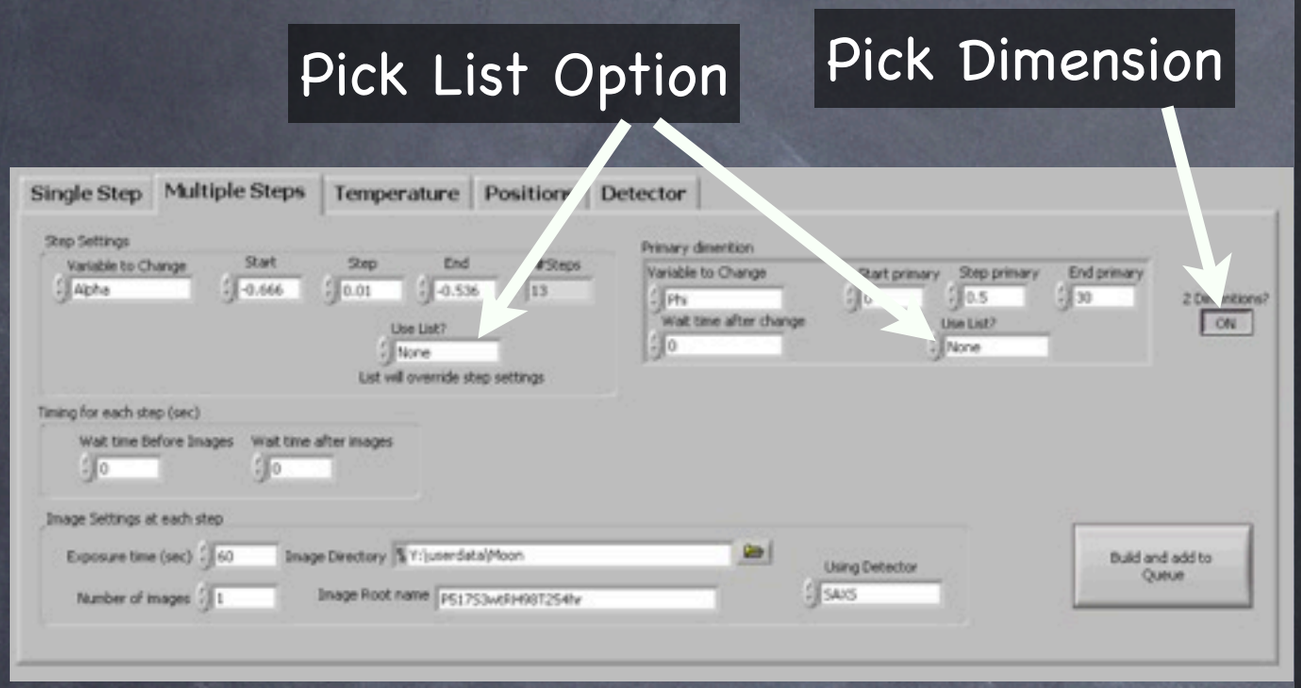
Pick List Option

Pick Dimension



Dimensions : 1 or 2 dimensions
For each dimension, the List option determines how the program will build the queue. The Options are:

Beamline Software



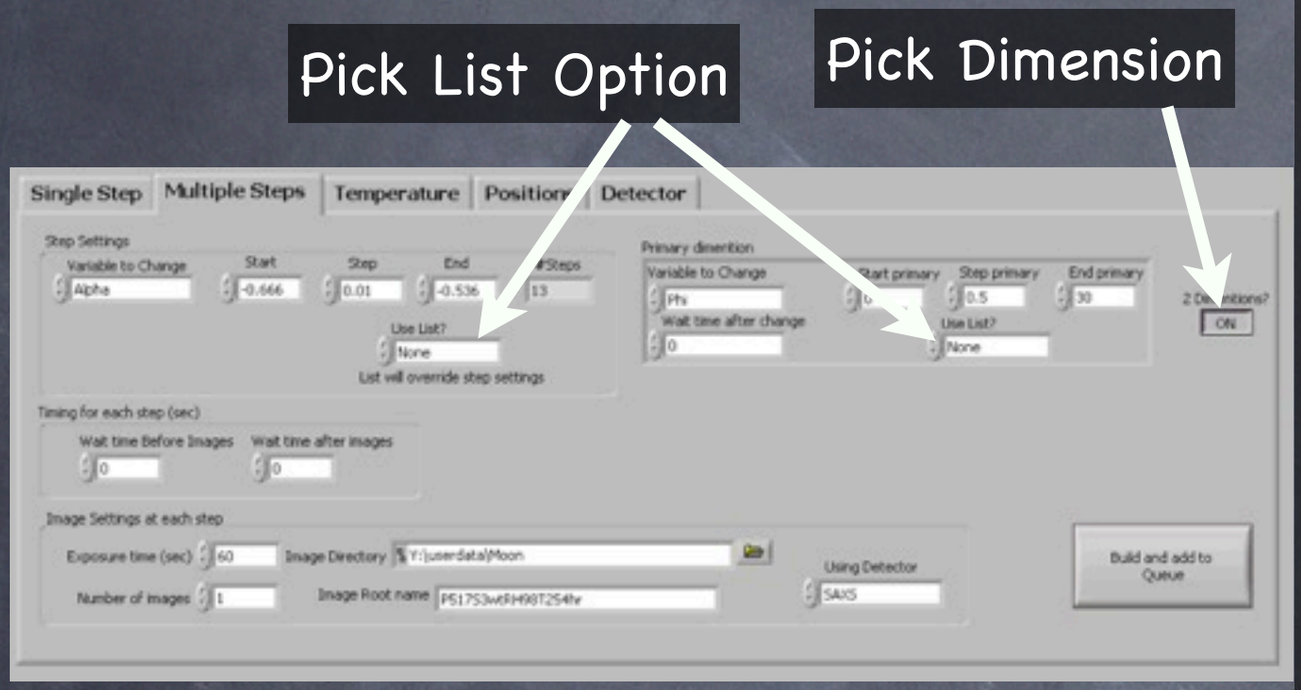
Multiple steps, (Queue Builder)

Dimensions : 1 or 2 dimensions

For each dimension, the List option determines how the program will build the queue. The Options are:

- Motor List : Use the list of Bookmarked motor Locations from positions tab

Beamline Software



Multiple steps, (Queue Builder)

Dimensions : 1 or 2 dimensions

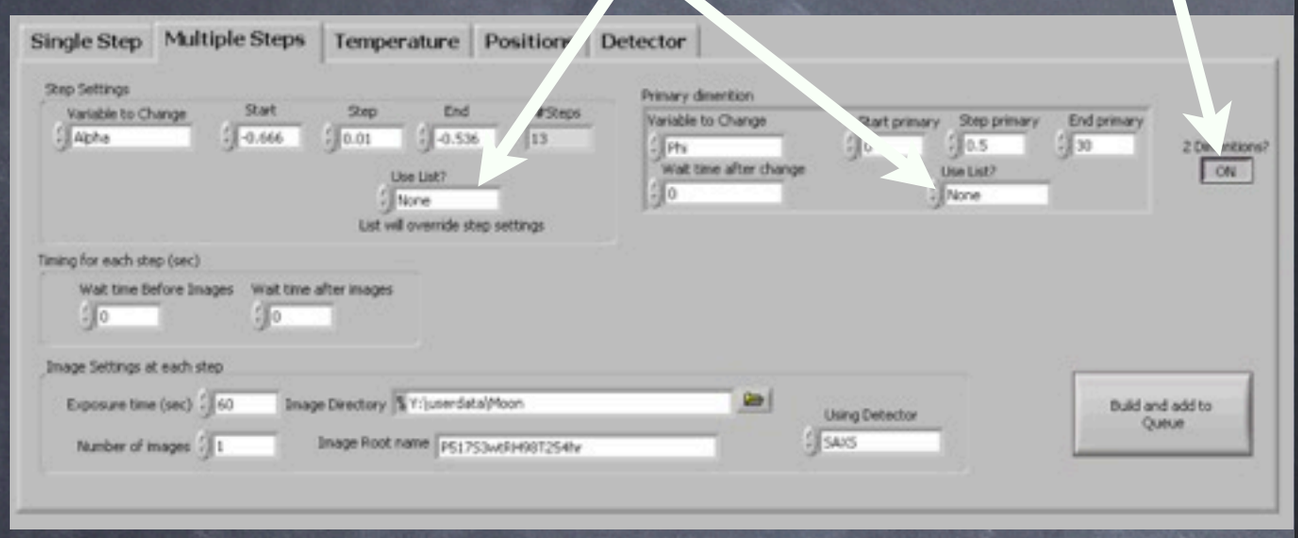
For each dimension, the List option determines how the program will build the queue. The Options are:

- Motor List : Use the list of Bookmarked motor Locations from positions tab
- Temperature List : Prompts for a file which contains columns of Temperature, rate to ramp, and wait time at that temperature, all separated by tabs

Beamline Software

Pick List Option

Pick Dimension



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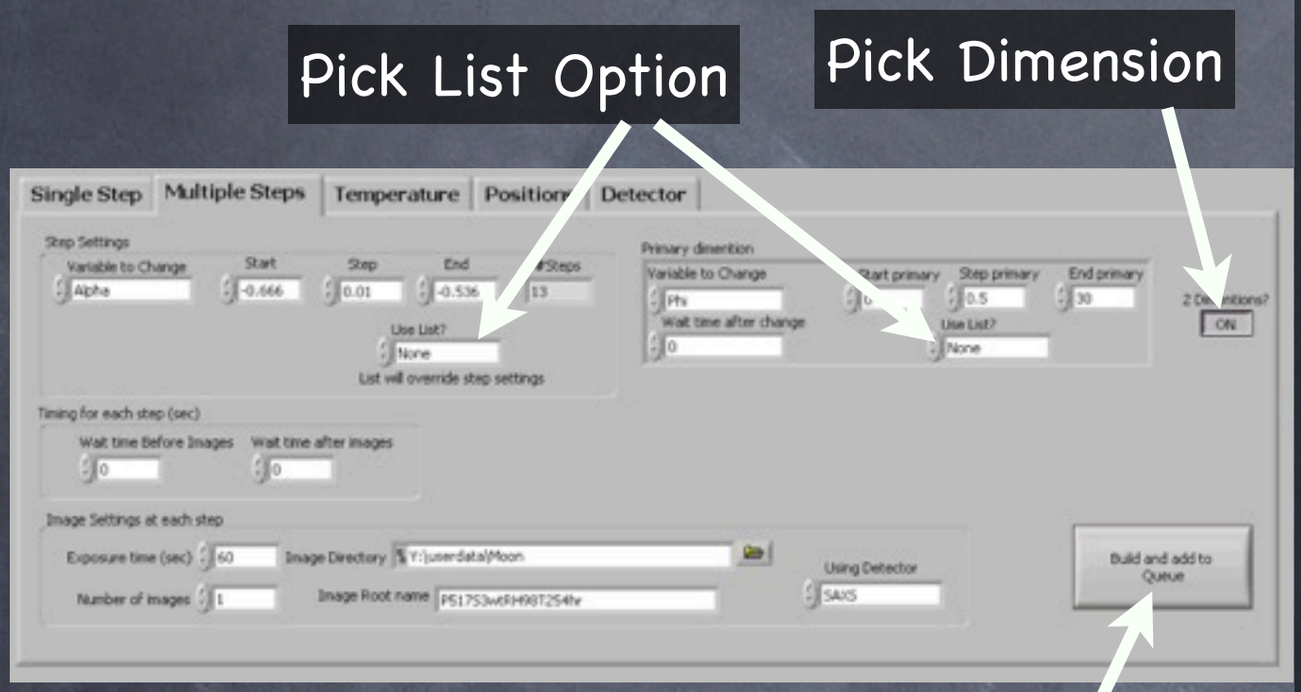
- None : Increment whichever variable from "start" to "stop", moving by "increment" at each step

Beamline Software



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- None : Increment whichever variable from "start" to "stop", moving by "increment" at each step

The Image root name will be appended for each step

Beamline Software

Beamline Software

Handling Errors

Beamline Software

Handling Errors

Do NOT just continue through an error on a Beamstop test, without repeating the test. This can cause a false negative and allow you to hurt the detectors

Beamline Software

Handling Errors

Do NOT just continue through an error on a Beamstop test, without repeating the test. This can cause a false negative and allow you to hurt the detectors

In any other situation, continuing though an error is fine, although this is an indication that something may be not working correctly, and your data is suspect

Beamline Software

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If an error occurs more than once

Beamline Software

Handling Errors

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If an error occurs more than once during an image

- First restart detector servers (see next slide)

Beamline Software

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If an error occurs more than once during an image

- First restart detector servers (see next slide)
- If that doesn't help, restart labview (save positions and queue to file first and ctrl-alt-del and end Labview process)

Beamline Software

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When moving a motor Make sure

- Motors are enabled

Beamline Software

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- Call Eliot

When moving a motor Make sure

- Motors are enabled
- Motor path is not obstructed

Beamline Software

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- Call Eliot

When moving a motor Make sure

- Motors are enabled
- Motor path is not obstructed
- Motors are not at end of travel

Beamline Software

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- Call Eliot

When moving a motor Make sure

- Motors are enabled
- Motor path is not obstructed
- Motors are not at end of travel
- 7.3.3 labview on left-most monitor doesn't have any errors

Beamline Software

Handling Errors

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When moving a motor Make sure

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- Motors are not at end of travel
- 7.3.3 labview on left-most monitor doesn't have any errors
- Then Call Eliot

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- If that doesn't help, restart labview (save positions and queue to file first and ctrl-alt-del and end Labview process)
- Call Eliot

When moving a motor Make sure

- Motors are enabled
- Motor path is not obstructed
- Motors are not at end of travel
- 7.3.3 labview on left-most monitor doesn't have any errors
- Then Call Eliot

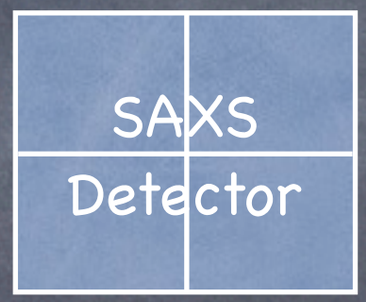
Otherwise for repeated errors, Write them down or leave them open and Call us

Beamline Software

ADSC Detector Schematic

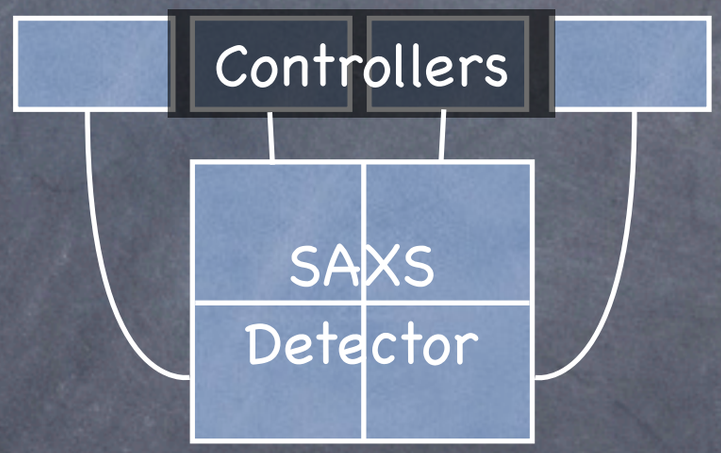
Beamline Software

ADSC Detector Schematic



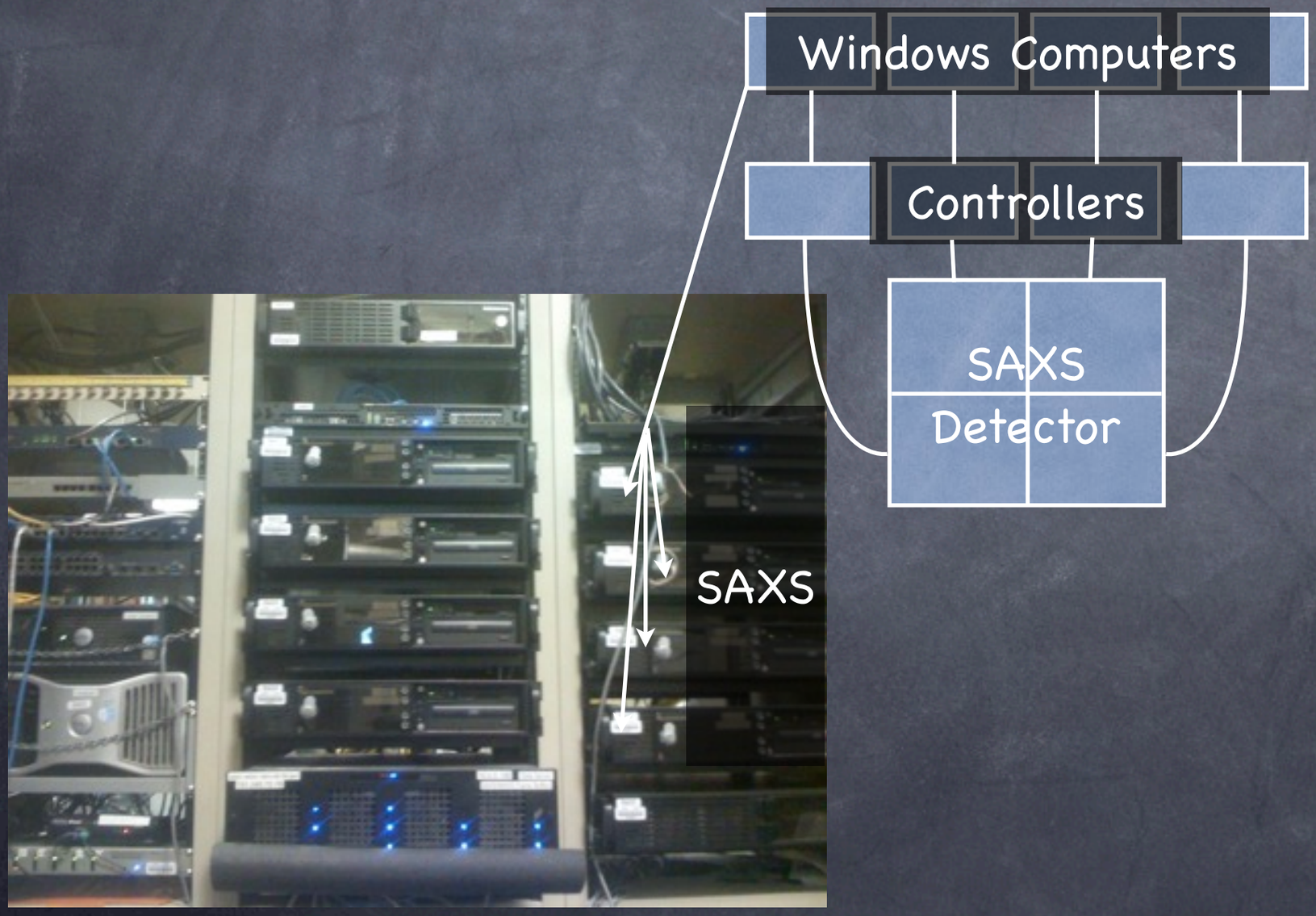
Beamline Software

ADSC Detector Schematic



Beamline Software

ADSC Detector Schematic

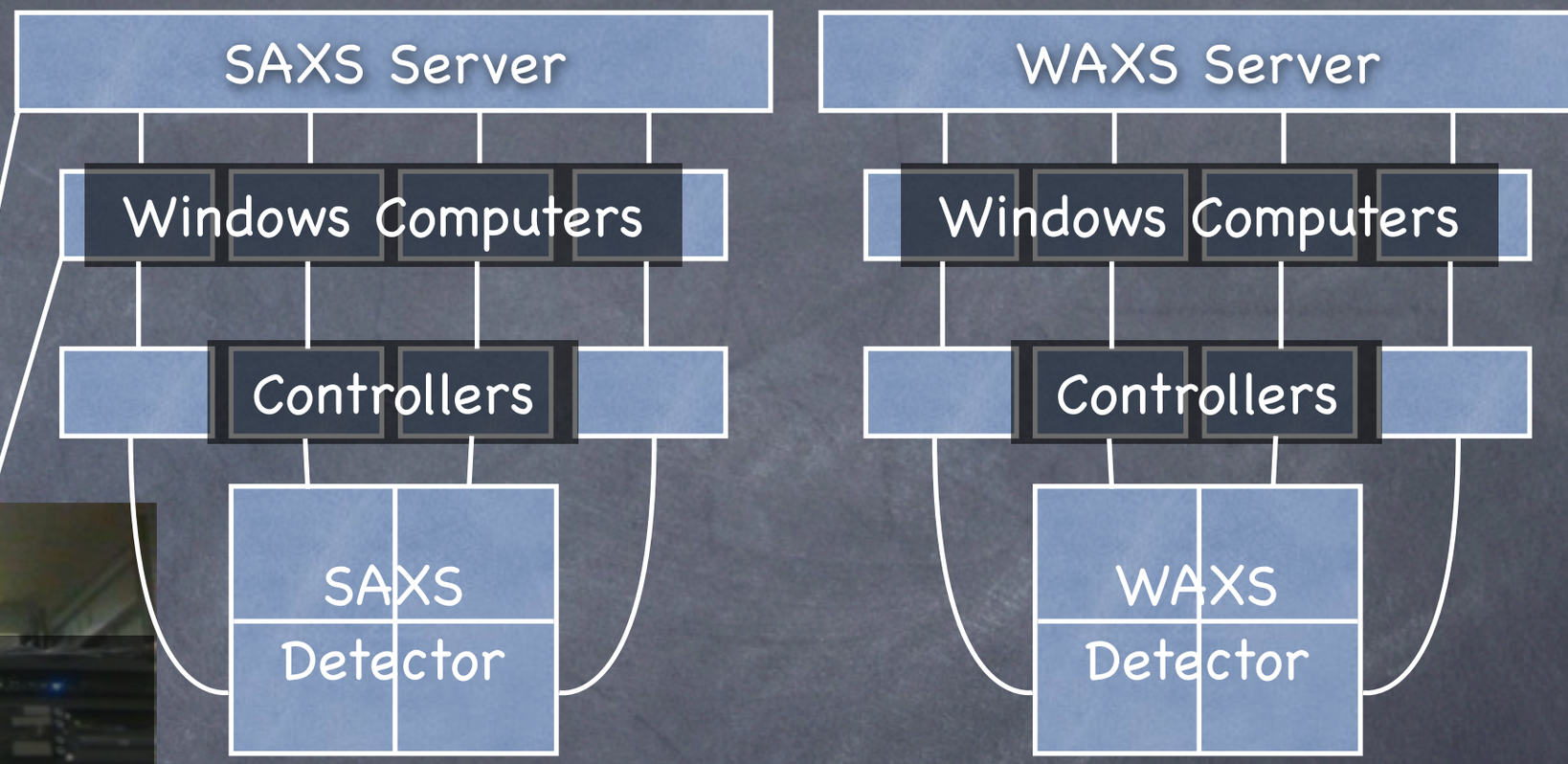


Beamline Software

ADSC Detector Schematic

Beamline Software

ADSC Detector Schematic



Beamline Software

ADSC Detector Schematic

SAXS Server

Windows Computers

Controllers

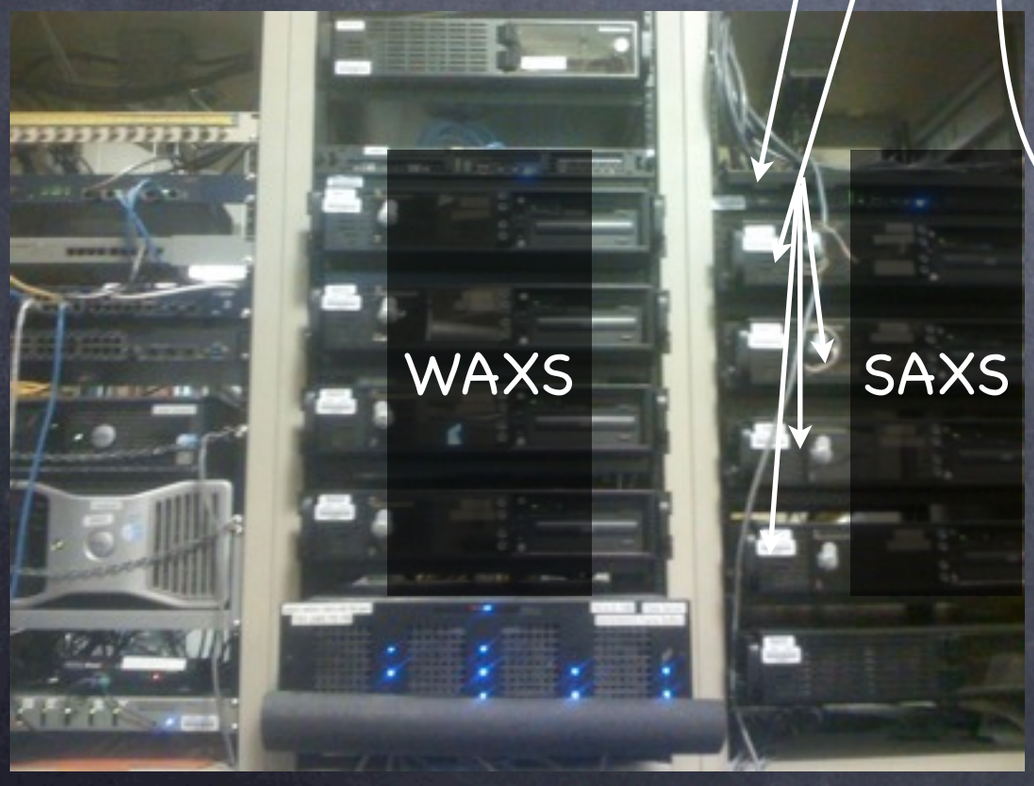
SAXS
Detector

WAXS Server

Windows Computers

Controllers

WAXS
Detector



Beamline Software

ADSC Detector Schematic

SAXS Server

WAXS Server

Windows Computers

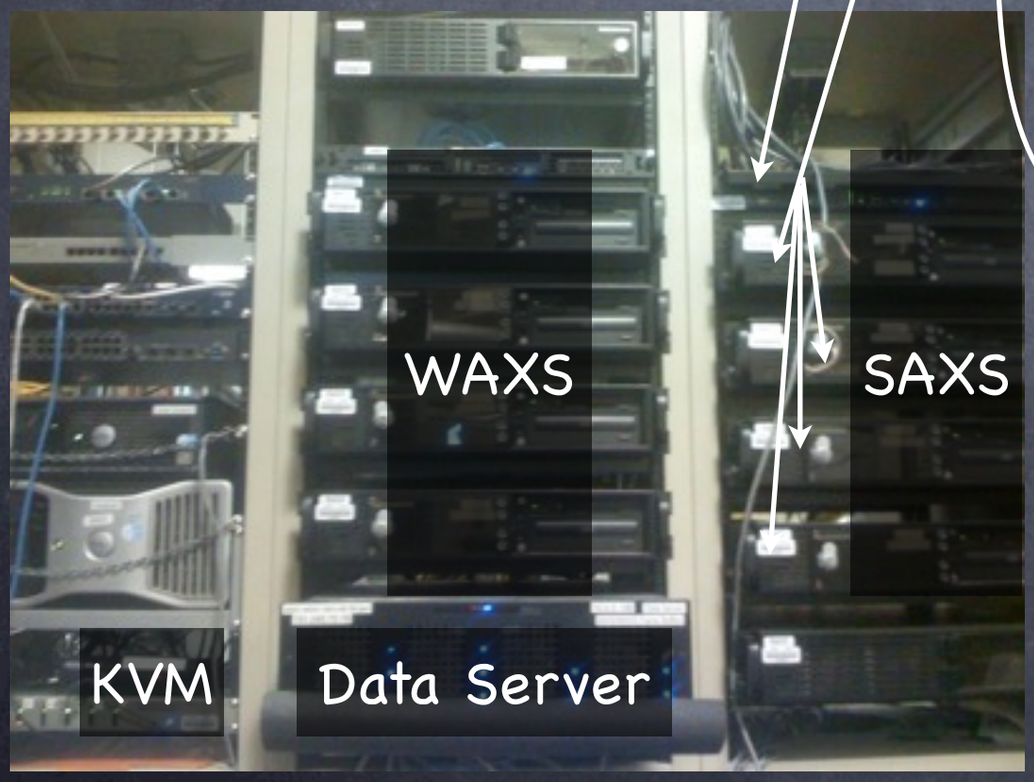
Windows Computers

Controllers

Controllers

SAXS
Detector

WAXS
Detector



Beamline Software

Restarting Detector Servers

When to restart the servers:

- Error occurs when taking an image
- Images are delayed or offset, or acting funny

How to restart the servers:

Change KVM to SAXS and then WAXS

- on each of these computers in the terminal type: "startccd"
- hit enter and wait for all four connections to be accepted

If this doesn't work let us know

Beamline Software

Restarting Detector Servers

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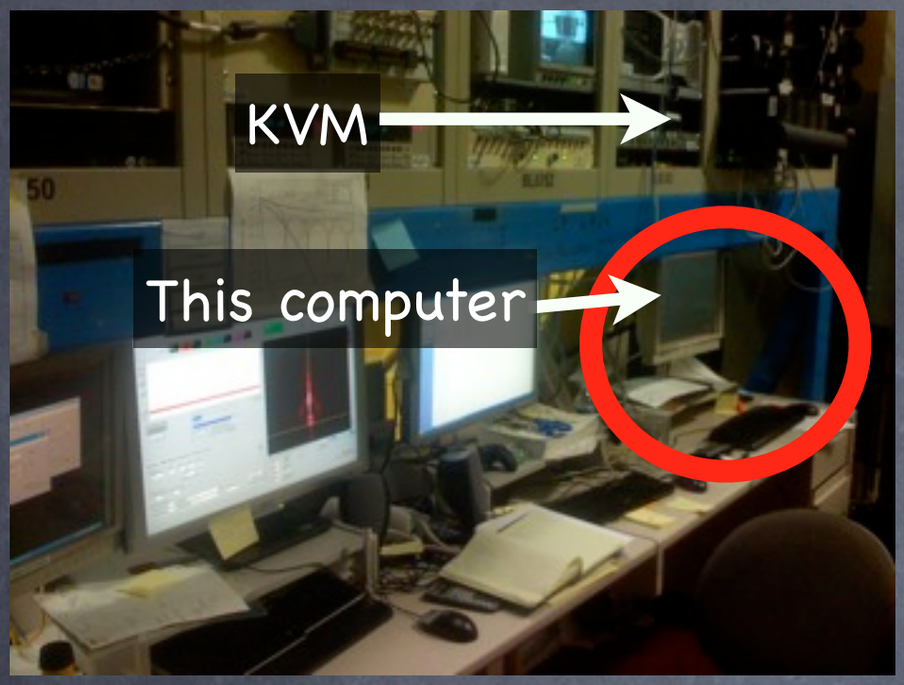
If this doesn't work let us know

Beamline Software



Restarting Detector Servers

When to restart the servers:

- Error occurs when taking an image
- Images are delayed or offset, or acting funny

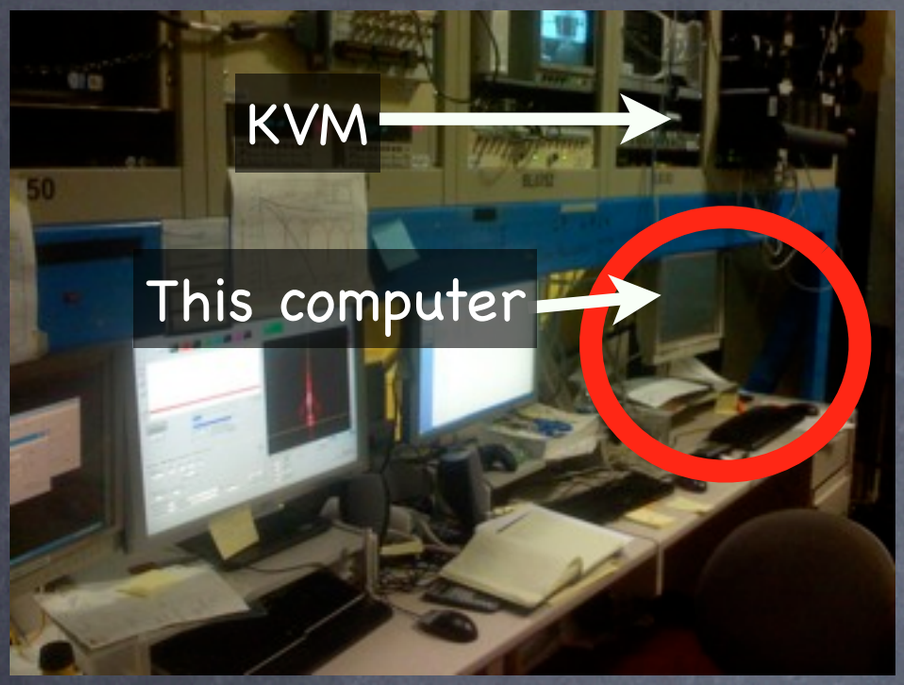
How to restart the servers:

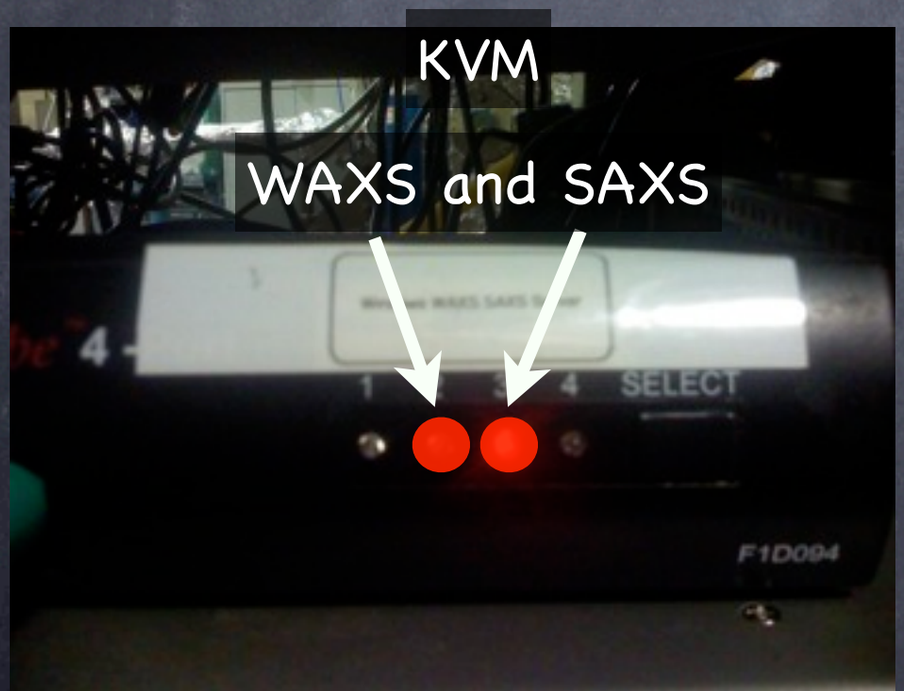
Change KVM to SAXS and then WAXS

- on each of these computers in the terminal type: "startccd"
- hit enter and wait for all four connections to be accepted

If this doesn't work let us know

Beamline Software





Restarting Detector Servers

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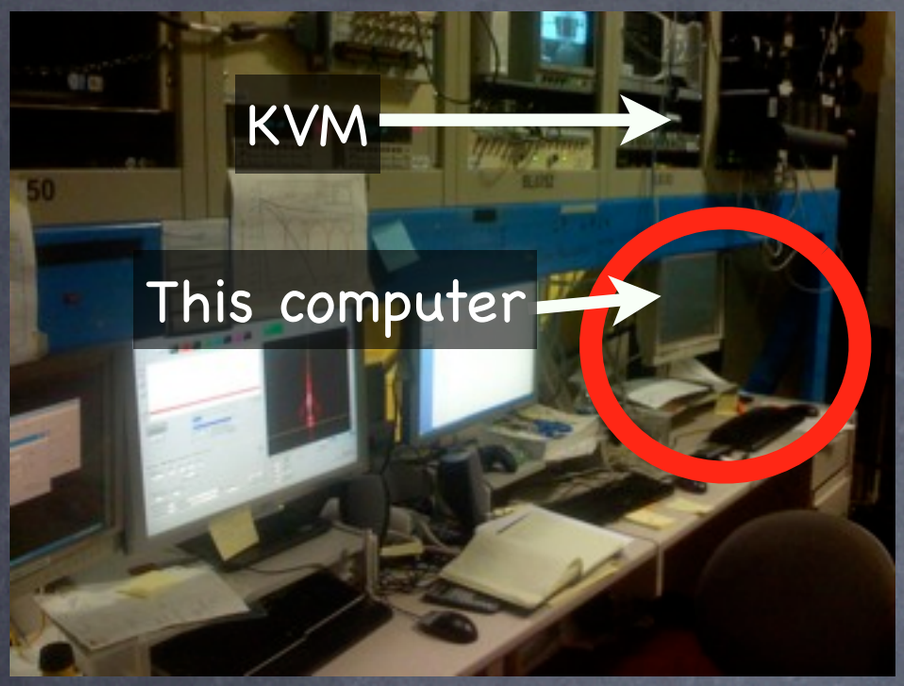
Beamline Software



Restarting Detector Servers

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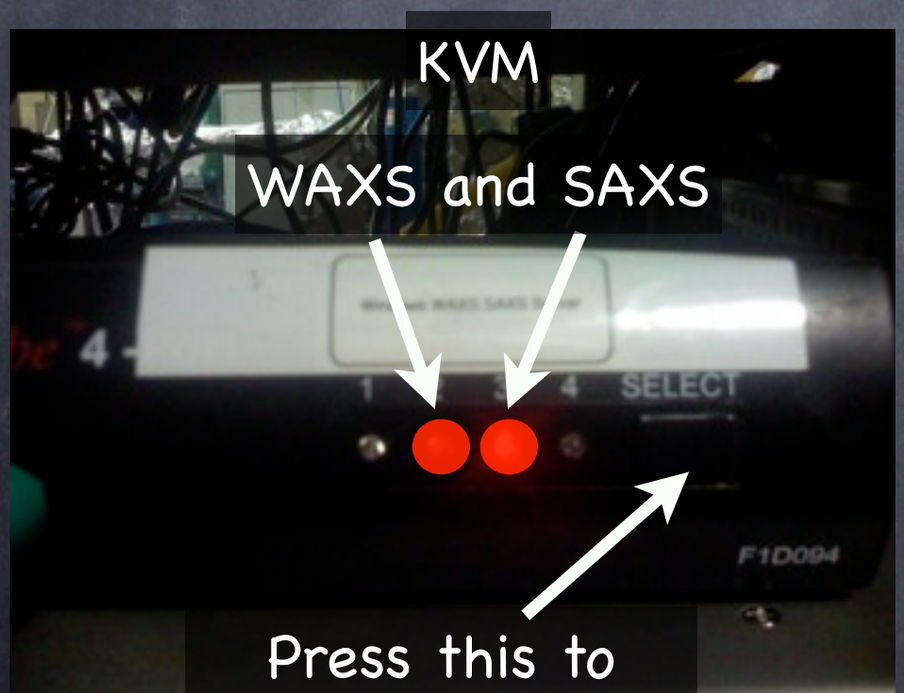
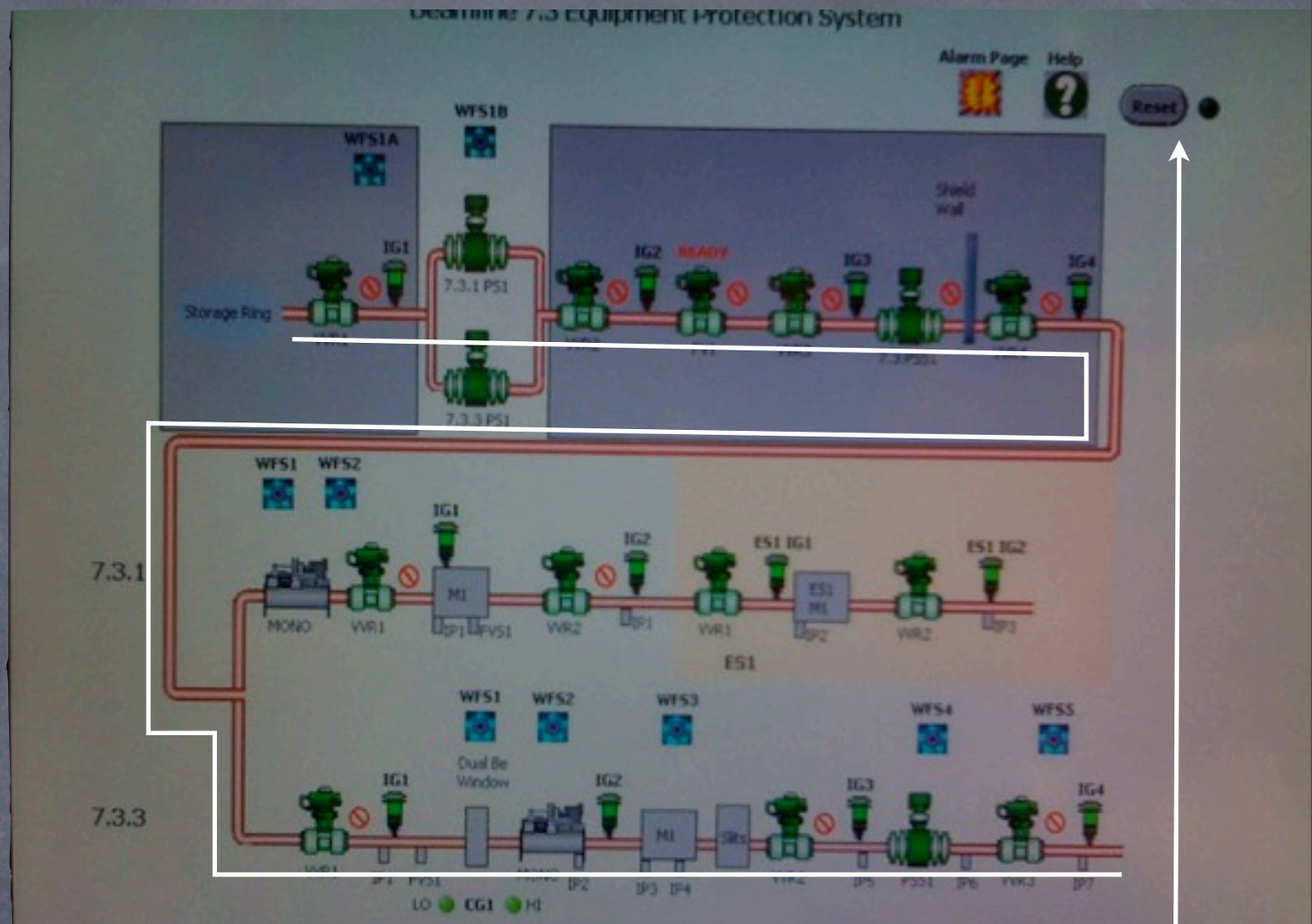
- hit enter and wait for all four connections to be accepted

If this doesn't work let us know



EPS Display

- When do we need to use it?
  - When ALS is running, PSS1 is open but no "beam pass" light is lit.
- Anything red or yellow on EPS display needs attention before beam will be available
- Report all errors
- Devices are Valves, Gauges, Pumps, and Water Flow Sensors
- Anything red is not working, ask Alex or Eliot, or beamline operators, or if none are available, the control room. they will put you in contact with the person who can fix the problem



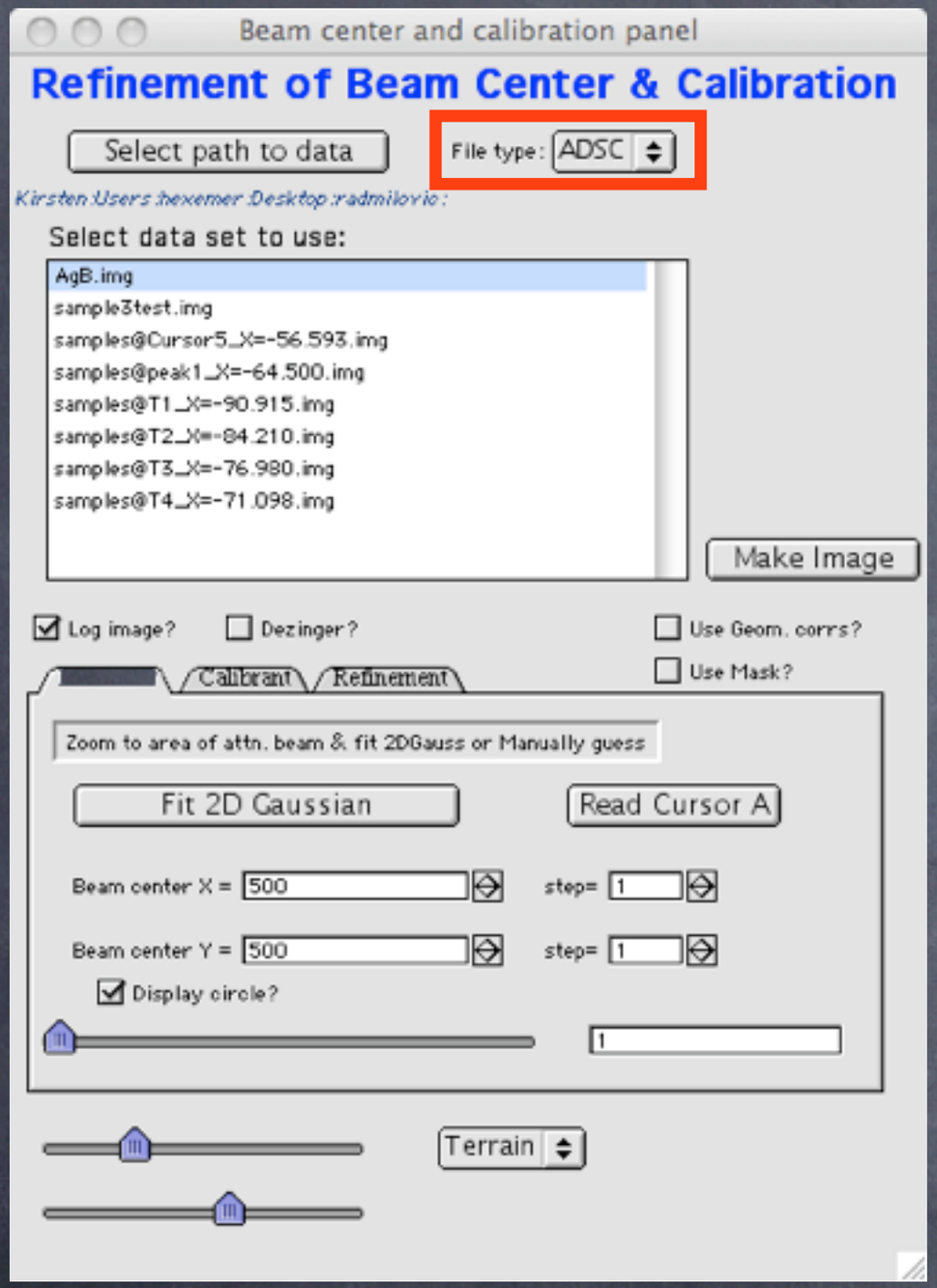
7.3.3 Beam Path (red means beam is passing)

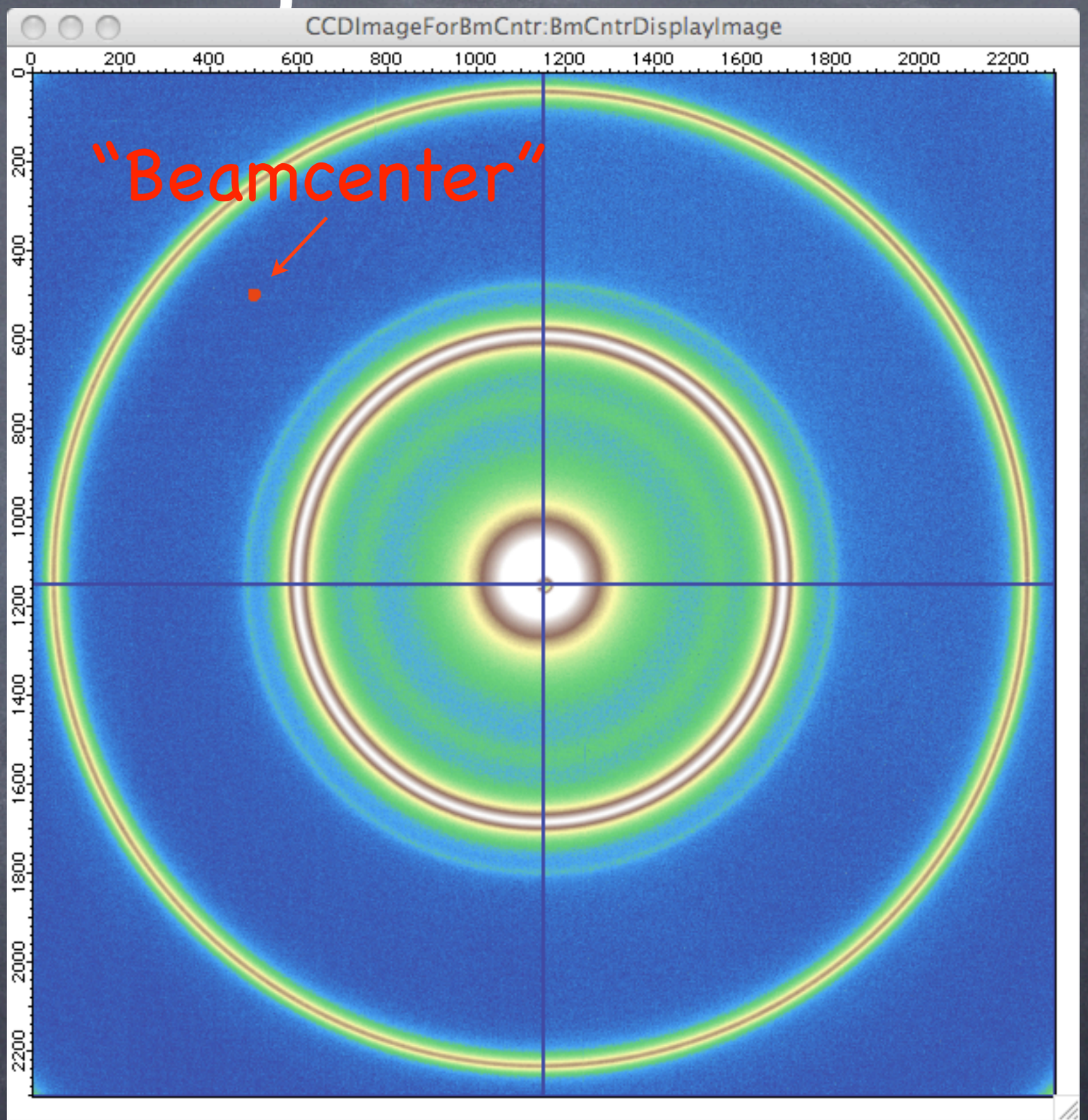
- Yellow Items can be "reset" by pressing reset
  - Still report anytime you need to reset the EPS display

Analysis

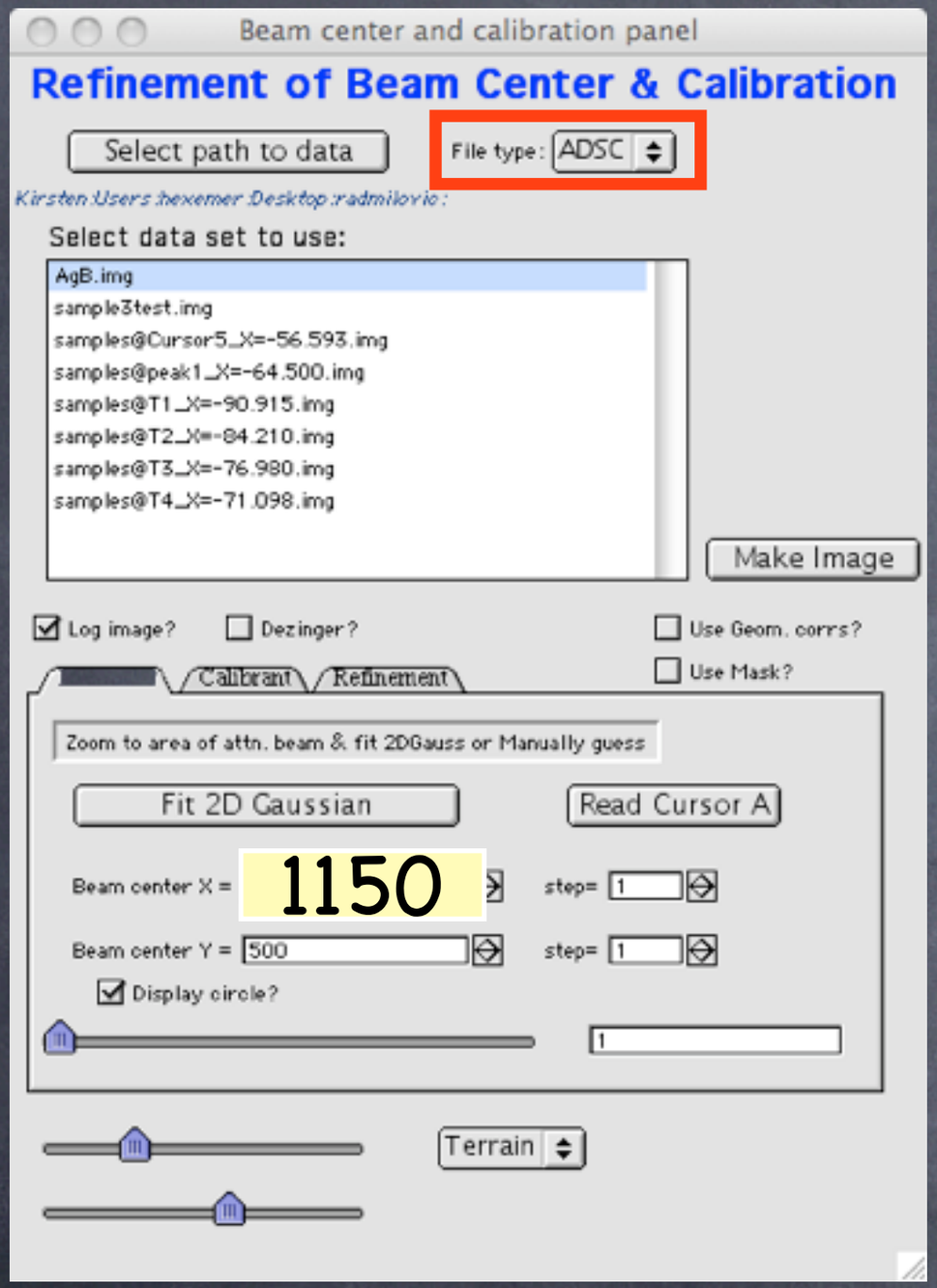
- Find direct beam position and sample detector distance
- Sector graphs
- Radial integration
- Line profile and where are they
- Getting your data in Ascii

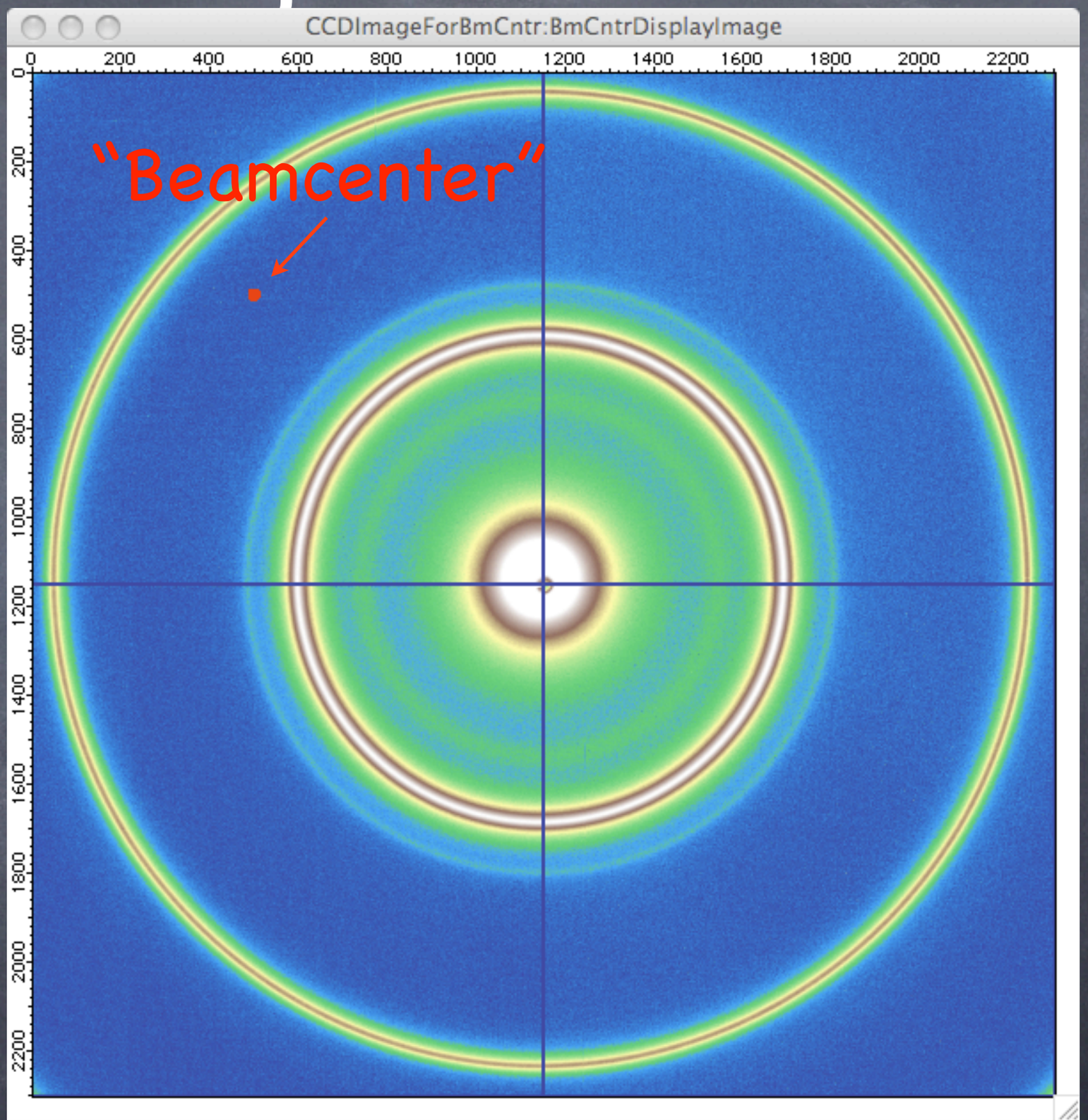
Beam alignment



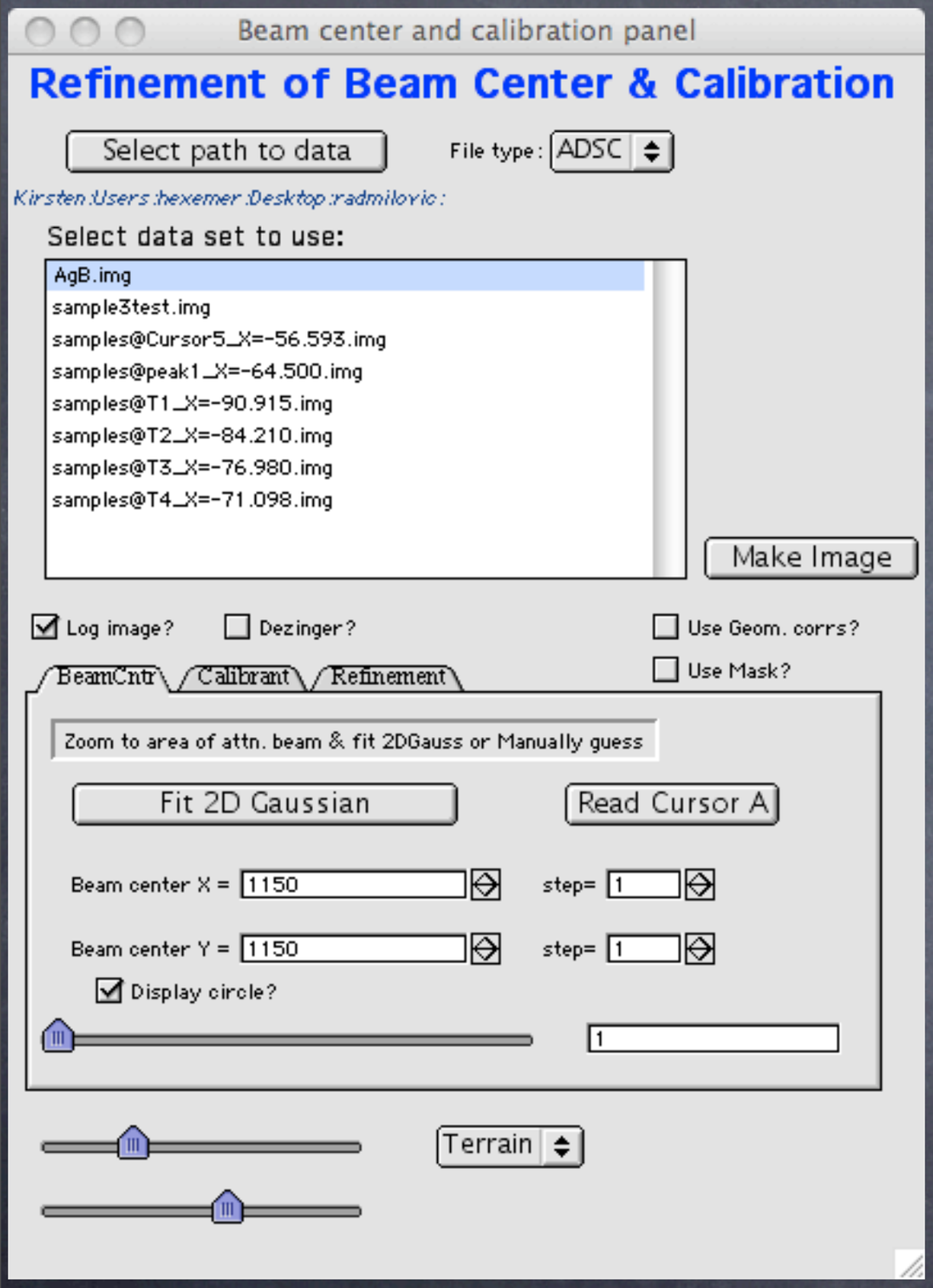


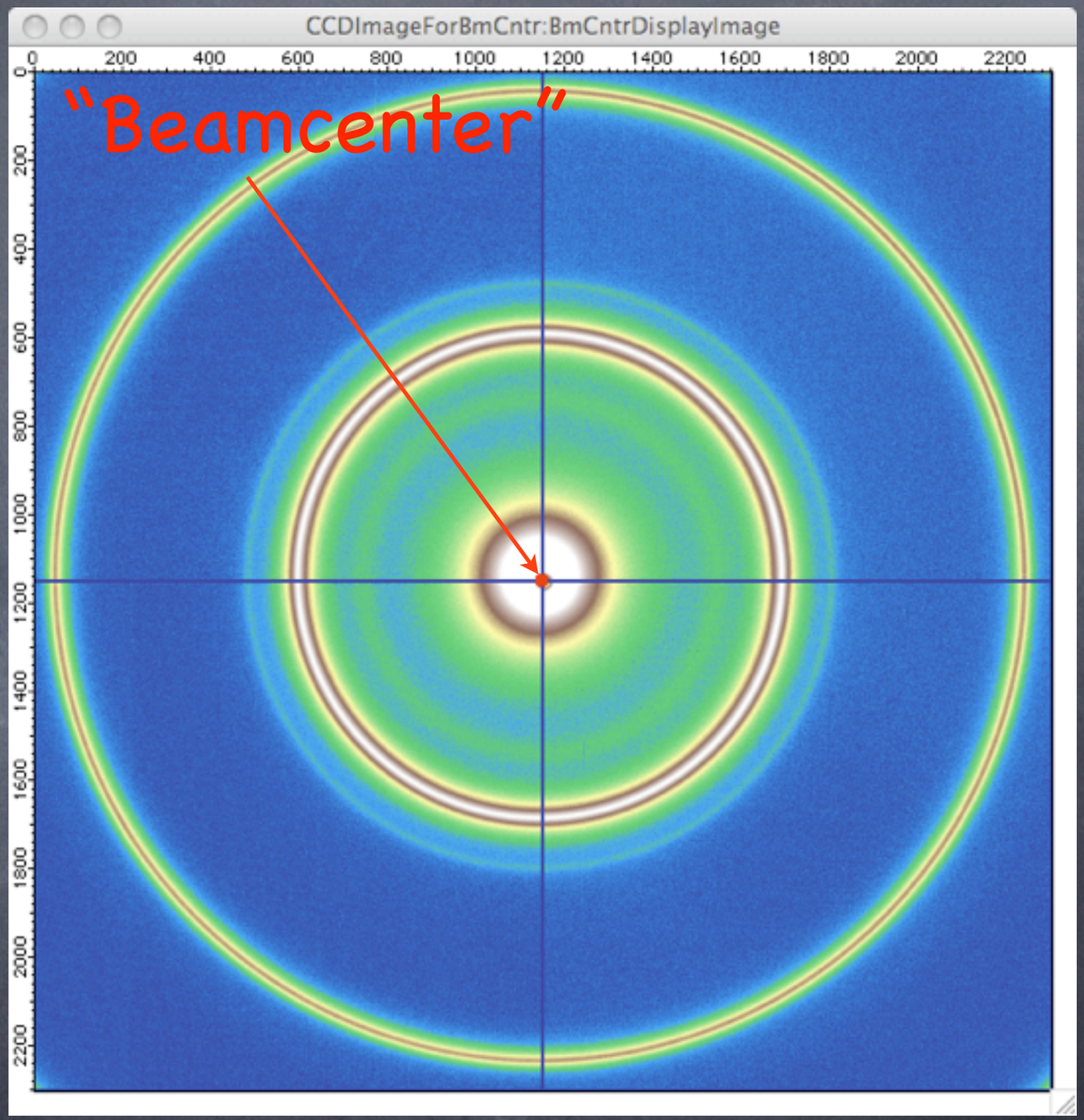
Beam alignment





Beam alignment





Beam alignment

Beam center and calibration panel

Refinement of Beam Center & Calibration

Select path to data | File type: ADSC

Kirsten:Users:hexemer:Desktop:radmilovic:

Select data set to use:

- AgB.img
- sample3test.img
- samples@Cursor5_X=-56.593.img
- samples@peak1_X=-64.500.img
- samples@T1_X=-90.915.img
- samples@T2_X=-84.210.img
- samples@T3_X=-76.980.img
- samples@T4_X=-71.098.img

Make Image

☑ Log image? ☐ Dezinger? ☐ Use Geom. corrs? ☐ Use Mask?

BeamCntr | Calibrant | Refinement

Pick calibrant / own param, border lines ☑ Display?

Calibrant: Ag behenate Lineout Intg over (pix) = 5

☑ Use d1? d1 = 58.38 width = 15

☑ Use d2? d2 = 29.185 width = 15

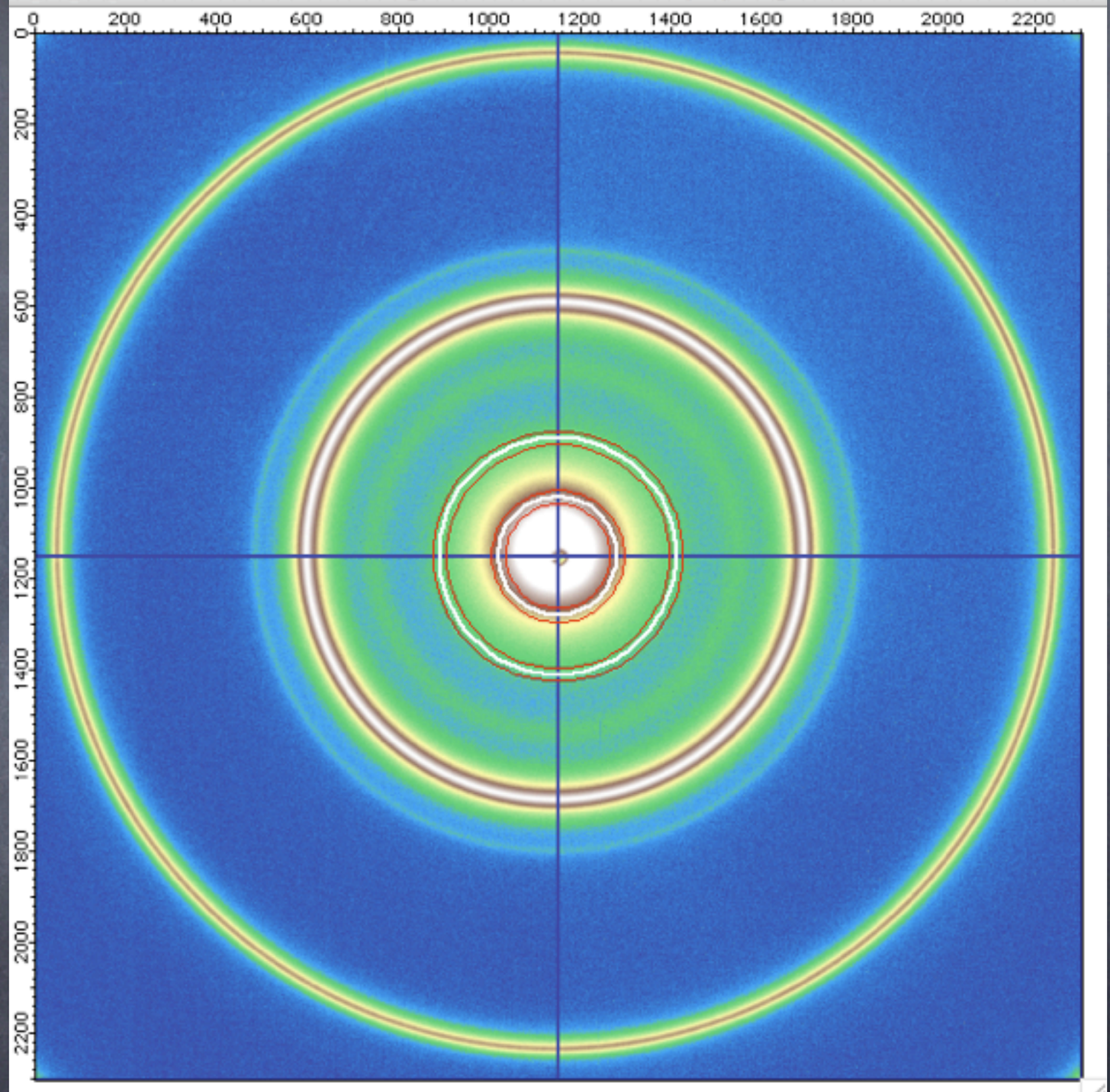
☐ Use d3?

☐ Use d4?

☐ Use d5?

Terrain

CCDImageForBmCntr:BmCntrDisplayImage



Beam alignment

Beam center and calibration panel

Refinement of Beam Center & Calibration

Select path to data | File type: ADSC

Kirsten:Users:hexemer:Desktop:radmilovic:

Select data set to use:

- AgB.img
- sample3test.img
- samples@Cursor5_X=-56.593.img
- samples@peak1_X=-64.500.img
- samples@T1_X=-90.915.img
- samples@T2_X=-84.210.img
- samples@T3_X=-76.980.img
- samples@T4_X=-71.098.img

Make Image

☑ Log image? ☐ Dezinger? ☐ Use Geom. corrs? ☐ Use Mask?

BeamCntr | Calibrant | Refinement

Pick calibrant / own param, border lines ☑ Display?

Calibrant: Ag behenate Lineout Intg over (pix) = 5

☑ Use d1? d1 = 58.38 width = 15

☑ Use d2? d2 = 29.185 width = 15

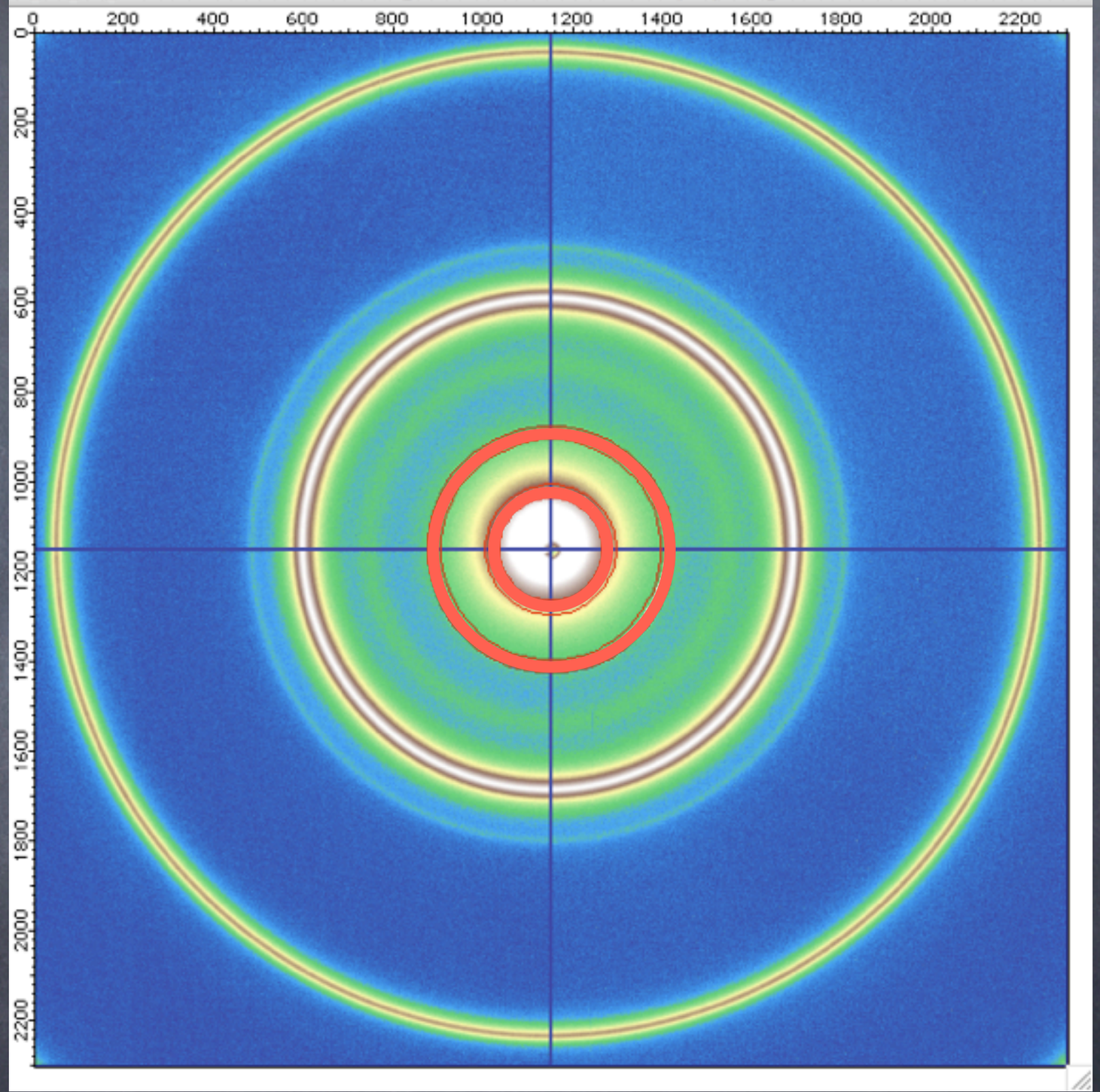
☐ Use d3?

☐ Use d4?

☐ Use d5?

Terrain

CCDImageForBmCntr:BmCntrDisplayImage



Beam alignment

Beam center and calibration panel

Refinement of Beam Center & Calibration

Select path to data | File type: ADSC

Kirsten:Users:hexemer:Desktop:radmilovic:

Select data set to use:

- AgB.img
- sample3test.img
- samples@Cursor5_X=-56.593.img
- samples@peak1_X=-64.500.img
- samples@T1_X=-90.915.img
- samples@T2_X=-84.210.img
- samples@T3_X=-76.980.img
- samples@T4_X=-71.098.img

Make Image

☑ Log image? ☐ Dezinger? ☐ Use Geom. corrs? ☐ Use Mask?

BeamCntr | Calibrant | Refinement

Select what to refine and run | Peak shape function: Gauss

☐ Refine beam center? | Sa-det distance [mm] 2100

☐ Refine Sa-Det distance? | Wavelength [A] 1.23984

☐ Refine wavelength? | X-ray energy [keV] 10

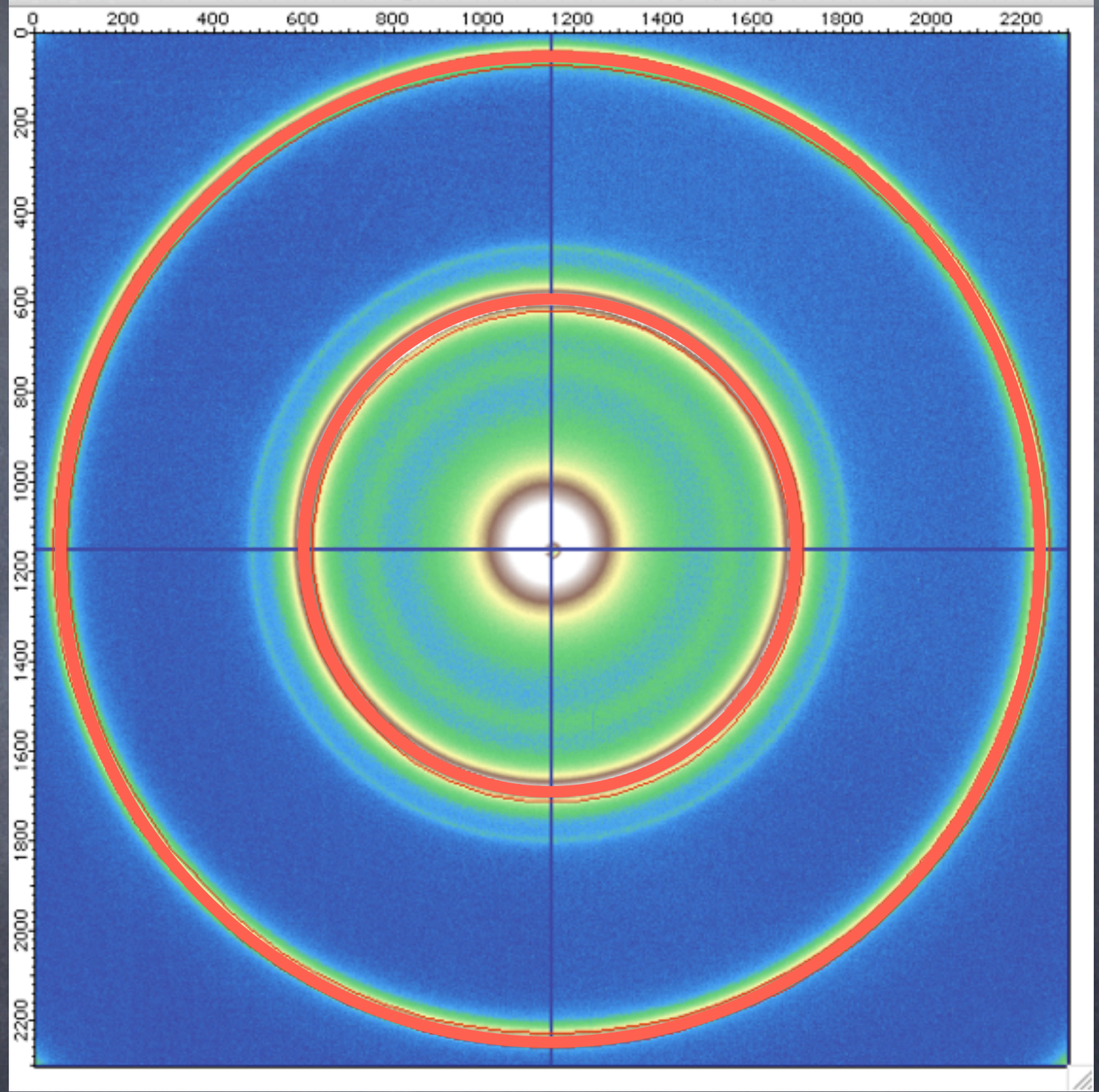
☐ Refine tilts? Horizontal 0 Vertical 0

Num sectors = 60 ☐ Display in image?

Run refinement | Return back

Terrain

CCDImageForBmCntr:BmCntrDisplayImage



Beam alignment

Beam center and calibration panel

Refinement of Beam Center & Calibration

Select path to data | File type: ADSC

Kirsten:Users:hexemer:Desktop:radmilovic:

Select data set to use:

- AgB.img
- sample3test.img
- samples@Cursor5_X=-56.593.img
- samples@peak1_X=-64.500.img
- samples@T1_X=-90.915.img
- samples@T2_X=-84.210.img
- samples@T3_X=-76.980.img
- samples@T4_X=-71.098.img

Log image? | Dezinger?

BeamCntr | Calibrant | Refinem

Select what to refine and run | Pe

Refine beam center? | Sa

Refine Sa-Det distance? | Wa

Refine wavelength? | X-

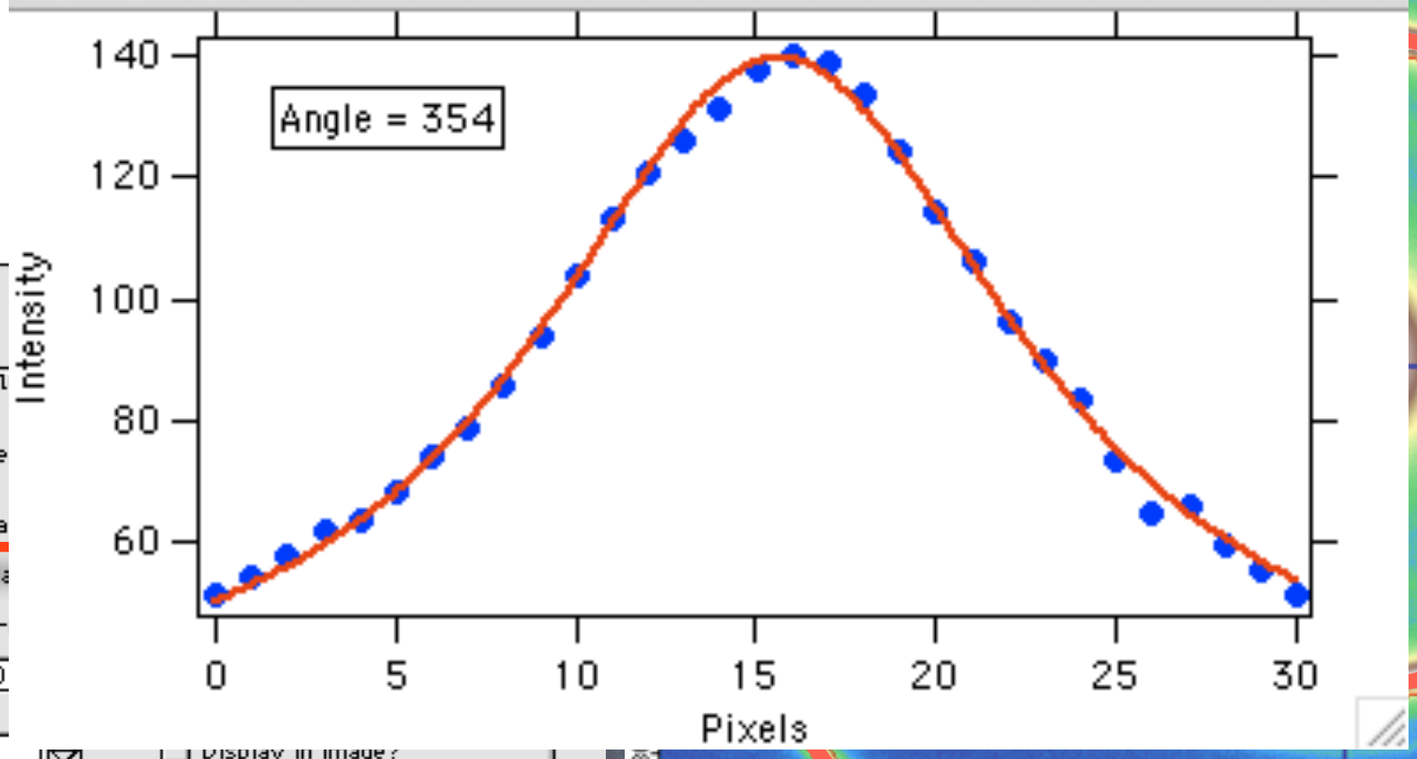
Refine tilts? | Horizontal 0

Num sectors = 60 | Display in image?

Run refinement | Return back

Terrain

Profile Fit window



CCDImageForBmCntr:BmCntrDisplayImage

Main 2D to 1D conversion panel

2D to 1D data conversion panel

Select data path

Image type ADSC

Kirsten:Users:hexemer:Desktop:radmilovic:

Select input data here

Invert 0, 0 corner?

AgB.img
sample3test.img
samples@Cursor5_X=-56.593.img
samples@peak1_X=-64.500.img
samples@T1_X=-90.915.img
samples@T2_X=-84.210.img
samples@T3_X=-76.980.img
samples@T4_X=-71.098.img

Refresh
Save/Load Config
Export image
Store image

Start ---

Select contiguous range:

End ---

Calibration | Mask | Processing | LUT method | Sector graph

Sample to CCD distance [mm] 2103.03

Wavelength [A] 1.23984

X-ray energy [keV] 10

Direction	X (horizontal)	Y (vertical)
CCD pixel size [mm]	0.0816	0.0816
Beam center	1145.17	1139.28
Horizontal Tilt	0	Vertical Tilt 0

- Use sample thickness (St)?
- Use pixel sensitivity (Pix2D)?
- Use sample transmission (T)?
- Subtract constant from data (Ofst)?
- Use sample Corection factor (C)?
- Use I0/I0ef for empty field?
- Use Monitor (I0)?
- Use sample measurement time (ts)?
- Use Dark field (DF2D)?
- Use empty measurement time (te)?
- Use Empty field (EF2D)?
- Use dark field measurement time (td)?

1*((Sa2D))

Ave & Display sel. file(s)

Ave & Convert N files

N = 1

Convert sel. files 1 at time

Skip bad files?

Ave & Convert sel. files

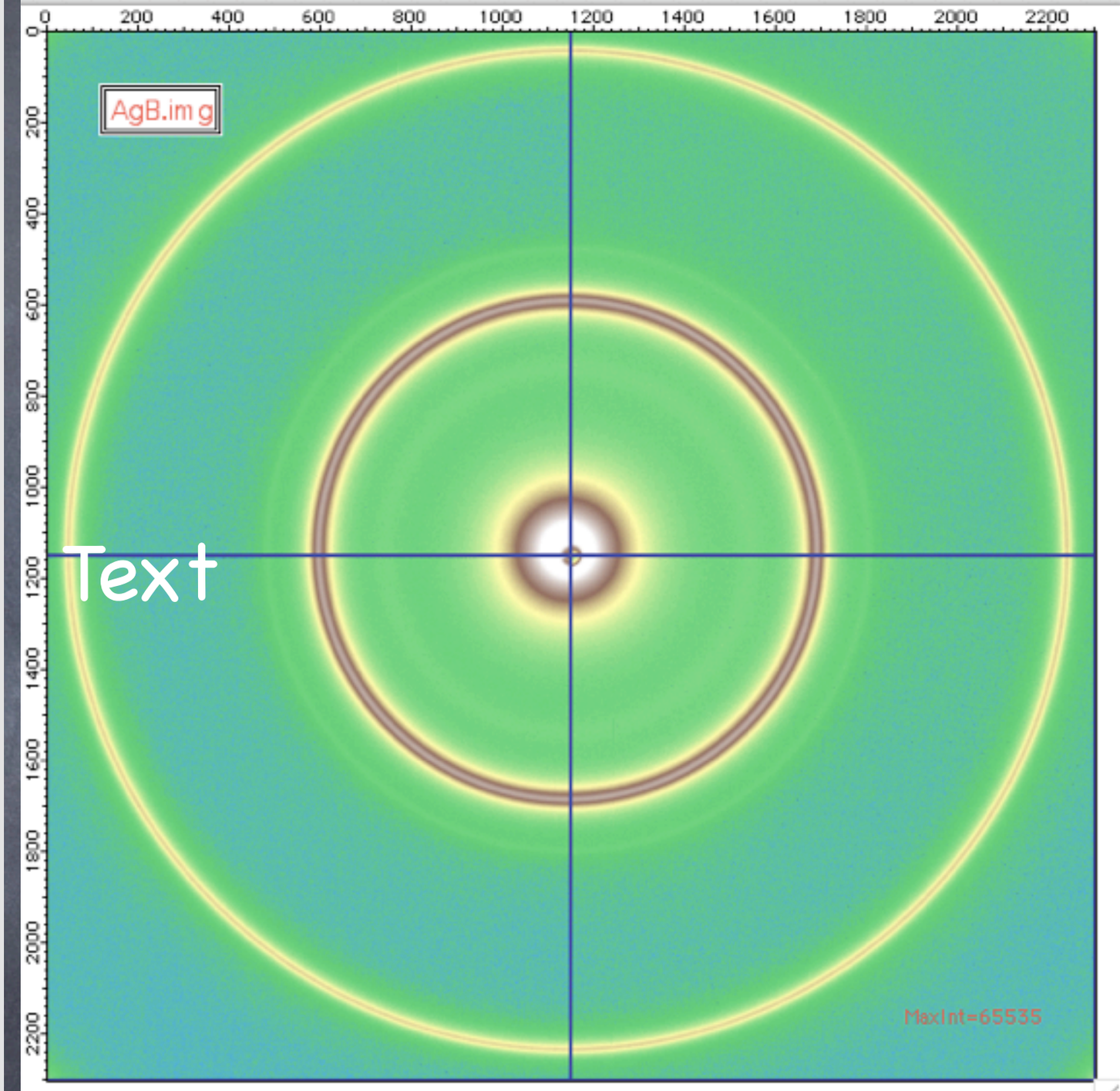
Colors Terrain

Display beam center?

Display sectors?

Log Int display?

CCDImageToConvertFig:CCDImageToConvert_dis



Main 2D to 1D conversion panel

2D to 1D data conversion panel

Select data path

Image type ADSC

Kirsten:Users:hexemer:Desktop:radmilovic:

Select input data here

Invert 0, 0 corner?

AgB.img
sample3test.img
samples@Cursor5_X=-56.593.img
samples@peak1_X=-64.500.img
samples@T1_X=-90.915.img
samples@T2_X=-84.210.img
samples@T3_X=-76.980.img
samples@T4_X=-71.098.img

Refresh
Save/Load Config
Export image
Store image

Start ---

Select contiguous range:

End ---

Sample

Wavelen

CCD pixel size [mm] 0.0816 | CCD pixel size [mm] 0.0816

Beam center 1145.17 | Beam center 1139.28

Horizontal Tilt 0 | Vertical Tilt 0

- [ ] Use sample thickness (St)?
- [ ] Use pixel sensitivity (Pix2D)?
- [ ] Use sample transmission (T)?
- [ ] Subtract constant from data (Ofst)?
- [ ] Use sample Corection factor (C)?
- [ ] Use I0/I0ef for empty field?
- [ ] Use Monitor (I0)?
- [ ] Use sample measurement time (ts)?
- [ ] Use Dark field (DF2D)?
- [ ] Use empty measurement time (te)?
- [ ] Use Empty field (EF2D)?
- [ ] Use dark field measurement time (td)?

1*((Sa2D))

Ave & Display sel. file(s)

Ave & Convert N files

N = 1

Convert sel. files 1 at time

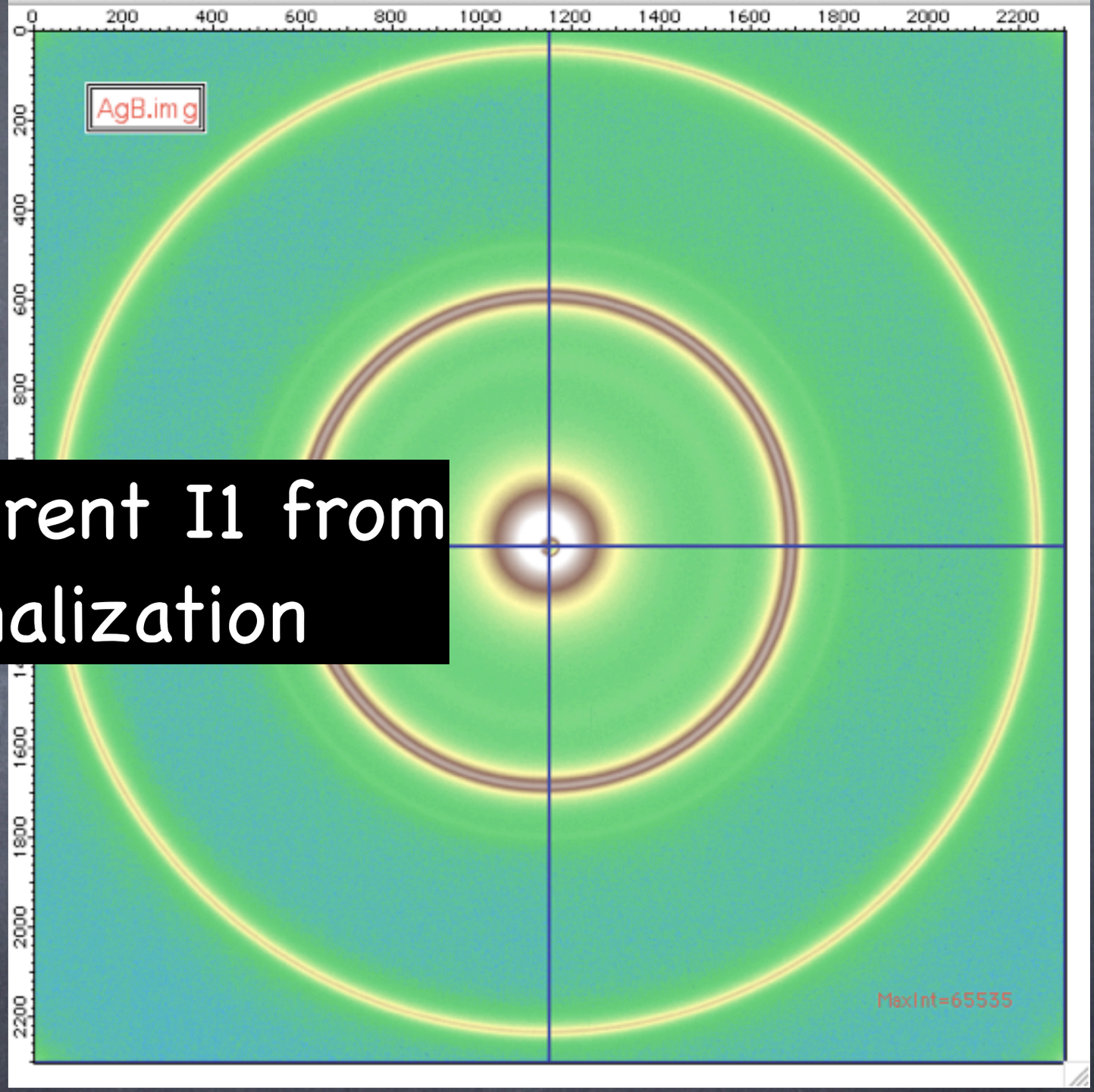
Skip bad files?

Ave & Convert sel. files

Colors Terrain

- [ ] Display beam center?
- [ ] Display sectors?
- [x] Log Int display?

CCDImageToConvertFig:CCDImageToConvert_dis



Uses Integrated Current I1 from header for normalization

Main 2D to 1D conversion panel

2D to 1D data conversion panel

Select data path

Image type ADSC

Kirsten:Users:hexemer:Desktop:radmilovic:

Select input data here

Invert 0, 0 corner?

AgB.img
sample3test.img
samples@Cursor5_X=-56.593.img
samples@peak1_X=-64.500.img
samples@T1_X=-90.915.img
samples@T2_X=-84.210.img
samples@T3_X=-76.980.img
samples@T4_X=-71.098.img

Refresh
Save/Load Config
Export image
Store image

Select

Sample

Wavele

CCD pixel size [mm] 0.0816

CCD pixel size [mm] 0.0816

Beam center 1145.17

Beam center 1139.28

Horizontal Tilt 0

Vertical Tilt 0

Use sample thickness (St)?

Use pixel sensitivity (Pix2D)?

Use sample transmission (T)?

Subtract constant from data (Ofst)?

Use sample Corection factor (C)?

Use I0/I0ef for empty field?

Use Monitor (I0)?

Use sample measurement time (ts)?

Use Dark field (DF2D)?

Use empty measurement time (te)?

Use Empty field (EF2D)?

Use dark field measurement time (td)?

1*((Sa2D))

Ave & Display sel. file(s)

Ave & Convert N files

N = 1

Convert sel. files 1 at time

Skip bad files?

Ave & Convert sel. files

Colors Terrain

Display beam center?

Display sectors?

Log Int display?

CCDImageToConvertFig:CCDImageToConvert_dis

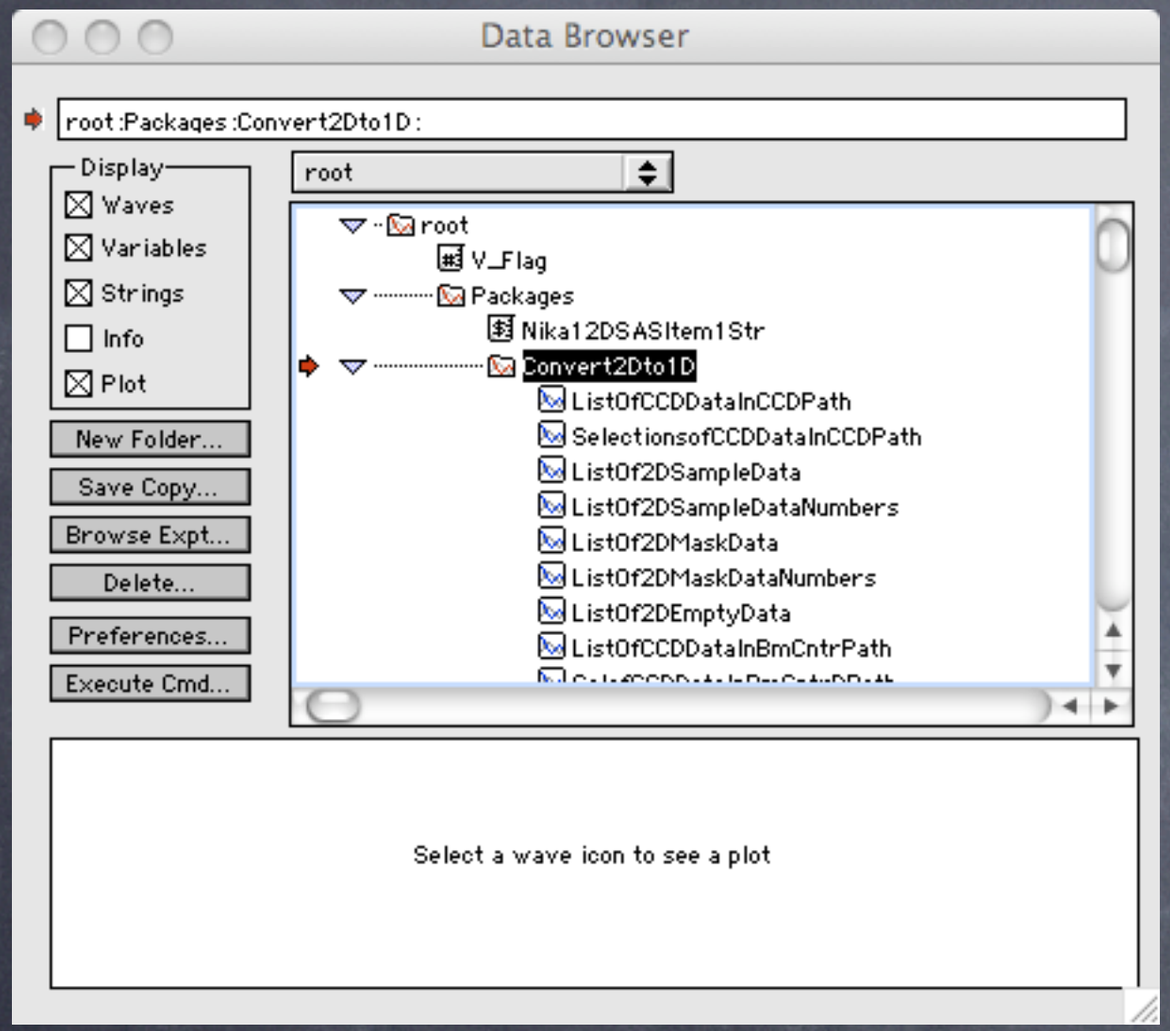
AgB.img

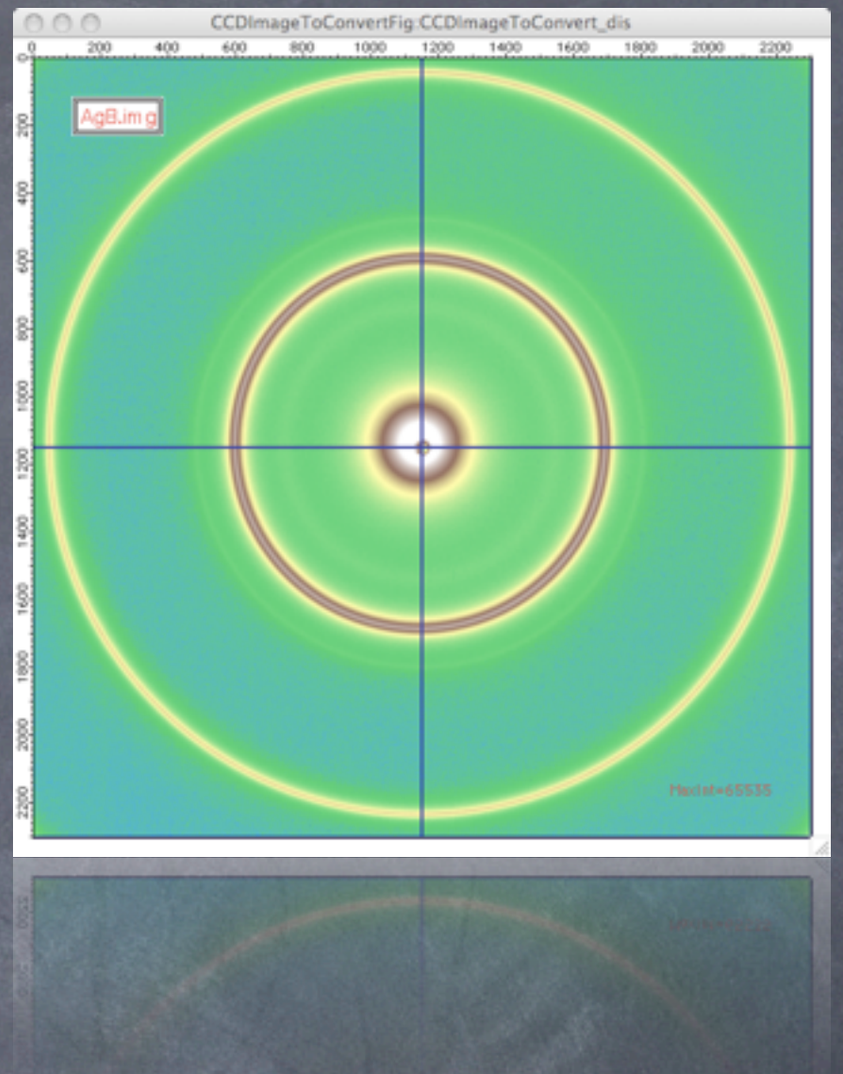
MaxInt=65535

Dark field: subtracts averaged dark field image Mask_and_Background/2304pix_read.ibw

Where is the data?

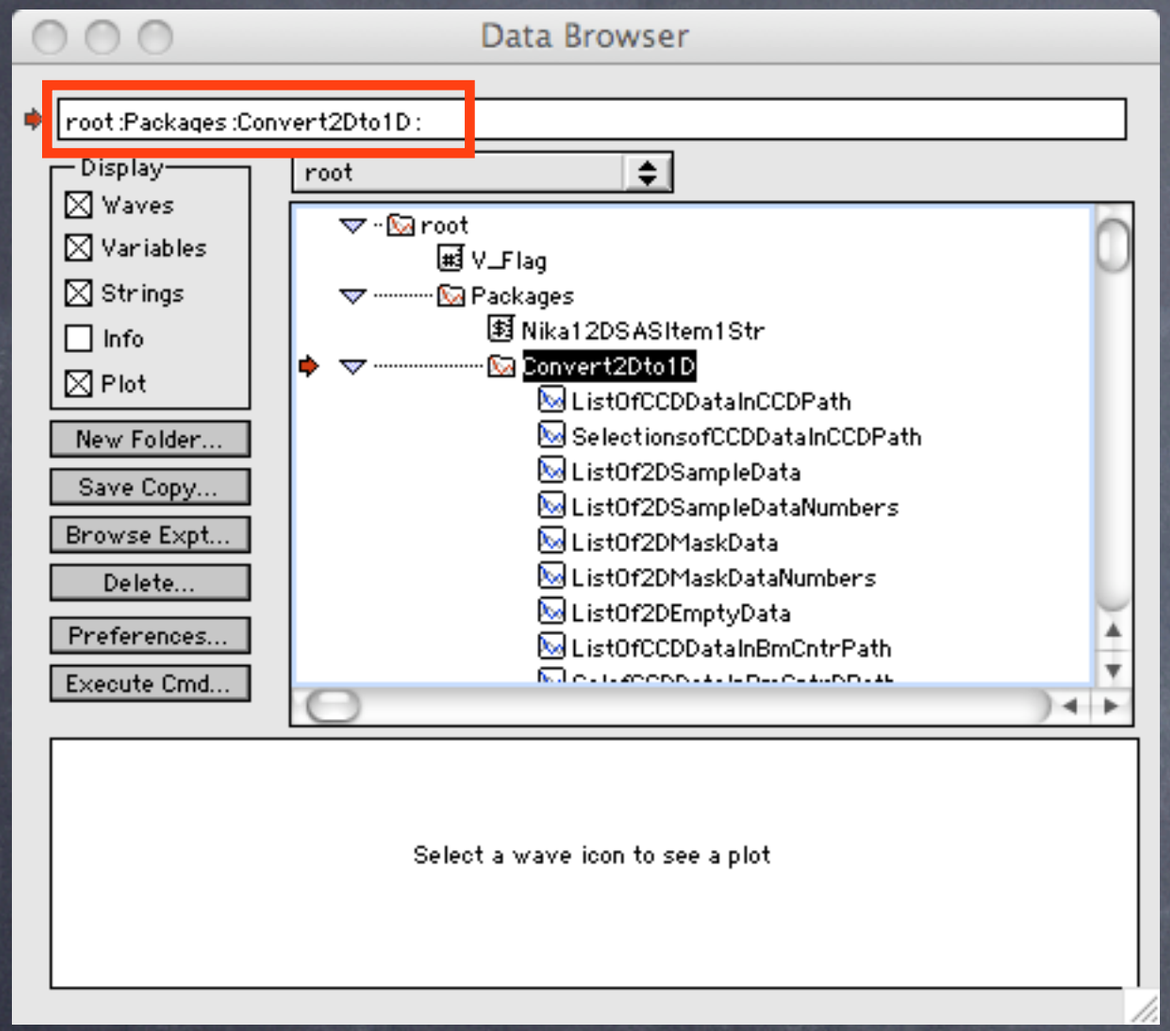
Data -> Data Browser

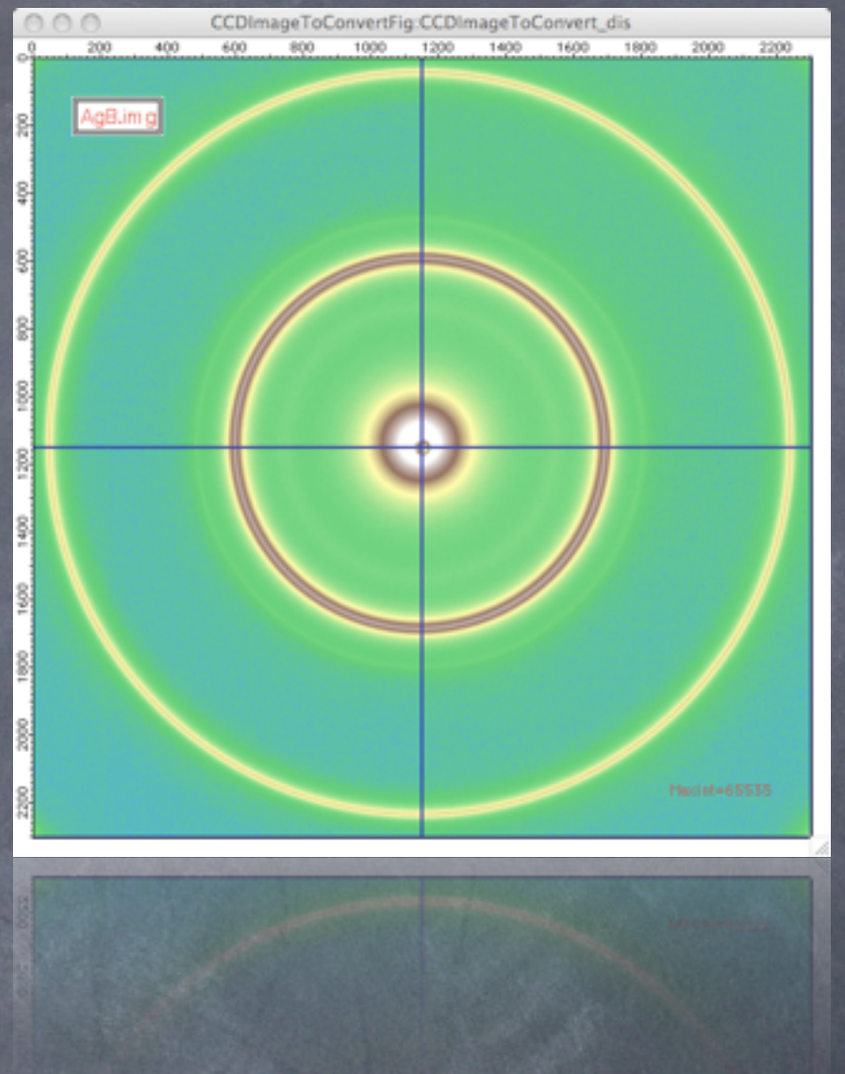




Where is the data?

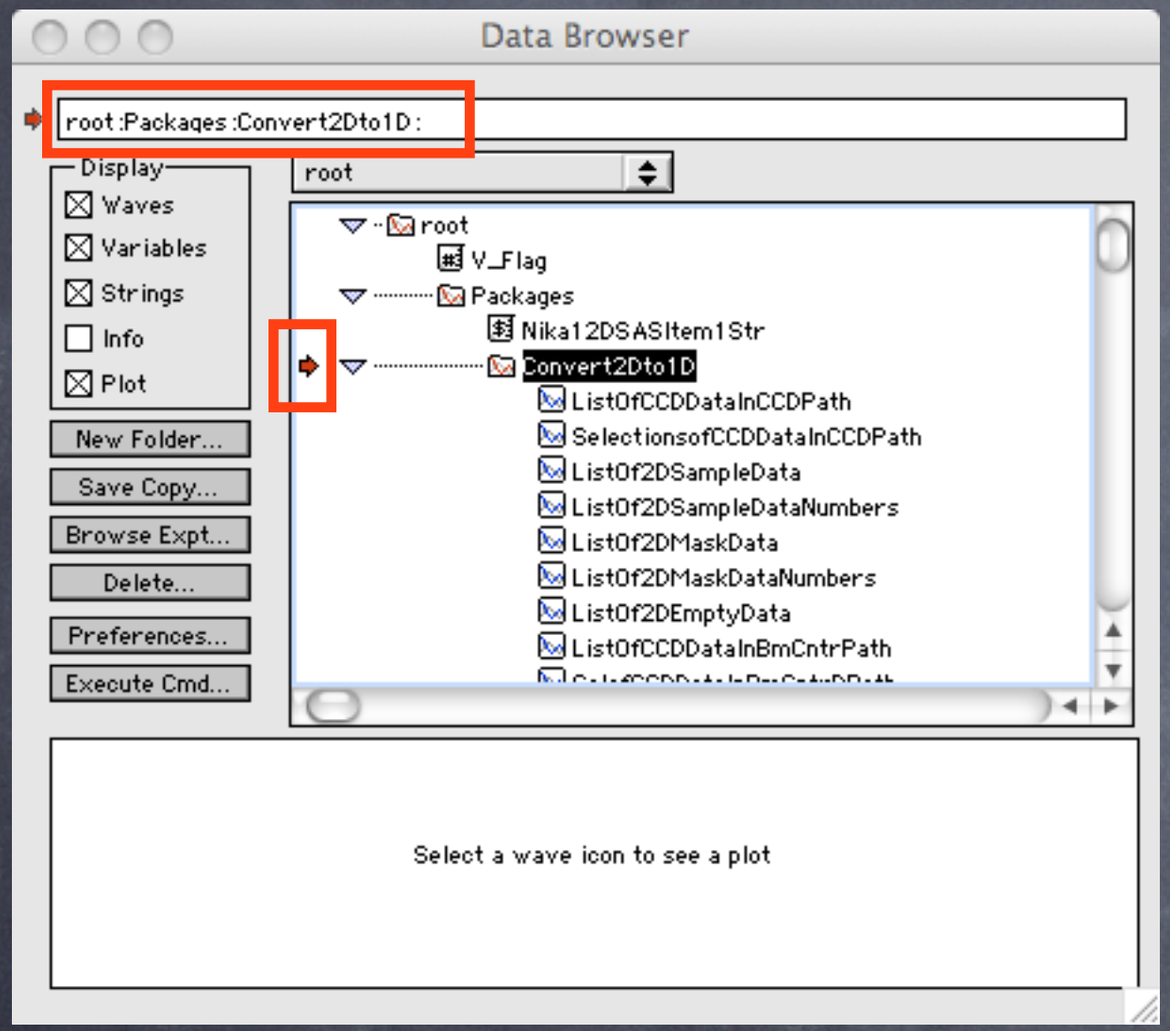
Data -> Data Browser

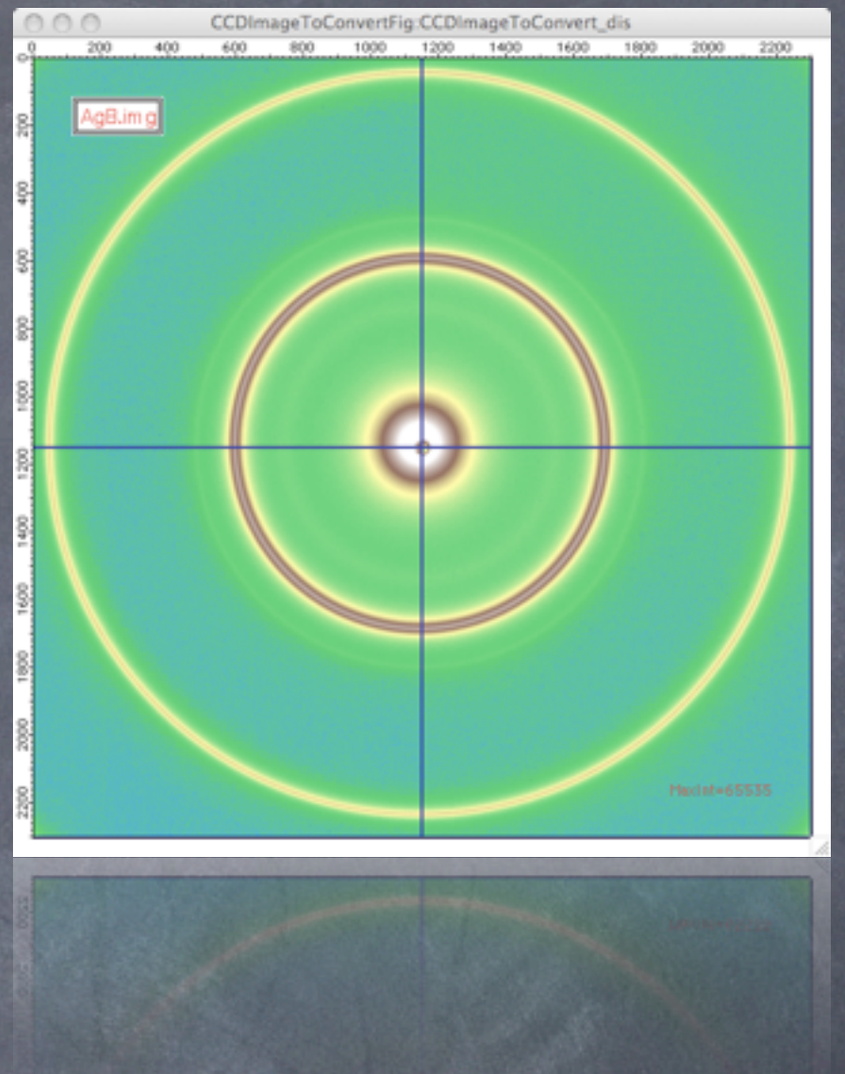




Where is the data?

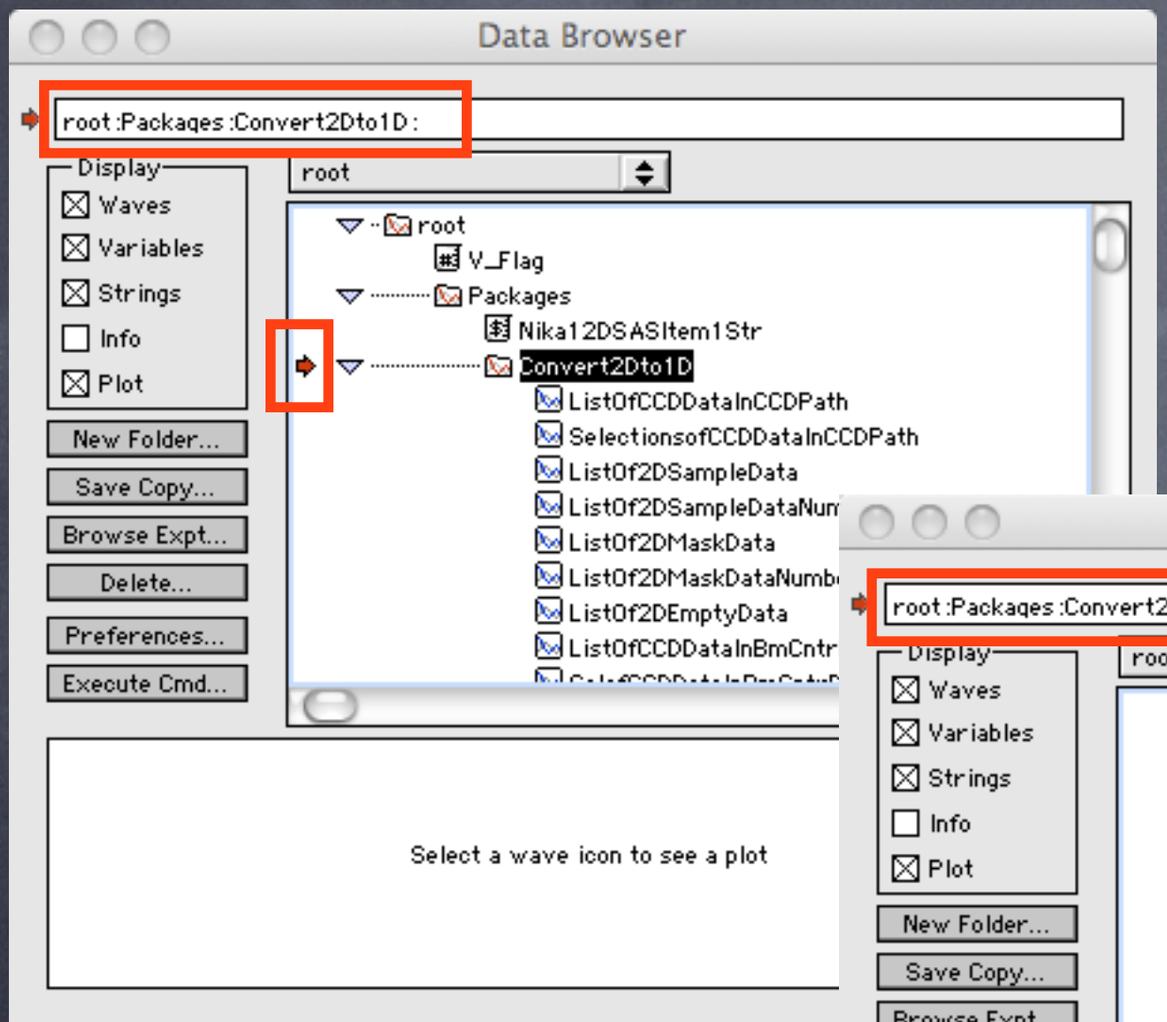
Data -> Data Browser

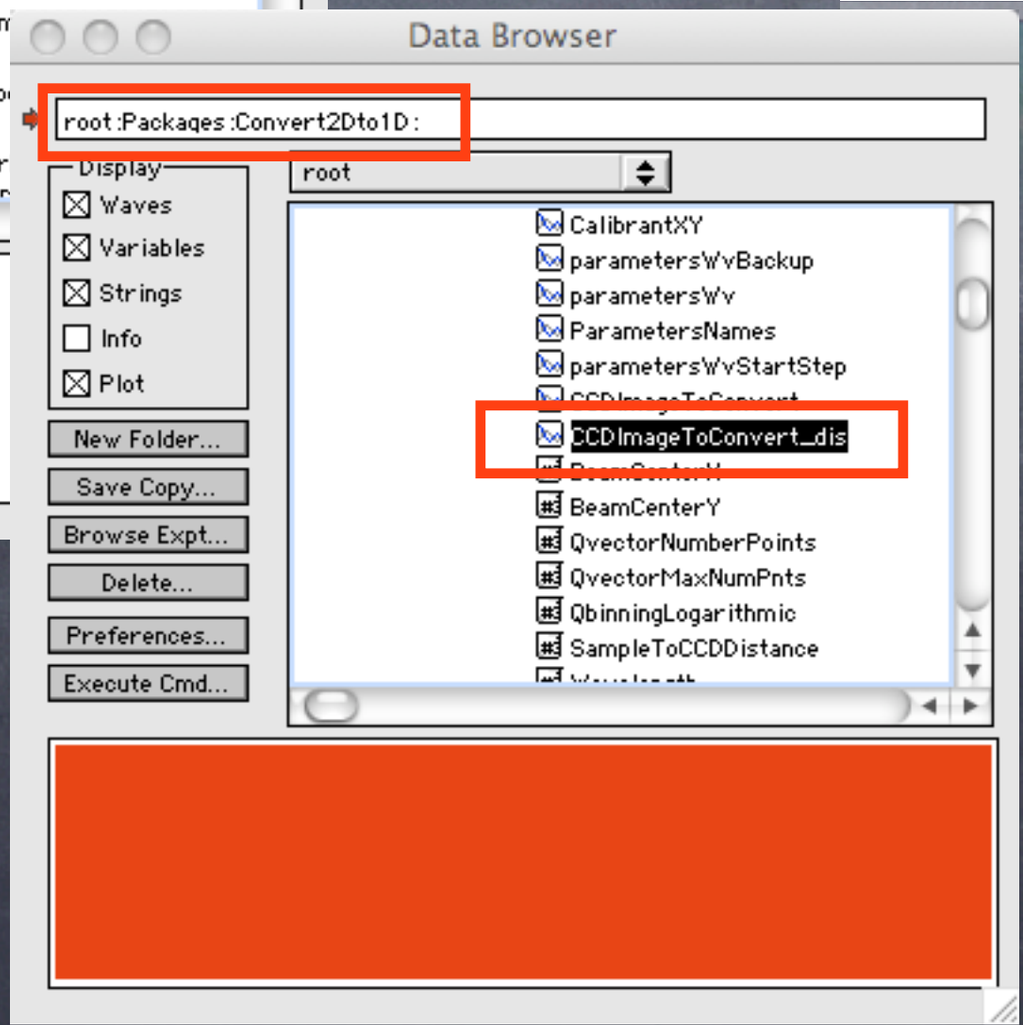


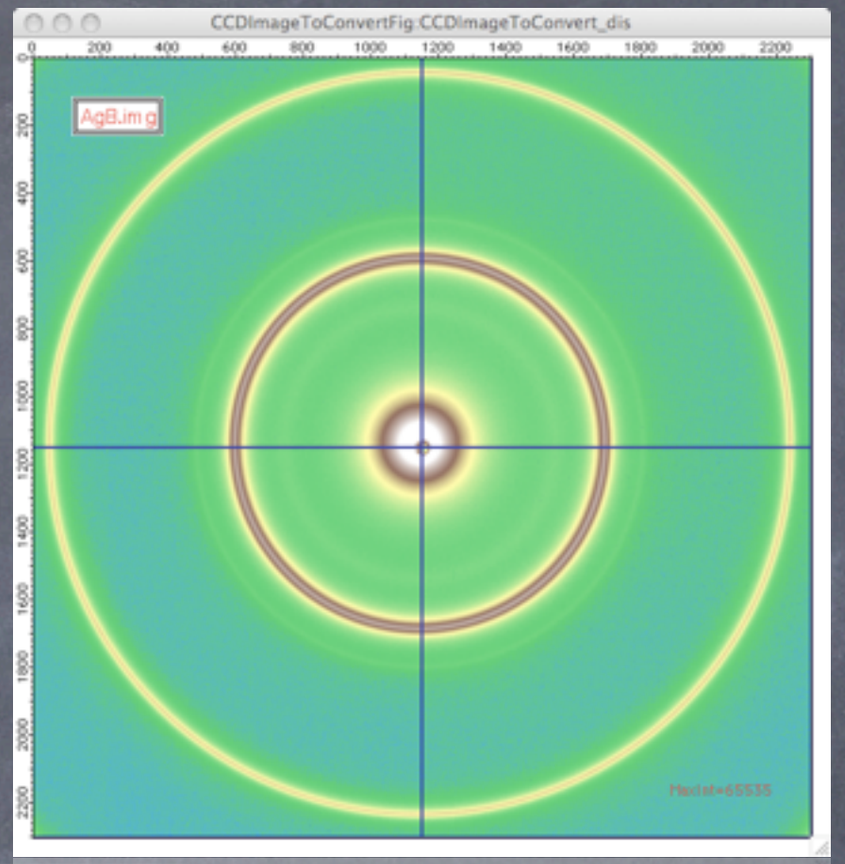


Where is the data?

Data -> Data Browser

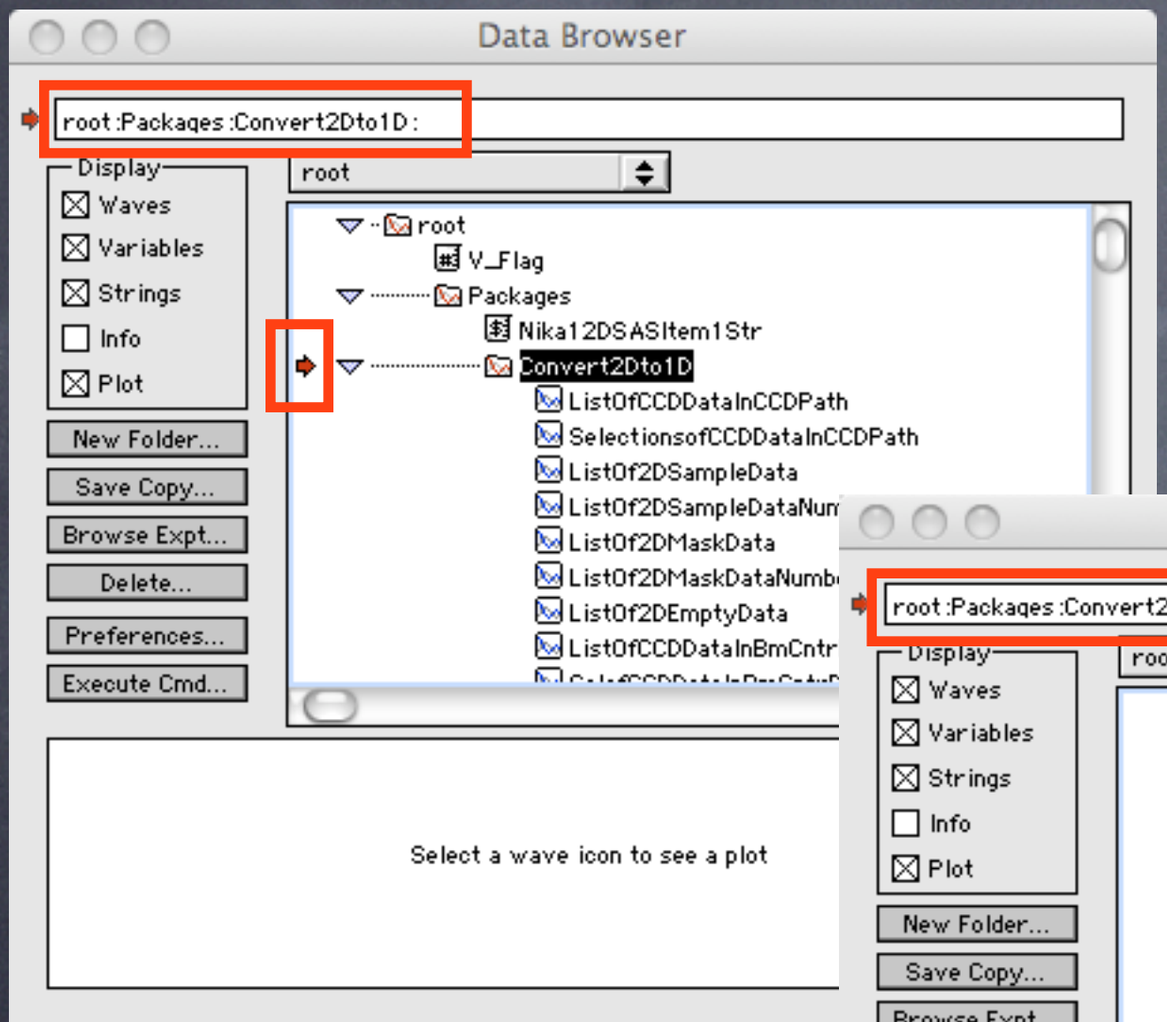


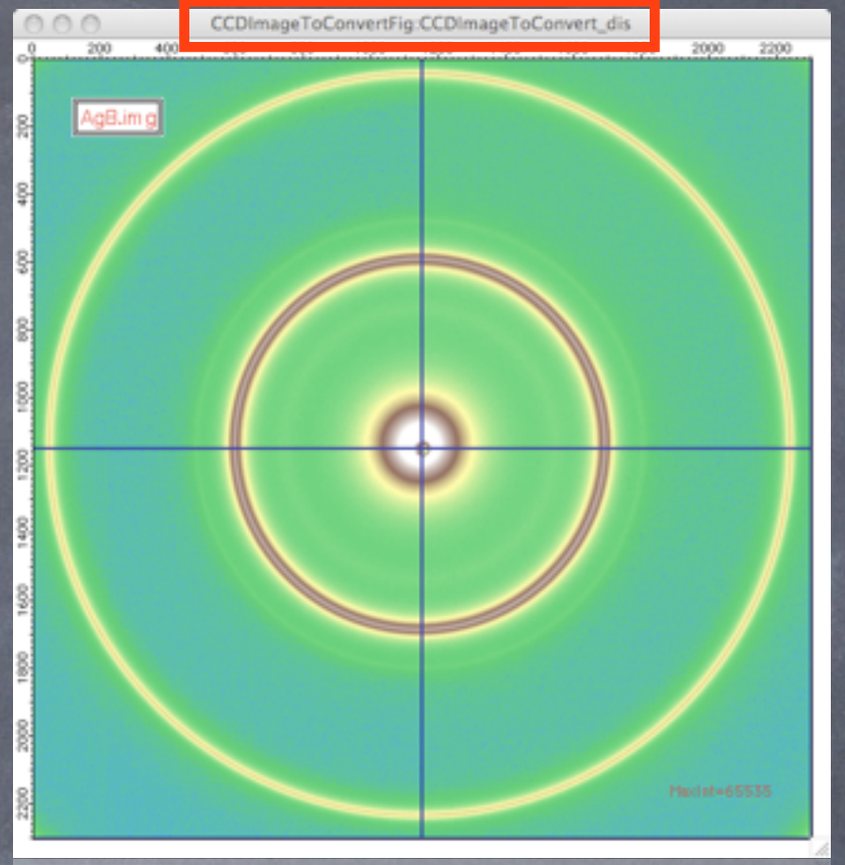


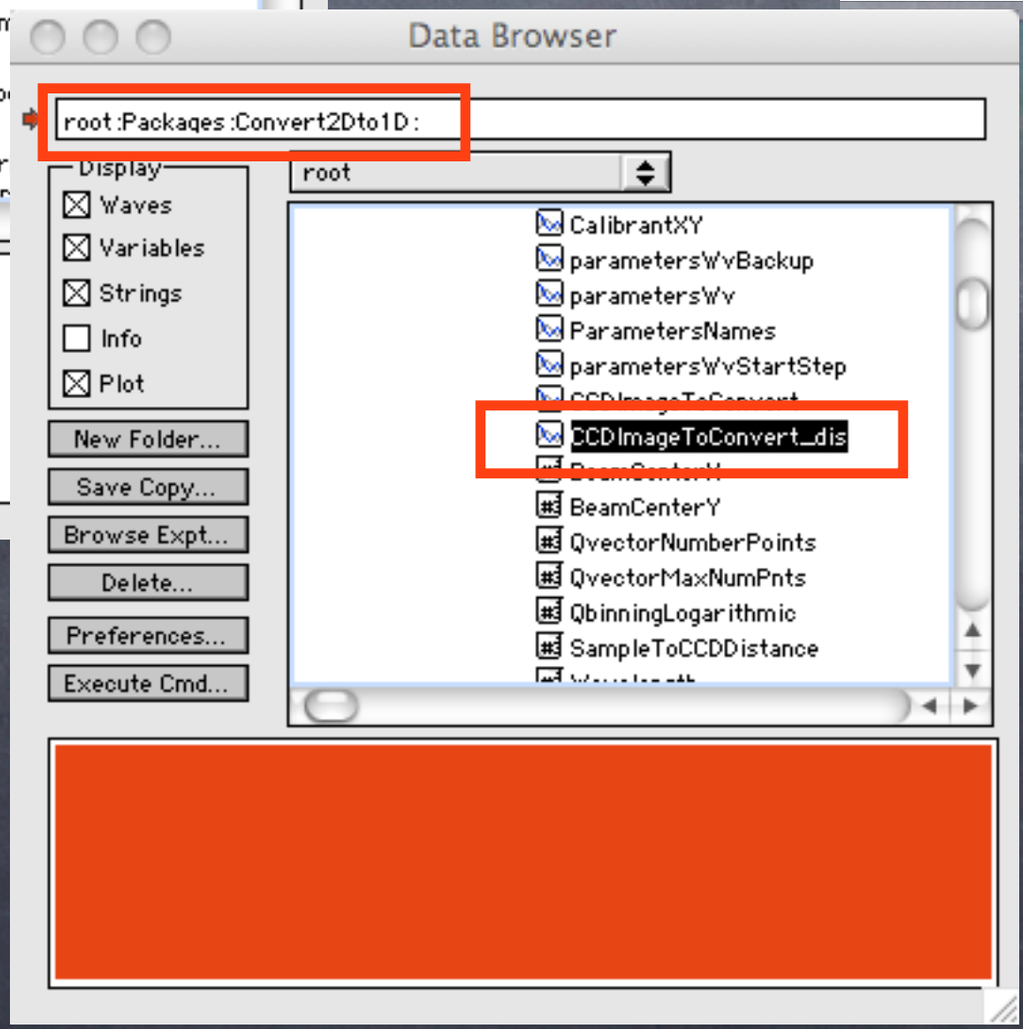


Where is the data?

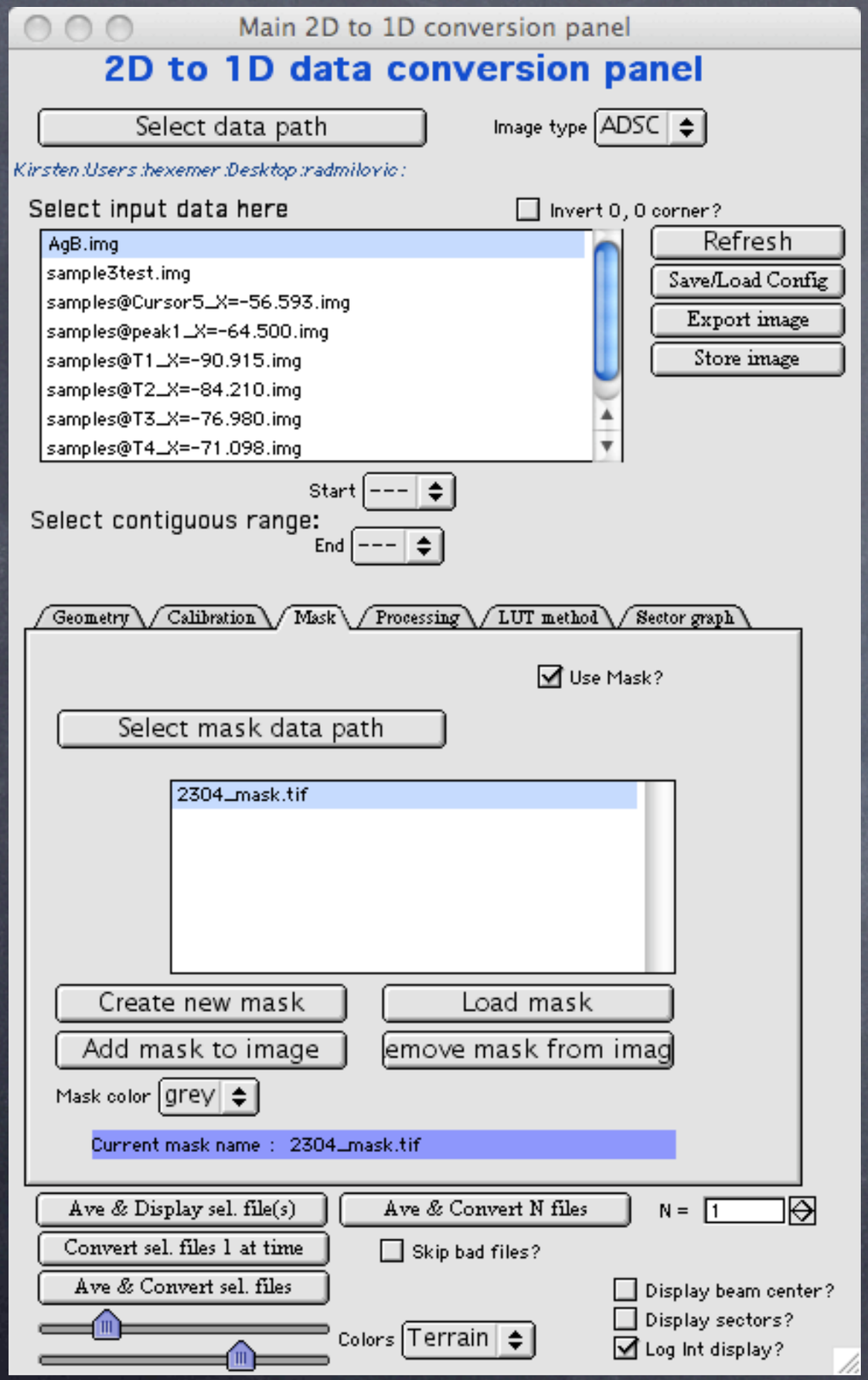
Data -> Data Browser





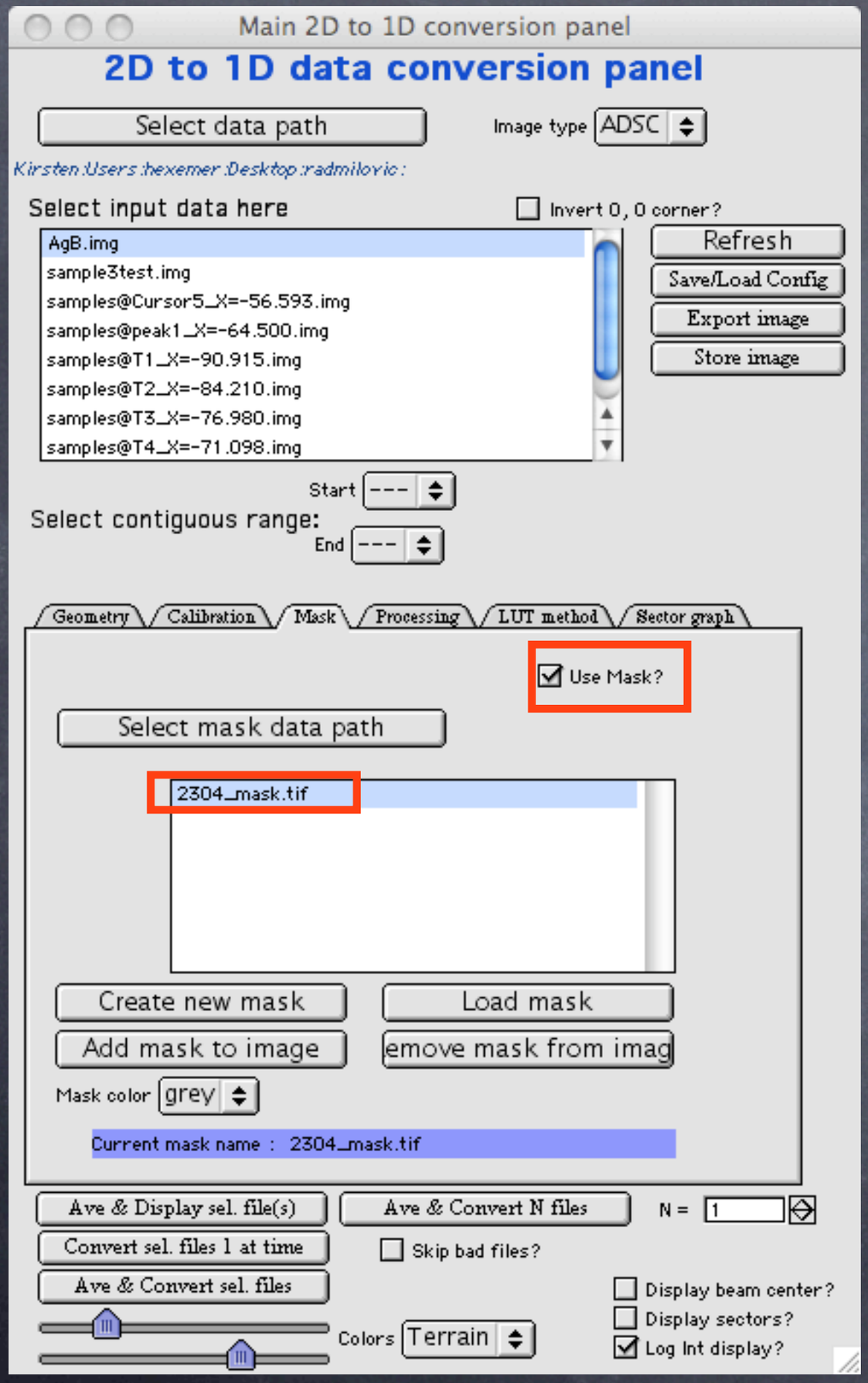


Radial Integration



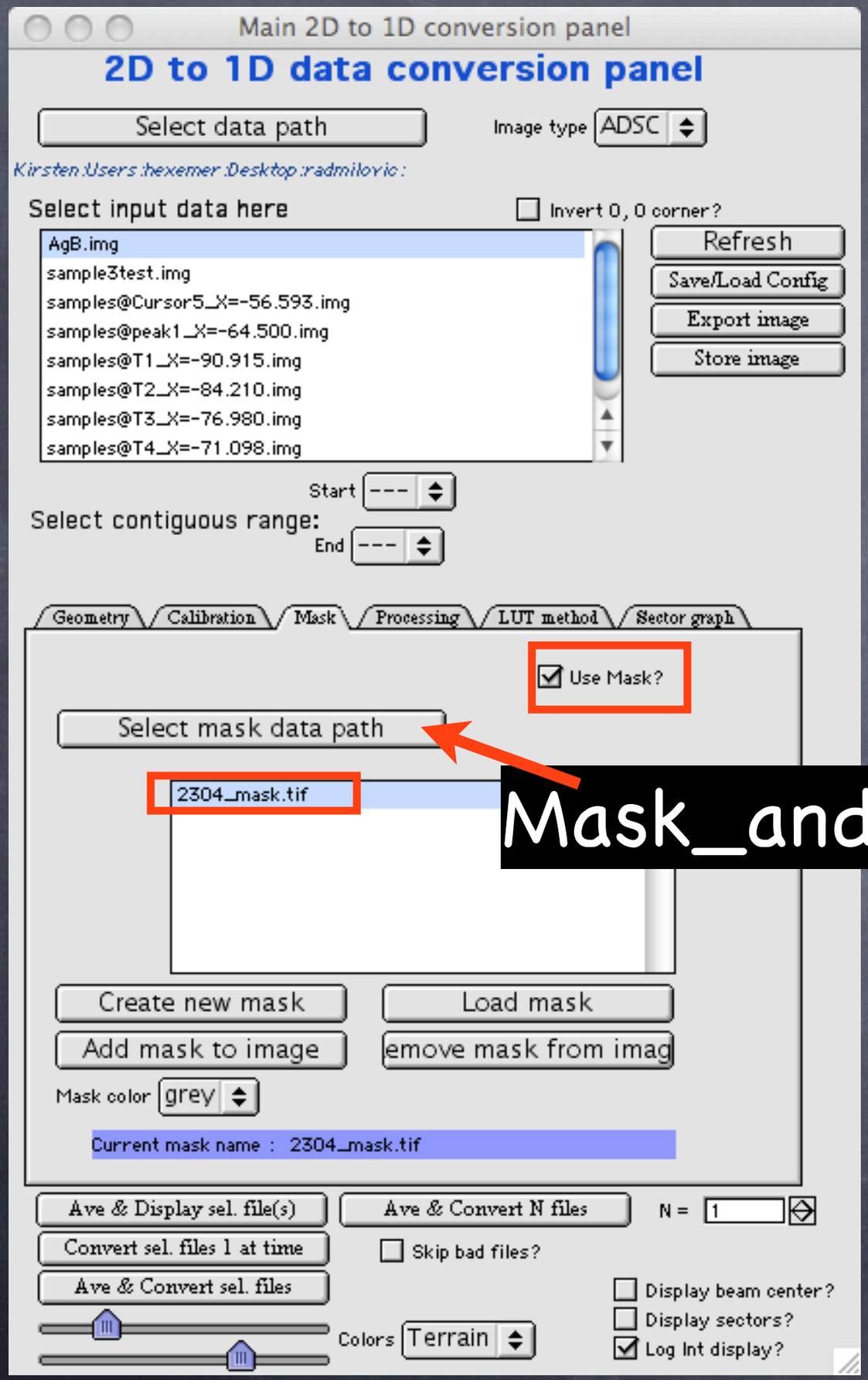
Select "Use Mask" to mask gap between ccd modules

Radial Integration



Select "Use Mask" to mask gap between ccd modules

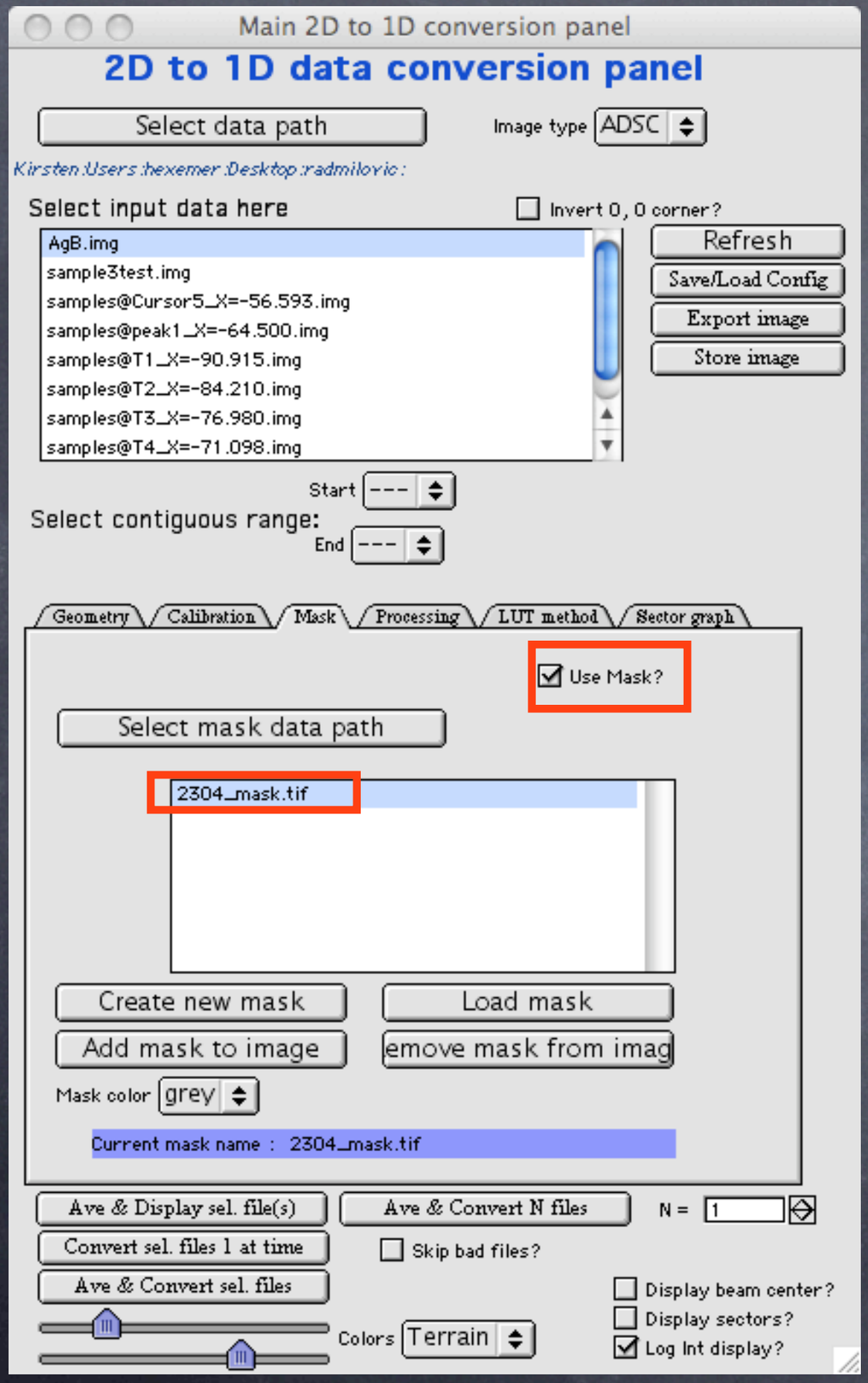
Radial Integration



Select "Use Mask" to mask gap between ccd modules

Mask_and_Background/2304_mask.tif

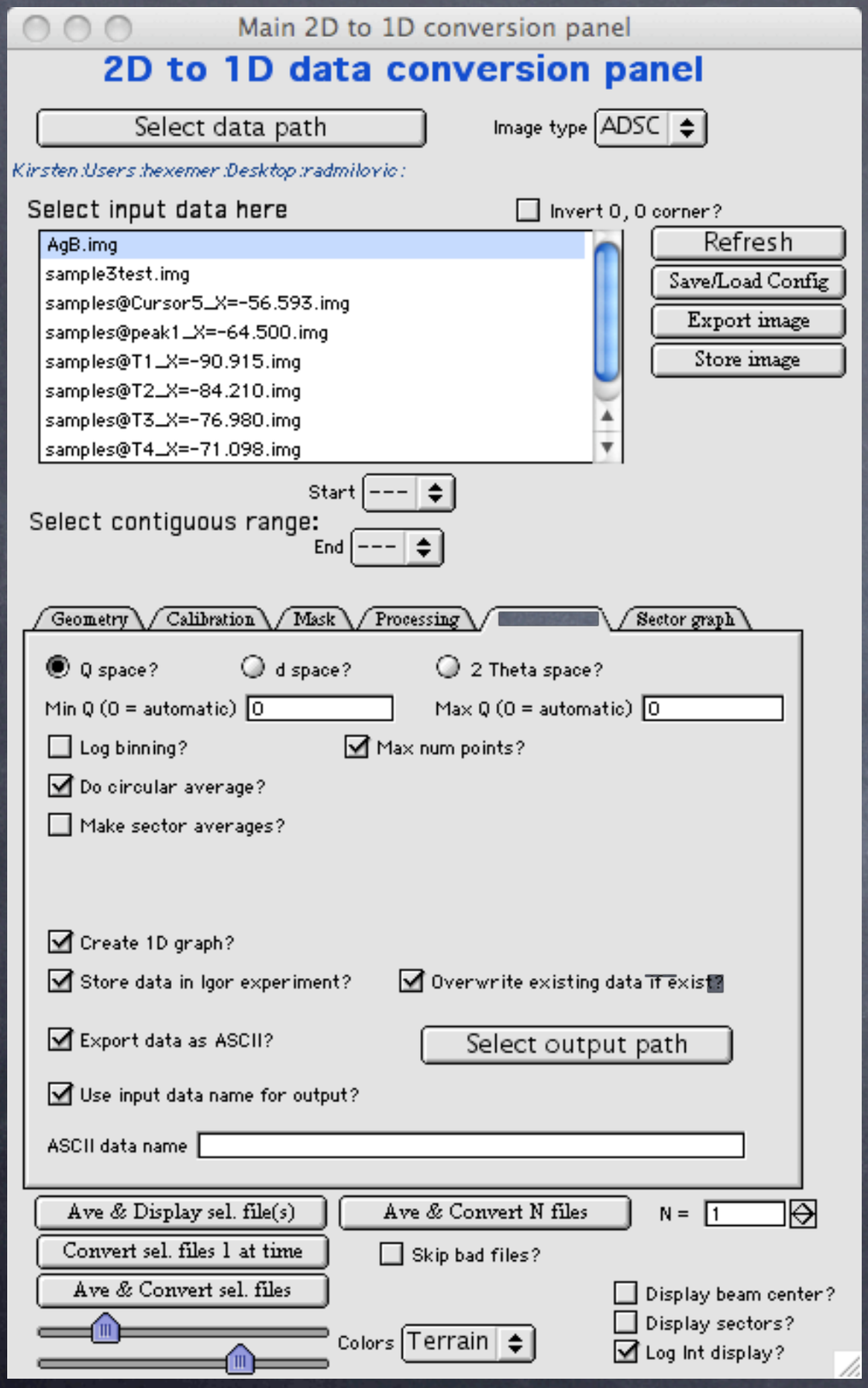
Radial Integration

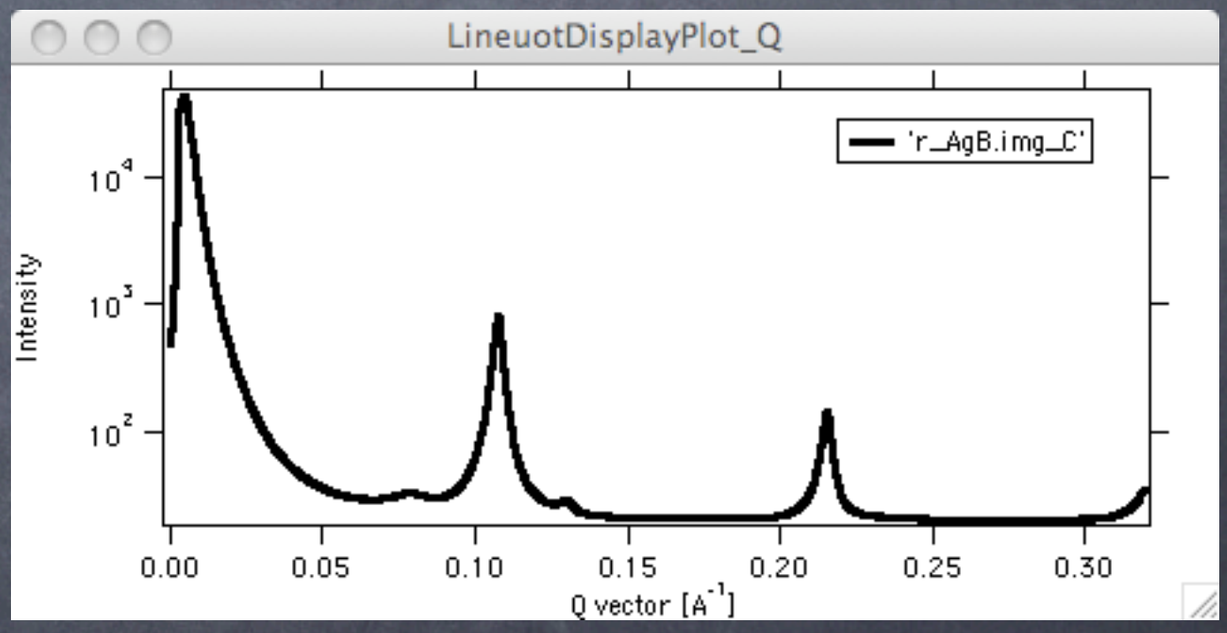


Select "Use Mask" to mask gap between ccd modules

Radial Integration

Select "LUT method"

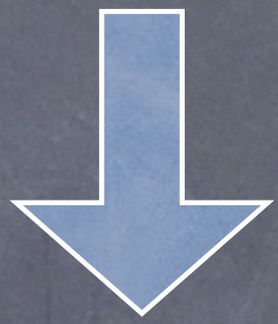


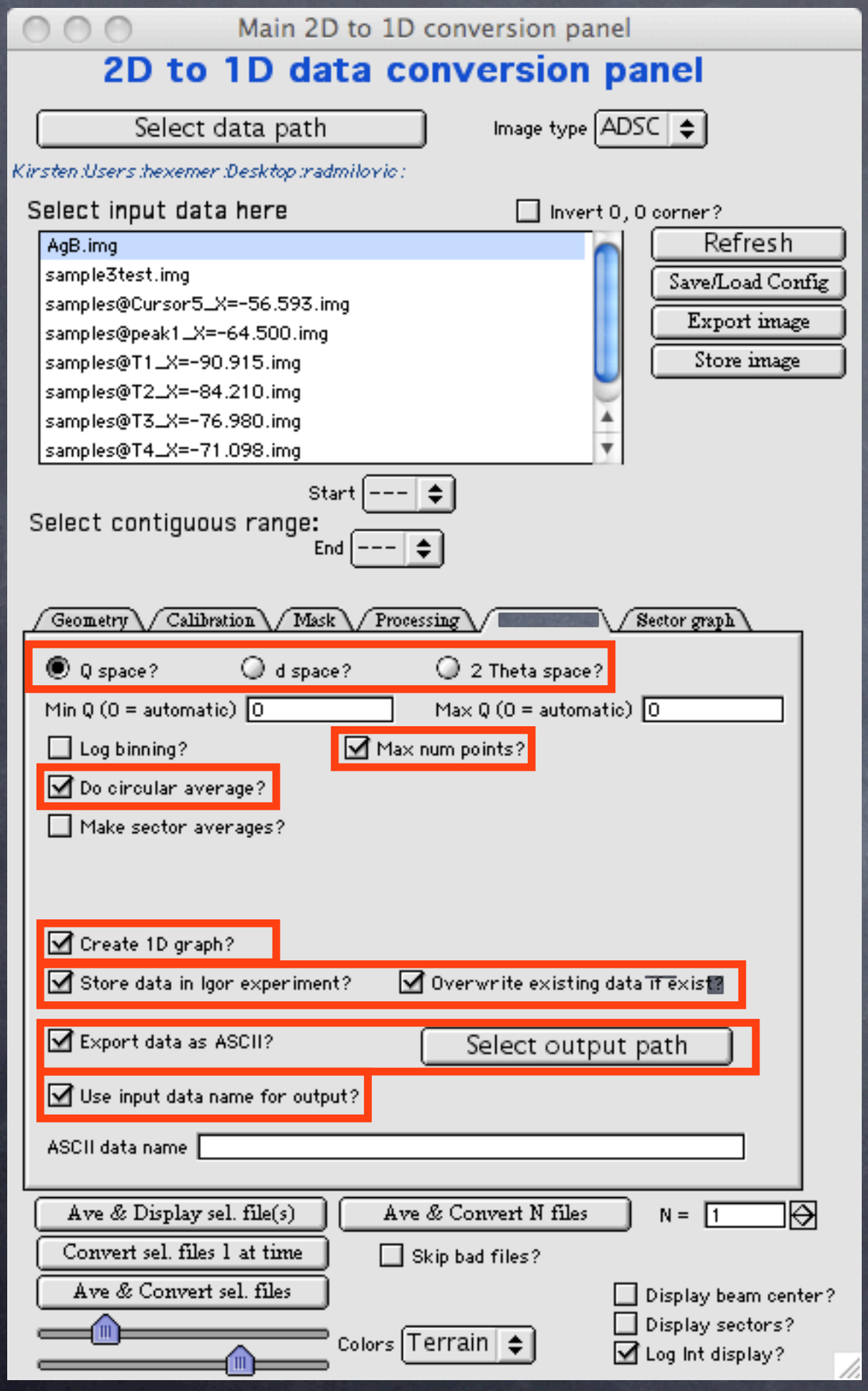


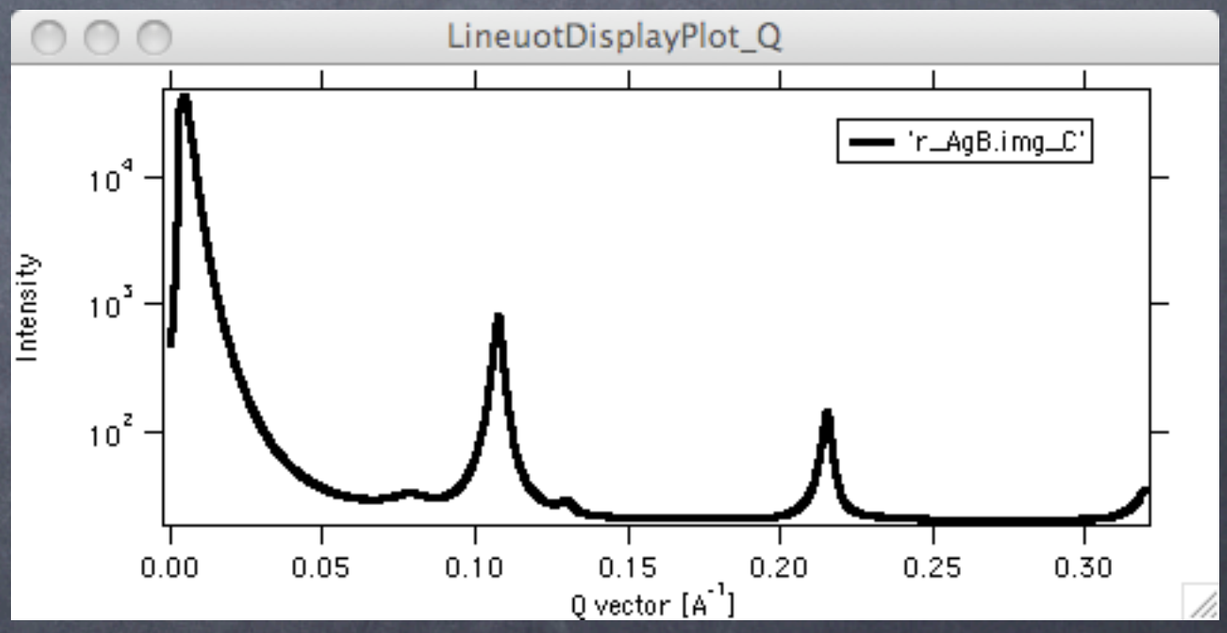
why does it take a long time for the first image?

Radial Integration

Select "LUT method"



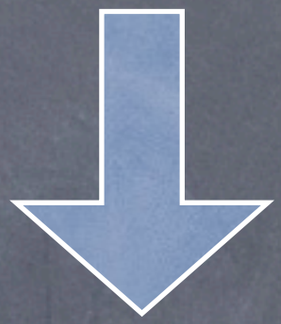


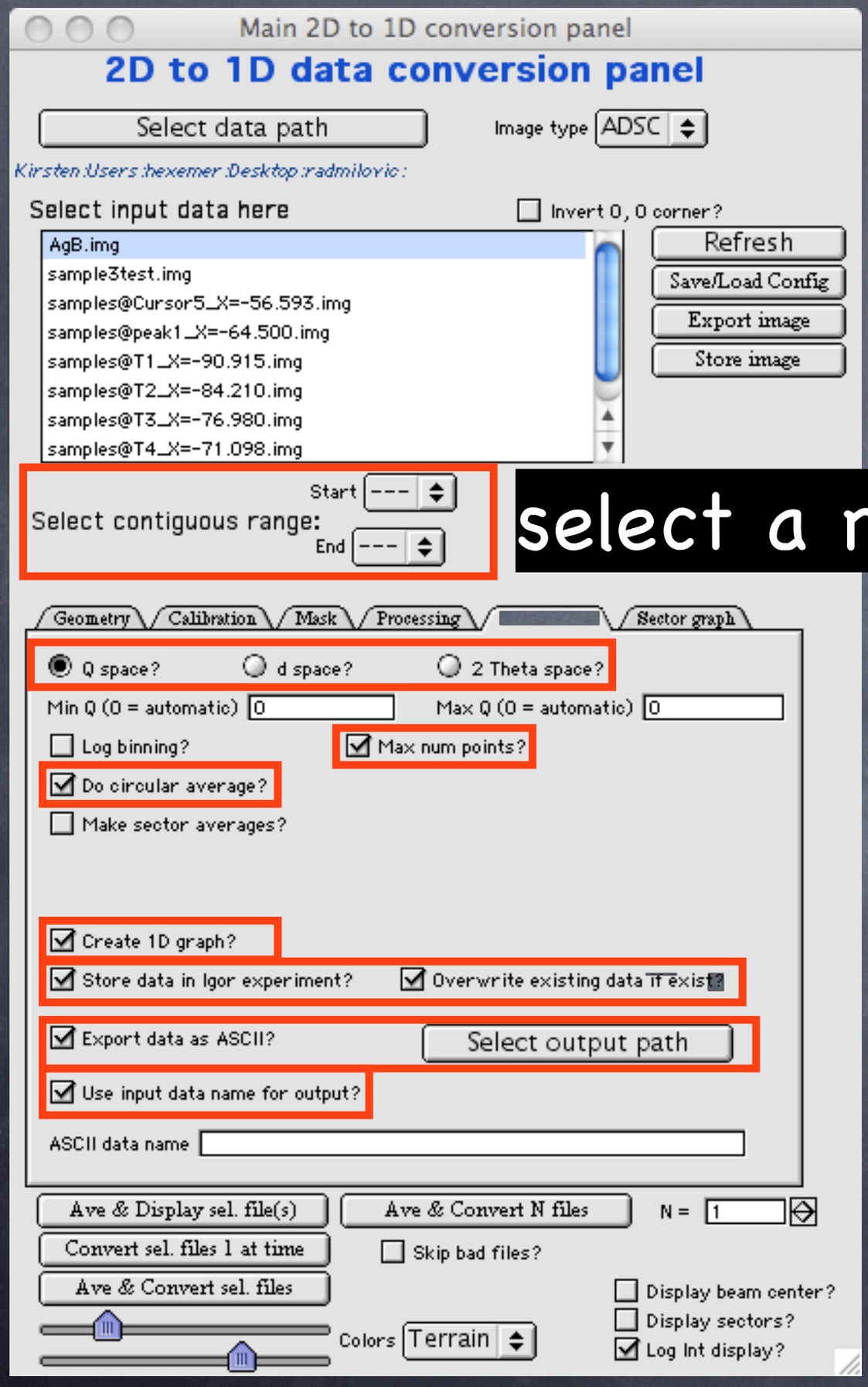


why does it take a long time for the first image?

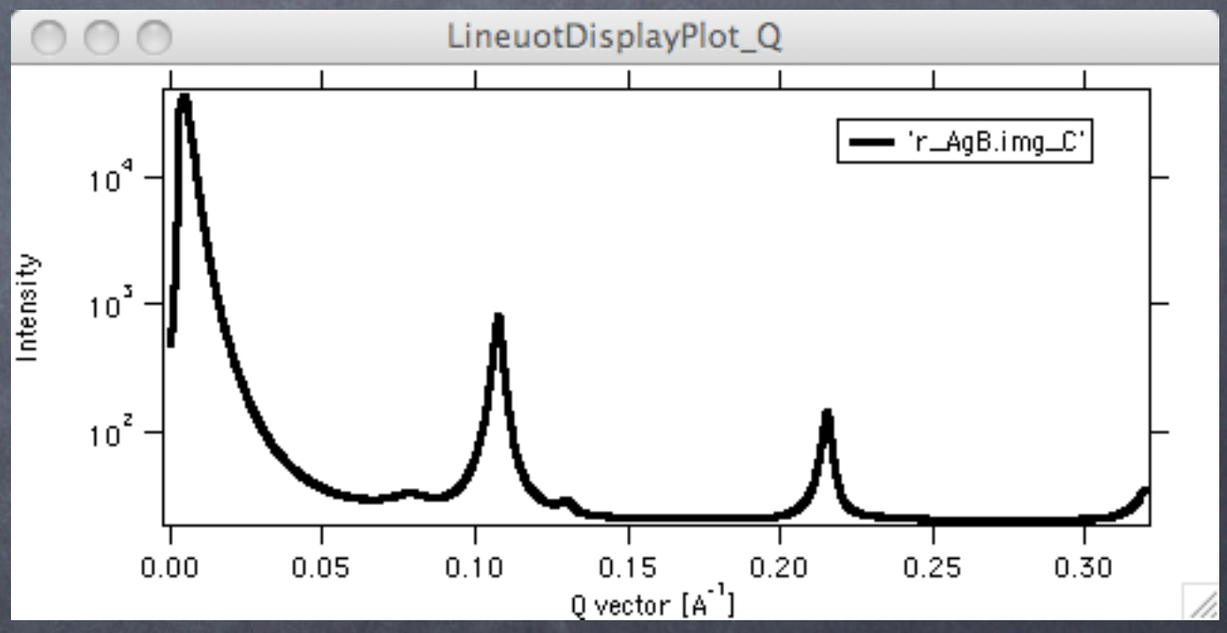
Radial Integration

Select "LUT method"





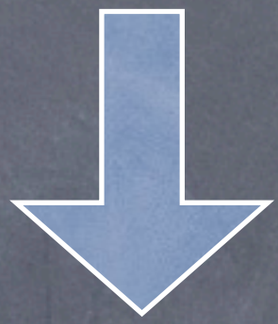
select a range

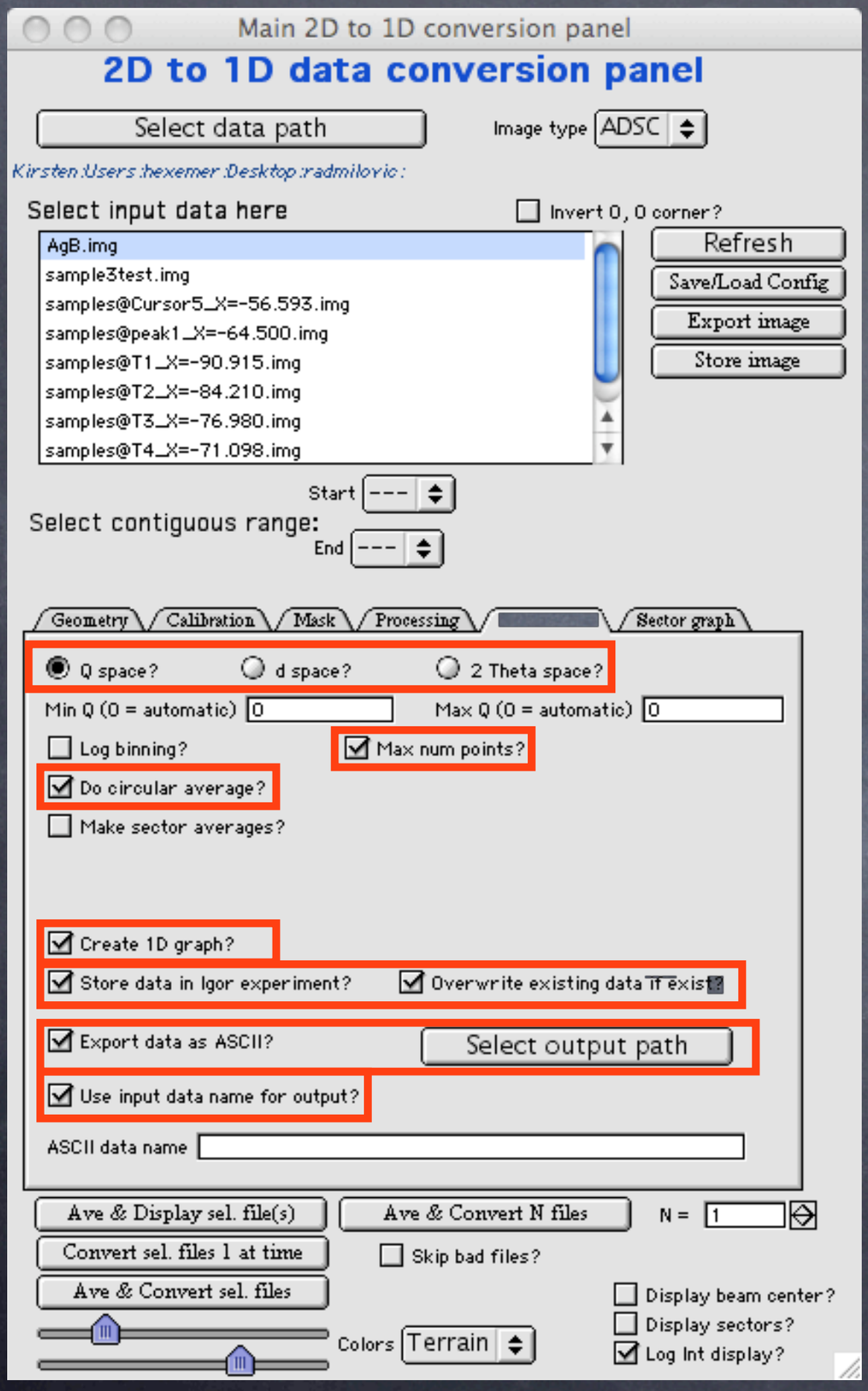


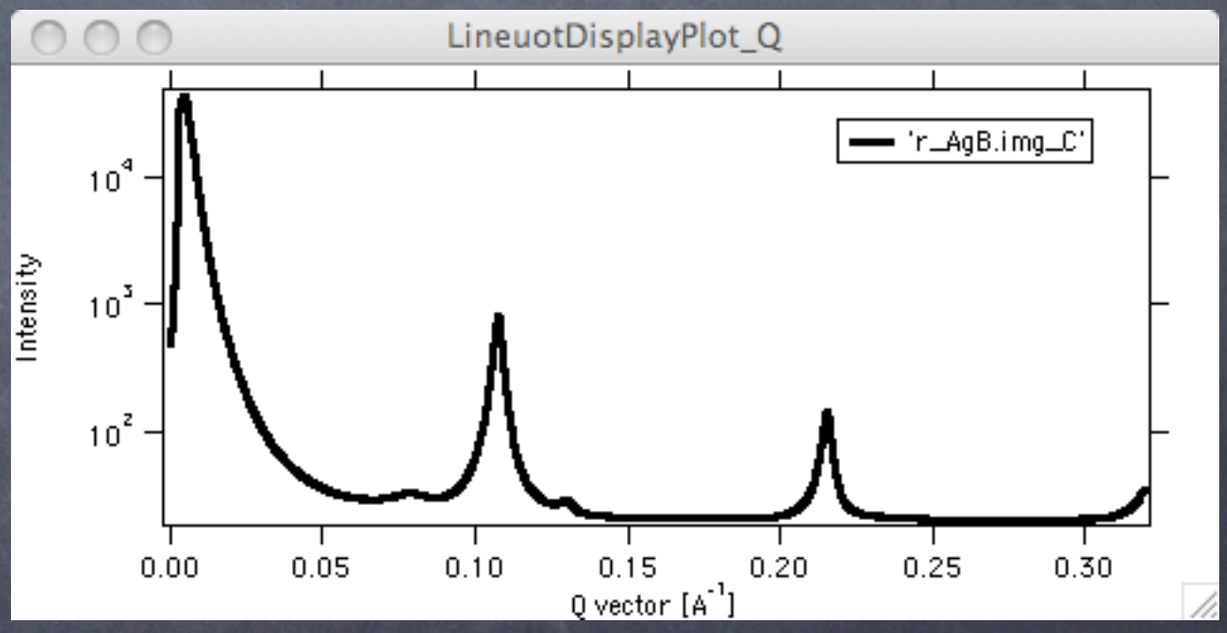
why does it take a long time for the first image?

Radial Integration

Select "LUT method"

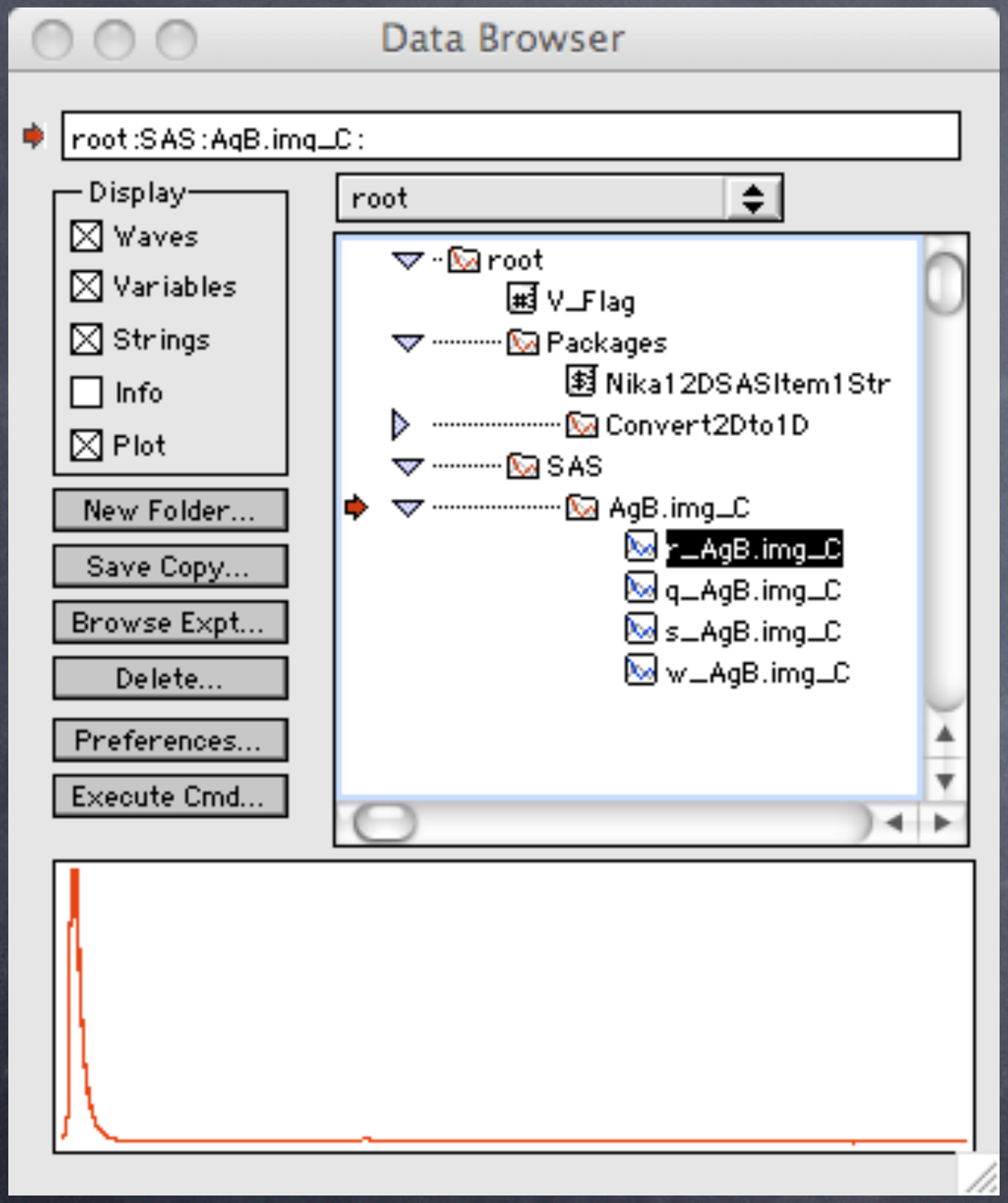


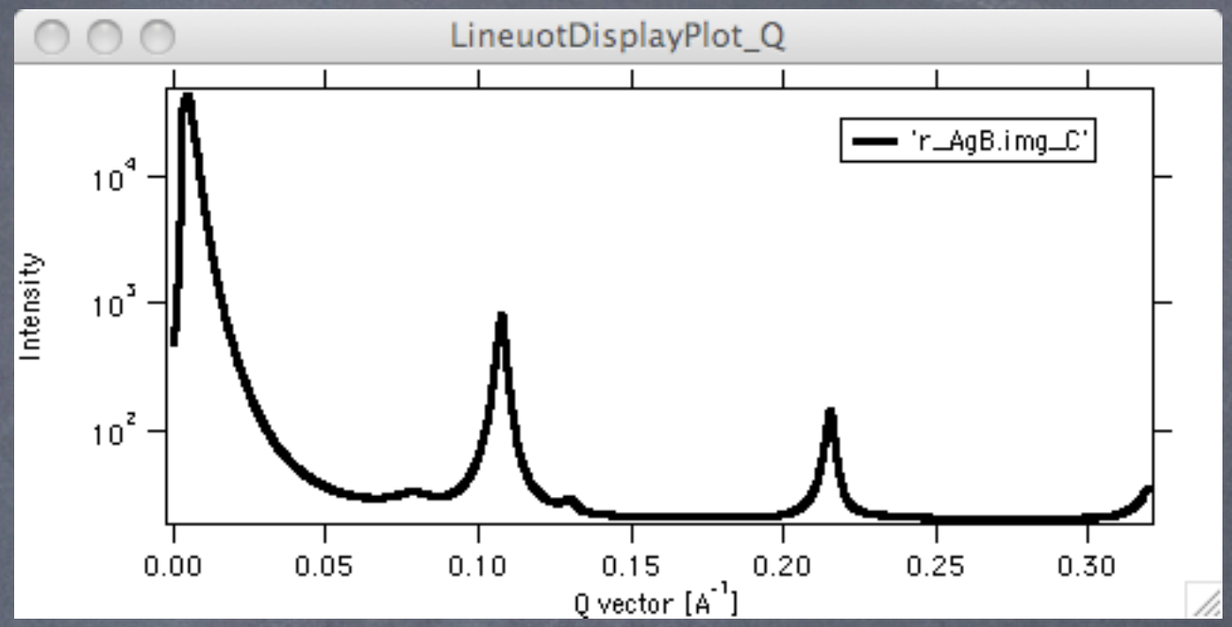




why does it take a long time for the first image?

Where is the data?



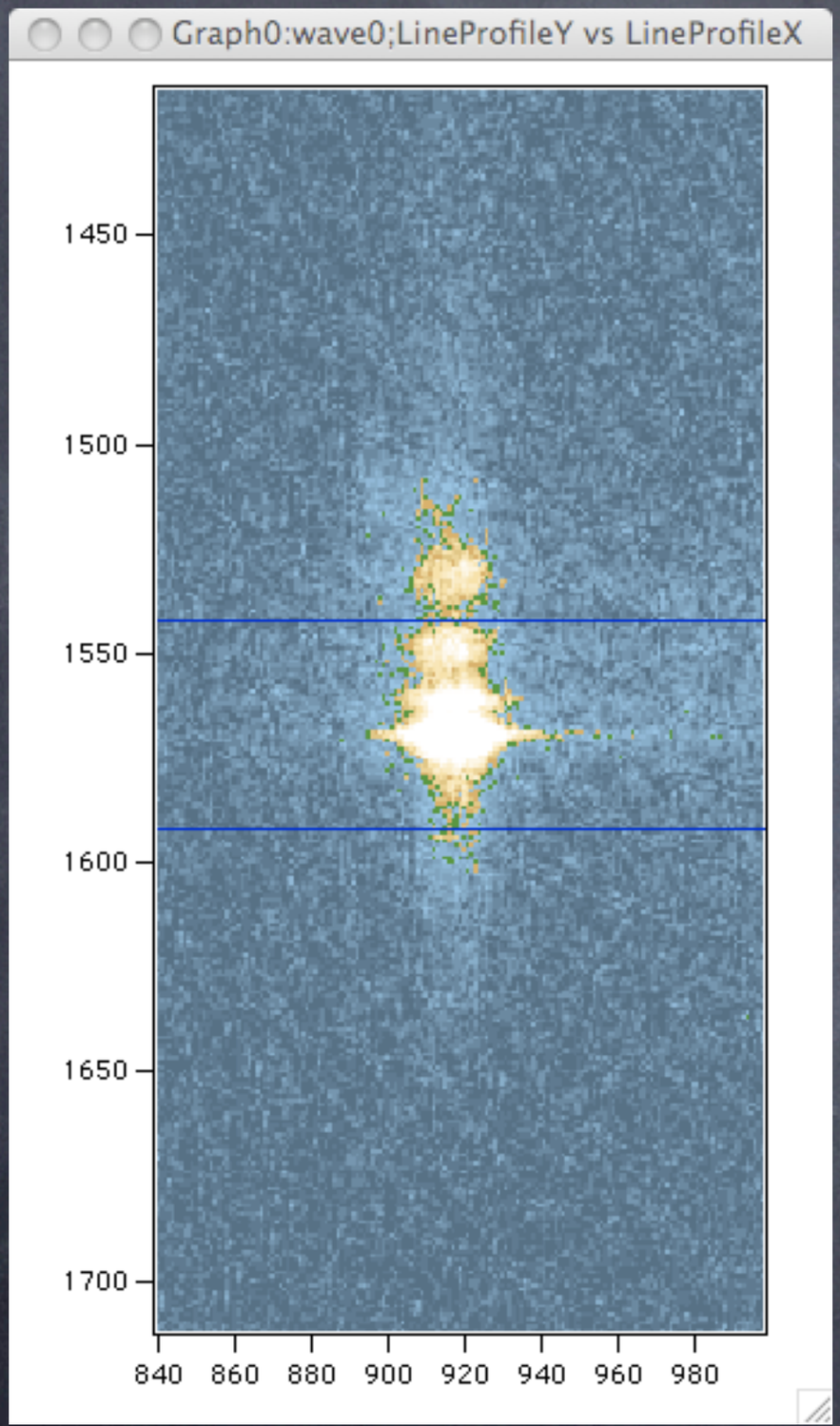


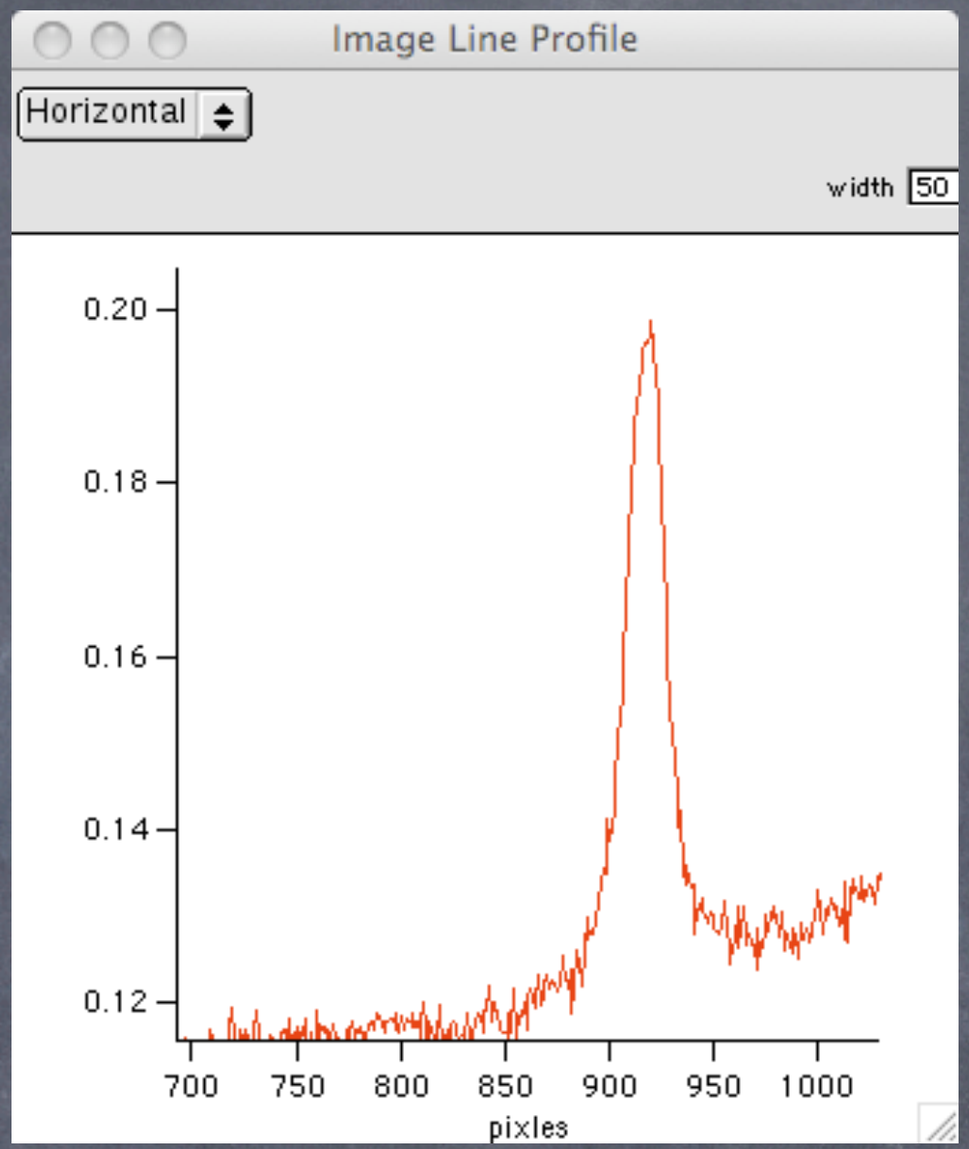
r = Radial intensity

q = q_value

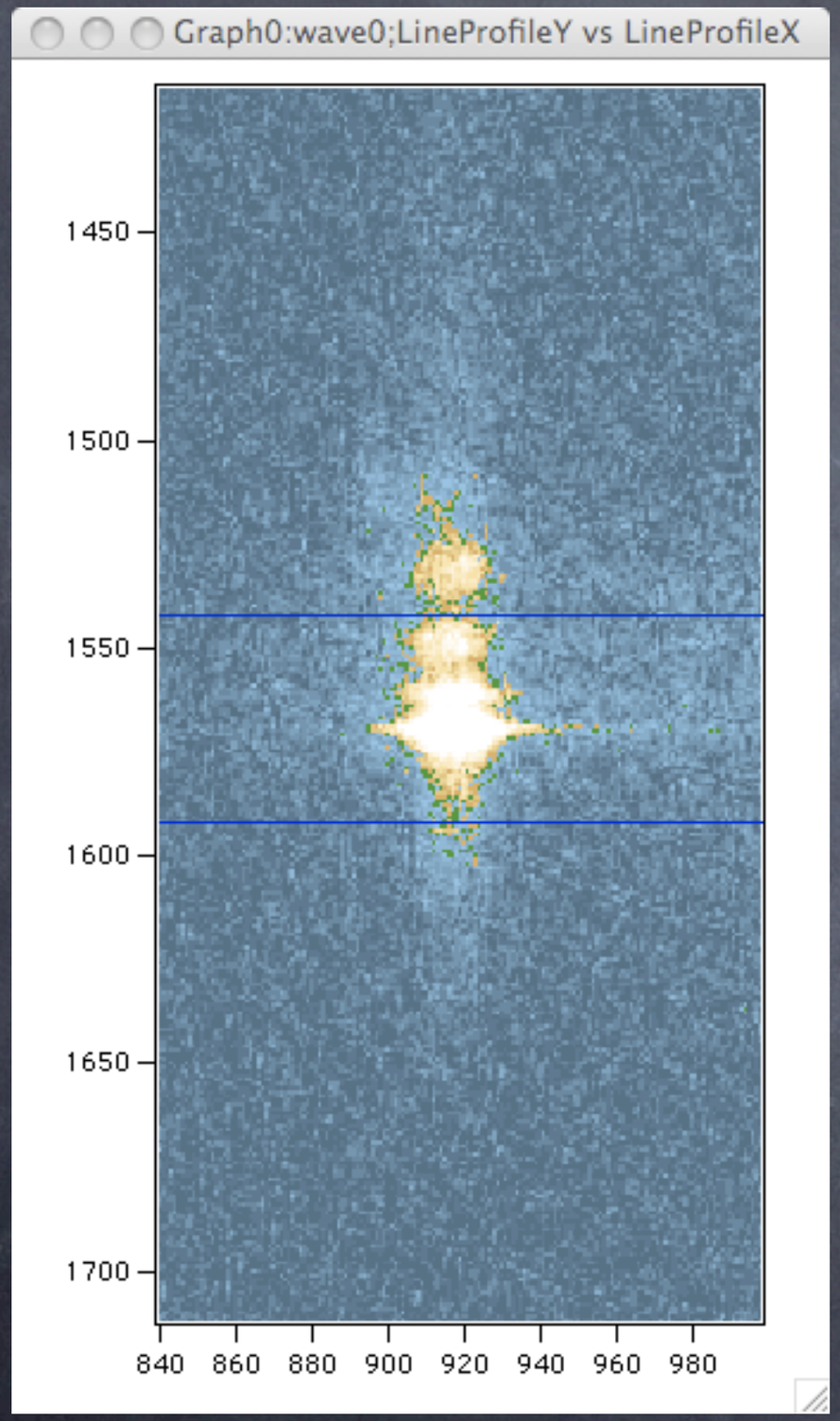
s = error (sqrt(r))

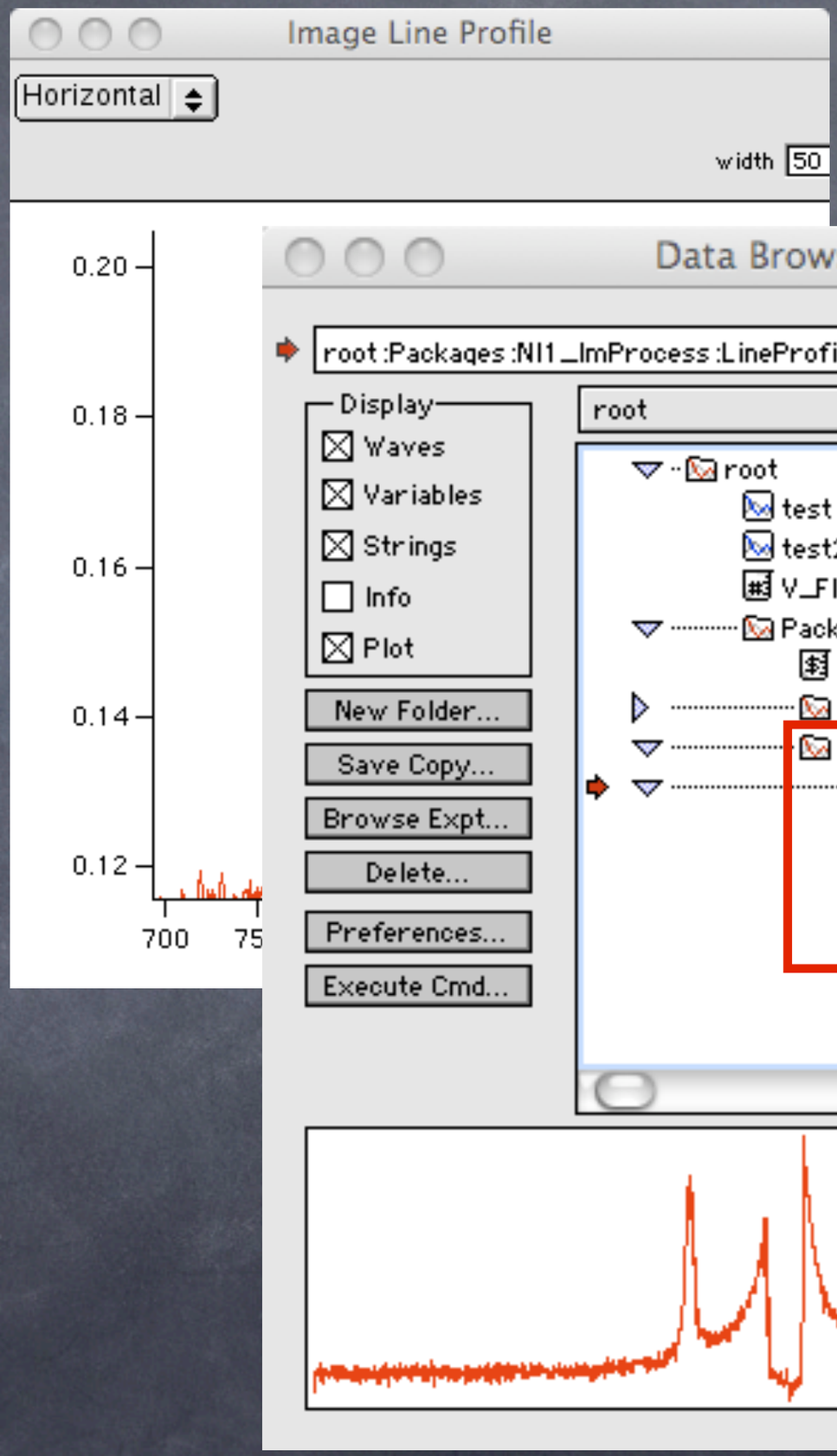
Line integration





Line integration





Before you Leave

- Clean up preparation area and remove your samples
- Close helium/other gasses
- Tell us when you are done collecting data
- Report Errors
- Suggest Improvements
- Getting your data through sftp password: