# CLS Run Summer 2023 Logbook

*June 15-18, 2023*

Participants: Richard Jones, Zisis Papandreou, Aram Teymurazyan, and Marcella Berg

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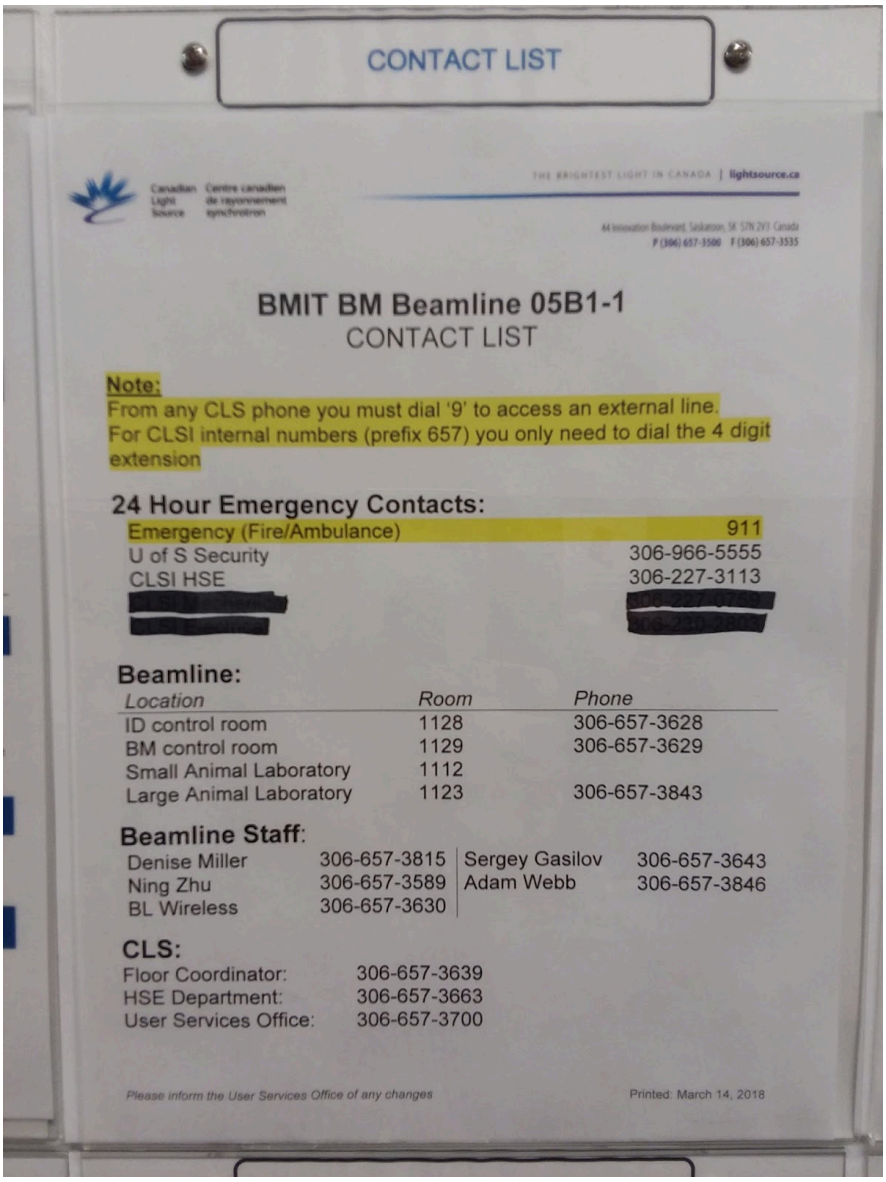
# Contact Information

- Phone numbers
    a. Richard Jones, richard.t.jones@uconn.edu, (860) 377-5224 (cell)
    b. Zisis Papandreou, zisis@uregina.ca, (306) 596-7775 (cell)
    c. Aram Teymurazyan, Aram.Teymurazyan@uregina.ca, (306) 450-5387 (cell)
    d. Marcella Berg, marcella.berg@uregina.ca, (639)915-0365 (cell)
    e. Adam Webb, BMIT Science Associate, office: 306-657-3846, cell: 306-372-8304
    f. BMIT and other CLS phone numbers are listed in the two images below.

*New image below updated on June 15, 2023. Please note that it is out of date: Denise is no longer at CLS; Adam is our contact for both hardware and software.*



CONTACT LIST

Canadian Light Source / Centre canadien de rayonnement synchrotron

THE BRIGHTEST LIGHT IN CANADA | lightsource.ca

44 Innovation Boulevard, Saskatoon, SK S7N 2V3 Canada
P (306) 657-3500 F (306) 657-3535

**BMIT BM Beamline 05B1-1**
CONTACT LIST

**Note:**
From any CLS phone you must dial '9' to access an external line.
For CLSI internal numbers (prefix 657) you only need to dial the 4 digit extension

**24 Hour Emergency Contacts:**

| | |
|---|---|
| Emergency (Fire/Ambulance) | 911 |
| U of S Security | 306-966-5555 |
| CLSI HSE | 306-227-3113 |
| [redacted] | [redacted] |

**Beamline:**

| *Location* | *Room* | *Phone* |
|---|---|---|
| ID control room | 1128 | 306-657-3628 |
| BM control room | 1129 | 306-657-3629 |
| Small Animal Laboratory | 1112 | |
| Large Animal Laboratory | 1123 | 306-657-3843 |

**Beamline Staff:**

| | | | |
|---|---|---|---|
| Denise Miller | 306-657-3815 | Sergey Gasilov | 306-657-3643 |
| Ning Zhu | 306-657-3589 | Adam Webb | 306-657-3846 |
| BL Wireless | 306-657-3630 | | |

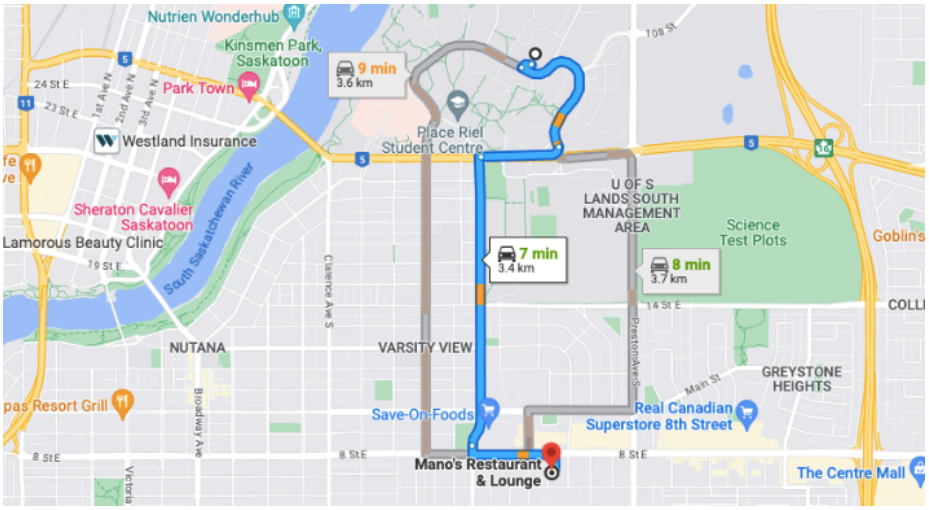
**CLS:**

| | |
|---|---|
| Floor Coordinator: | 306-657-3639 |
| HSE Department: | 306-657-3663 |
| User Services Office: | 306-657-3700 |

*Please inform the User Services Office of any changes*

Printed: March 14, 2018

# Pre-experiment group dinner



# Goals for this run

1. Check out beamline optics and verify camera focus
2. Verify that the diamonds case arrived intact
3. Mount JD80-211 on holder and install in beamline
4. Take rocking curves of JD80-211 in 4 orientations
5. Transfer data from JD80-211 to UConn, verify data quality
6. Dismount JD80-211 and return to packaging
7. Mount JD80-212 on holder and install in beamline
8. Take rocking curves of JD80-212 in 4 orientations
9. Transfer data from JD80-212 to UConn, verify data quality
10. Dismount JD80-212 and return to packaging
11. Mount JD80-213 on holder and install in beamline
12. Take rocking curves of JD80-213 in 4 orientations
13. Transfer data from JD80-213 to UConn, verify data quality
14. Dismount JD80-213 and return to packaging
15. Transfer all remaining data, photos, and software tools to UConn
16. Clean up and check out.

# Diamond inventory

We have a big spreadsheet with the complete inventory of all GlueX diamonds at the link below.

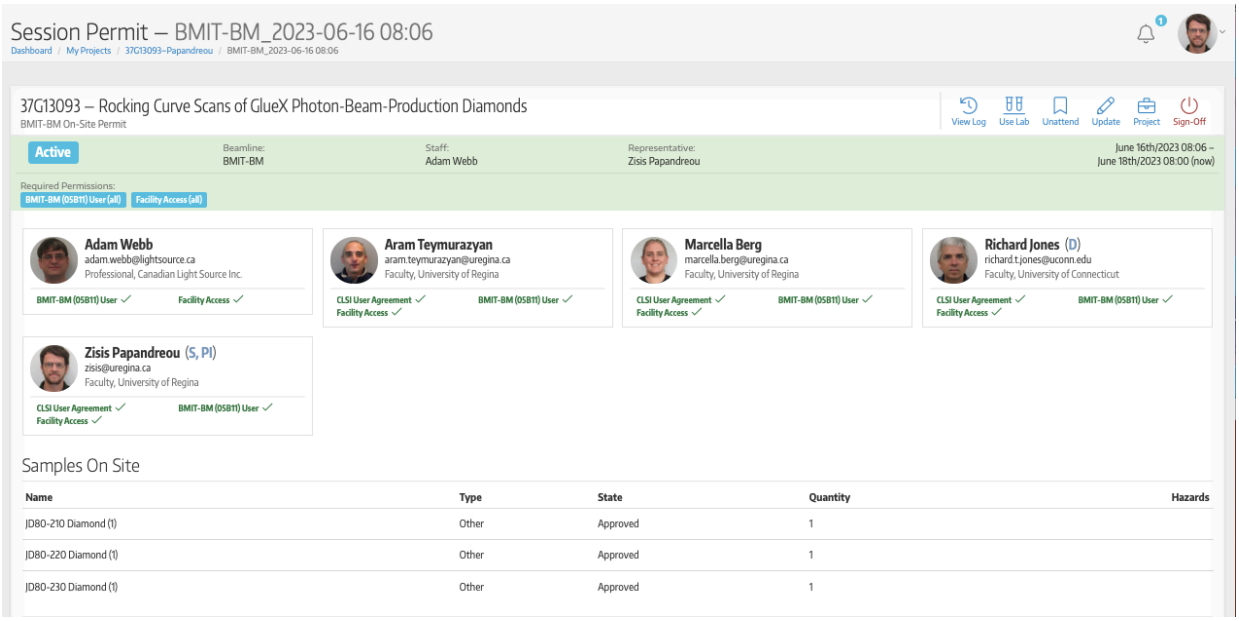
- full GlueX diamond inventory

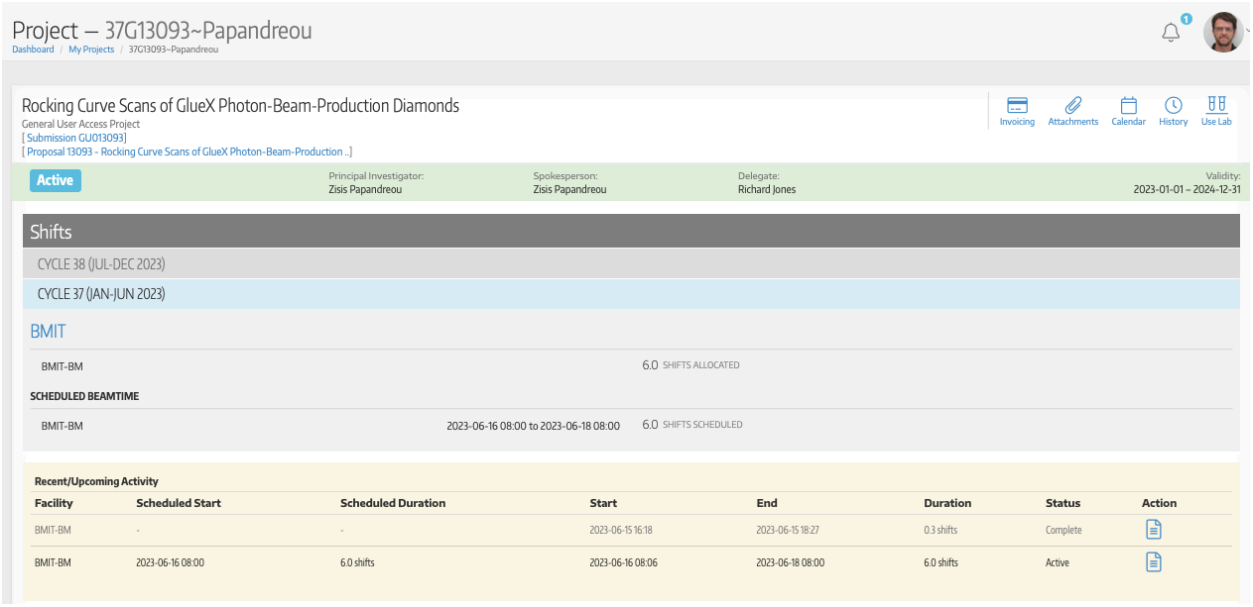
The list below shows the samples that we brought with us to study during this run.

1. JD80-200 - this original sample was scanned during the 12-2021 run, and then sent off to Delaware Diamond Knives to be sliced into 3 pieces. See below for the photos taken at unpacking time in the counting room for the containers each of these were carried in to CLS.
    a. JD80-211
    b. JD80-212
    c. JD80-213
2. JD80-100 - also in the carrying case, see photo (multi-row carrier, middle row)
3. JD80-300 - also in the carrying case, see photo below


JD80-1
Single Crystal
CVD DIAMOND Plates
3 off
270-EXP-0078
JD80-211
A: JD80-212
B: JD80-213

# Session Permit document

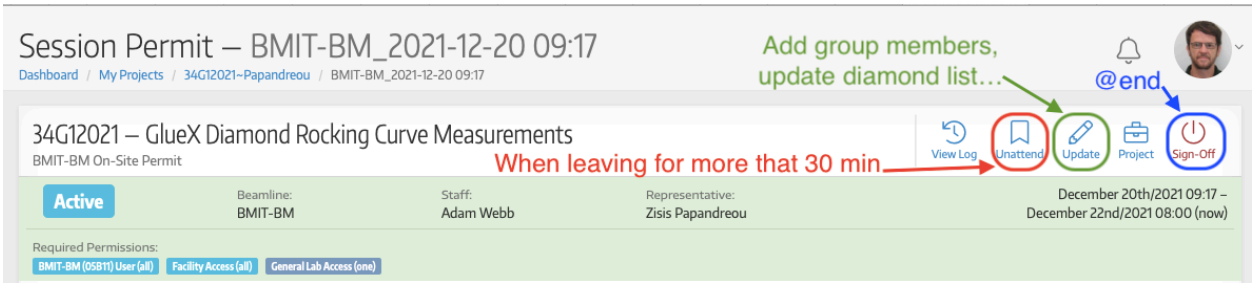


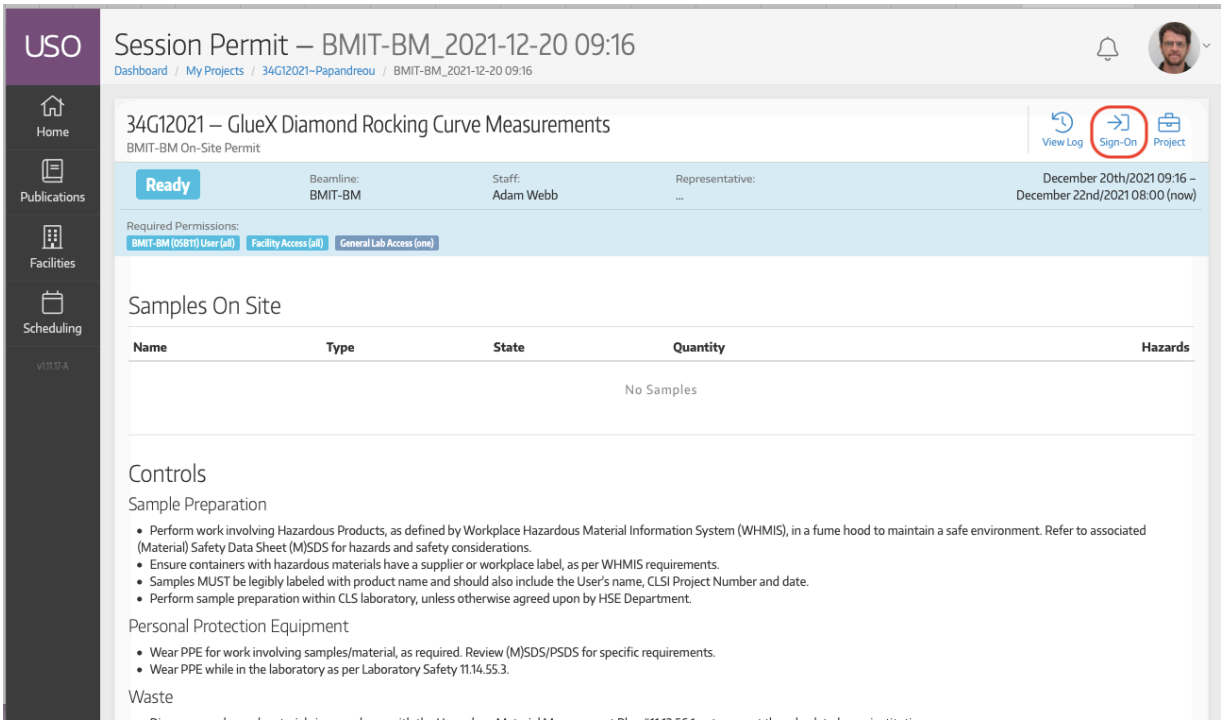

# Experimental Sign-in

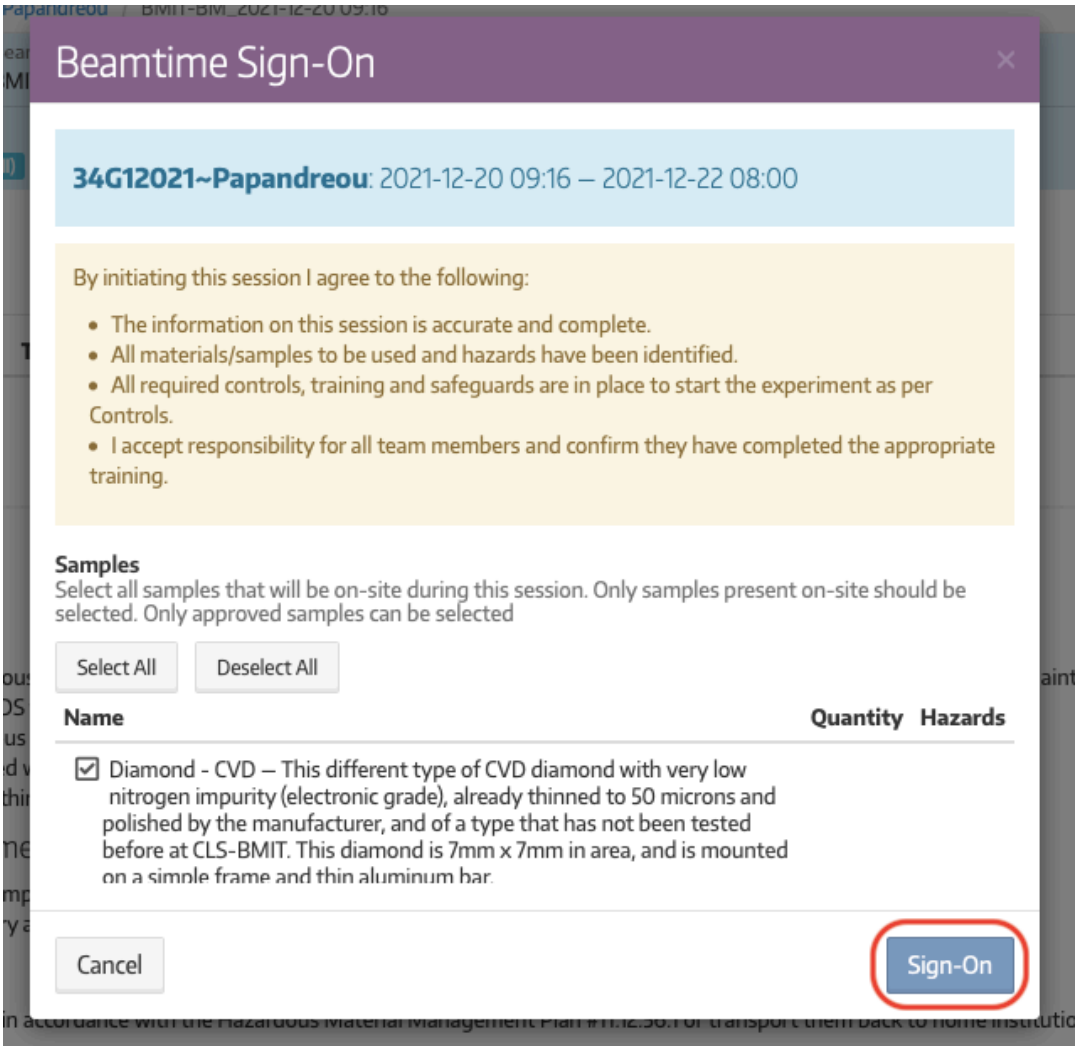
Once Marcella received its BSO (Beam Safety Operations) training, Adam Webb credited her with the completion of the course.  All other members had a valid BSO, which expires in December 2023. Then, each member logged into their CLS account and confirmed the results

of the training before the PI (ZP) could Sign in and take control of the experiment. At the end of the beam time, ZP will sign off. Also, if the experiment is to be left unattended, this can be indicated. All actions can be carried out by clicking on the respective button at the top right of the PI's account, as shown in the screenshot below (example is from the 2021 run).




# Beamtime Sign-on






# Info from previous runs

The logbooks from the August, 2016 run is a valuable store of useful information for how to carry out these rocking curve measurements at CLS. Use the link below to obtain read-only access.

- Logbook from GlueX CLS winter run 2021
- Link to photos taken during winter run 2021
- Logbook from GlueX CLS summer run 2019
- Link to photos taken during summer run 2019
- Logbook from GlueX CLS fall run 2017
- Link to photo directory from November, 2017
- Logbook from GlueX CLS summer run 2016

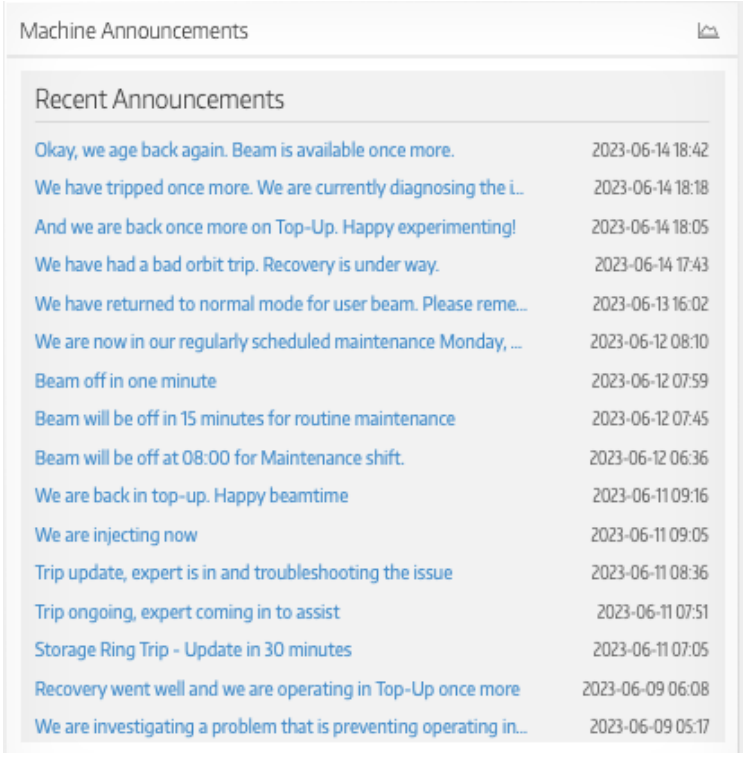
- Link to photos taken during summer run 2016
- Logbook from CLS run in September, 2016
- Link to photo directory from September, 2016

# Shift schedule

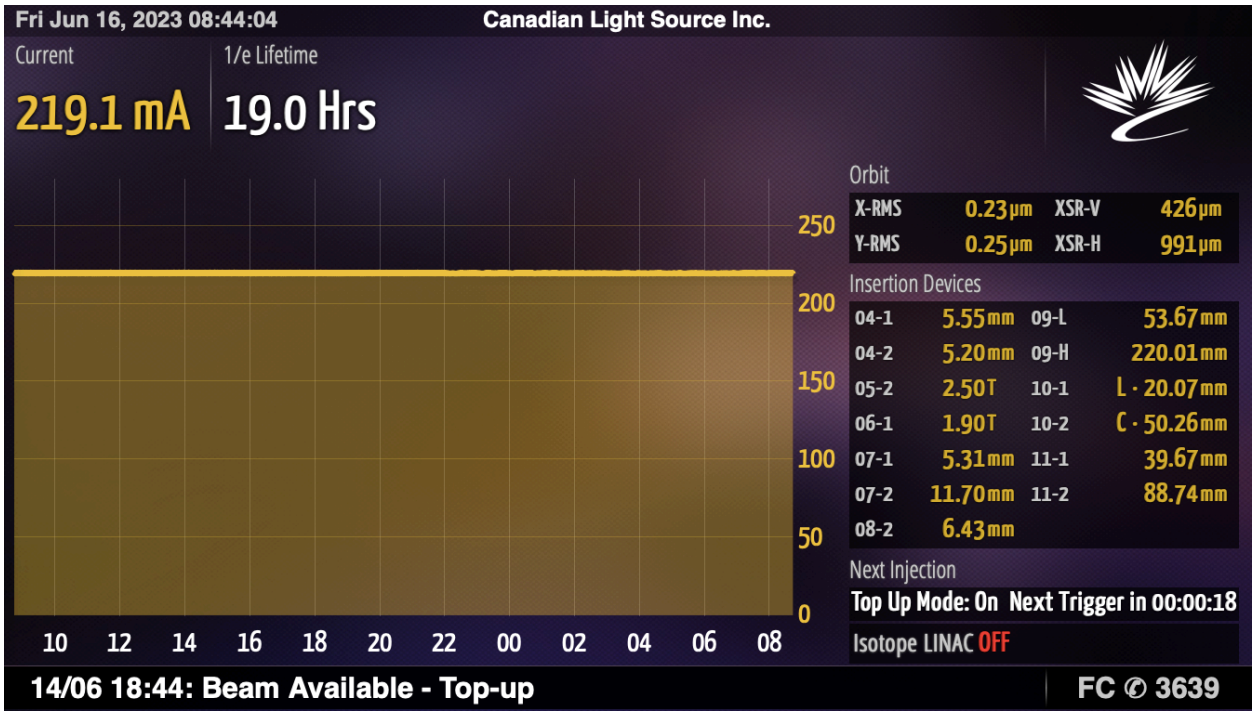
*June 16, 2023 [rtj, zp, at, mb]*
We all arrived at the BMIT-BM beamline at 7:50am on June 16, and started unpacking for the run. We will decide how to stagger our teams for around-the-clock running later on, after data collection is underway.

# Accelerator

Beam used to be refilled every 8 hours but now is in top up mode: injection every 2 minutes. Occasionally, vacuum is lost in BMIT. If this occurs, the shutter automatically closes. On the beam control computer, the shutter functions will appear red and will be inoperative (meaning the shutter cannot be opened). In such a case, we are to call the Floor Coordinator. That person is our single point of contact with accelerators and technical people; we do not call the latter directly; the Floor Coordinator does it on our behalf. The recent accelerator performance is shown below.



Accelerator screen as of the morning of June 16, 2023.



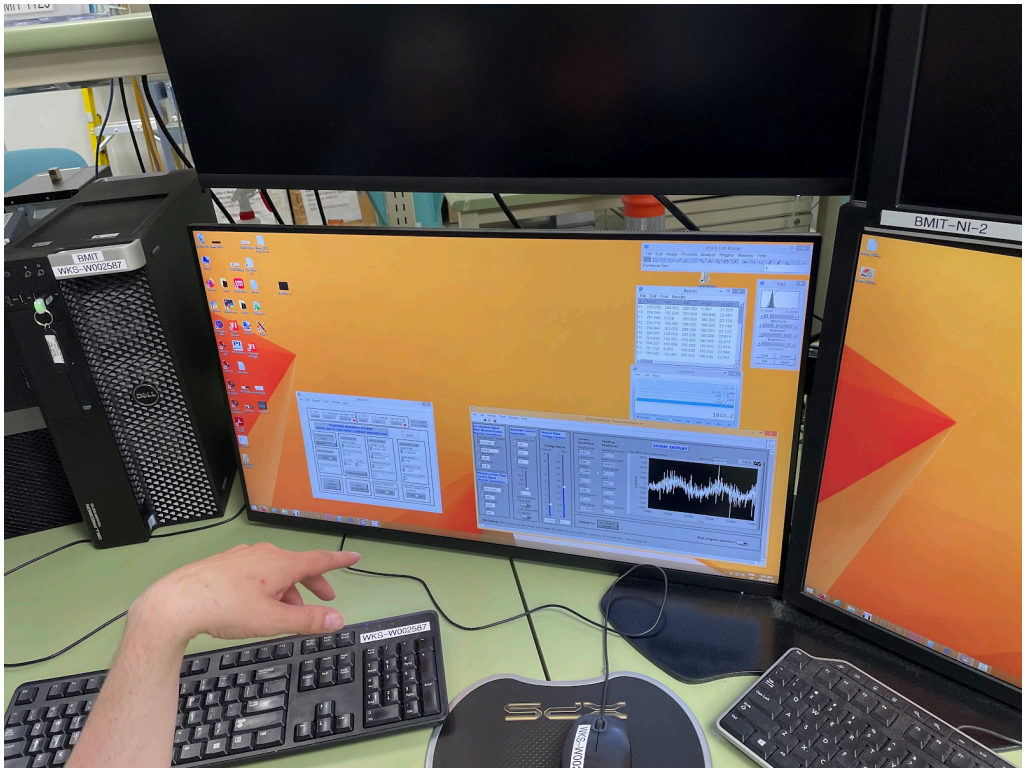

# Setting up the counting room workstations

There is a new data acquisition computer and software. The old Windows machine has been repurposed to transfer data and moved to the computer room around the corner.

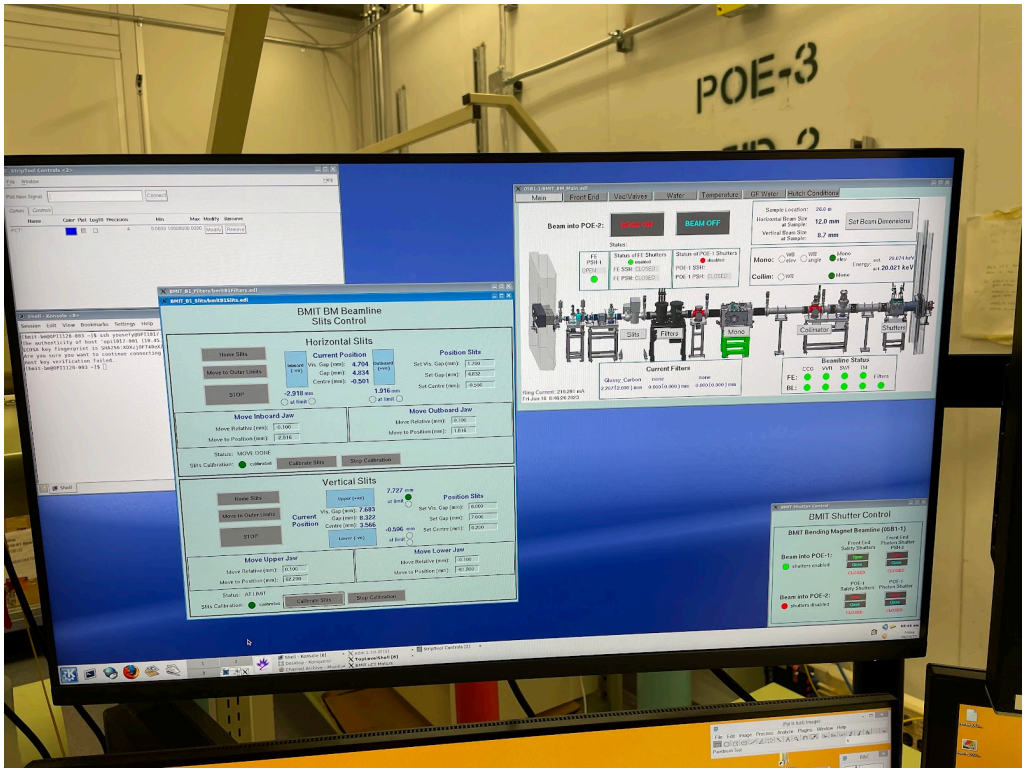
Photo 1: Bottom screen, Adam closing all windows and starting from the beginning.

Photo 2: Top screen , Adam starting to set up the slit.

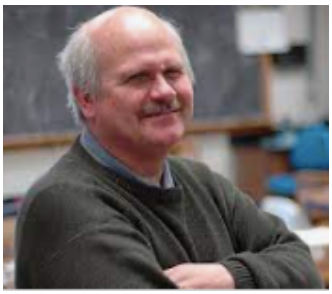
Photo 3: Slit settings.


BMIT
WKS-W002587
BMIT-NI-2
WKS-W002587

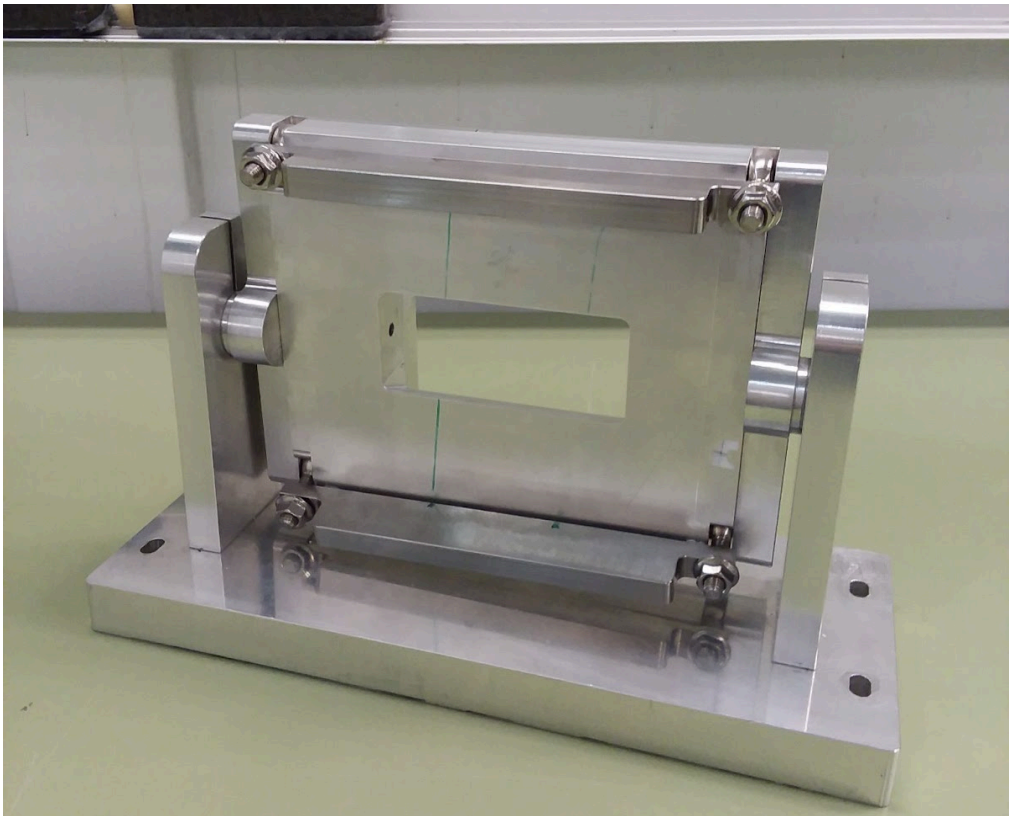

BMIT 1129
BMIT
WKS-W002587
BMIT BM Beamline
DC Monochromator Control
Beamline Setup: Mono and Collimator
Monochromator Elevation
Bragg Angle
BMIT BM Beamline
Beam Size at Sample Location
BMIT BM Beamline
Filters Control
BMIT Shutter Control

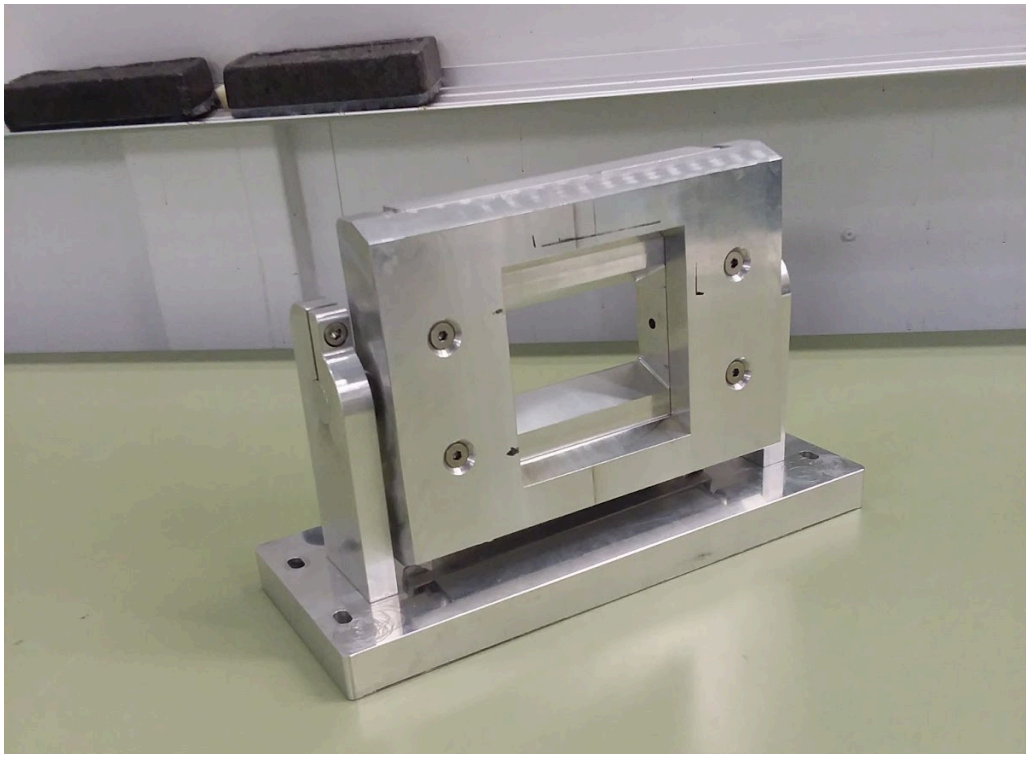



# Setting up the goniometer, camera



The aluminum frame that holds the diamonds was located in Dean Chapman's cabinet, inside the detector hutch. Dean gave us permission to use it. Zisis found it and placed it on the workspace outside the hutch, as pictured below.  Dean dropped by the experiment yesterday to say hello.  Thanks once again Dean!





## X-ray camera description

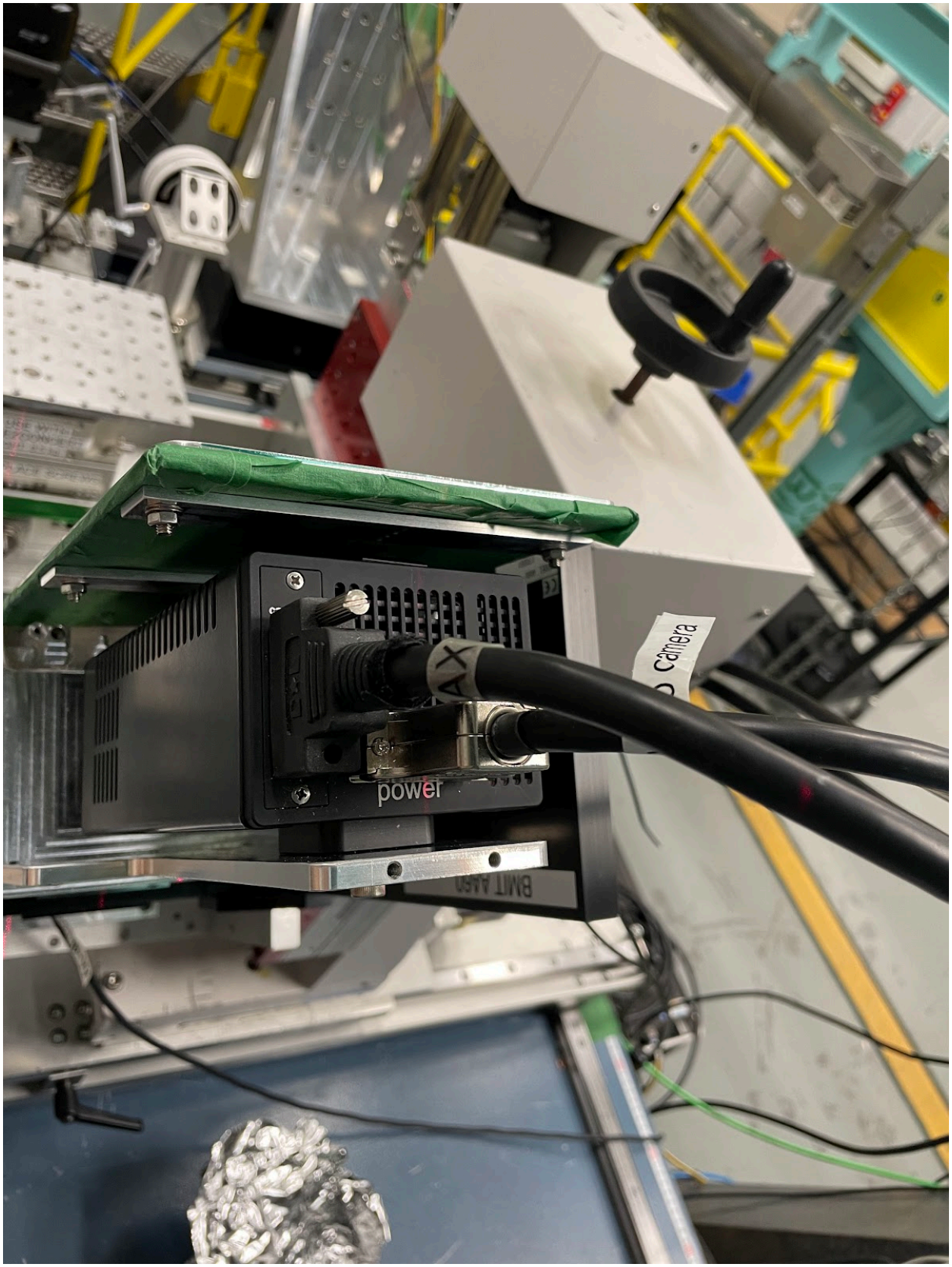
The X-ray camera consists of two parts.

1. X-ray optics - Hamamatsu AA-60 and the scintillator C9300-124
2. camera imager - PCO 4000 (see info and photos below)


Carbon Window P-43 20 µm
AA-60


05ID-2
PCO4000 shielding
PCO 4000
105mm Lens
front (upstream)


BMIT
POE-
BMIT AA60
OPEN
AA-40 FOCUSING


power


MODEL AA60
S. No. 170001
HAMAMATSU PHOTONICS K.K.
MADE IN JAPAN


1288
EMVA Standard Compliant

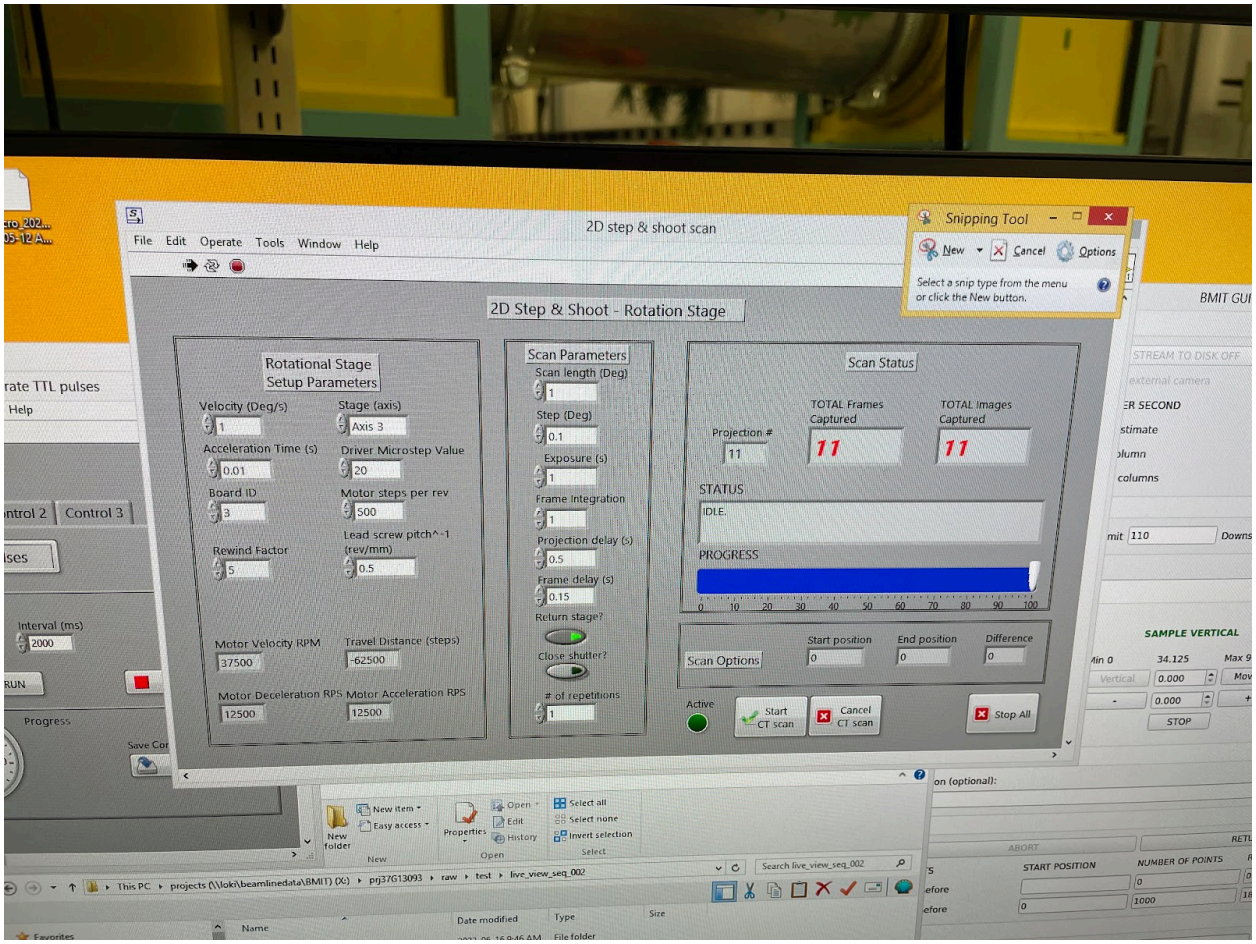
data available on www.pco.de

# pco.4000
# cooled digital 14 bit CCD camera system

- superior resolution (4008 × 2672 pixel)
- 14 bit dynamic range
- frame rate of 5 fps at full resolution
- image memory in camera (camRAM up to 4 GB)
- excellent low noise of 11 $e^-$ rms @ 8 MHz
- thermoelectrical cooling of –45 °C vs. ambient
- standard interfaces (IEEE 1394, camera link, GigE Vision, USB 2.0)
- UV sensitive & color CCD image sensor available
- double shutter and modulate versions available
- ultra stable offset

# Scanning software setup

Adam is working on setting up the scanning software. Looking back through the logbooks, we found that the scan GUI is called the “2D-snap&shoot scan Labview vi”.




Adam set up a personal globus endpoint for us to use to transfer data from the local DAQ system, hostname loki, to UConn. On loki, the shared drive is named Z: which shows up as /z on globus. The directory where we can store our files pending transfer is

- Z:\BMIT\projects\prj37G13093\raw\2023-06-16

# Goniometer Motors

Photos 1 and 2: goniometer overview shots

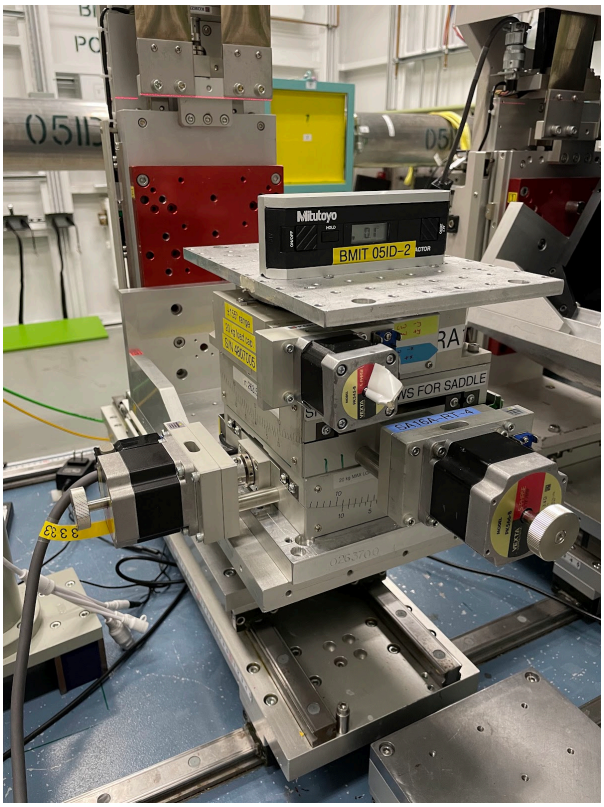




Photo 3: front motor, Photo 4: side motor

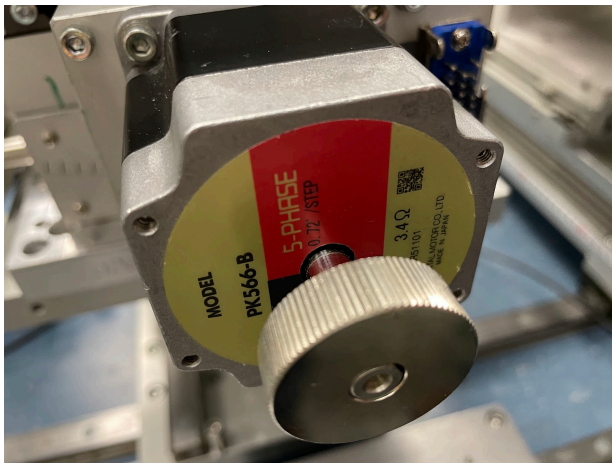
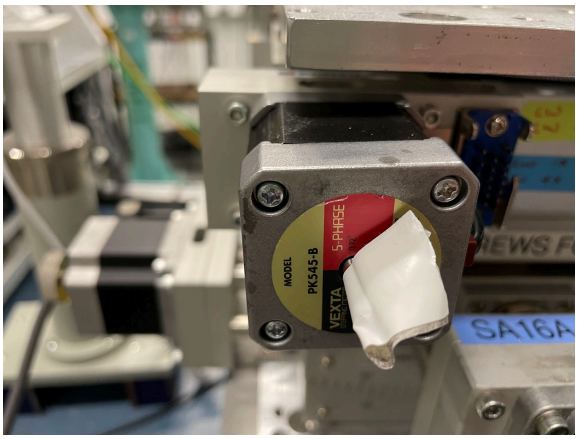



Photo 5: smaller, top motor



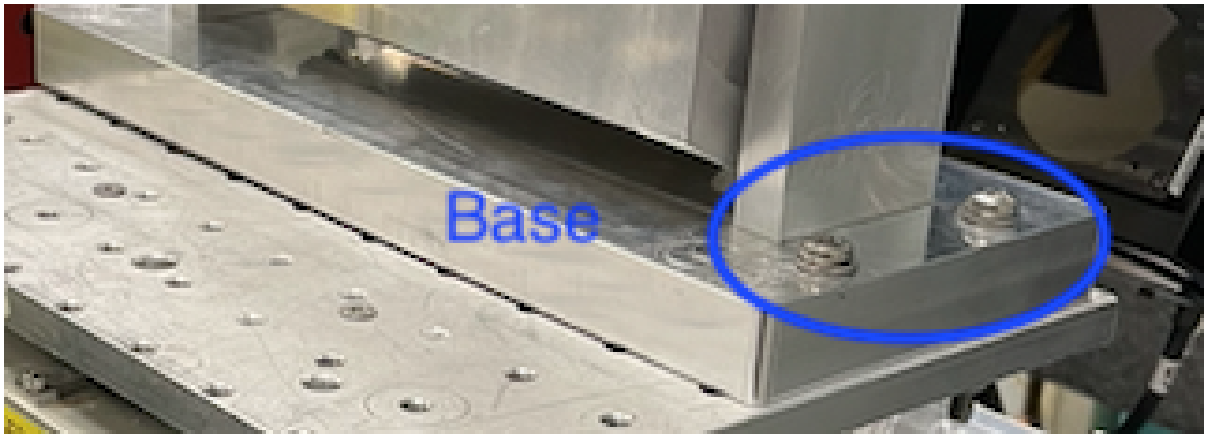

Here is the information about the pitch angle motor that Adam found.

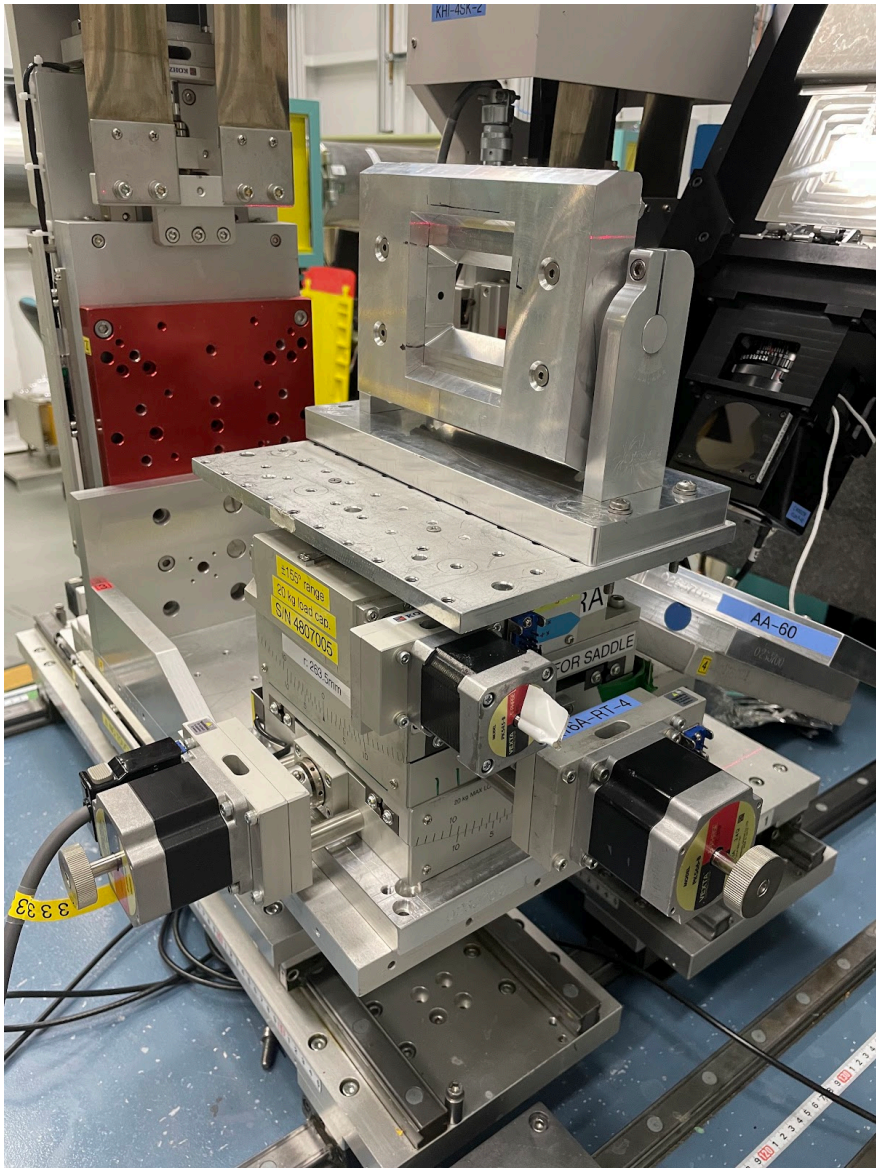
Here are the data sheets from Kohzu about the stages. We were using SA16A-RM for pitch. The data sheets give the resolution

| | Full step | half step | micro step | repeatability |
|---|---|---|---|---|
| SA16A-RM | 0.0012 | 0.0006 | 0.00006 | 0.0001 |
| SA16A-RT | 0.001412 | 0.000706 | 0.0000706 | 0.0001 |

I think this is the source we used previously. It is still not clear to me how the parameters for the software lead to these values.

# Aluminum Target Stand





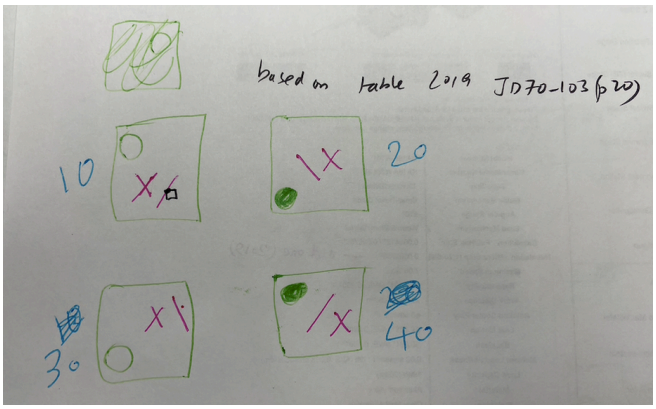

We discovered that M6 bolts would not fit through the slots on the base of the aluminum target stand, although they were the correct bolt for the threaded holes on the base. In the end, Aram used thinner bolts (M4, 50 mm, with washers) and put nuts under, as shown below in the blue oval.  Only 3 of the 4 would line up with holes on the base.  But this should hold it firm, and anyhow we don't care because we only rotate along the pitch angle. For the future, we could also mount the stand using clamps. The swivel was aligned by eye.

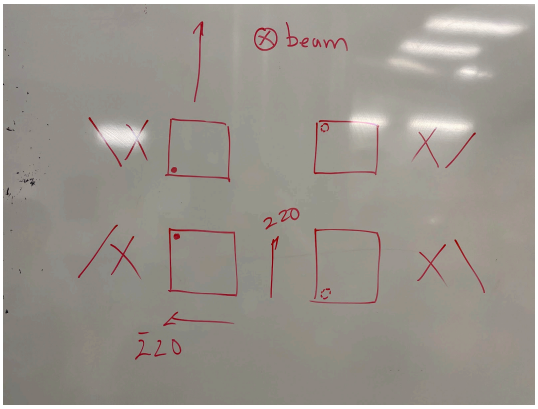
# Orientations

The diamond orientation schematics are shown in the figure below.  We plan to put markings on the backs of the diamonds (backs according to the photon beam).  In the sketches below, the dot represents the virtual diamond "wet spot" (where it would have normally been glued to the aluminum bar. A solid circle means that that spot is in the front of the diamond and an open

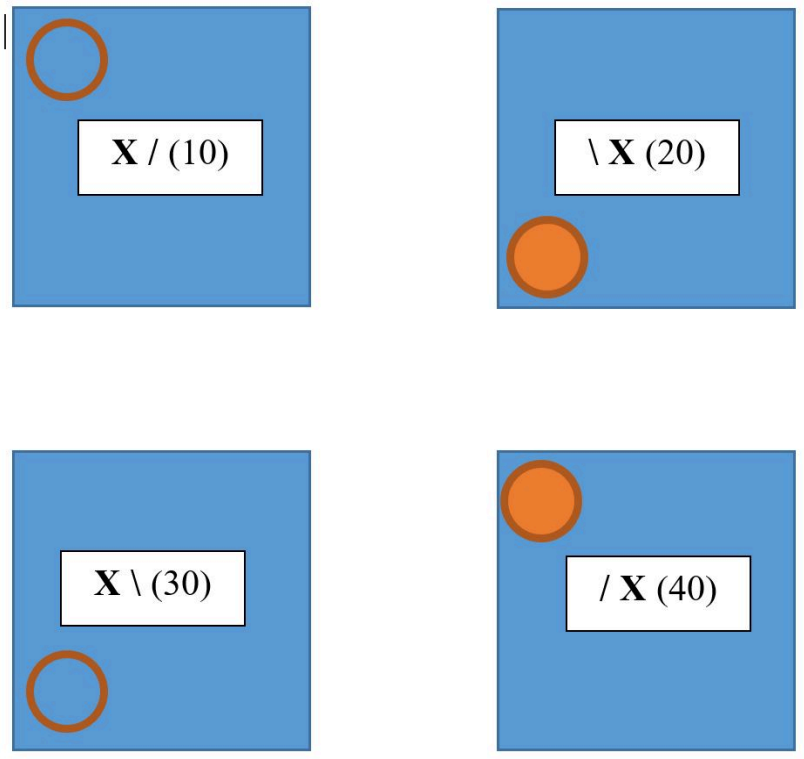
circle means it is on the back of the diamond. The 10-40 represent the scan numbers. The left sketch is from the December 2021 run and the right is on the whiteboard from the June 2023 run.

$$1\,urad\ = 0.000057\,degree$$

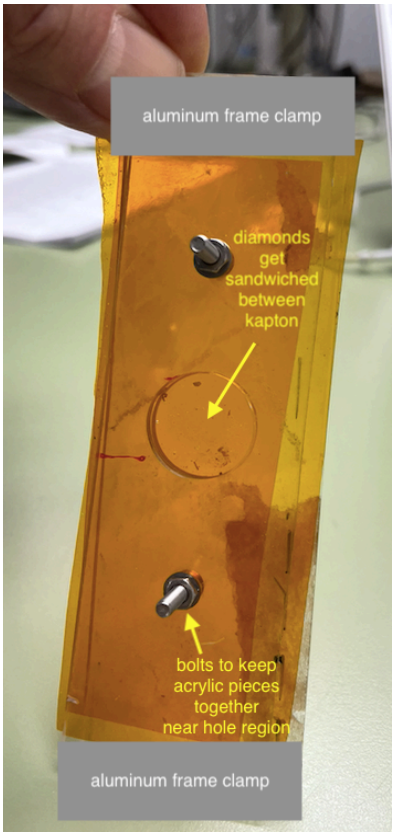



A fancier schematic drawing is below:

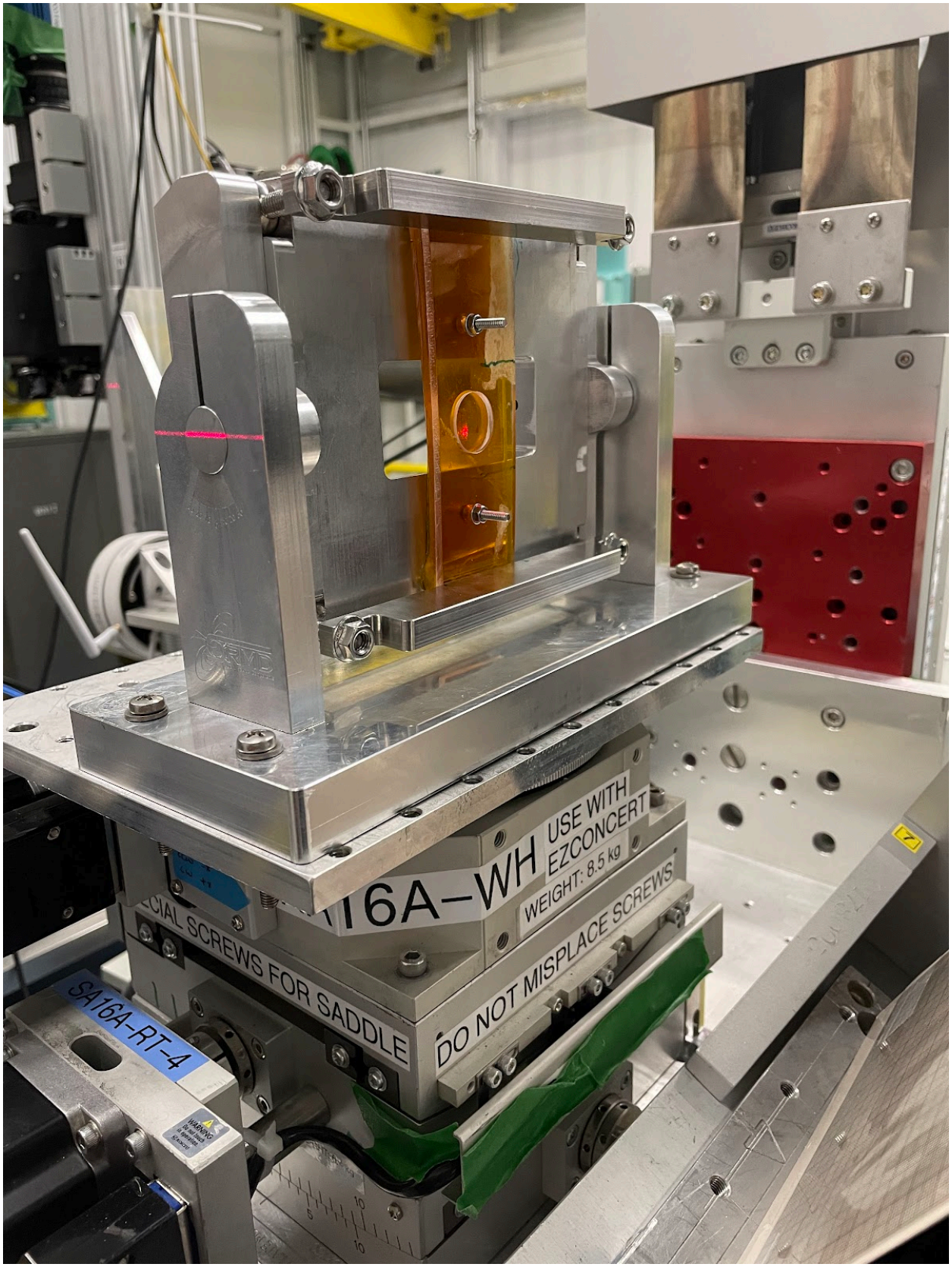


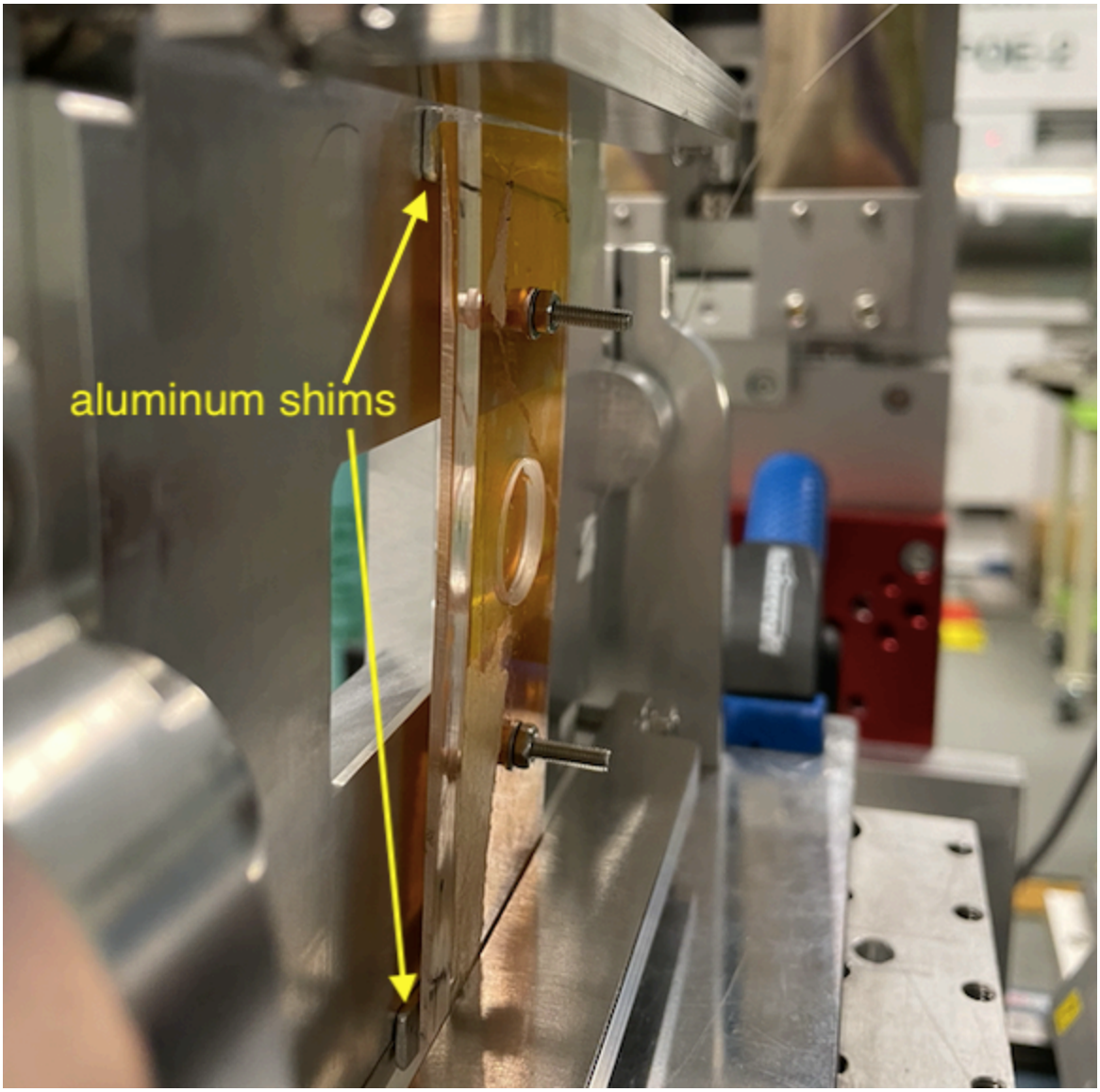
# Diamond holder



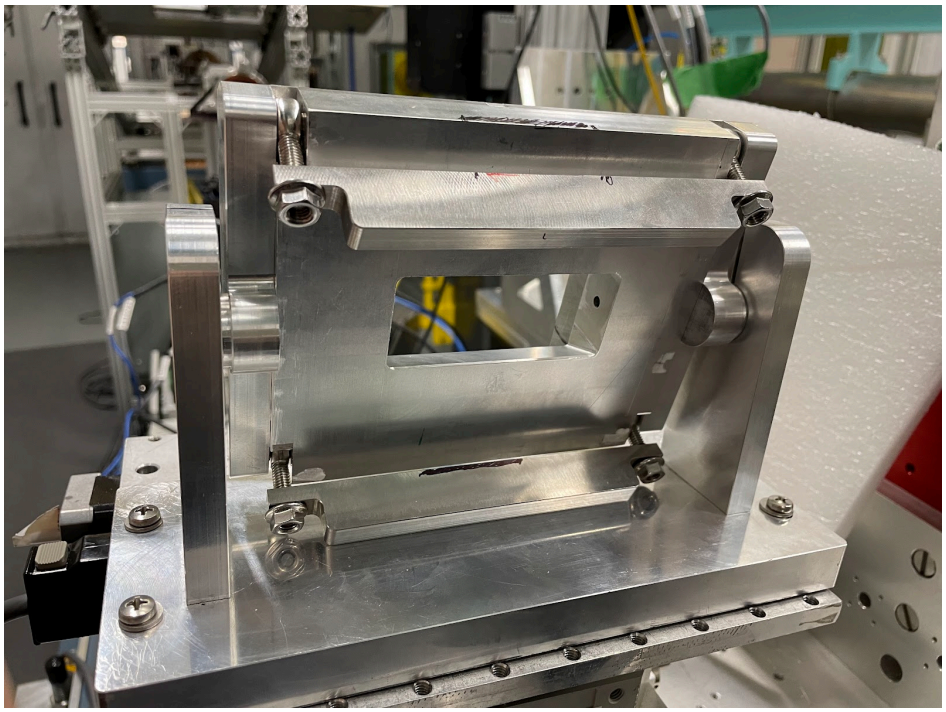

The diamonds for the run are still not necessarily at their final thickness, which means they cannot be mounted on the aluminum target strips/ladder. During the December 2023 run, we cut two pieces of acrylic, boring a 2cm-diameter hole in both, and added screws above and below the hole, to keep the acrylic pieces close together. The non-sticky side of kapton tape is used to hold the diamond in place with friction, while the sticky side is applied on the acrylic pieces. This construction holds the diamonds in place in the beam, and also is easy to take apart to install a new diamond. See adjacent photo. Marcella mounted the JD80-211 (270 um thickness) diamond in the holder. The letters T and B (for top and bottom) were written with red Sharpie on the holder, as shown below. However, Aram reversed this because the shims need to be on the side of the head of the screws and not where the bolts are. Also, the washers are now installed on the bolt side and not the nut side.

The mounting on the Aluminum target stands is now as shown below:


16A–WH
USE WITH
EZCONCERT
WEIGHT: 8.5 kg
DO NOT MISPLACE SCREWS
SA16A-RT-4

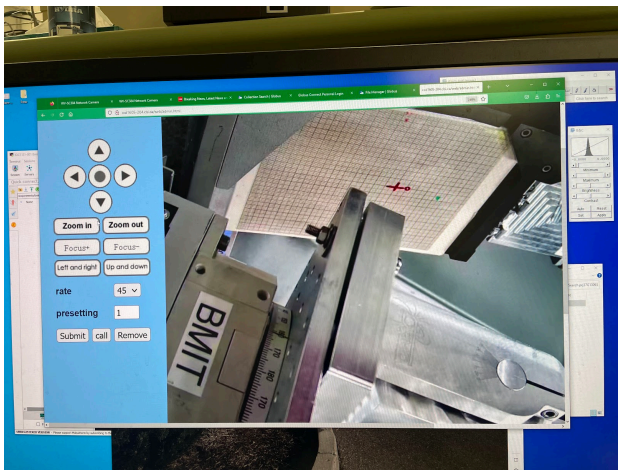



We marked the spot of the holder using a black Sharpie marker on the aluminum frame.  This allows for easy repositioning of the holder after each diamond configuration change. Here is the photo:



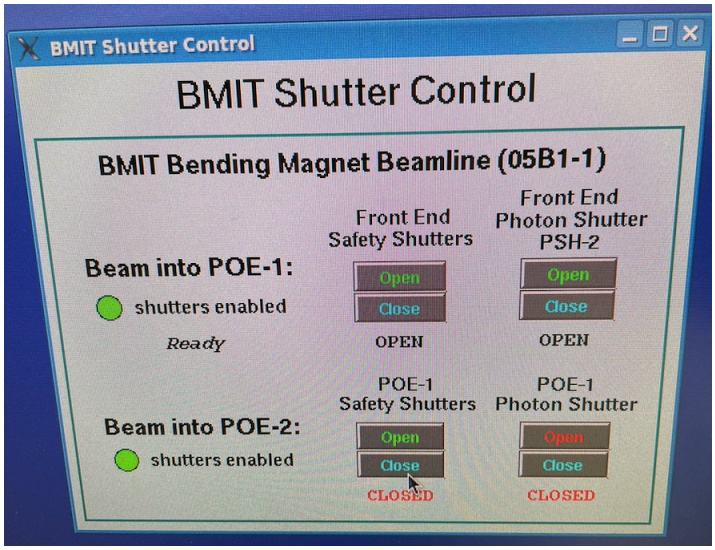
# Web Camera

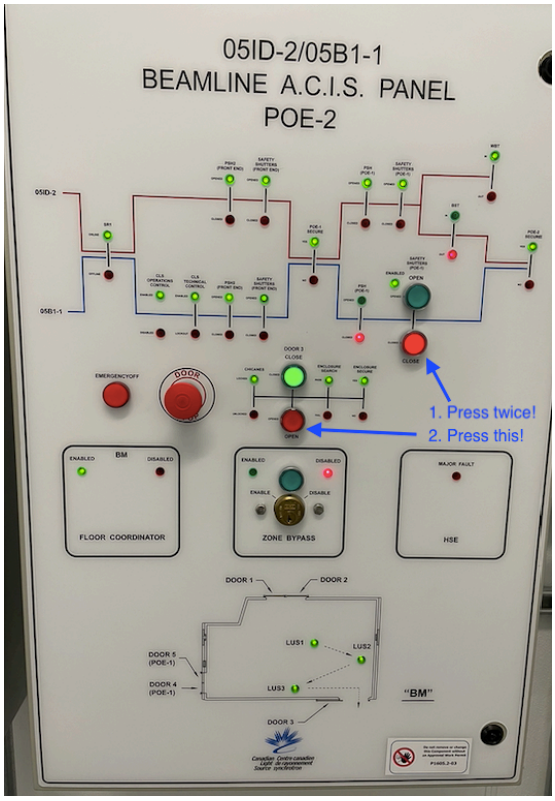
Adam mounted two webcams and the screenshots of theirs views are shown below:



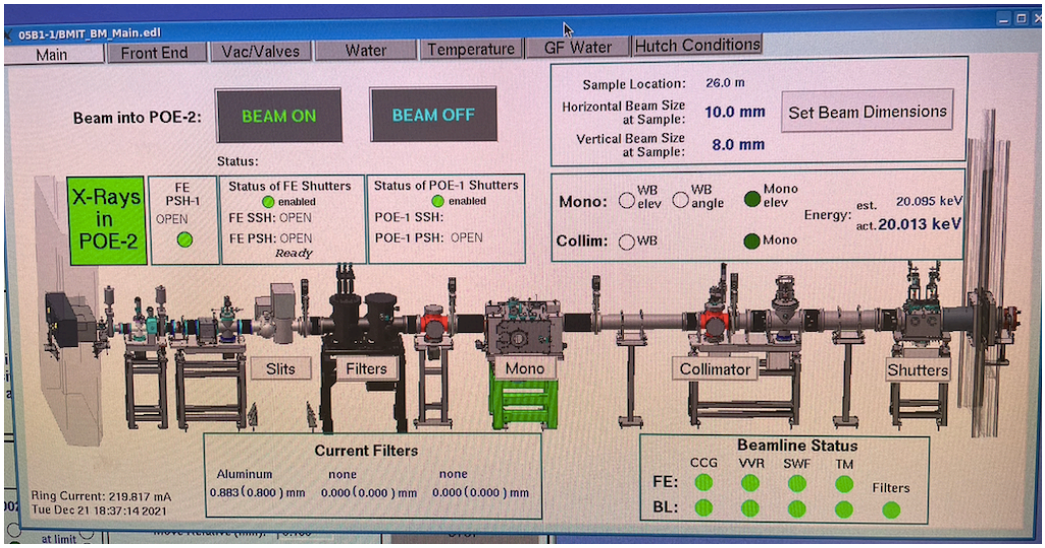

# Beamline optics

The Safety and Photon Shutters are controls from the counting house computer.  In locking up the area, Safety Shutter is turned on first, then Photon Shutter (POE-2), and the reverse when going to Controlled Access, although the latter step is usually controlled at the door interlock. Note that the monochromator (POE-1) stays with shutters enabled (in) to stay warm.



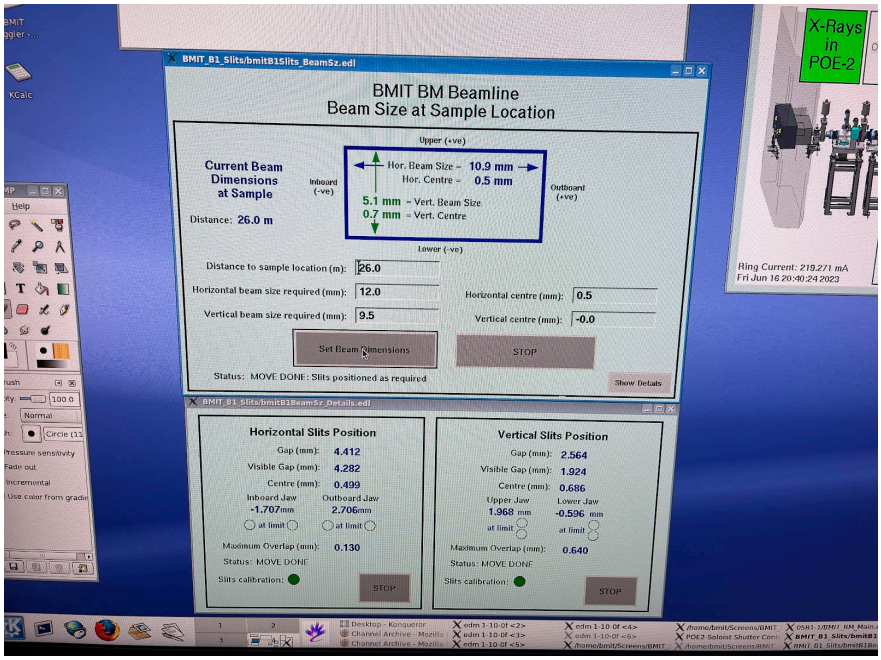



BMIT uses a double crystal bragg 2,2,0 monochromator. Adam tuned the monochromator to 20 kV (monochromator - click on diagram, type 20 kV) and we are using a 0.8mm Al filter. Screenshot is below from the December 2021 run, showing an 8.0 mm vertical at sample.

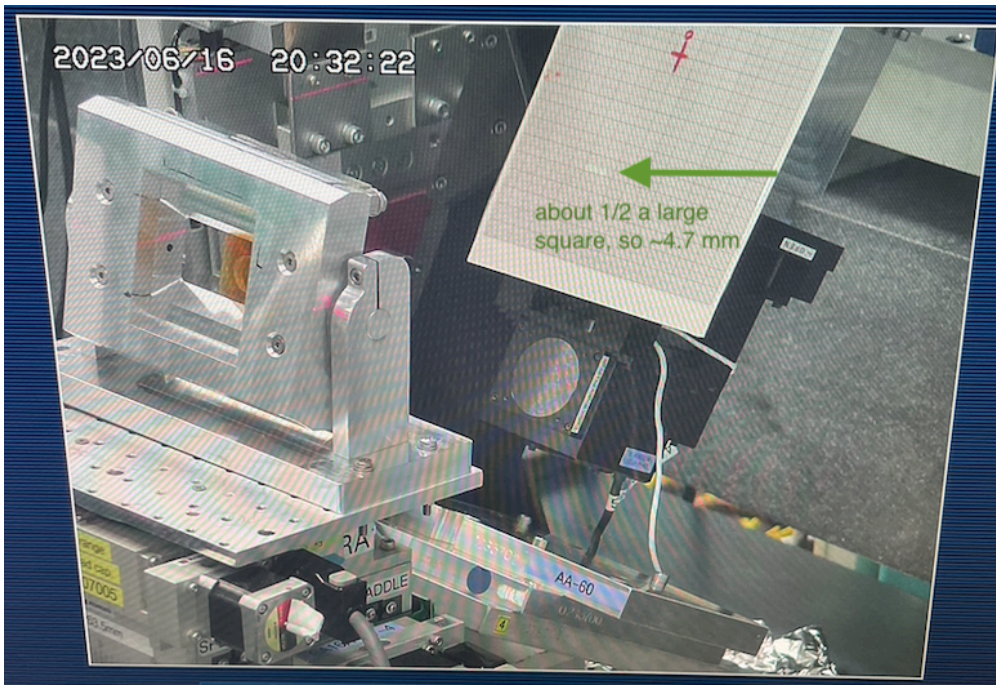


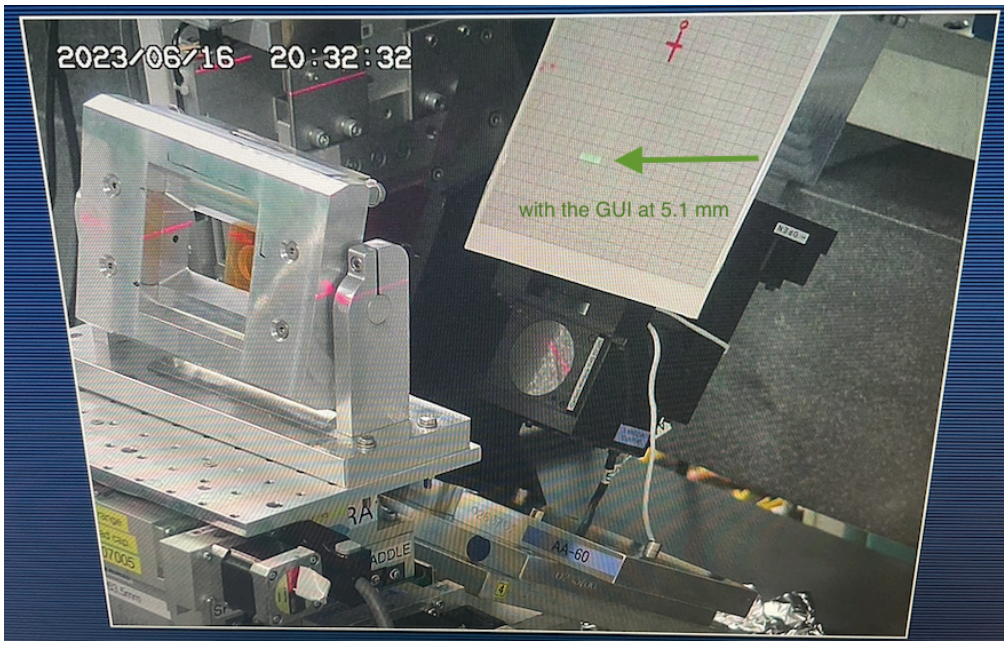

However, when doing our test scans in June 2023, we noticed that while we were covering approximately 1000 pixels in the horizontal direction, we were limited to around 700 in the vertical direction and we were seeing a sharp upper edge to the image not entirely consistent with what we expect from a diamond.  Our suspicion fell to the slits.  Looking at the screenshots

below, it looks like our effective vertical beam width is 4.7 mm at the sample location, which is inadequate to cover the 8 mm diamond. Horizontally at the sample location we have 10.9 mm width, which is more than enough.  For this run, the horizontal laser is 14 mm higher than the center of the target, as it is centered on the microscope.

Confirmation of the beam spot on the camera location is seen in the two spots below, the first corresponding to 4.7 mm size on the GUI and the second to 5.1 mm.




Decision: as it is 20:55 we decided to proceed by scanning the diamond in two vertical sweeps, which Richard can stitch together.

# Setting up to locate the beam

June 16, 2023, 13:42, we turned off all alignment lasers and had to install a block of foam to the left of the Aluminum Target holder, to block light from a red beacon on the back left corner of the room (left of the incoming beam).

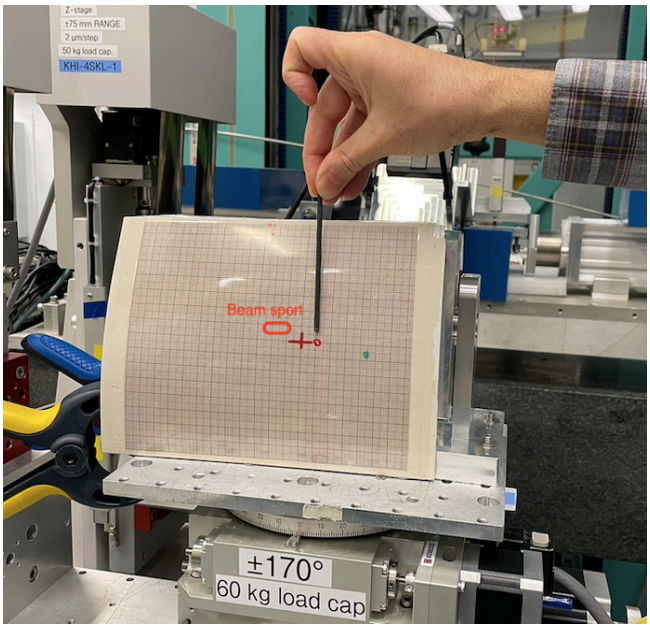
We also rotated the fluorescent paper to have its longest dimension horizontally, as the main beam was hitting its top before and likely overwhelming the camera.



***Warning:*** Remove Mitutoyo protractor from the enclosure to protect it from the X rays.  Keep it in its case.

14:30 Note that after failing to find the diamond image, we went into the enclosure and found out that the horizontal level was too high by 14 mm (it was aligned with the microscope, as mentioned above) and thus we were missing the diamond.  We lowered the vertical stage by 14 mm and restarted the scan, from 10.7 deg and up. Soon thereafter we found the primary 2,2,0 reflection within a degree of its nominal position.

Use the fluorescent paper to locate the spot in the direction of the camera. See photo:




## Scan procedures

Sergey and Adam worked out a scheme for us to be able to do automated scans using the Scan&Shoot labview vi.

1. open the camera gui, and log in
    - select beamline BMIT, BM
    - Project: 37G13093
    - Login
2. source /opt/wfoenv
3. python /beamlinedata/BMIT/scripts/

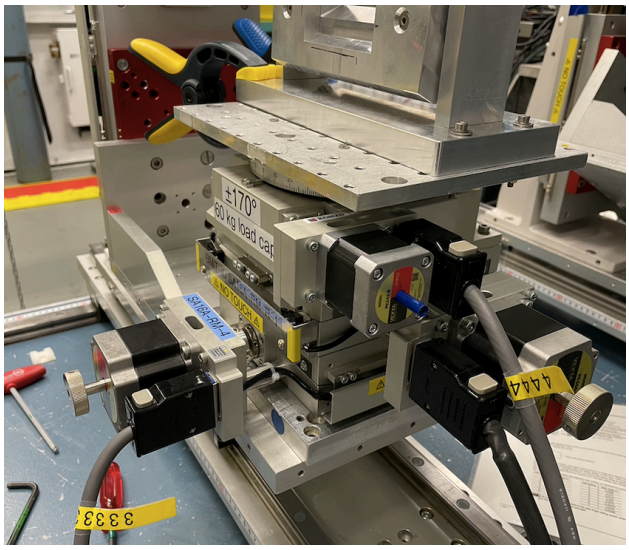
# Goniometer and Camera controls

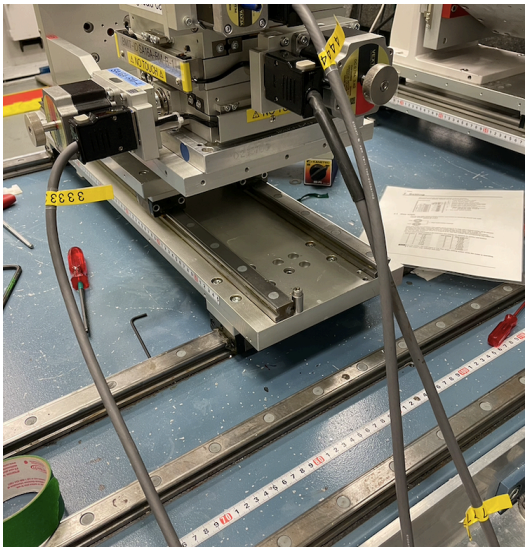
Five (5) motors have been connected to the goniometer, labeled with yellow streamers with the numbers 1111, 2222, 3333, etc.  See nomenclature and pictures below.

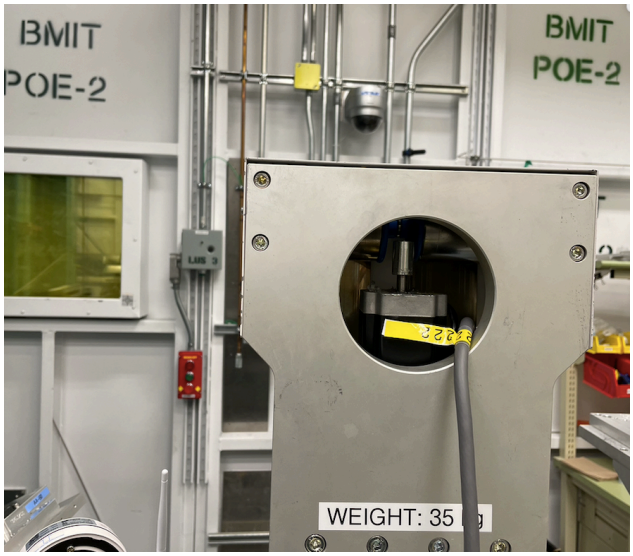
- 1 vertical - camera
- 2 vertical - goniometer
- 3 pitch - goniometer
- 4 roll - goniometer
- 7 yaw - goniometer

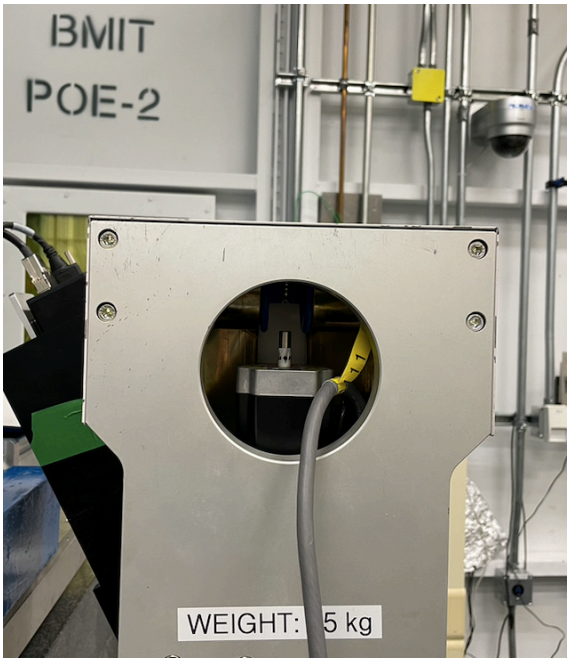
Copied over from 2019 logbook: The motor assignments are as follows:

- Cable 1 - vertical motion stage on the target
- Cable 2 - vertical motion stage on the camera
- Cable 3 - target chi angle
- Cable 4 - target theta (Bragg) angle
- Cable 7 - target phi angle

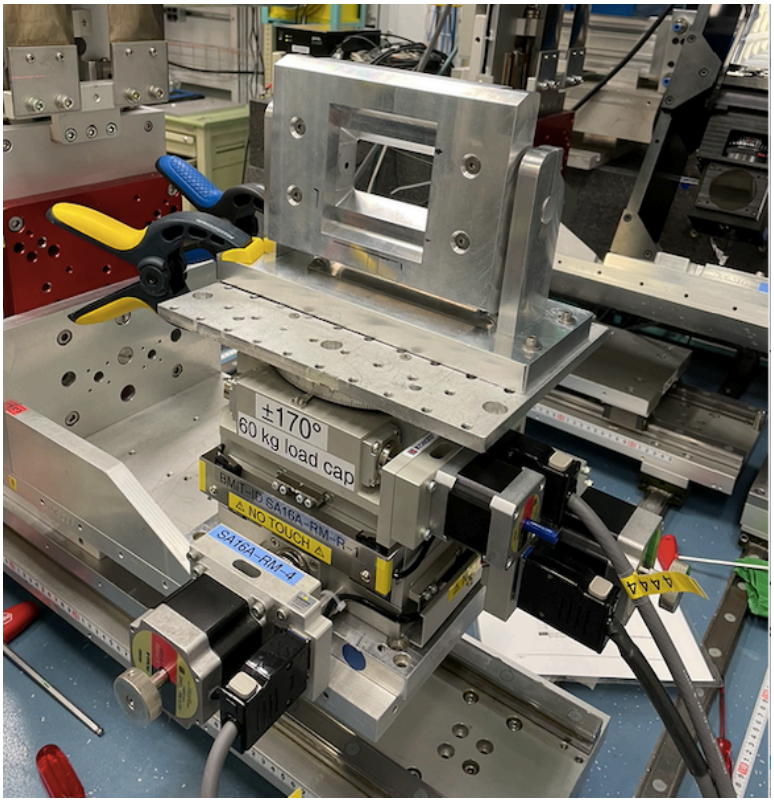


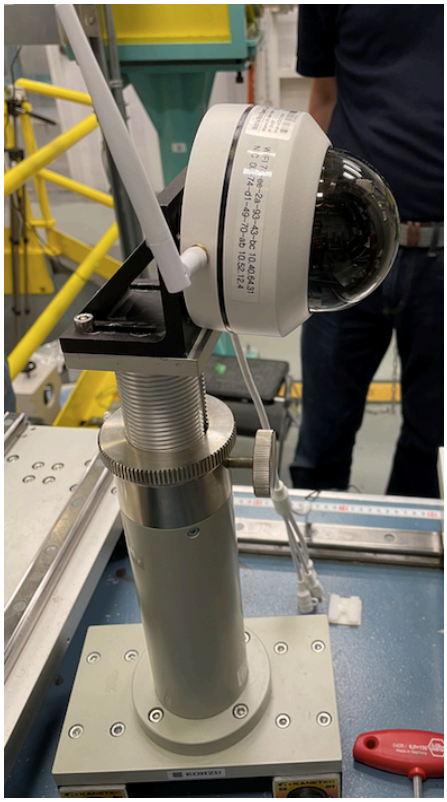




The complete goniometer setup is below as well as the webcam that looks at the goniometer.





Note: The stepping motor spec sheet (since 2021) is shown below.

KOHZU

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You are in: Products » Precision Stages » Precision Swivel (Tilt) Stage » Motorized Swivel Stage »

**Precision Positioning Stages**

- Precision X/XY Stage
- Manual X/XY Stage
- Motorized X/XY Stage
- Precision Z Stage
- Precision Rotation Stage
- Precision Swivel (Tilt) Stage
- Manual Swivel Stage
- Motorized Swivel Stage
- Manual Alignment Station
- Heavy Duty Goniometer
- Old model Lineup
- Vacuum Stages
- Compact 6-Axes Manipulator
- Laser measurement system
- Blur Vibration Simulator
- System Products / Experimental
- Product Comparing
- Control Electronics
- Accessories

RoHS

SA16A-RM


Catalog Data PDF Browse

Price(JPY)
¥ 480,000

Quote
Quantity 0

Information
Link to Technical informaiton of motorized Swivel(Tilt) Stage

Drawings file: 2D JPEG
Drawing For Download: 2D CAD DXF | 2D CAD STEP | 2D CAD SWA90.0
Connect Fig File: Wiring Diagram | Mirror Wiring

Remarks and Features
Please, prepare the cable for 10 lead motor.
2 phase stepper motor is available. (Model) SA16A-RM-BM (Additional Cost ¥ 40,000)

メカ仕様

| | |
|---|---|
| Model Number | SA16A-RM |
| Mirror Model Number | SA16A-RM-R |
| Table Size | 160mm×160mm |
| Guide Mechanism | Cross-Roller Guide |
| Angular Range | ±10° |
| Lead Mechanism | Worm & Worm Wheel |
| Resolution Full/Half Step | 0.0012°/0.0006° |
| Resolution Micro Step (1/20 div) | 0.00006° ← new one (2021) we use 2 μstep = 0.00012 ≒ 2.09 μrad |
| Maximum Speed | 6°/sec |
| Repeatability | ±0.001° |
| Work Distance | 280mm±0.5mm |
| Rotation Center Play | φ0.5mm/±10° |
| Lost Motion | ≦0.005° |
| Backlash | ≦0.003° |
| Moment Load Stiffness | 0.02 arcsec/N·cm |
| Load Capacity | 196N (20kgf) |
| Material | Aluminum Alloy |
| Finishing | Clear-Matt Anodizing |
| Weight | 5.5kg |

電気仕様

| | |
|---|---|
| Standard Motor | 5 phase stepper motor (Oriental Motor: PK566-B)<br>2 phase stepper motor (Oriental Motor: PK264JDB)<br>Motor Shaft Diameter:Φ8mm Conformance option handle: B type |
| Standard Connector | 20Pin Rectangular (Hirose: PC-1620, P-1620A-STA) |
| Sensor Model | F-101(HOME, LIMIT), F-107(INDEX) |

Overhaul Price
¥ 48,000~
*Additional parts cost is not included on Overhaul Price

Lubricant Change Option

| | |
|---|---|
| Clean Room Lubricant Change Price ("-C" at the end of model number) | ¥ 36,000 |
| Vacuum Lubricant Change Price ("-V" at the end of model number) | ¥ 36,000 |

Motor Change Option

| | |
|---|---|
| Same Size Motor Change Price | ¥ 15,000~ |
| Different Size Motor Change Price | ¥ 36,000~ |

*The Motor cost is not included on Motor Change Price

# Take rocking curves (8) of JD80-211

| scan | orientation | theta range (deg) | no. steps | step size (urad/deg) | target vertical shift (mm) | image prefix |
|---|---|---|---|---|---|---|
| 10* | \X | (0.2600-0.2672) | 60 | 2.09 / 0.00012 | 0 | JD80-211-10 |
| 11 | \X | (1.165,-1.177) | 100 | “ | 0 | JD80-211-11 |
| 12 | \X | (1.165-1.177) | 100 | “ | -4 | JD80-211-12 |
| 20 | /X | (-0.419,-0.428) | 75 | “ | -4 | JD80-211-20 |
| 21 | /X | (-0.419,-0.428) | 75 | “ | 0 | JD80-211-21 |
| 30 | X/ | (1.757,1.769) | 100 | “ | 0 | JD80-211-30 |
| 31 | X/ | (1.757,1.769) | 100 | “ | -4 | JD80-211-31 |
| 40 | X\ | (-0.006,0.006) | 100 | “ | -4 | JD80-211-40 |
| 41 | X\ | (-0.006,0.006) | 100 | “ | 0 | JD80-211-41 |

*The camera and the target were off center for this scan, this was practice only.

# Transfer data from JD80-211 to UConn

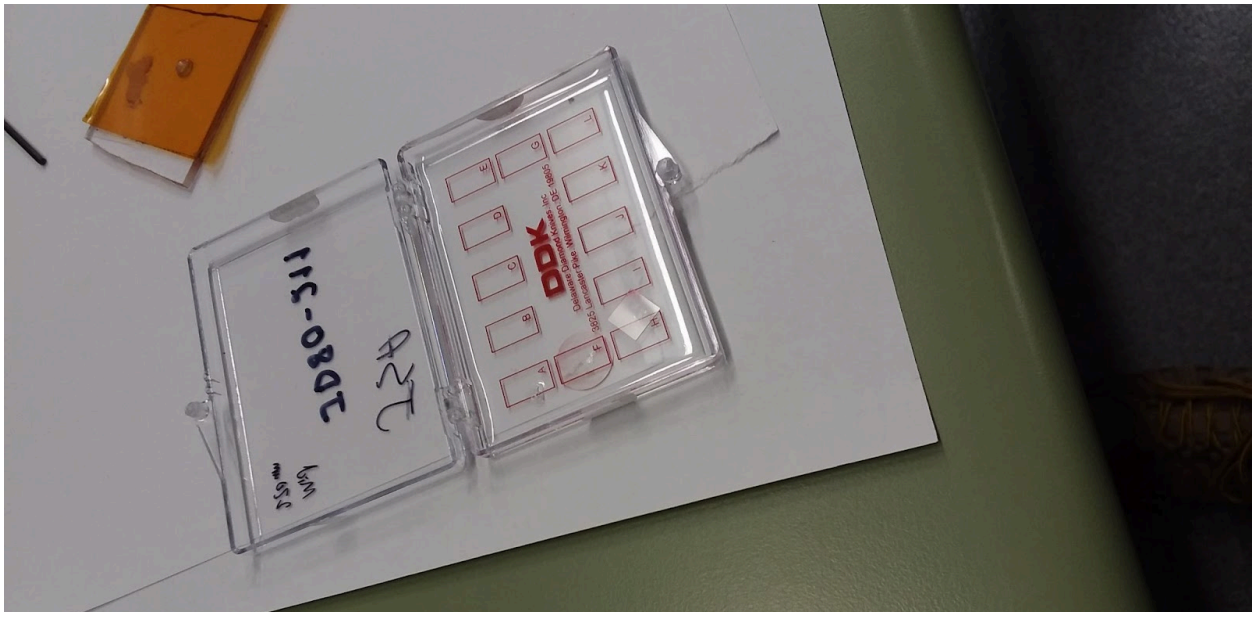
Using the new Globus Personal Endpoint that Adam set up for us, we were able to transfer all of the above scans immediately to UConn.

# Verify data quality

Postponed to the end of the run.

# Dismount JD80-211, repackage

*June 17, 2023 [rtj, mb]*
The JD80-211 diamond was returned to its pillbox and returned to the carrying case.




# Take rocking curves (8) of JD80-213

| scan | orientation | theta range (deg) | no. steps | step size (urad/deg) | target vertical shift (mm) | image prefix |
|---|---|---|---|---|---|---|
| 01 | \X | (-0.444,-0.432) | 100 | 2.09 / 0.00012 | 0 | JD80-213-01 |
| 10 | \X | (-0.448,-0.4312) | 140 | “ | -4 | JD80-213-10 |
| 11 | \X | (-0.448,-0.4312) | 140 | “ | 0 | JD80-213-11 |
| 20 | /X | (4.681,4.696) | 125 | “ | 0 | JD80-213-20 |
| 21 | /X | (4.681,4.696) | 125 | “ | -4 | JD80-213-21 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 30* | X/ | (-0.372,-0.360) | 100 | “ | -4 | JD80-213-30 |
| 31 | X/ | (-0.372,-0.360) | 100 | “ | -4 | JD80-213-31 |
| 32 | X/ | (-0.372,-0.360) | 100 | “ | 0 | JD80-213-32 |
| 40* | X\ | (2.543,2.555) | 100 | “ | 0 | JD80-213-40 |
| 41 | X\ | (2.548,2.560) | 100 | “ | 0 | JD80-213-41 |
| 42 | X\ | (2.548,2.560) | 100 | “ | -4 | JD80-213-42 |

*The target position was misconfigured for this scan, should ignore.

June 17, 2023 [at,zp]

- Took over from rtj/mb at 7:00am to do diamond scans JD80-213-40 and -41.
- Very hard to find the image. Three things compounded: i) the pitch angle (this was made easier by the 4.7 deg off observation that rtj/mb, which helped us. ii) vertical offset was off at the very large pitch angle. ii) roll angle was off pushing the spot off the right side of the camera’s sensitive window; we had to rotate the target clockwise (w.r.t. to incoming beam) to fix the latter.
- No notes were in the logbook about how to handle the ½ top scan and the ½ bottom scan due to the beam’s 4 mm vertical size. It was passed to us by word of mouth, but we are tired and are second guessing ourselves.
- A checklist should be made and followed following any target adjustment (replace diamond, move holder in aluminum frame, a.o. 1) check height with horizontal laser; remember this is 14mm above our target center; we put a tape across the Al holder, with the bottom of the tape indicating the laser height. 2) check the diamond for left-right alignment. 3) check the diamond holder to align with markings when the diamond is square in its center, or rotate the holder if the diamond is a bit off. 4) Put fluorescent paper and find the spot. 4) if needed, mark the spot on the monitor and count the squares on the grid paper, and then go in the hutch to see if that spot hits the camera window. For any of these, make suitable adjustments with either a target holder position or with the appropriate movable stage.

# Transfer data from JD80-213 to UConn

Using the new Globus Personal Endpoint that Adam set up for us, we were able to transfer all of the above scans immediately to UConn, except for -40 and -41 which will be done in the afternoon when Richard returns.

## Verify data quality

Postponed to the end of the run.

## Dismount JD80-213, repackage

*June 17, 2023 [zp,at,rtj]*
The JD80-213 diamond was returned to its pillbox and returned to the carrying case.

## Removing JD80-212 from its case

This was tricky, because this new diamond case was difficult, as its floor is somewhat sticky. Aram managed to get it out on a piece of paper, and here is the photo.

## Take rocking curves (8) of JD80-212

| scan | orientation | theta range (deg) | no. steps | step size (urad/deg) | target vertical shift (mm) | image prefix |
|---|---|---|---|---|---|---|
| 10 | \X | (1.520-1.535) | 125 | “ | -4 | JD80-212-10 |
| 11 | \X | (1.520-1.535) | 125 | “ | 0 | JD80-212-11 |
| 20 | /X | (1.120,1.138) | 150 | “ | 0 | JD80-212-20 |
| 21 | /X | (1.120,1.138) | 150 | “ | -4 | JD80-212-21 |
| 30* | X/ | (1.700-1.715) | 125 | “ | 0 | JD80-212-30 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 31* | X/ | (1.700-1.715) | 125 | “ | -4 | JD80-212-31 |
| 32 | X/ | (1.700-1.715) | 125 | “ | 0 | JD80-212-32 |
| 33 | X/ | (1.700-1.715) | 125 | “ | -4 | JD80-212-33 |
| 34† | X/ | (1.700-1.715) | 125 | “ | -8 | JD80-212-34 |
| 40 | X\ | (0.760,0.778) | 150 | “ | 0 | JD80-212-40 |
| 41 | X\ | (0.760,0.778) | 150 | “ | -4 | JD80-212-41 |

*These scans were taken with the fluorescent screen in front of the camera, should ignore.

†This scan was taken at an extra 4mm vertical offset of the target, should ignore.

# Transfer data from JD80-212 to UConn

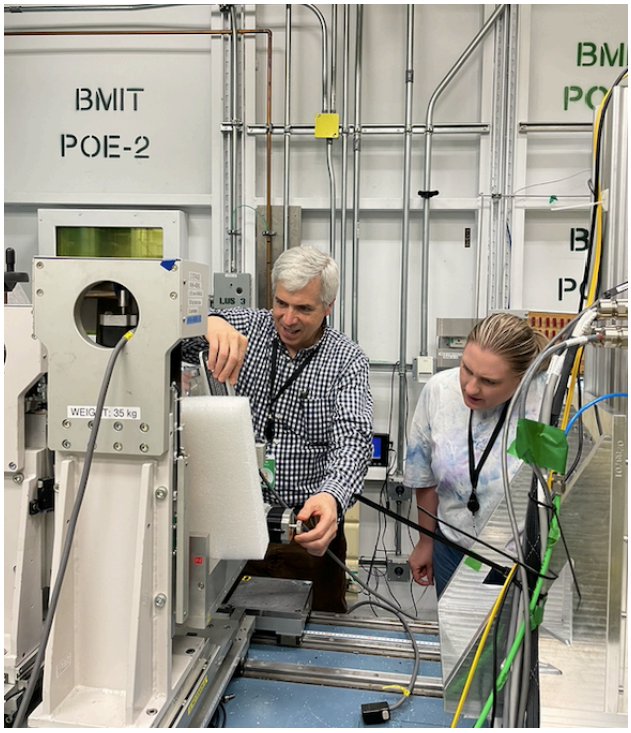
Using the new Globus Personal Endpoint that Adam set up for us, we were able to transfer all of the above scans immediately to UConn.

# Verify data quality

Postponed to the end of the run.

# Last scan

Setting up for the last scan; see photo.




## Dismount JD80-212, repackage

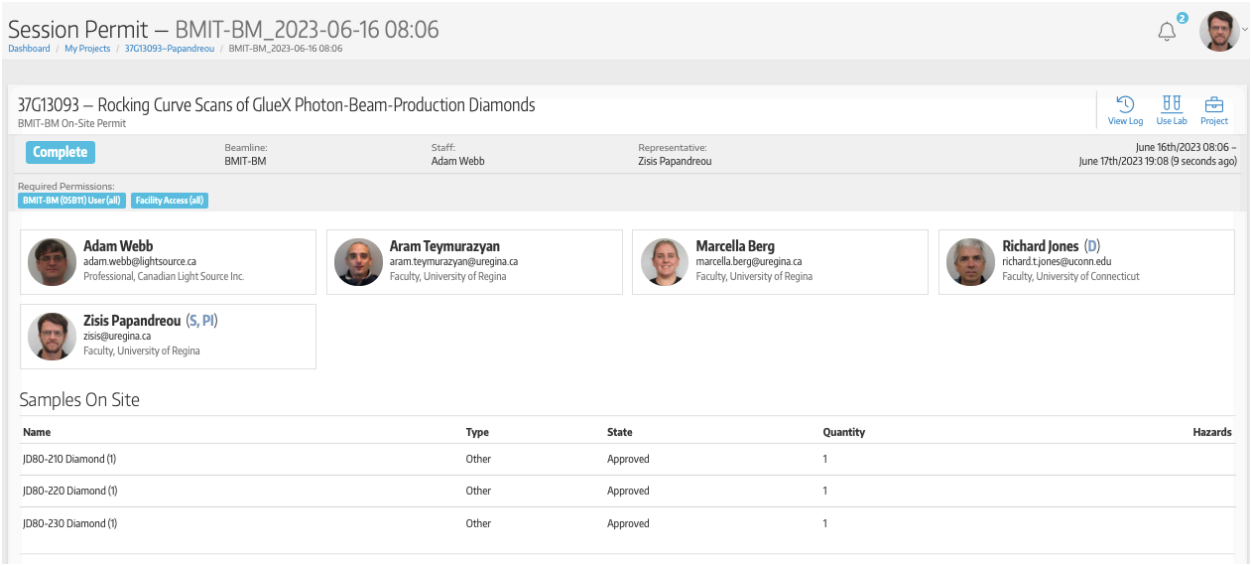
*June 17, 2023 [rtj, mb,zp,at]*
The JD80-212 diamond was returned to its pillbox and returned to the carrying case.

# Wrapping up

Dean’s aluminum holder was removed from the goniometer and returned to Dean’s cabinet in the hutch.  All bolts and washers were cleaned up and returned to their drawers along the wall.

We had a fan watching us during the experiment from up high:

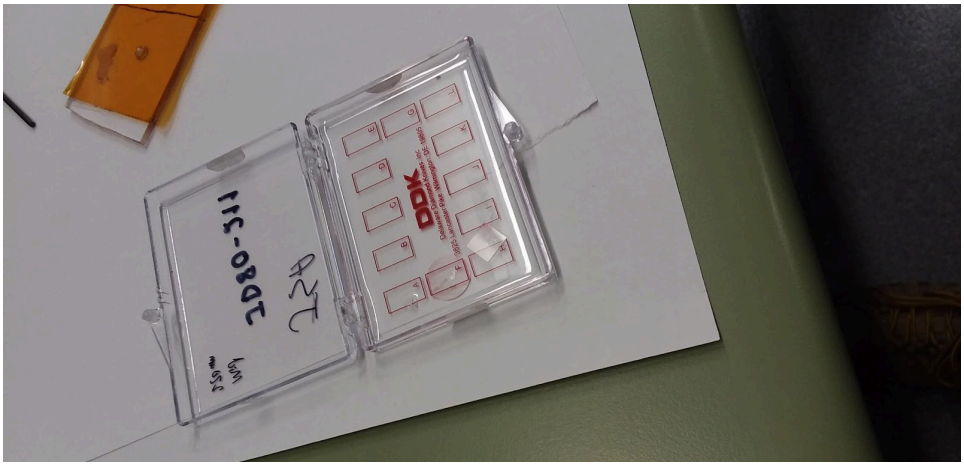
19:08 Project complete:




# Clean up and Sign Out

*June 17, 2023 [rtj,at,mb,zp]*
A few end-of-run photos.


Thank you to Adam, and everyone at CLS for your help!


JD80-211
DDK


Single Crystal
CVD DIAMOND Plates
8x8x1.35mm 3 off
270-EXP-0073
MICROWAVE ENTERPRISES
JD80-1
2PCVDEG757504A-1
PCS - 1 CTS - 0.6
A: JD80-212
B: JD80-213
JD80-211

# Transfer data to UConn

*June 17, 2023 [rtj]*
We used globus to transfer all of the rocking curve data to UConn. Adam uploaded the folder containing all of our data to the CLS-BMIT-2 globus endpoint, where Richard was able to find it and transfer it to the UConn storage system. These data are remotely accessible to anyone with the URL to where the data are stored. The URLs for all of the rocking curve measurements ever performed for GlueX radiators are saved in the GlueX Diamond Inventory Spreadsheet that is linked from the GlueX wiki.

Photos taken throughout the run by Zisis and Richard were all copied to a single shared google drive dedicated to this run. The drive is owned by Richard and will be maintained for the duration of the GlueX experiment.

Photos from run CLS-6-2023

# Rocking curve data analysis

*To be continued...*