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16-BM-D REMOTE USER OPERATION GUIDE
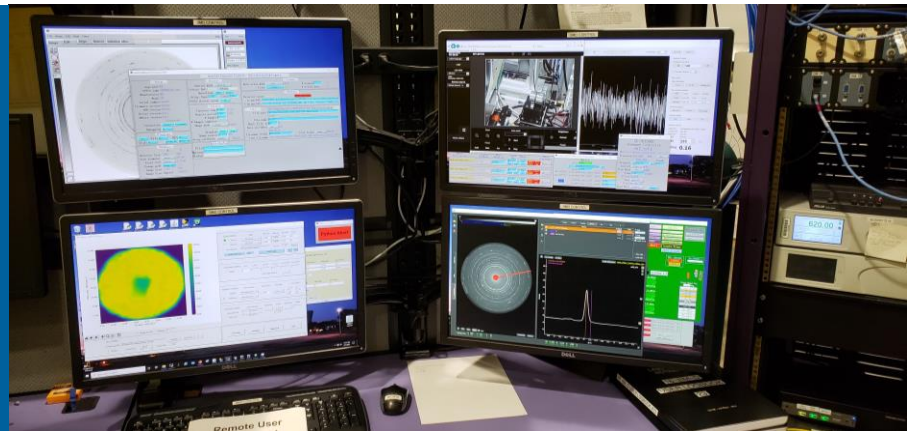
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NOMACHINE DISPLAY SETTING

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Beamline's Display:
Understand Beamline Computer's Physical Display Setting
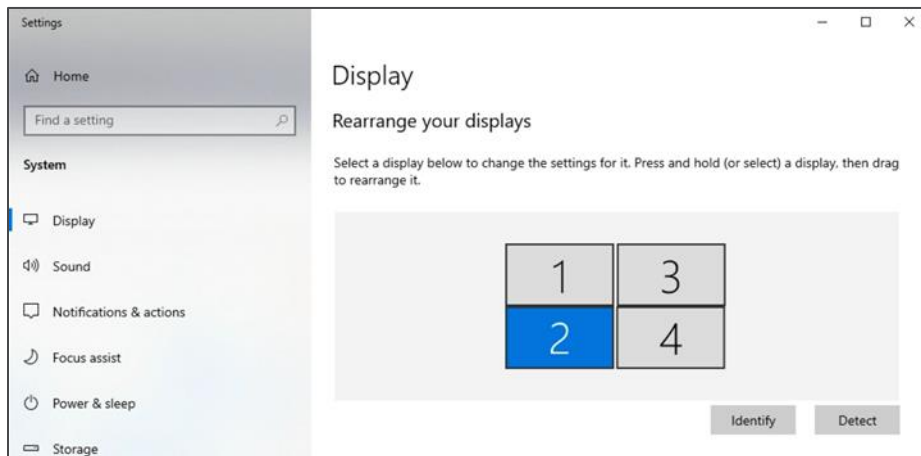
- Four physical screens with ID
- 1920 x 1080 resolution for each screen

- Client NoMachine session best works when its screen resolution matches with the beamline's or better.

Note that beamline's EPICS GUI is based on 1920x1080 pixel coordinates of each screen, and the 4 screens are merged to a single, expanded coordinate system. Changing the resolution of any one of these 4 screens results in a modification of the screen coordinates and may greatly disturb the EPICS display behaviors (e.g., disappearing from the screen).

NoMachine Display Setting:
"Ctrl + Alt + 0" shortcut

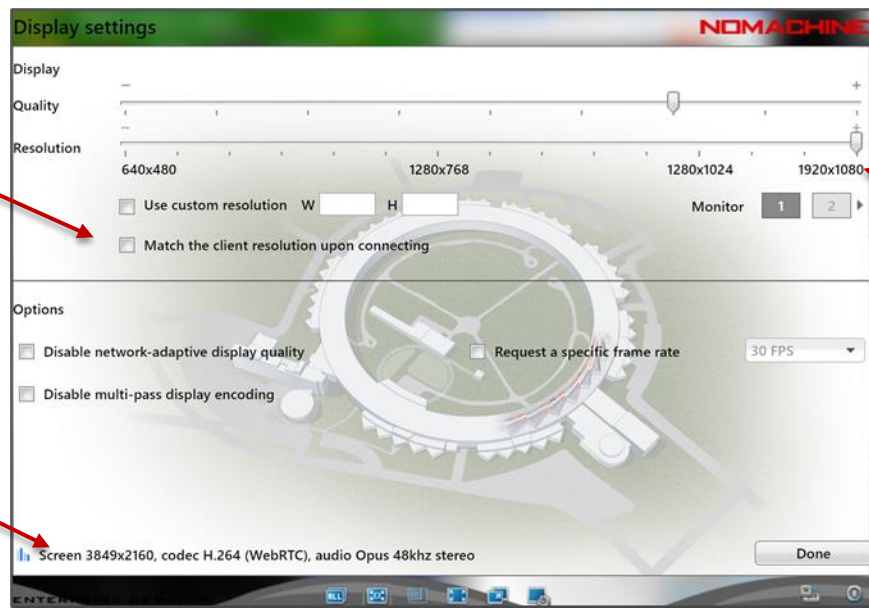Ctrl+Alt+0 → Display → Change settings
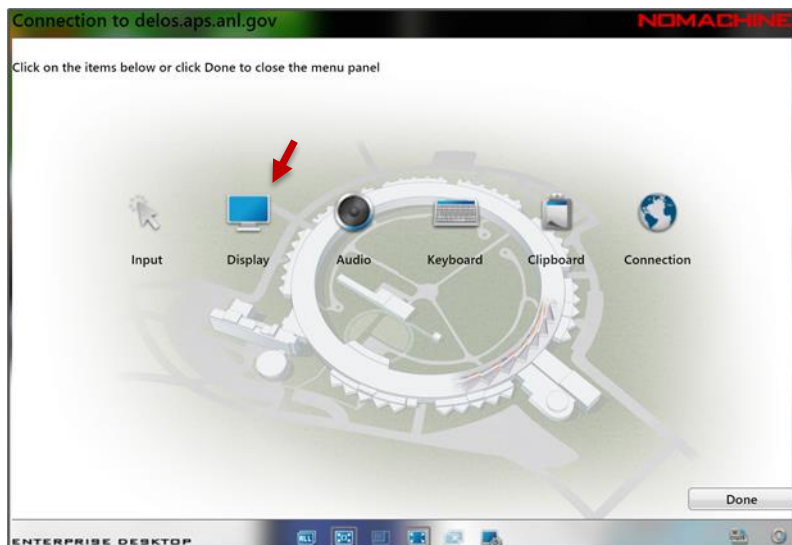
NoMachine Display Setting:

Balance between speed and quality, and be aware of a possible adverse effect on EPICS display on the screen by changing the resolution

Uncheck all boxes

The lower the quality, the faster the display update.

Match the resolution to the beamline's display resolution for all 4 monitors.

This can be (or has to be) customized to match client's best resolution (esp. for lower resolution monitors), but it will globally affect beamline's screen coordinates and may result in an adverse effect on the EPICS GUI. Inform other co-users if this setting is to be changed.

This is client's intrinsic resolution (i.e., your computer screen)

NoMachine Display Setting:
For monitors with poorer resolution than beamline's

Disable "Fit to window" and scroll the screen to get better resolution on client screen (instead of changing the display resolution in the setting).
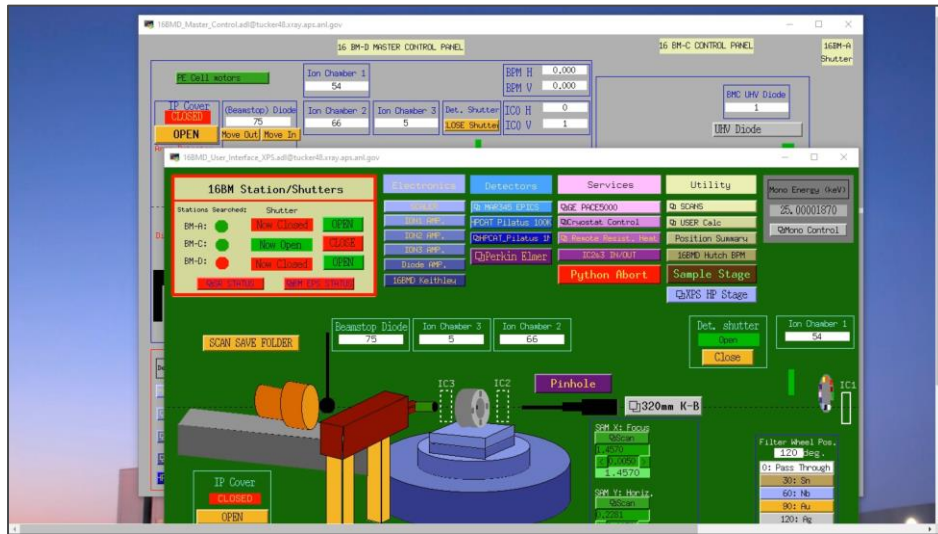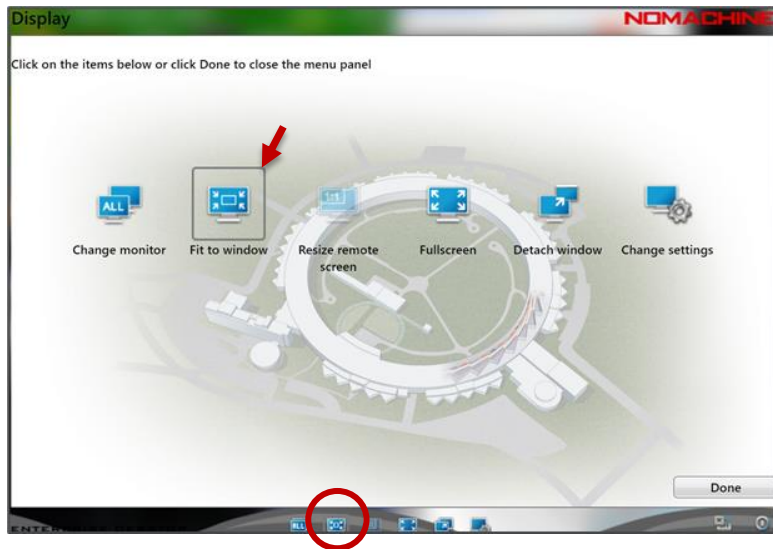
NoMachine Screen Navigation:

Shortcut keys (Windows and Linux):

- Ctrl + Alt + 0:   for settings, quick screen actions, and disconnection*

- Ctrl + Alt + 1,2,3, or 4:   for navigating the screens

- Ctrl + Alt + a: for showing all screens (useful to move windows across screens)

- Ctrl + Alt + f: for toggling to a full screen mode

- Esc: for escaping from the full screen mode

- Ctrl + Alt + i: for identifying the screens

- Ctrl + Alt + t: for disconnecting

- Ctrl + Alt + End: "Ctrl + Alt + Del" for lock screen

* Legit disconnection using the "Disconnect" button.

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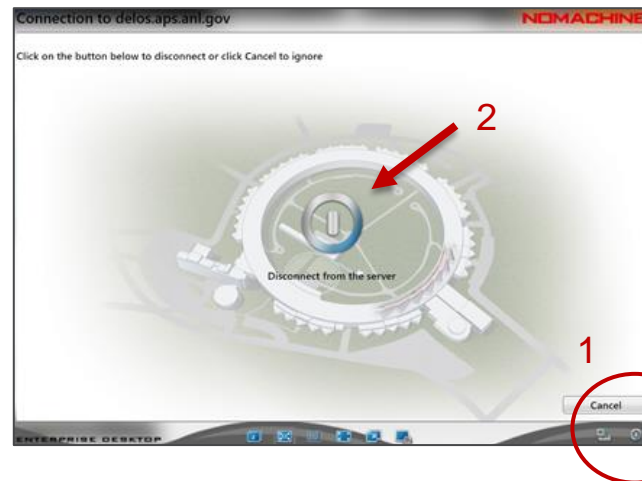
Tips for NoMachine connections:
Commonly experienced

- It relies on internet connection – the **bandwidth** is a definite limiting factor.

- APS-IT recommends faster than **25 Mbps**.

- Internet speed may depend on your **device** too (pc, laptop, tablet, etc.) – check your device's speed.

- A custom **proxy** setting on Chrome browser may interfere the connection.

- Your organizational **firewall** may block the APS ip addresses.

- NoMachine **client software** is free. Give it a try.

- It shares the **resources** – multiple, simultaneous connections are not always the best.

- For a blur screen, **hoover the mouse** and click.

- It is silly to say that high-speed internet, expensive computer and monitor would work better; but sadly, it is very true. Provide students with better computers!
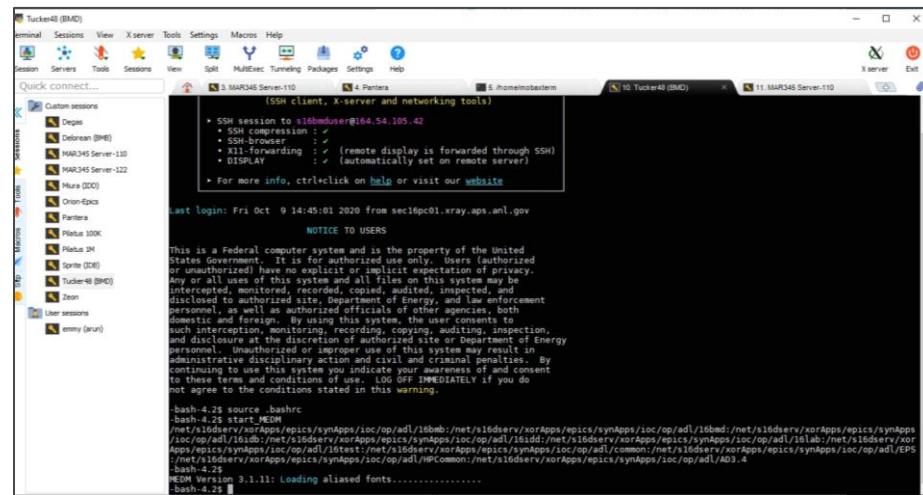
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START BEAMLINE EPICS CONTROL

MobaXterm:
The starting point for beamline control based on EPICS


From the Session tab
- Tucker48:
  - login: ask beamline scientist
  - > source .bashrc
  - > start_MEDM

- Mar345 Server – 110:
  - login: ask beamline scientist
  - > mar345dtb (start detector server)

  - duplicate the tab or open a new session
  - > start_epics (EPICS area detector controller)
  - Make sure the image mode is mar2300 (i.e., 150 μm pixel). If necessary, change the mode.

Keep this program running and never close.

Argonne National Laboratory is a
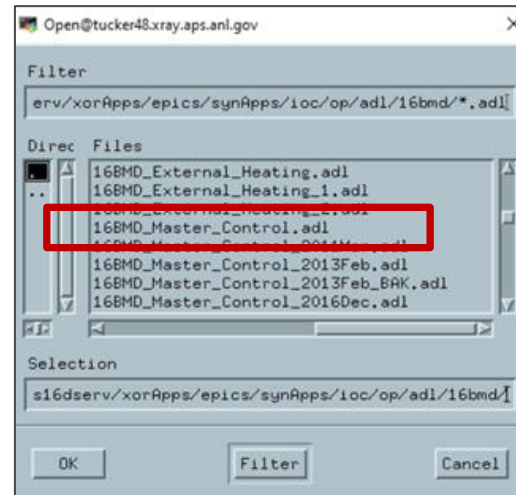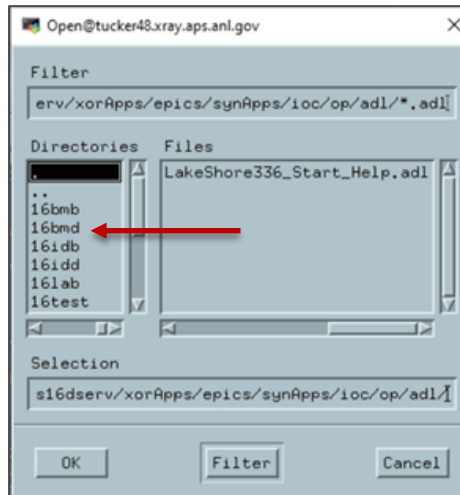U.S. Department of Energy laboratory
managed by UChicago Argonne, LLC.
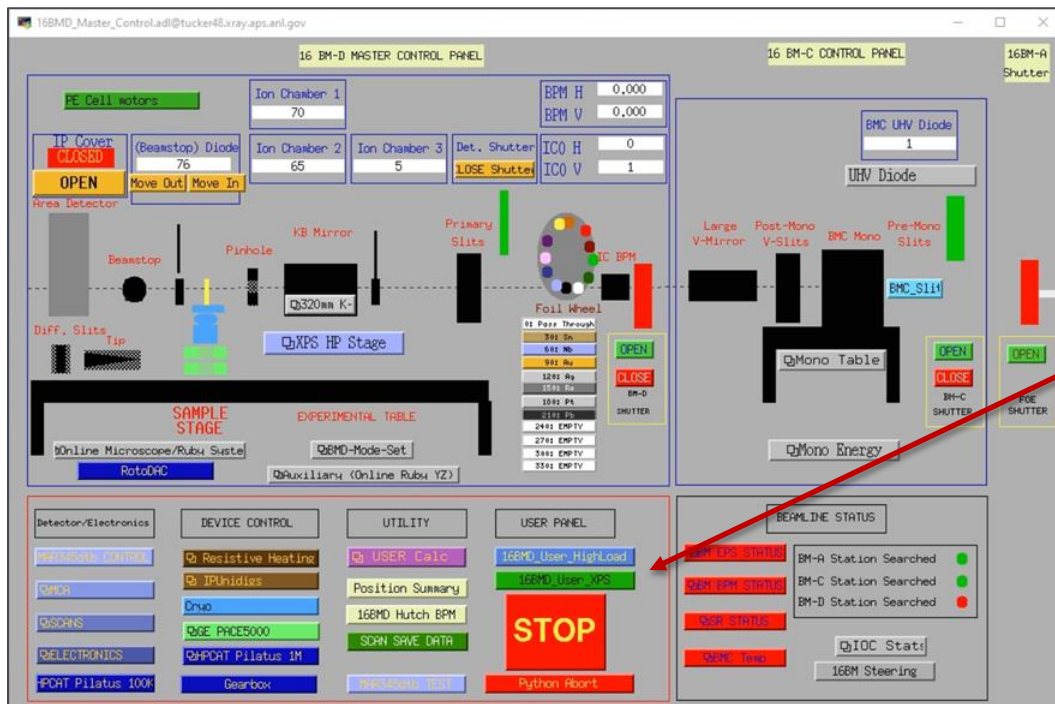
start_MEDM
Open 16BMD_Master_Control
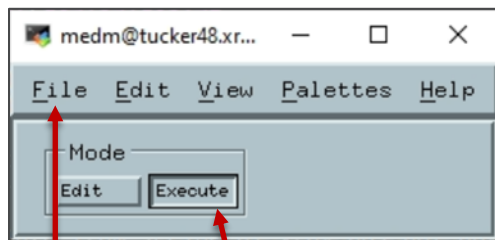
Change to "Execute" mode

File - Open

16-BM-D Master Control
16BMD_Master_Control to open 16BMD_User_Interface_XPS

Open 16BMD user interface

- 16BMD_User_XPS
- For high-precision XPS sample stage (default)

- 16BMD_User_HighLoad
- For high-load sample stage (for large cryostat experiment)

16-BM-D User Interface (with High-precision XPS Stage)

Ion chambers and diode gain controls

PACE5000 membrane gas pressure control

Change X-ray energy (in keV)

Beamline shutter

Resistive heater control

Pneumatic stage In/Out for IC2&IC3 or others

Toggle between "Sample Scan Mode" and "Diffraction Mode" automatically cares of beam exposure to Mar345 IP by overriding the "Det. Shutter" and the "IP Cover" controls. It takes 12 seconds to complete the switch.
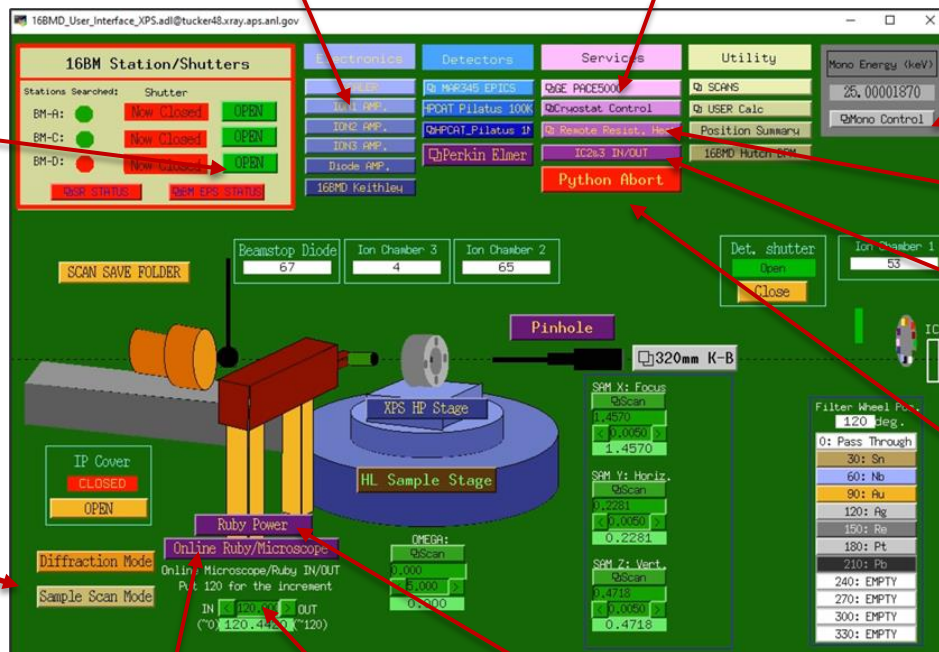
Launch an "Abort" button for beamline's Python based scan program (Diptera)

Online Ruby/Microscope Y-stage In/Out (by setting 120 mm relative motion)

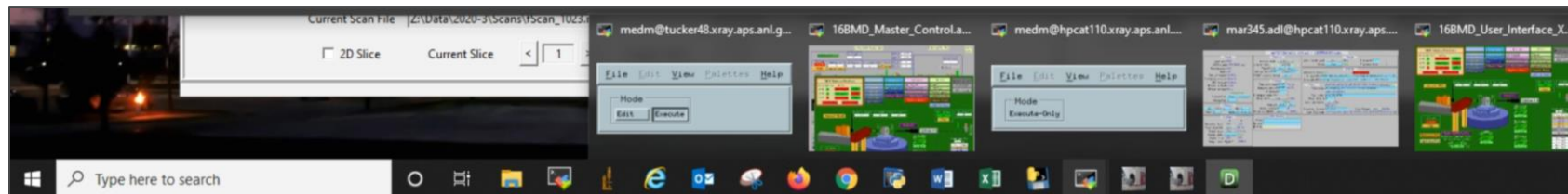Online Ruby/Microscope stage full control

Laser Power

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EPICS Windows on Desktop
Taskbar icon collections for the EPICS windows

MobaXterm icon
(let the program keep
running undisturbed)

Collections of the EPICS windows
(Note the icons are identical to MobaXterm as they
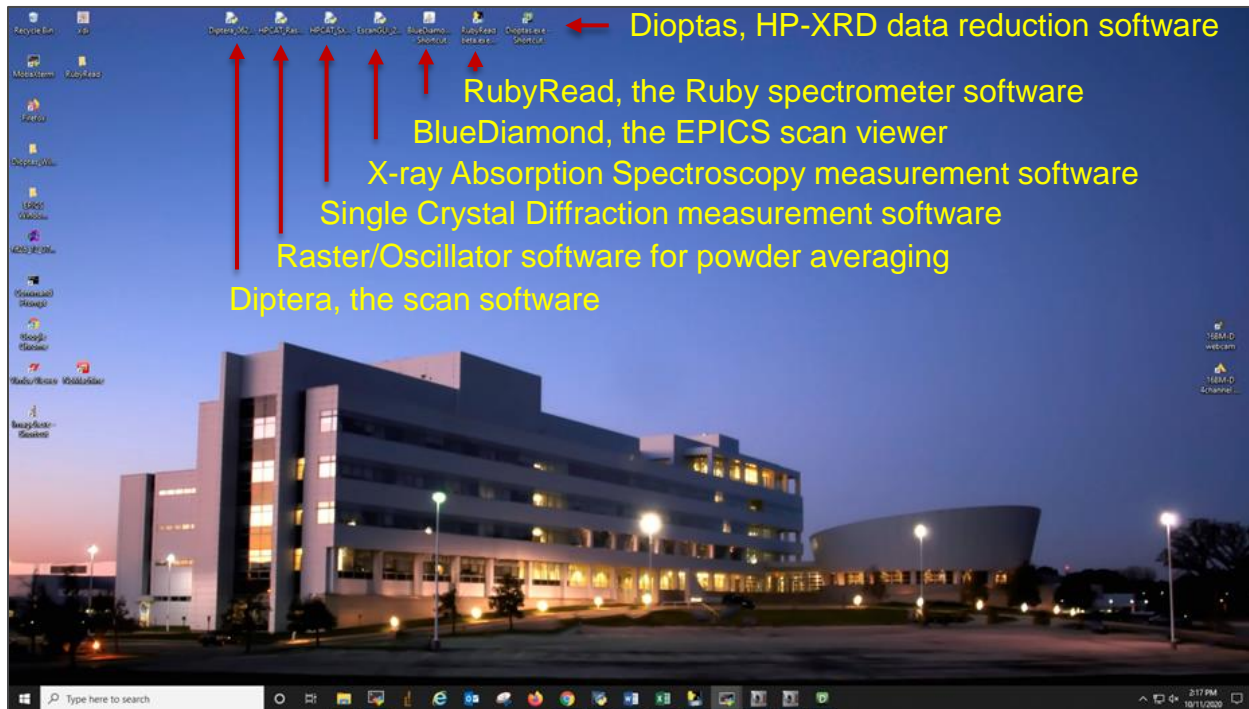are all tunneled through the MobaXterm X-server.)

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BEAMLINE SOFTWARE DESKTOP SHORTCUTS

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Beamline Software:
Shortcuts for Beamline Software

Dioptas, HP-XRD data reduction software

RubyRead, the Ruby spectrometer software

BlueDiamond, the EPICS scan viewer

X-ray Absorption Spectroscopy measurement software

Single Crystal Diffraction measurement software

Raster/Oscillator software for powder averaging
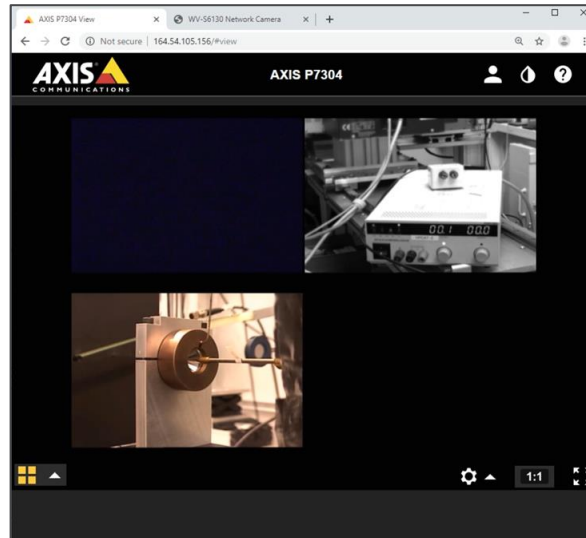
Diptera, the scan software

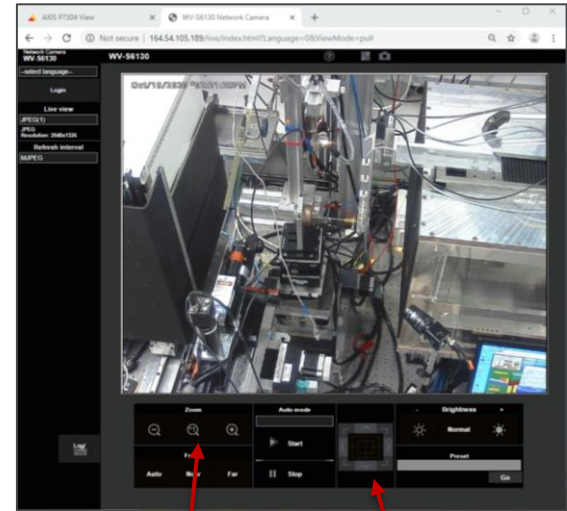# Web Camera and Quad-Channel Video
Visuals for inside of hutch and cameras

Web browser shortcuts for web camera and quad-channel videos

Channel selection

Zoom control

Camera angle

DIRECTORY AND FOLDER NAME CONVENTION

Directory and Folder Name Convention:

Beamline computer

- Mapped network drive: 16bmd (\\pantera\data) (Z:)
- User data root folder: Z:\Data\yyyy-n (4-digit year and run cycle)
- Diptera and EPICS scan save directory: Z:\Data\yyyy-n\Scans
- User data folder: Z:\Data\yyyy-n\ESAFxxxxxx-<description: PI last name or Experiment>

Globus online

- Endpoint: aps#data (needs APS User Authentication – d<badge> and password)
- Root path: /gdata/
- User data folder: /gdata/dm/HPCAT/16BMD/yyyy-n/s16bmd-<yyyymmdd>-e<xxxxxx>-<description>

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