



Elettra
Sincrotrone
Trieste

MXCuBE / ISPyB Meeting

Virtual Meeting @ ALBA Synchrotron



Update Status MxCuBE3 at beamline XRD2

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IT

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XRD2

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Since last meeting

- **Mxcube3 in operation since September 2018**
- **Focus on:**
 - **Stability**
 - **ISPyB and data processing integration**
 - **Remote Access**
- **Last 10 user shifts from remote, mainly from Italy**

October 2019

- Login :

- ✔ Rest authentication through ELETTRA VUO
- ✔ ISPyB
 - ✔ Connection with VUO, proposals, people
 - ✔ *Populating the table with persons on sessions for logins*
- ✘ Logout restart server every time

- Data Collection Tab:

- ✔ Beamline Actions
 - ✔ Visualize Beam, Optimize intensity (charts not working)
- ✔ Diffractometer (MD2):
 - ✔ Changing md2 phases moved to main menu
 - ✘ Automatic loop centering
 - ✔ Camera streaming
 - ✔ Better status of pin mounted/unmounted

- Sample Changer Tab:

- ✔ Fully integrated via SynchWeb-ISPyB
- ✔ Robot actions moved to SC

- Sample Overview Tab:

- ✘ MCA scans

June 2020

- Login :

- ✔ ISPyB
 - ✔ In-house shifts treated as VUO internal proposals
 - ✔ Individual login for common sessions
 - ✔ Implemented “visit” concept, avoids overwriting
- ✔ Clean Logout

- Data Collection Tab:

- ✔ Data Collection
 - ✔ Better data collection abort management
 - ✔ Better DISTL and AUTOPROC integration
 - ✔ New Pilatus Tango Device
 - ✔ Run number increment according to ISPyB
- ✔ Beamline Actions
 - ✔ Optimize beam position (H,V, Yaw), intensity with live charts
- ✔ Diffractometer (MD2):
 - ✘ Automatic loop centering
 - ✔ Camera streaming without v4I2loopback module
 - ✔ Better 3-click centering abort management

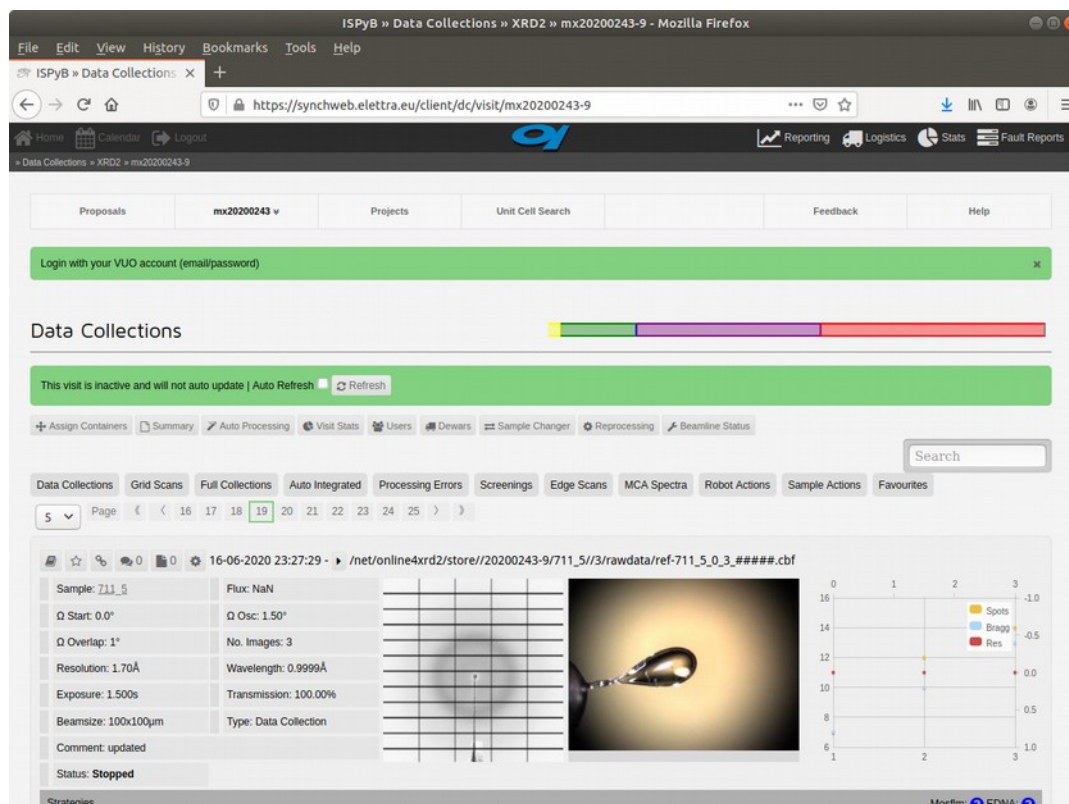
- Sample Changer Tab:

- ✔ Bug fix for long term operations

- Sample Overview Tab:

- ✘ MCA scans

First months after last meeting



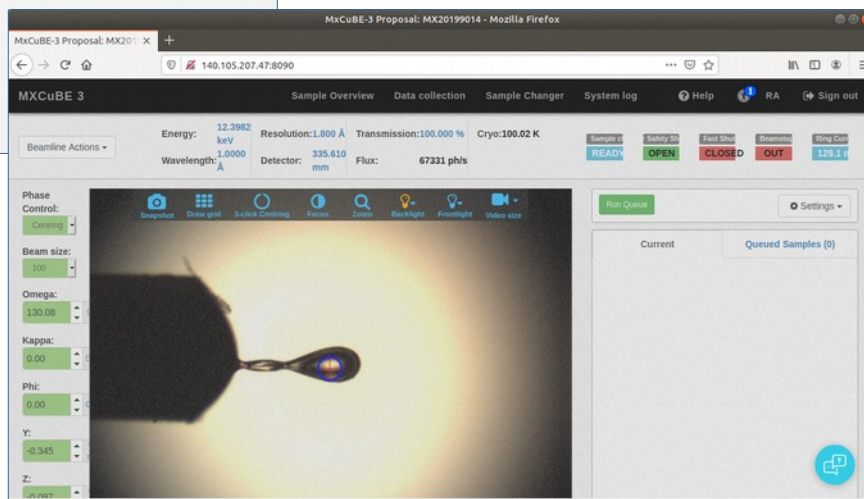
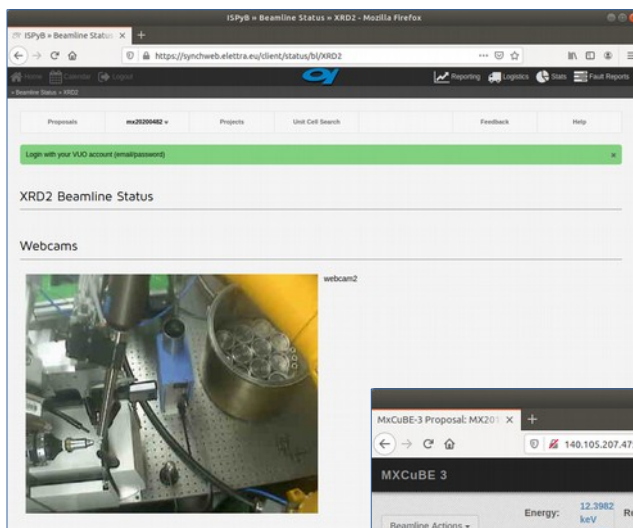
The screenshot shows the ISPyB web interface in a Mozilla Firefox browser. The address bar displays the URL: <https://synchweb.elettra.eu/client/dc/visit/mx20200243-9>. The page title is "ISPyB » Data Collections » XRD2 » mx20200243-9". The interface includes a navigation menu with options like "Proposals", "Projects", "Unit Cell Search", "Feedback", and "Help". A green banner prompts the user to "Login with your VUO account (email/password)". Below this, a "Data Collections" section shows a progress bar and a message: "This visit is inactive and will not auto update | Auto Refresh [Refresh]". A search bar is present, and a list of data collection entries is shown. The selected entry is for "Sample: 711_5" with a status of "Stopped". The entry details include: Flux: NaN, Ω Start: 0.0°, Ω Osc: 1.50°, Ω Overlap: 1°, Resolution: 1.70Å, Wavelength: 0.9999Å, Exposure: 1.500s, Transmission: 100.00%, Beamsize: 100x100µm, Type: Data Collection, and Comment: updated. A small image of a sample is visible. The bottom of the page shows "Strategies" and "Mosflm: EDNA".

- Worked on better abort management (data-collection, 3-click centering)
- Automatic Distl and Autoproc data processing within MxCube3
- SynchWeb has been upgraded to the latest version (support from DLS)
- Automatic integration of Autoproc results into ISPyB
- Beam Flux optimization in MxCube with live charts (Beamline Actions)
- New Pilatus Tango Device (Python)



Last months: strong focus on Remote Access (COVID-19)

- Customized sample camera streaming (with bug-fix)
- Individual user login for common proposal
- Robot camera streaming integrated into SynchWeb



XRD2 RA setup

- Direct access to MxCube3
- Direct access to SynchWeb
- Reserved ZOOM room
- Albula via NoVNC Remote Desktop



Customization and bug fixes

LONG TERM OPERATION ISSUE

We've experienced an **automatic hidden command retry** from the web browser after a 2 minutes timeout: this led to an unexpected robot arm movement, very dangerous. Fortunately the standard timeout can be increased in the webpack configuration files.

VIDEO STREAMING

On Ubuntu18.04, kernel 5.3.0-4, we found the standard v4l2loopback module compiled in readonly mode. We had to adapt MxCube3 for streaming the video to ffmpeg via a pipe.

We've experienced a web browser crazy CPU usage, we had to modify part of the Javascript code for avoiding the creation of multiple video stream connections.



What's next?

- Automatic login name for Remote Access sessions
- Remote client already logged in after MxCube3 server restart, why?
- Automatic loop centring (MD2 not reliable): XREC, C3D ?
- Implement Raster Scan
- Solve MD2 issues: PC substitution, Camera Zoom motion system
- Actions from 'Sample Overview' or 'Data Collection' tabs are not the same?
- Force proposal selection after login and avoid duplicate messages in "RA chat"
- Autoproc analysis moved to a cluster?



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Thank you

