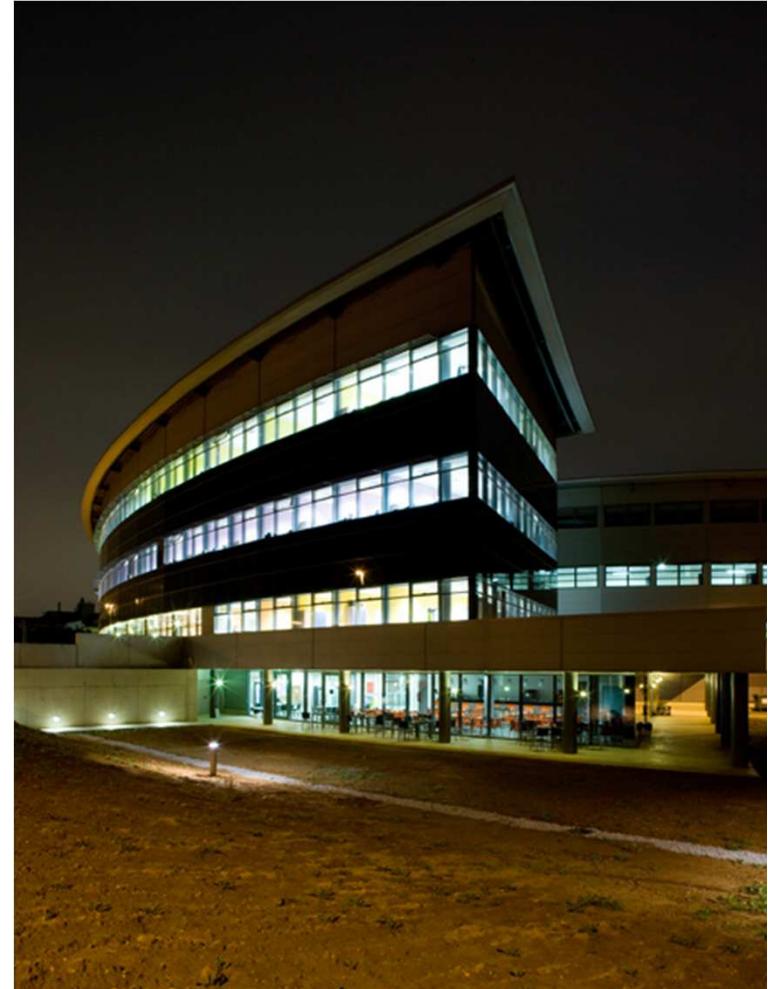


How Sardana is being used at ALBA's beamlines

**Guifré Cuní - on
behalf of the ALBA's
Controls Group**

October 2015





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Control System
Infrastructure

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Hardware Controllers

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Tango Device Servers

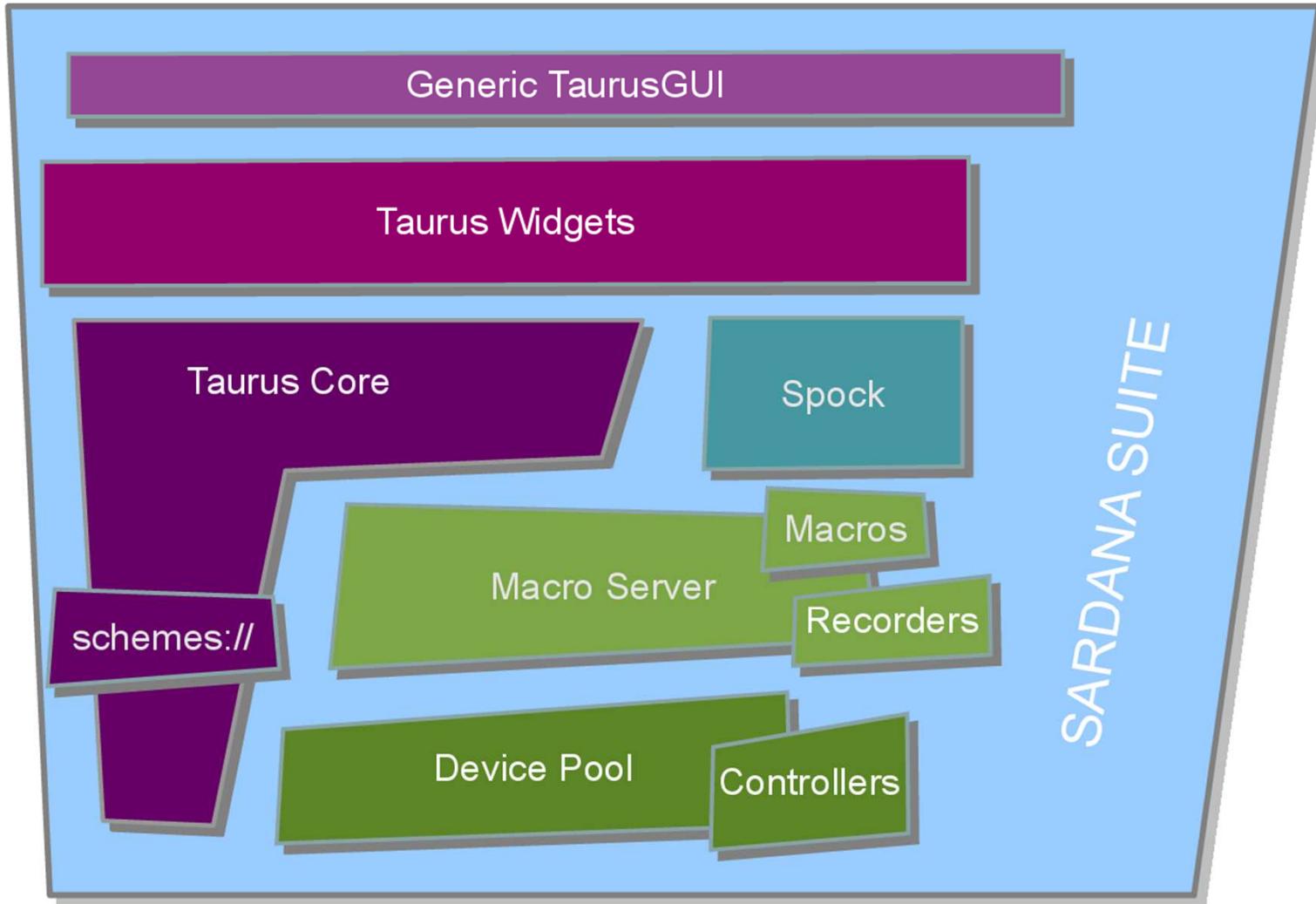
4

The figure displays six windows of the Jive 4.19 interface, each showing a hierarchical list of Tango Device Servers. The servers are categorized into Alias, Property, Server, Device, and Class tabs. Several specific entries are highlighted with yellow boxes:

- Eurotherm2408** (highlighted in the first window)
- PyLoCum4** (highlighted in the second window)
- PyLinkam** (highlighted in the third window)
- PyCATS** (highlighted in the fourth window)
- Peem** (highlighted in the fifth window)
- PmacEth** (highlighted in the fifth window)
- VectorMagnetXMC** (highlighted in the sixth window)

Below the windows, there are two photographs:

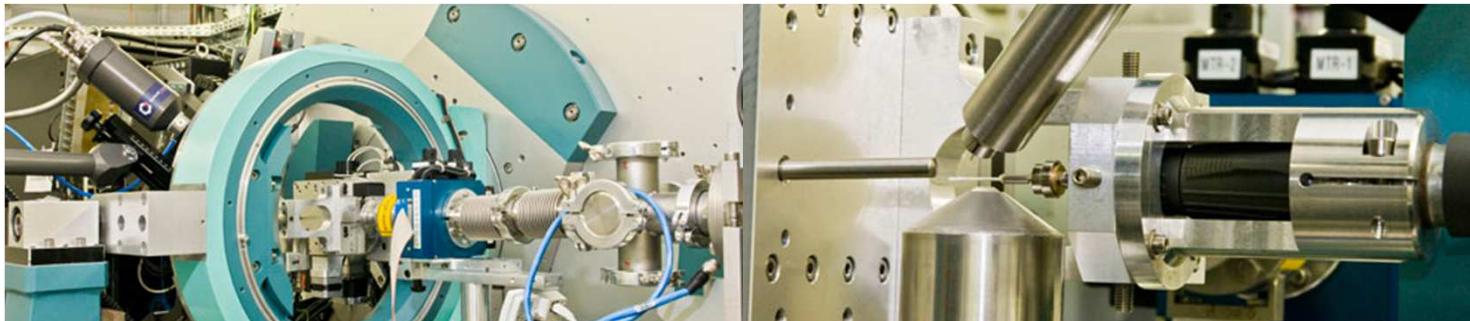
- A photograph of a white control unit with a screen and various cables connected.
- A photograph of a yellow robotic arm positioned over a complex industrial vacuum system.



- Vacca: Vacuum GUI valves, gauges, pumps
- Equipment Protection System
- Electrometer calibrations
- Panic to manage alarms
- FE control
- ctblIXX, ctblIXXmacro, experiments

- spock is available in all beamlines and mainly used for:
 - Homing elements
 - Aligning the beamline and the sample
 - Openbeamline, openvalve, generic operation/maintenance procedures
 - Generic scans and isolated instruments operation (outside experiment macros)

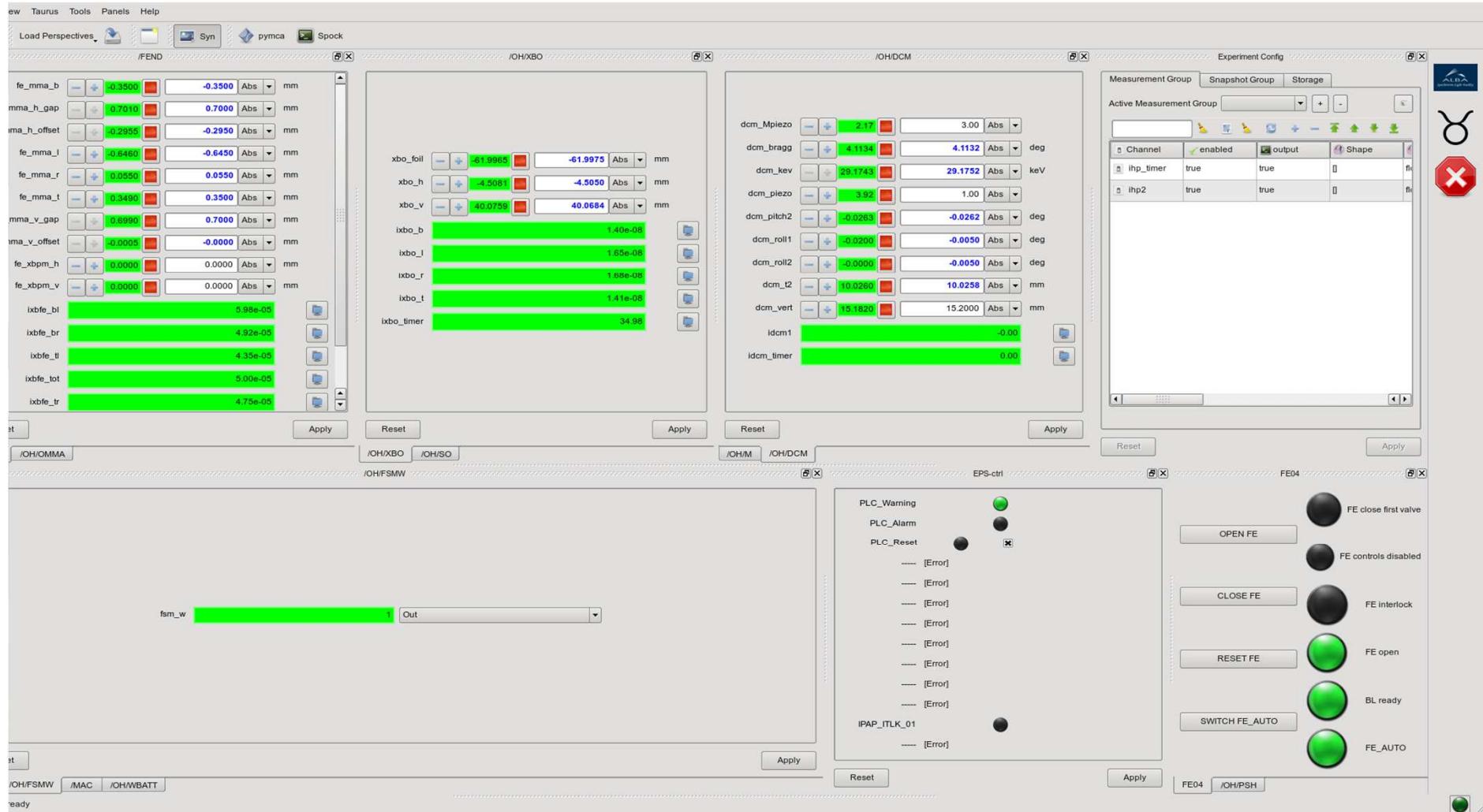
BL04-MSPD - Usage



high-resolution powder diffraction and high pressure powder diffraction

- Main control from spock:
 - mar_ct (single image), mar_scan (scan omega and synchronize shutter), mythen_acquire (single), madscan using continuous scan
- GUIs for On Axis View interaction, Macro Sequencer

BL04-MSPD - Usage





BL04-MSPD - Usage

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TANGO://TBL0401:10000/BL04/OH/MOCO

State: ON

Attributes Commands

Amplitude	0.10	0.00
Beam		6.7399e-06 0.146799
Beam_In		6.7311e-06
Beam_Out		0.15
FBeam		6.73282e-06 0.146815
FBeam_In		6.7329e-06
FBeam_Out		0.15
Frequency	166.67	0.00
InBeamConf	CURR NORM UNIP 2.5e-05 NOAUTO	curr norm unip 2.e-5 noauto
MocoState		RUN
Mode	INTENSITY	Not initialised
OperationFlags	Show	
OscBeamMainSignal	0.00	0.00
OscBeamQuadSignal	0.00	0.00
OutBeamConf	VOLT NORM UNIP 1.25 NOAUTO	Not initialised
Phase	90.00	0.00
Piezo	2.17	3.00

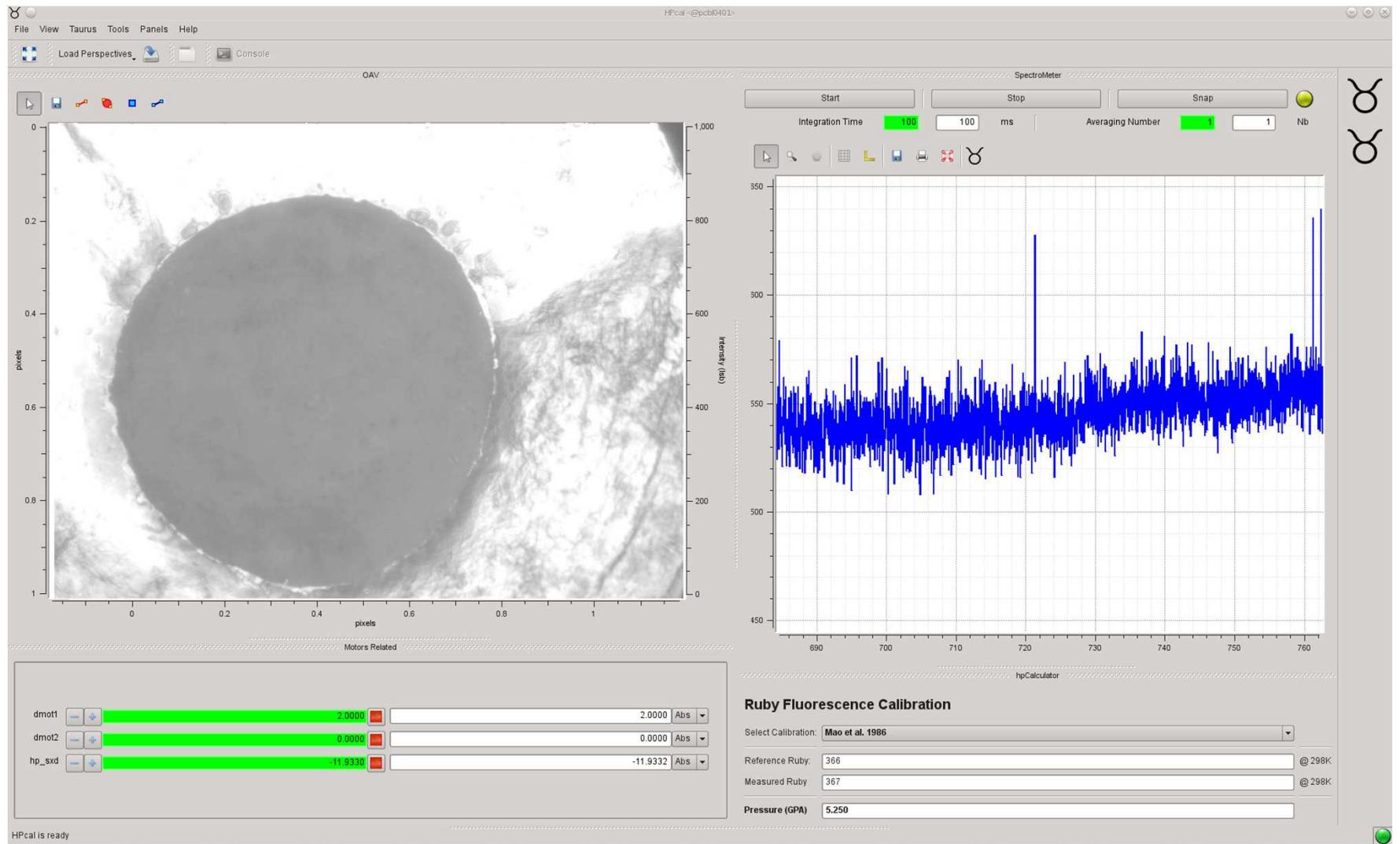
The device is in ON state.

MOCOGui is ready

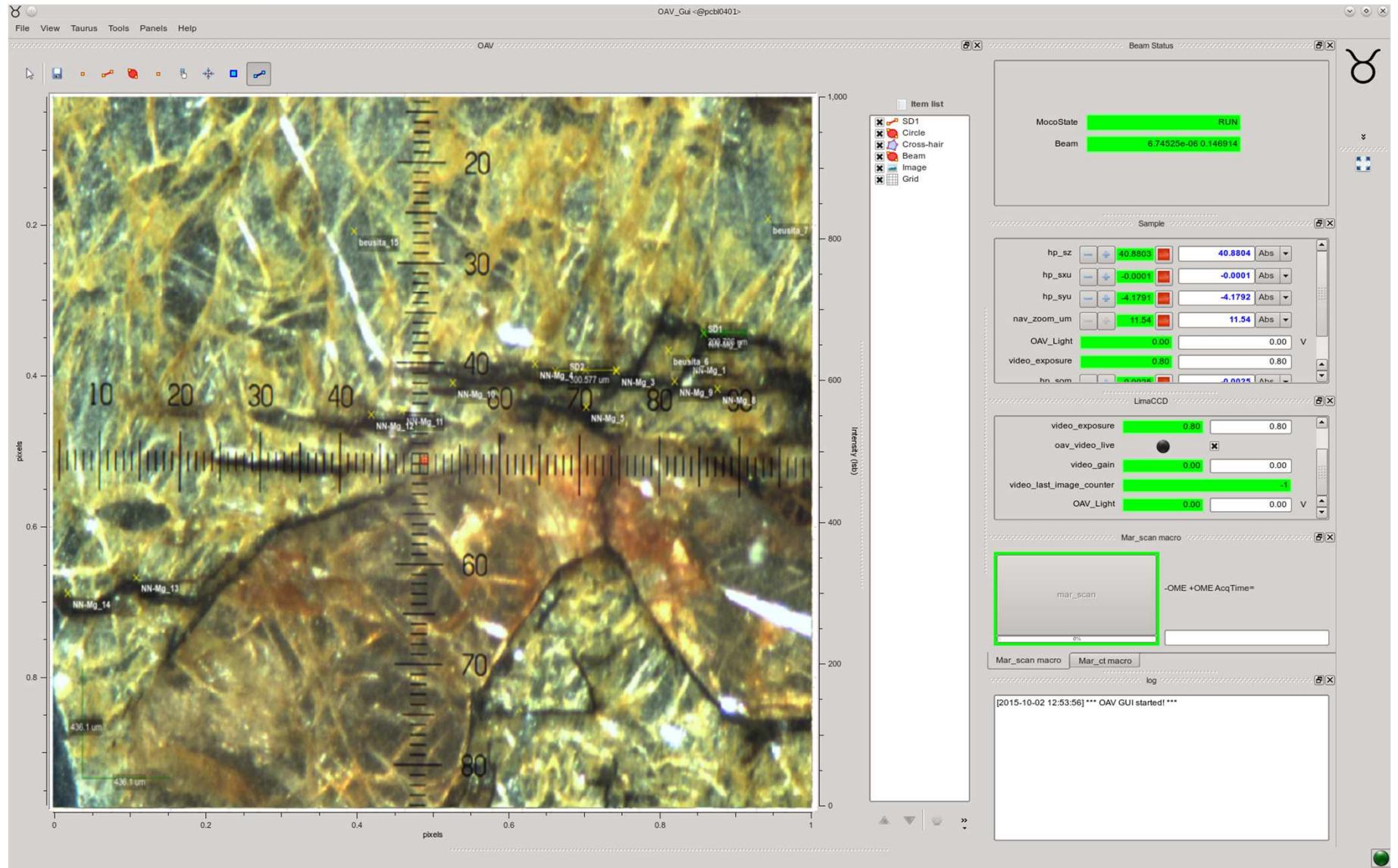
Piezo

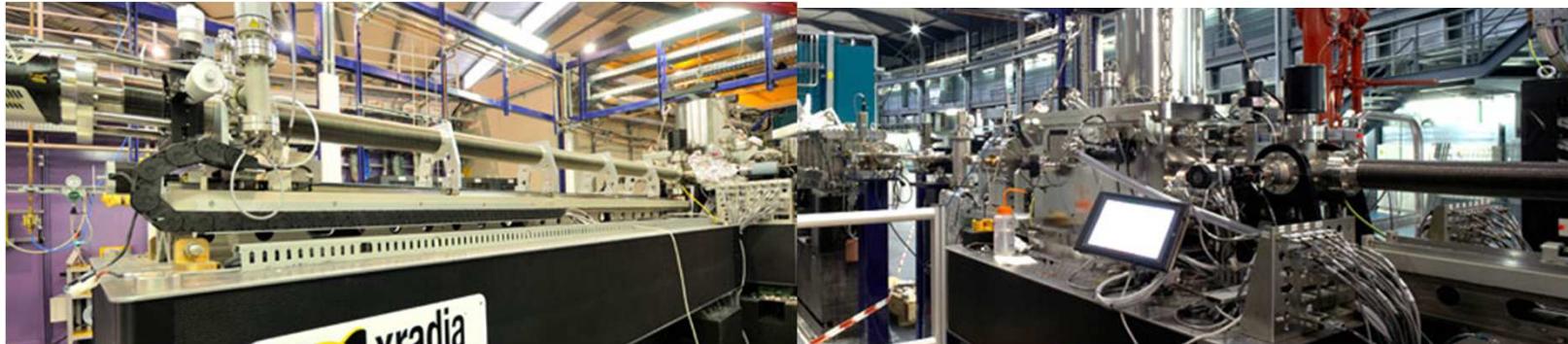
dcm_Mpiezo	2.17	3.00
dcm_piezo	3.92	1.00
Voltage	21.53	0.00
Position	3.92	0.00
ServoMode	<input checked="" type="radio"/>	<input type="checkbox"/>
AlbaEmIP	84.89.224.81	
AlbaEmMAC	00:90:C2:E6:9D:84	
ixbo_t	1.4e-08	
ixbo_I	1.6e-08	
ixbo_r	1.7e-08	
ixbo_b	1.4e-08	
range_ch4	1uA	1uA
range_ch3	1uA	1uA
range_ch2	1uA	1uA
range_ch1	1uA	1uA

Reset Apply



BL04-MSPD - Usage

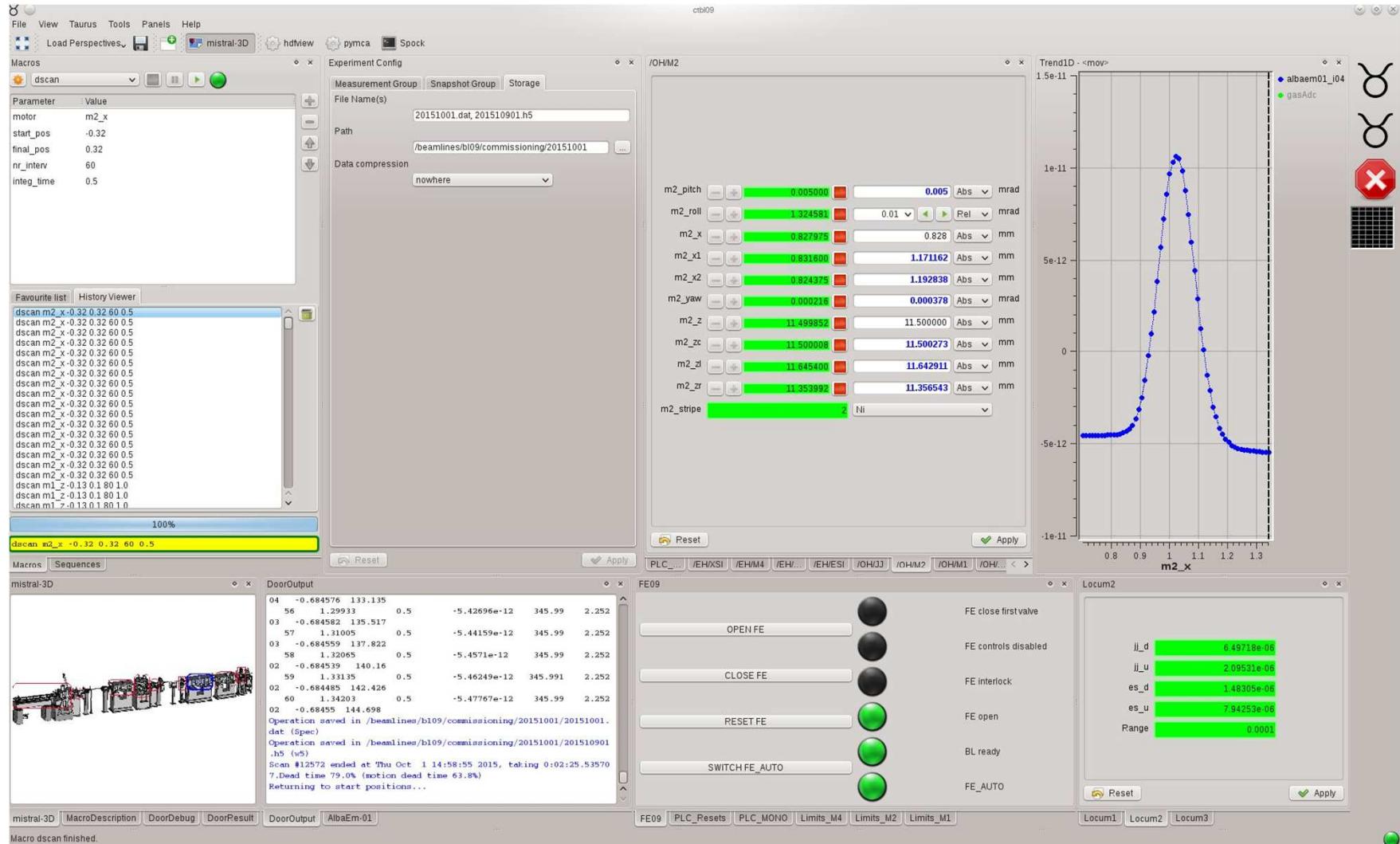




X-ray Microscopy

- Main control from Xradia GUI plus taurus GUIs for:
 - Positioning of mirrors, slits, mono
 - BPMs and electrometer readouts
 - Macro execution (and history)
 - Online plotting trends
 - Extensive use of snapshots with Tango Attributes before scans
- spock used for dscans alignments and open/close valves

BL09-MISTRAL - Usage

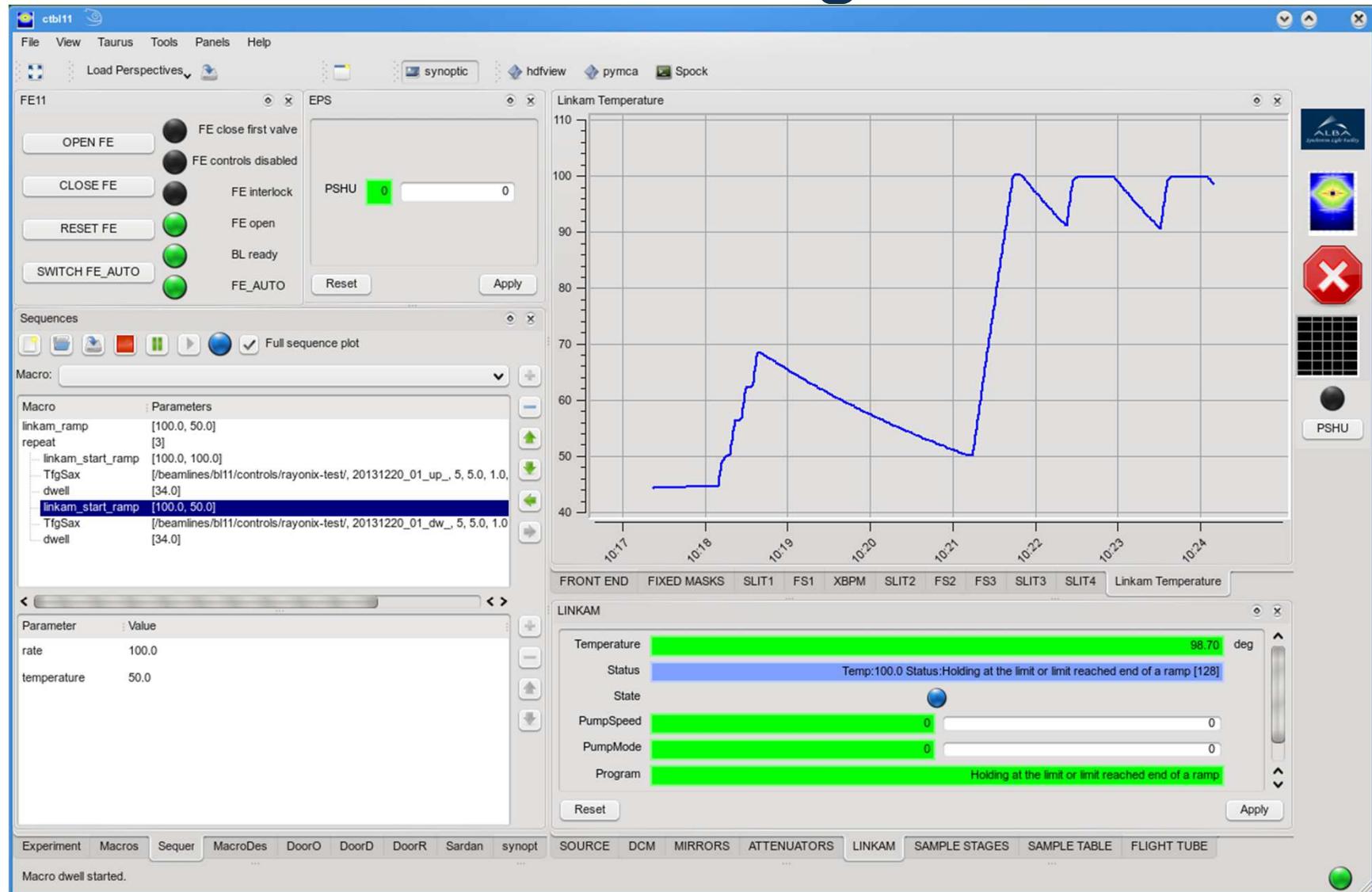


```
xterm <3>
^[[A
Door_BL09 [1]: M2_mesh
    m2_x
    0.5180
Operation will be saved in /beamlines/bl09/commissioning/20151002/20151002.dat (
Spec)
Operation will be saved in /beamlines/bl09/commissioning/20151002/20151002.h5 (
w5)
Scan #12573 started at Fri Oct  2 08:44:34 2015. It will take at least 0:00:30.5
00000
Moving to start positions...
#Pt No      m2_x      albaem01_timer  albaem01_i04  Energy_val  Cff_val  gasAdc
dt
  0      0.197912      0.5      -4.68908e-12  520.111   2.24964  -1.70136
  5.60357
  1      0.208625      0.5      -4.67621e-12  520.111   2.24964  -1.70189
  7.95201
  2      0.219275      0.5      -4.67115e-12  520.109   2.24963  -1.70242
  10.2107
  3      0.229963      0.5      -4.66257e-12  520.112   2.24965  -1.70288  12.6721
  4      0.240613      0.5      -4.653e-12     520.112   2.24965  -1.70327  14.9252
  5      0.2513          0.5      -4.64024e-12  520.112   2.24964  -1.7036   17.1753
  6      0.26195         0.5      -4.62946e-12  520.112   2.24965  -1.704   19.5013
```



Small/Wide Angle X-ray Scattering

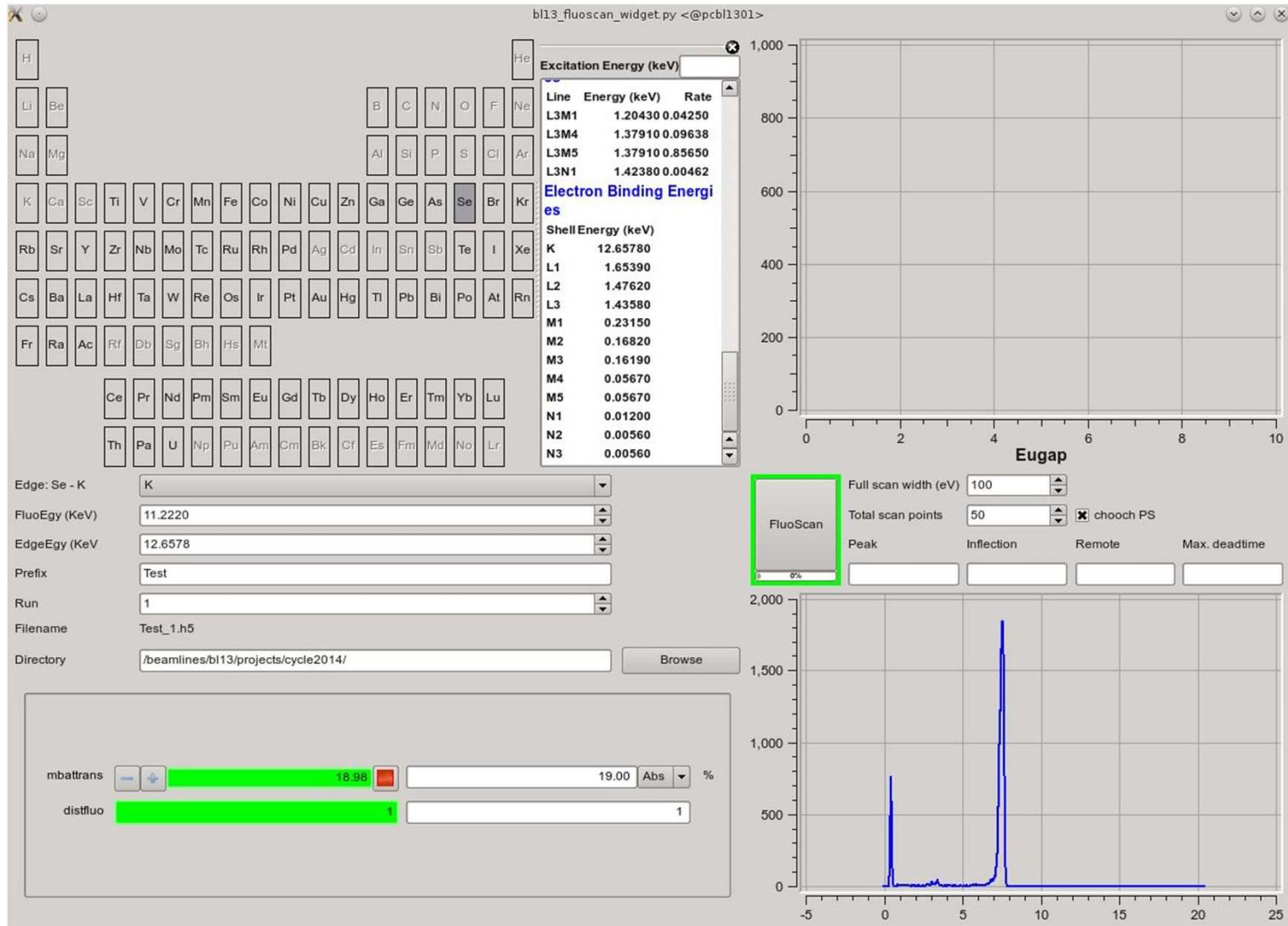
- Main control for users: GUI
- Main control for scientists: CLI
- The experiments: sax, wax, saxwax macros
- In commissioning control GUIs are used to manually perform actions to the instruments, shutters, or detectors

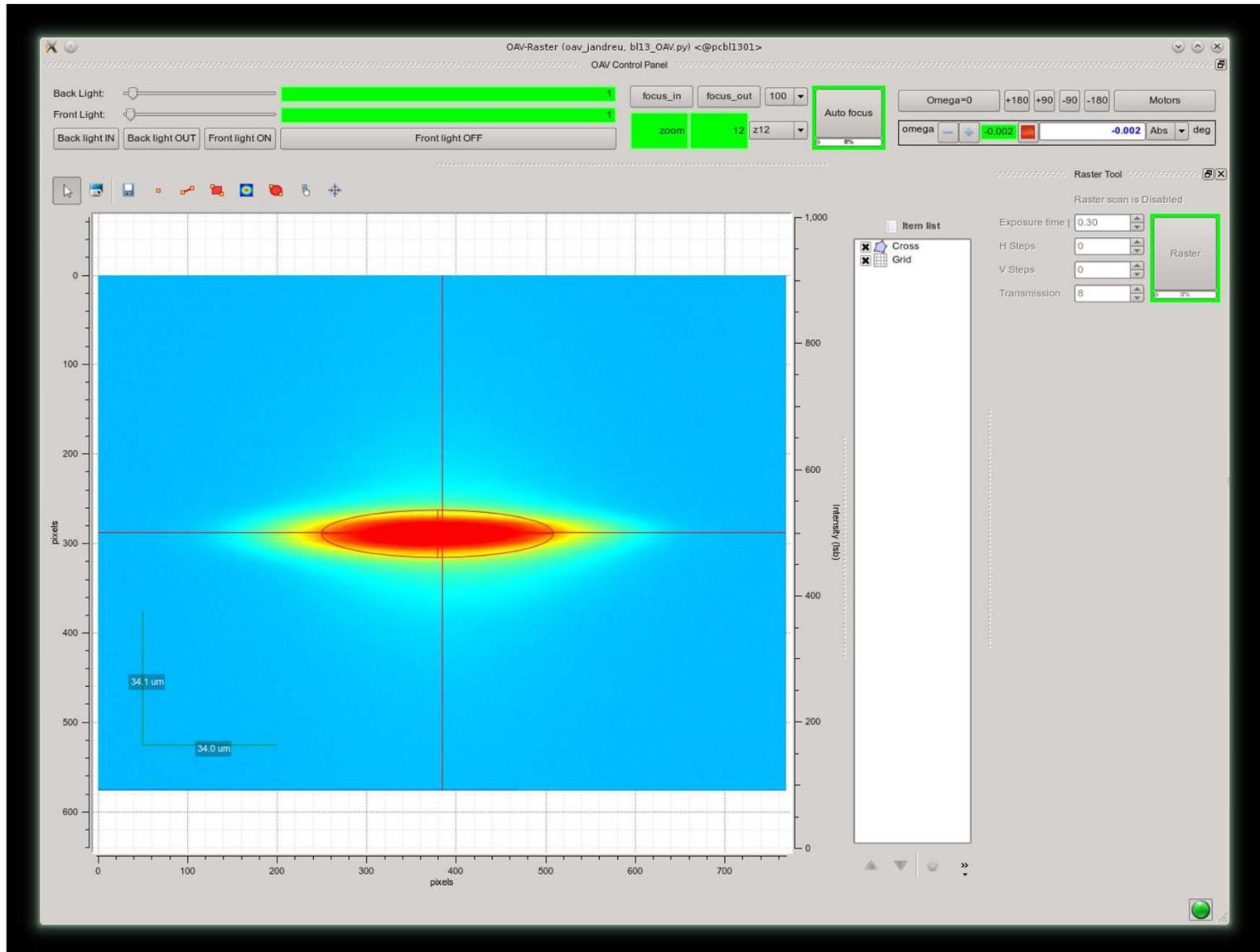


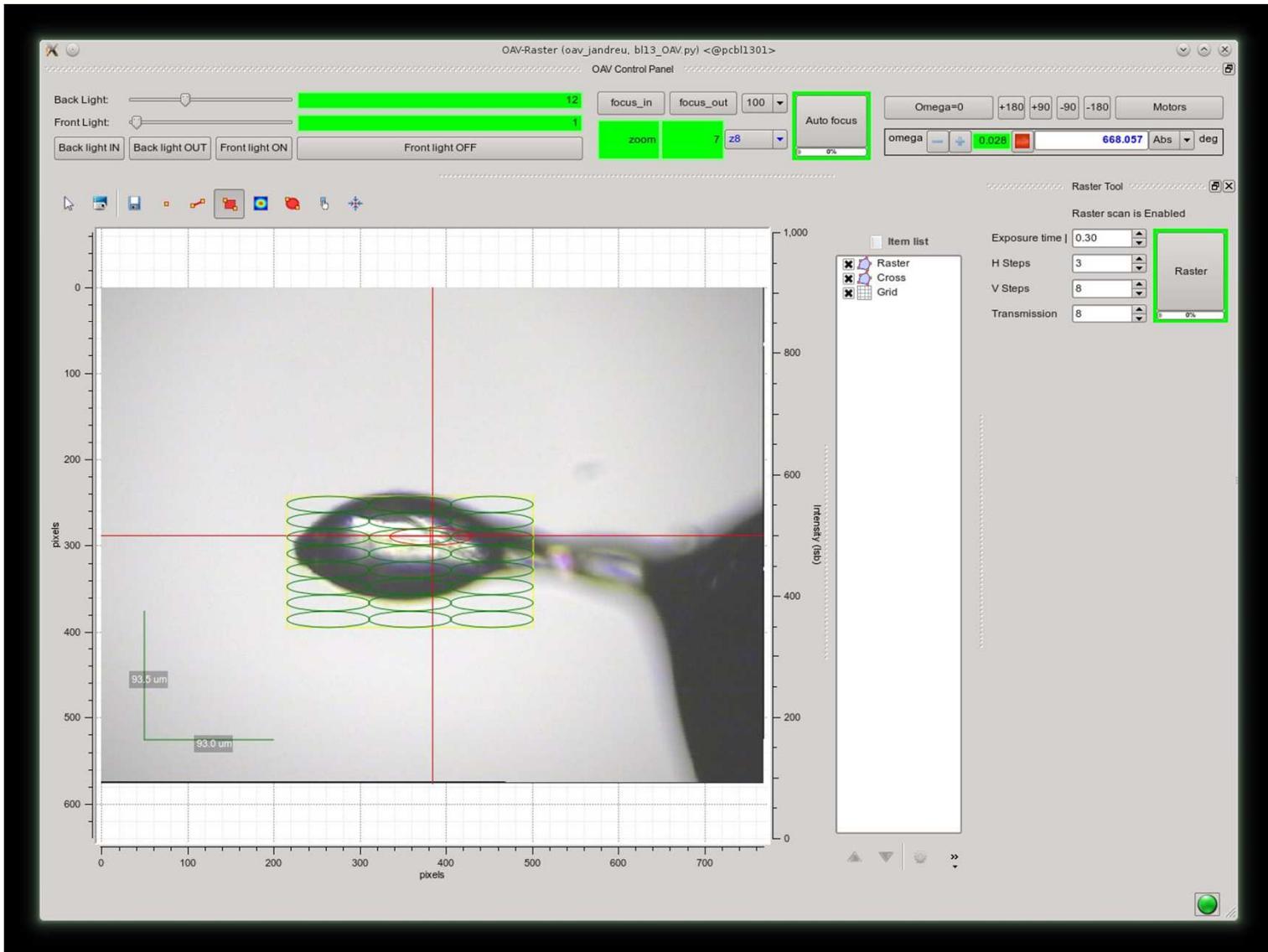


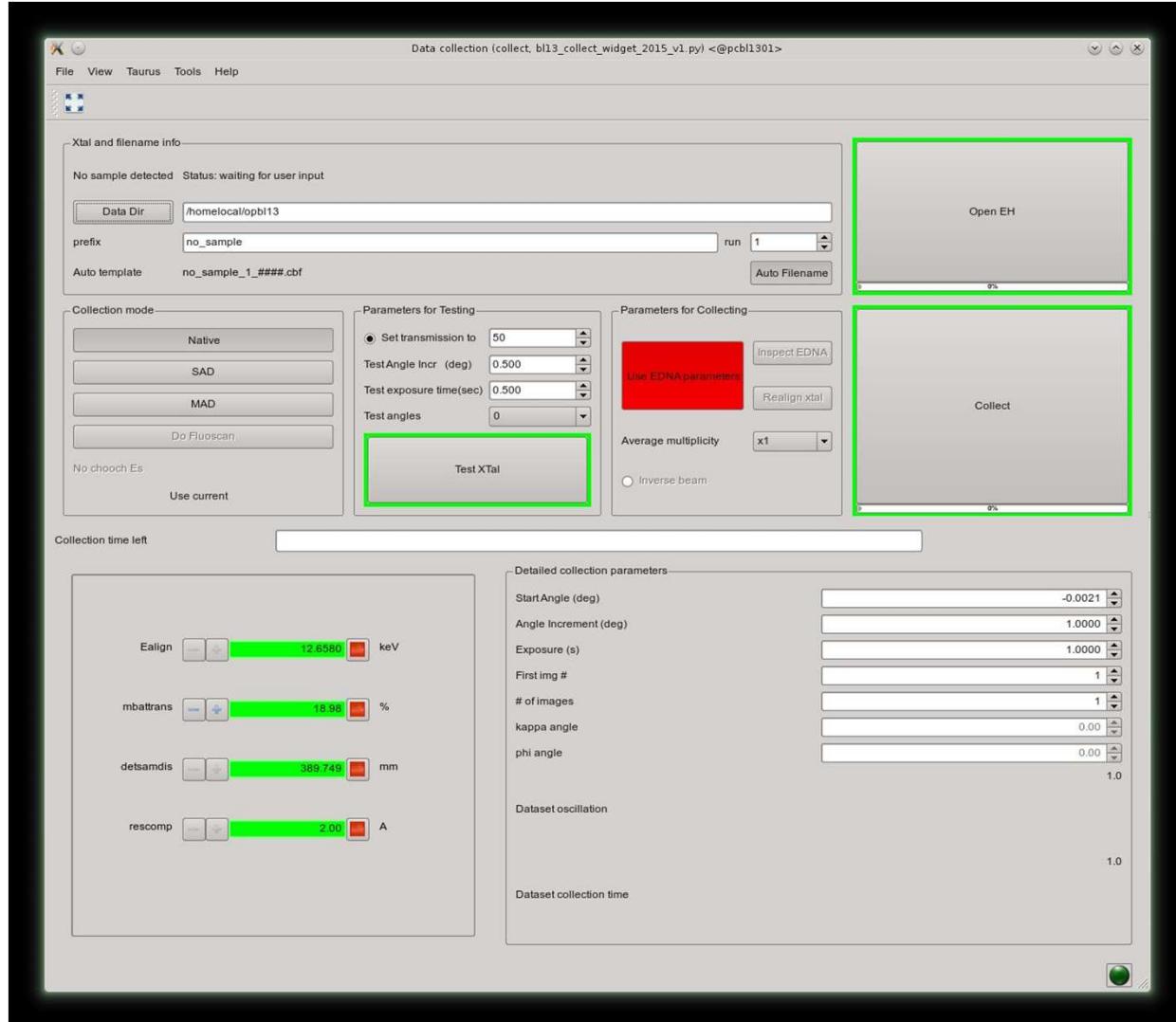
Macromolecular Crystallography

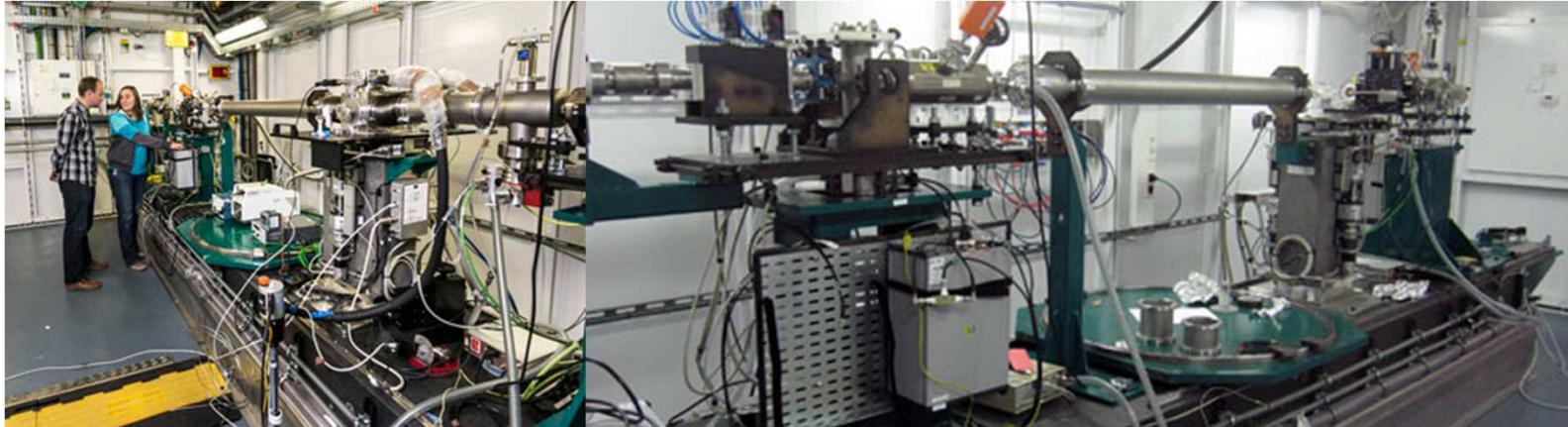
- Main usage of GUIs using Taurus:
 - Collect, OAV, fluoscan, diagnostics, ...
 - Macroexecutor/sequencer not used at all
- Macros extensively used for alignment, commissioning and maintenance





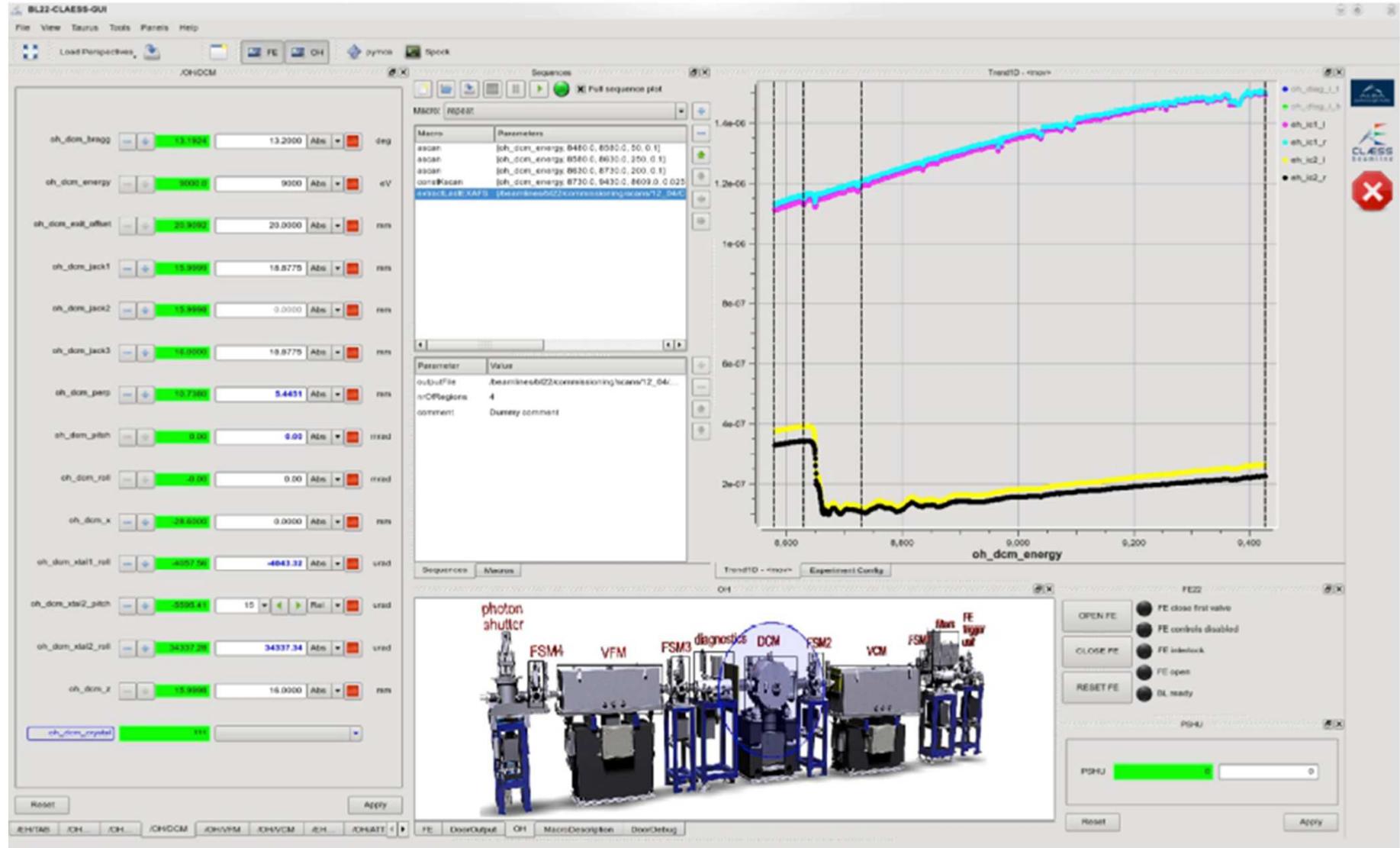


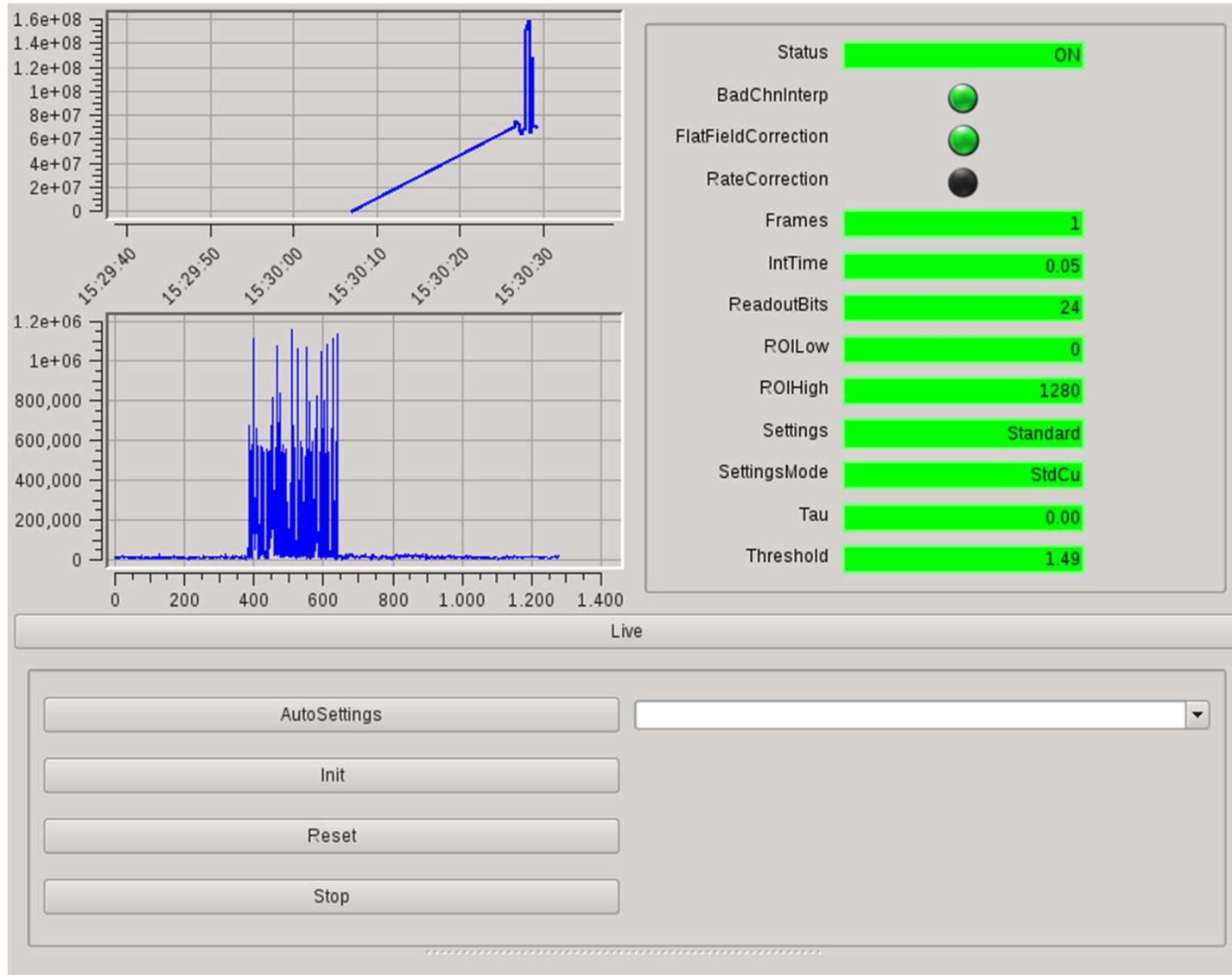


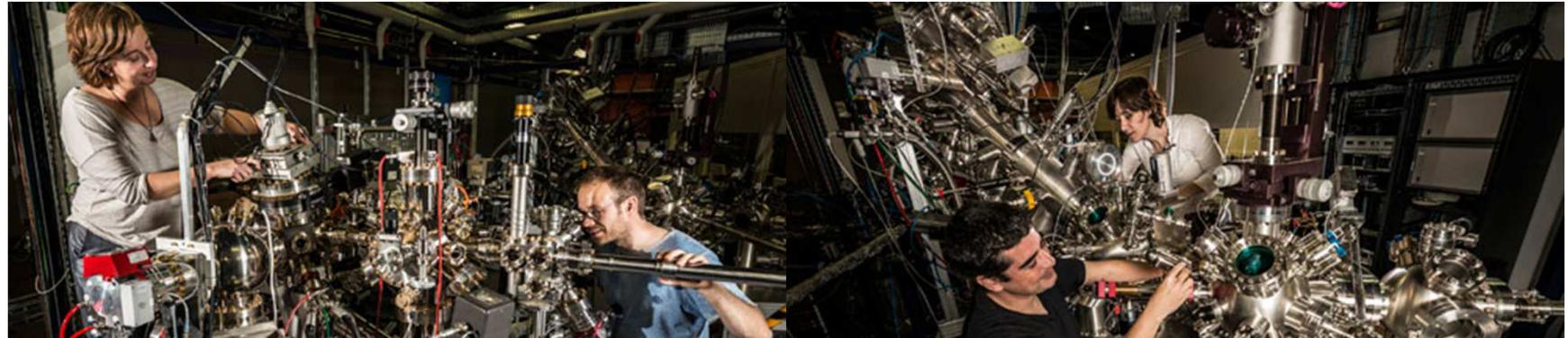


Absorption and Emission Spectroscopy

- User experiments via macros in spock:
 - qExafs (continuous scans)
- Many monitor GUIs:
 - Ctbl22, ctbl22macros (macroexecutor, expconf, sequencer), mythenGUI, amptekGUI







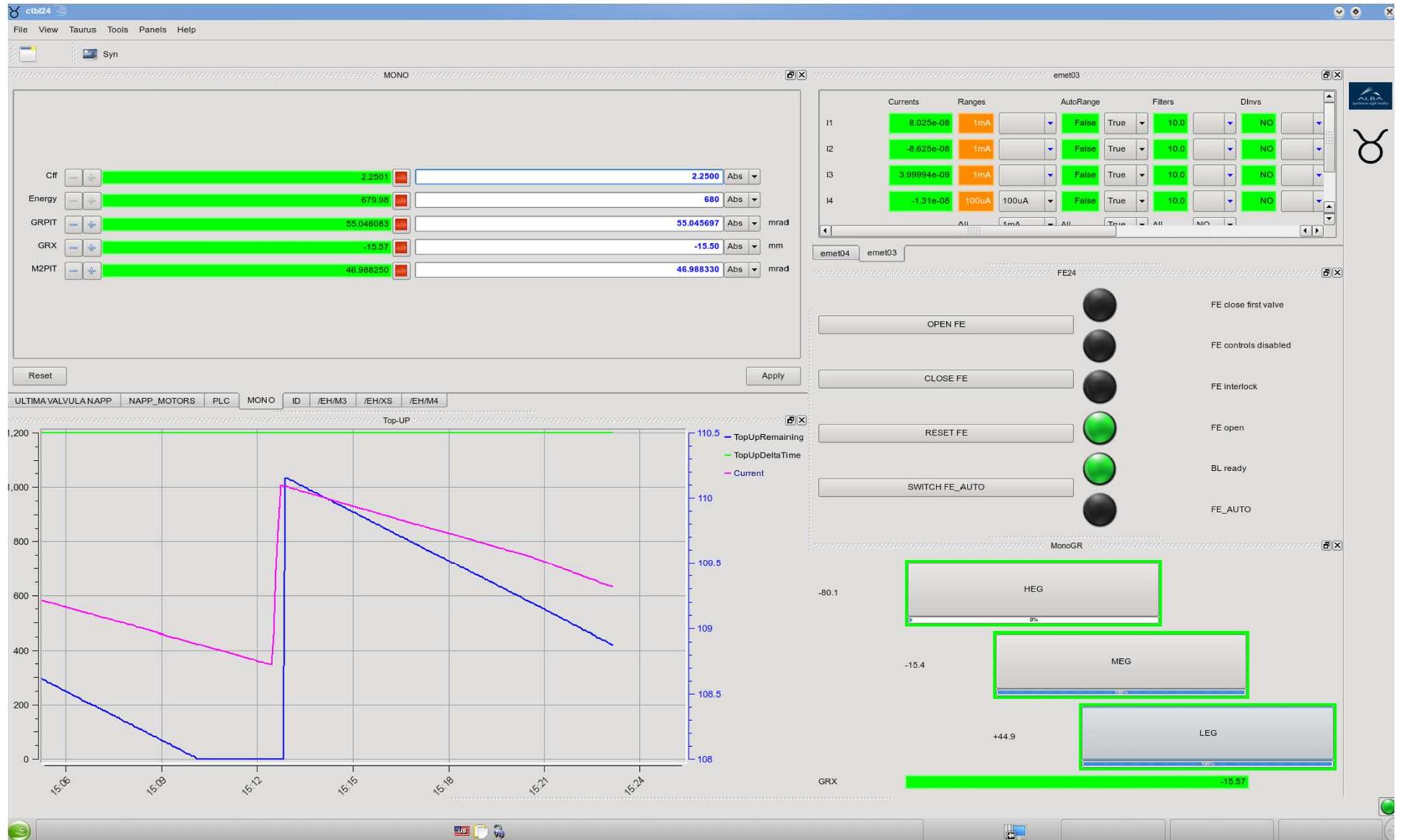
Advanced Photoemission Experiments

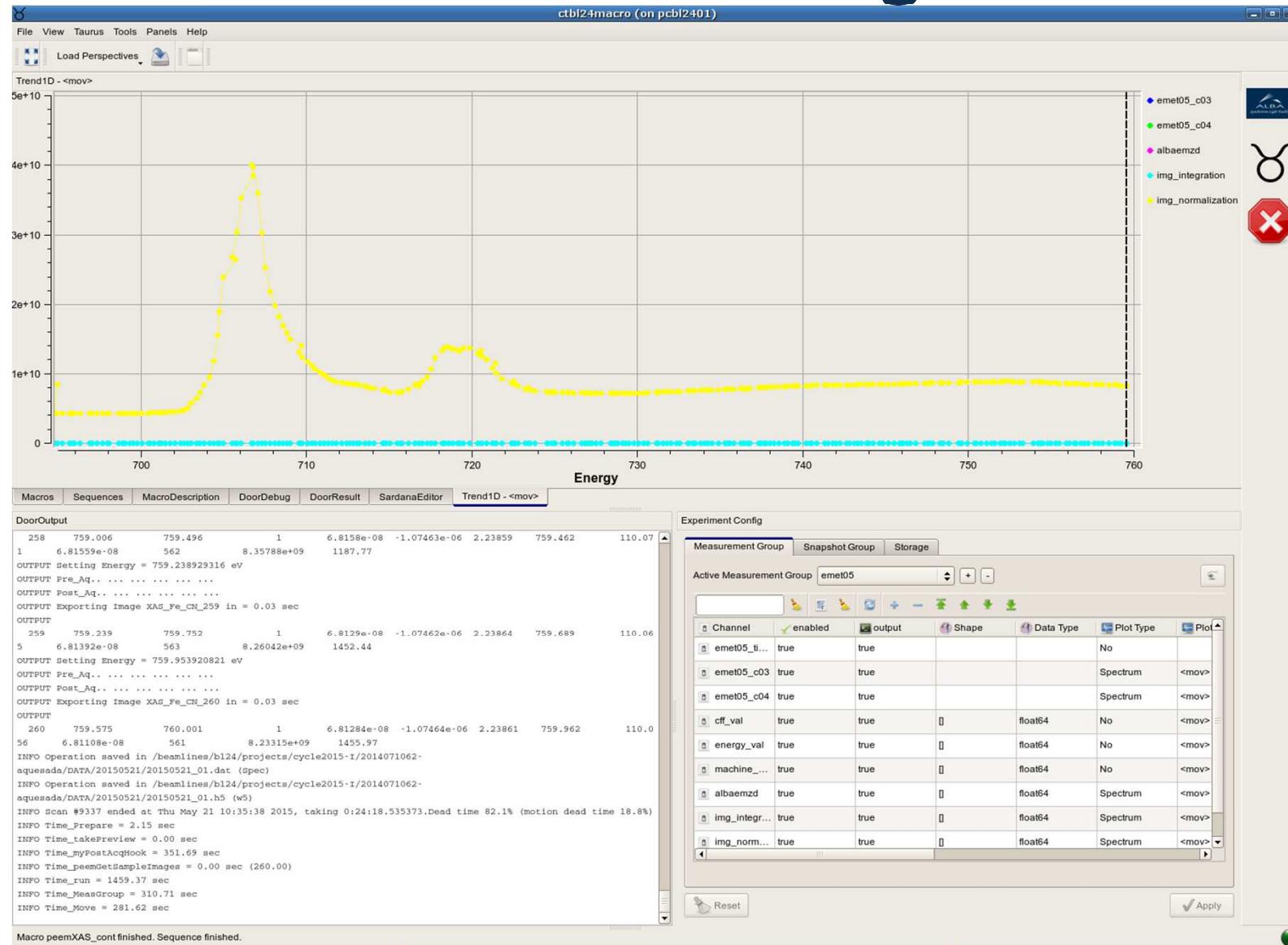
- Mixture of GUIs and Spock:
 - ctbl24 with all instruments and status, ctbl24macros using the MacroExecutor, ExpConf and Sequencer
 - The users interact with the graphical interface
- PhotoEmission Electron Microscopy experiments via macros interacting with end-station Software

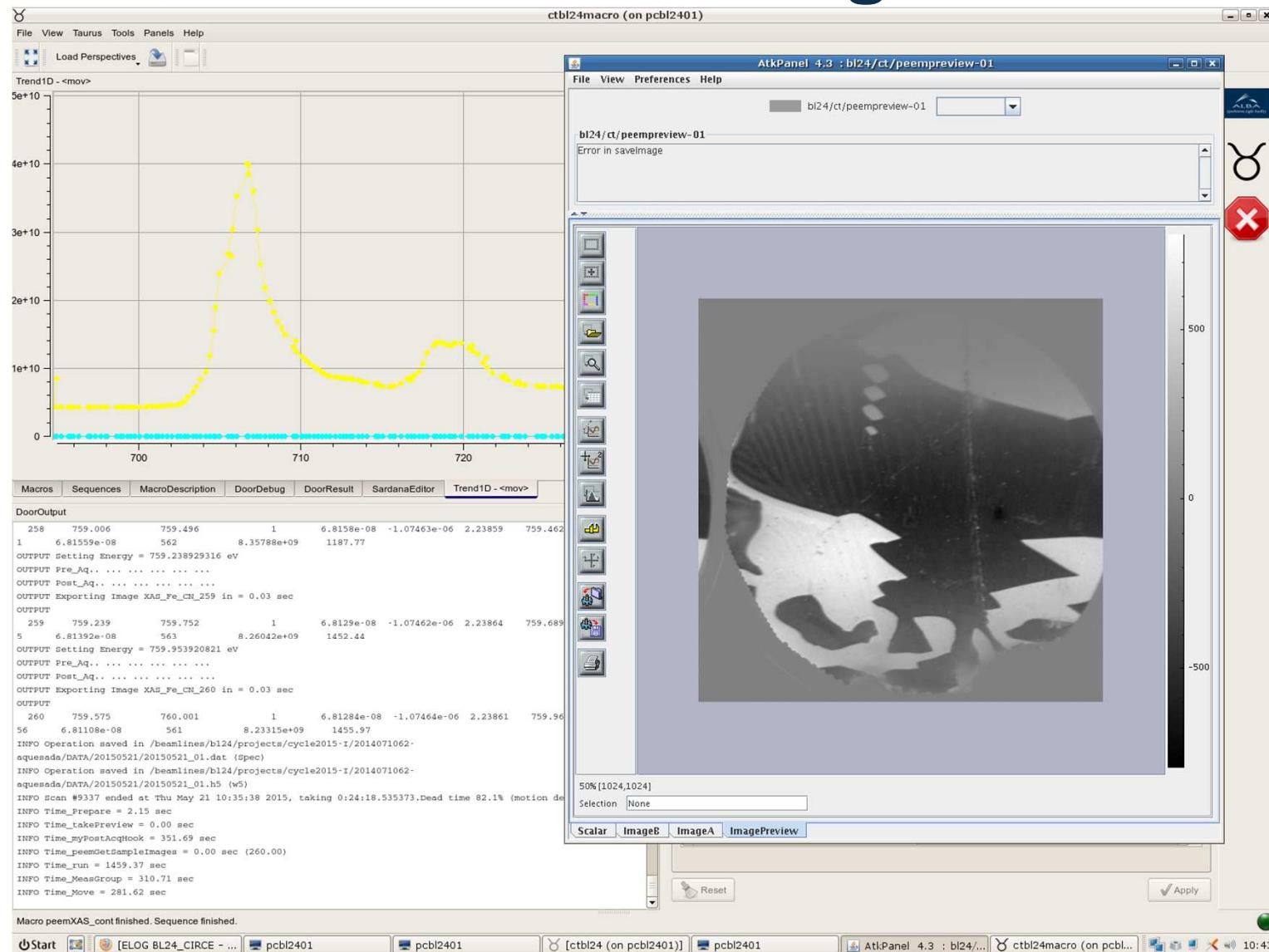


BL24-CIRCE - Usage

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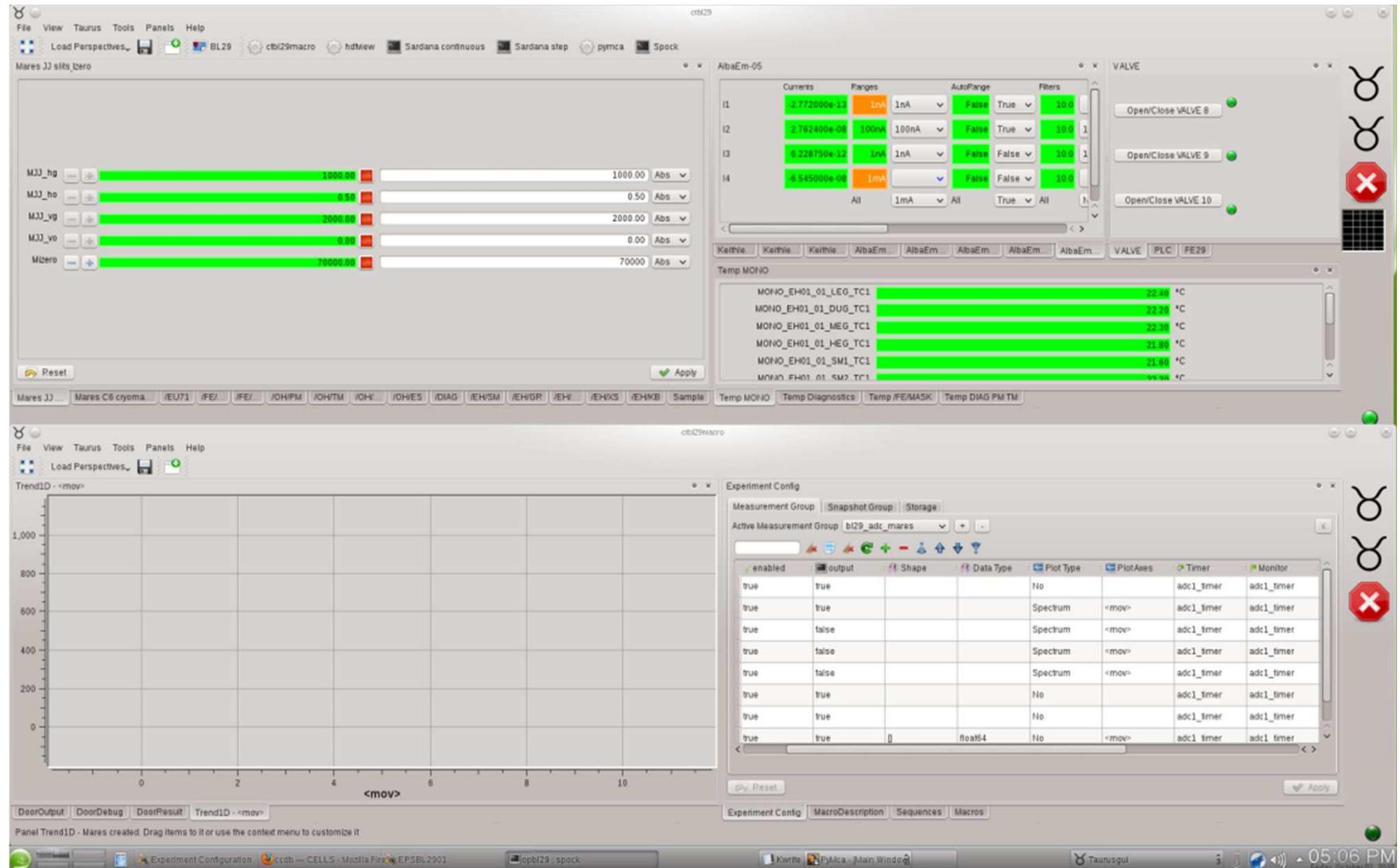


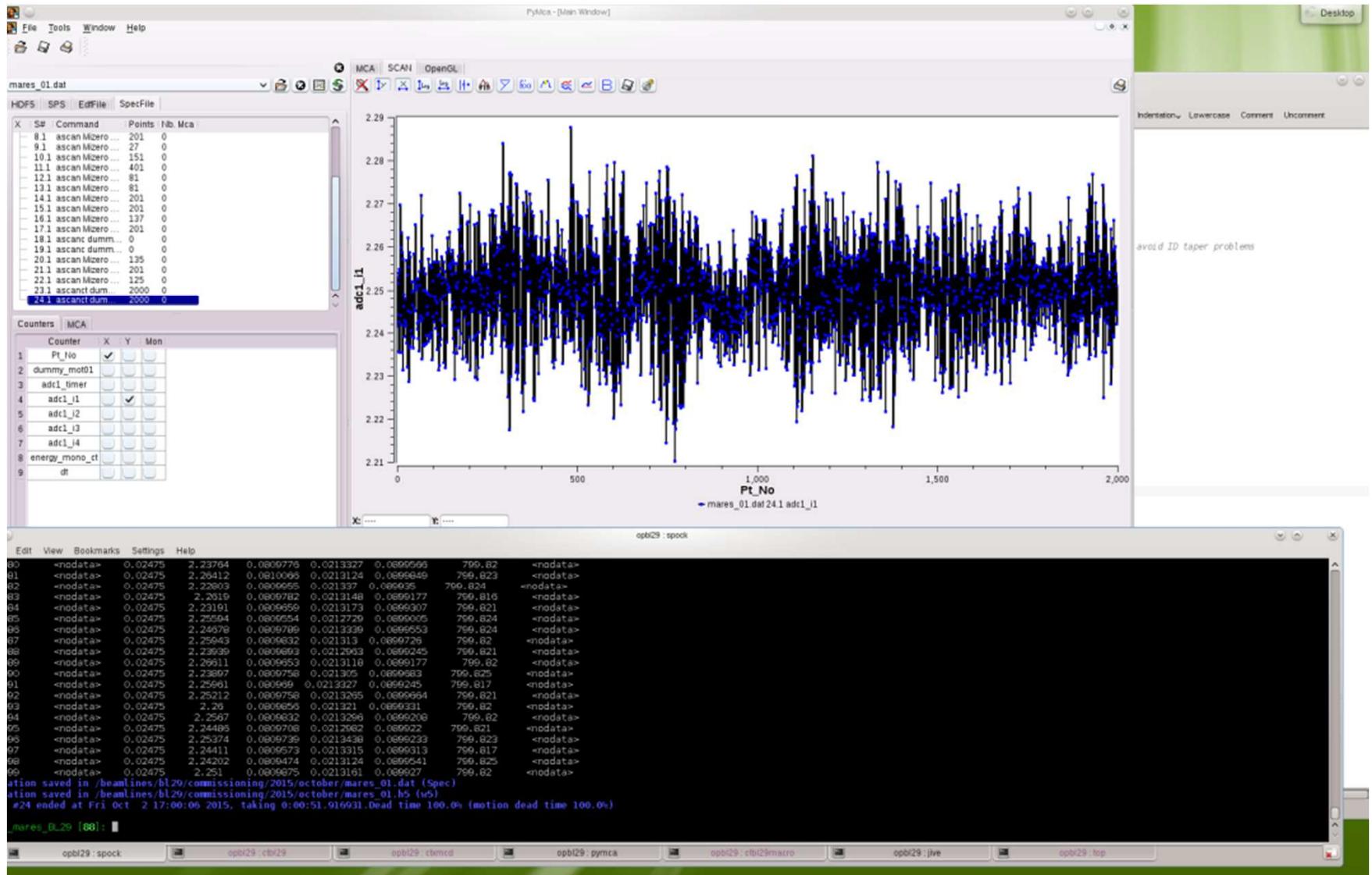




Soft X-ray absorption spectroscopy and dichroism

- Mixture of GUIs and Spock:
 - ctbl29 with all instruments and status, ctbl29macros using the MacroExecutor, ExpConf and Sequencer
 - Ctxmcd for the end station
- Continuous Scan of mono and ID synchronized by time







Beamline's Feedback

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sourceforge.net/p/sardana/tickets/?source=navbar&limit=250

Summary | Files | Reviews | Support | **Tickets** | Wiki | Mailing Lists | Git | SVN (Old) | Macros | Controllers

Search Tickets

+ Create Ticket

View Stats

Milestone

unassigned	7
Jan16	110
future	12

Searches

Closed	110
Feature Req.	71
Jul15-resolved	24
Open	131

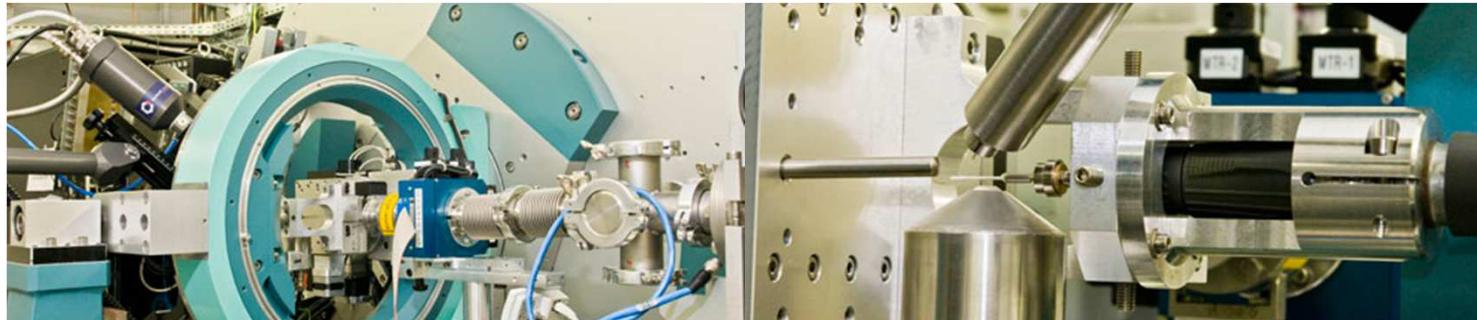
Help

Tickets

Showing 123 results of 123

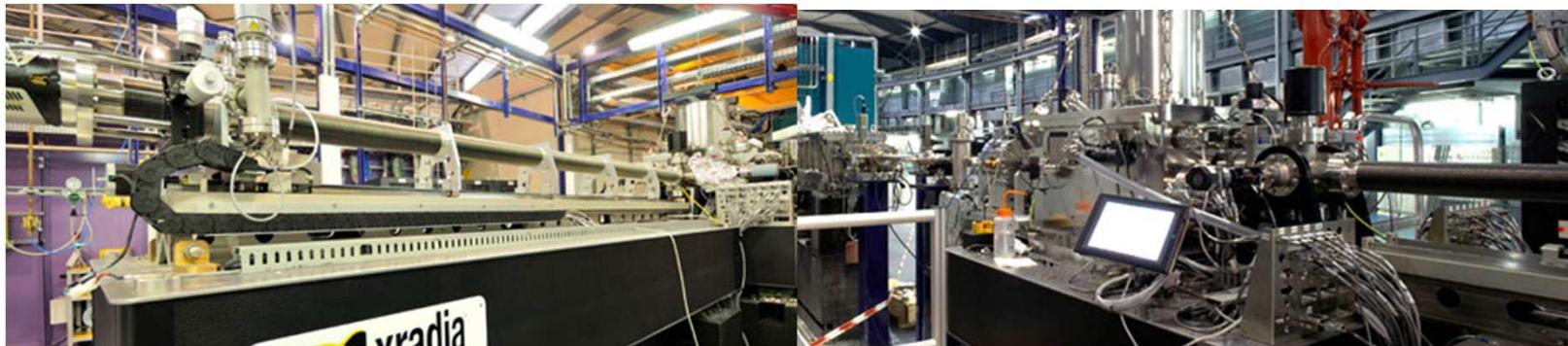
#	Summary ▾	Milestone	Status	Owner	Creator	Created	Updated	Votes
388	Experimental channels in instruments not correctly organized in nexus files	future	waiting	marc		3 days ago	3 days ago	0
387	Macro executor does not load default values	unassigned	waiting	Gabriel		4 days ago	4 days ago	0
386	Macro with any capital letter fails in the macro executor	unassigned	waiting	Gabriel		4 days ago	4 days ago	0
385	Motor Tango device crash when setting default value to attribute range config	unassigned	waiting	Zbigniew Reszela		4 days ago	4 days ago	0
384	defaults MacroPath	unassigned	waiting	Frédéric PICCA	2015-09-28	2015-09-28	2015-09-28	0

Document usage of specific macro environment



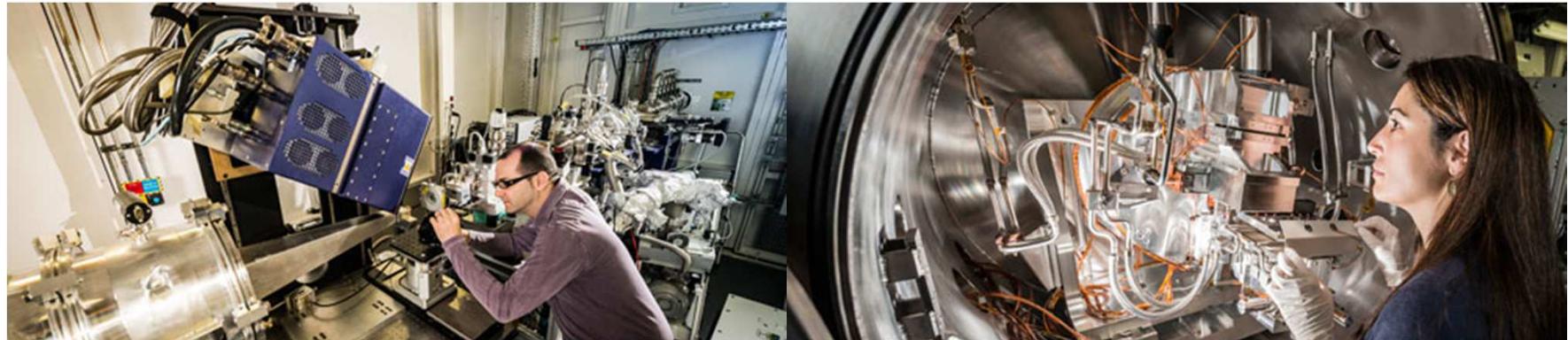
high-resolution powder diffraction and high pressure powder diffraction

- ! API_EVENT_TIMEOUT (?)
- ! TRANSIENT CORBA (some times)
- ! Performance of ct 0.1 should be around 0.1s and not ~1s
- + showscan from spock (not expconf)
- + define different snapshot groups associated to different macros
- + make expconf optional and use spock to set up the whole experiment



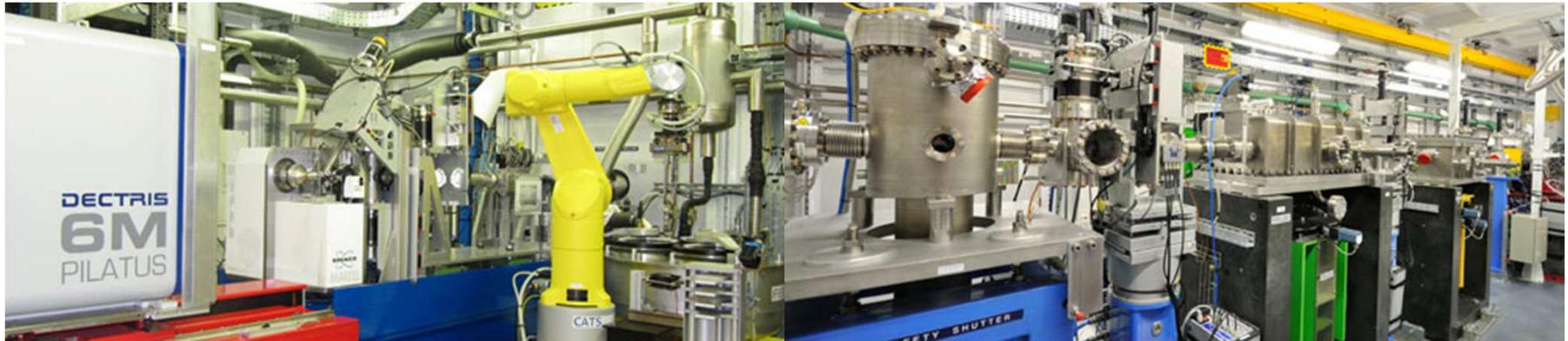
X-ray Microscopy

- ! Stability of ctbl09
- + protect motors for not being moved
- + align with contscans



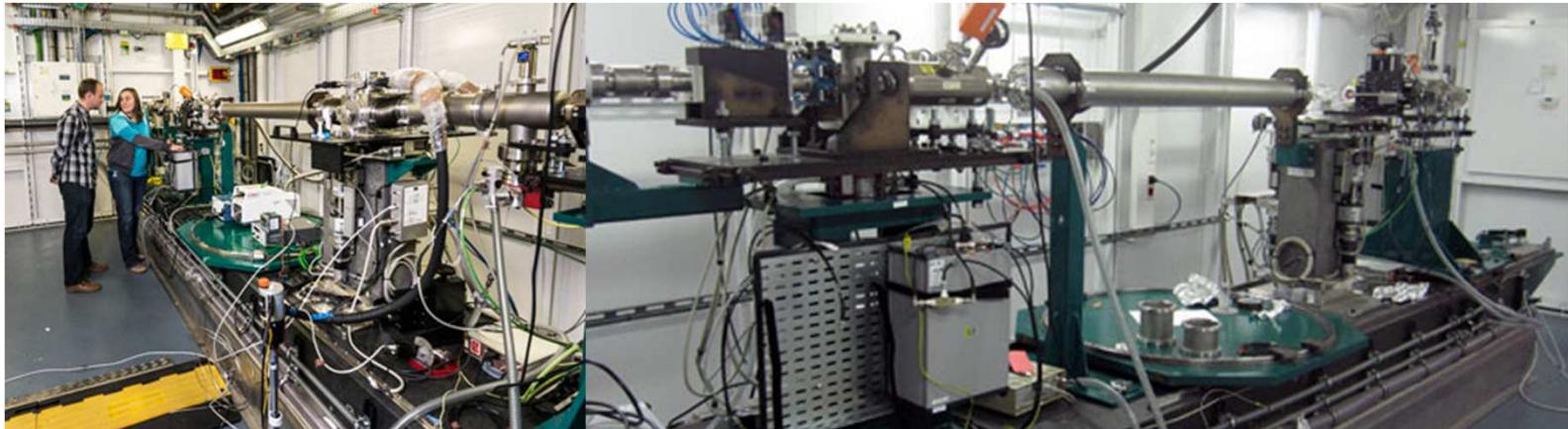
Small/Wide Angle X-ray Scattering

- ! Sequencer bug with parameters with spaces
- ! Stability of ctbl11
- = sardana editor integrated in the GUI
- + spock integrated in the GUI
- + Detector images integrated in the GUI
- + macros interacting with showscan plot



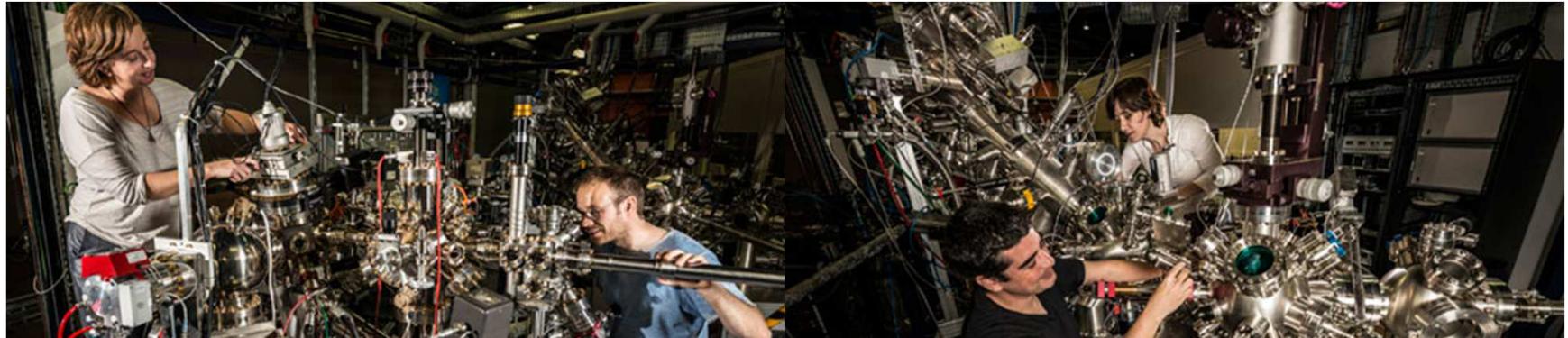
Macromolecular Crystallography

- !TRANSIENT CORBA (random)
- ! Scan plot is poor, peak search, go to peak...
- ! Experiment configuration should be single GUI
 - + compact widget for motors
 - + better macrobutton interface for own widgets



Absorption and Emission Spectroscopy

- ! Current qExafs limitations above 30keV
- + generic continuous scan with slow channels
- + trajectories and trigger by position



Advanced Photoemission Experiments

- !TRANSIENT CORBA (random)
- !None values in measurement group errors
- !stepscan deadtime
- !MacroExecutor <Enter> last param
- !expoconf usability
- +MacroExecutor sorted and filtered macros
- +Access Sardana Environment Variables from GUIs



Soft X-ray absorption spectroscopy and dichroism

- ! Stability of the continuous scan (SEP6)
- ! API_EVENT_TIMEOUTS, TRANSIENT CORBA (random)
- !stability of the main gui when including the macroexecutor
- +pseudocounter support in ascanct
- +ascanct with theoretical values
- +software continuous scan by position
- +timescan synchronized by hardware