



# MXCuBE at LNLS/Sirius

**Laís Pessine do Carmo**

Beamline Software Group (SOL)

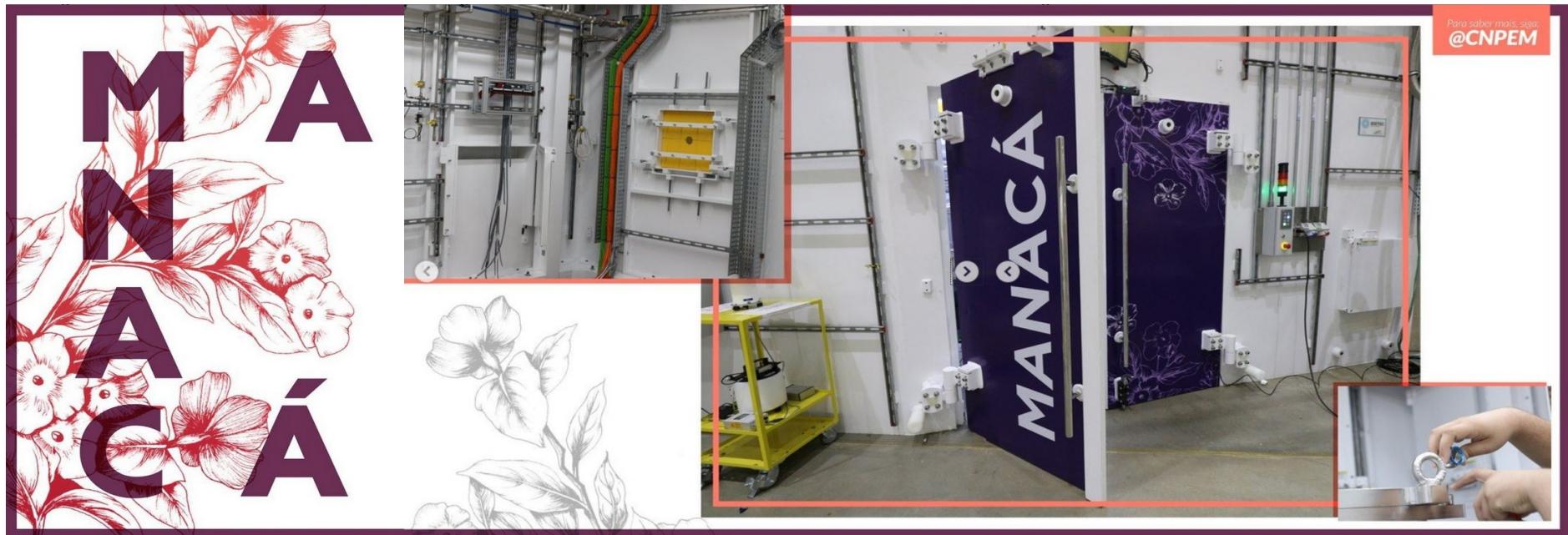
Brazilian Synchrotron Light Source (LNLS / Sirius)

Virtual MXCuBE & ISPyB Meeting at ALBA

29 - 30 June, 2020

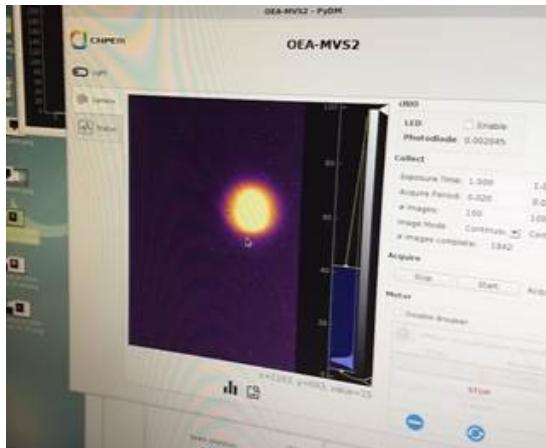
# MANACÁ (MX Beamline)

- Beam commissioning

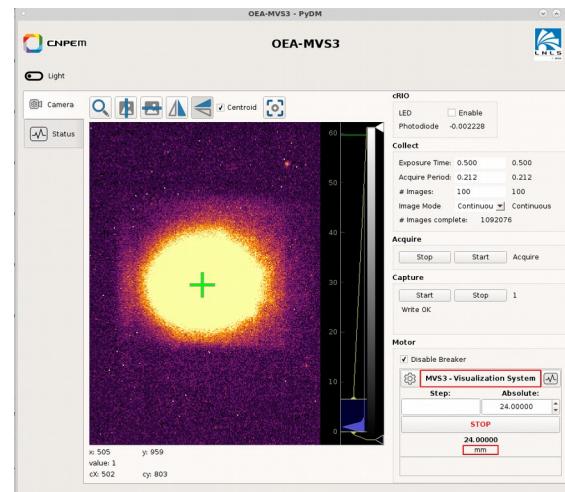


# MANACÁ

- June – week 1
  - ✓ 03 - Ondulator, DCM and mirrors operational
  - ✓ 04 - Beam through **Optical Hutch**



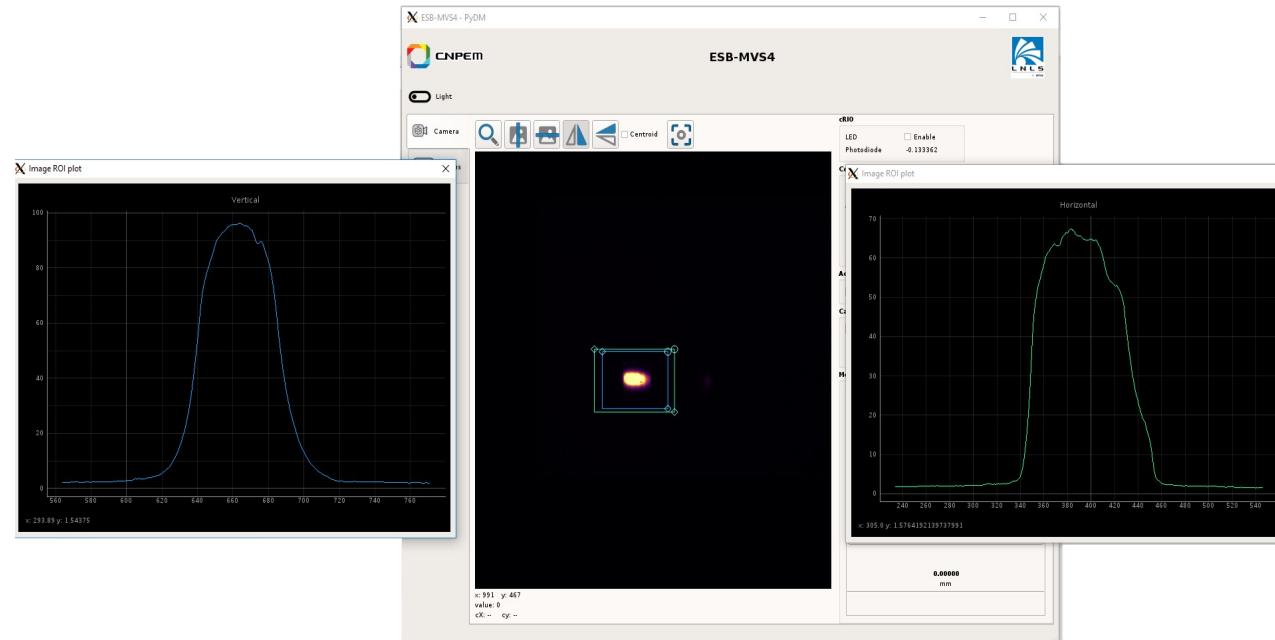
Beam after DCM



Beam after M1

# MANACÁ

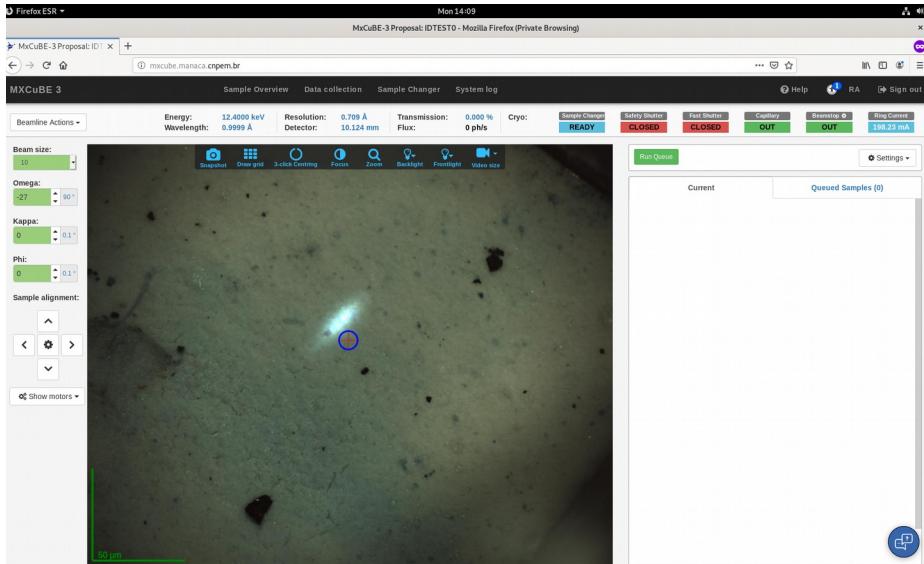
- June – week 2
  - ✓ 10 - Beam at Experimental Hutch!



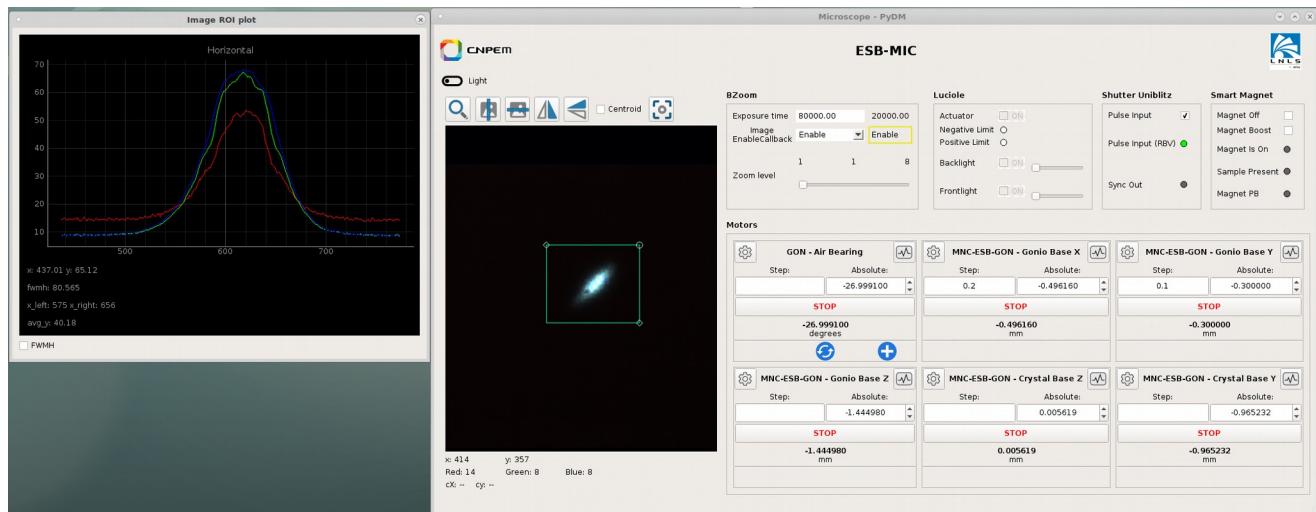
Beam after M2

# MANACÁ

- June – week 3
  - ✓ 22 - Beam at sample station!



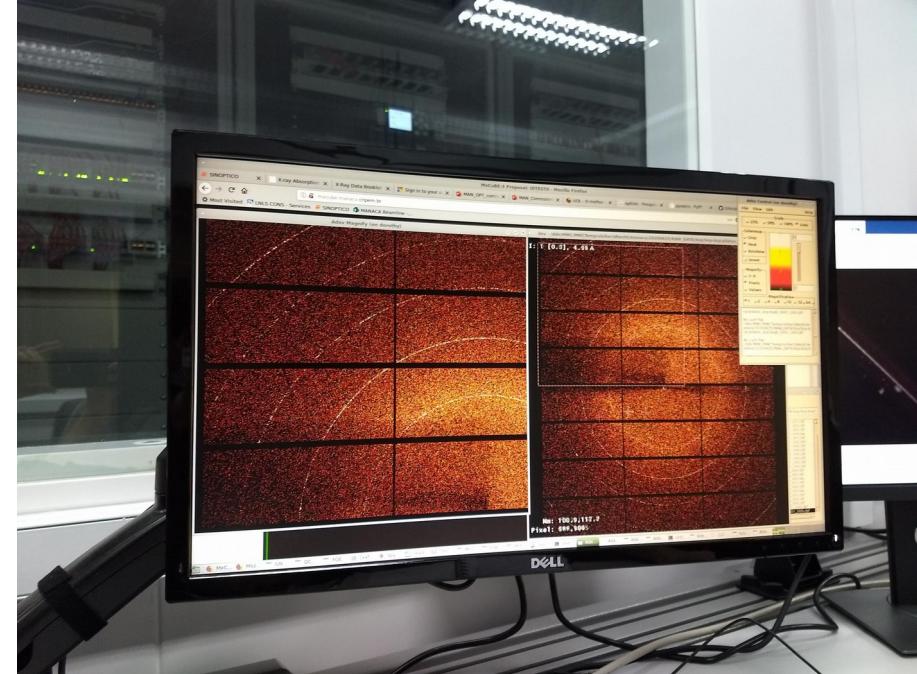
**MXCuBE3**



**PyDM Microscope GUI**

# MANACÁ

- June – week 3
  - ✓ 22 - Beam at sample station!
  - ✓ 24 - First collections with MXCuBE3:
    - Beamstopper check
    - Det-to-sample distance check



*LaB6*  
100 ms, 9 keV, 3 mA  
100 x 100  $\mu\text{m}$  Beam  
No attenuation

# MANACÁ

- June – week 3
  - ✓ 22 - Beam at sample station!
  - ✓ 24 - First collections with MXCuBE3:
    - Beamstopper check
    - Det-to-sample distance check
  - ✓ 25 – WIP: **Flyscan tests and Initial Experiment**

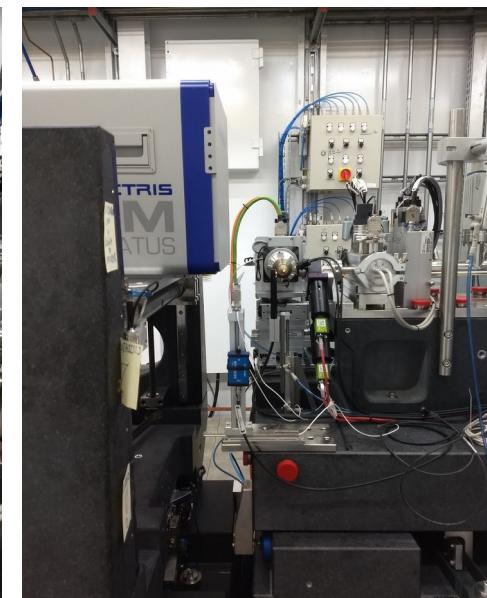
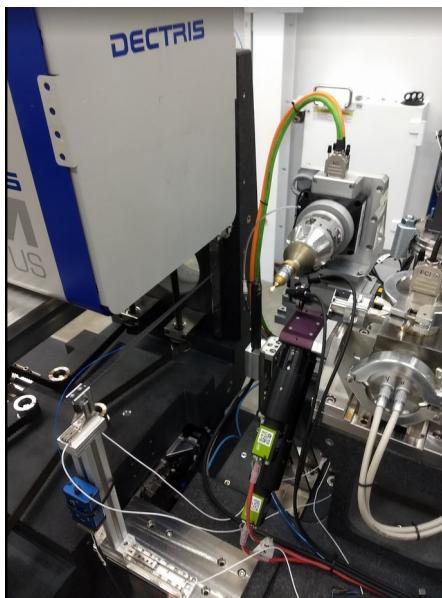


*Lysozyme data acquisition*

# MANACÁ

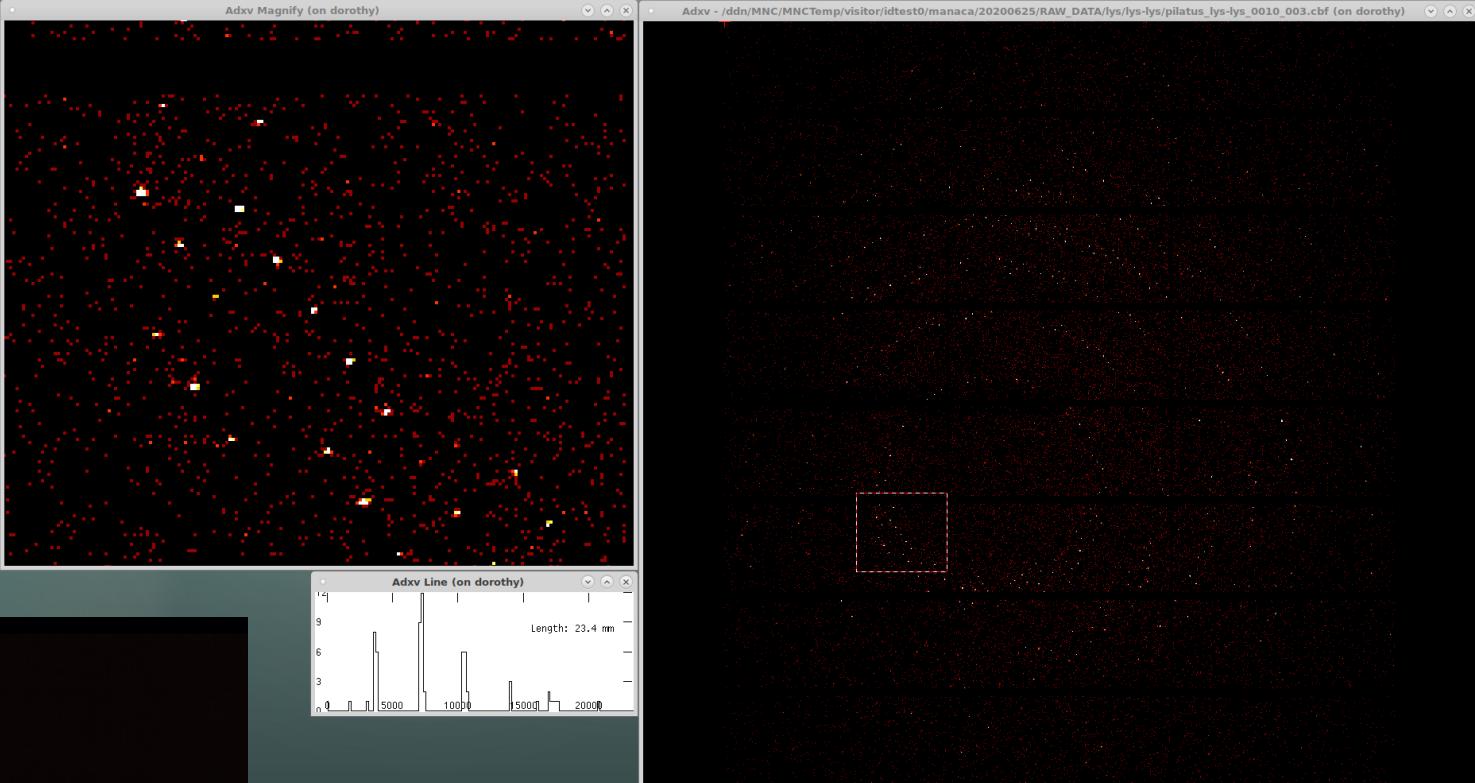
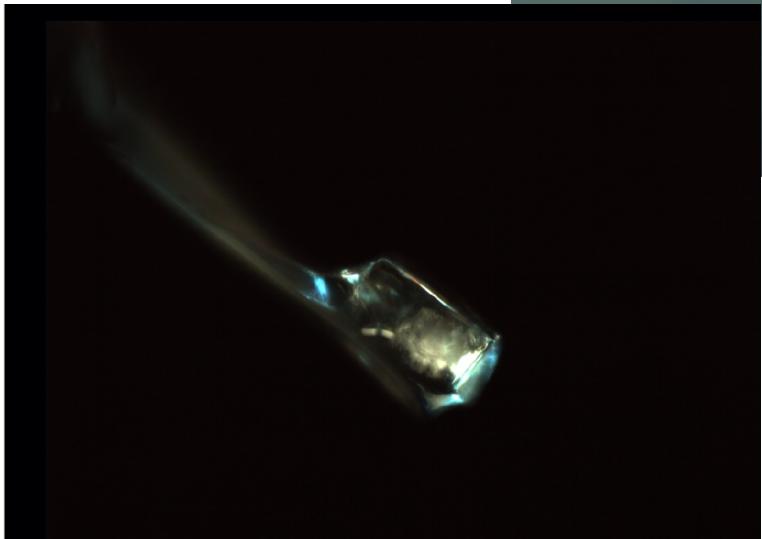
- Flyscan
  - Delta Tau Goniometer (master)
  - NI Crio (slave, trigger manager)
  - Pilatus 2M detector
  - Uniblitz Fast Shutter

Testing	
Exposure	50, 75, 100 ms
Images	3600 – 7200



# MANACÁ

- Initial Experiment



*Lysozyme data acquisition (WIP)*

To Be Continued ↻

# MANACÁ

## Next?

- Centring routine
- Beam of 10 um
- Increase current
- Upgrade to PiMega (under commissioning, 2KHz)
- Open for users on the 2<sup>th</sup> semester



# CATERETÊ (SAXS Beamline)

Coherent And TimE REsolved scatTERing

- Imaging and dynamics of biological and nano materials



[www.lnls.cn pem.br/facilities/caterete/](http://www.lnls.cn pem.br/facilities/caterete/)

# CATERETÊ (SAXS Beamline)

## Techniques

- Coherent X-ray Diffraction Imaging (**CXDI**)
- X-ray Photon Correlation Spectroscopy (**XPCS**)
- Small-Angle X-ray Scattering (**SAXS**)
- Wide-angle X-ray Scattering (**WAXS**)

## Setup includes

- 4 crystal monochromator (4CM)
- Delta Tau, Smaract and Symétrie motor controllers
- PiMega Detector
- Arinax BZoom Camera



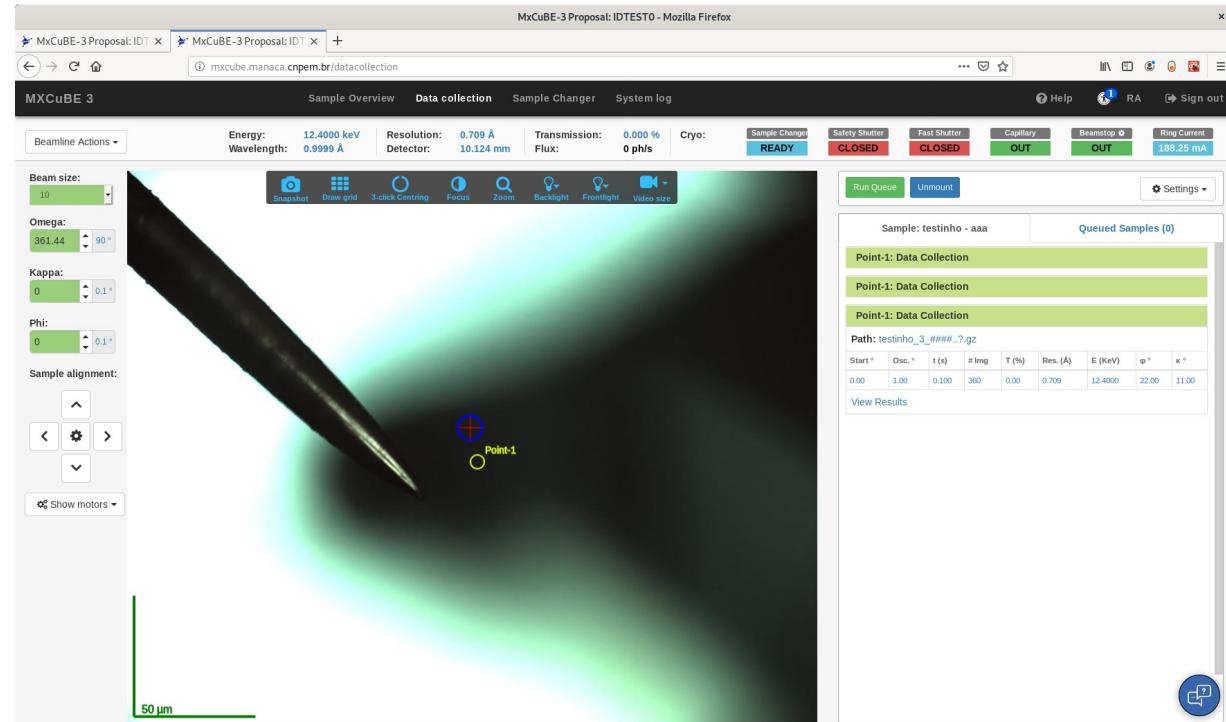
## Status

- July: Beam commissioning

# MXCuBE

Done:

- Updated base (after Code Camp)
- Classes
  - EPICSActuator (PV setter/getter)
    - LNLSMotor (EPICSMotor?)
    - LNLSInOut
    - LNLSZoom
  - LNLS Camera (improvements)



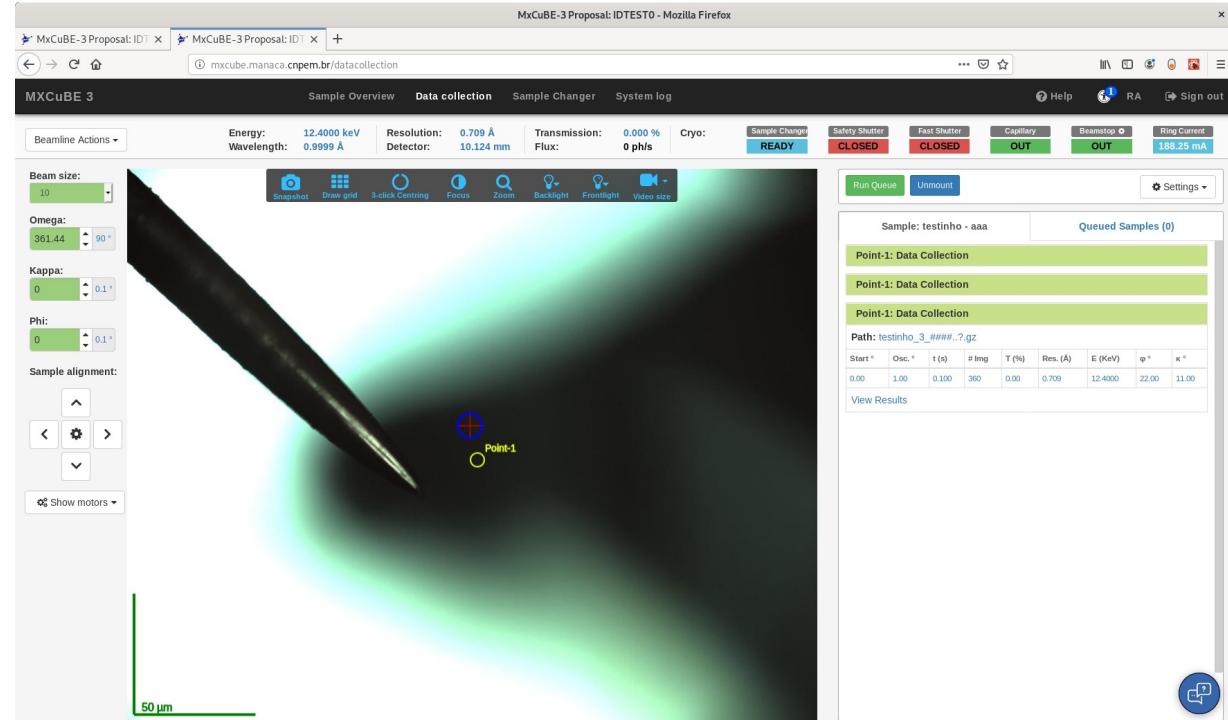
MXCuBE3 at Manacá

# MXCuBE

WIP:

- LNLSCollect (reusing `py4syn`\*)
- Status Pvs, Shutters
- User login

\*[github.com/Lnls-sol/py4syn](https://github.com/Lnls-sol/py4syn)



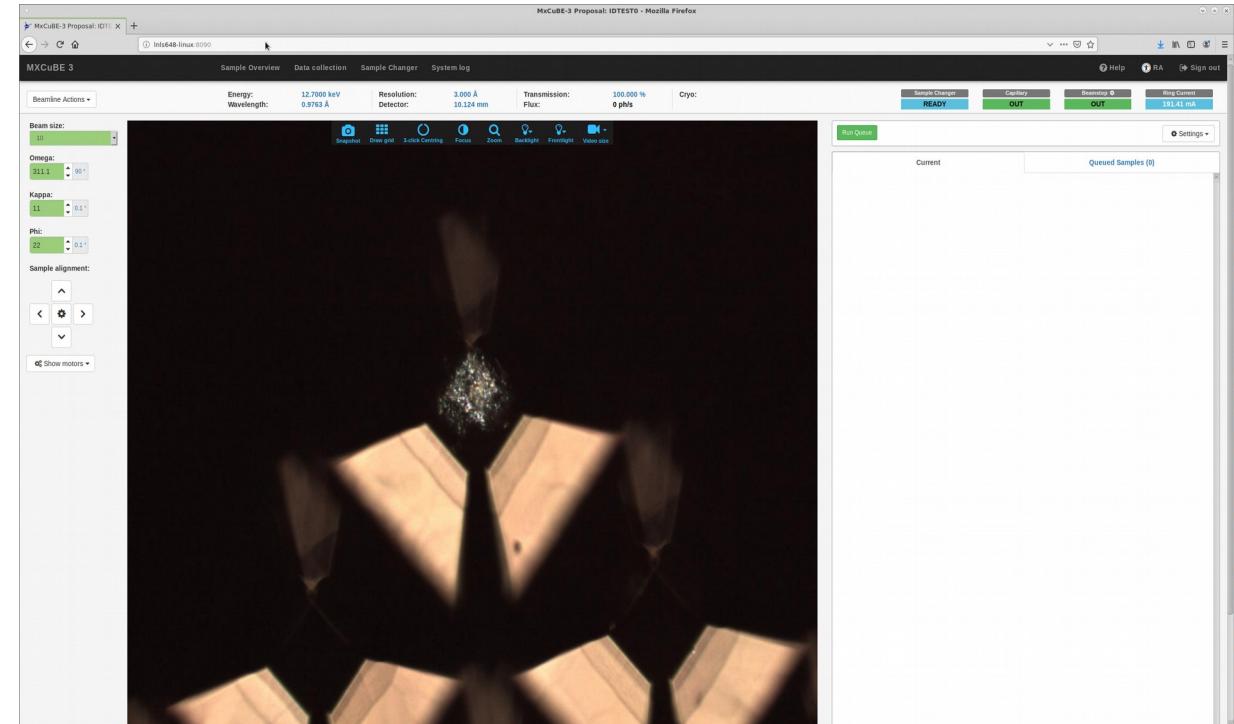
MXCuBE3 at Manacá

# MXCuBE

WIP:

- LNLSCollect (reusing **py4syn\***)
- Status Pvs, Shutters
- User login

\*[github.com/Lnls-sol/py4syn](https://github.com/Lnls-sol/py4syn)

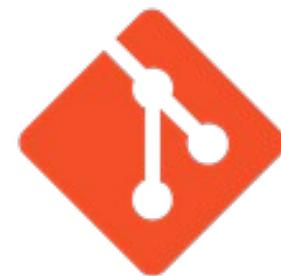


*Experimenting MXCuBE3 at Cateretê*

# MXCuBE

## Repositories?

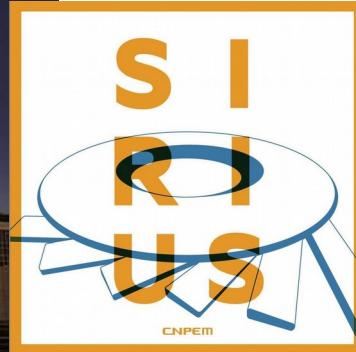
- [github.com/Lnls-sol/mxcube3](https://github.com/Lnls-sol/mxcube3)
- [github.com/Lnls-sol/HardwareRepository](https://github.com/Lnls-sol/HardwareRepository)
- [github.com/Lnls-sol/mx3docker](https://github.com/Lnls-sol/mx3docker)



See branch: **Lnls**

# Acknowledgments

- Beamline Operation Software Group (SOL)
- MANACÁ Group
- CATERETÊ Group
- MXCuBE & ISPyB community



# Thank you!

Questions? :)