ID16 Piezo Hexapod

Cyril Guilloud

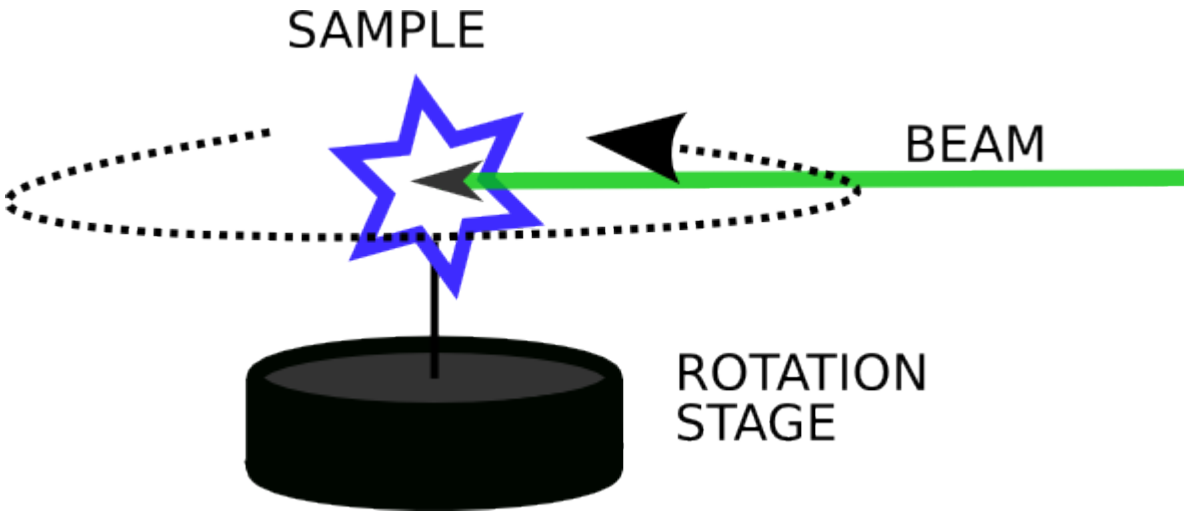
Manuel Perez

Jens Meyer

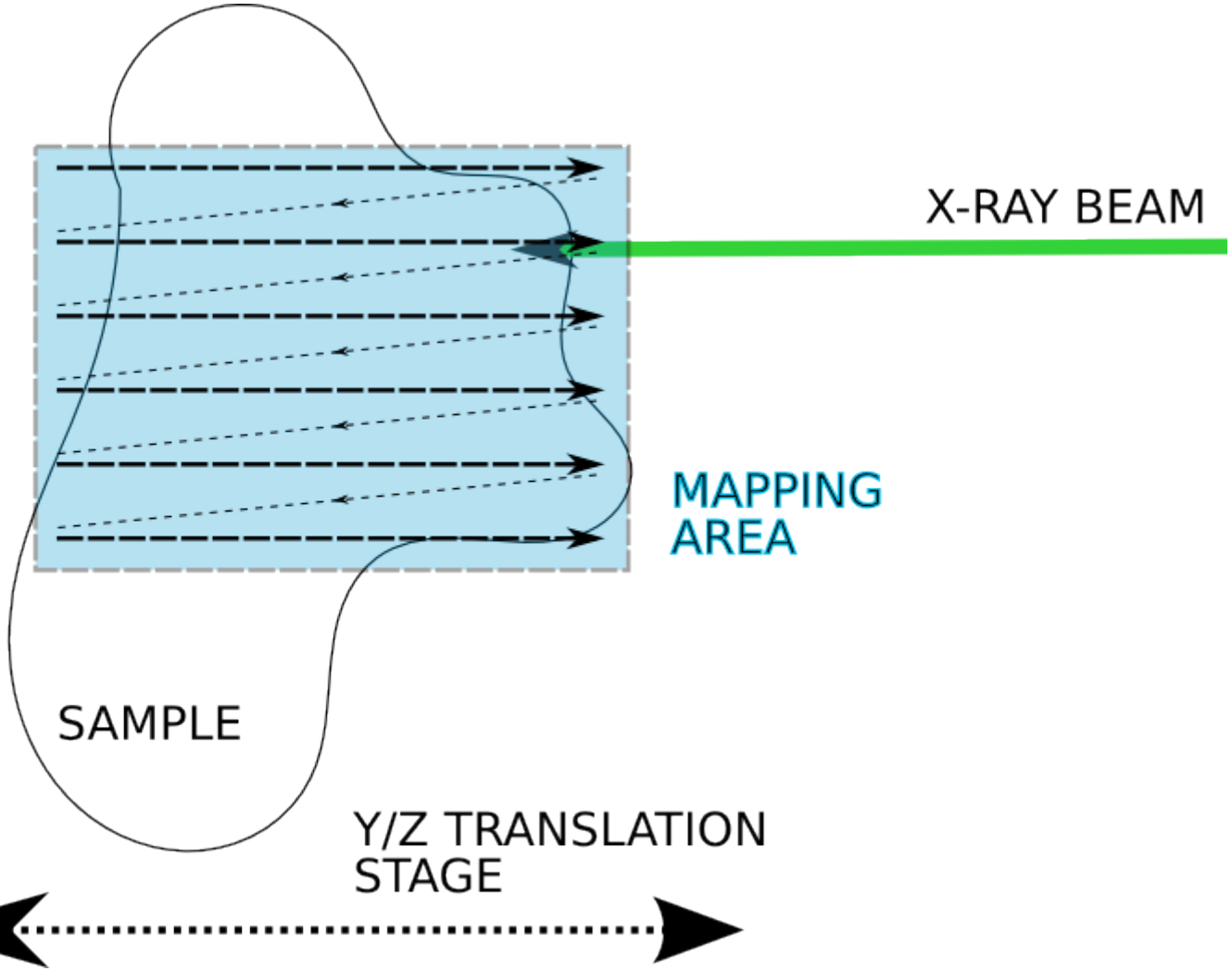
BLISS - ESRF

28th Tango meeting - ESRF - Grenoble

Nano-imaging experiments

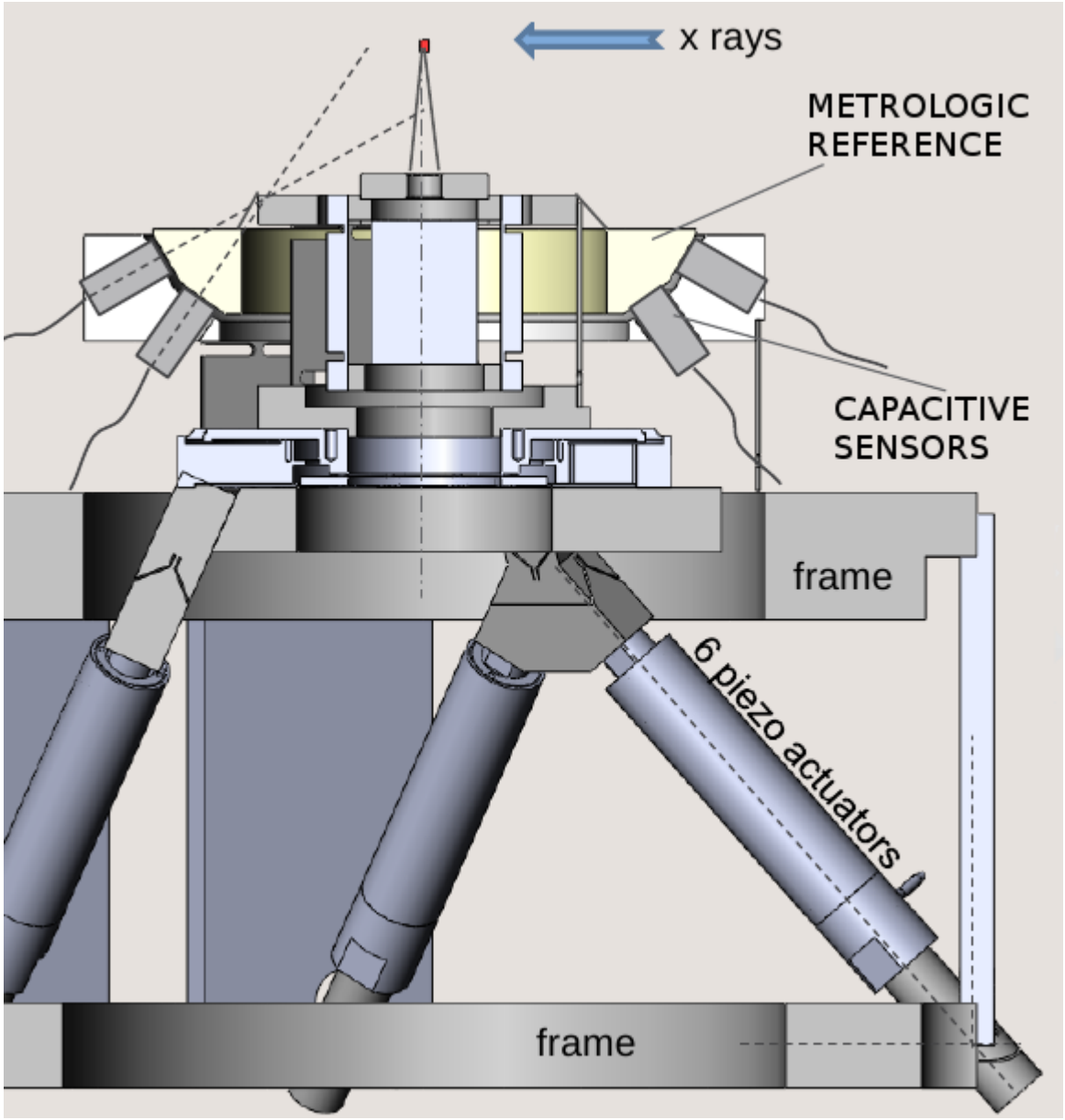


- Tomography

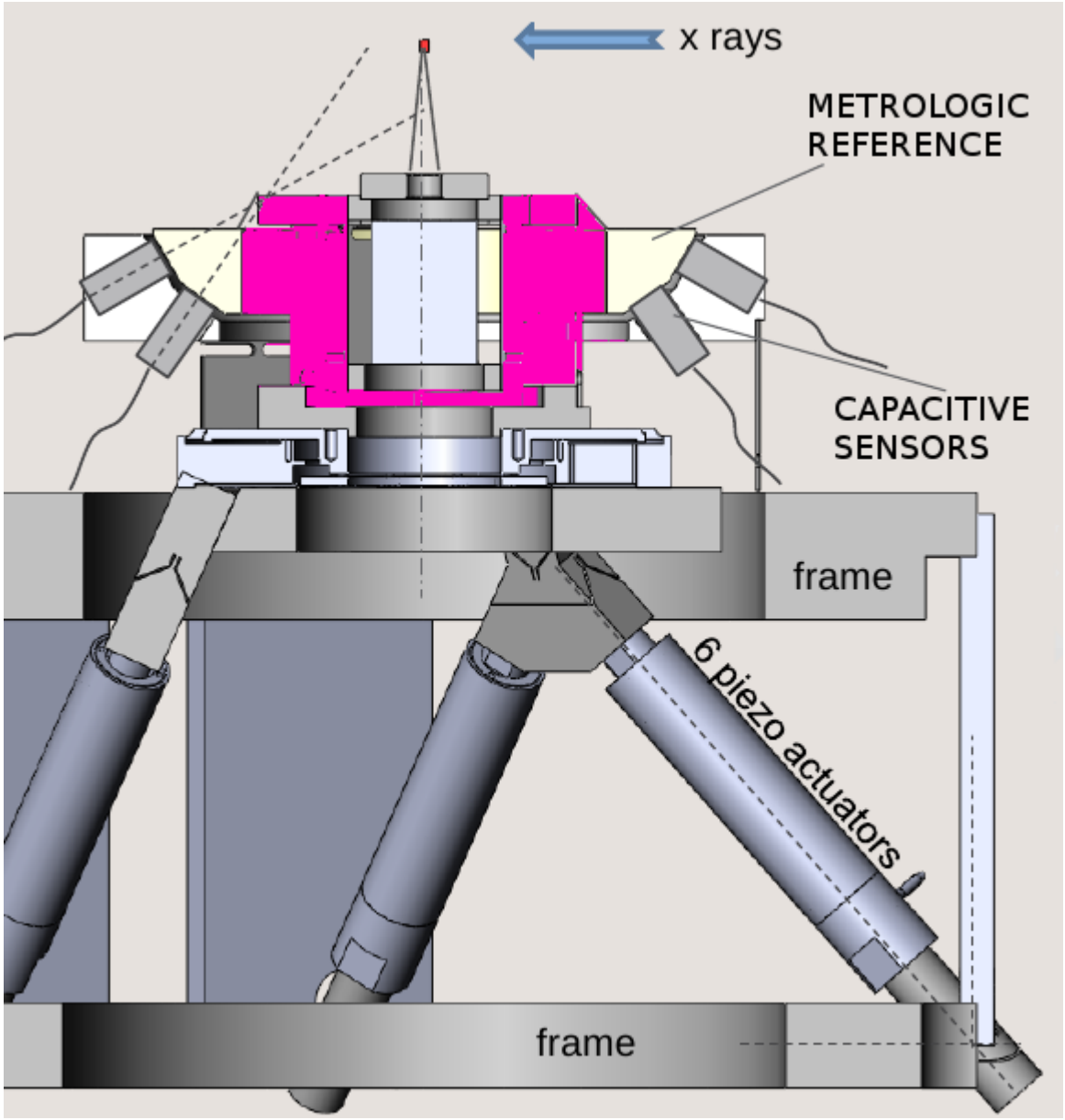


- Mapping

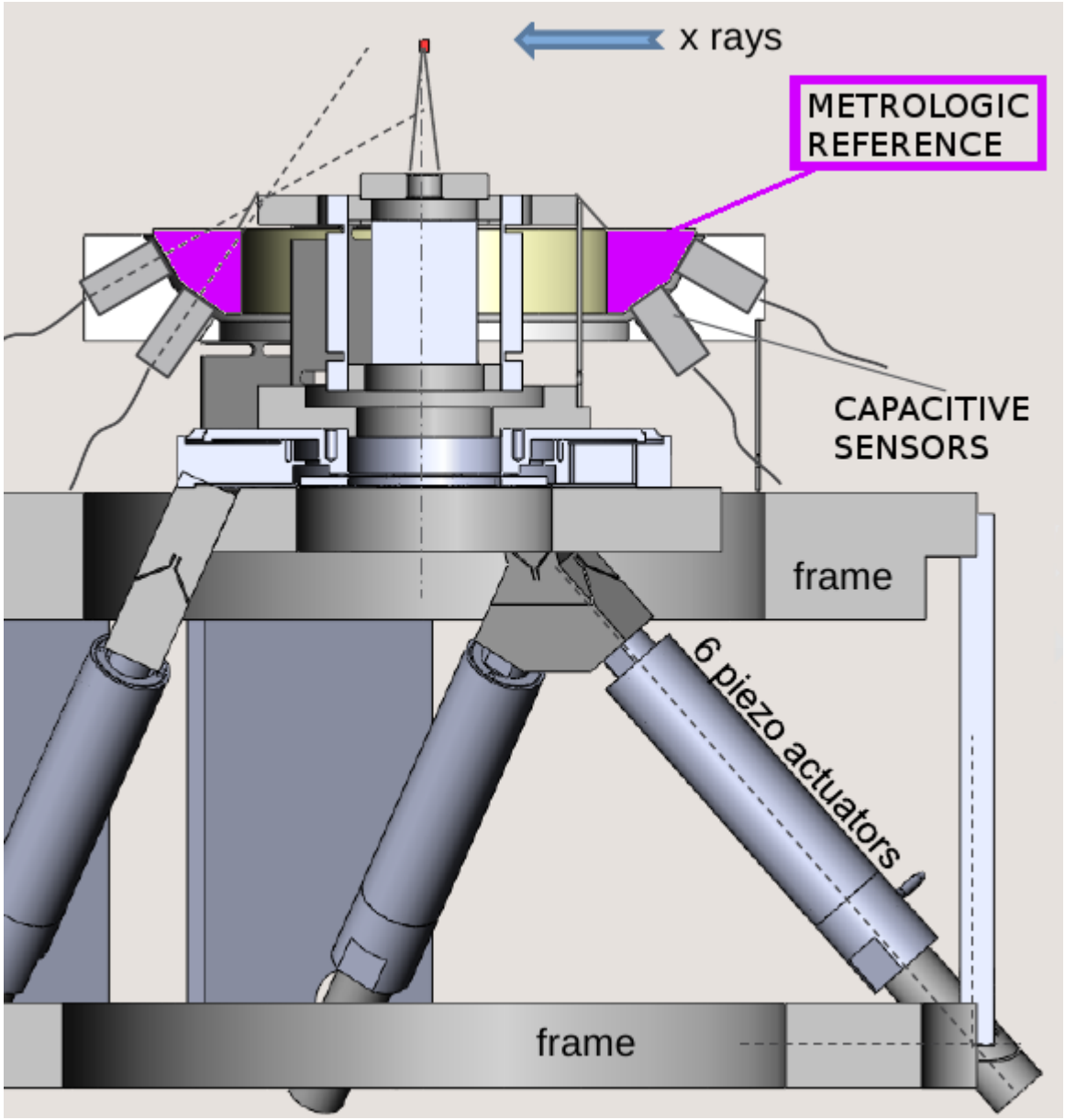
Sample Stage


x rays
METROLOGIC
REFERENCE
CAPACITIVE
SENSORS
frame
6 piezo actuators
frame

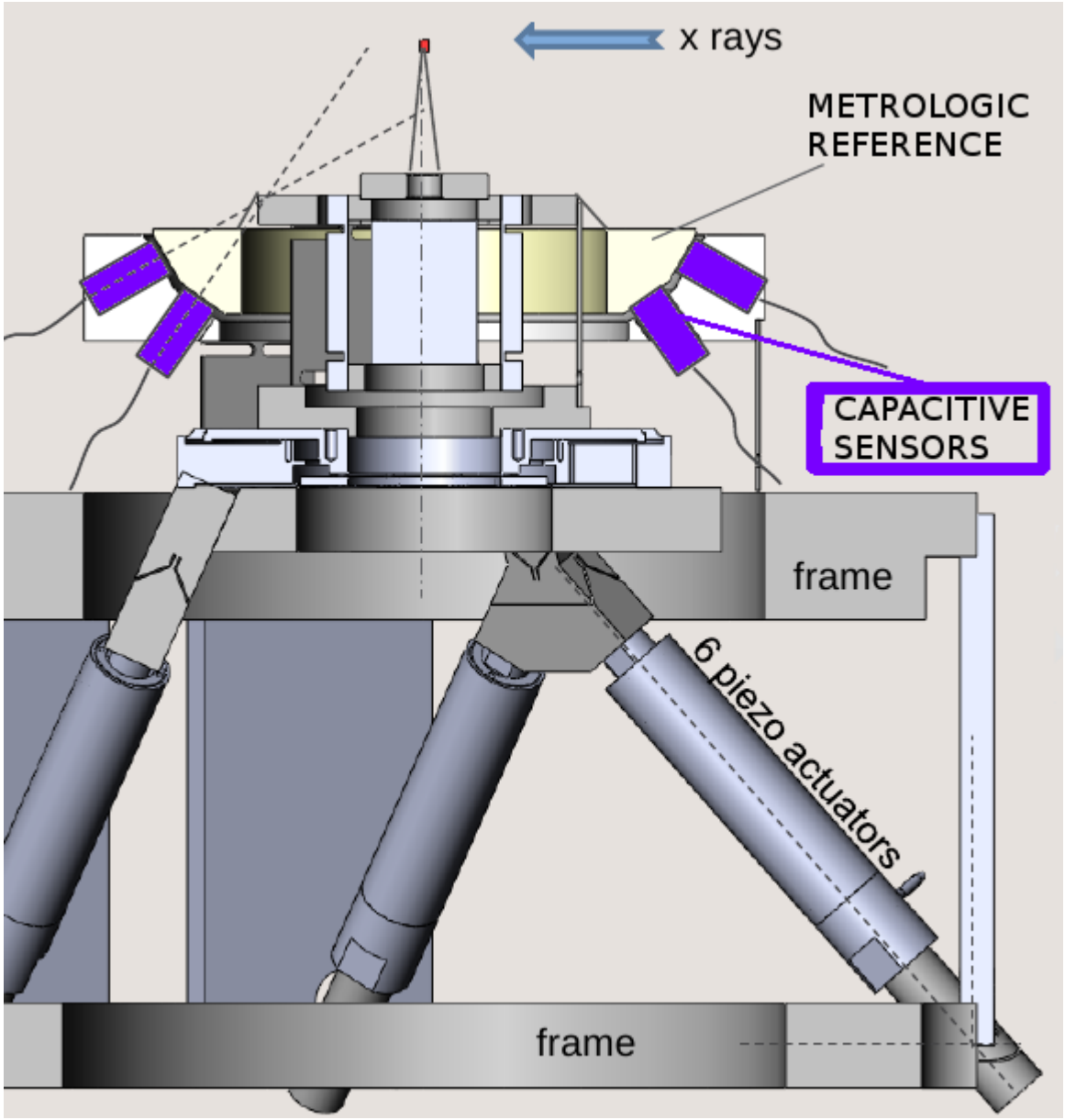
Rotation Stage


x rays
METROLOGIC
REFERENCE
CAPACITIVE
SENSORS
frame
6 piezo actuators
frame

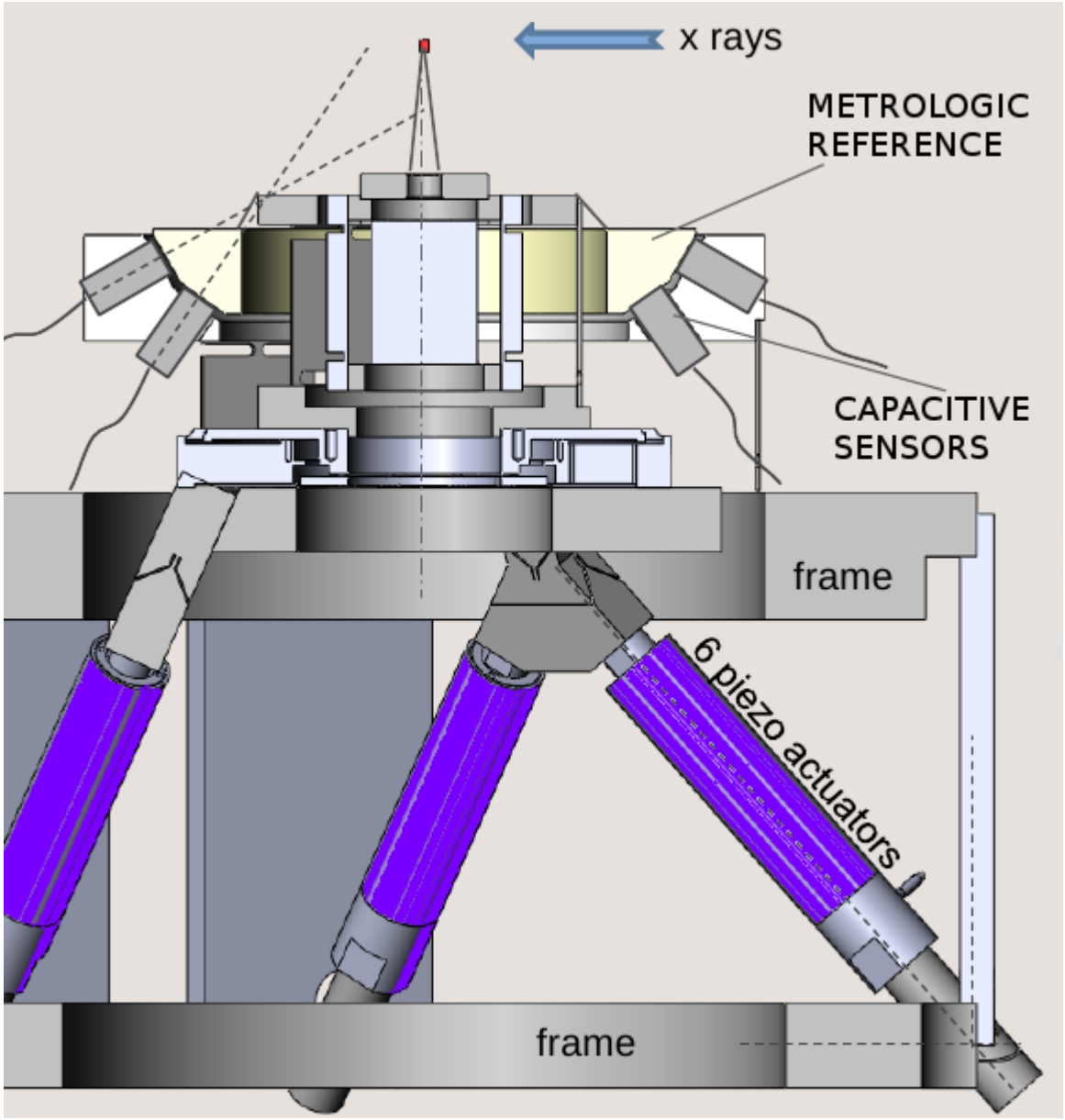
Metrologic Ring


x rays
METROLOGIC REFERENCE
CAPACITIVE SENSORS
frame
6 piezo actuators
frame

12 Capacitive Sensors

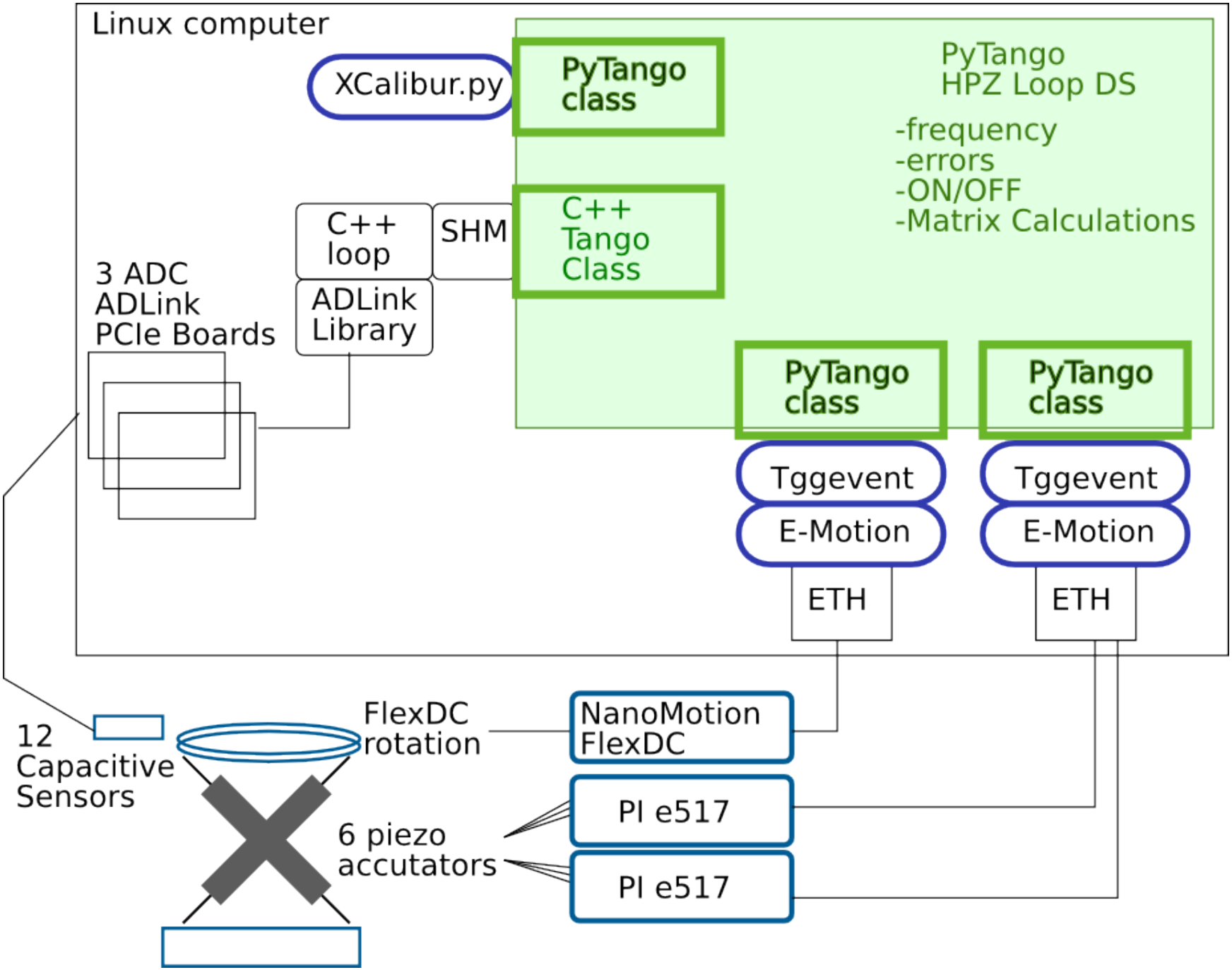

x rays
METROLOGIC
REFERENCE
CAPACITIVE
SENSORS
frame
6 piezo actuators
frame

6 Piezo Legs

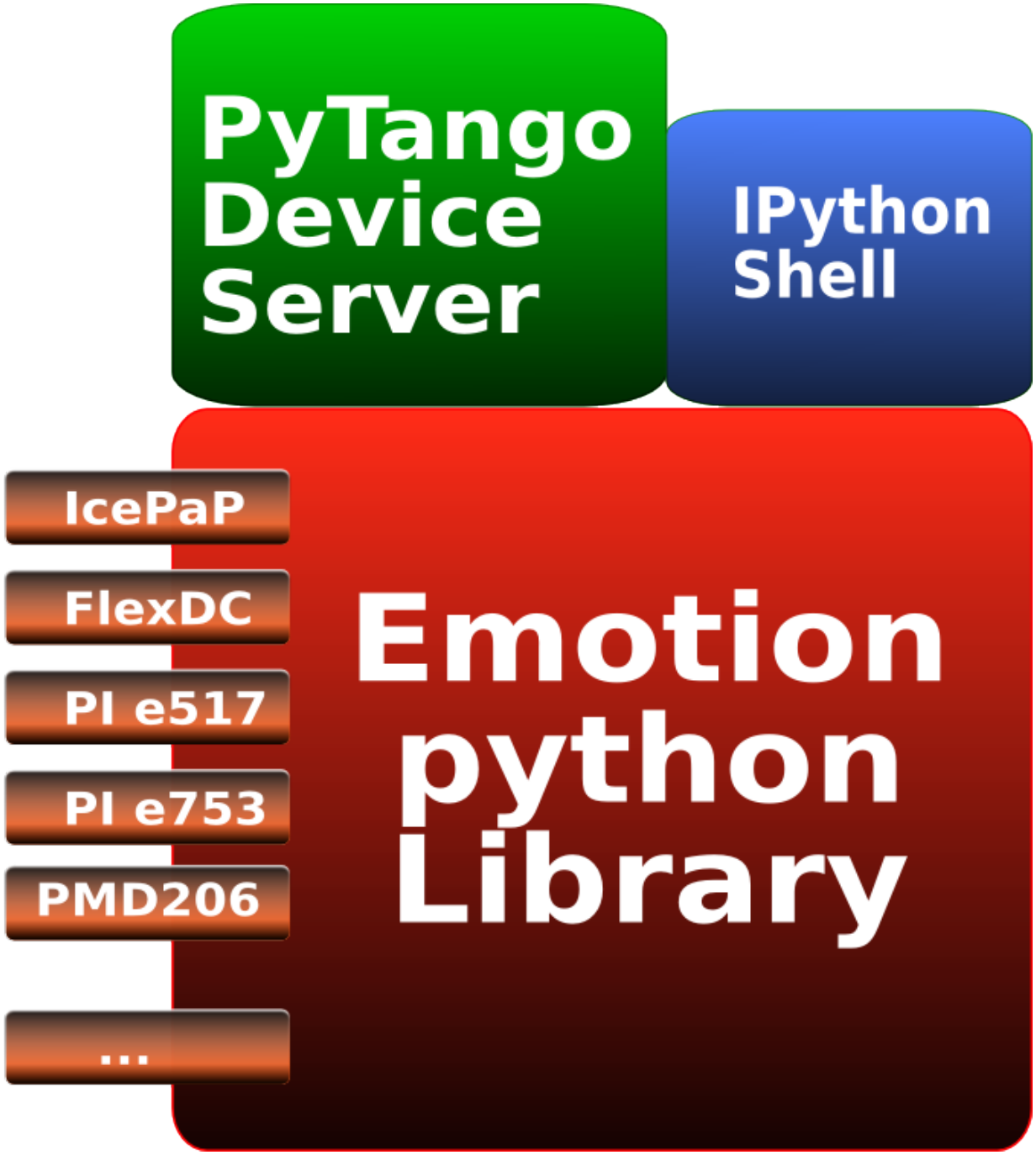

x rays
METROLOGIC
REFERENCE
CAPACITIVE
SENSORS
frame
6 piezo actuators
frame

Control : Feedback Loop

Control


Linux computer
XCalibur.py
PyTango class
PyTango
HPZ Loop DS
-frequency
-errors
-ON/OFF
-Matrix Calculations
C++ loop
SHM
C++ Tango Class
3 ADC ADLink PCIe Boards
ADLink Library
PyTango class
PyTango class
Tggevent
E-Motion
ETH
Tggevent
E-Motion
ETH
12 Capacitive Sensors
FlexDC rotation
NanoMotion FlexDC
PI e517
6 piezo accutators
PI e517

E-Motion


PyTango
Device
Server
IPython
Shell
IcePaP
FlexDC
PI e517
PI e753
PMD206
...
Emotion
python
Library

Conclusion

Results

- 40Hz loop (without RT OS)
- <5nm steps

Advantages using Tango

- Easy mixing of C++ and Python Tango classes.
- Monitoring (Atk Trends) help a lot users during tuning.

Problems

- Monitoring of arrays not so easy as scalars
- No structs as parameters / attributes

- Many layers -> harder to debug

About

Acknowledgments

- Matias Guijaro (BLISS) : E-Motion
- Peter Cloetens (ID16) : Hexapod design
- Francois Villar (Mechanical Engineering Group) : Hexapod design

Project made with

- git/gitlab
- Tango & PyTango & AtkPanel
- Python

Presentation made with deck.js

← →

/

Go to slide: