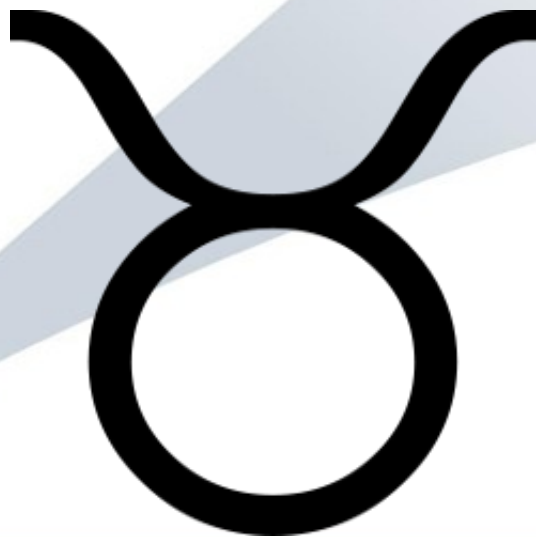


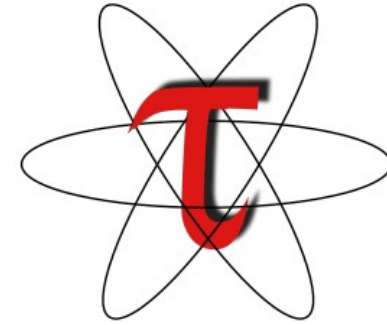
Tau V2 (Taurus)

Tango Meeting, 25-26th
of October, 2010



❏ Problem:

Name conflict with an existing *Tau* package



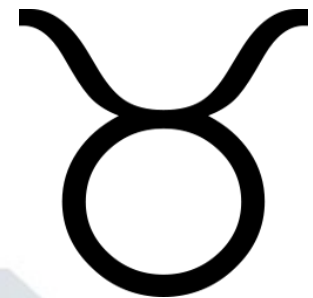
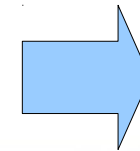
<http://www.cs.uoregon.edu/research/tau>

❏ Solution:

Rename **Tau** to **Taurus**
(starting from version 2.0)

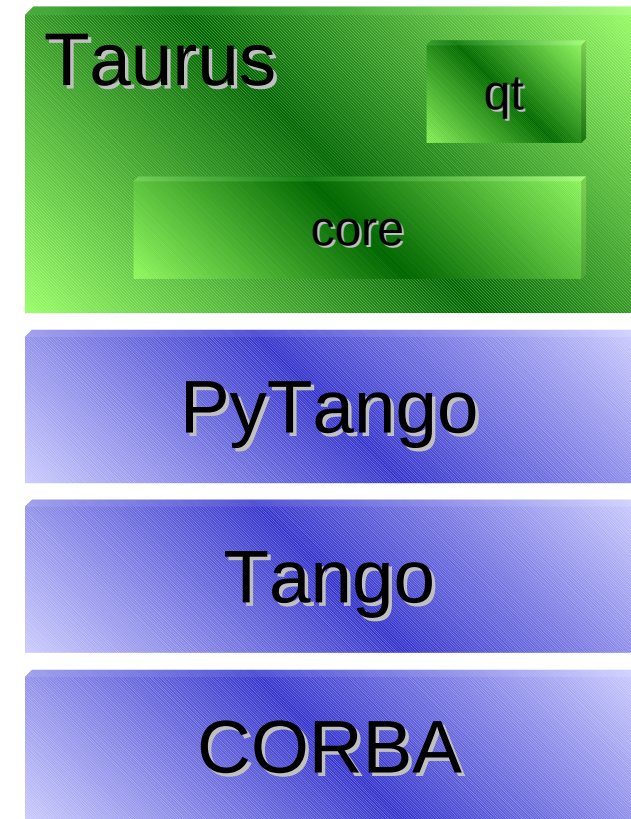


Tau
(v1.2)



Taurus
(v2.0)

- ❑ Taurus is just a newer Tau
- ❑ A framework for Tango CLIs and GUIs
- ❑ Based on Python and PyQt
- ❑ PyTango abstraction layer
- ❑ Available as a SVN branch of Tau [2]
- ❑ Will be available on the pink site [3]
- ❑ Documentation in [4]



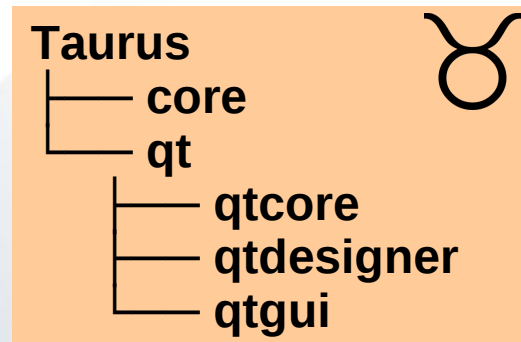
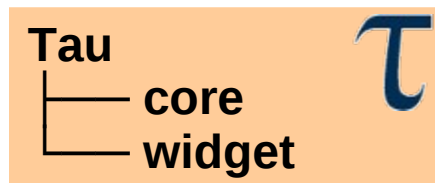
(1) <http://www.tango-controls.org/Events/meetings/May-2010/SardanaTANG02010.pdf>

(2) http://tango-cs.svn.sf.net/viewvc/tango-cs/tau/branches/tau_restructure_01

(3) <http://www.tango-controls.org/download>




(4) <http://www.tango-controls.org/static/taurus/latest/doc/html/index.html>

▣ Submodules structure changed:



▣ More explicit imports *encouraged*...

```

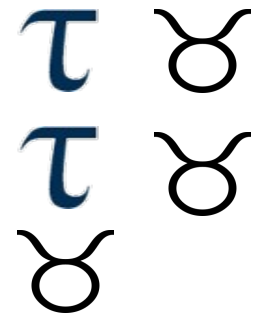
  >>> from tau.widget import TauForm
 >>> from taurus.qt.qtgui.panel import TaurusForm
  
```

(...but backwards compatibility is preserved)

New schema for Taurus models

Valid model names in Taurus:

- tango://domain/family/member/[attribute]
- tango://alias
- resource://[filename]/variable_name
- ...



```
>>> rs = taurus.core.ResourceFactory()
>>> rs.loadResource('mydefs.py')
>>> f = TaurusForm()
>>> f.setModel('res://foo')
```

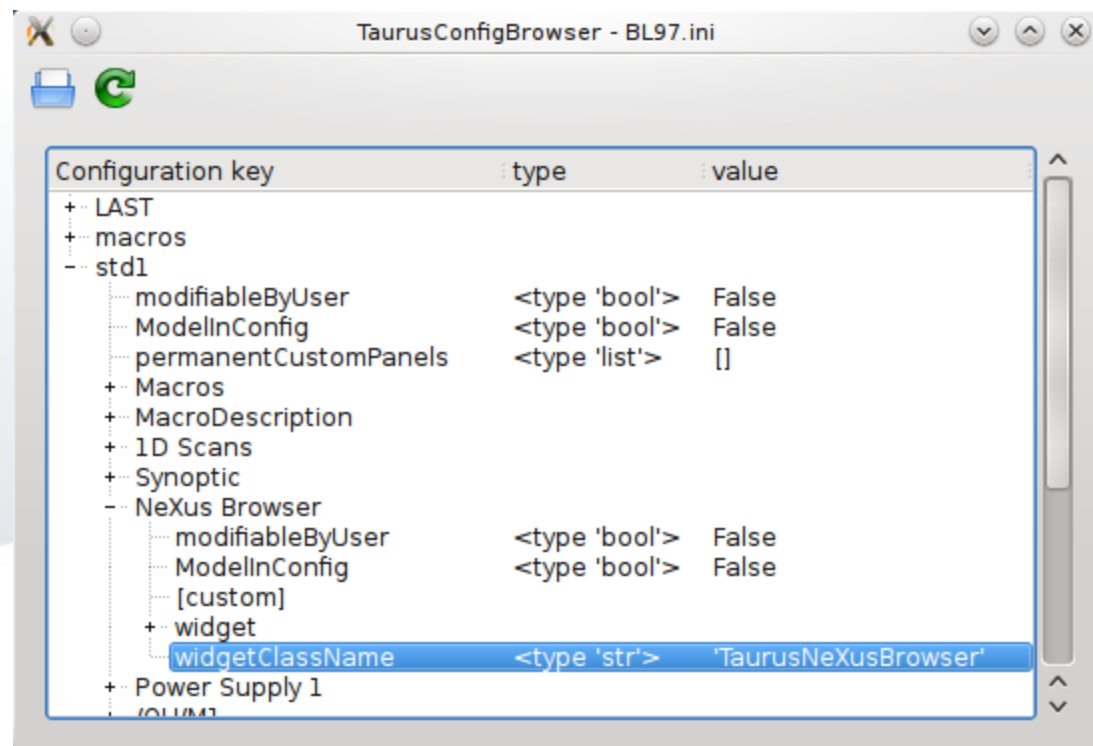
```
$ cat my_defs.py
foo = 'a/b/c/d'
bar = 'tango://a/b/c'
```

Simple API for auto-load/save settings

- Based on QSettings
- Uses ini files (platform-indep)
- Hierarchical delegation:

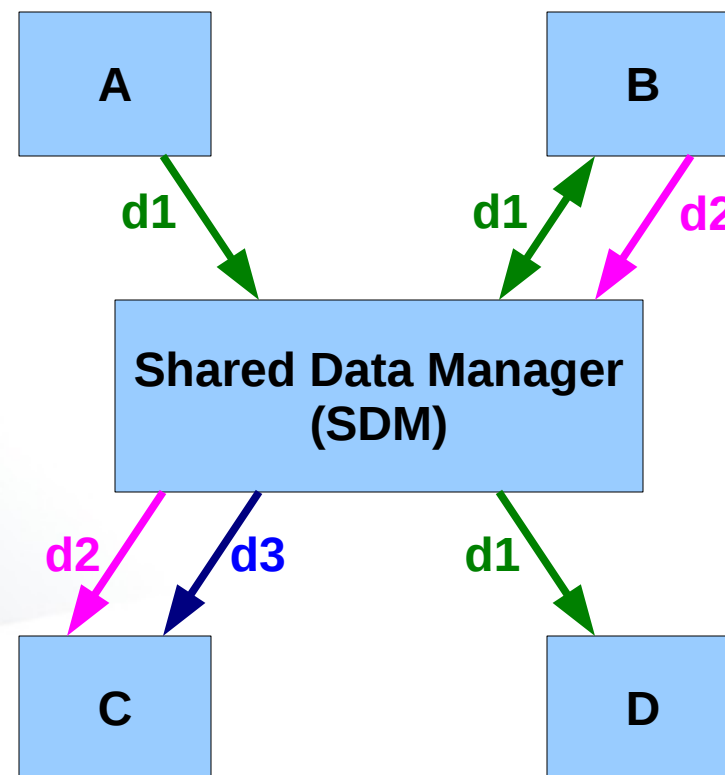
```
foo = TaurusWidget()
foo.bar = TaurusPlot()
foo.registerConfigProperty(getProp, setProp, 'name'):
foo.registerConfigDelegate(foo.bar)
```

- TaurusMainWindow:
 - auto-saves settings on close
 - loads settings on init
 - provides “perspectives”



An API for inter-widget communication

- Based on PyQt Signals... but decoupling emitter from slot
- Unique ID used to label each shared datum
- Widgets register at SDM as 'reader' and/or 'writer' of one or more data
- A, B, C, D do not need to know each other (and need not exist!)
- Useful for dynamical GUIs (like TaurusGUI)



	Writers	Readers
'd1'	A, B	B, D
'd2'	B	C
'd3'	-	C

An API for icons

☒ Unified access to:

- ☒ theme-specific icons
- ☒ Tango-FreeDesktop icons
- ☒ Taurus specific resources

☒ See: taurus/qt/qtgui/resource/catalog.html

```
>>> from taurus.qt.qtgui.resource import getThemeIcon, getIcon
```

```
>>> icon1 = getThemeIcon('folder-open') 
```

```
>>> icon2 = getIcon('/:status/network-error.svg') 
```

```
>>> icon2 = getIcon('/:institutes/logo_desy.gif') 
```

❏ New/upgraded widgets:

- ❏ **TaurusDbTree**
- ❏ **TaurusAttrForm**
- ❏ **TaurusCommandForm**
- ❏ **TaurusNexusBrowser**
- ❏ **TaurusMacroExecutor**
- ❏ **TaurusPoolMotor**
- ❏ **TaurusMainWindow**
- ❏ ...

❏ New/upgraded widgets:

❏ **TaurusDbTree**

❏ TaurusAttrForm

❏ TaurusCommandForm

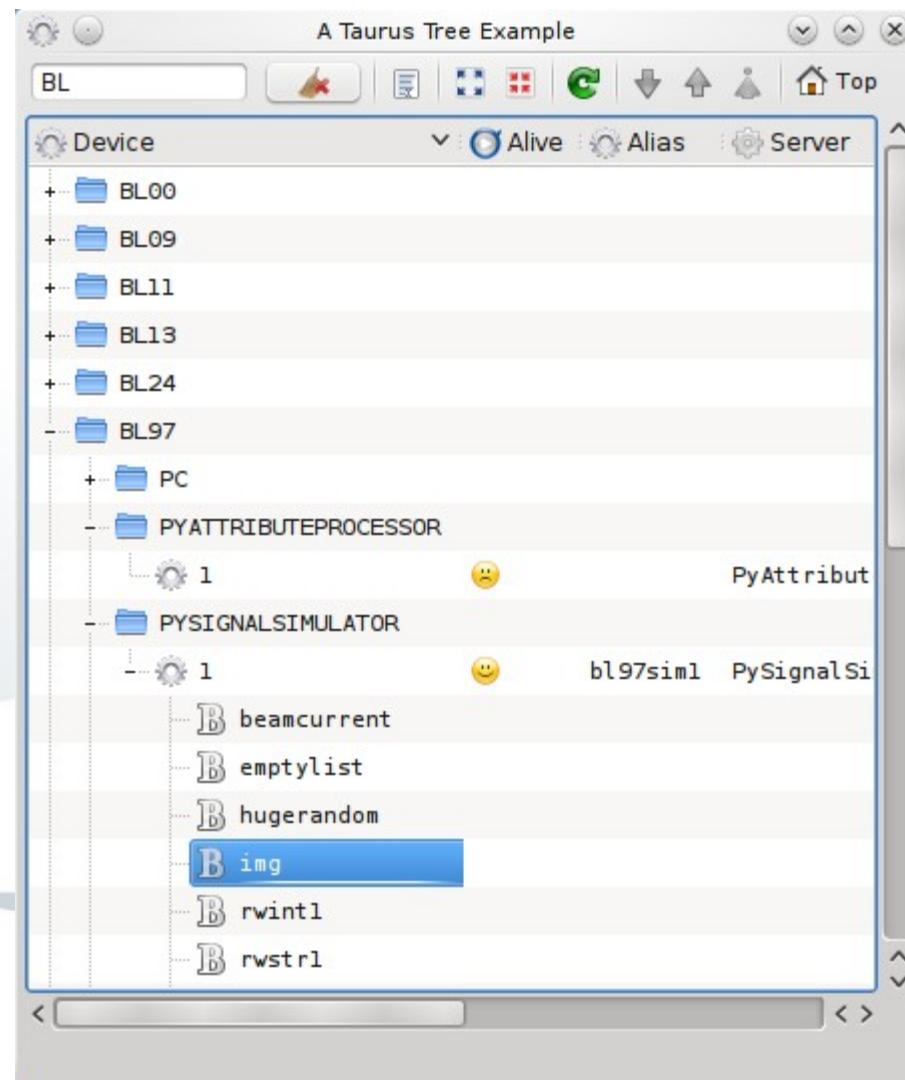
❏ TaurusNexusBrowser

❏ TaurusMacroExecutor

❏ TaurusPoolMotor

❏ TaurusMainWindow

❏ ...



❏ New/upgraded widgets:

❏ TaurusDbTree

❏ TaurusAttrForm

❏ TaurusCommandForm

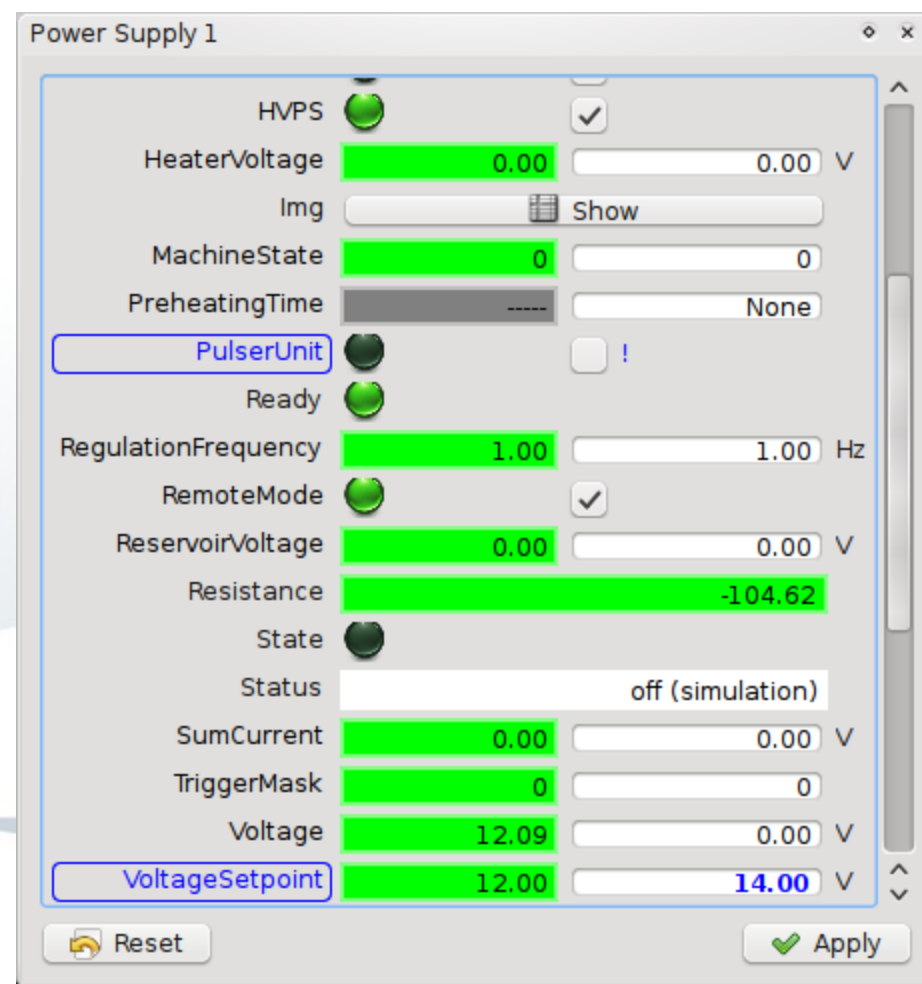
❏ TaurusNexusBrowser

❏ TaurusMacroExecutor

❏ TaurusPoolMotor

❏ TaurusMainWindow

❏ ...



❏ New/upgraded widgets:

- ❏ TaurusDbTree

- ❏ TaurusAttrForm

- ❏ **TaurusCommandForm**

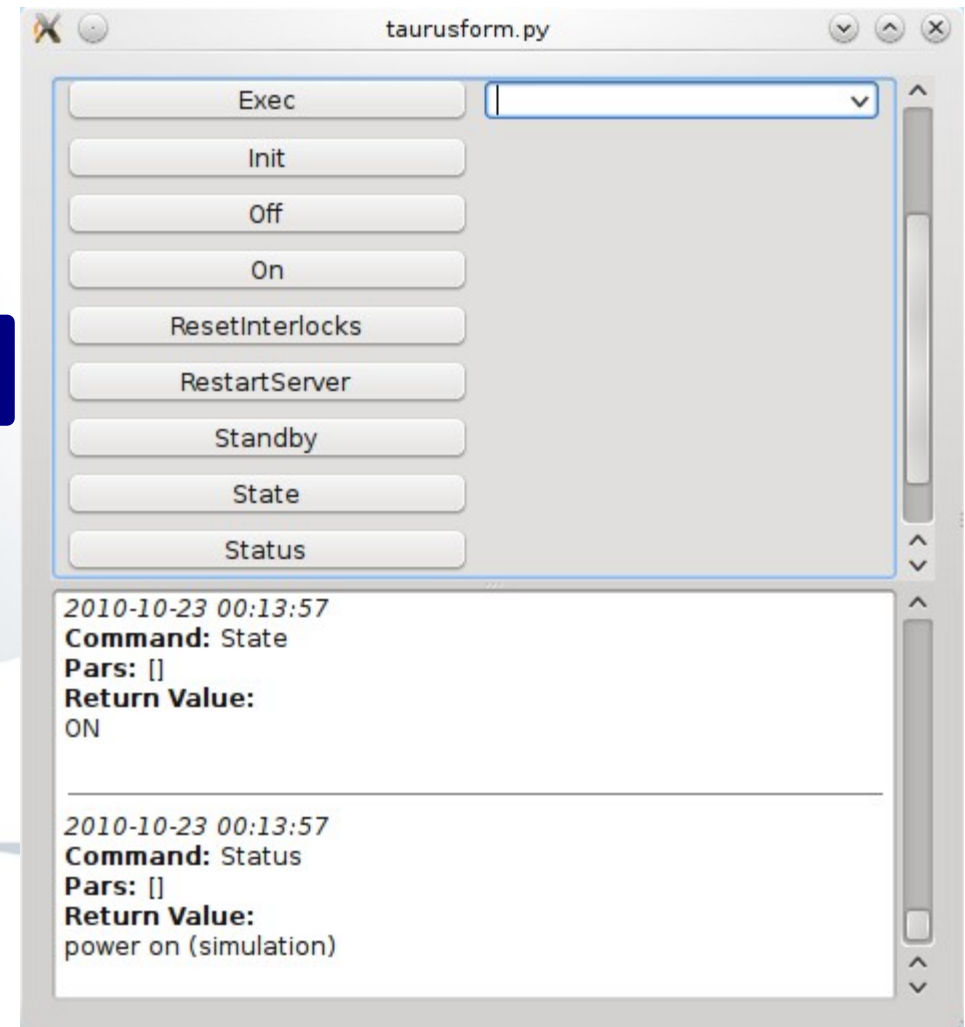
- ❏ TaurusNexusBrowser

- ❏ TaurusMacroExecutor

- ❏ TaurusPoolMotor

- ❏ TaurusMainWindow

- ❏ ...



❏ New/upgraded widgets:

- ❏ TaurusDbTree

- ❏ TaurusAttrForm

- ❏ TaurusCommandForm

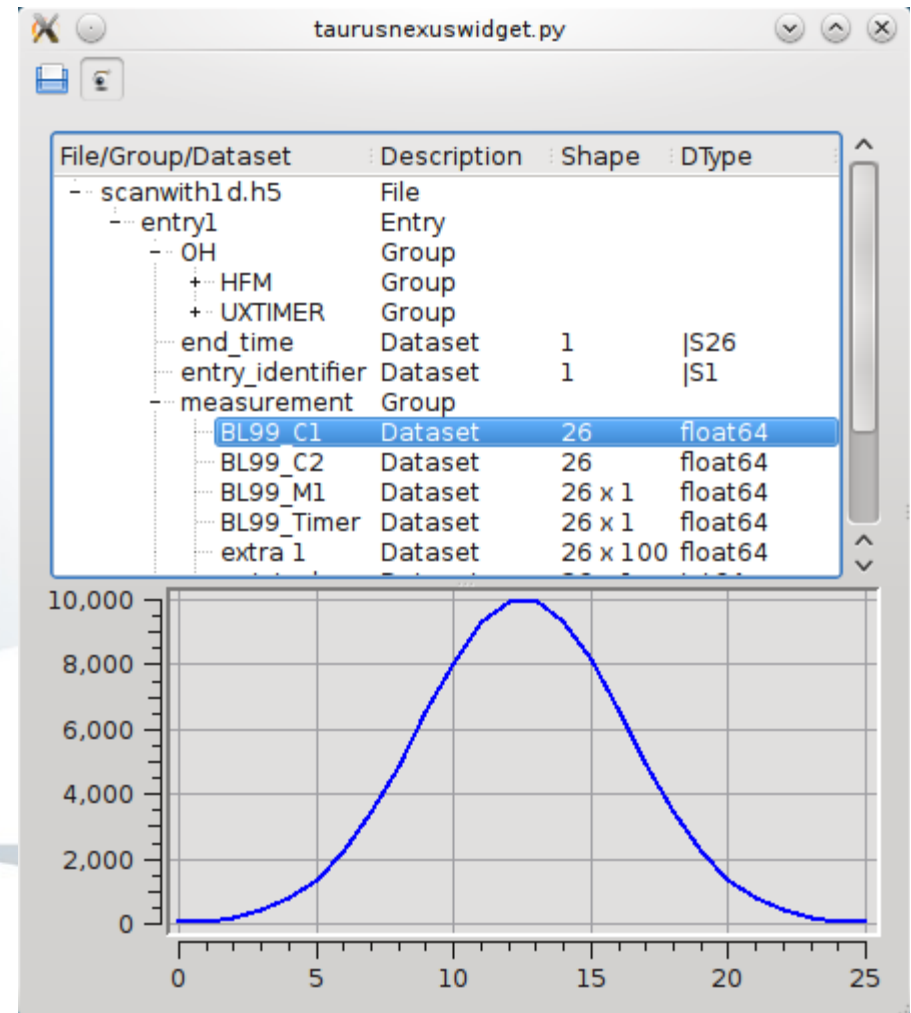
- ❏ **TaurusNexusBrowser**

- ❏ TaurusMacroExecutor

- ❏ TaurusPoolMotor

- ❏ TaurusMainWindow

- ❏ ...



❏ New/upgraded widgets:

- ❏ TaurusDbTree

- ❏ TaurusAttrForm

- ❏ TaurusCommandForm

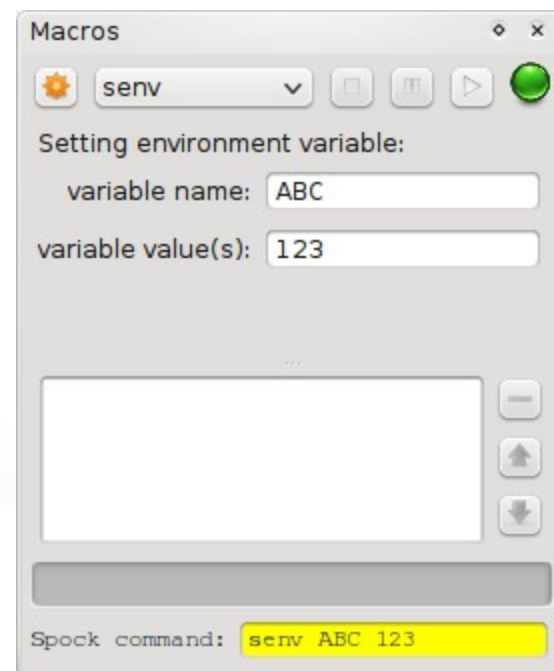
- ❏ TaurusNexusBrowser

- ❏ TaurusMacroExecutor

- ❏ TaurusPoolMotor

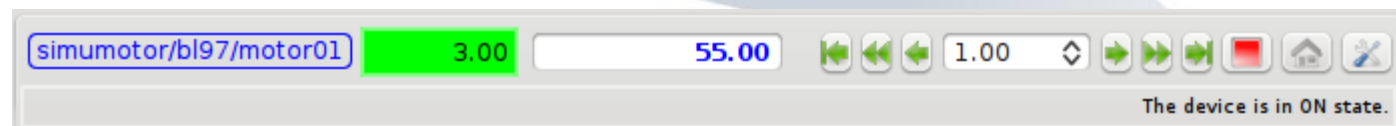
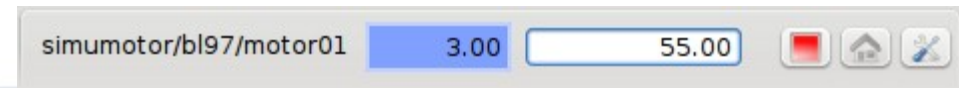
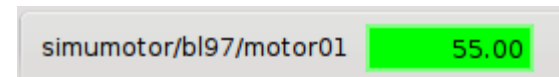
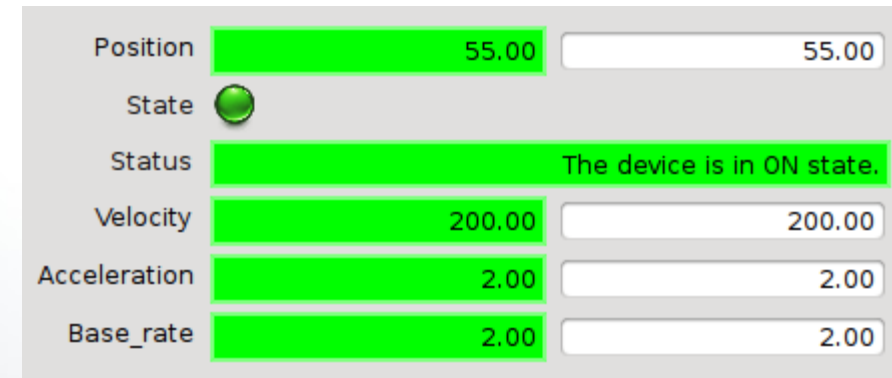
- ❏ TaurusMainWindow

- ❏ ...



❏ New/upgraded widgets:

- ❏ TaurusDbTree
- ❏ TaurusAttrForm
- ❏ TaurusCommandForm
- ❏ TaurusNexusBrowser
- ❏ TaurusMacroExecutor
- ❏ **TaurusPoolMotor**
- ❏ TaurusMainWindow
- ❏ ...

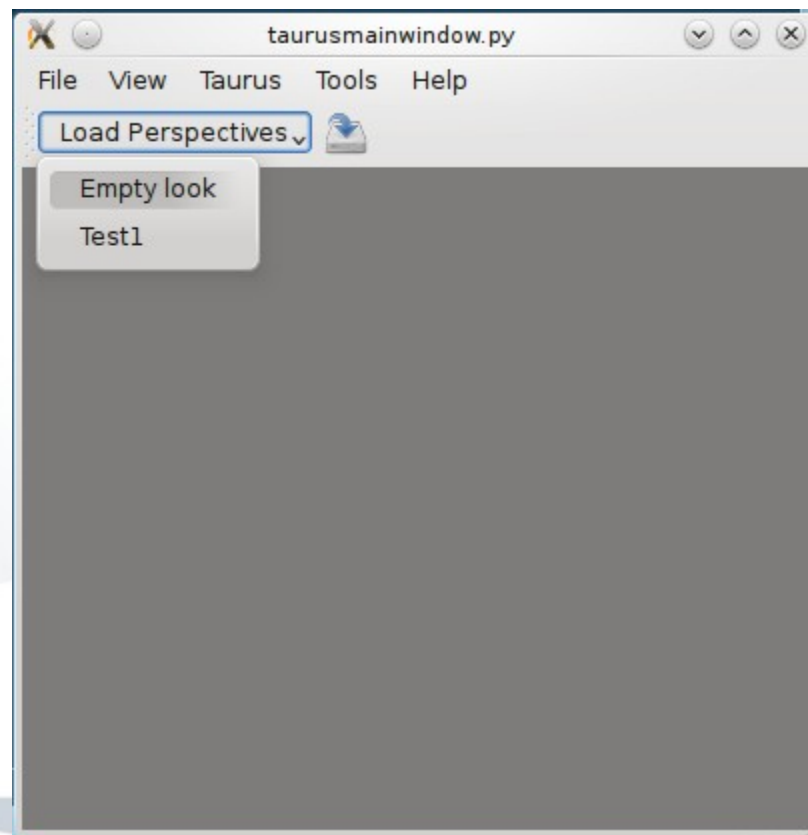


❏ New/upgraded widgets:

- ❏ **TaurusDbTree**
- ❏ **TaurusAttrForm**
- ❏ **TaurusCommandForm**
- ❏ **TaurusNexusBrowser**
- ❏ **TaurusMacroExecutor**
- ❏ **TaurusPoolMotor**

❏ **TaurusMainWindow**

❏ ...



❏ New/upgraded widgets:

- ❏ TaurusDbTree
- ❏ TaurusAttrForm
- ❏ TaurusCommandForm
- ❏ TaurusNexusBrowser
- ❏ TaurusMacroExecutor
- ❏ TaurusPoolMotor
- ❏ TaurusMainWindow



TaurusGUI

(live demo)



- ❏ Configuration file
- ❏ Run-time customization:
 - ❏ move panels
 - ❏ Create panels
 - ❏ Customize form panels (drag&drop and model chooser)
 - ❏ Customize TauValue subwidgets
- ❏ Selecting form via synoptic
- ❏ Perspectives
- ❏ Macro execution and custom macro (senv)
- ❏ PoolMotor (HideAll/ShowAll)
- ❏ Open Nexus File

```
#!/usr/bin/env python
"""
bl98.py:
"""
from gblgui_utils import PanelDescription, ExternalApp, Qt_Qt

#=====
# This configuration file determines the default, permanent, pre-defined
# contents of the BL GUI. While the user may add/remove more elements at run
# time and those customizations will also be stored, this file defines what a
# user will find when launching the GUI for the first time.
#=====
BL_NAME = 'BL98'
ORGANIZATION = 'ALBA'

#=====
# SYNOPTIC FILE (comment out or make it None to skip creating a synoptic panel)
#=====
SYNOPTIC = 'bl98/images/bl98.jdw'

#=====
# Define which External Applications are to be inserted. After defining them, add
# them to the EXTERNAL_APPS variable.
# See TauMainWindow.addExternalAppLauncher for valid values of ExternalApp
#=====
xterm = ExternalApp(cmdargs=['xterm','spock'], text="Spock", icon='utilities-terminal')
hdfview = ["hdfview"]
pymca = ['pymca']

EXTERNAL_APPS = [xterm, hdfview, pymca]

#=====
# Monitor widget
#=====
MONITOR = ['simulation/pysignalsimulator/01/beamcurrent']

#=====
# Macro execution configuration
# (comment out or make MACRO_SERVER=None to skip creating a macro execution
# infrastructure)
#=====
MACROSERVER_NAME = 'macroserver/bl98/1'
DOOR_NAME = 'door/bl98/1'
MACROEDITORS_PATH = '<tauruslib>/qt/qtgui/extra_macroexecutor/macroparameterseditor/customeditors'
```

```
#####  
# Set INSTRUMENTS_FROM_POOL to True for enabling auto-creation of  
# instrument panels based on the Pool Instrument info  
#####  
INSTRUMENTS_FROM_POOL = False  
  
#####  
# Define more panels to be shown. After defining them, add them to the  
# CUSTOM_PANELS variable.  
# To define a panel, instantiate a PanelDescription object (see documentation  
# for the gblgui_utils module)  
#####  
  
nxbrowser = PanelDescription('NeXus Browser',  
                             classname = 'TaurusNeXusBrowser',  
                             area = Qt_Qt.TopDockWidgetArea)  
  
mirror1 = PanelDescription('Mirror1',  
                           classname = 'TaurusForm',  
                           area = Qt_Qt.LeftDockWidgetArea,  
                           model = ['motor/bl98_dummymotorctrl1/1',  
                                   'motor/bl98_dummymotorctrl1/2',  
                                   'expchan/bl98_dummyctr1/1/value',  
                                   'expchan/bl98_dummyctr1/2/value',  
                                   'simulation/pysignalsimulator/01/movingsin' ])  
  
mirror2 = PanelDescription('Mirror2',  
                           classname = 'TaurusForm',  
                           area = Qt_Qt.LeftDockWidgetArea,  
                           model = ['motor/bl98_dummymotorctrl1/3',  
                                   'motor/bl98_dummymotorctrl1/4',  
                                   'expchan/bl98_dummyctr1/3/value',  
                                   'expchan/bl98_dummyctr1/4/value' ])  
  
endstation = PanelDescription('EndStation',  
                              classname = 'TaurusAttrForm',  
                              area = Qt_Qt.LeftDockWidgetArea,  
                              model = 'sys/tg_test/1')  
  
motions = PanelDescription('Motions',  
                           classname = 'TaurusForm',  
                           area = Qt_Qt.LeftDockWidgetArea,  
                           model = ['motor/bl98_dummymotorctrl1/%d%i for i in range(1,5)] )  
  
CUSTOM_PANELS = [mirror1, mirror2, endstation, motions]
```

/OH/XBPM3

foilb3 103.43 0.00

bpm3z 0.00 0.00

bpm3x 0.00 0.00

ib3l 0.00 0.00

ib3d 0.00 0.00

ib3u 0.00 0.00

ib3r 0.00 0.00

Reset Apply

/OH/HFM /OH/... /EH /OH/... /OH/... /OH/... < >

Macros NeXusBrowser

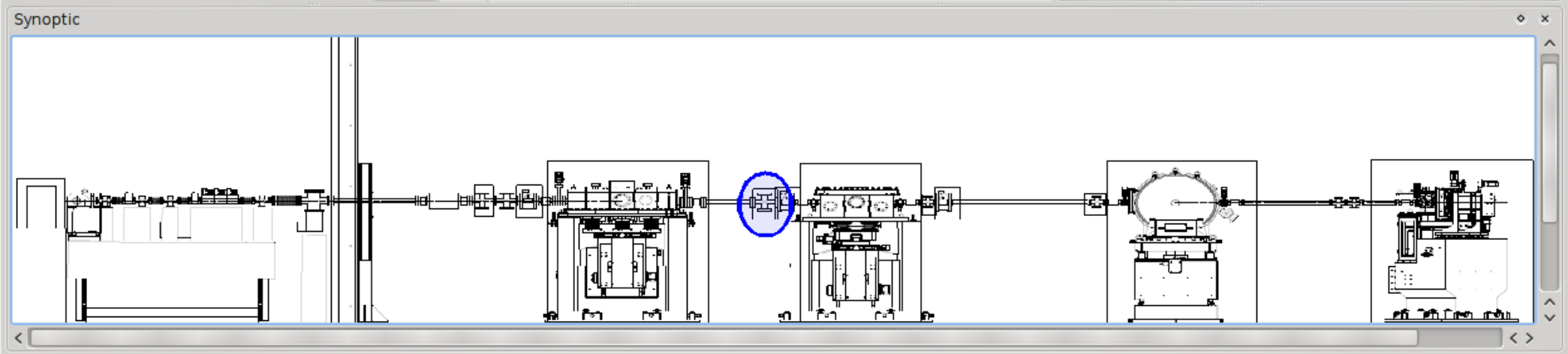
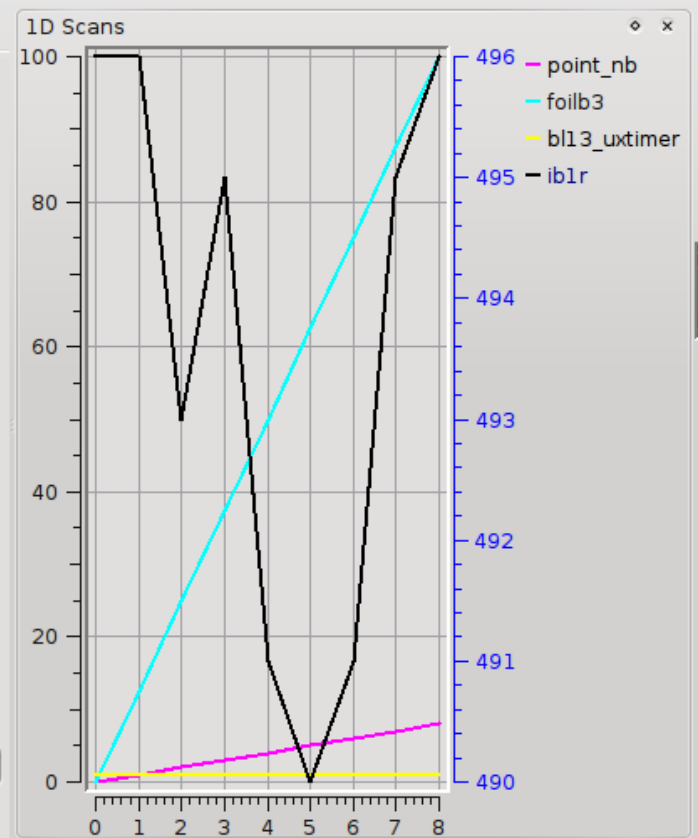
ascan

Parameter	Value
motor	foilb3
start_pos	0.0
final_pos	150.0
nr_interv	12
integ_time	1.0

```
ascan foilb3 0.0 150.0 12 1.0
serv ABC 123
ascan HFM_PIT 1.0 200.0 10 1.0
```

69%

Spock command: `ascan foilb3 0.0 150.0 12 1.0`



```
Door_BL99 [27]: ascan bl99_ml 0 100 25 1
JsonRecorder is not defined. Use "senv JsonRecorder True" to enable it
SharedMemory is not defined.
SharedMemory is not defined.
Scan started at Tue Oct 19 11:01:21 2010.. It will take at least 0:00:00
Scan data will be saved in /home/tcoutinho/tmp/nexus_scan_with_2d.h5 (w5)
#Pt No      BL99_M1    BL99_Timer  BL99_C1    BL99_C2    MCA_1      CCD_1
  0      0          1           38         38         (100,)     (494, 659)
  1      4          1           91         38         (100,)     (494, 659)
  2      8          1          200         39         (100,)     (494, 659)
  3     12          1          405         38         (100,)     (494, 659)
  4     16          1          772         38         (100,)     (494, 659)
  5     20          1         1357         38         (100,)     (494, 659)
  6     24          1         2252         39         (100,)     (494, 659)
  7     28          1         3447         39         (100,)     (494, 659)
  8     32          1         4880         38         (100,)     (494, 659)
  9     36          1         6514         38         (100,)     (494, 659)
 10     40          1         8041         38         (100,)     (494, 659)
 11     44          1         9305         38         (100,)     (494, 659)
 12     48          1        10031         39         (100,)     (494, 659)
 13     52          1        10016         39         (100,)     (494, 659)
 14     56          1         9263         38         (100,)     (494, 659)
 15     60          1         8027         38         (100,)     (494, 659)
 16     64          1         6513         38         (100,)     (494, 659)
 17     68          1         4937         39         (100,)     (494, 659)
 18     72          1         3424         38         (100,)     (494, 659)
 19     76          1         2237         38         (100,)     (494, 659)
 20     80          1         1359         38         (100,)     (494, 659)
 21     84          1          772         38         (100,)     (494, 659)
 22     88          1          405         38         (100,)     (494, 659)
 23     92          1          201         39         (100,)     (494, 659)
 24     96          1           91         38         (100,)     (494, 659)
 25    100          1           38         38         (100,)     (494, 659)
Scan ended at Tue Oct 19 11:02:01 2010, taking 0:00:40.534879
Door_BL99 [28]: lsenv
```



/bin/bash

```

Door_BL99 [27]: ascan bl99
JsonRecorder is not defined
SharedMemory is not defined
SharedMemory is not defined
Scan started at Tue Oct 19 19:58:38 2010
Scan data will be saved in /home/tcoutinho/tmp/nexus_scan_with_2d.h5

```

#Pt	No	BL99_M1
0	0	0
1	4	4
2	8	8
3	12	12
4	16	16
5	20	20
6	24	24
7	28	28
8	32	32
9	36	36
10	40	40
11	44	44
12	48	48
13	52	52
14	56	56
15	60	60
16	64	64
17	68	68
18	72	72
19	76	76
20	80	80
21	84	84
22	88	88
23	92	92
24	96	96
25	100	100

Scan ended at Tue Oct 19 19:58:38 2010

Door_BL99 [28]: lsenv

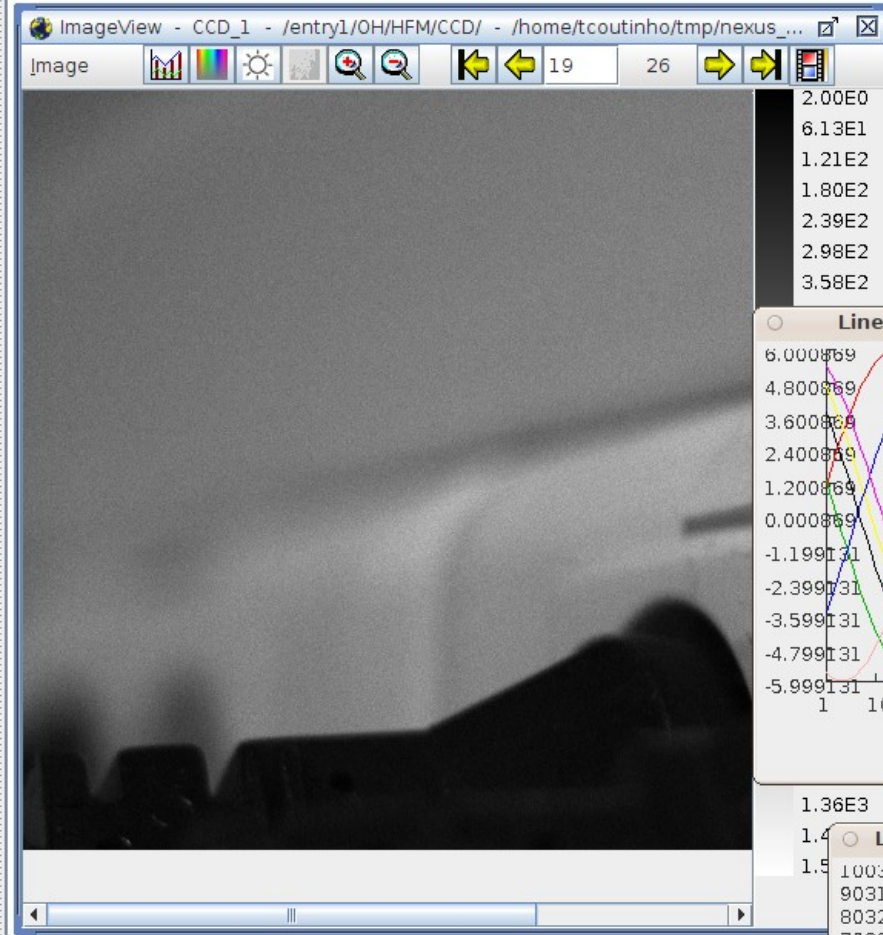
HDFView

File Window Tools Help

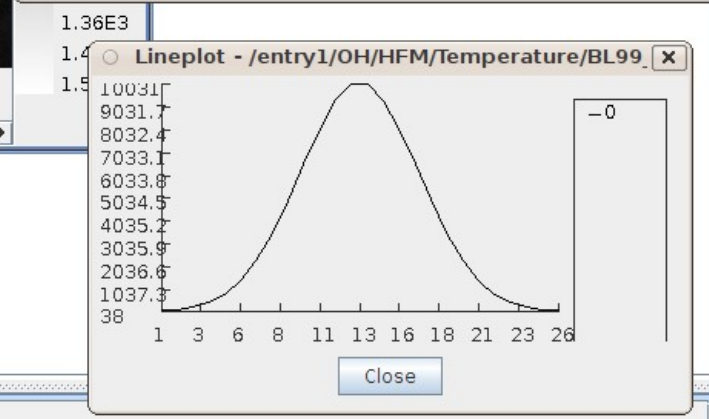
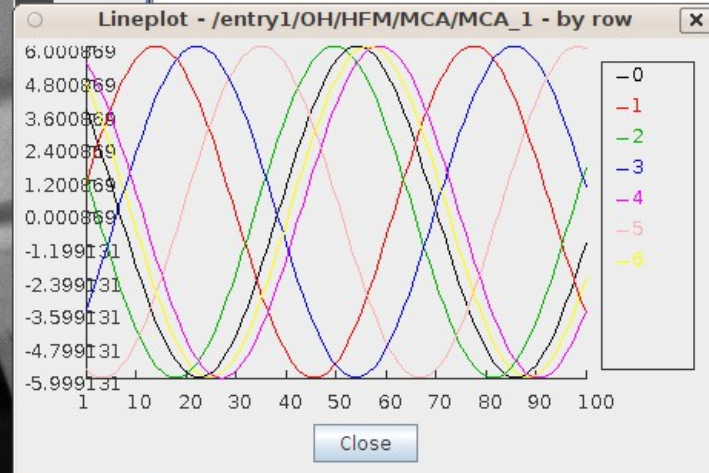
File/URL /home/tcoutinho/tmp/nexus_scan_with_2d.h5

nexus_scan_with_2d.h5

- entry1
 - OH
 - HFM
 - CCD
 - CCD_1
 - MCA
 - MCA_1
 - Pressure
 - BL99_C2
 - Temperature
 - BL99_C1
 - X
 - UXTIMER
 - BL99_Timer
 - end_time
 - entry_identifier
 - measurement
 - start_time
 - title
 - user



2.00E0
6.13E1
1.21E2
1.80E2
2.39E2
2.98E2
3.58E2



CCD_1 (9728)
16-bit unsigned integer, 26 x 494 x 659
Number of attributes = 1
target = /entry1/measurement/CCD_1

Log Info Metadata

