

# BlissData at DESY

## Sardana and NXFileRecorder with BlissData

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Sardana Workshop, ALBA



Jun 11, 2026

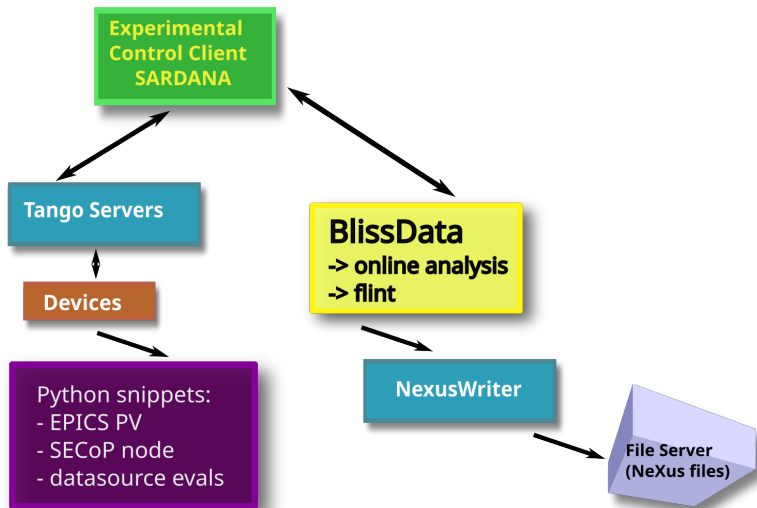
# BlissData deployed with Sardana

DESY/PETRA III beamline computers running on debian12  
( ¿ ubuntu 26.04 ? )

- RedisDB Stack running in a podman container as a systemd server
- Sardana, NXS\_FileRecorder, RedisBlissRecorder, BlissData installed via debian packages accessible at deb <http://repos.pni-hdri.de/apt/debian>
- An example installation with docker compose at <https://gitlab.desy.de/jan.kotanski/fsecservers-bookworm>

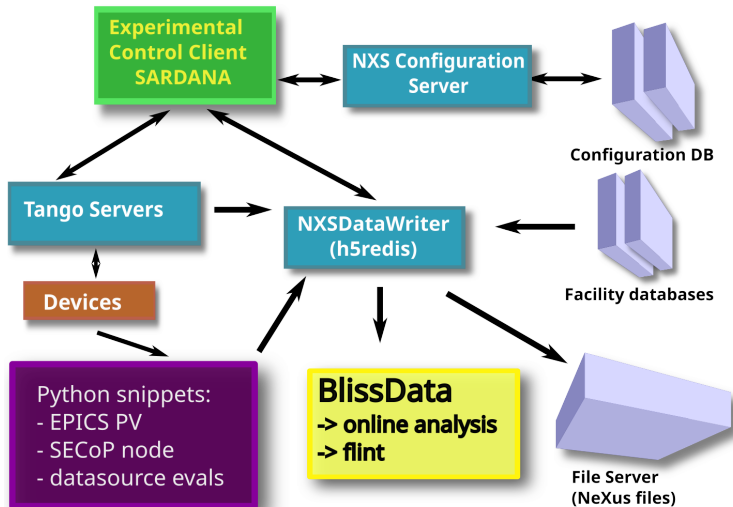
Currently we are testing NXS\_FileRecorder, RedisBlissRecorder which publish (meta)data to BlissData

# BlissRedisRecorder at DESY with NexusWriter ESRF



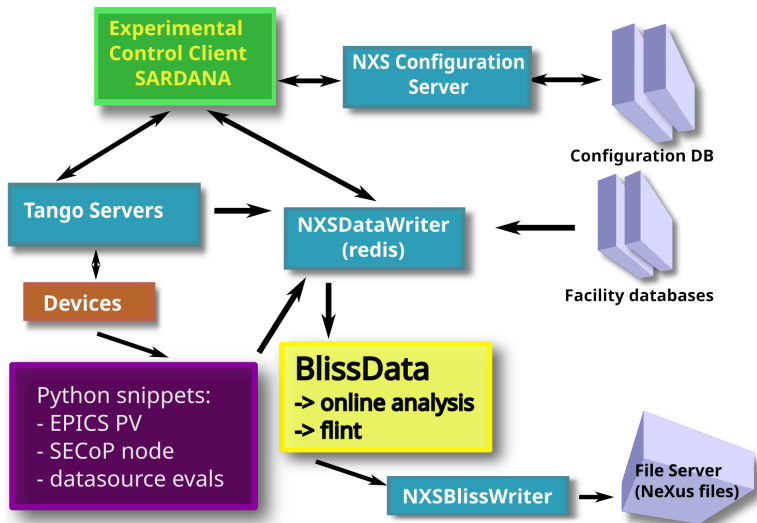
- At DESY not all metadata and data is passed through sardana
- NeXus files created by BLISS NexusWriter (ESRF) are not arbitrary configurable

# NXS\_FileRecorder with NXSDataWriter (h5redis)



- **NXSDataWriter** with `Writer = 'h5redis'` <https://github.com/nexdatas/>
- contrary to **RedisBlissRecorder** **NXS\_FileRecorder** writers (meta)data to **NeXus files** and publish them to **BlissData**

# NXS\_FileRecorder with NXSDataWriter (redis)



- **NXSDataWriter** with `Writer = 'redis'` <https://github.com/nexdatas/>
- with `redis` module the XML configuration is passed via blissdata to **NXSBlissWriter**
- similarly **FIOBlissWriter** and (**SpecWriter** from ALBA)

# NeXus Component Selector

## Device Selection – Detector Components

The screenshot shows the NeXus Component Selector (expert mode) window. The title bar reads "NeXus Component Selector (expert mode) (on haso113deb12test)". The interface includes several input fields and buttons:

- Scan File: myscanb3
- Scan File Ext: .nxs, .flo
- Scan Dir: /home/p99user/gpfs/current/raw
- Scan ID: 533
- Timer: lab\_t01
- MntGrp: iso113deb12test
- Buttons: +, -, >>, Multi-Scan Files
- Navigation tabs: Detectors, Descriptions, User Data, Configuration

The main area is divided into four panels, each with a table of components:

Timers	
Sel.	Dis.
<input checked="" type="checkbox"/> lab_t01	<input type="checkbox"/>
<input checked="" type="checkbox"/> lab_t02	<input type="checkbox"/>

Counters							
Sel.	Dis.	Sel.	Dis.	Sel.	Dis.	Sel.	Dis.
<input checked="" type="checkbox"/> lab_c01	<input checked="" type="checkbox"/>	<input type="checkbox"/> lab_c12	<input type="checkbox"/>	<input type="checkbox"/> lab_c23	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> lab_c02	<input checked="" type="checkbox"/>	<input type="checkbox"/> lab_c13	<input type="checkbox"/>	<input type="checkbox"/> lab_c24	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> lab_c03	<input type="checkbox"/>	<input type="checkbox"/> lab_c14	<input type="checkbox"/>	<input type="checkbox"/> lab_c25	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> lab_c04	<input type="checkbox"/>	<input checked="" type="checkbox"/> lab_c15	<input checked="" type="checkbox"/>	<input type="checkbox"/> lab_c26	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> lab_c05	<input type="checkbox"/>	<input type="checkbox"/> lab_c16	<input type="checkbox"/>	<input type="checkbox"/> lab_c27	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> lab_c06	<input type="checkbox"/>	<input checked="" type="checkbox"/> lab_c17	<input checked="" type="checkbox"/>	<input type="checkbox"/> lab_c28	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> lab_c07	<input type="checkbox"/>	<input type="checkbox"/> lab_c18	<input type="checkbox"/>	<input type="checkbox"/> lab_c29	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> lab_c08	<input type="checkbox"/>	<input type="checkbox"/> lab_c19	<input type="checkbox"/>	<input type="checkbox"/> lab_c30	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> lab_c09	<input type="checkbox"/>	<input type="checkbox"/> lab_c20	<input type="checkbox"/>	<input type="checkbox"/> lab_c31	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> lab_c10	<input type="checkbox"/>	<input type="checkbox"/> lab_c21	<input type="checkbox"/>	<input type="checkbox"/> lab_c32	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> lab_c11	<input type="checkbox"/>	<input type="checkbox"/> lab_c22	<input type="checkbox"/>				

VFC	
Sel.	Dis.
<input type="checkbox"/> lab_vfc01	<input type="checkbox"/>
<input type="checkbox"/> lab_vfc02	<input type="checkbox"/>
<input type="checkbox"/> lab_vfc03	<input type="checkbox"/>
<input type="checkbox"/> lab_vfc04	<input type="checkbox"/>
<input type="checkbox"/> lab_vfc05	<input type="checkbox"/>
<input type="checkbox"/> lab_vfc06	<input type="checkbox"/>
<input type="checkbox"/> lab_vfc07	<input type="checkbox"/>
<input type="checkbox"/> lab_vfc08	<input type="checkbox"/>

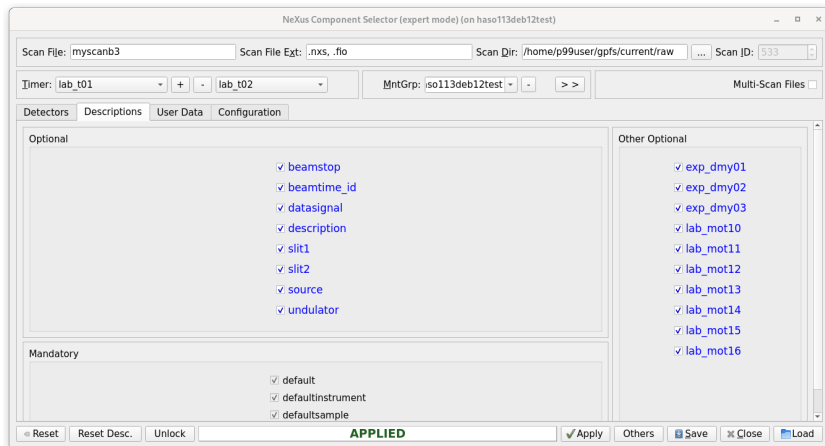
MCA/SCA	
Sel.	Dis.
<input checked="" type="checkbox"/> lab_mca01	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> lab_mca02	<input checked="" type="checkbox"/>
<input type="checkbox"/> lab_mca03	<input type="checkbox"/>
<input type="checkbox"/> lab_mca04	<input type="checkbox"/>

At the bottom, there are buttons: Reset, ClearAll, **APPLIED**, Apply, Others, Save, Close, Load.

Select components recorderd for the each step scan.

# NeXus Component Selector

## Device Selection – Description Components



Descriptive components store their data in the INIT or/and FINAL mode, i.e. before or/and after the scan.

# Spock scan with Sardana NXS\_FileRecorder

```
Python: home/p99user
root@haso113deb12test x Python: home/p99user x p99user@haso113deb12test: /etc x p99user@haso113deb12test: ~
ValRefg file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or(Index:04d).h5 and/or mg_haso113deb12test
Operation will be saved in /home/p99user/gpfs/current/raw/myscanb_00533.nxs (nxs from NXS_FileRecorder)
Operation will be saved in /home/p99user/gpfs/current/raw/myscanb3_5ScanId.fio (fio from FIO_FileRecorder)
Scan #533 started at Thu Jun 5 10:48:37 2025. It will take at least 0:00:03.101295
#PT No exp_dmy#1 lab_t#1 lab_c15 lab_c17 lab_nca#2 lab_nca#1 lab_c#2 lab_c#1 lab_t#2 and/or dt
0 0 0.1 0.129732 1.74953 (2048,) (1024,) 21.0286 27.7866 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0000
1 0.333333 0.1 6.81955 62.4486 (2048,) (1024,) 0.0465131 16.0253 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0001
2 0.666667 0.1 60.4592 223.331 (2048,) (1024,) 5.09972 117.826 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0002
3 1 0.1 80.9742 79.119 (2048,) (1024,) 101.802 141.634 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0003
4 1.33333 0.1 140.626 77.2112 (2048,) (1024,) -0.0480886 17.0661 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0004
5 1.66667 0.1 1.2233 7.64744 (2048,) (1024,) 2.39271 69.5864 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0005
6 2 0.1 -0.0179879 0.139465 (2048,) (1024,) 15.3947 23.3314 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0006
7 2.33333 0.1 143.572 126.68 (2048,) (1024,) 151.304 64.8751 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0007
8 2.66667 0.1 39.9281 13.245 (2048,) (1024,) 191.071 216.563 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0008
9 3 0.1 0.528357 0.184982 (2048,) (1024,) 29.8741 72.4864 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0009
10 3.33333 0.1 10.5096 90.6874 (2048,) (1024,) 70.038 2.44992 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0010
11 3.66667 0.1 106.668 9.49905 (2048,) (1024,) 120.73 -0.038186 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0011
12 4 0.1 63.2092 -0.00821435 (2048,) (1024,) 16.1747 13.1354 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0012
13 4.33333 0.1 0.382217 85.9312 (2048,) (1024,) 0.16914 151.502 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0013
14 4.66667 0.1 29.1943 10.5869 (2048,) (1024,) 107.839 139.02 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0014
15 5 0.1 186.944 0.8992351 (2048,) (1024,) 15.415 26.9666 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0015
16 5.33333 0.1 0.025645 0.216705 (2048,) (1024,) 0.164402 0.636117 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0016
17 5.66667 0.1 0.322766 62.1232 (2048,) (1024,) 217.774 0.847616 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0017
18 6 0.1 114.127 170.08 (2048,) (1024,) 67.0184 32.4092 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0018
19 6.33333 0.1 -0.047868 8.77996 (2048,) (1024,) 2.65361 78.4207 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0019
20 6.66667 0.1 80.7032 106.003 (2048,) (1024,) -0.0181051 1.94555 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0020
21 7 0.1 27.1478 15.7115 (2048,) (1024,) 61.5754 71.4169 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0021
22 7.33333 0.1 3.01253 0.8743257 (2048,) (1024,) 27.4237 177.78 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0022
23 7.66667 0.1 73.2156 12.5187 (2048,) (1024,) 198.337 -0.0373945 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0023
24 8 0.1 121.311 123.955 (2048,) (1024,) 24.2042 1.31644 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0024
25 8.33333 0.1 0.0386494 0.0643457 (2048,) (1024,) 0.0570784 116.16 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0025
26 8.66667 0.1 -0.0207404 6.97055 (2048,) (1024,) 6.90447 0.0763025 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0026
27 9 0.1 10.4064 114.055 (2048,) (1024,) 123.282 21.0844 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0027
28 9.33333 0.1 23.8776 204.008 (2048,) (1024,) 0.0286568 159.516 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0028
29 9.66667 0.1 -0.0362647 113.438 (2048,) (1024,) 7.47702 26.2722 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0029
30 10 0.1 1.77562 185.965 (2048,) (1024,) 133.038 154.612 0.1 h5file:///home/p99user/gpfs/current/raw/myscanb_00533/and/or/and/or0000.h5::entry_0030
Operation saved in /home/p99user/gpfs/current/raw/myscanb3_00533.nxs (nxs)
Operation saved in /home/p99user/gpfs/current/raw/myscanb3_00533.fio (fio)
Scan #533 ended at Thu Jun 5 10:49:17 2025, taking 0:00:39.898736. Dead time 91.5% (setup time 0.7%, motion dead time 0.5%)
p99@door/haso113deb12test.01 [77]: senw ScanRecorder RedisBlissRecorder
```

For NeXus Recorder the file extension is .nxs

# File structure examples

Silx viewer (on haso113deb12test)

File Options Views Help

Name	Description	Type	Shape	Link
myscanb3.nxs		NXroot		
myscanb3_00529	"Water te...	NXentry		External
myscanb3_00530	"Water te...	NXentry		External
myscanb3_00531	"Water te...	NXentry		External
myscanb3_00532	"Water te...	NXentry		External
myscanb3_00533	"Water te...	NXentry		External
data		NXdata		
end_time	"2025-06-...	string	scalar	
experiment_description	"PaNET01...	string	scalar	
experiment_identifier	"P99_202...	string	scalar	
instrument	"P99 Test ...	NXinstrument		
andor	"Simulato...	NXdetector		
beamstop	"circular"	NXbeam_stop		
collection		NXcollection		
insertion_device		NXinsertion_device		
lab_mca01		NXdetector		
name	"P99 Test ...	string	scalar	
slit1		NXslit		
slit2		NXslit		
source	"PETRA III"	NXsource		
program_name	"NexDaTaS"	string	scalar	
sample	"hh water"	NXsample		
start_time	"2025-06-...	string	scalar	
title	"Water te...	string	scalar	
myscanb3_00534	"Water te...	NXentry		External

/home/p99user/gpfs/current/raw/myscanb3\_00533.nxs::scan

Options\_ X: ----- Y: -----

HDF5 NXdata

# Lavue with LimaCCDs events

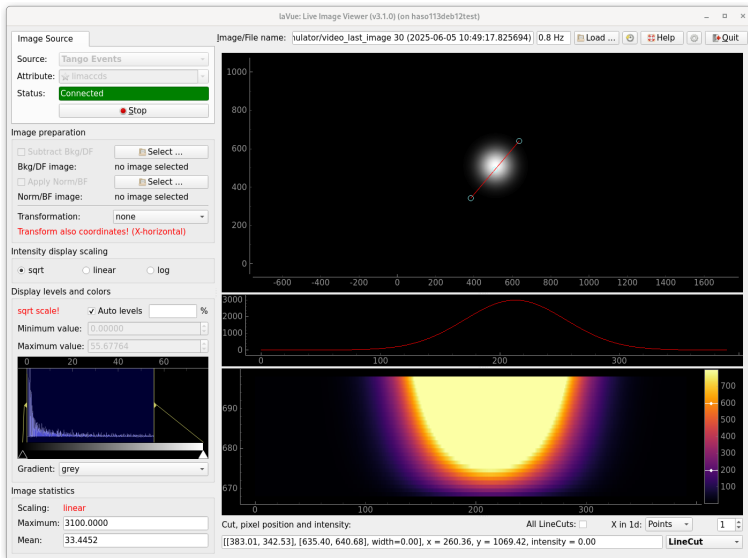
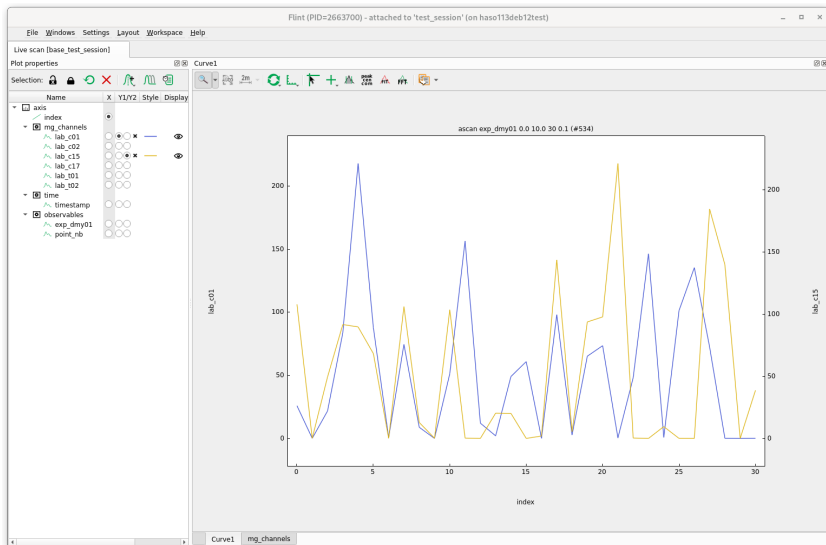


Image data read from LimaCCDs Tango Events



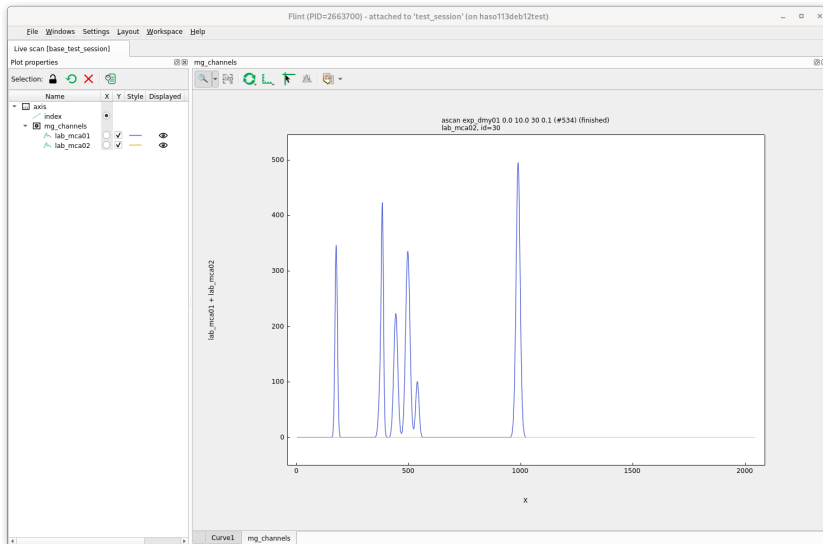
# Flint with counters



Counter data read from BlissData streams

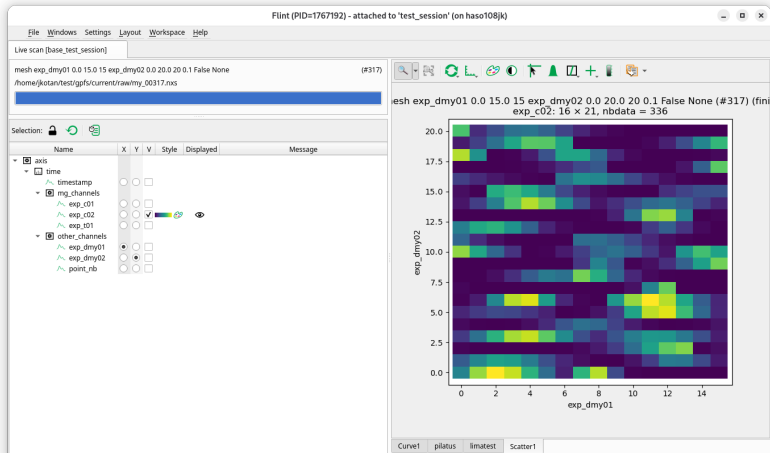


# Flint with MCAs



MCA data read from BlissData streams

# Flint with Mesh scans



Sardana mesh scan displayed as a scatter plot.

# Python client code example

```
from sardana_blissdata.utils.redis_utils import get_data_store

data_store = get_data_store("redis://localhost:6380")
timestamp, key = data_store.get_last_scan()

scan = data_store.load_scan(key)

print(scan.name)

print(scan.number)

print(scan.info)

print(scan.streams)

c01str = scan.streams["lab_c01"]
cc01 = c01str.cursor()
print(cc01.read())
```

# Summary

BlissData tested on two DESY beamlines with friendly users

## Tested Bliss Writers

- NexusWriter (ESRF) (with BlissRedisRecorder (ALBA))
- NXSBlissWriter (DESY) (with NXS\_FileRecorder (DESY))
- FIOBlissWriter (DESY)
- SpecWriter (ALBA)

## Other Blisdata consumers

- flint (ESRF)
- ewoksdata (ESRF)
- Daiquiri (ESRF)
- ASAPO (DESY)
- user python scripts . . .

...

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# Thank You !