BlissData at DESY

Sardana and NXSFileRecorder with BlissData

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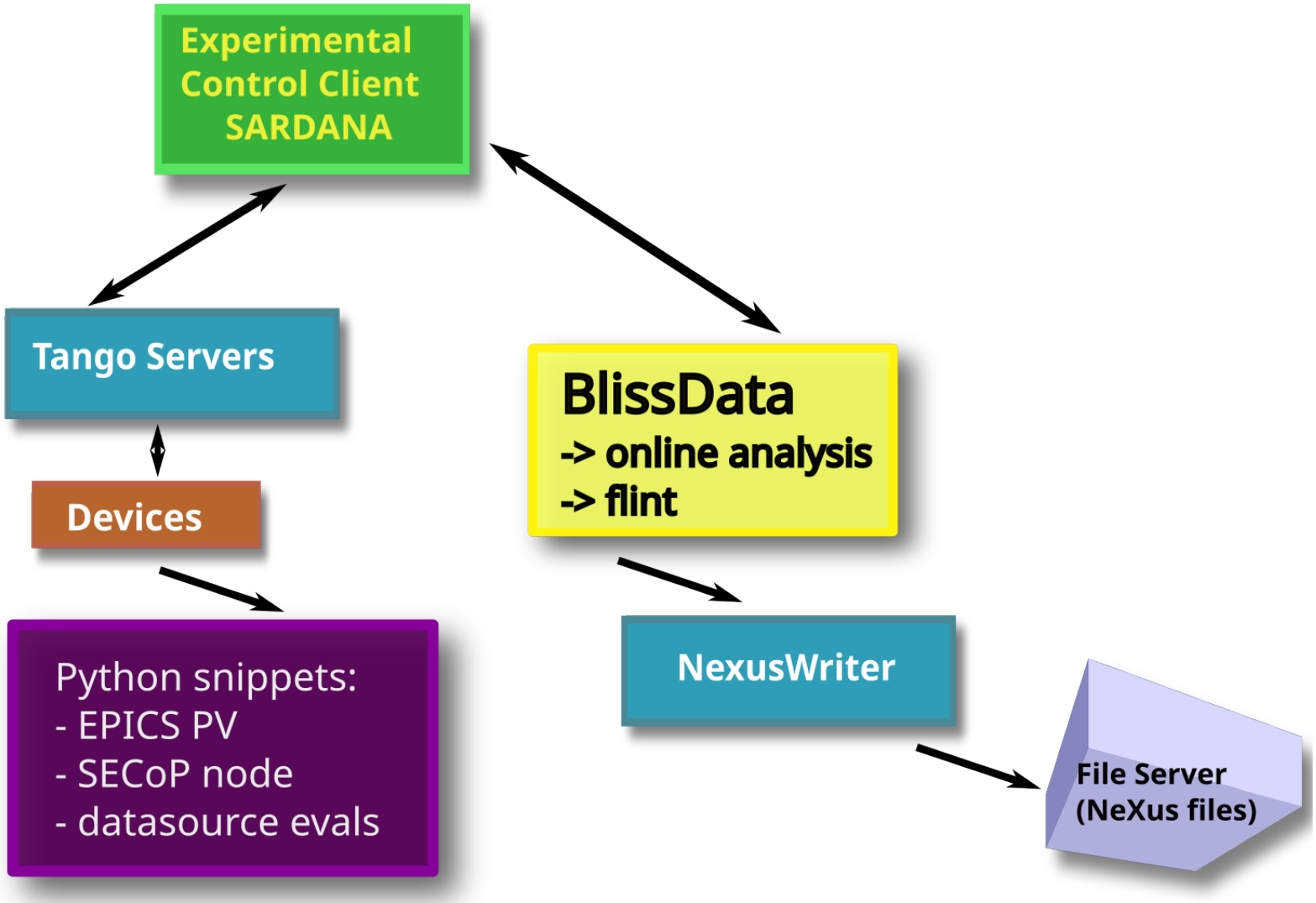
BlissData deployed with Sardana

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

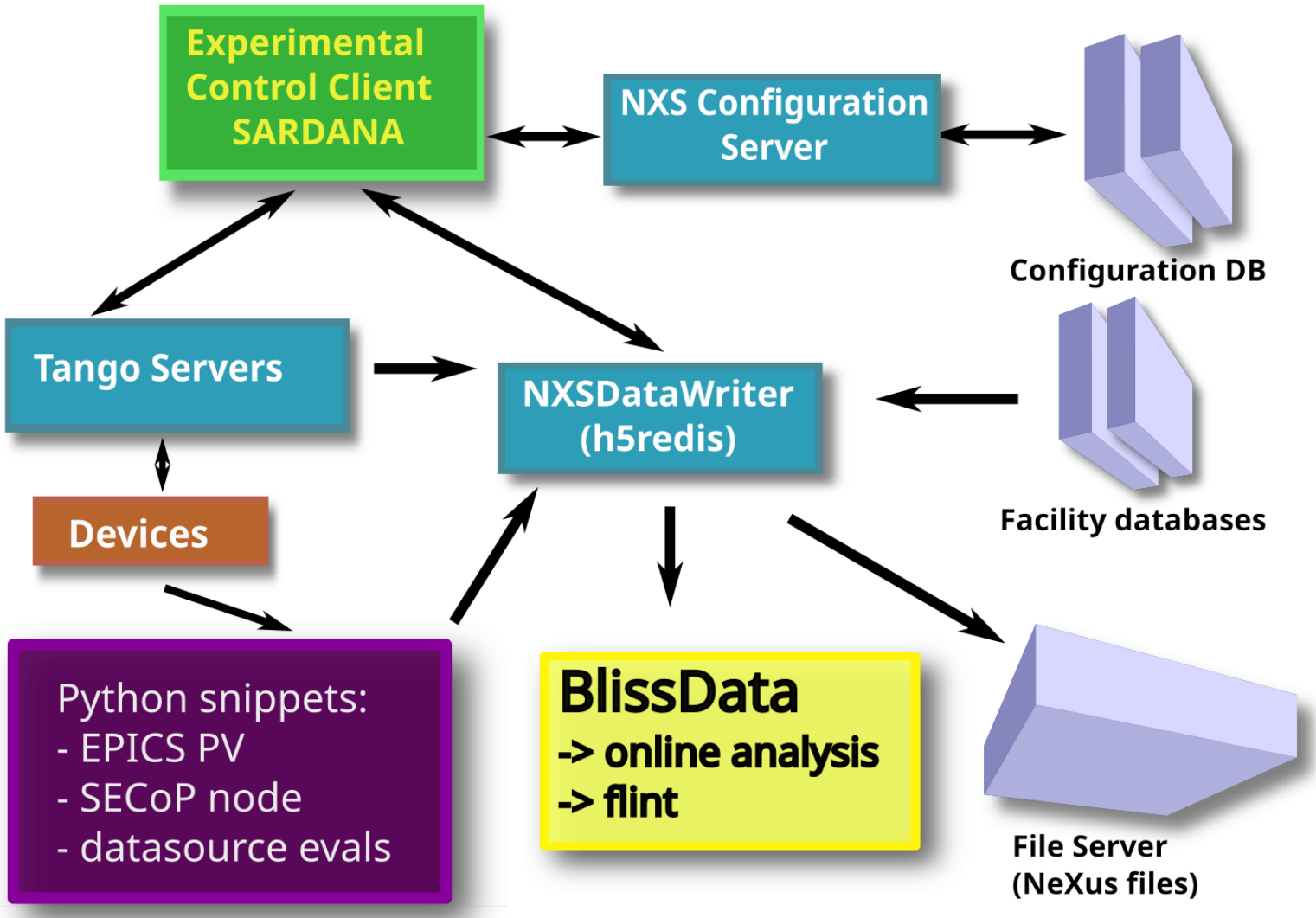
Currently we are testing NXS_FileRecorder, RedisBlissRecorder
which publish (meta)data to BlissData

BlissRedisRecorder at DESY with NexusWriter ESRF



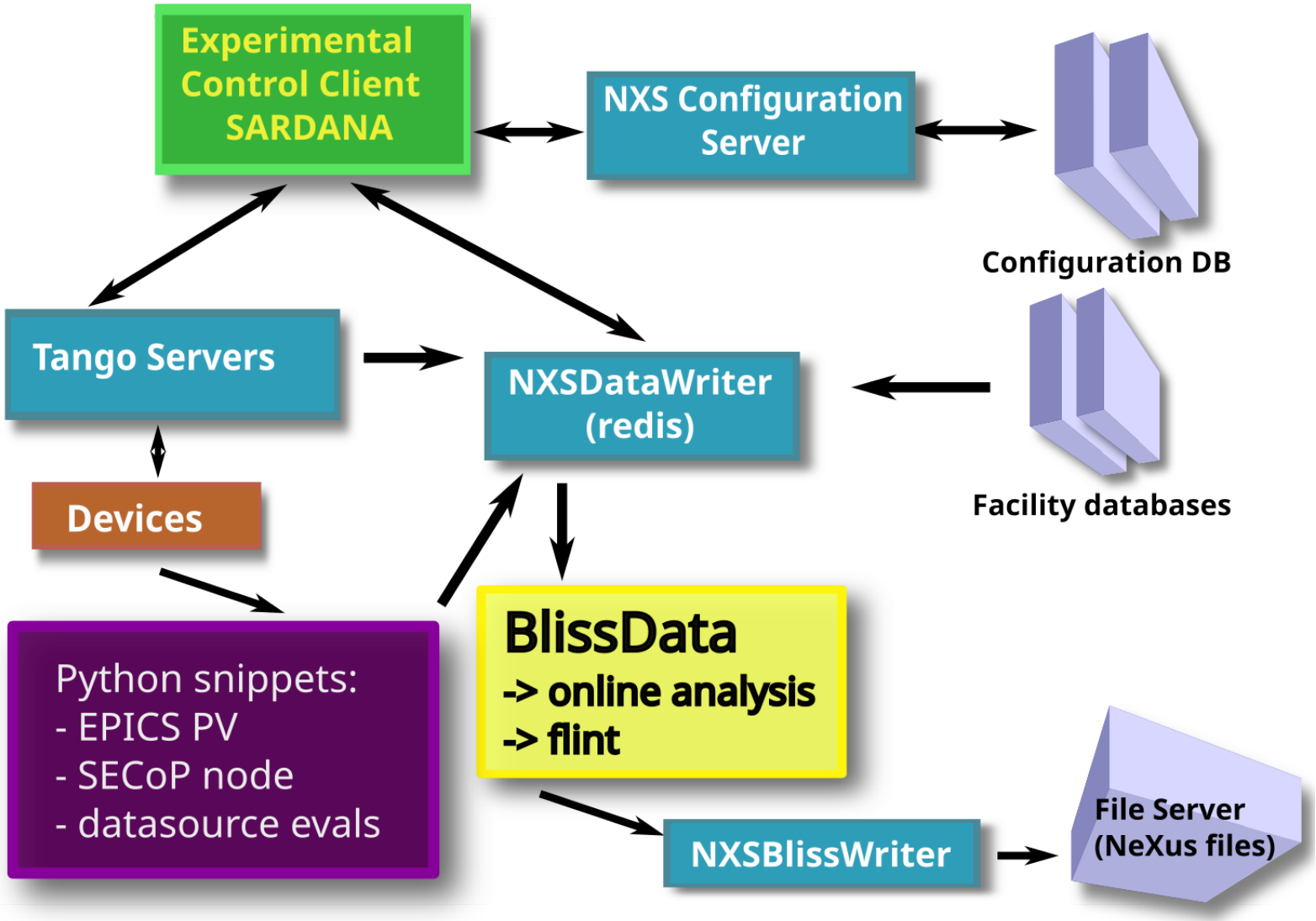
- At DESY not all metadata and data is passed through sardana
- NeXus files created by BLISS NexusWriter (ESRF) are not arbitrary configurable

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

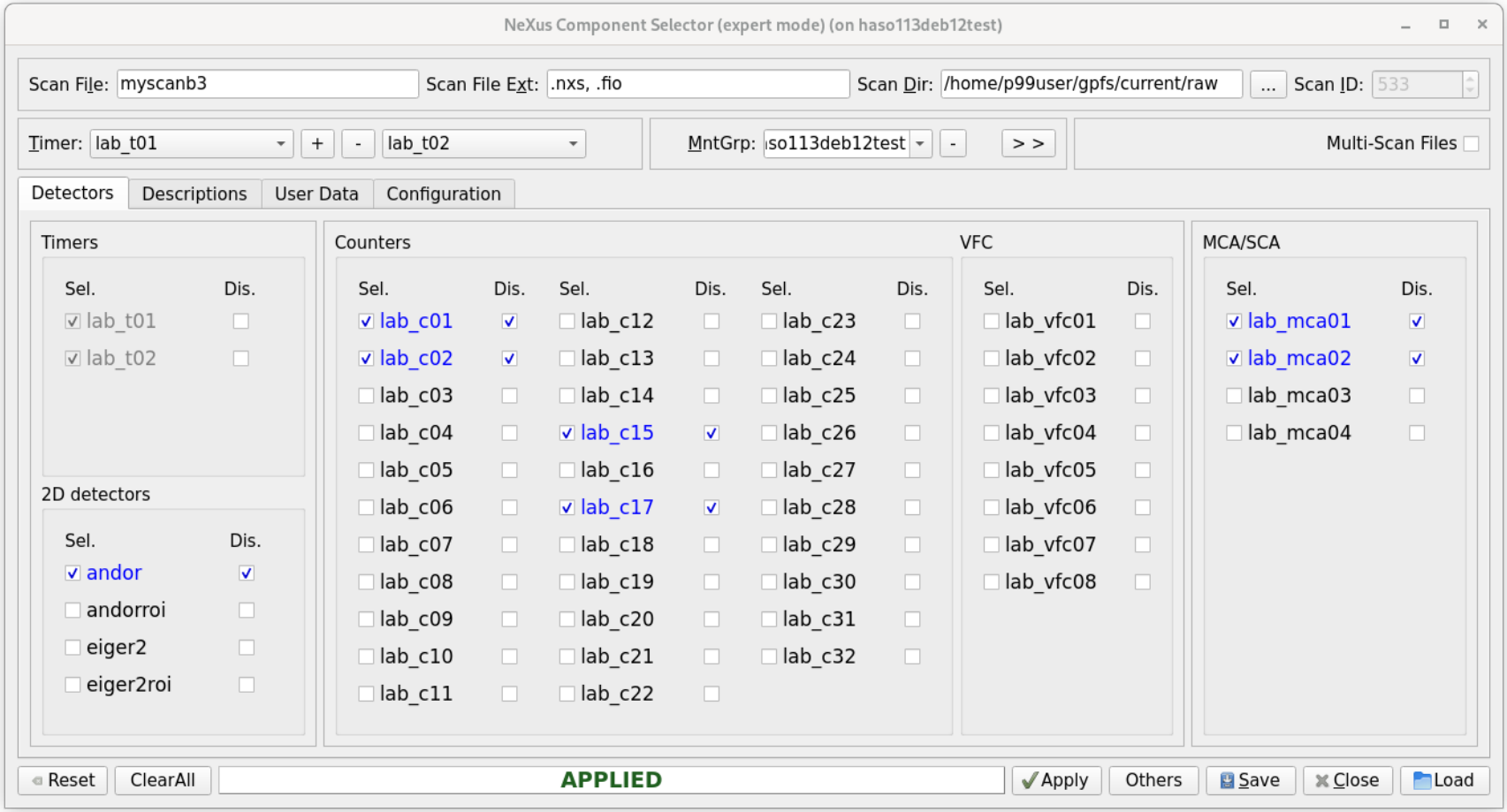
NXS_FileRecorder with NXSDataWriter (redis)



- 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

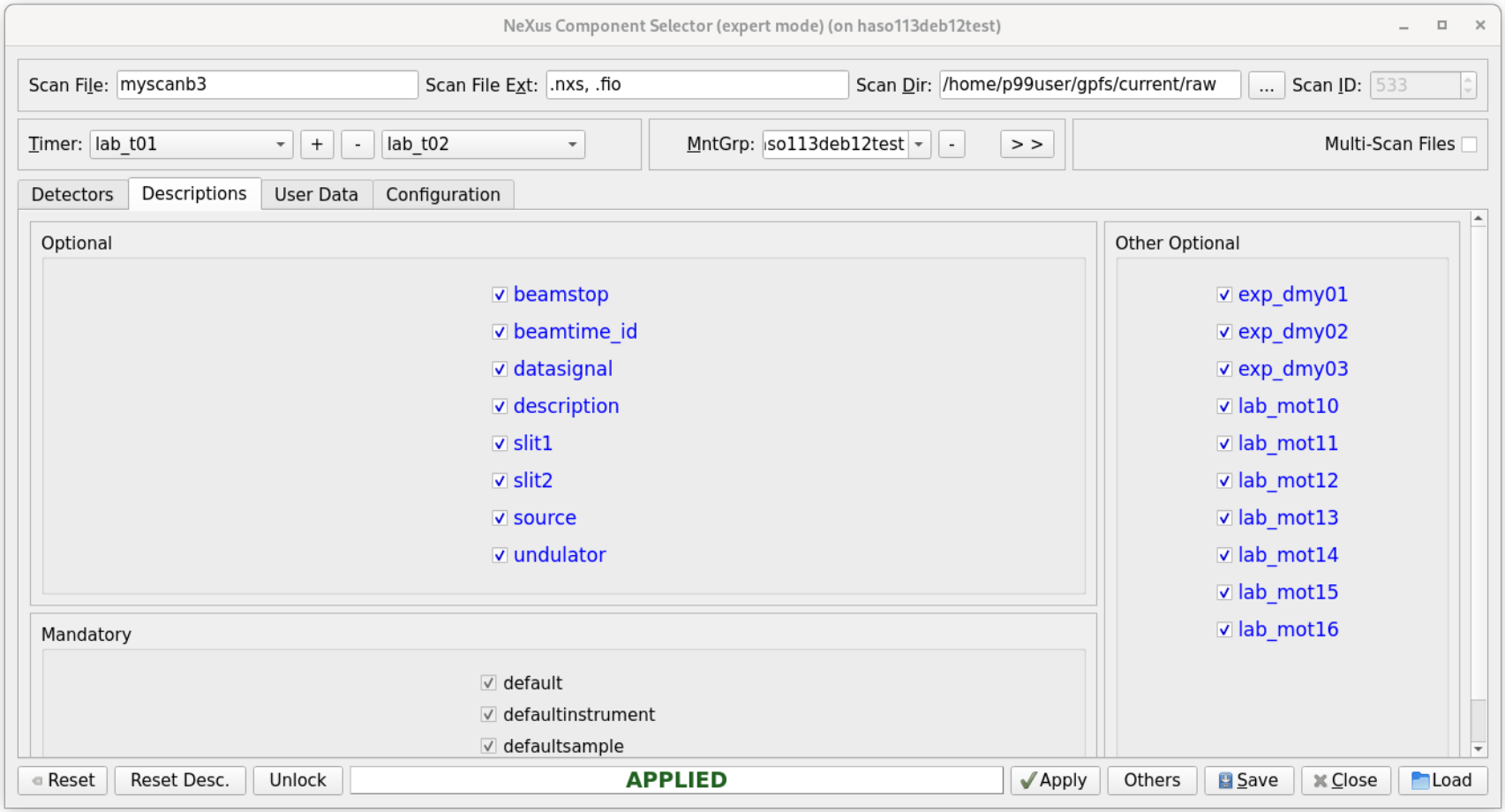
Device Selection – Detector Components



Select components recordered 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

IPython: home/p99user

root@haso113deb12test | IPython: home/p99user | p99user@haso113deb12test: /etc | p99user@haso113deb12test: ~

```
ValRefG file:///home/p99user/gpfs/current/raw/myscanb_00533/andor/andor{index:04d}.h5 andor mg_haso113deb12test
Operation will be saved in /home/p99user/gpfs/current/raw/myscanb3_00533.nxs (nxs from NXS_FileRecorder)
Operation will be saved in /home/p99user/gpfs/current/raw/myscanb3_[ScanId].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
```

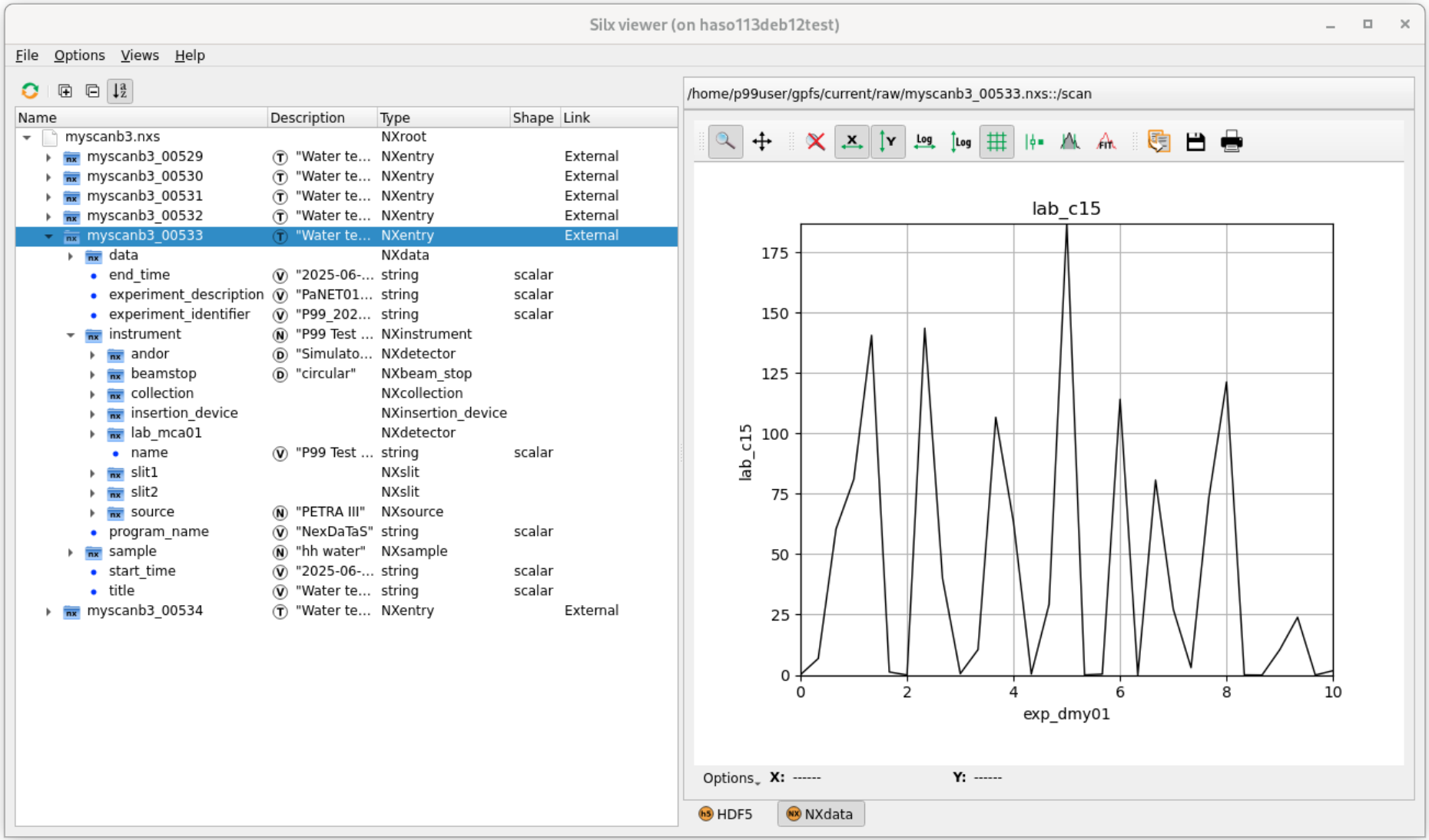
#Pt No	exp_dmy01	lab_t01	lab_c15	lab_c17	lab_mca02	lab_mca01	lab_c02	lab_c01	lab_t02	andor	dt
0	0	0.1	0.129732	1.74053	(2048,)	(1024,)	21.0286	27.7866	0.1	h5file:///home/p99user/gpfs/current/raw/myscanb_00533/andor/andor0000.h5::entry_000	
1	0.333333	0.1	6.81955	62.4486	(2048,)	(1024,)	0.0465131	16.0253	0.1	h5file:///home/p99user/gpfs/current/raw/myscanb_00533/andor/andor0000.h5::entry_00	
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/andor/andor0000.h5::entry_000	
3	1	0.1	80.9742	79.119	(2048,)	(1024,)	101.802	141.634	0.1	h5file:///home/p99user/gpfs/current/raw/myscanb_00533/andor/andor0000.h5::entry_000	
4	1.33333	0.1	140.626	77.2112	(2048,)	(1024,)	-0.0408986	17.0681	0.1	h5file:///home/p99user/gpfs/current/raw/myscanb_00533/andor/andor0000.h5::entry_0	
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/andor/andor0000.h5::entry_000	
6	2	0.1	-0.0179879	0.139465	(2048,)	(1024,)	15.3947	23.3314	0.1	h5file:///home/p99user/gpfs/current/raw/myscanb_00533/andor/andor0000.h5::entry_0	
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/andor/andor0000.h5::entry_000	
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/andor/andor0000.h5::entry_000	
9	3	0.1	0.528357	0.184982	(2048,)	(1024,)	29.8741	72.4864	0.1	h5file:///home/p99user/gpfs/current/raw/myscanb_00533/andor/andor0000.h5::entry_000	
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/andor/andor0000.h5::entry_000	
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/andor/andor0000.h5::entry_00	
12	4	0.1	63.2092	-0.00821435	(2048,)	(1024,)	16.1747	13.1354	0.1	h5file:///home/p99user/gpfs/current/raw/myscanb_00533/andor/andor0000.h5::entry_	
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/andor/andor0000.h5::entry_000	
14	4.66667	0.1	29.1943	10.5869	(2048,)	(1024,)	107.039	139.02	0.1	h5file:///home/p99user/gpfs/current/raw/myscanb_00533/andor/andor0000.h5::entry_000	
15	5	0.1	186.944	0.0982351	(2048,)	(1024,)	15.415	26.9666	0.1	h5file:///home/p99user/gpfs/current/raw/myscanb_00533/andor/andor0000.h5::entry_00	
16	5.33333	0.1	0.0256245	0.216705	(2048,)	(1024,)	0.164402	0.636117	0.1	h5file:///home/p99user/gpfs/current/raw/myscanb_00533/andor/andor0000.h5::entry_00	
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/andor/andor0000.h5::entry_000	
18	6	0.1	114.127	170.08	(2048,)	(1024,)	67.0184	32.4092	0.1	h5file:///home/p99user/gpfs/current/raw/myscanb_00533/andor/andor0000.h5::entry_000	
19	6.33333	0.1	-0.0477868	8.77996	(2048,)	(1024,)	2.65361	78.4207	0.1	h5file:///home/p99user/gpfs/current/raw/myscanb_00533/andor/andor0000.h5::entry_0	
20	6.66667	0.1	80.7032	186.003	(2048,)	(1024,)	-0.0181051	1.94555	0.1	h5file:///home/p99user/gpfs/current/raw/myscanb_00533/andor/andor0000.h5::entry_0	
21	7	0.1	27.1478	15.7115	(2048,)	(1024,)	61.5754	71.4169	0.1	h5file:///home/p99user/gpfs/current/raw/myscanb_00533/andor/andor0000.h5::entry_000	
22	7.33333	0.1	3.01253	0.0743257	(2048,)	(1024,)	27.4237	177.78	0.1	h5file:///home/p99user/gpfs/current/raw/myscanb_00533/andor/andor0000.h5::entry_00	
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/andor/andor0000.h5::entry_0	
24	8	0.1	121.311	123.955	(2048,)	(1024,)	24.2042	1.31644	0.1	h5file:///home/p99user/gpfs/current/raw/myscanb_00533/andor/andor0000.h5::entry_000	
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/andor/andor0000.h5::entry_	
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/andor/andor0000.h5::entry_	
27	9	0.1	10.4864	114.055	(2048,)	(1024,)	123.282	21.0844	0.1	h5file:///home/p99user/gpfs/current/raw/myscanb_00533/andor/andor0000.h5::entry_000	
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/andor/andor0000.h5::entry_00	
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/andor/andor0000.h5::entry_0	
30	10	0.1	1.77562	185.965	(2048,)	(1024,)	133.038	154.612	0.1	h5file:///home/p99user/gpfs/current/raw/myscanb_00533/andor/andor0000.h5::entry_000	

```
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]: senv ScanRecorder RedisBlissRecorder
```

For NeXus Recorder the file extension is `.nxs`

File structure examples



Lavue with LimaCCDs events

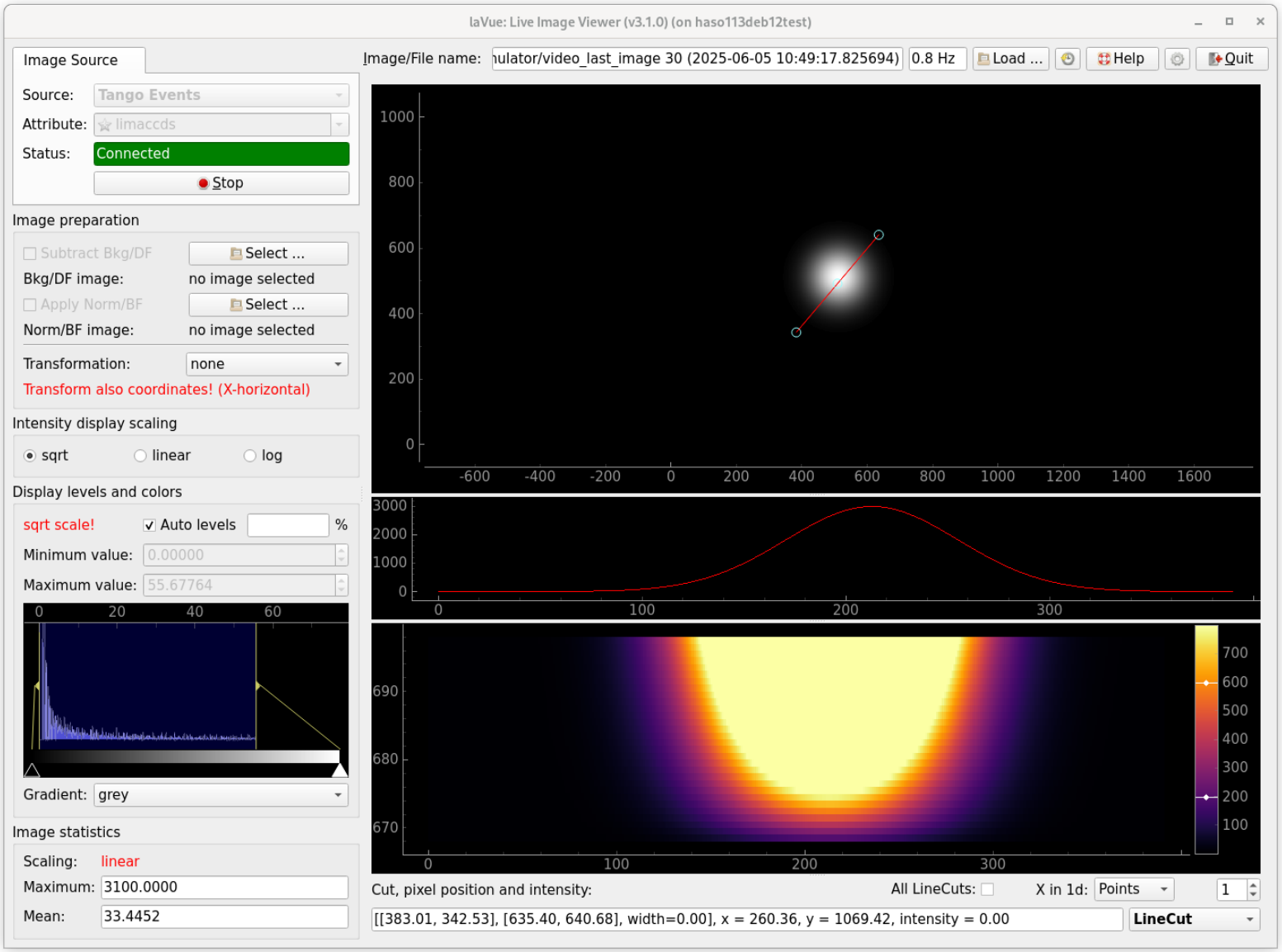
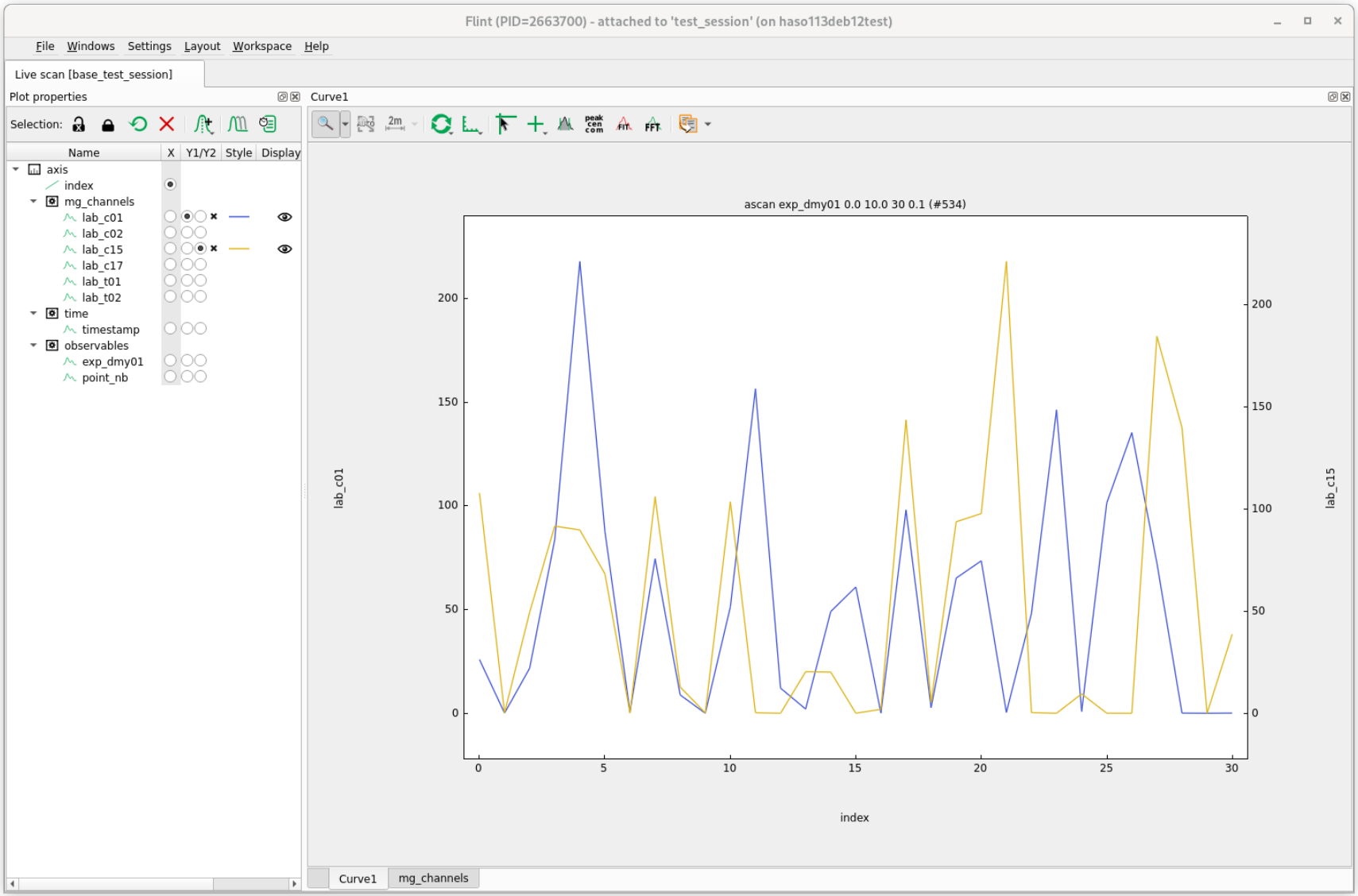


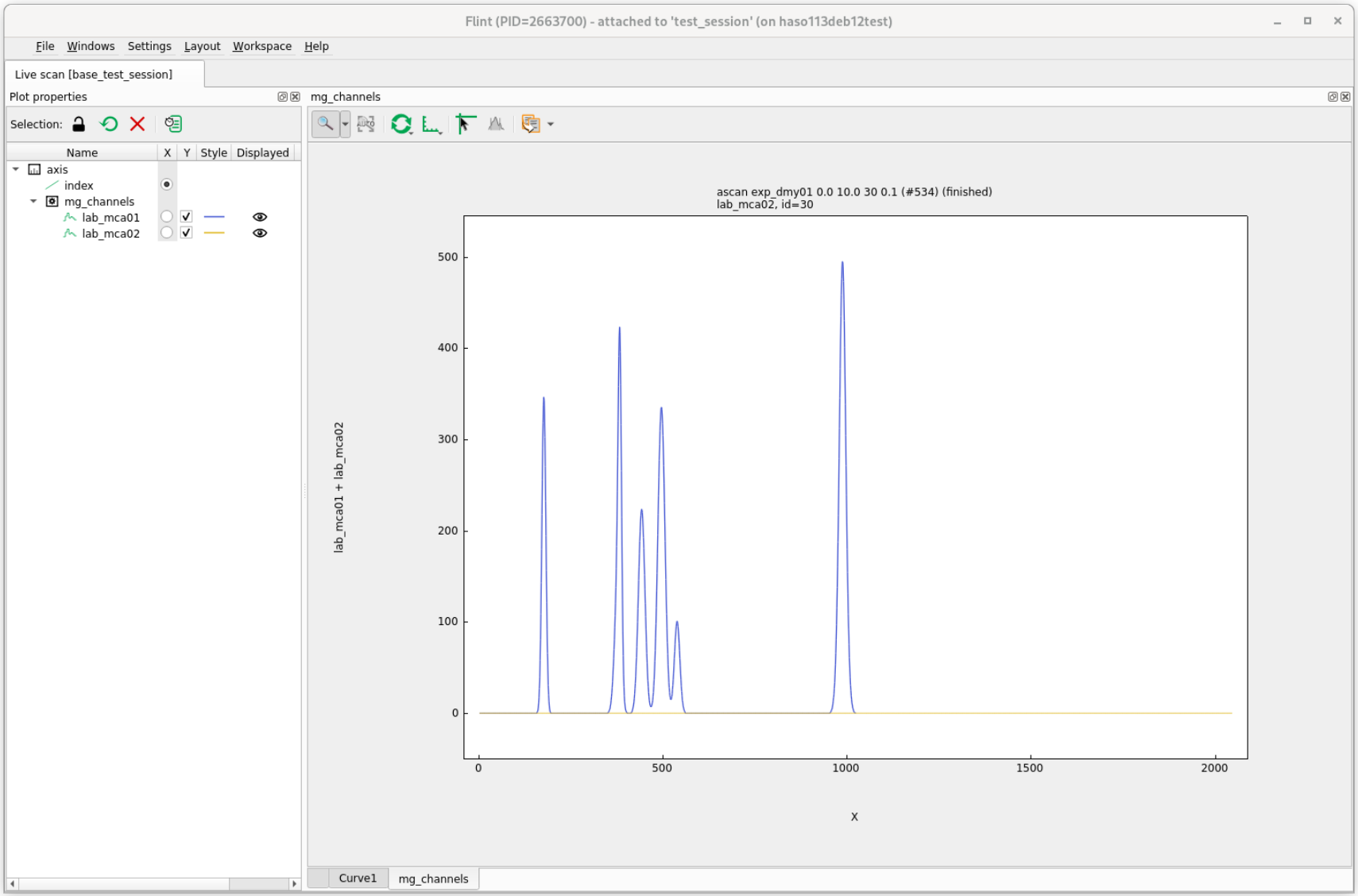
Image data read from LimaCCDs Tango Events

Flint with counters



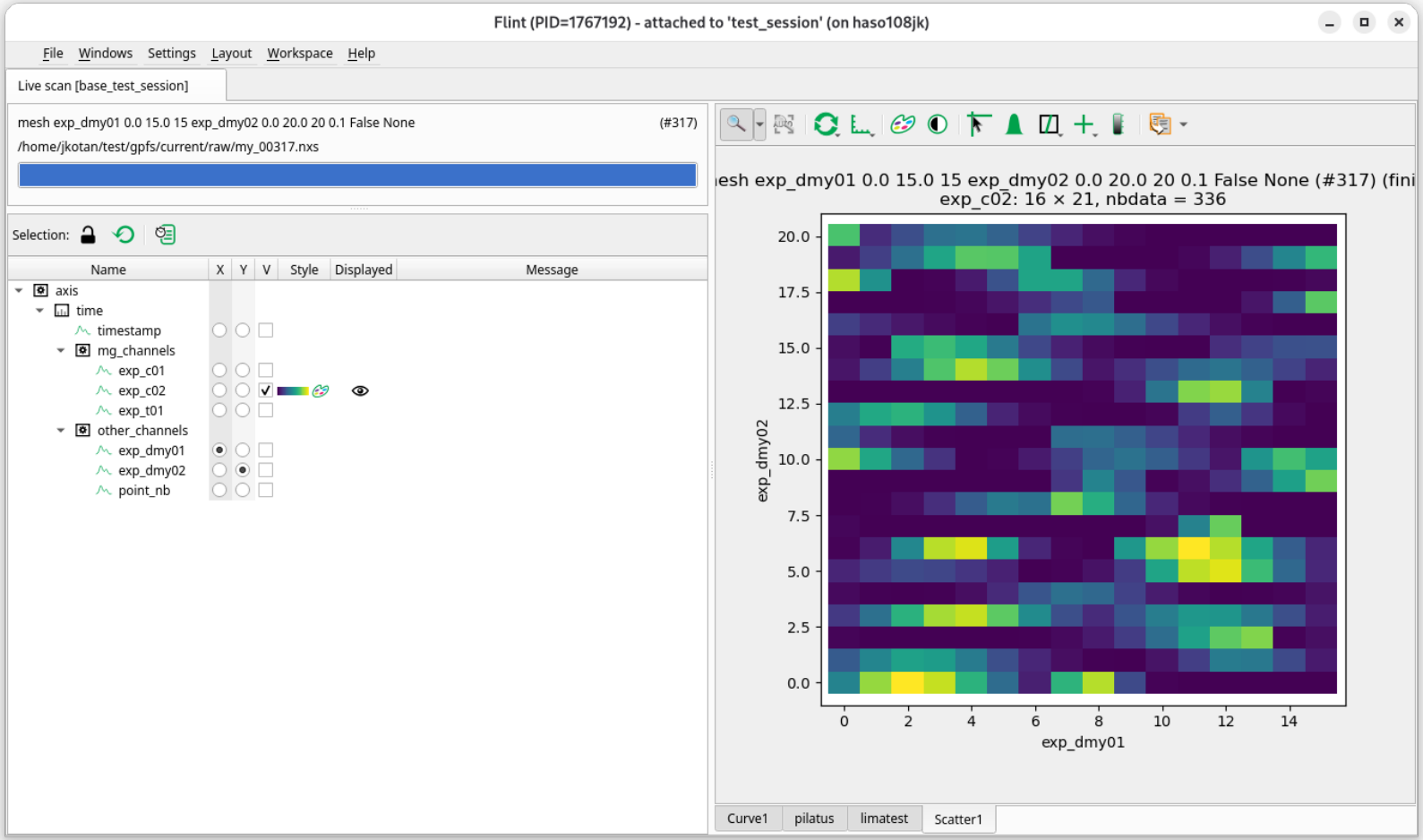
Counter data read from BlissData streams

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(c001.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 !