Example_HR

May 25, 2020

Contents

1 Form

SIRIUS Beamline : Experiment 1234

Confined at home

- Type: Proposal
- Safety: Red
- Date: 13/03/2020 - 11/05/2020

- Main proposer: Hemmerle
- Local contact: Arnaud
- Users (on site): Person A; Person B
- Recording directory: Users/arnaudhemmerle/Documents/Recherche/Analysis/JupyLabBook/recording/

- Machine:
  - Current: 450 mA

  - Mode: Top-up

- Optics:
  - DCM: Si111
  - MGM: Not used
  - M1: M1-A Pt Track
  - M2: M2 Pt Track
  - M3: No M3
  - M4: M4 Pt Track

- Beam:
  - Fixed/Variable energy: Fixed
  - Energy (keV): 8
  - Wavelength (nm): 0.155
  - Harmonic: 19
  - Polarisation: LH
  - Phase (deg): 0
  - Horizontal focalisation: False
  - Vertical focalisation: True
  - Horizontal beamsize (mm): 2
  - Vertical beamsize (mm): 0.1

- Monitors and XBPM:
  - mon1:
  - mon2: thick diamond
  - mon3:
  - mon4:
  - Detectors: Pilatus

- Remarks: This is a nice experiment.

2 Beamline alignment

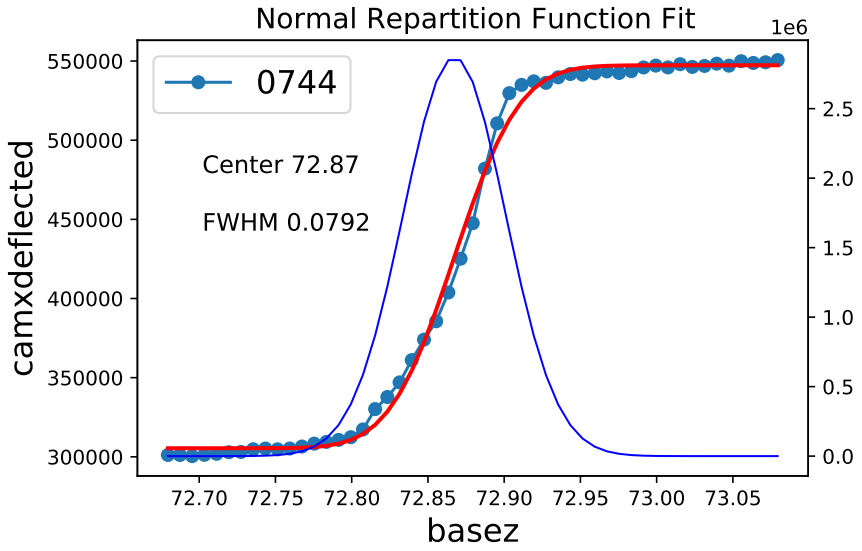
2.1 Scan 654 -> 680 : DCM Alignment 8keV + HU36 + M1 + M2

-Incidence:

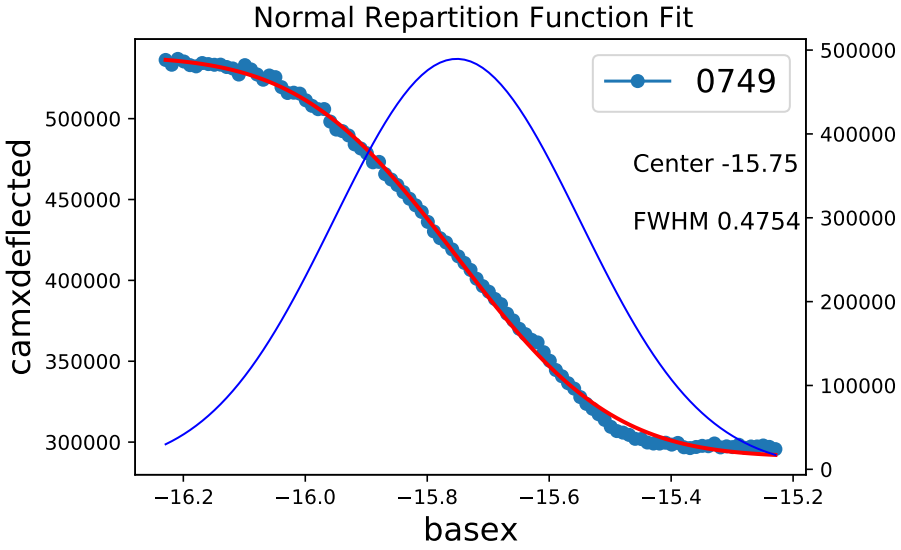
$$\frac{786 - 558}{2 \times 2069} \times 0.0355 = 1.9 mrad$$

2.2 Alignment diffracto

2.2.1 (Vertical) SIRIUS_2020_03_11_0744: dscan basez -.2 .2 50 .1

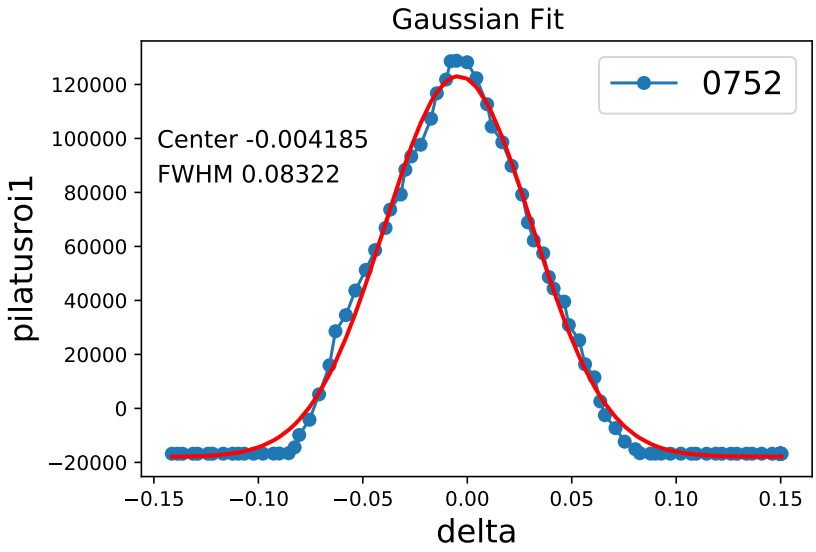


2.2.2 (Horizontal) SIRIUS_2020_03_11_0749: %sigmoid_dscan basex -.5 .5 100 .1

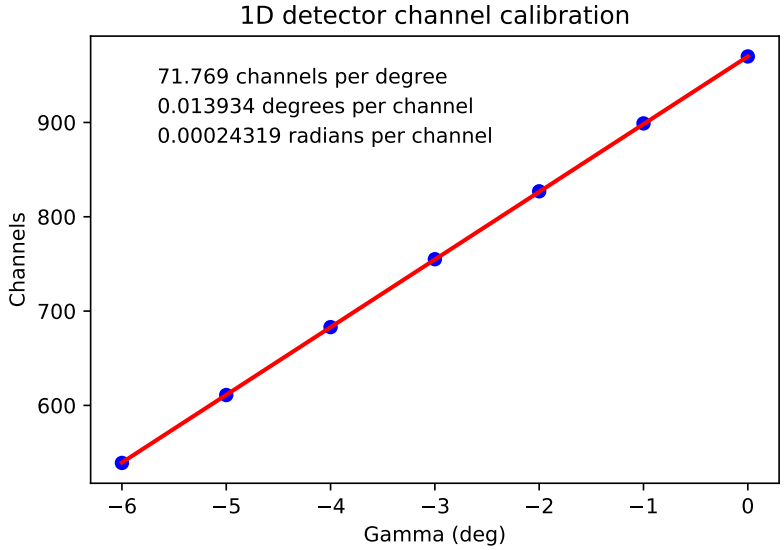


2.2.3 SIRIUS_2020_03_11_0752: continuous_ascan delta -.15 .15 100 1

scans 750 -> 752 : Alignment delta angle (Pilatus+Soller)



2.3 Calibration thetaz



3 Calibration with Octadecanol

3.0.1 SIRIUS_2020_03_12_0756: continuous_ascan delta -24 -19 100 5

Extraction of Vineyard

```
 - Open Nexus Data File :
        /Users/arnaudhemmerle/Documents/Recherche/Analysis/JupyLabBook/recording
/SIRIUS_2020_03_12_0756.nxs
        . Number of data points:  101
        . Available Counters:
                0  ------->  delta
```

```
1  -------->  zs
2  -------->  gamma
3  -------->  hu36energy
4  -------->  xs
5  -------->  energydcm
6  -------->  current
7  -------->  mon2
8  -------->  surfacepressure
9  -------->  areapermolecule
10  -------->  qxy
11  -------->  pilatus
12  -------->  pilatusroi1
13  -------->  integration_time
14  -------->  sensorsRelTimestamps
15  -------->  sensorsTimestamps
```

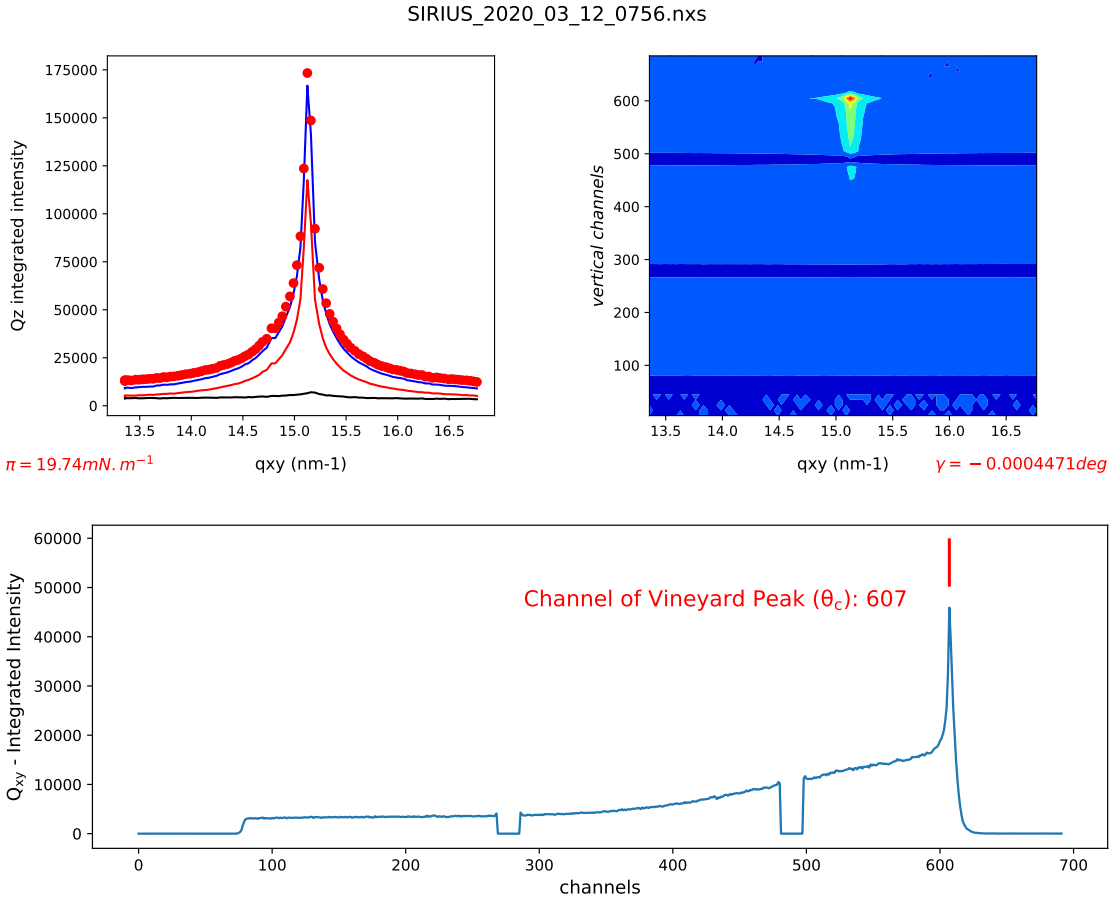
. Pilatus data found, (column 11, alias pilatus)

. qxy data found, (column 10, alias qxy)

. Surface pressure data found, mean value 19.74 ± 0.006119 mN/m

. Area per molecule data found, mean value 0.3557 ± 3.944e-05 nm2 per molecule

. Gamma motor data found, mean value -0.0004471 deg



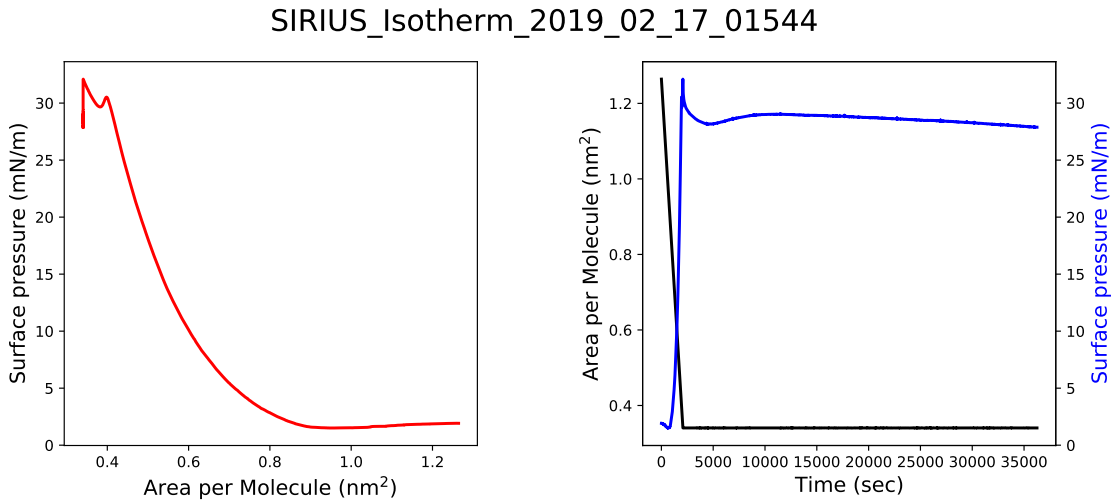
Data not saved. To save data, run a GIXD on the scan.

Channel0: 607

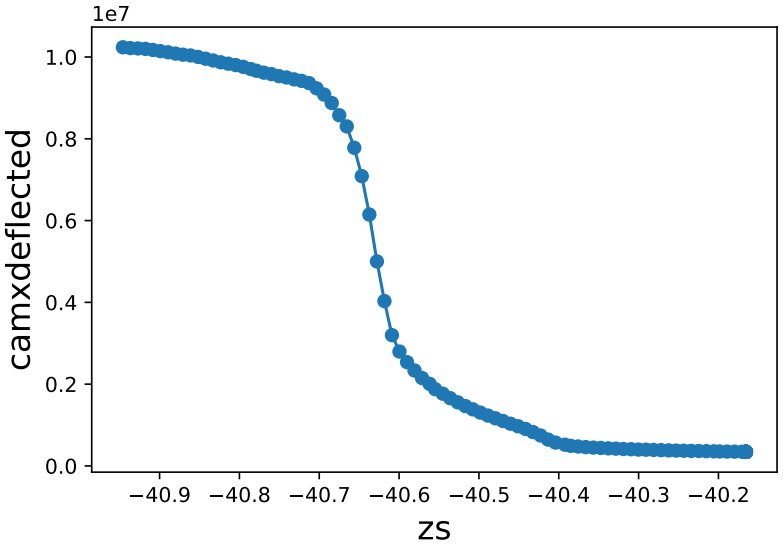
4 Experiment GIXD+Langmuir

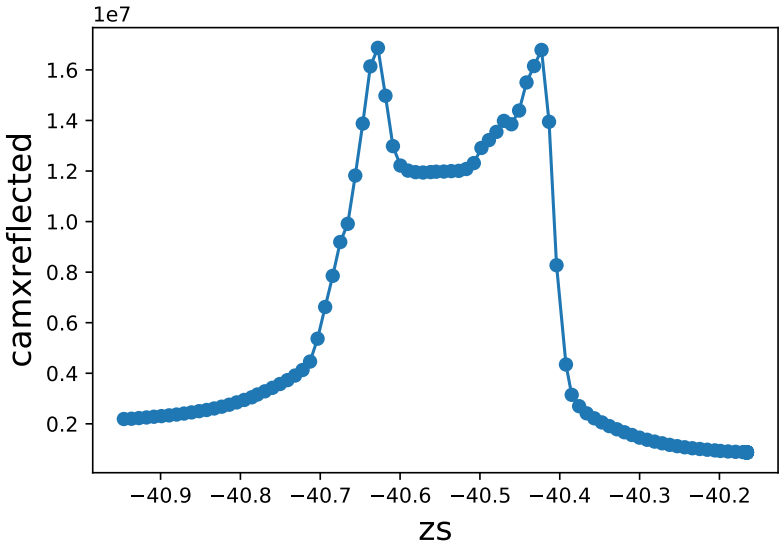
4.1 Sample A

4.1.1 SIRIUS_Isotherm_2019_02_17_01544: isotherm 1.97 46 35000 1

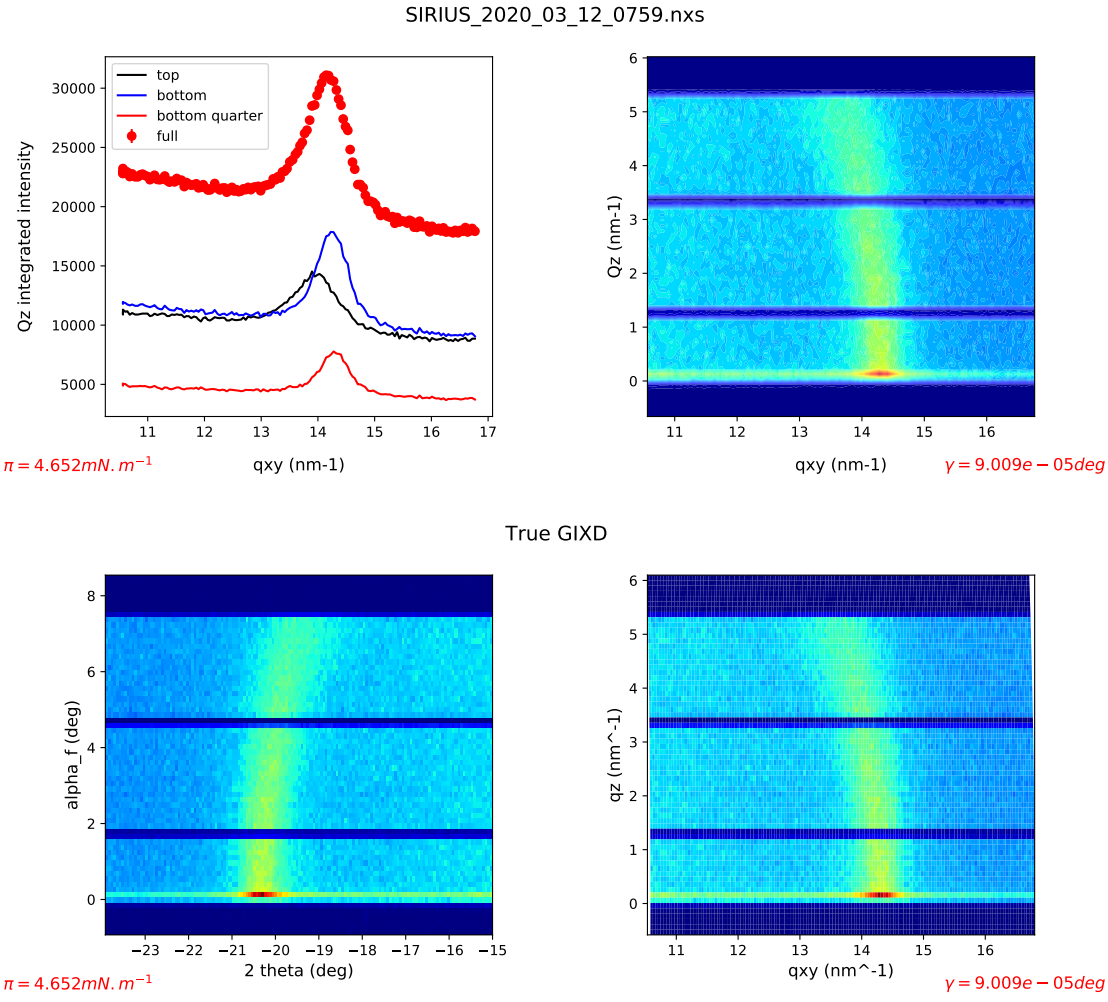


4.1.2 SIRIUS_2020_03_12_0760: run cont_regh.ipy





4.1.3 SIRIUS_2020_03_12_0759: continuous_ascan delta -24 -15 150 5

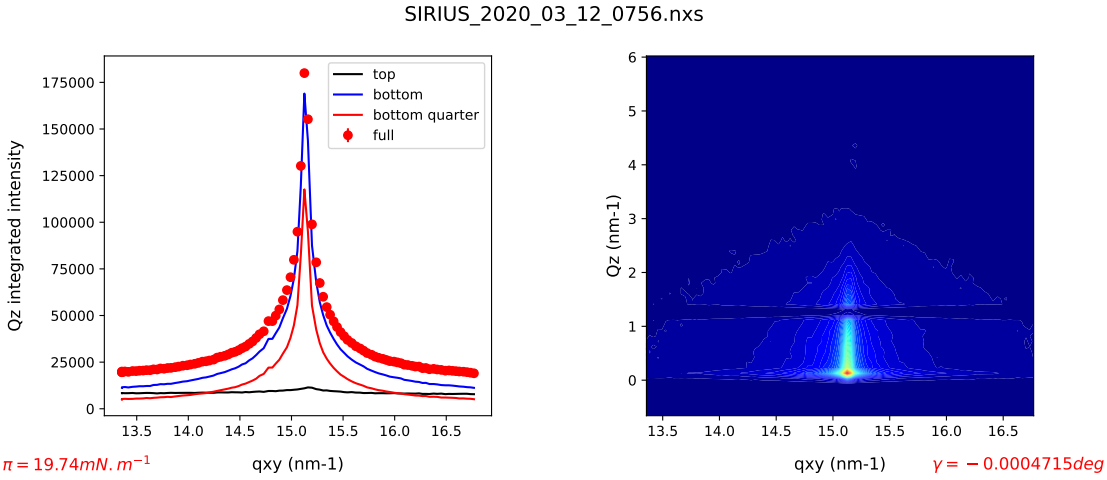


4.2 Sample B

4.2.1 SIRIUS_2020_03_12_0756: continuous_ascan delta -24 -19 100 5

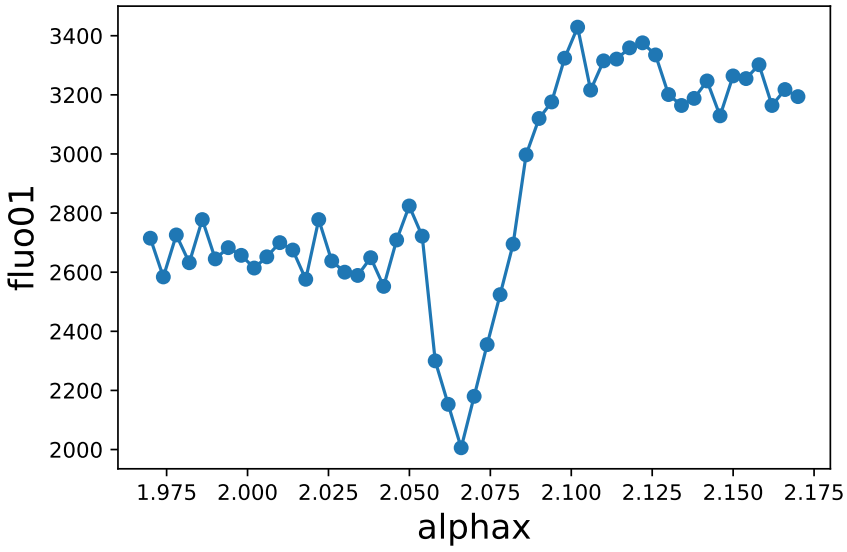
```
 - Open Nexus Data File :
        /Users/arnaudhemmerle/Documents/Recherche/Analysis/JupyLabBook/recording
/SIRIUS_2020_03_12_0756.nxs
        . Number of data points:  101
        . Available Counters:
                0  -------->  delta
                1  -------->  zs
                2  -------->  gamma
                3  -------->  hu36energy
                4  -------->  xs
                5  -------->  energydcm
                6  -------->  current
                7  -------->  mon2
                8  -------->  surfacepressure
                9  -------->  areapermolecule
                10  -------->  qxy
                11  -------->  pilatus
                12  -------->  pilatusroi1
                13  -------->  integration_time
                14  -------->  sensorsRelTimestamps
                15  -------->  sensorsTimestamps
        . Pilatus data found, (column 11, alias pilatus)
        . qxy data found, (column 10, alias qxy)
        . Valid data between points 0 and 100
        . Surface pressure data found, mean value 19.74 ± 0.006163 mN/m
        . Area per molecule data found, mean value 0.3557 ± 3.866e-05 nm2 per
molecule
        . Gamma motor data found, mean value -0.0004715 deg
        . Original, non binned matrix saved in:
         /Users/arnaudhemmerle/Documents/Recherche/Analysis/JupyLabBook/working/
SIRIUS_2020_03_12_0756_1D.mat
        . Scalar data saved in:
         /Users/arnaudhemmerle/Documents/Recherche/Analysis/JupyLabBook/working/
SIRIUS_2020_03_12_0756_1D.dat
        . Qz values saved in:
        /Users/arnaudhemmerle/Documents/Recherche/Analysis/JupyLabBook/working/S
IRIUS_2020_03_12_0756_1D_qz10.dat
        . Binned matrix saved in:
         /Users/arnaudhemmerle/Documents/Recherche/Analysis/JupyLabBook/working/
SIRIUS_2020_03_12_0756_1D.mat10
        . XYZ    data saved in:
         /Users/arnaudhemmerle/Documents/Recherche/Analysis/JupyLabBook/working/
SIRIUS_2020_03_12_0756_1D.moy10
        . Qz values saved in:
        /Users/arnaudhemmerle/Documents/Recherche/Analysis/JupyLabBook/working/S
IRIUS_2020_03_12_0756_1D_qz20.dat
        . Binned matrix saved in:
```

```
        /Users/arnaudhemmerle/Documents/Recherche/Analysis/JupyLabBook/working/
SIRIUS_2020_03_12_0756_1D.mat20
        . XYZ    data saved in:
        /Users/arnaudhemmerle/Documents/Recherche/Analysis/JupyLabBook/working/
SIRIUS_2020_03_12_0756_1D.moy20
        . Qz values saved in:
        /Users/arnaudhemmerle/Documents/Recherche/Analysis/JupyLabBook/working/S
IRIUS_2020_03_12_0756_1D_qz40.dat
        . Binned matrix saved in:
        /Users/arnaudhemmerle/Documents/Recherche/Analysis/JupyLabBook/working/
SIRIUS_2020_03_12_0756_1D.mat40
        . XYZ    data saved in:
        /Users/arnaudhemmerle/Documents/Recherche/Analysis/JupyLabBook/working/
SIRIUS_2020_03_12_0756_1D.moy40
```

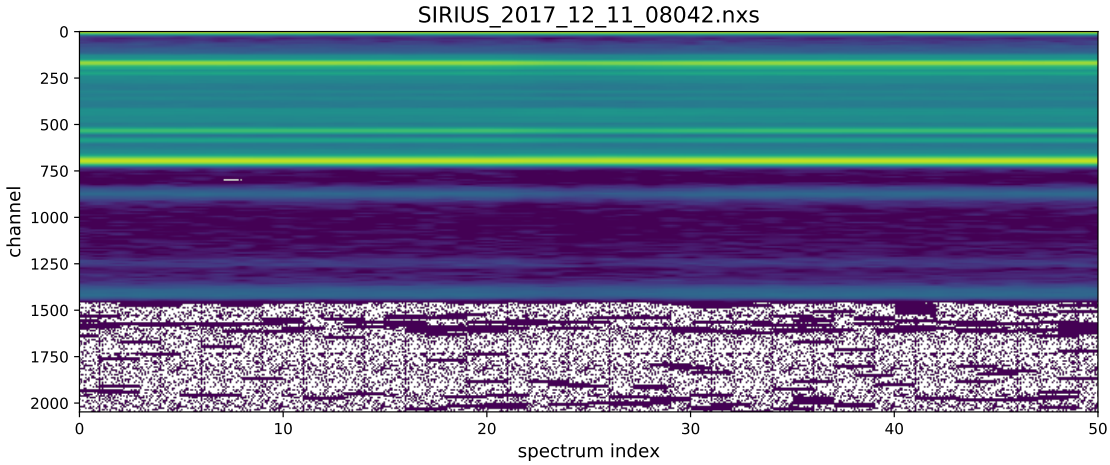


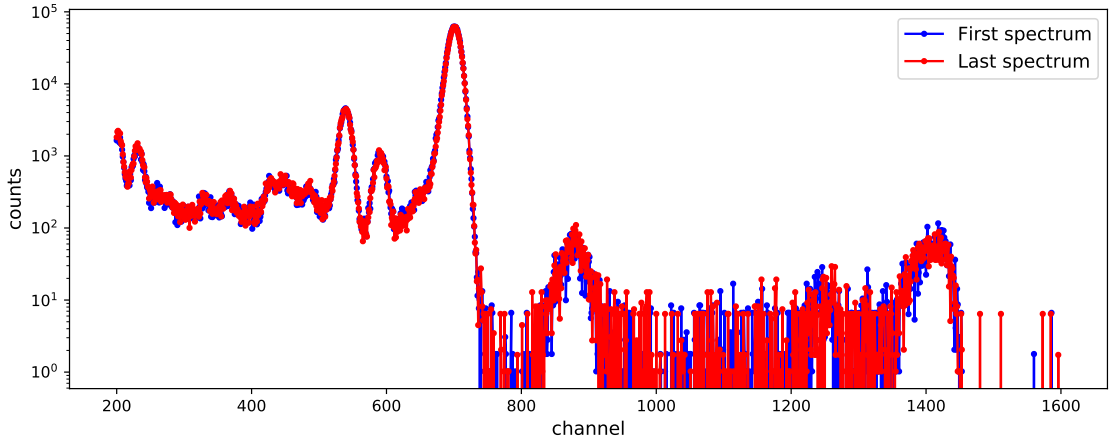
5 Experiment XRF

5.0.1 SIRIUS_2017_12_11_08042: run xsw7.ipy



```
. Available Counters:
         0  ------->  alphax
         1  ------->  gamma
         2  ------->  delta
         3  ------->  ys
         4  ------->  ds1hg
         5  ------->  os2hg
         6  ------->  zs
         7  ------->  alphax
         8  ------->  gamma
         9  ------->  hu36energy
         10  ------->  xs
         11  ------->  thetah
         12  ------->  ds2hg
         13  ------->  ss1hg
         14  ------->  current
         15  ------->  mon2
         16  ------->  dioderefl
         17  ------->  fluo00
         18  ------->  fluo01
         19  ------->  fluo02
         20  ------->  fluo03
         21  ------->  fluoicr00
         22  ------->  fluoicr01
         23  ------->  fluoicr02
         24  ------->  fluoicr03
         25  ------->  fluoocr01
         26  ------->  fluoocr02
         27  ------->  fluoocr03
         28  ------->  fluospectrum00
         29  ------->  fluospectrum01
         30  ------->  fluospectrum02
         31  ------->  fluospectrum03
         32  ------->  fluoocr00
         33  ------->  mon4
         34  ------->  gainfemtodioderefl
         35  ------->  integration_time
         36  ------->  sensors_rel_timestamps
         37  ------->  sensorsTimestamps
         38  ------->  i15-c-cx1/ex/v2_grp_alphax.rot/rot
         39  ------->  i15-c-cx1/ex/v2_grp_gamma.rot/rot
```


SIRIUS_2017_12_11_08042.nxs
channel
spectrum index
0
250
500
750
1000
1250
1500
1750
2000
0
10
20
30
40
50


First spectrum
Last spectrum
counts
channel
10^5
10^4
10^3
10^2
10^1
10^0
200
400
600
800
1000
1200
1400
1600