2nd Code Camp
September 26, 2016

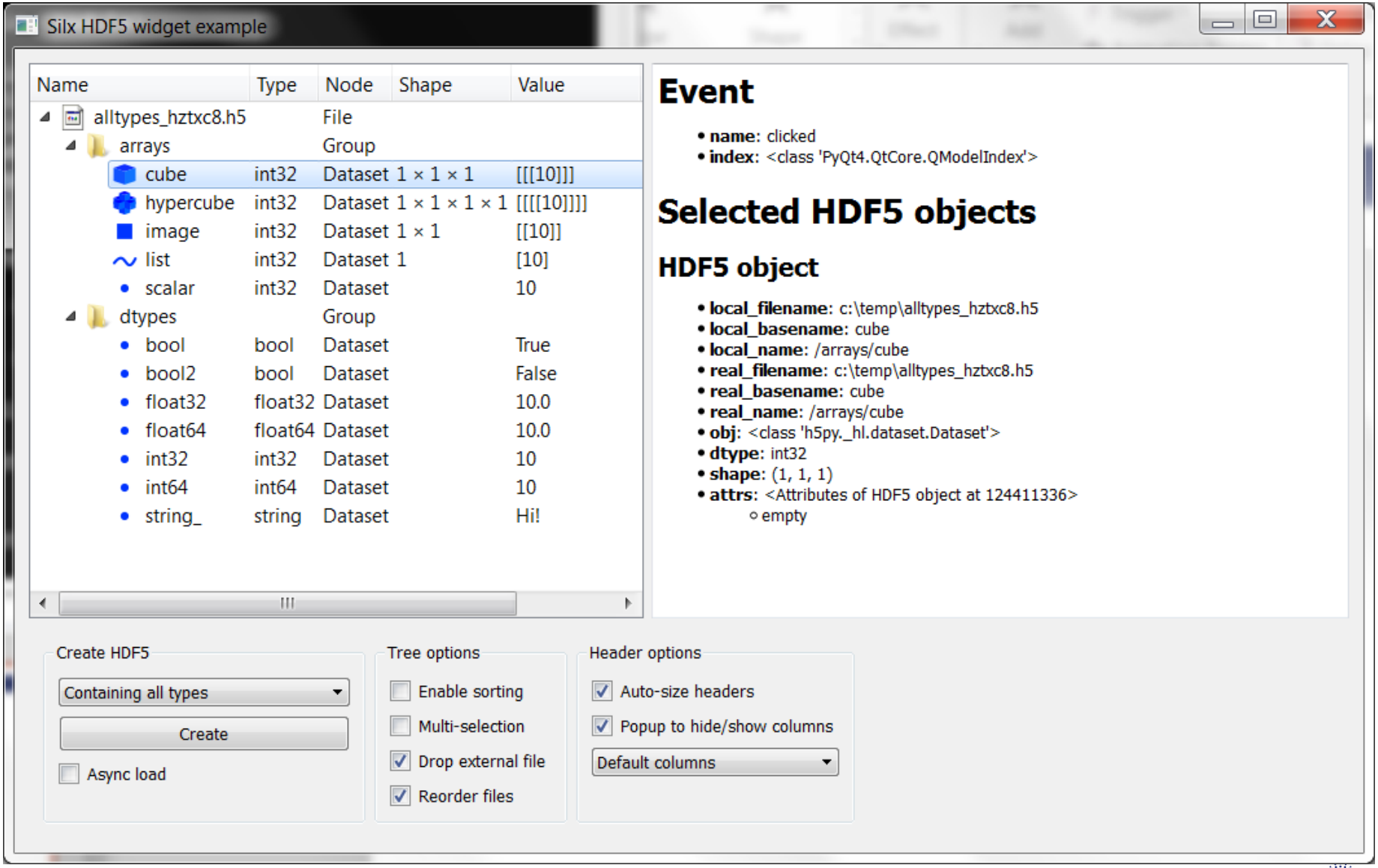
The European Synchrotron | ESRF

THIS TALK

- Introduction
- Status of silx
- Goals of the code camp
  - For users
  - For core developers
- Hands on!

CURRENT STATUS

- Read SPEC files using an API similar to the h5py one
- Convert SPEC files to ESRF HDF5 NeXus implementation
- Dump dictionaries to files in several formats
- Decided to use FabIO for image formats other than TIFF
- Unified widget to deal with all data format

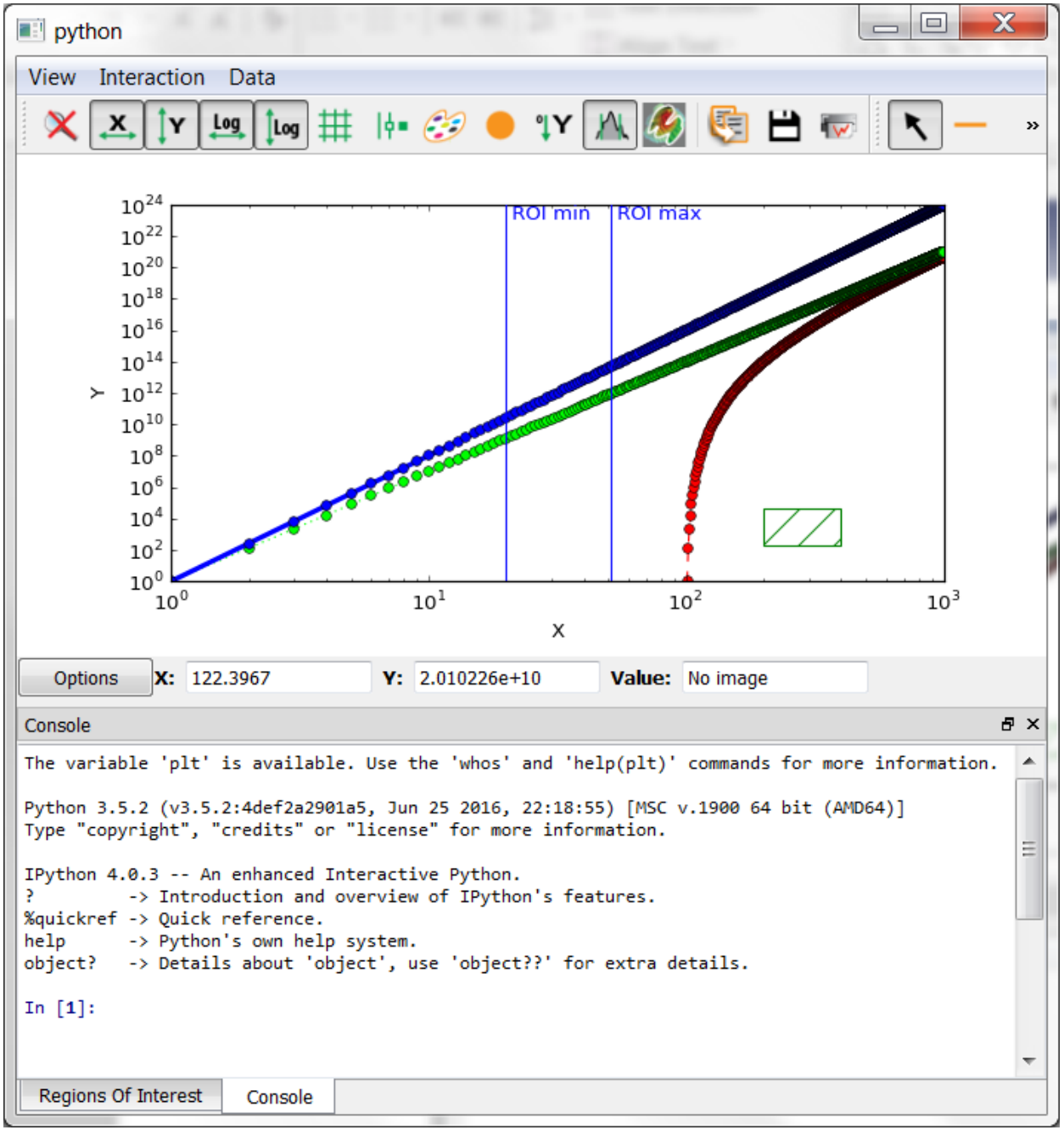

Silx HDF5 widget example
Name
Type
Node
Shape
Value
alltypes_hztxc8.h5 File
arrays Group
cube int32 Dataset 1 × 1 × 1 [[[10]]]
hypercube int32 Dataset 1 × 1 × 1 × 1 [[[[10]]]]
image int32 Dataset 1 × 1 [[10]]
list int32 Dataset 1 [10]
scalar int32 Dataset 10
dtypes Group
bool bool Dataset True
bool2 bool Dataset False
float32 float32 Dataset 10.0
float64 float64 Dataset 10.0
int32 int32 Dataset 10
int64 int64 Dataset 10
string_ string Dataset Hi!
Event
name: clicked
index: <class 'PyQt4.QtCore.QModelIndex'>
Selected HDF5 objects
HDF5 object
local_filename: c:\temp\alltypes_hztxc8.h5
local_basename: cube
local_name: /arrays/cube
real_filename: c:\temp\alltypes_hztxc8.h5
real_basename: cube
real_name: /arrays/cube
obj: <class 'h5py._hl.dataset.Dataset'>
dtype: int32
shape: (1, 1, 1)
attrs: <Attributes of HDF5 object at 124411336>
empty
Create HDF5
Containing all types
Create
Async load
Tree options
Enable sorting
Multi-selection
Drop external file
Reorder files
Header options
Auto-size headers
Popup to hide/show columns
Default columns

CURRENT STATUS

- Weighted n-dimensional histograms
- Fast histogramming using look up tables
- Non-linear least squares fits with constraints
- 1D peak search
- Fitting functions with automatic estimation of initial parameters

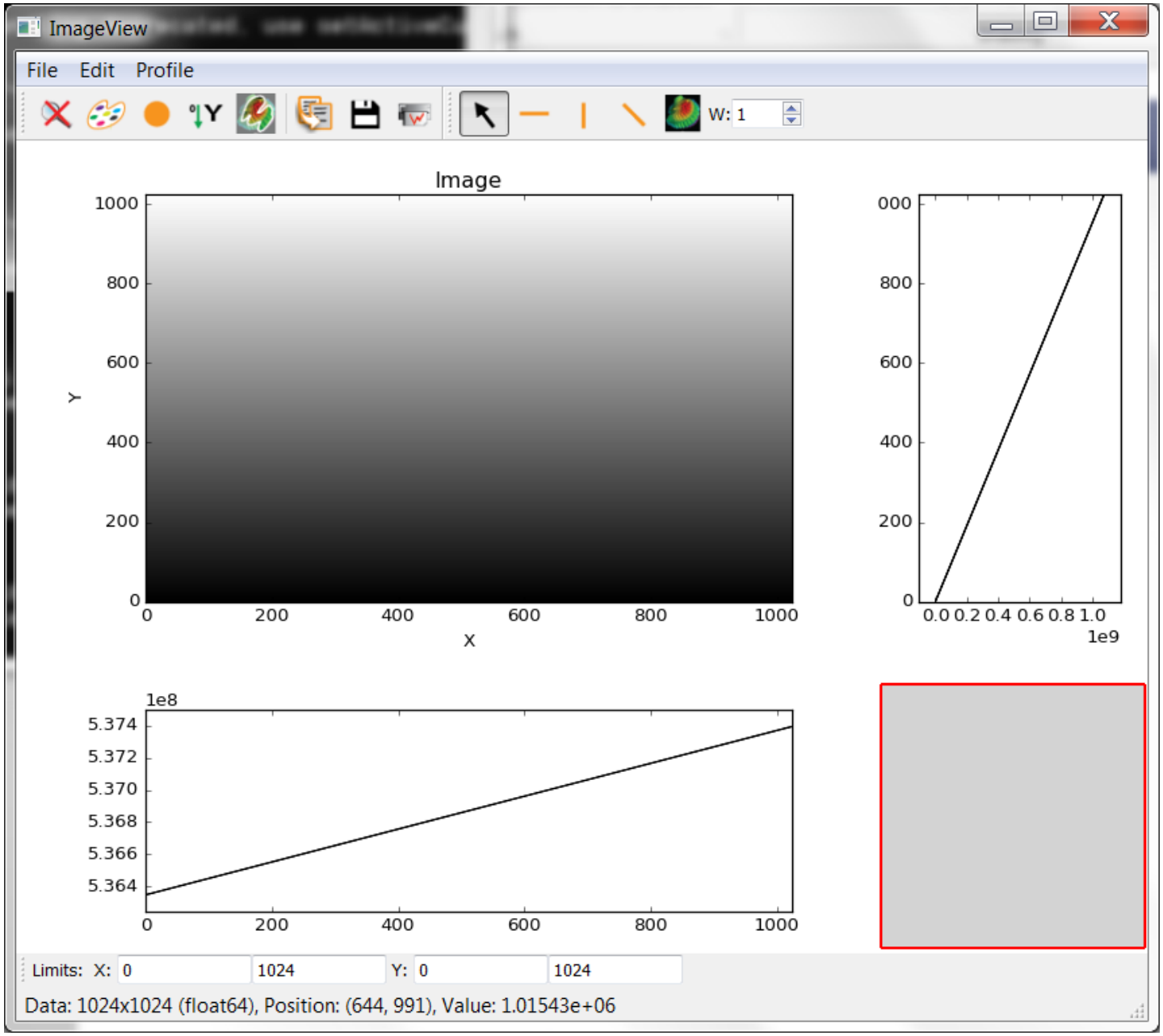
CURRENT STATUS

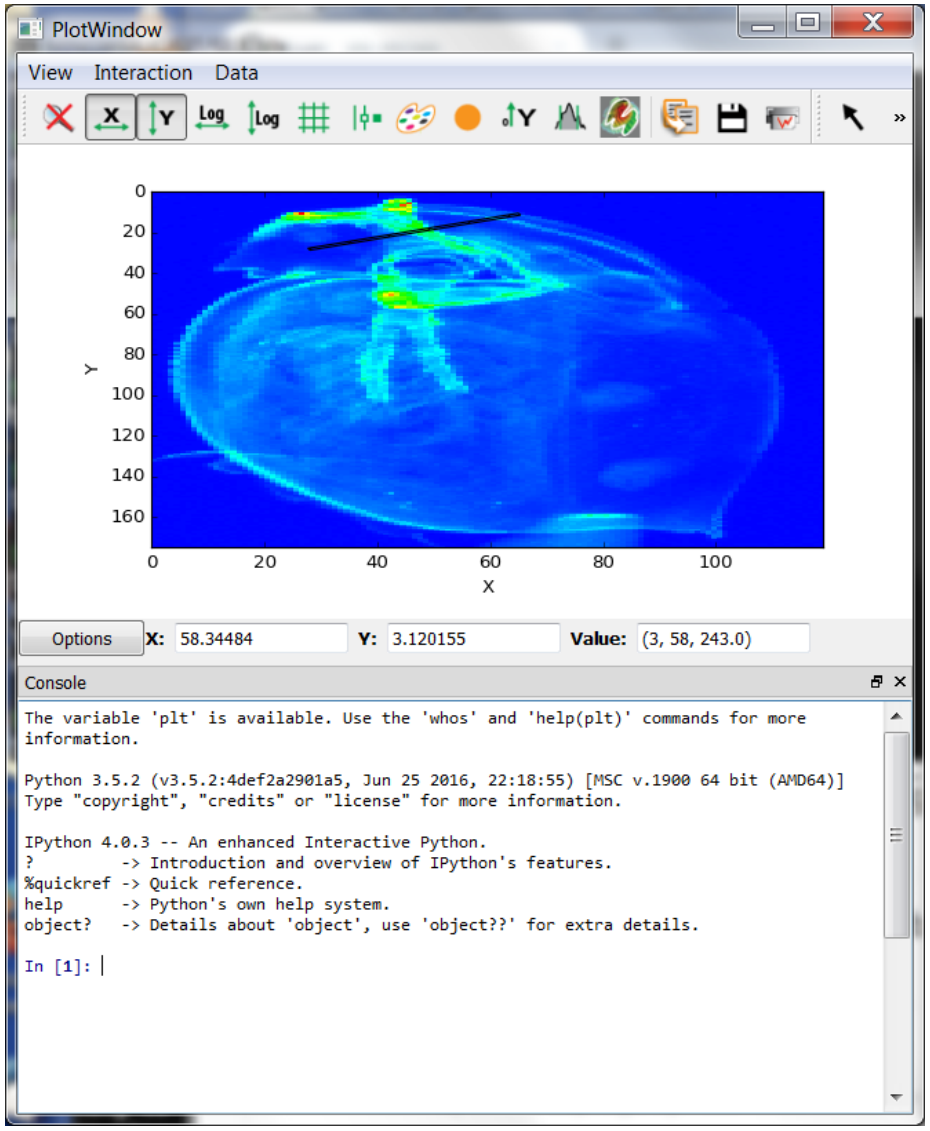
- Visualize 1D data
- Apply ROIs on them
- Control the plot via an interactive console
- Fitting capabilities


python
View
Interaction
Data
ROI min
ROI max
Y
X
Options
X: 122.3967
Y: 2.010226e+10
Value: No image
Console
The variable 'plt' is available. Use the 'whos' and 'help(plt)' commands for more information.
Python 3.5.2 (v3.5.2:4def2a2901a5, Jun 25 2016, 22:18:55) [MSC v.1900 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.
IPython 4.0.3 -- An enhanced Interactive Python.
? -> Introduction and overview of IPython's features.
%quickref -> Quick reference.
help -> Python's own help system.
object? -> Details about 'object', use 'object??' for extra details.
In [1]:
Regions Of Interest
Console

CURRENT STATUS

- Visualize 2D data
- Apply Profiles and Masks on them
- Apply different colormaps
- Plot an image with associated histograms
- Isosurface calculations


ImageView
File Edit Profile
W: 1
Image
1000
800
600
400
200
0
Y
0 200 400 600 800 1000
X
000
800
600
400
200
0
0.0 0.2 0.4 0.6 0.8 1.0
1e9
1e8
5.374
5.372
5.370
5.368
5.366
5.364
0 200 400 600 800 1000
Limits: X: 0 1024 Y: 0 1024
Data: 1024x1024 (float64), Position: (644, 991), Value: 1.01543e+06


PlotWindow
View Interaction Data
Options
X: 58.34484
Y: 3.120155
Value: (3, 58, 243.0)
Console
The variable 'plt' is available. Use the 'whos' and 'help(plt)' commands for more information.
Python 3.5.2 (v3.5.2:4def2a2901a5, Jun 25 2016, 22:18:55) [MSC v.1900 64 bit (AMD64)]
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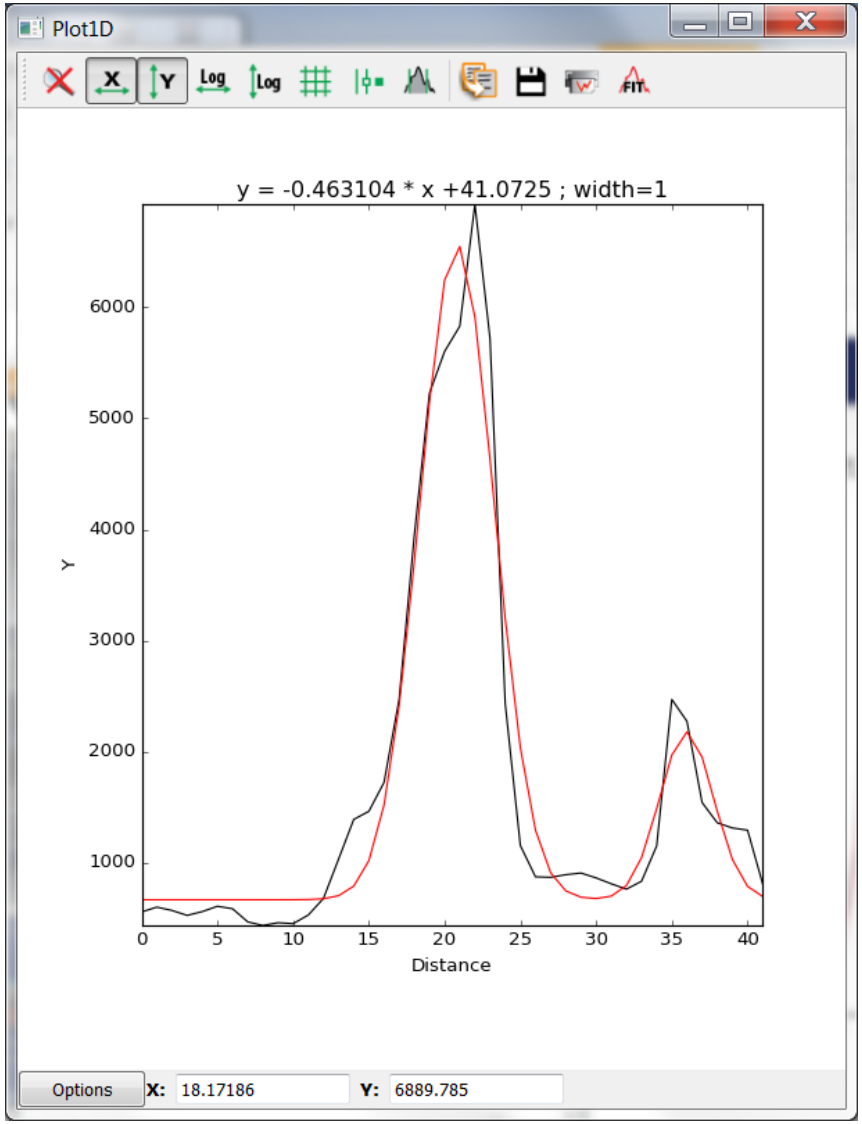
Plot1D
y = -0.463104 * x +41.0725 ; width=1
Distance
Options
X: 18.17186
Y: 6889.785

ROLE OF NON-CORE DEVELOPERS

- Identify something you are interested on
- Try to achieve it
- Wow! I can do what I want, what next?
  - Start again
  - Make suggestions
  - Contribute with a demo/recipe
- I cannot do it
  - Ask help

ROLE OF CORE DEVELOPERS

- Help non-core developers
- Create issues
  - Bugs
  - Documentation
  - Desired features
- Fix issues
  - Bugs
  - Documentation
  - Unlikely for new features
- Review pull requests

HANDS ON!

- Try to start with a single entry point www.silx.org
  - You should be able to install 0.2.0 version
- For this code camp we'll use 0.3.0, you can either:
  - clone the repository (and use your compilation chain)
  - install a nightly built package (debian)
  - use a pre-built binary wheel:
    - http://www.silx.org/pub/wheelhouse/