felapps deployment

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@felapps

Install required packages:

Required third-party packages: `numpy scipy matplotlib pyepics h5py lmfit pyrpn`

Install them by: `pip install package_name`

Other recommanded packages:

`wheel, python-dateutil, nose, notebook, jupyter, ipython`

Install packages developed for FEL commissioning: 'felapps' and 'beamline'

uninstall previous version first by:

```
pip uninstall felapps
pip uninstall beamline
```

install latest version by:

```
pip install felapps
pip install beamline
```

or by [`--upgrade`] option:

`pip install package_name --upgrade`

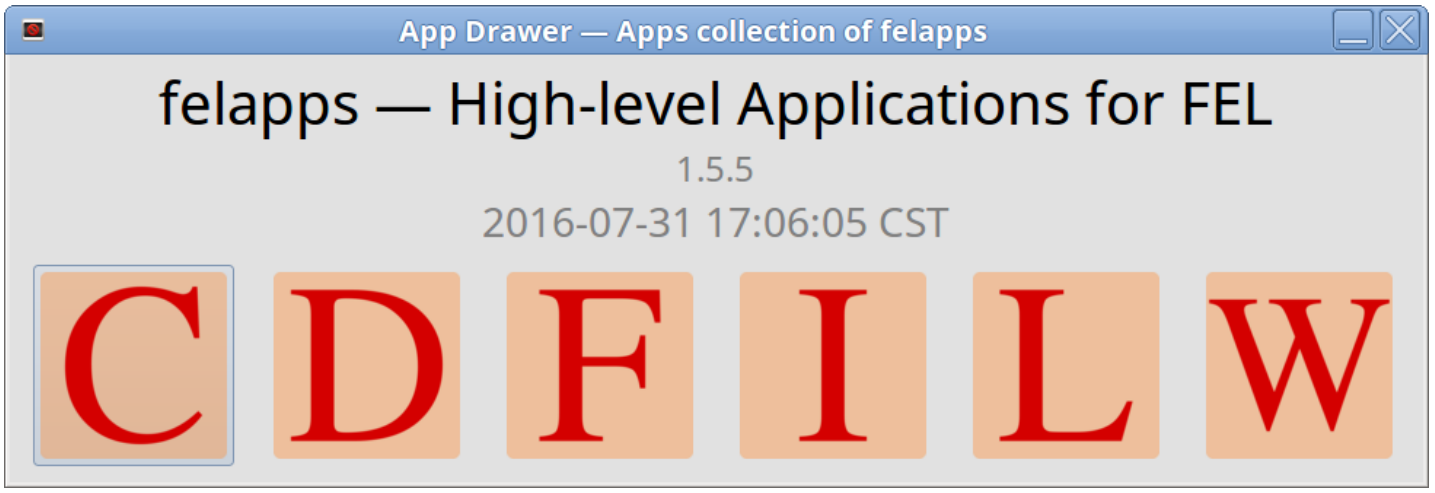
Useful configuration files: (see attachments with below boldfaced names)

`imageviewer:` **imageviewer.xml**

`cornalyzer:` **udefs.py**`, should be located when choosing user-defined operation function on scan dependent var.`

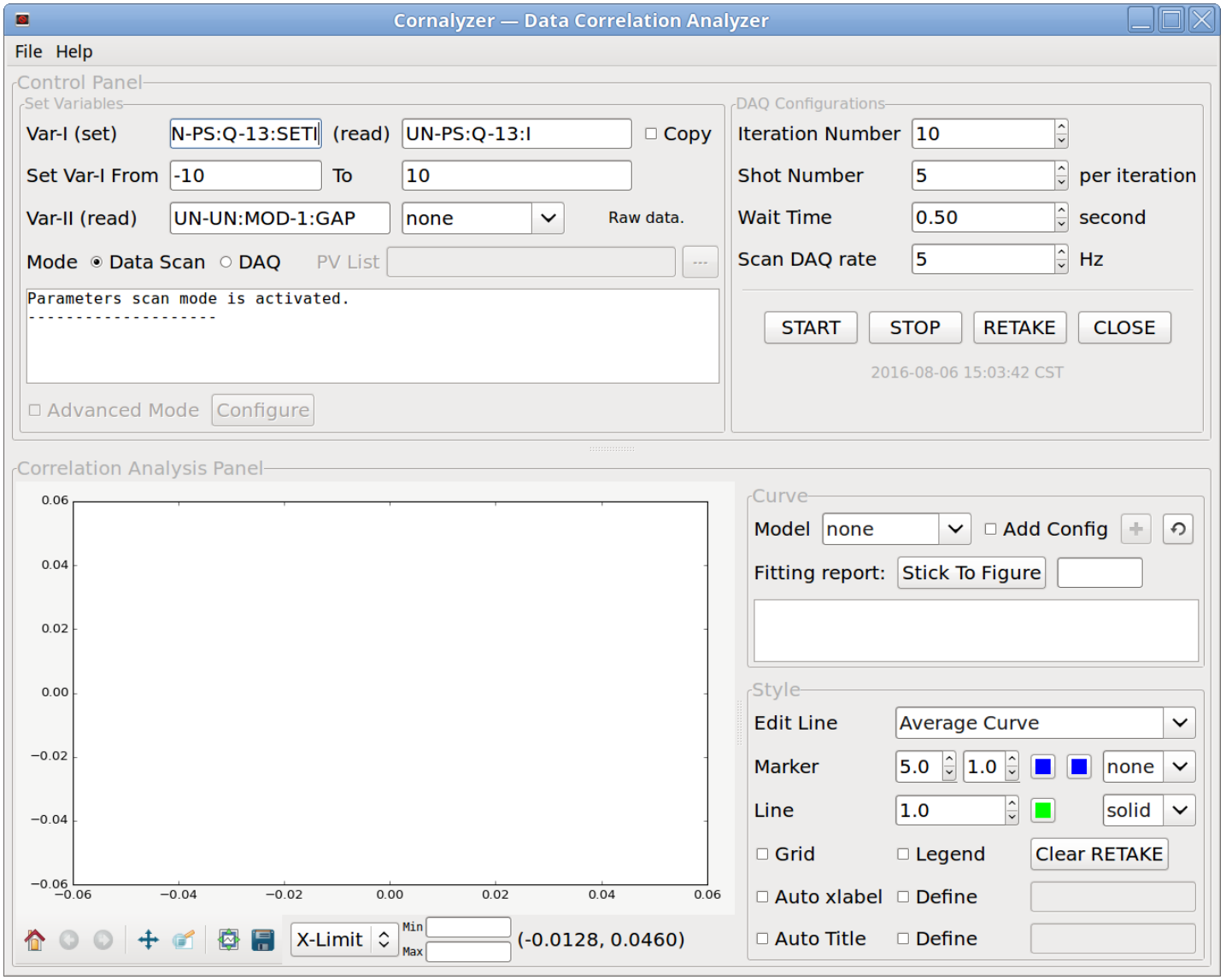
Simple Test:

1. execute '`runfelapps`' or '`appdrawer`' in terminal, GUI app should be shown like:

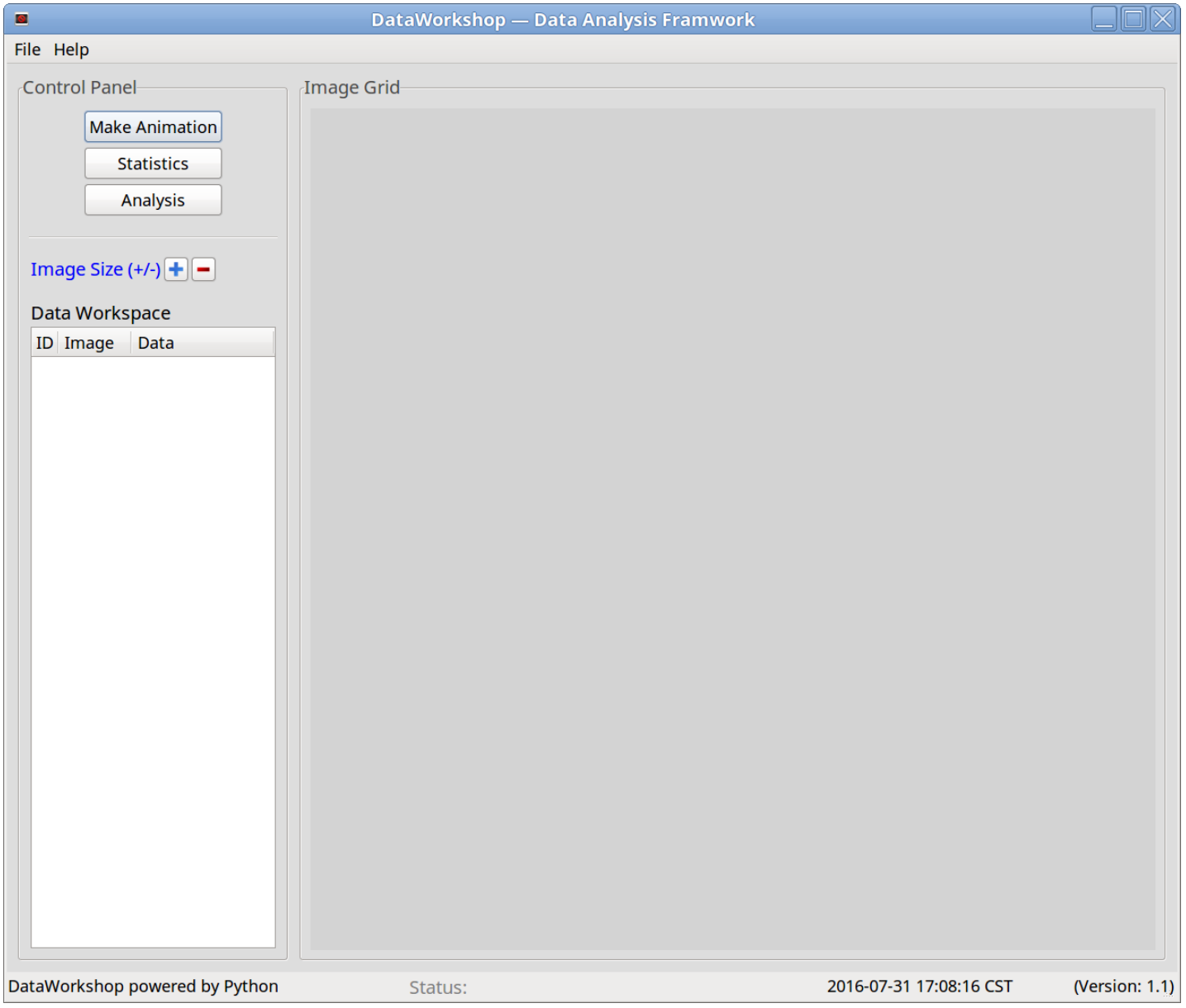


2. click every capitalized alphabet to evoke available GUI apps:

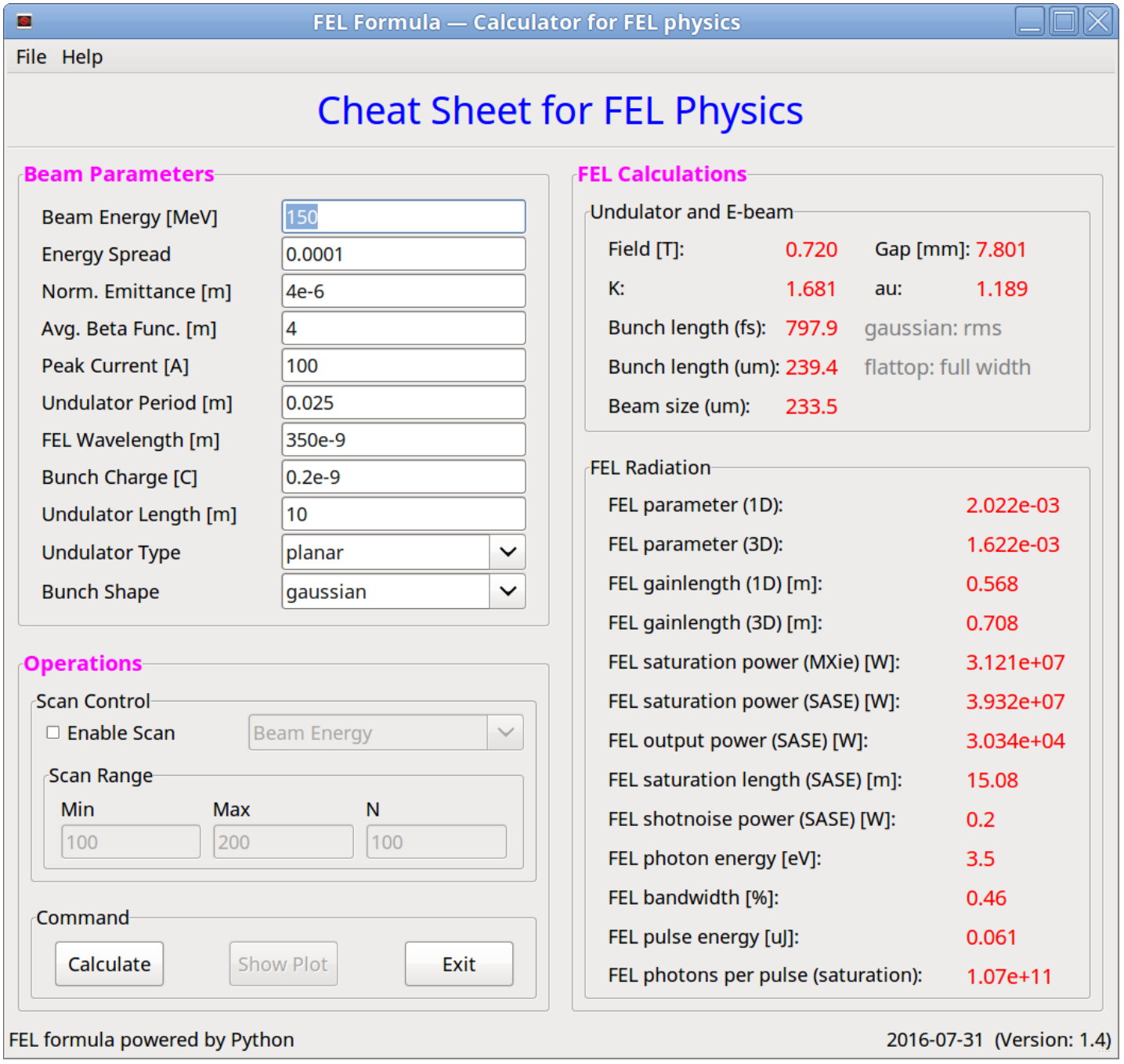
C:


Cornalyzer — Data Correlation Analyzer
File Help
Control Panel
Set Variables
Var-I (set)
N-PS:Q-13:SETI
(read)
UN-PS:Q-13:I
Copy
Set Var-I From
-10
To
10
Var-II (read)
UN-UN:MOD-1:GAP
none
Raw data.
Mode
Data Scan
DAQ
PV List
Parameters scan mode is activated.
Advanced Mode
Configure
DAQ Configurations
Iteration Number
10
Shot Number
5
per iteration
Wait Time
0.50
second
Scan DAQ rate
5
Hz
START
STOP
RETAKE
CLOSE
2016-08-06 15:03:42 CST
Correlation Analysis Panel
0.06
0.04
0.02
0.00
−0.02
−0.04
−0.06
X-Limit
Min
Max
(-0.0128, 0.0460)
Curve
Model
none
Add Config
Fitting report:
Stick To Figure
Style
Edit Line
Average Curve
Marker
5.0
1.0
none
Line
1.0
solid
Grid
Legend
Clear RETAKE
Auto xlabel
Define
Auto Title
Define

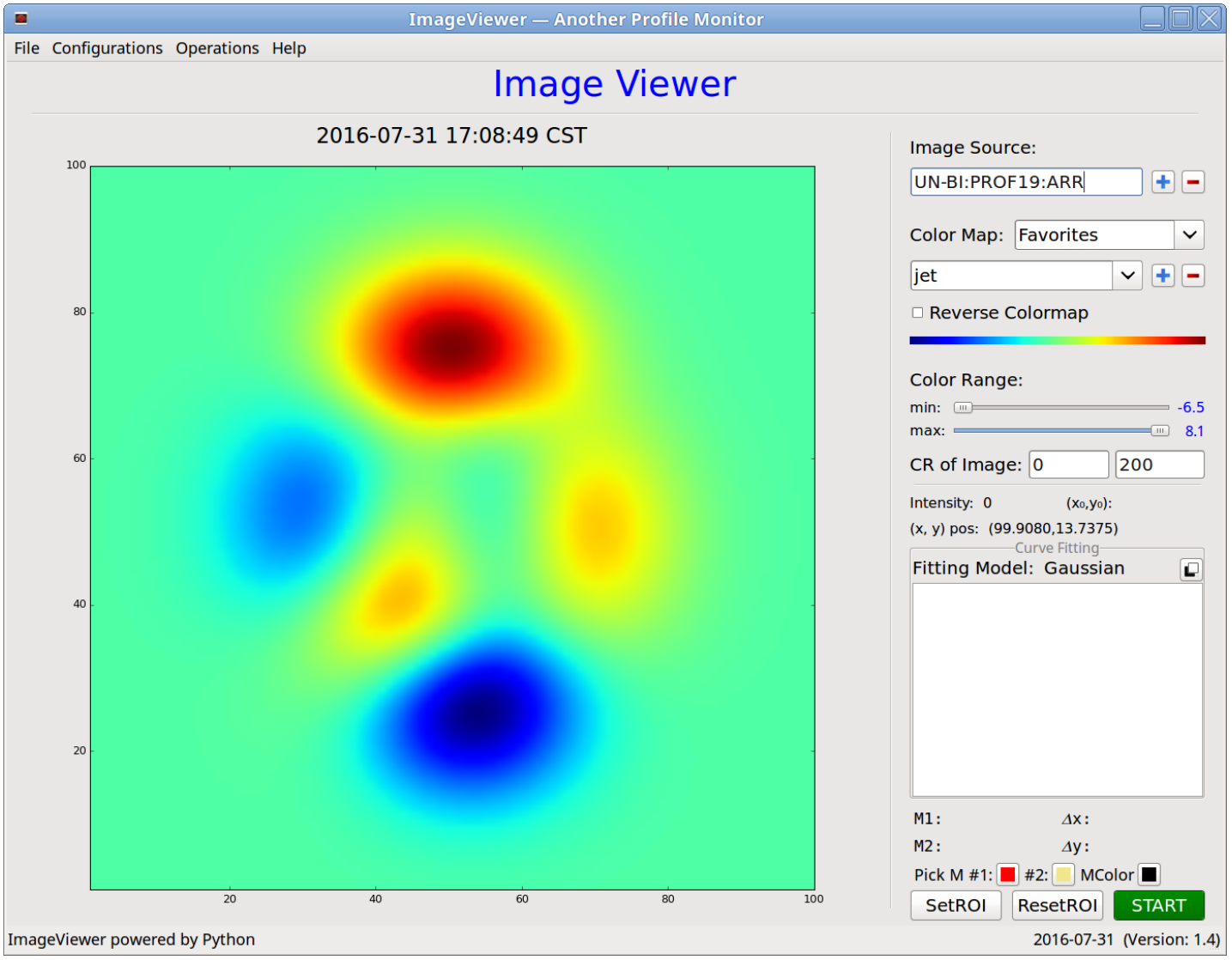
D:


DataWorkshop — Data Analysis Framwork
File Help
Control Panel
Make Animation
Statistics
Analysis
Image Size (+/-)
Data Workspace
ID Image Data
Image Grid
DataWorkshop powered by Python
Status:
2016-07-31 17:08:16 CST
(Version: 1.1)

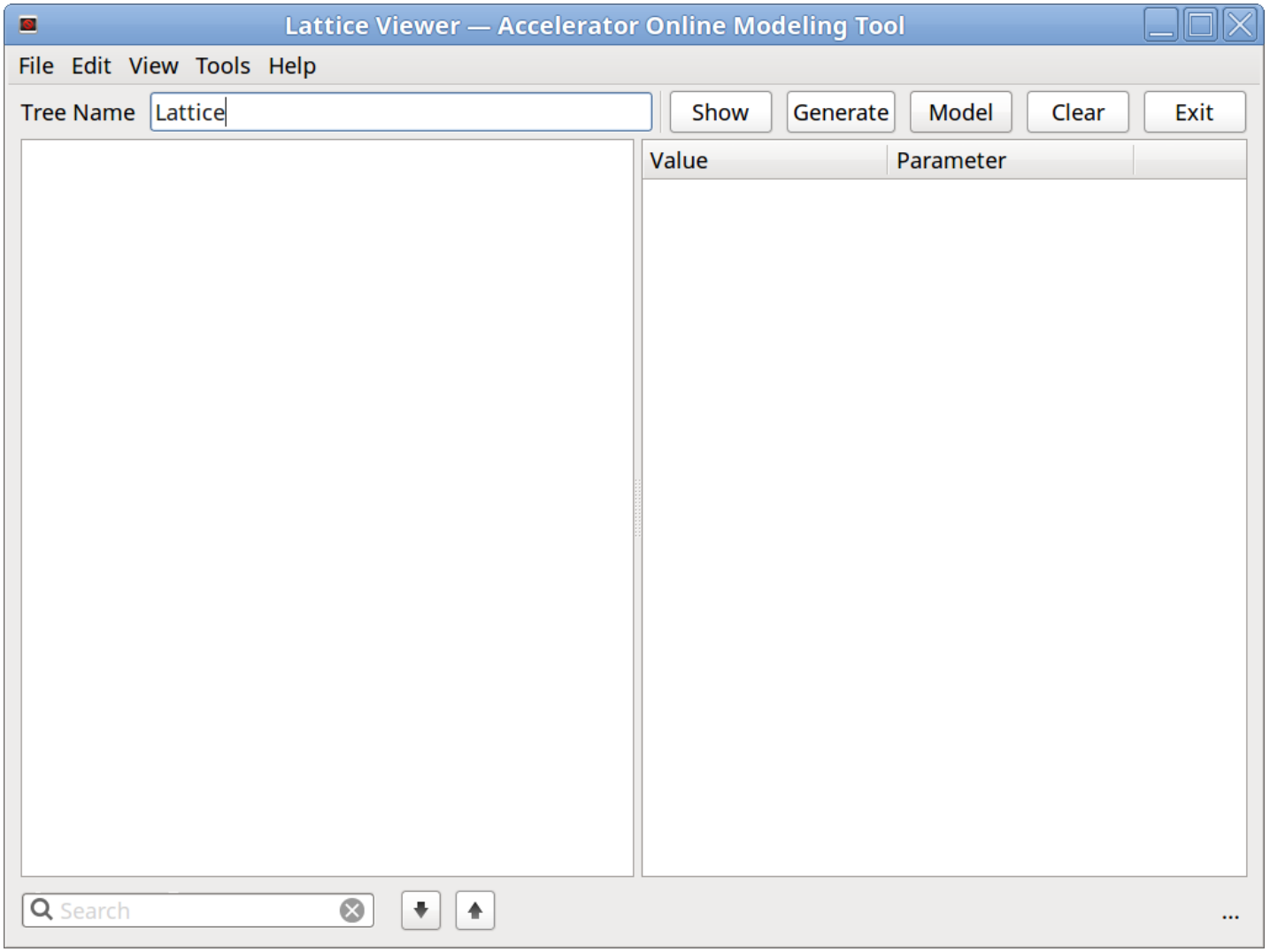
F:


FEL Formula — Calculator for FEL physics
File Help
Cheat Sheet for FEL Physics
Beam Parameters
Beam Energy [MeV] 150
Energy Spread 0.0001
Norm. Emittance [m] 4e-6
Avg. Beta Func. [m] 4
Peak Current [A] 100
Undulator Period [m] 0.025
FEL Wavelength [m] 350e-9
Bunch Charge [C] 0.2e-9
Undulator Length [m] 10
Undulator Type planar
Bunch Shape gaussian
Operations
Scan Control
Enable Scan
Beam Energy
Scan Range
Min 100
Max 200
N 100
Command
Calculate
Show Plot
Exit
FEL Calculations
Undulator and E-beam
Field [T]: 0.720
Gap [mm]: 7.801
K: 1.681
au: 1.189
Bunch length (fs): 797.9
gaussian: rms
Bunch length (um): 239.4
flattop: full width
Beam size (um): 233.5
FEL Radiation
FEL parameter (1D): 2.022e-03
FEL parameter (3D): 1.622e-03
FEL gainlength (1D) [m]: 0.568
FEL gainlength (3D) [m]: 0.708
FEL saturation power (MXie) [W]: 3.121e+07
FEL saturation power (SASE) [W]: 3.932e+07
FEL output power (SASE) [W]: 3.034e+04
FEL saturation length (SASE) [m]: 15.08
FEL shotnoise power (SASE) [W]: 0.2
FEL photon energy [eV]: 3.5
FEL bandwidth [%]: 0.46
FEL pulse energy [uJ]: 0.061
FEL photons per pulse (saturation): 1.07e+11
FEL formula powered by Python
2016-07-31 (Version: 1.4)

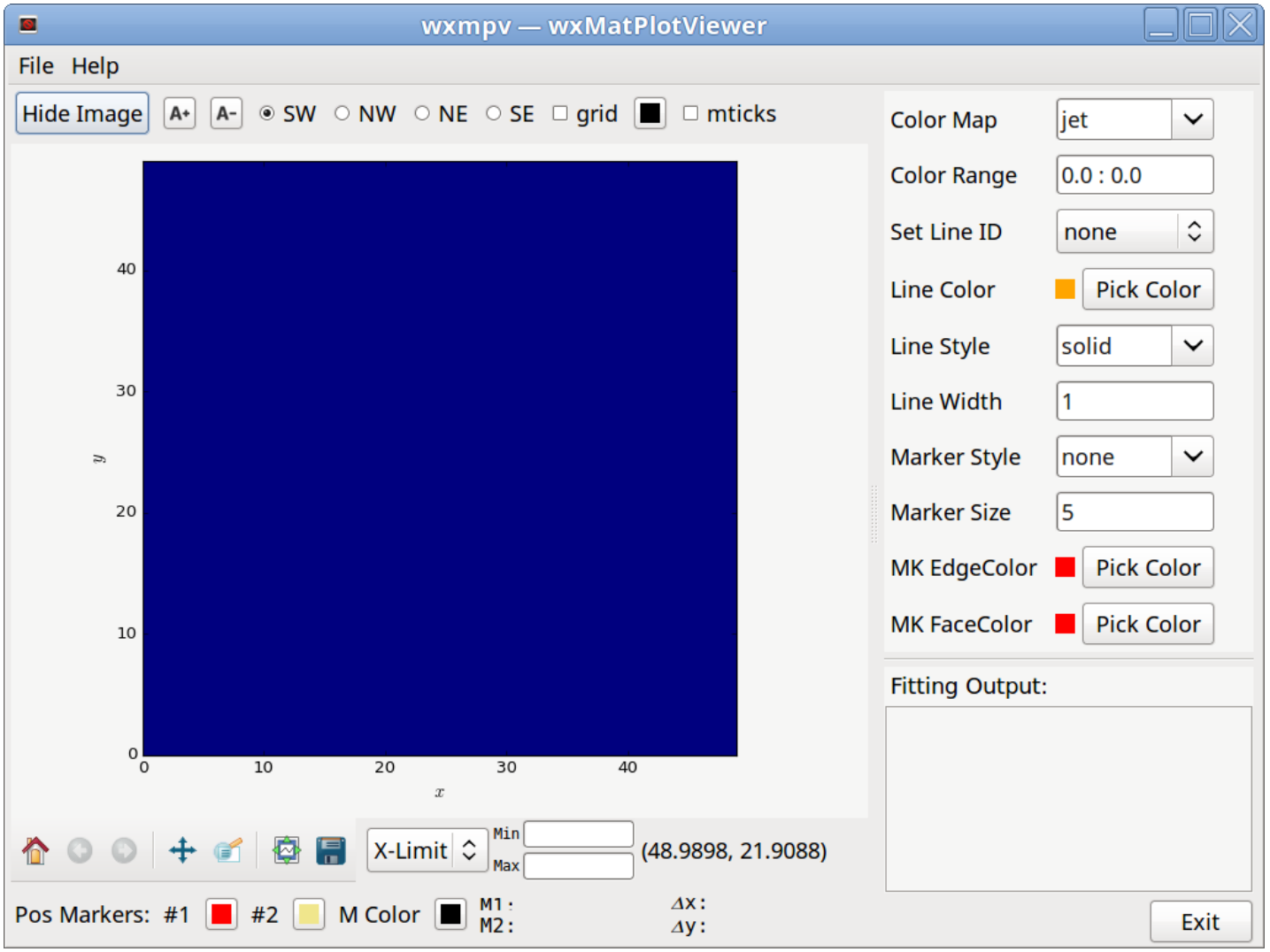
I:


ImageViewer — Another Profile Monitor
File Configurations Operations Help
Image Viewer
2016-07-31 17:08:49 CST
100
80
60
40
20
20
40
60
80
100
Image Source:
UN-BI:PROF19:ARR
Color Map:
Favorites
jet
Reverse Colormap
Color Range:
min:
-6.5
max:
8.1
CR of Image:
0
200
Intensity: 0
(x0,y0):
(x, y) pos: (99.9080,13.7375)
Curve Fitting
Fitting Model: Gaussian
M1:
Δx:
M2:
Δy:
Pick M #1:
#2:
MColor
SetROI
ResetROI
START
ImageViewer powered by Python
2016-07-31 (Version: 1.4)

L:


Lattice Viewer — Accelerator Online Modeling Tool
File Edit View Tools Help
Tree Name
Lattice
Show
Generate
Model
Clear
Exit
Value
Parameter
Search

W:


wxmpv — wxMatPlotViewer
File Help
Hide Image
A+
A-
SW
NW
NE
SE
grid
mticks
Color Map
jet
Color Range
0.0 : 0.0
Set Line ID
none
Line Color
Pick Color
Line Style
solid
Line Width
1
Marker Style
none
Marker Size
5
MK EdgeColor
Pick Color
MK FaceColor
Pick Color
Fitting Output:
0
10
20
30
40
y
x
X-Limit
Min
Max
(48.9898, 21.9088)
Pos Markers: #1 #2 M Color
M1:
M2:
Δx:
Δy:
Exit