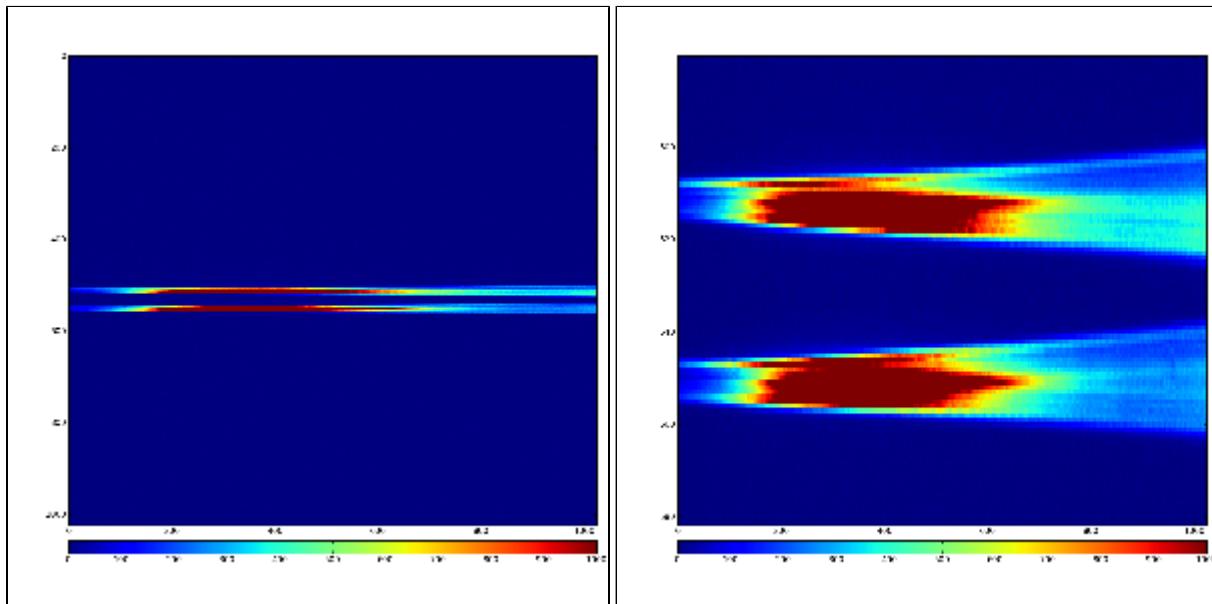


Differential spectrum from Opal camera image

- Motivation
- Psana configuration file to get image:
- Project of analysis-specific modules
 - Module producing spectra
 - Functionality
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 - Module example for analysis of spectra
 - Functionality
 - Module parameters

Motivation

- 2012-09-13 14:00 - Mtg with Ryan Coffee, Josef Frisch, Nick Hartmann
- Would like to have psana application to process xppi0412 data



Psana configuration file to get image:

```

[psana]
files      = \
/reg/d/psdm/xpp/<experiment>/xtc/<file-1>.xtc \
/reg/d/psdm/xpp/<experiment>/xtc/<file-2>.xtc \
...
/reg/d/psdm/xpp/<experiment>/xtc/<file-N>.xtc

modules     = \
    ImgAlgos.CameraImageProducer \
    ImgAlgos.SaveImageInFile
#          psana_examples.DumpOpallk \
events      = 3

[ImgAlgos.CameraImageProducer]
source      = DetInfo(:Opall1000)
key_in      =
key_out     = img
subtract_offset = true
print_bits   = 15

[ImgAlgos.SaveImageInFile]
source      = DetInfo(:Opall1000)
key        = img
fname      = img-spectra
saveAll    = true
#eventSave = 1

```

In order to run this script, the xtc file path and names should be substituted, then use commands:

```

sit_setup
psana -c <the-name-of-the-configuration-file>

```

Project of analysis-specific modules

Module producing spectra

Functionality

- Define and cut the spectral regions for signal and reference band.
- Integrate in columns and evaluate two 1024-bin spectra, fs and fr, and their relative difference $r = 2(fs-fr)/(fs+fr)$.
- Put 3 spectra in the event as `ndarray<double,2>` object.
- Save spectra in the text file, 1024 x 3 lines of float numbers, if necessary.

Module parameters

- source
- key_in
- key_out
- Signal band Y-center
- Signal band width
- Signal band tilt angle
- Reference band Y-center
- Reference band width
- Reference band tilt angle
- Output file name (text format, 1024 x 3 lines of float numbers). If specified, then the file is saved for all selected events.

Module example for analysis of spectra

Functionality

- get the `ndarray<double,2>` object from the event.
- do iteration over vectors and print elements for example.



Then users extend this module functionality depending on their goal...

Module parameters

- source
- key_in
- other parameters for analysis or accumulation of statistics etc.