

Peak finder parameters tuning for cxii0212-r0091

Pedestals

```
psana -c ana-cxii0212/psana-cxii0212-r0104-pedestals.cfg
```

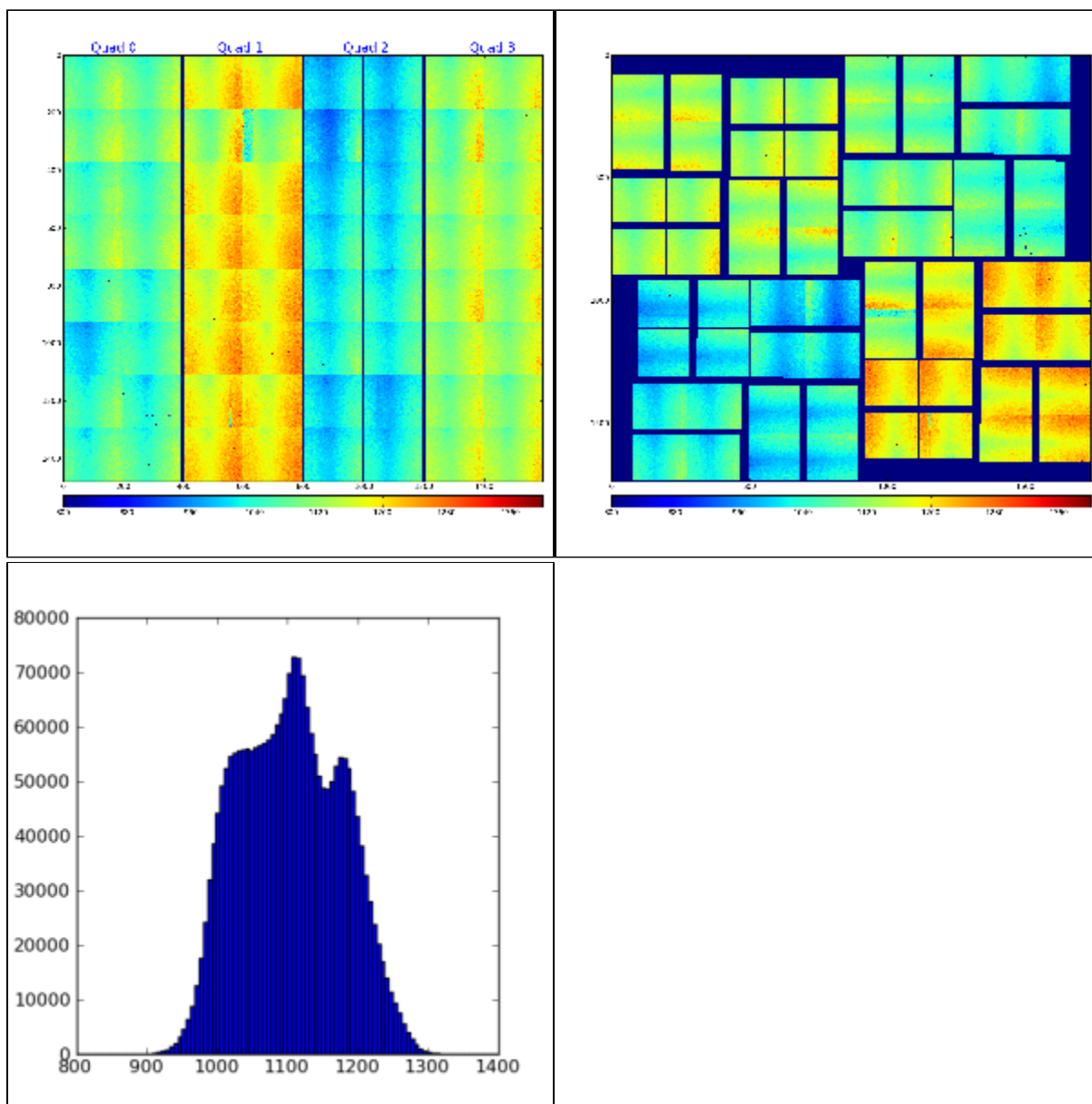
where ana-cxii0212/psana-cxii0212-r0104-pedestals.cfg

```
[psana]
files   = /reg/d/psdm/cxi/cxii0212/xtc/el65-r0104-s00-c00.xtc \
          /reg/d/psdm/cxi/cxii0212/xtc/el65-r0104-s02-c00.xtc

events      = 1000
modules     = ImgAlgos.CSPadArrAverage

[ImgAlgos.CSPadArrAverage]
source      = DetInfo(CxiDsl.0:Cspad.0)
key         =
avefile     = ana-cxii0212/cspad-cxii0212-r0104-pedestals-ave.dat
rmsfile     = ana-cxii0212/cspad-cxii0212-r0104-pedestals-rms.dat
print_bits  = 15
evts_stage1 = 100
evts_stage2 = 100
gate_width1 = 200
gate_width2 = 20
```

```
./PlotCSPadArrayFromFile.py ana-cxii0212/cspad-cxii0212-r0104-pedestals-ave.dat 800 1400
```



Copy the pedestal file:

bq: cp ana-cxii0212/cspad-cxii0212-r0104-pedestals-ave.dat ana-cxii0212/calib/CsPad::CalibV1/CxiDs1.0:Cspad.0/pedestals/0-end.data

Background

Averaged background for 1000 events is obtained from:

```
psana -c ana-cxii0212/psana-cxii0212-r0091-bkgd-ave.cfg
```

where ana-cxii0212/psana-cxii0212-r0091-bkgd-ave.cfg:

```

[psana]
files = \
  /reg/d/psdm/cxi/cxii0212/xtc/e165-r0091-s00-c00.xtc \
  /reg/d/psdm/cxi/cxii0212/xtc/e165-r0091-s00-c01.xtc \
  /reg/d/psdm/cxi/cxii0212/xtc/e165-r0091-s02-c00.xtc \
  /reg/d/psdm/cxi/cxii0212/xtc/e165-r0091-s02-c01.xtc

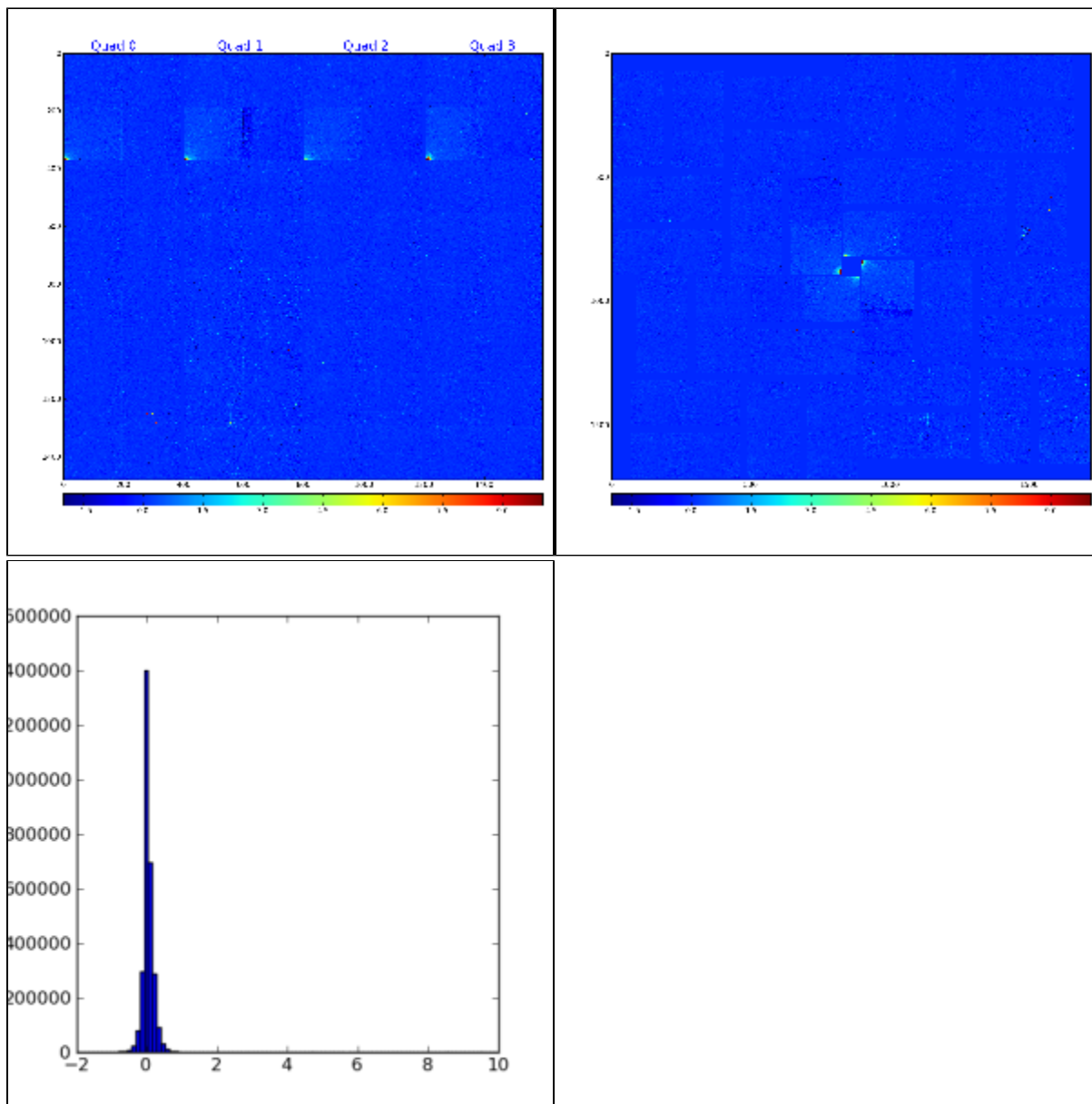
#skip-events = 100
events       = 1000
modules      = cspad_mod.CsPadCalib ImgAlgos.CSPadArrAverage

[cspad_mod.CsPadCalib]
inputKey     =
outputKey    = calibrated
doPedestals  = yes
doPixelStatus = no
doCommonMode = yes

[ImgAlgos.CSPadArrAverage]
source = DetInfo(CxiDs1.0:Cspad.0)
key     = calibrated
avefile = ana-cxii0212/cspad-cxii0212-r0091-background-ave.dat
rmsfile = ana-cxii0212/cspad-cxii0212-r0091-background-rms.dat
print_bits = 15

```

```
./PlotCSPadArrayFromFile.py ana-cxii0212/cspad-cxii0212-r0091-background-ave.dat -2 10
```



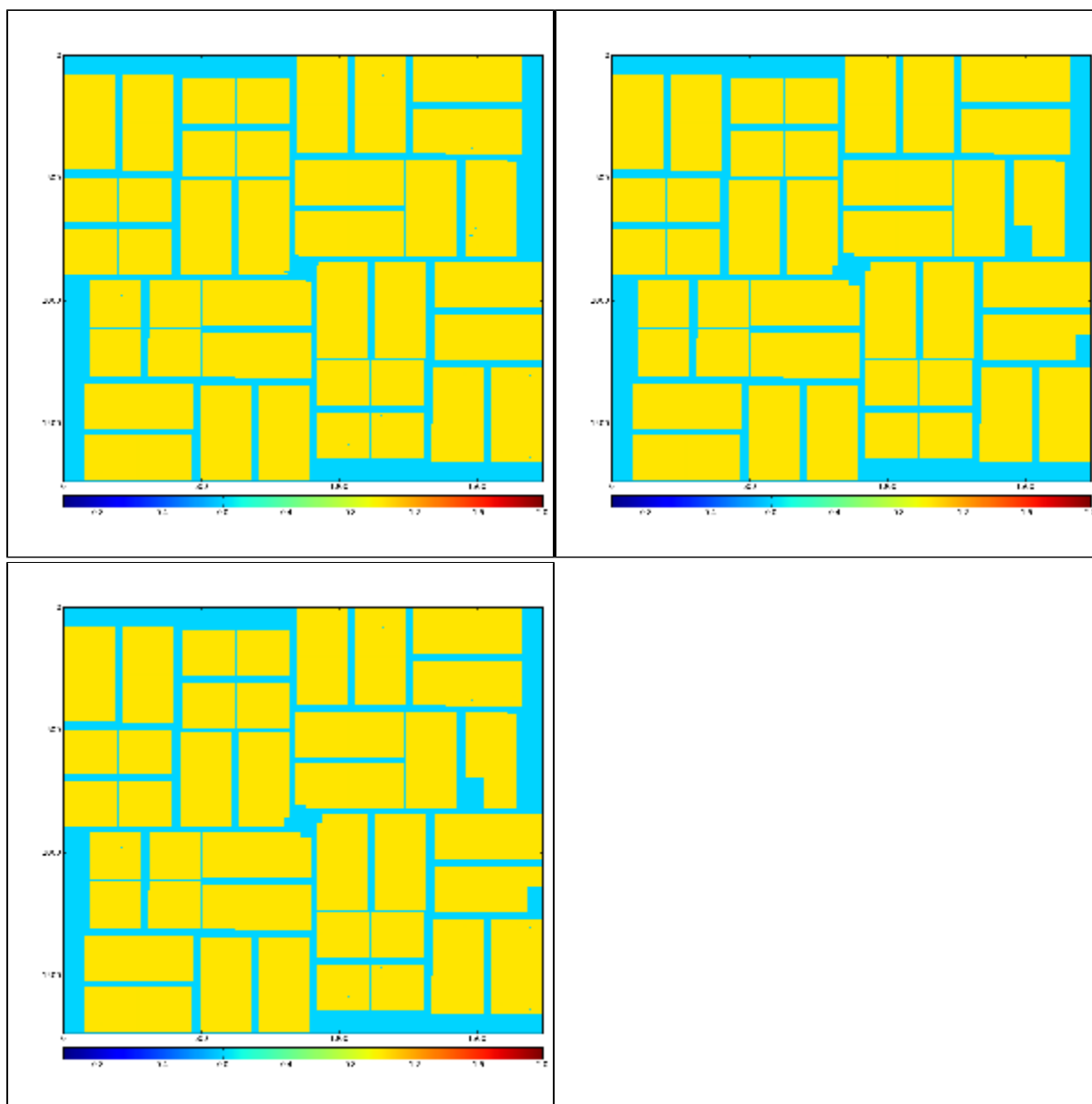
Permanent mask

```
./MakePixelMask.py ana-cxii0212/cspad-cxii0212-r0091-background-ave.dat 2 ana-cxii0212/cspad-cxii0212-r0091-mask-<type>.dat
```

... with minor edition of the `MakePixelMask.py` we get masks:

```
ana-cxii0212/cspad-cxii0212-r0091-mask-bkgd.dat - for background with threshold 2
ana-cxii0212/cspad-cxii0212-r0091-mask-rects.dat - for rectangular regions
ana-cxii0212/cspad-cxii0212-r0091-mask-badregs.dat - for both, background and rectangular regions
```

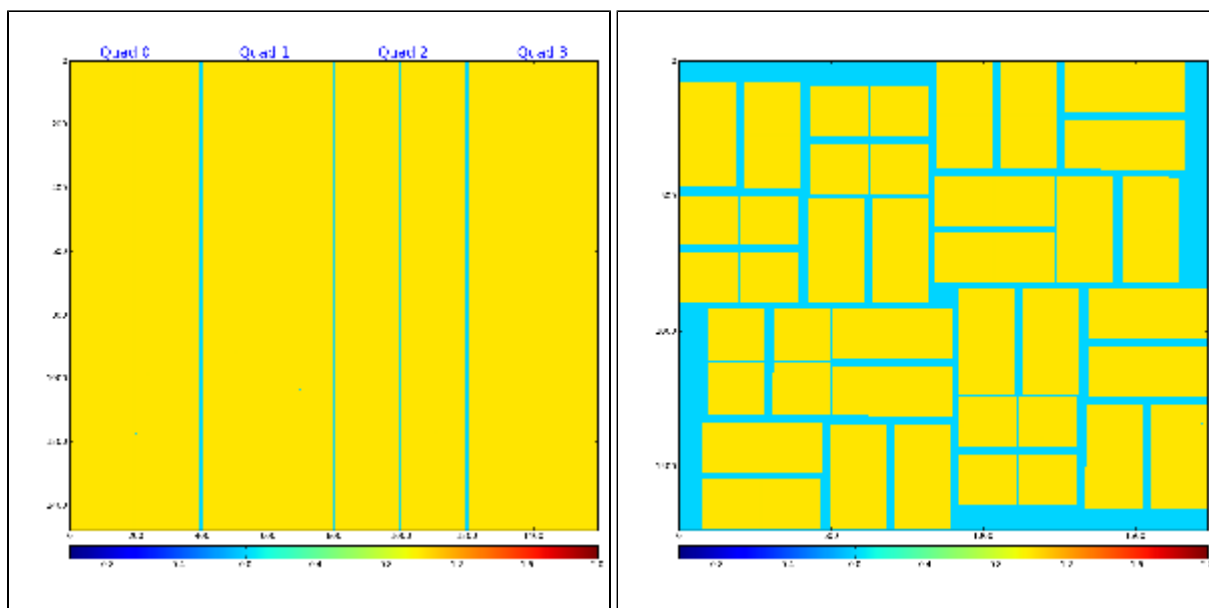
```
./PlotCSPadArrayFromFile.py ana-cxii0212/cspad-cxii0212-r0091-mask-bkgd.dat -1 2
```



Noisy-pixel mask

From peak finder output

```
./PlotCSPadArrayFromFile.py ana-cxii0212/cspad-cxii0212-r0091-noise-mask-out.dat -1 2
```



Peak finder / selector

```
psana -c ana-cxii0212/psana-cxii0212-r0091-peak-finder.cfg
```

where the ana-cxii0212/psana-cxii0212-r0091-peak-finder.cfg:

```

[psana]
files = \
  /reg/d/psdm/cxi/cxii0212/xtc/e165-r0091-s00-c00.xtc \
  /reg/d/psdm/cxi/cxii0212/xtc/e165-r0091-s00-c01.xtc \
  /reg/d/psdm/cxi/cxii0212/xtc/e165-r0091-s02-c00.xtc \
  /reg/d/psdm/cxi/cxii0212/xtc/e165-r0091-s02-c01.xtc

#skip-events = 100
#events      = 1000
experiment   = cxii0212
calib-dir    = ana-cxii0212/calib

modules = cspad_mod.CsPadCalib \
          ImgAlgos.CSPadMaskApply \
          ImgAlgos.CSPadArrPeakFinder \
          PSXtcOutput.XtcOutputModule

[cspad_mod.CsPadCalib]
inputKey      =
outputKey     = calibrated
doPedestals  = yes
doPixelStatus = no
doCommonMode = yes

[ImgAlgos.CSPadMaskApply]
source        = DetInfo(CxiDsl.0:Cspad.0)
inkey         = calibrated
outkey        = masked_arr
mask_fname    = ana-cxii0212/cspad-cxii0212-r0091-mask-badregs.dat
masked_amp    = 0
print_bits    = 5
mask_control_bits = 15

[ImgAlgos.CSPadArrPeakFinder]
source        = DetInfo(CxiDsl.0:Cspad.0)
key           = masked_arr
key_peaks_out = peaks

hot_pix_mask_inp_file = ana-cxii0212/cspad-cxii0212-r0091-noise-mask-ini.dat
hot_pix_mask_out_file = ana-cxii0212/cspad-cxii0212-r0091-noise-mask-out.dat
frac_noisy_evts_file  = ana-cxii0212/cspad-cxii0212-r0091-noise-frac.dat

evt_file_out      = tmp/cspad-ev-
rmin              = 8
dr                = 1
SoNThr_noise      = 3
SoNThr_signal     = 4
frac_noisy_imgs   = 0.9
peak_npix_min     = 5
peak_npix_max     = 500
peak_amp_tot_thr  = 0.
peak_SoN_thr      = 5.
event_npeak_min   = 4
event_npeak_max   = 1000
event_amp_tot_thr = 0.
nevents_mask_update = 0
nevents_mask_accum = 50
selection_mode    = SELECTION_ON
out_file_bits     = 15
print_bits        = 1601

[PSXtcOutput.XtcOutputModule]
dirName          = ./xtc

```

Intermediate:

| | | | | | | |
|---|----------|------|--------|-------------|-------|----------------------|
| [info:ImgAlgos.CSPadArrPeakFinder fps) | NFrames: | 1000 | NHits: | 7 (0.70%) | Time: | 220.357 sec (4.538 |
| [info:ImgAlgos.CSPadArrPeakFinder fps) | NFrames: | 2000 | NHits: | 15 (0.75%) | Time: | 436.159 sec (4.585 |
| [info:ImgAlgos.CSPadArrPeakFinder fps) | NFrames: | 3000 | NHits: | 25 (0.83%) | Time: | 651.769 sec (4.603 |
| [info:ImgAlgos.CSPadArrPeakFinder fps) | NFrames: | 4000 | NHits: | 33 (0.82%) | Time: | 872.068 sec (4.587 |
| [info:ImgAlgos.CSPadArrPeakFinder fps) | NFrames: | 5000 | NHits: | 38 (0.76%) | Time: | 1087.951 sec (4.596 |

Selected events:

```

tmp/cspad-ev-000049-r0091-2012-05-15-001045.234643687-peaks.txt
tmp/cspad-ev-000257-r0091-2012-05-15-001106.040495738-peaks.txt
tmp/cspad-ev-000290-r0091-2012-05-15-001109.341278610-peaks.txt
tmp/cspad-ev-000405-r0091-2012-05-15-001120.843585383-peaks.txt
tmp/cspad-ev-000553-r0091-2012-05-15-001135.646752814-peaks.txt
tmp/cspad-ev-000757-r0091-2012-05-15-001156.050227355-peaks.txt
tmp/cspad-ev-000823-r0091-2012-05-15-001202.650968368-peaks.txt
tmp/cspad-ev-001047-r0091-2012-05-15-001225.058570990-peaks.txt
tmp/cspad-ev-001378-r0091-2012-05-15-001258.171085846-peaks.txt
tmp/cspad-ev-001393-r0091-2012-05-15-001259.671736030-peaks.txt
tmp/cspad-ev-001509-r0091-2012-05-15-001311.276967953-peaks.txt
tmp/cspad-ev-001678-r0091-2012-05-15-001328.182259445-peaks.txt
tmp/cspad-ev-001914-r0091-2012-05-15-001351.792593865-peaks.txt
tmp/cspad-ev-001969-r0091-2012-05-15-001357.295585954-peaks.txt
tmp/cspad-ev-001991-r0091-2012-05-15-001359.496636193-peaks.txt
tmp/cspad-ev-002185-r0091-2012-05-15-001418.904297816-peaks.txt
tmp/cspad-ev-002214-r0091-2012-05-15-001421.805401099-peaks.txt
tmp/cspad-ev-002286-r0091-2012-05-15-001429.008349593-peaks.txt
tmp/cspad-ev-002361-r0091-2012-05-15-001436.511386761-peaks.txt
tmp/cspad-ev-002564-r0091-2012-05-15-001456.817729702-peaks.txt
tmp/cspad-ev-002608-r0091-2012-05-15-001501.218988796-peaks.txt
tmp/cspad-ev-002751-r0091-2012-05-15-001515.523954494-peaks.txt
tmp/cspad-ev-002896-r0091-2012-05-15-001530.028242293-peaks.txt
tmp/cspad-ev-002927-r0091-2012-05-15-001533.129495321-peaks.txt
tmp/cspad-ev-002985-r0091-2012-05-15-001538.931948039-peaks.txt
tmp/cspad-ev-003003-r0091-2012-05-15-001540.732602249-peaks.txt
tmp/cspad-ev-003598-r0091-2012-05-15-001640.231630346-peaks.txt
tmp/cspad-ev-003603-r0091-2012-05-15-001640.731596354-peaks.txt
tmp/cspad-ev-003609-r0091-2012-05-15-001641.331563485-peaks.txt
tmp/cspad-ev-003692-r0091-2012-05-15-001649.631654569-peaks.txt
tmp/cspad-ev-003713-r0091-2012-05-15-001651.731763017-peaks.txt
tmp/cspad-ev-003774-r0091-2012-05-15-001657.832338070-peaks.txt
tmp/cspad-ev-003870-r0091-2012-05-15-001707.434251204-peaks.txt
tmp/cspad-ev-004087-r0091-2012-05-15-001729.139940879-peaks.txt
tmp/cspad-ev-004211-r0091-2012-05-15-001741.541492733-peaks.txt
tmp/cspad-ev-004325-r0091-2012-05-15-001752.942562495-peaks.txt
tmp/cspad-ev-004338-r0091-2012-05-15-001754.242951955-peaks.txt
tmp/cspad-ev-004768-r0091-2012-05-15-001837.261195747-peaks.txt
...

```


Images 257, 485, 553, and 823:

