AGATA Analysis Workshop 2023

PostPSA calibration

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CSIC
Consejo Superior de Investigaciones Científicas

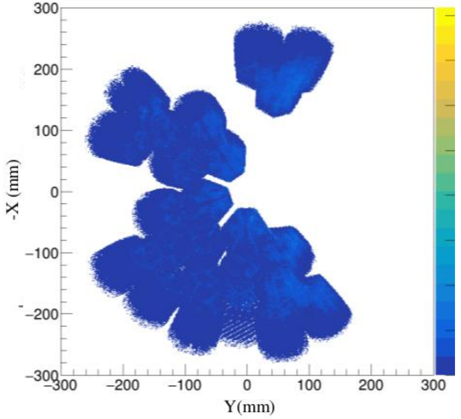
IFIC
Institut de Física Corpuscular

INFN
LNL

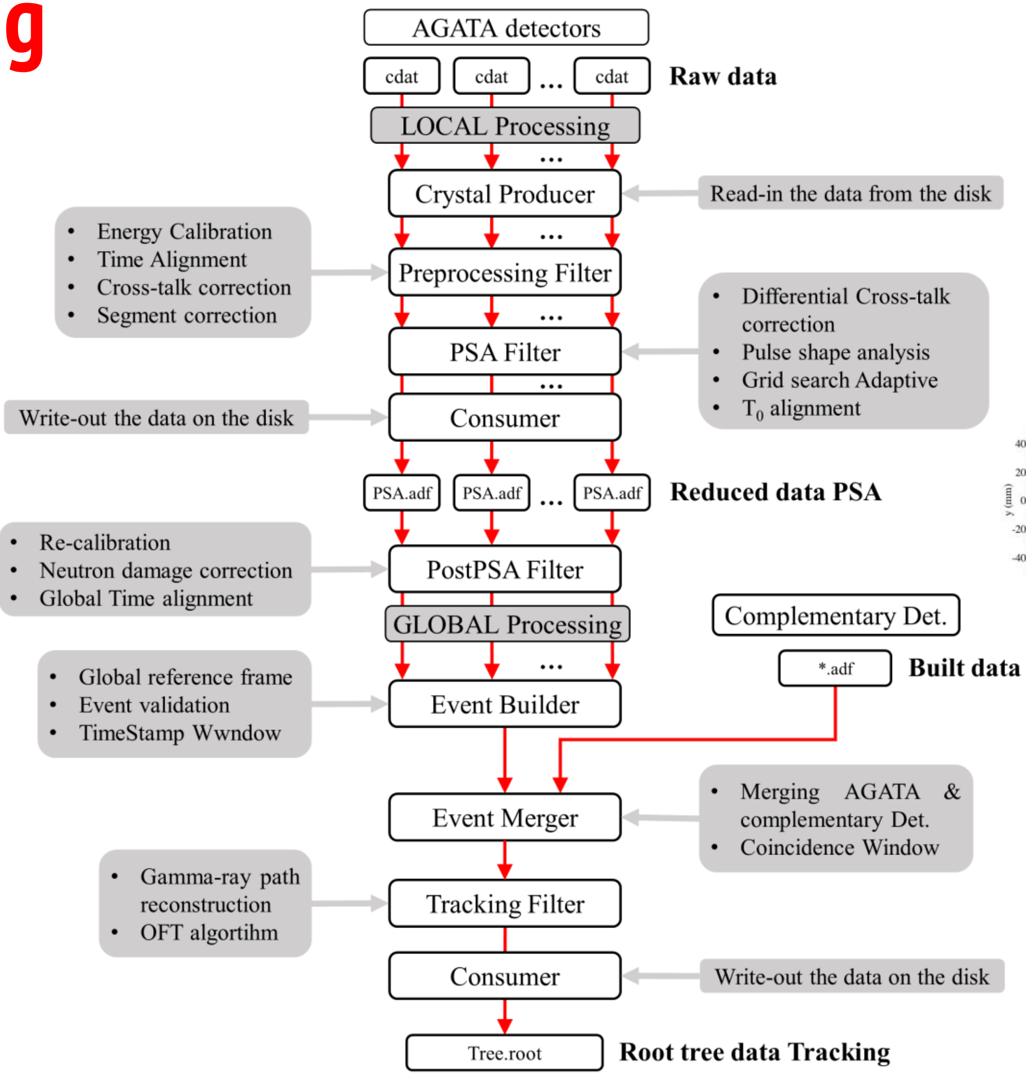
Data Processing

Narval actors

Tracking



First Interaction pattern



AGATA detectors

cdat | cdat | … | cdat — **Raw data**

LOCAL Processing

Crystal Producer ← Read-in the data from the disk

Preprocessing Filter ←

- Energy Calibration
- Time Alignment
- Cross-talk correction
- Segment correction

PSA Filter ←

- Differential Cross-talk correction
- Pulse shape analysis
- Grid search Adaptive
- T_0 alignment

Consumer ← Write-out the data on the disk

PSA.adf | PSA.adf | … | PSA.adf — **Reduced data PSA**

PostPSA Filter ←

- Re-calibration
- Neutron damage correction
- Global Time alignment

GLOBAL Processing

Complementary Det.

*.adf — **Built data**

Event Builder ←

- Global reference frame
- Event validation
- TimeStamp Wwndow

Event Merger ←

- Merging AGATA & complementary Det.
- Coincidence Window

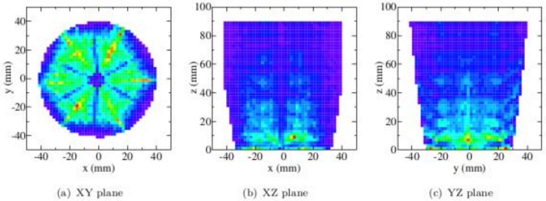
Tracking Filter ←

- Gamma-ray path reconstruction
- OFT algortihm

Consumer ← Write-out the data on the disk

Tree.root — **Root tree data Tracking**

Pulse Shape Analysis



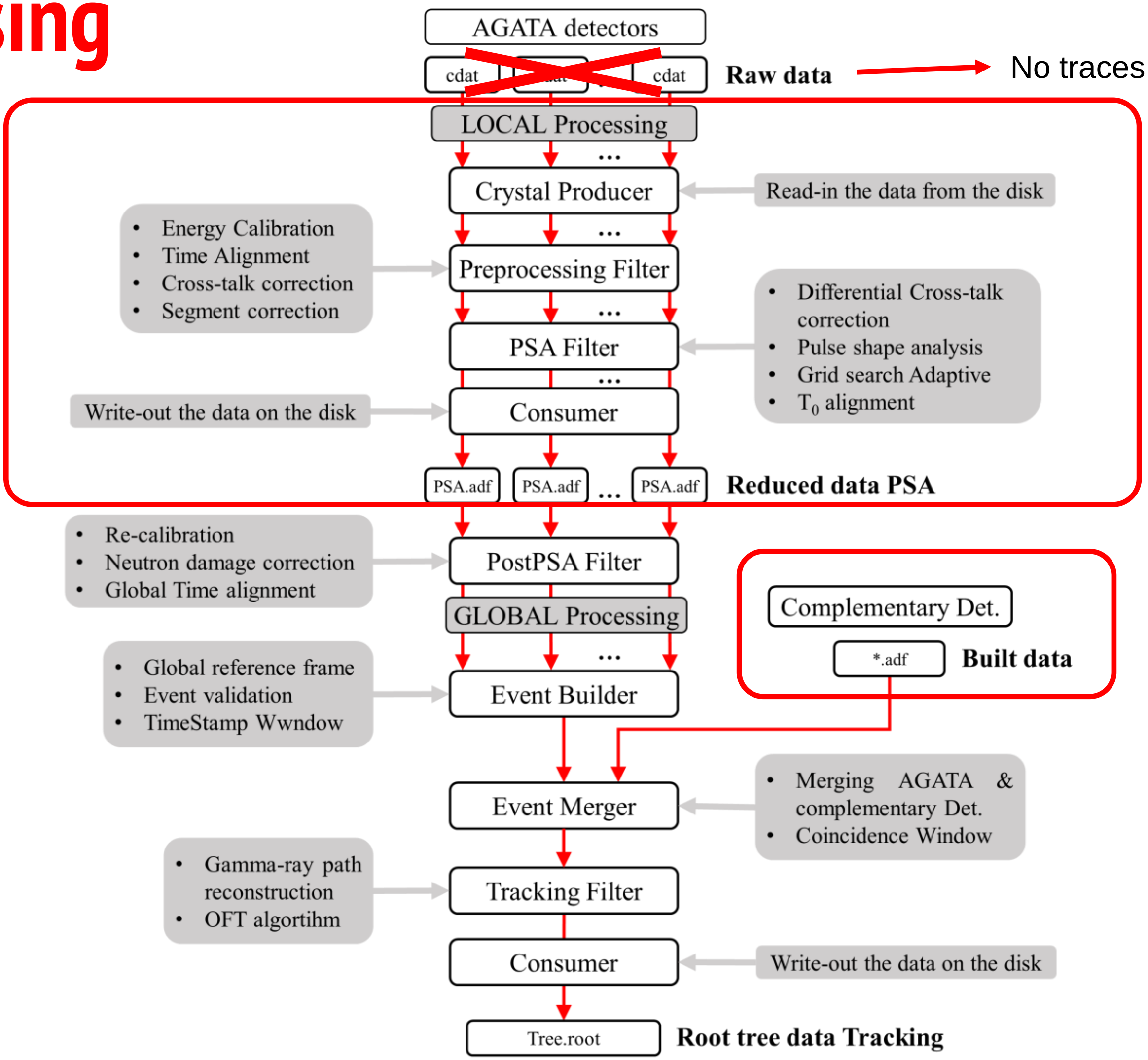
(a) XY plane

(b) XZ plane

(c) YZ plane

Data Processing

Narval actors



AGATA detectors

~~cdat~~ ~~cdat~~ ... ~~cdat~~ **Raw data** → No traces stored during LNL campaign

LOCAL Processing

Crystal Producer ← Read-in the data from the disk

- Energy Calibration
- Time Alignment
- Cross-talk correction
- Segment correction

→ Preprocessing Filter

PSA Filter ←

- Differential Cross-talk correction
- Pulse shape analysis
- Grid search Adaptive
- T_0 alignment

Write-out the data on the disk → Consumer

PSA.adf PSA.adf ... PSA.adf **Reduced data PSA**

Online
Configuration prepared before the experiment

- Re-calibration
- Neutron damage correction
- Global Time alignment

→ PostPSA Filter

GLOBAL Processing

- Global reference frame
- Event validation
- TimeStamp Wwndow

→ Event Builder

Complementary Det.

*.adf **Built data**

Event Merger ←

- Merging AGATA & complementary Det.
- Coincidence Window

- Gamma-ray path reconstruction
- OFT algortihm

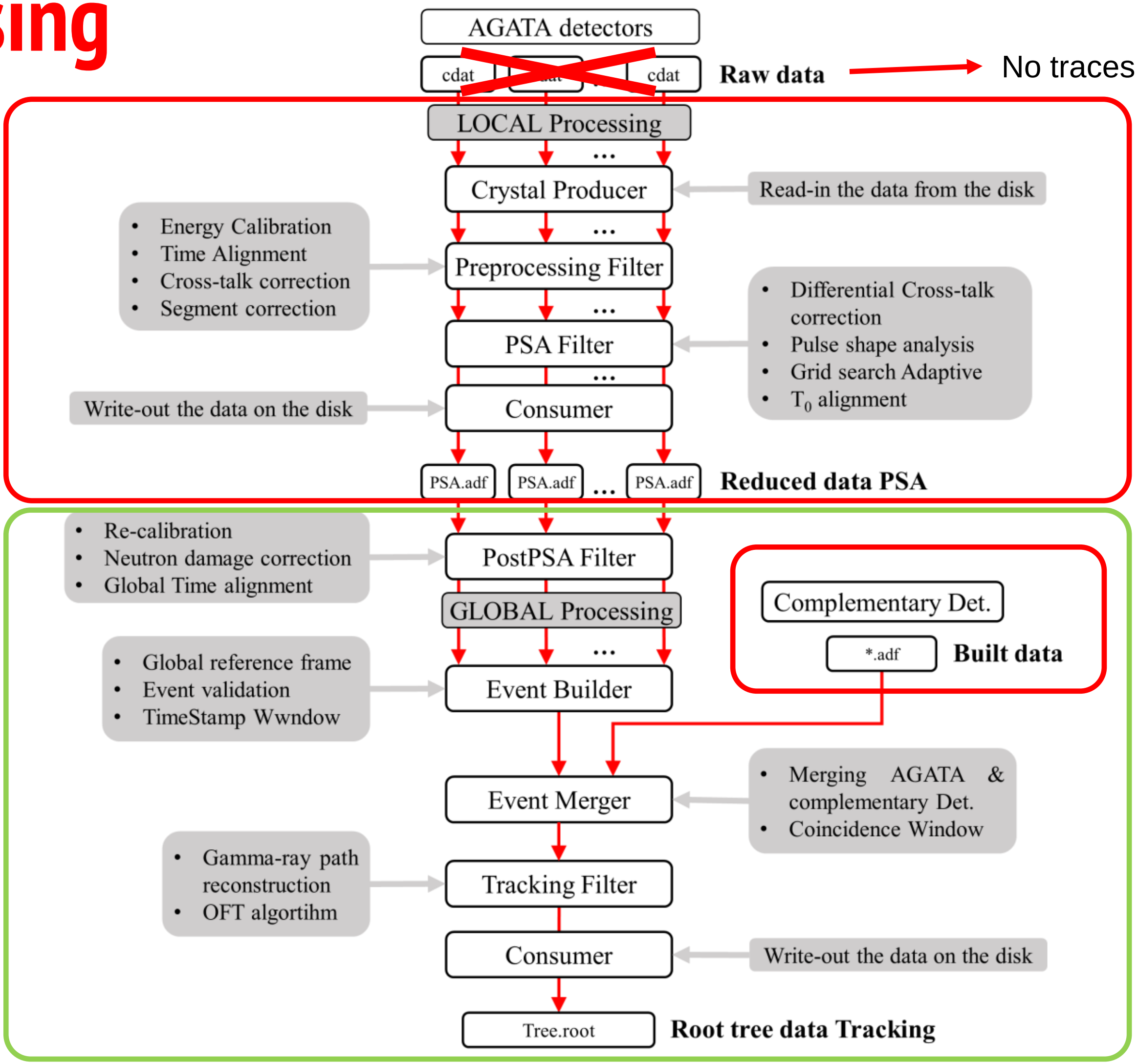
→ Tracking Filter

Consumer ← Write-out the data on the disk

Tree.root **Root tree data Tracking**

Data Processing

Narval actors



AGATA detectors

~~cdat~~ ~~cdat~~ ... ~~cdat~~ **Raw data**

No traces stored during LNL campaign

LOCAL Processing

Crystal Producer

- Read-in the data from the disk

Preprocessing Filter

- Energy Calibration
- Time Alignment
- Cross-talk correction
- Segment correction

PSA Filter

- Differential Cross-talk correction
- Pulse shape analysis
- Grid search Adaptive
- T_0 alignment

Consumer

- Write-out the data on the disk

PSA.adf PSA.adf ... PSA.adf **Reduced data PSA**

Online
Configuration prepared before the experiment

PostPSA Filter

- Re-calibration
- Neutron damage correction
- Global Time alignment

GLOBAL Processing

Event Builder

- Global reference frame
- Event validation
- TimeStamp Wwndow

Complementary Det.

*.adf **Built data**

Event Merger

- Merging AGATA & complementary Det.
- Coincidence Window

Tracking Filter

- Gamma-ray path reconstruction
- OFT algortihm

Consumer

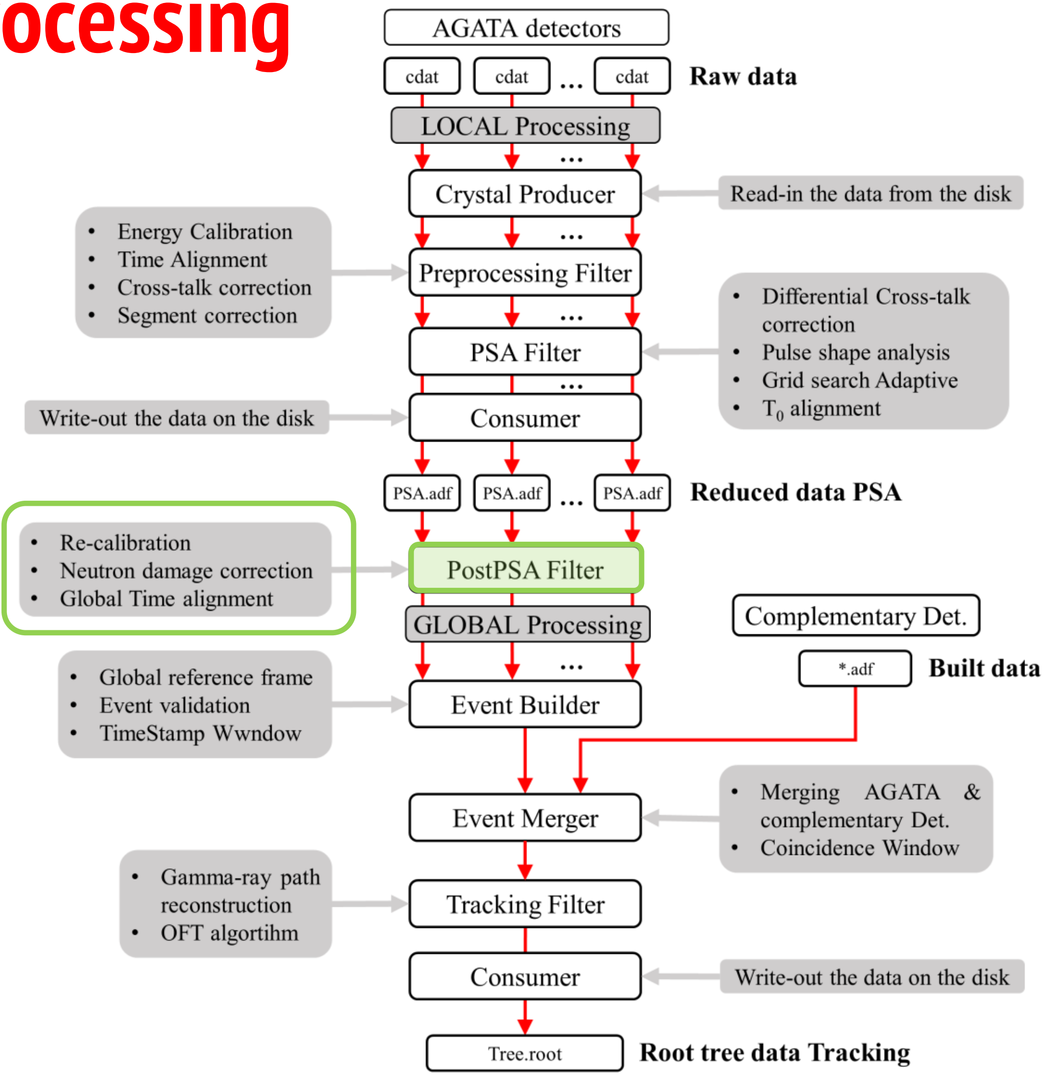
- Write-out the data on the disk

Tree.root **Root tree data Tracking**

Nearline/Offline
Configuration prepared after the experiment

Local Level Processing

Narval actors



AGATA detectors

cdat cdat … cdat **Raw data**

LOCAL Processing

Crystal Producer — Read-in the data from the disk

Preprocessing Filter

- Energy Calibration
- Time Alignment
- Cross-talk correction
- Segment correction

PSA Filter

- Differential Cross-talk correction
- Pulse shape analysis
- Grid search Adaptive
- T_0 alignment

Consumer — Write-out the data on the disk

PSA.adf PSA.adf … PSA.adf **Reduced data PSA**

PostPSA Filter

- Re-calibration
- Neutron damage correction
- Global Time alignment

GLOBAL Processing

Complementary Det.

*.adf **Built data**

Event Builder

- Global reference frame
- Event validation
- TimeStamp Wwndow

Event Merger

- Merging AGATA & complementary Det.
- Coincidence Window

Tracking Filter

- Gamma-ray path reconstruction
- OFT algortihm

Consumer — Write-out the data on the disk

Tree.root **Root tree data Tracking**

Local Level Processing

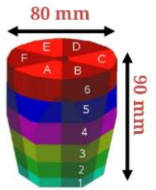
PostPSA Filter

- Performs:
  - Recovery (partial) of neutron damage using info from PSA: **Trapping.cal**
  - Final energy calibrations with offset: **RecalEnergy2.cal, gen_conf.py**
  - Force segments to core (optional) : **gen_conf.py**
  - Global Time alignment: **gen_conf.py**
- **Configuration for this actor can be done by users during/after the experiment**
- Generates one file:
  - Post__5-40-16384-UI__Ener.spec → **File in Out/00A e.g.**

Files in Conf/00A e.g. gen_conf.py its outside the configuration directory

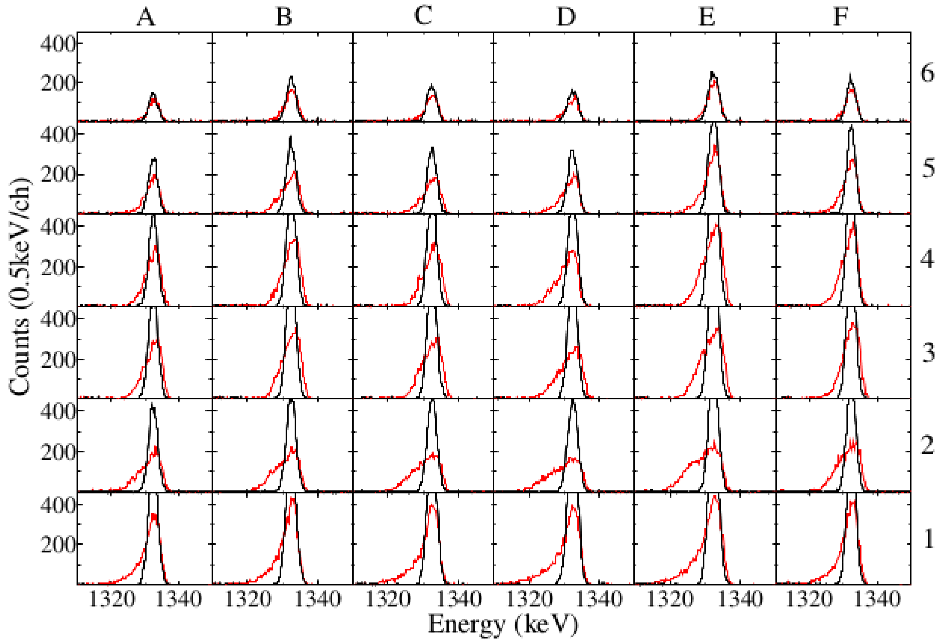
PostPSA Filter

1. Neutron Damage correction



6x6 segmented cathode

- **Fast neutrons** are well known to produce specific lattice defects in germanium crystals which act as **efficient hole traps.**
- Reduction in the charge collection efficiency of the detectors observable by **a low energy tailing** on the energy line shape
- AGATA crystals are n-type HPGe detectors, which are found to be less sensitive to the neutron radiation in terms of central contact signals
- The energy deficit can be **corrected using the position information obtained by the PSA**



SortPsaHits program applies to the PSA hits a grid of **correction parameters for the electron and hole trapping**, determining the optimum set parameters for all the detector channels **that minimizes the FWHM and the tail on the left** side of the energy peaks in the spectra.

PostPSA Filter

1. Neutron Damage correction

Replay to generate Psa__0-16-F__Hits.fdat files
femul key in PSAFilter: `"WritePSAHits",`

What is needed:

- Long 60Co run
- PSA hits file : Data/{crystalID}/**Psa__0-16-F__Hits.fdat**
- Conf File: **Trapping.cal, gen_conf.py**
- Auxiliary files: Pso__2-4-40-2048-UI__Ener.spec
- Programs/scripts:

femul key in PostPSAFilter:
`"Trapping Trapping.cal",`

SortPsaHits: get the optimum lambdaE lambadaH parameters and generates Pso__2-4-40-2048-UI__Ener.spec

```
SortPsaHits  -f  Psa__0-16-F__Hits.fdat  -best 1300 1350  -bpar 1 10000 0
SortPsaHits -f ../Data/{crystalID}/Psa__0-16-F__Hits.fdat -gain 5 -offs 5000 -fcal Trapping.cal
```

RecalEnergy: generate calibration coefficients for the different colümms of Trapping.conf

```
RecalEnergy -spe Pso__2-4-40-2048-UI__Ener.spec -num 40 -sub 0 -offs -5000 -gain 5 -noTR -dwa 25 2 | tee Recal_SG_orig.txt
```

colupdate.py: add these coefficients to the different columns of Trapping.conf

```
./colupdate.py -c 1 13 Trapping.cal Recal_SG_orig.txt -o Trapping.cal
```

The Trapping.cal file has 36 lines, one per segment:

```
#SG gainSG_orig gainCC_orig lambdaE lambdaH gainSG_corr gainCC_corr
 0           1.          1.    51.6     6.6          1.          1.
 1           1.          1.   269.3     6.6          1.          1.
 2           1.          1.    51.6     6.6          1.          1.
...
 35          1.          1.   104.4     8.9          1.          1.
```

3 steps process

1. SortPSAHits (Check)
2. RecalEnergy, SortPSAHits (Check)
3. RecalEnergy, SortPSAHits (Check)

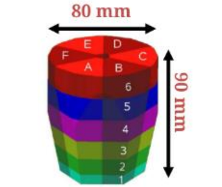
More details in AGATA_LLP_UsersGuide.pdf

PostPSA Filter

1. Neutron Damage correction

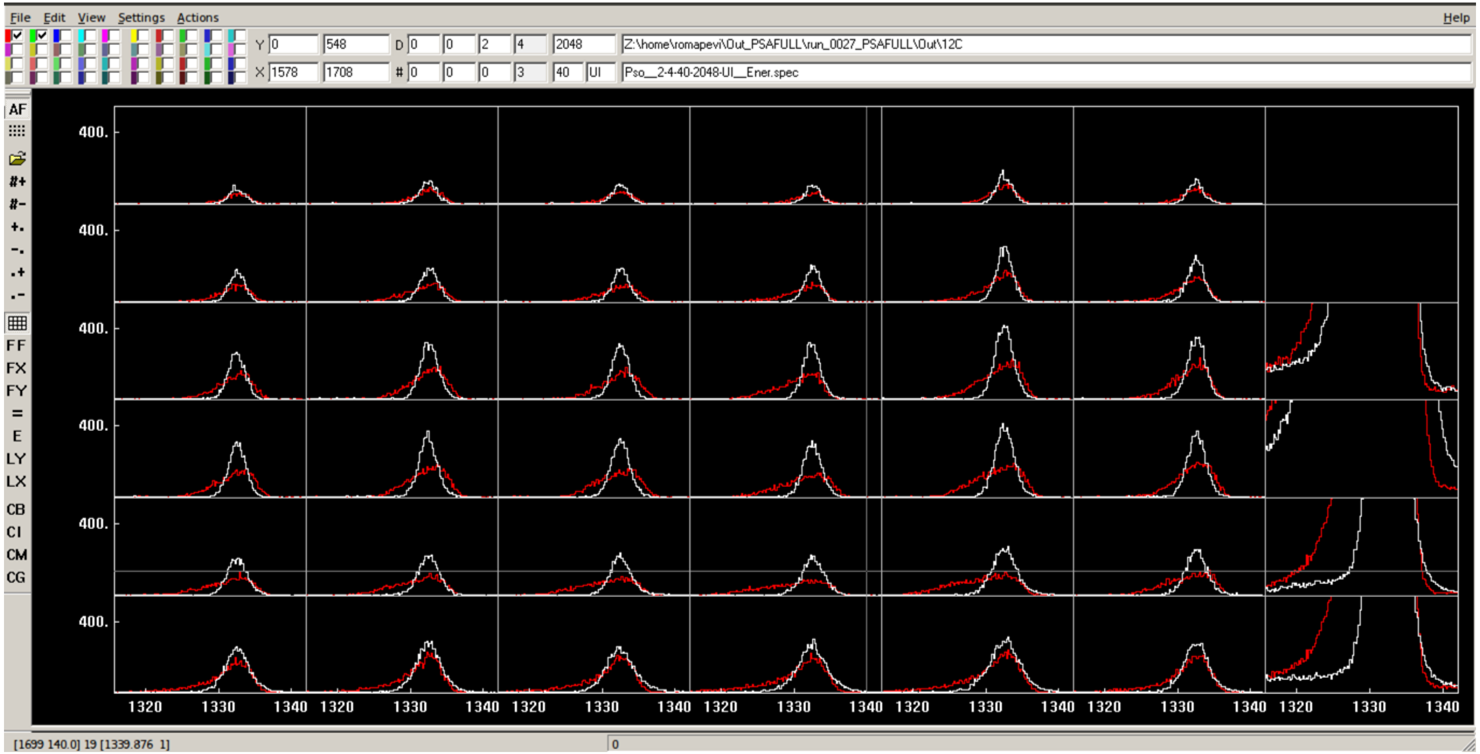
3 steps process

1. SortPSAHits (Check)
2. RecalEnergy, SortPSAHits (Check)
3. RecalEnergy, SortPSAHits (Check)



6x6 segmented cathode

Pso__2-4-40-2048-UI__Ener.spec [0][1][all] before (red) and [0][3][all] after (white) the neutron correction



Y 0 548 D 0 0 2 4 2048 Z:\home\romapevi\Out_PSAFULL\run_0027_PSAFULL\Out\12C

X 1578 1708 # 0 0 0 3 40 UI Pso__2-4-40-2048-UI__Ener.spec

[1699 140.0] 19 [1339.876 1] 0

[0-SG,1-CC]

[0-orig,1-orig+recal,2-corr,3-corr+recal]

[0-39]:

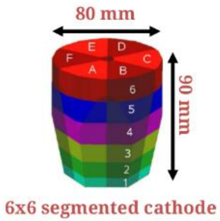
- 0-35 segments
- 36 Or of segments/cores
- 37 Or of segments/cores M=1
- 38 Sum of segments/cores
- 39 Average SumSegs+SumCC

```
#SG gainSG_orig gainCC_orig lambdaE lambdaH gainSG_corr gainCC_corr
 0           1.          1.    51.6     6.6          1.          1.
 1           1.          1.   269.3     6.6          1.          1.
 2           1.          1.    51.6     6.6          1.          1.
...
 35          1.          1.   104.4     8.9          1.          1.
```

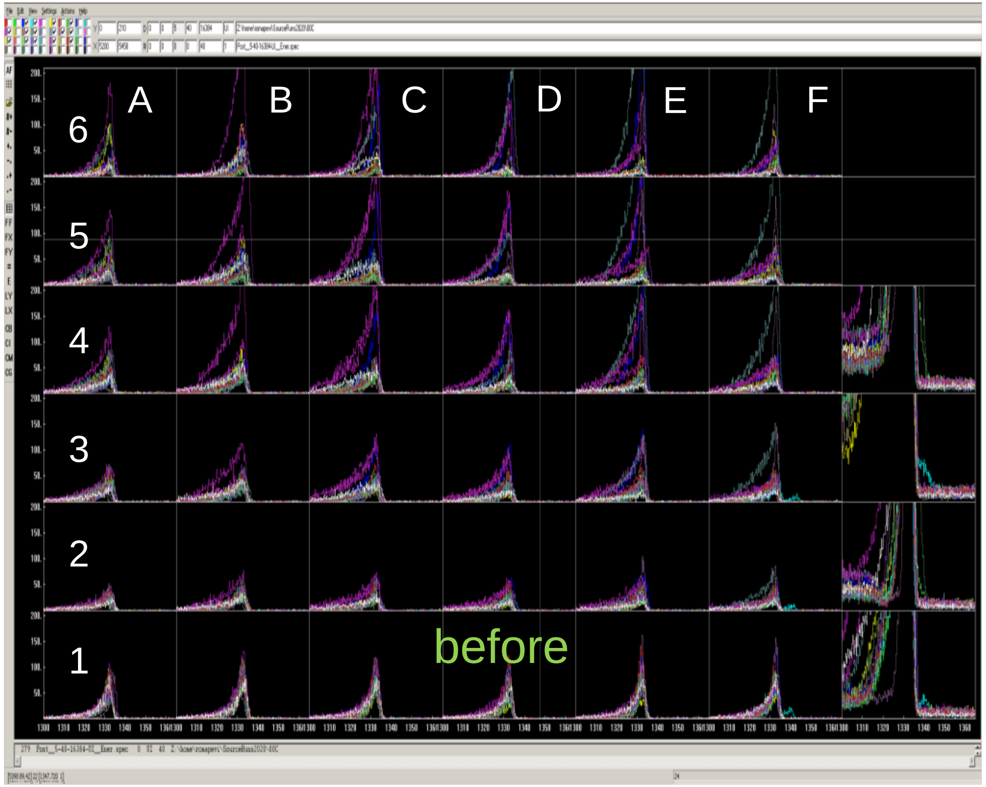
PostPSA Filter

1. Neutron Damage correction

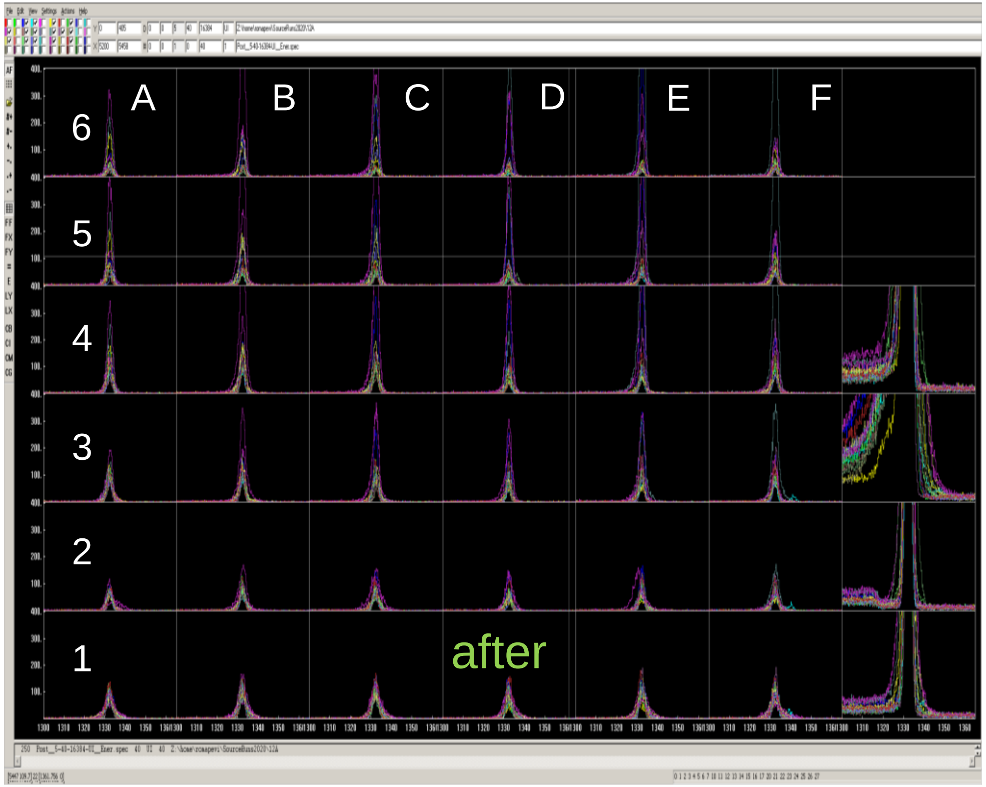
Verification with femul replay



Post__5-40-16384-UI__Ener.spec [0] [0-39]



Post__5-40-16384-UI__Ener.spec [1] [0-39]



PostPSA Filter

2. Recalibration

3 steps process

1. RecalEnergy2 (Check)
2. RecalCC and RecalSG (Check)
3. ForceSegmentstoCore (Optional)

Verification with femul replay each step

What is needed:

- Long 152Eu run
- PSA hits file : Data/{crystalID}/**Post__5-40-16384-UI__Ener.spec**
- Conf File: **RecalEnergy2.cal, gen_conf.py**
- Auxiliary files: Recal2.txt
- Programs/scripts:

RecalEnergy: generate calibration coefficients

- If Trapping.cal is **not** applied:

```
RecalEnergy -spe Out_norecal/{crystalID}/Post__5-40-16384-UI__Ener.spec -sub 0 -num 36 -gain 4 -poly1 -152Eu
```

- If Trapping.cal **is applied**:

```
RecalEnergy -spe Out_norecal/{crystalID}/Post__5-40-16384-UI__Ener.spec -sub 40 -num 36 -gain 4 -poly1 -152Eu
```

```
# indx  #spec #pks #ok    rEnergy     FW05     FW01      Area  Position  Width    Ampli    WTML    WTMR  slope*gain rChi2%    offs1*g   slope1*g rChi2%
#
     0     40   32  10   1408.15    5.032   12.662     4294   5624.78   16.5      171   4.320   1.823    1.001387   1.74      0.216   1.001157   0.42
     1     41   18   8   1409.43    9.080   18.768     2425   5614.94   36.0       59   2.329   1.823    1.004054 999.99      7.040   0.996854  91.65
     2     42   24  10   1407.05    7.637   17.111     3068   5611.22   29.1       85   2.861   1.823    1.003023  52.70     -0.732   1.003805  41.66
     3     43   25   9   1407.38    5.256   13.774     3854   5624.43   15.7      144   5.210   1.823    1.000901  29.62     -1.073   1.001038   2.44
     4     44   20   9   1408.21    4.658   12.739     2799   5621.39   12.1      116   6.562   1.823    1.002036   6.53      0.213   1.001812   6.24
     5     45   14   9   1408.15    4.126   10.131     1331   5623.55   14.1       65   3.909   1.823    1.001609  37.60     -0.389   1.002013  38.46
     6     46   29  10   1407.69    5.470   13.087     4393   5626.02   19.5      165   3.546   1.823    1.000845   9.79      0.293   1.000532   8.18
     7     47   22  10   1408.45    6.756   17.530     2612   5619.43   20.6       76   4.964   1.823    1.002556  21.86      0.213   1.002329  23.10
     8     48   22  10   1406.20    7.643   17.149     3859   5615.23   29.2      107   2.873   1.823    1.001704  58.23     -0.356   1.002085  61.32
     9     49   27   5   1408.70    7.257   18.956     4738   3839.23   17.0      186   3.888   2.197    1.467693 919.64      3.908   1.461898 601.93
```

The RecalEnergy2.cal file has 36 lines, one per segment:

```
#segm %d(id)      %f(offset)   %f(egain)
 segm     0          0.216      1.001157
 segm     1          7.040      0.996854
 segm     2         -0.732      1.003805
 ...
 segm    35         -1.083      1.002038
```

colupdate.py: add these coefficients to the 3rd and 4th columns of RecalEnergy2.cal

```
./colupdate.py -c 2 14 RecalEnergy2.cal Recal2.txt -o RecalEnergy2.cal
./colupdate.py -c 3 15 RecalEnergy2.cal Recal2.txt -o RecalEnergy2.cal
```

femul key in PostPSAFilter:

```
"RecalEnergy2 RecalEnergy2.cal",
"RecalCC offset egain",
"RecalSG offset egain",
```

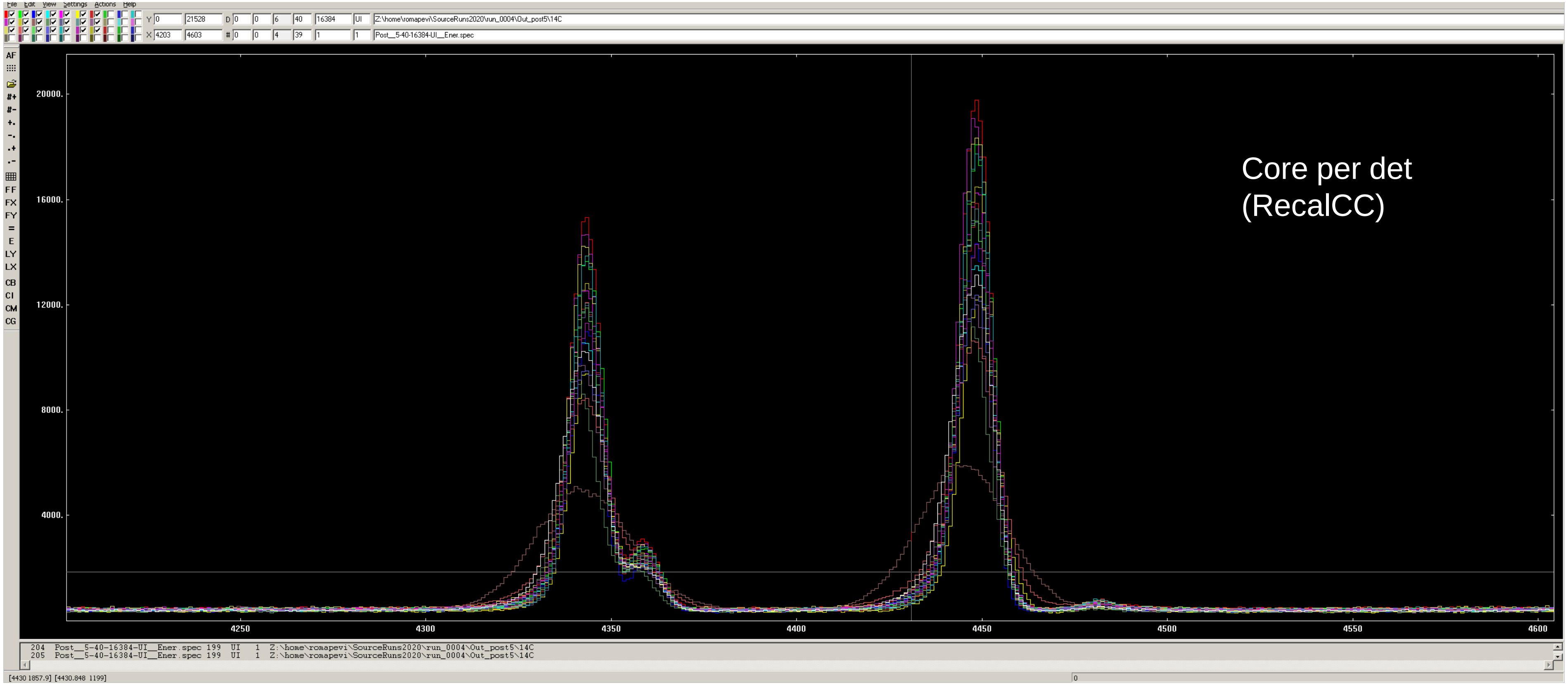
More details in AGATA_LLP_UsersGuide.pdf

PostPSA Filter

Verification with femul replay each step

2. Recalibration

Post__5-40-16384-UI__Ener.spec [4] [39]



Y 0 21528 D 0 0 6 40 16384 UI Z:\home\romapevi\SourceRuns2020\run_0004\Out_post5\14C

X 4203 4603 # 0 0 4 39 1 1 Post__5-40-16384-UI__Ener.spec

Core per det
(RecalCC)

```
 204  Post__5-40-16384-UI__Ener.spec 199  UI   1  Z:\home\romapevi\SourceRuns2020\run_0004\Out_post5\14C
 205  Post__5-40-16384-UI__Ener.spec 199  UI   1  Z:\home\romapevi\SourceRuns2020\run_0004\Out_post5\14C
```

[4430 1857.9] [4430.848 1199]

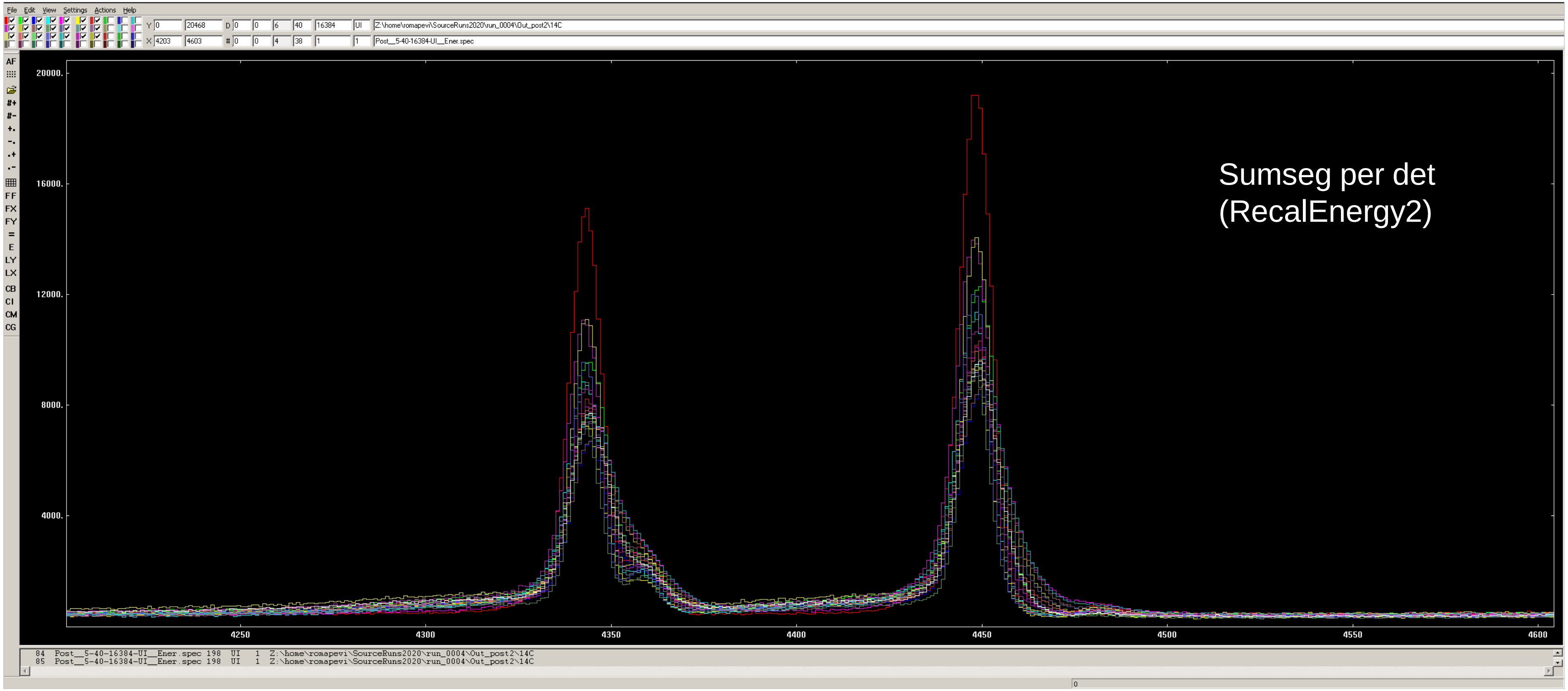
0

PostPSA Filter

Verification with femul replay each step

2. Recalibration

Post__5-40-16384-UI__Ener.spec [4] [38]



```
Y 0     20468  D 0  0  6  40  16384  UI  Z:\home\romapevi\SourceRuns2020\run_0004\Out_post2\14C
X 4203  4603   # 0  0  4  38  1      1   Post__5-40-16384-UI__Ener.spec
```

Sumseg per det
(RecalEnergy2)

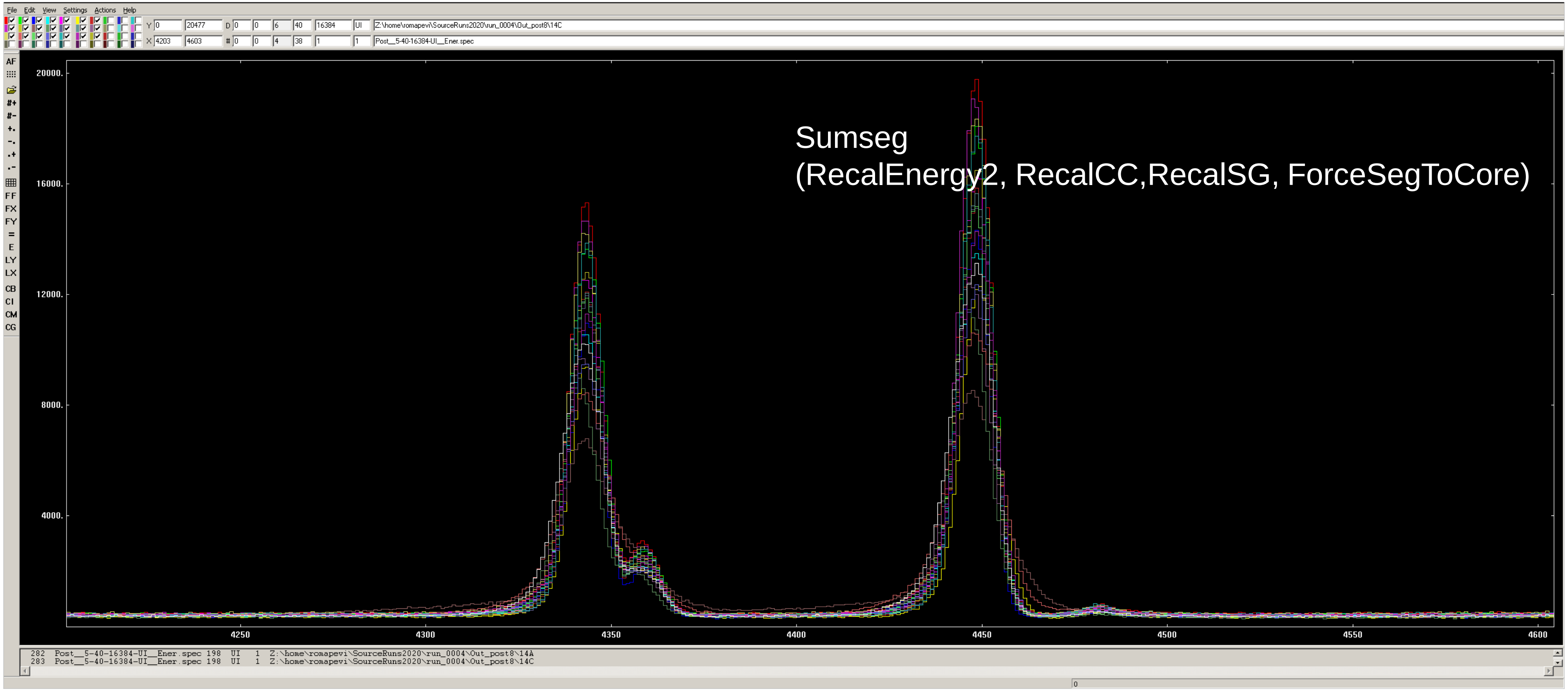
```
 84  Post__5-40-16384-UI__Ener.spec 198  UI   1  Z:\home\romapevi\SourceRuns2020\run_0004\Out_post2\14C
 85  Post__5-40-16384-UI__Ener.spec 198  UI   1  Z:\home\romapevi\SourceRuns2020\run_0004\Out_post2\14C
```

PostPSA Filter

Verification with femul replay each step

2. Recalibration

Post__5-40-16384-UI__Ener.spec [4] [38]



```
Y 0     20477   D 0  0  6  40  16384  UI  Z:\home\romapevi\SourceRuns2020\run_0004\Out_post8\14C
X 4203  4603    # 0  0  4  38  1      1   Post__5-40-16384-UI__Ener.spec
```

Sumseg
(RecalEnergy2, RecalCC,RecalSG, ForceSegToCore)

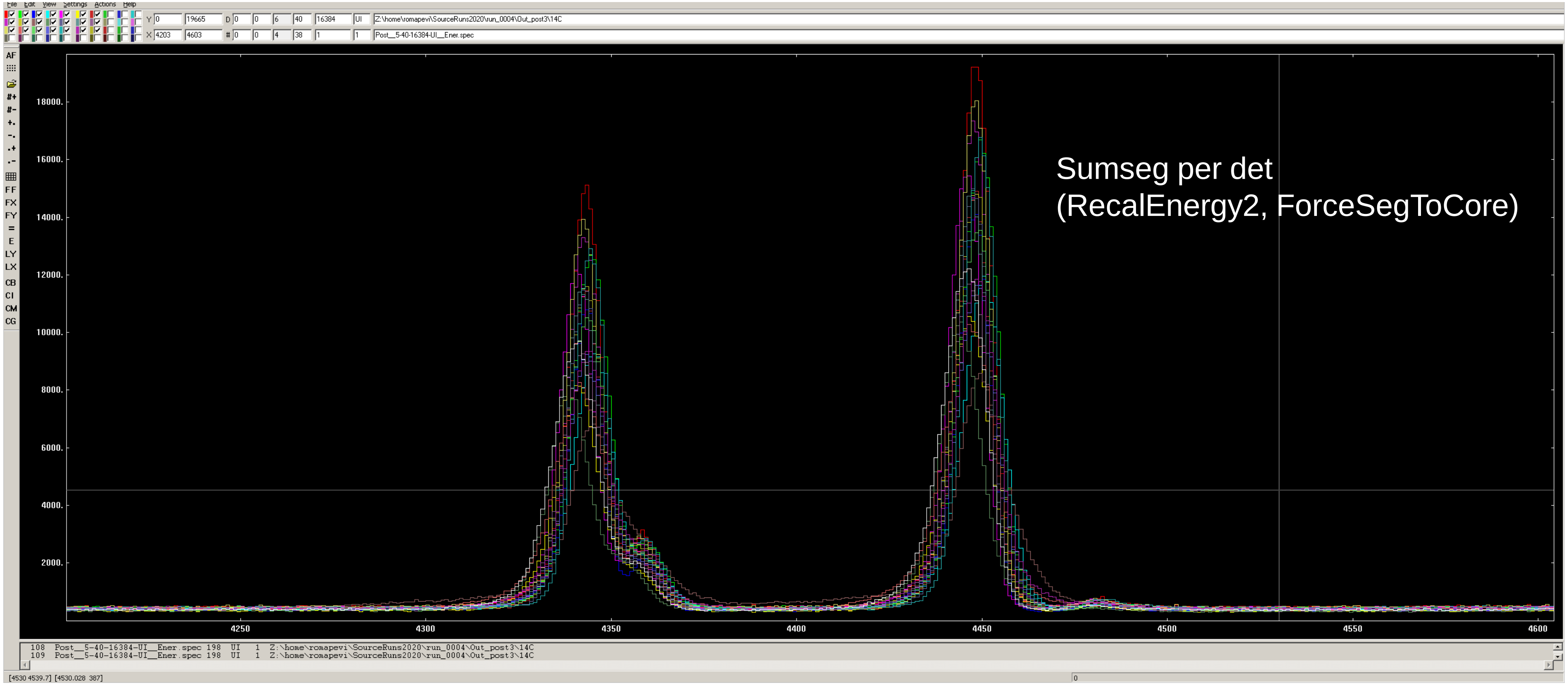
```
 282  Post__5-40-16384-UI__Ener.spec 198  UI   1  Z:\home\romapevi\SourceRuns2020\run_0004\Out_post8\14A
 283  Post__5-40-16384-UI__Ener.spec 198  UI   1  Z:\home\romapevi\SourceRuns2020\run_0004\Out_post8\14C
```

PostPSA Filter

Verification with femul replay each step

2. Recalibration

Post__5-40-16384-UI__Ener.spec [4] [38]



```
Y 0     19665   D 0  0  6  40  16384  UI  Z:\home\romapevi\SourceRuns2020\run_0004\Out_post3\14C
X 4203  4603    # 0  0  4  38  1      1   Post__5-40-16384-UI__Ener.spec
```

Sumseg per det
(RecalEnergy2, ForceSegToCore)

```
 108  Post__5-40-16384-UI__Ener.spec 198  UI   1  Z:\home\romapevi\SourceRuns2020\run_0004\Out_post3\14C
 109  Post__5-40-16384-UI__Ener.spec 198  UI   1  Z:\home\romapevi\SourceRuns2020\run_0004\Out_post3\14C
```

[4530 4539.7] [4530.028 387]

0

PostPSA Filter

3. Force Segments to Core

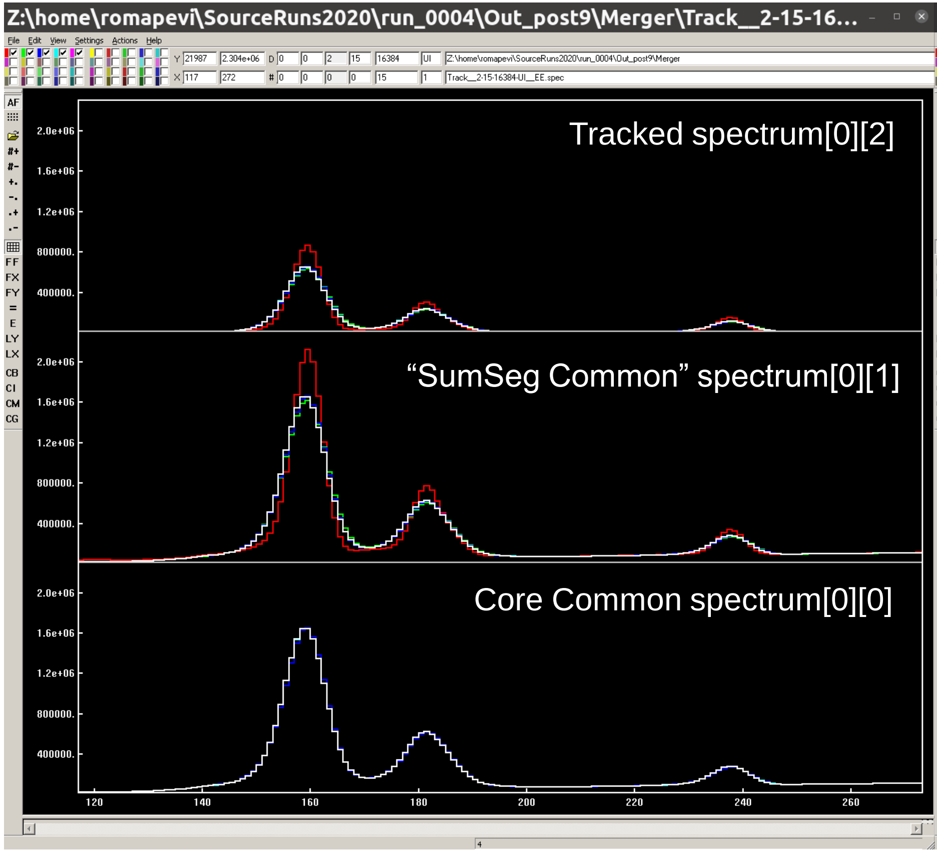
No ForceSeg, RecalEnergy2

ForceSeg, RecalEnergy2, RecalCC RecalSG

ForceSeg, RecalEnergy2 no offset, RecalCC RecalSG

femul key in PostPSAFilter:
`"ForceSegmentsToCore",`

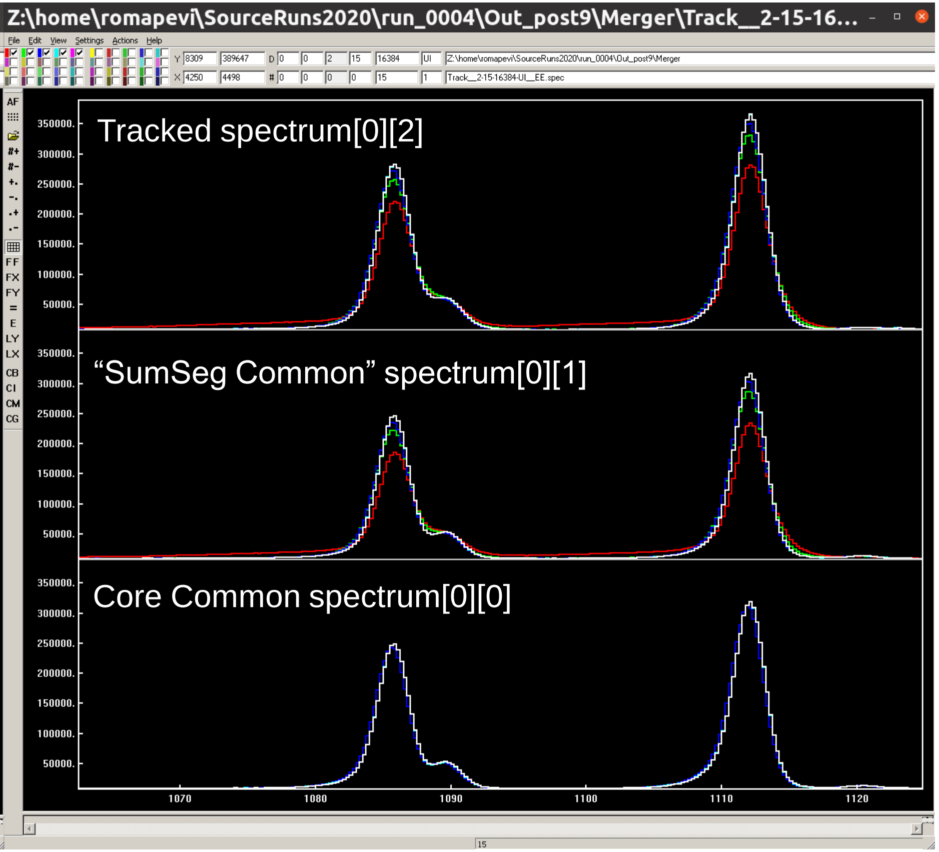
Track__2-15-16384-UI__EE.spec [0][0-2]



Z:\home\romapevi\SourceRuns2020\run_0004\Out_post9\Merger\Track__2-15-16...

Y 21987 2.304e+06 D 0 0 2 15 16384 UI Z:\home\romapevi\SourceRuns2020\run_0004\Out_post9\Merger

X 117 272 # 0 0 0 0 15 1 Track__2-15-16384-UI__EE.spec



Z:\home\romapevi\SourceRuns2020\run_0004\Out_post9\Merger\Track__2-15-16...

Y 8309 389647 D 0 0 2 15 16384 UI Z:\home\romapevi\SourceRuns2020\run_0004\Out_post9\Merger

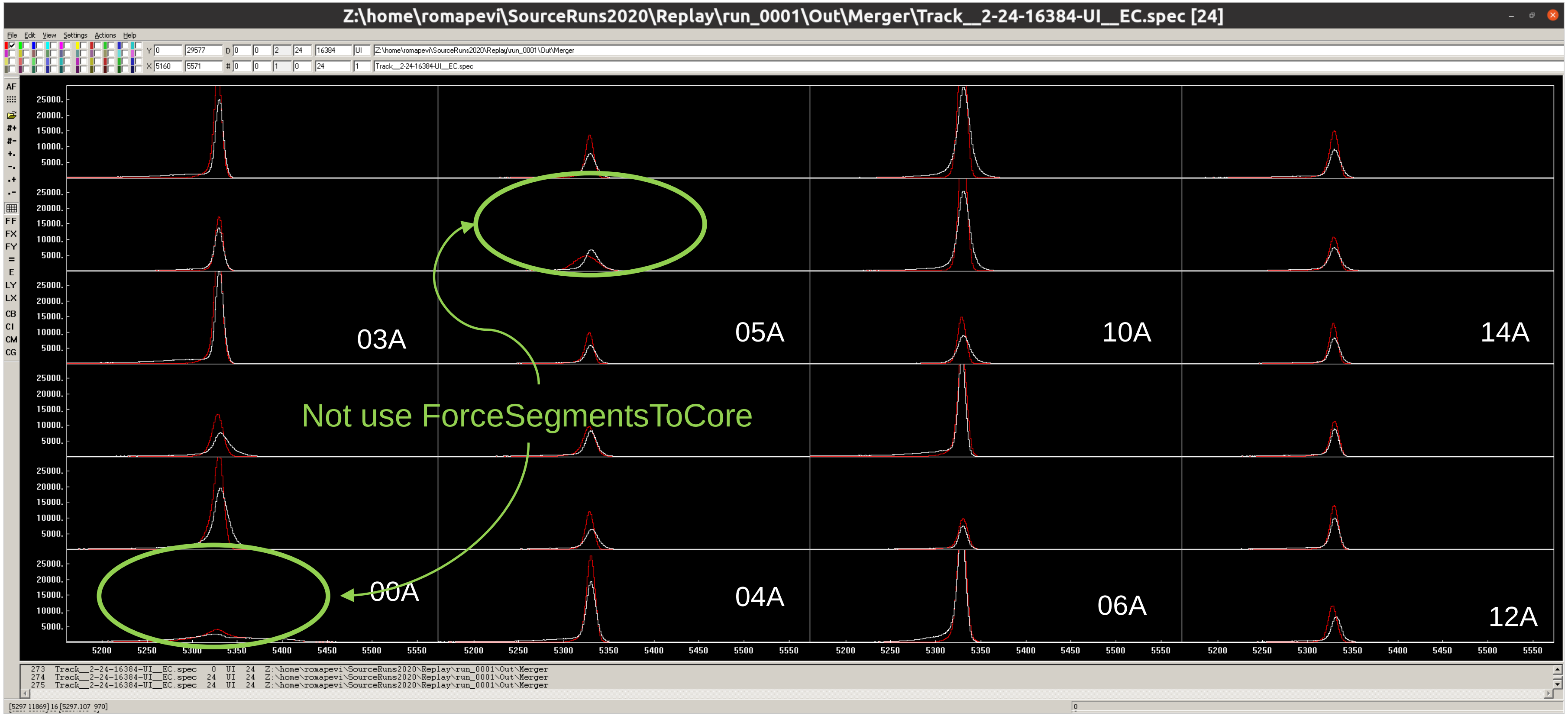
X 4250 4498 # 0 0 0 0 15 1 Track__2-15-16384-UI__EE.spec

PostPSA Filter

3. Force Segments to Core

femul key in PostPSAFilter:
“ForceSegmentsToCore”,

Track__2-24-16384-UI__EC.spec



Z:\home\romapevi\SourceRuns2020\Replay\run_0001\Out\Merger\Track__2-24-16384-UI__EC.spec [24]

Y 0 29577 D 0 0 2 24 16384 UI Z:\home\romapevi\SourceRuns2020\Replay\run_0001\Out\Merger

X 5160 5571 # 0 0 1 0 24 1 Track__2-24-16384-UI__EC.spec

Not use ForceSegmentsToCore

```
 273  Track__2-24-16384-UI__EC.spec   0  UI  24  Z:\home\romapevi\SourceRuns2020\Replay\run_0001\Out\Merger
 274  Track__2-24-16384-UI__EC.spec  24  UI  24  Z:\home\romapevi\SourceRuns2020\Replay\run_0001\Out\Merger
 275  Track__2-24-16384-UI__EC.spec  24  UI  24  Z:\home\romapevi\SourceRuns2020\Replay\run_0001\Out\Merger
```

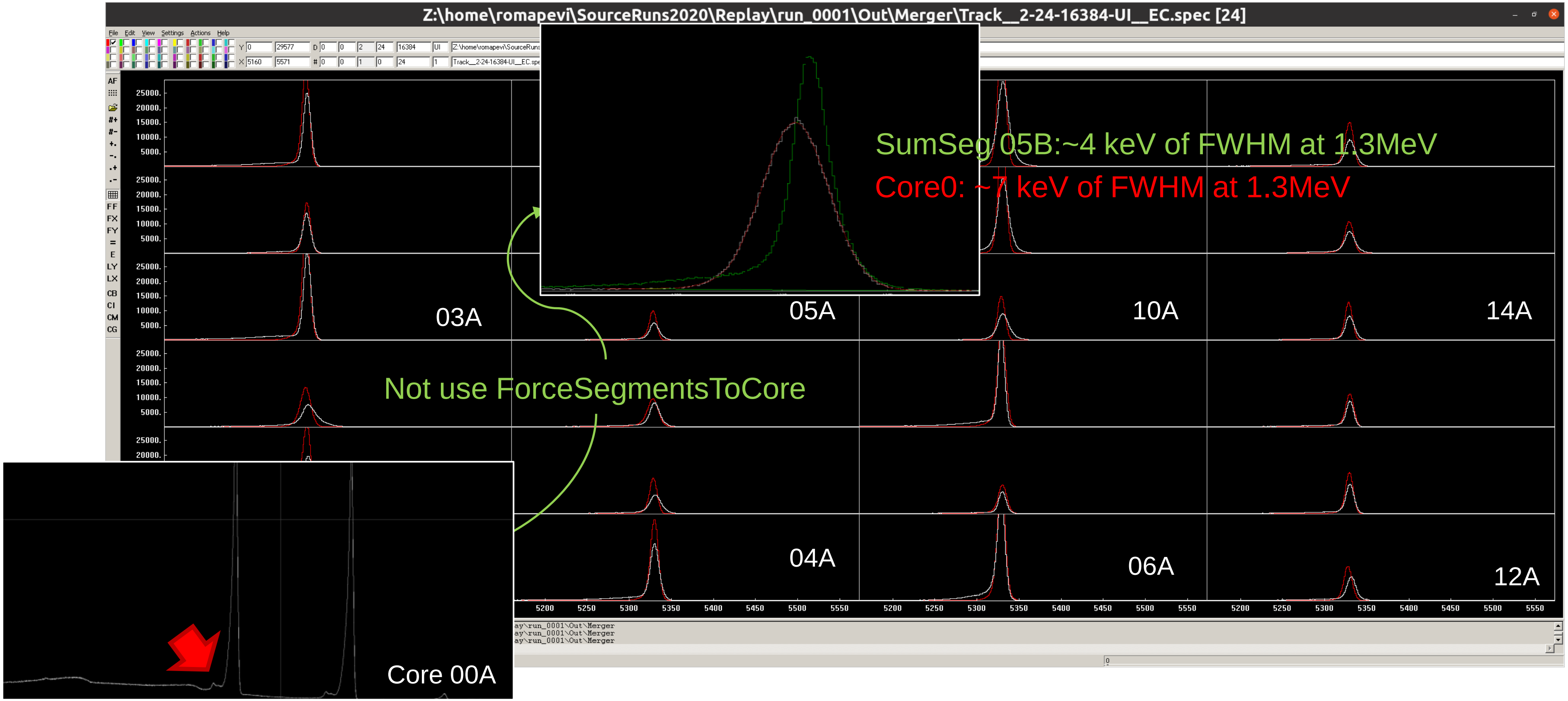
[5297 11869] 16 [5297.107 970]

PostPSA Filter

3. Force Segments to Core

femul key in PostPSAFilter:
`"ForceSegmentsToCore",`

Track__2-24-16384-UI__EC.spec



Z:\home\romapevi\SourceRuns2020\Replay\run_0001\Out\Merger\Track__2-24-16384-UI__EC.spec [24]

SumSeg 05B:~4 keV of FWHM at 1.3MeV

Core0: ~7 keV of FWHM at 1.3MeV

Not use ForceSegmentsToCore

```
ay\run_0001\Out\Merger
ay\run_0001\Out\Merger
ay\run_0001\Out\Merger
```

PostPSA Filter

4. Global time alignment

To be done every time that there is a GTS alignment

2 steps process

1. Replay without coeff
2. Replay with coeff

What is needed:

- Any run
- Spectra file : Data/Merger/**Track__35-35-1000-UI__TT.spec**
- Conf File: **gen_conf.py**
- Auxiliary files: Recal2.txt
- Programs/scripts:

RecalEnergy: generate shift coefficients for the N*N time spectra

```
RecalEnergy -spe ../Out/Merger/Track__${N}-${N}-1000-UI__TT.spec -T 500 -num ${NN} | tee recalT.dat
```

```
# indx  #spec #pks #ok   rEnergy     FW05     FW01      Area  Position  Width   Ampli    WTML    WTMR  shift*gain
#
     0      0    1   1    0.00      0.000    0.000         0     0.00     0.0       0    0.000   0.000       0.000
     1      1    1   1  503.37     19.629   44.382      9422   500.85    19.5     400    2.382   2.171      -0.850
     2      2    1   1  501.04     16.180   36.094     11042   500.47    15.8     574    2.604   1.955      -0.473
     3      3    1   1  502.67     16.667   36.949     10726   499.84    16.4     543    2.558   1.958       0.164
     4      4    1   1  503.28     17.366   40.384      8202   499.65    17.1     388    2.484   2.231       0.350
    ...
```

solveTT.py:find the best shift combination.

```
${pathSoftware}/solveTT.py -f recalT_nohead.dat -n ${N} -c 13 -p 500
```

```
Shifts that minimize Chi2
0.001
-0.181
0.004
-0.087
0.040
-0.239
...
```

femul key in PostPSAFilter:
`"TimeShiftCC coeff",`

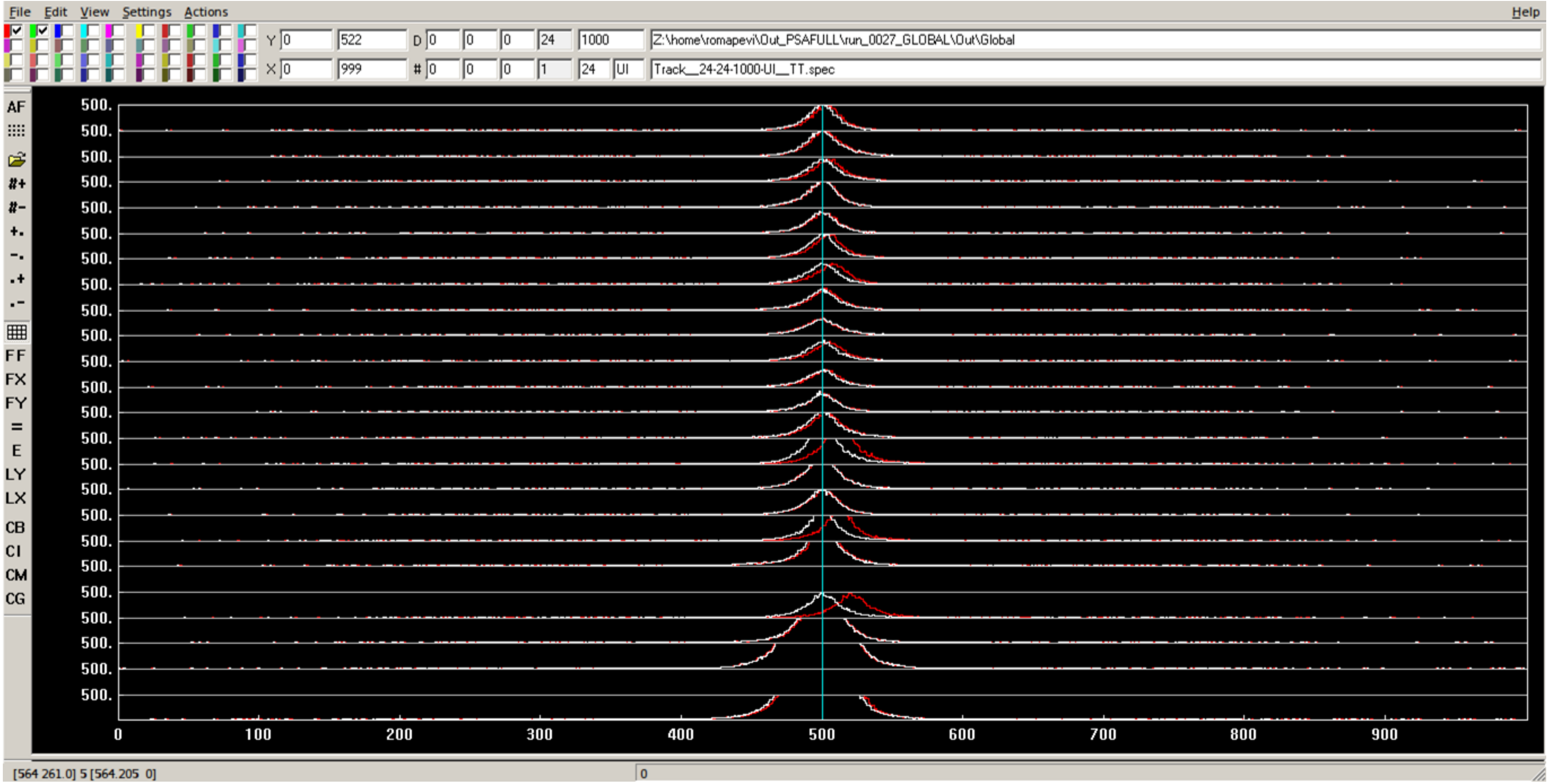
More details in AGATA_LLP_UsersGuide.pdf

PostPSA Filter

Verification with femul replay

4. Global Time Alignment

Track__24-24-1000-UI__TT.spec example detector 00B [0][all] red before, white after time alignment



Y 0 522 D 0 0 0 24 1000 Z:\home\romapevi\Out_PSAFULL\run_0027_GLOBAL\Out\Global

X 0 999 # 0 0 0 1 24 UI Track__24-24-1000-UI__TT.spec

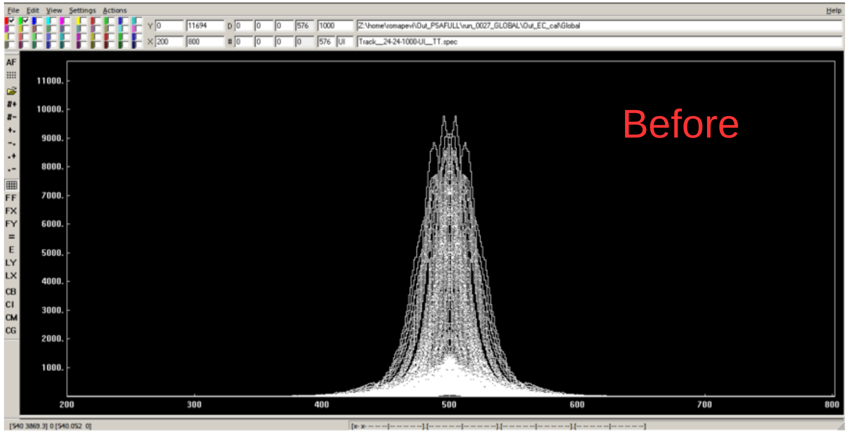
[564 261.0] 5 [564.205 0]   0

PostPSA Filter

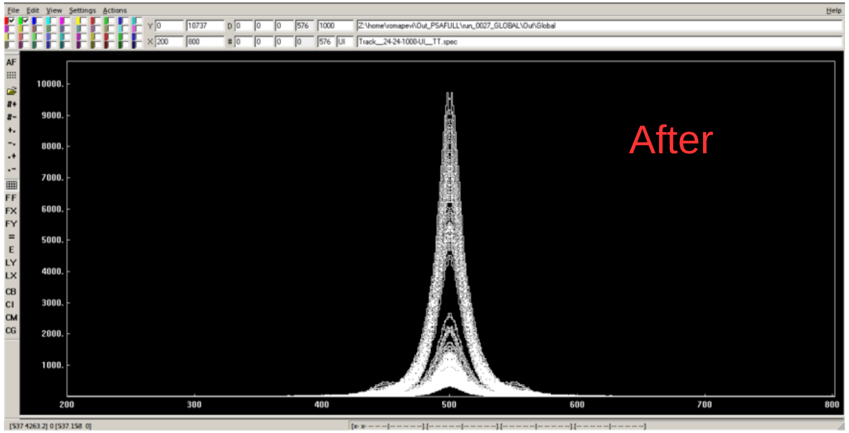
Verification with femul replay

4. Global Time Alignment

Track__24-24-1000-UI__TT.spec all [all][all]



```
Y 0 11694 D 0 0 0 576 1000 Z:\home\romapevi\Out_PSAFULL\run_0027_GLOBAL\Out_EC_cal\Global
X 200 800 # 0 0 0 0 576 UI Track__24-24-1000-UI__TT.spec
[540 3869.3] 0 [540.052 0]
```



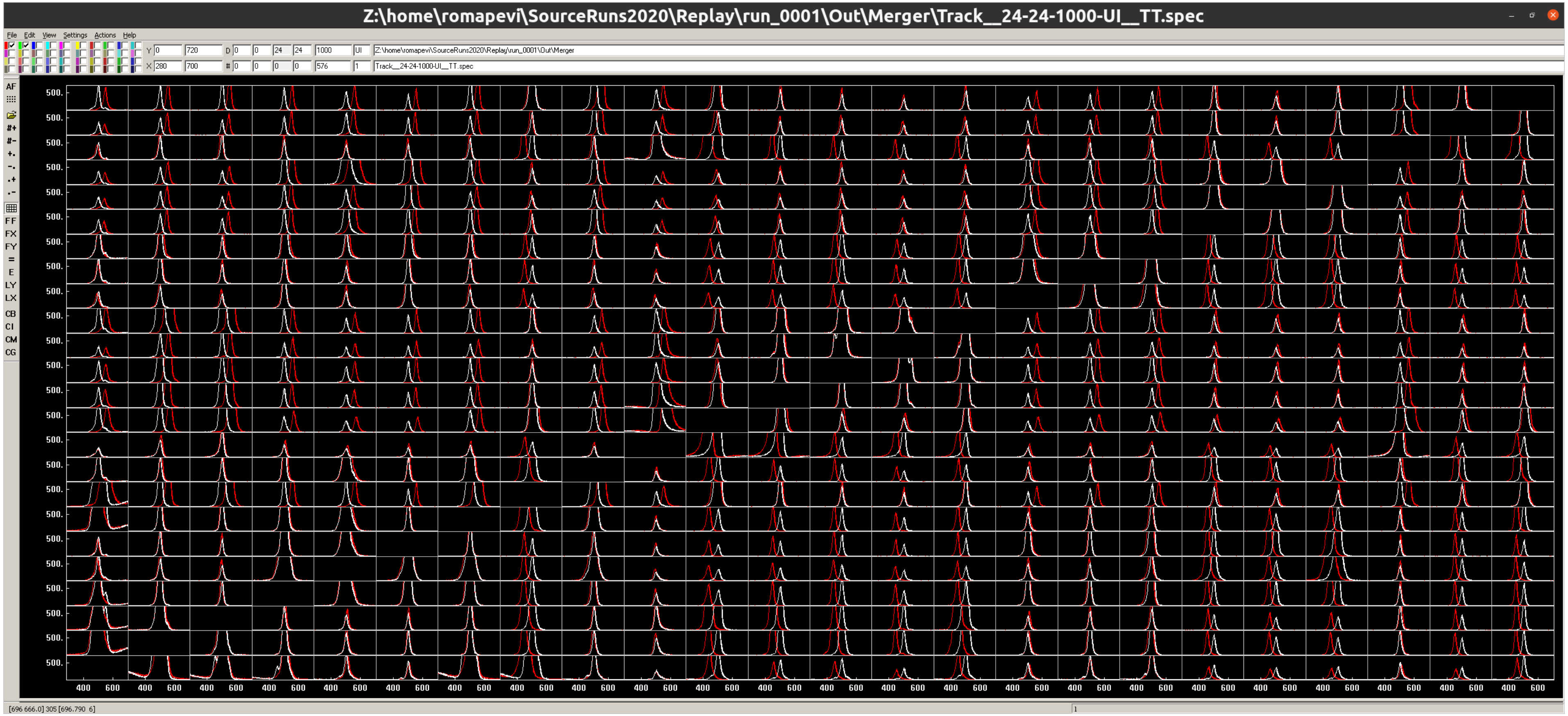
```
Y 0 10737 D 0 0 0 576 1000 Z:\home\romapevi\Out_PSAFULL\run_0027_GLOBAL\Out\Global
X 200 800 # 0 0 0 0 576 UI Track__24-24-1000-UI__TT.spec
[537 4263.2] 0 [537.158 0]
```

PostPSA Filter

4. Global Time Alignment

Verification with femul replay

- Track__24-24-1000-UI__TT.spec all [all][all] red before, white after time alignment



Z:\home\romapevi\SourceRuns2020\Replay\run_0001\Out\Merger\Track__24-24-1000-UI__TT.spec

File Edit View Settings Actions Help

Y 0 720 D 0 0 24 24 1000 UI Z:\home\romapevi\SourceRuns2020\Replay\run_0001\Out\Merger
X 280 700 # 0 0 0 0 576 1 Track__24-24-1000-UI__TT.spec

[696 666.0] 305 [696.790 6]

00A 03A 04A 05A 06A 10A 12A 14A

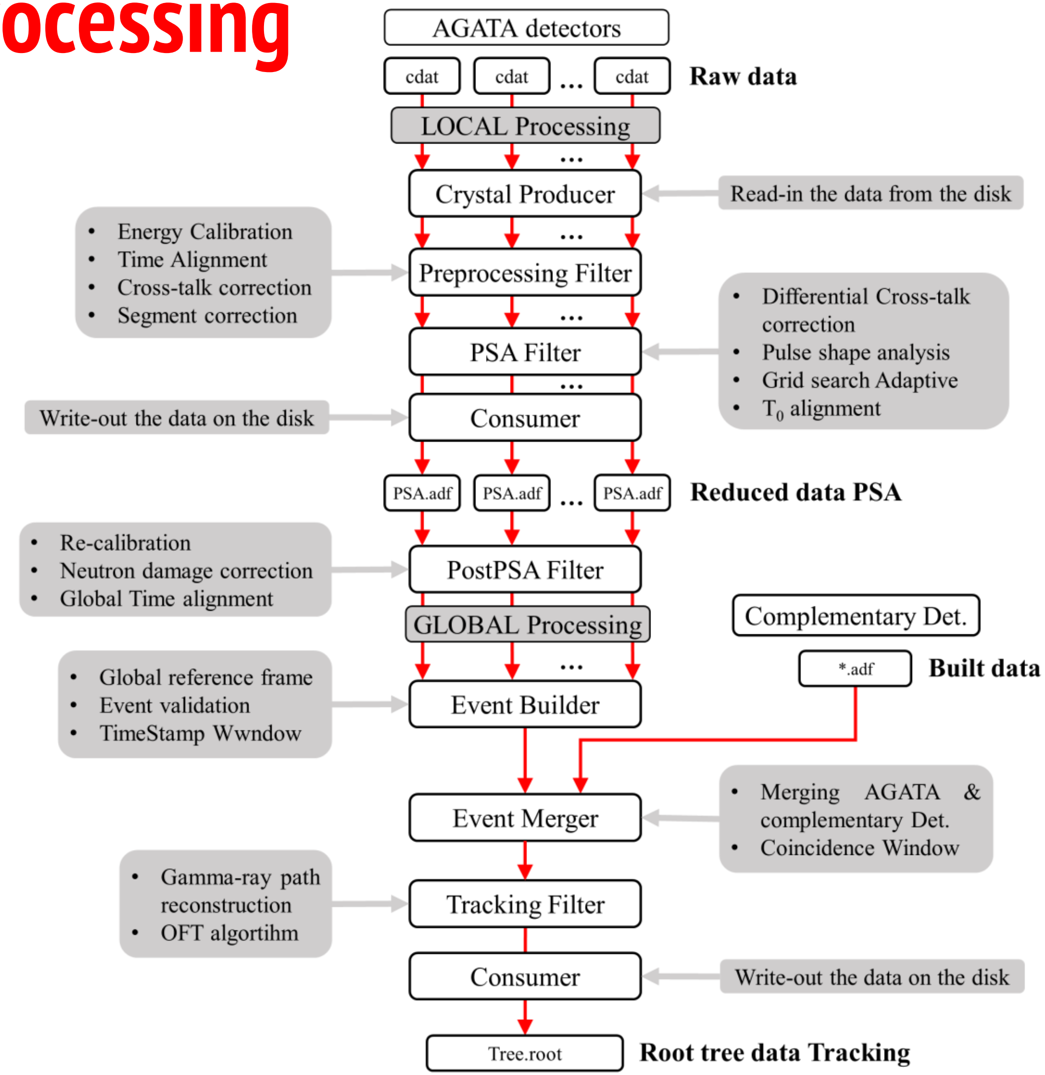
Local Level Processing

PostPSA Filter

- Follow the order given here.
- Be careful of the possible redundant calibration done by the PostPSA filter actor.
- The PostPSA is the last chance to have properly calibrated segments.
- The calibration offset can only be set at this level of the analysis.
- ForceSegToCore! final correction, only when the core resolution is good.
- Keep track of the GTS alignment for the Global Time alignment (important to reduce random coincidences)

Local Level Processing

Narval actors



AGATA detectors

cdat cdat … cdat **Raw data**

LOCAL Processing

Crystal Producer ← Read-in the data from the disk

- Energy Calibration
- Time Alignment
- Cross-talk correction
- Segment correction

→ Preprocessing Filter

PSA Filter ←

- Differential Cross-talk correction
- Pulse shape analysis
- Grid search Adaptive
- T_0 alignment

Write-out the data on the disk → Consumer

PSA.adf PSA.adf … PSA.adf **Reduced data PSA**

- Re-calibration
- Neutron damage correction
- Global Time alignment

→ PostPSA Filter

GLOBAL Processing

Complementary Det.

*.adf **Built data**

- Global reference frame
- Event validation
- TimeStamp Wwndow

→ Event Builder

Event Merger ←

- Merging AGATA & complementary Det.
- Coincidence Window

- Gamma-ray path reconstruction
- OFT algortihm

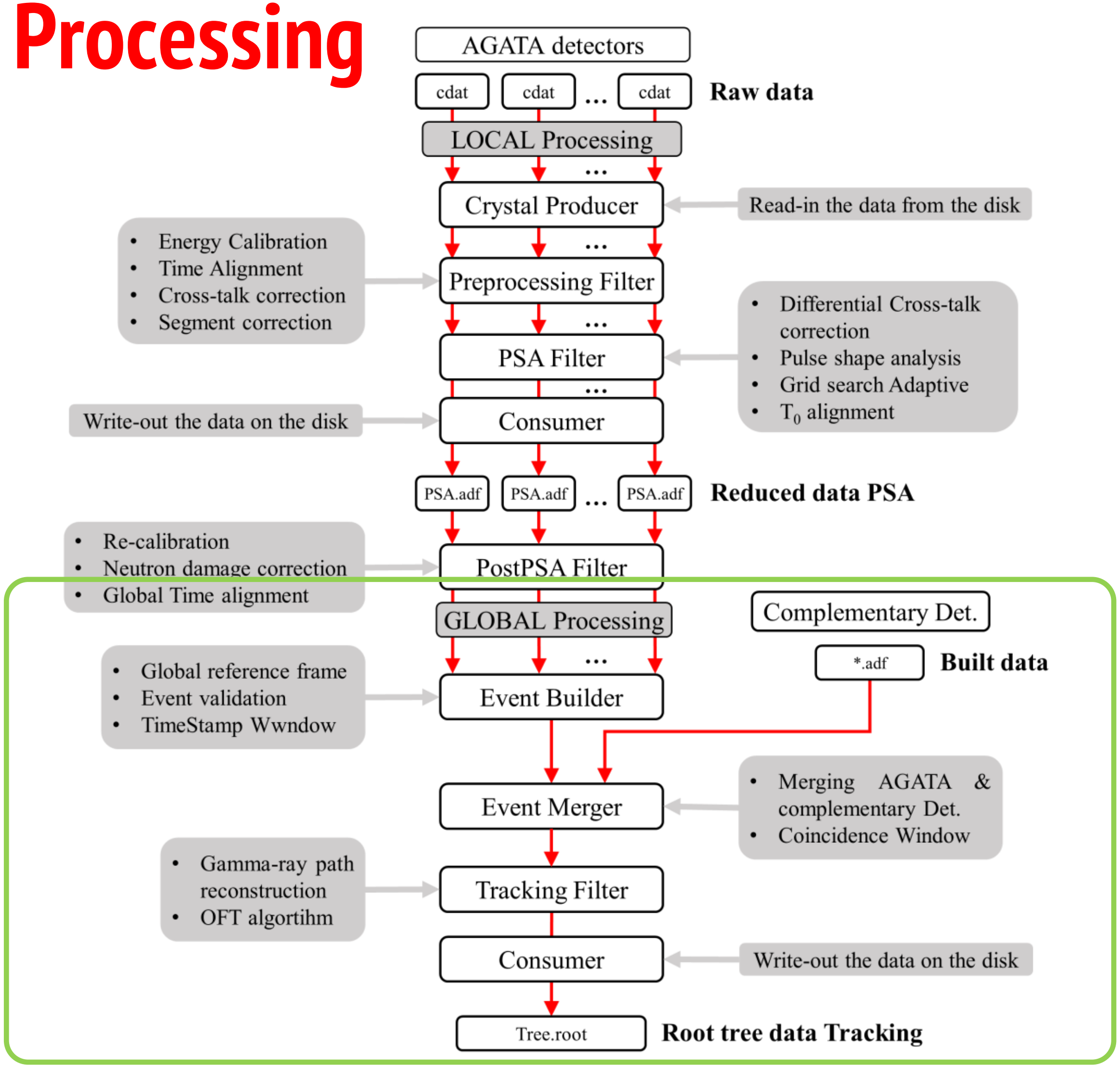
→ Tracking Filter

Consumer ← Write-out the data on the disk

Tree.root **Root tree data Tracking**

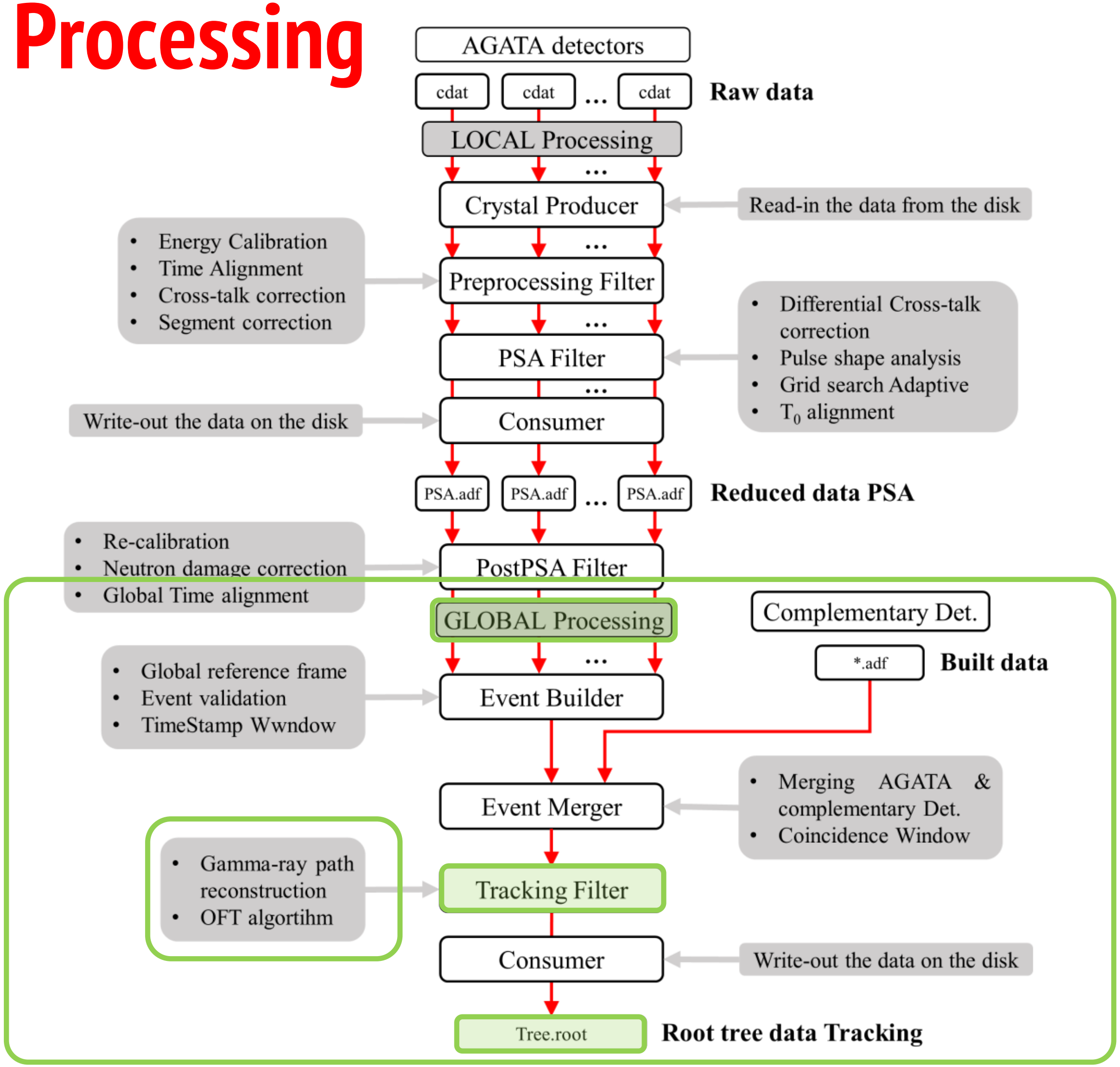
Global Level Processing

Narval actors



Global Level Processing

Narval actors



AGATA detectors

cdat cdat … cdat **Raw data**

LOCAL Processing

Crystal Producer ← Read-in the data from the disk

- Energy Calibration
- Time Alignment
- Cross-talk correction
- Segment correction

→ Preprocessing Filter

PSA Filter ←

- Differential Cross-talk correction
- Pulse shape analysis
- Grid search Adaptive
- T_0 alignment

Write-out the data on the disk → Consumer

PSA.adf PSA.adf … PSA.adf **Reduced data PSA**

- Re-calibration
- Neutron damage correction
- Global Time alignment

→ PostPSA Filter

GLOBAL Processing

Complementary Det.

*.adf **Built data**

- Global reference frame
- Event validation
- TimeStamp Wwndow

→ Event Builder

Event Merger ←

- Merging AGATA & complementary Det.
- Coincidence Window

- Gamma-ray path reconstruction
- OFT algortihm

→ Tracking Filter

Consumer ← Write-out the data on the disk

Tree.root **Root tree data Tracking**

Global data replay

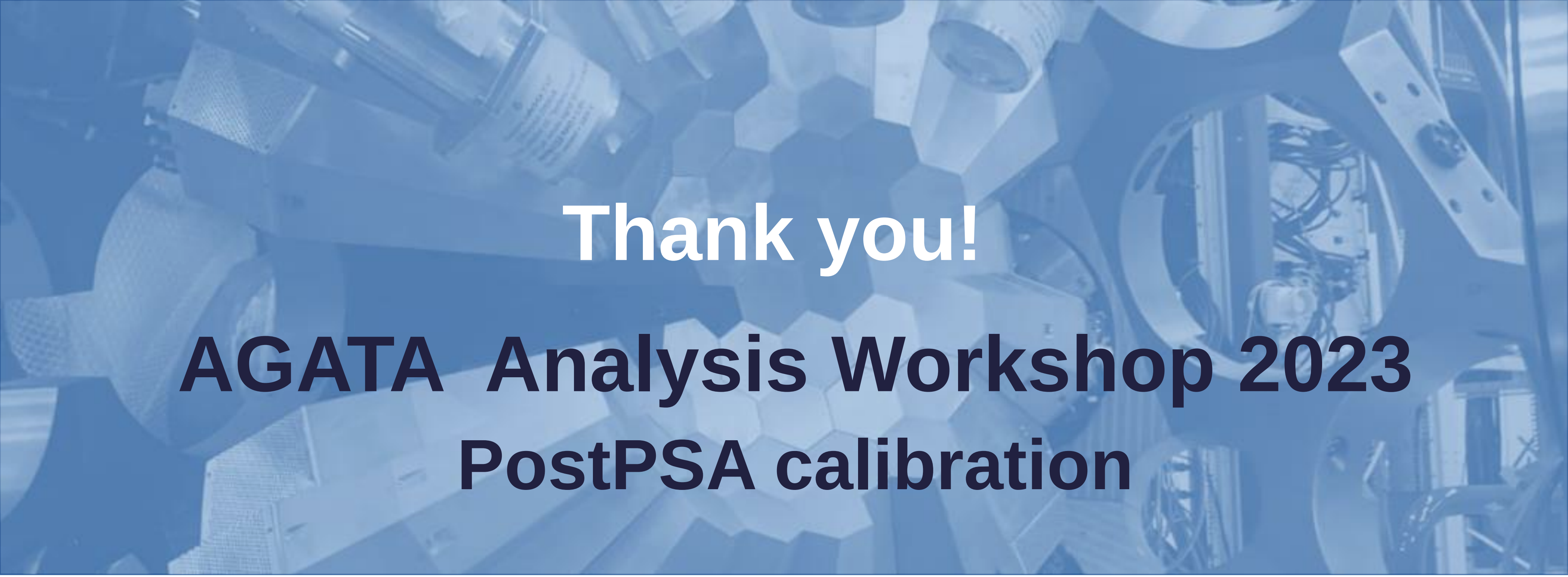
Speaker: **Jérémie Dudouet**
Wednesday

Tracking

Speaker: **Araceli Lopez Martens**
Friday

Selector

Speaker: **Daniele Brugnara**
Thursday



Thank you!

AGATA Analysis Workshop 2023

PostPSA calibration

R.M. Pérez-Vidal

12/09/2023, Legnaro

Questions?