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# **'LPD Offline Correction' Documentation**

***Release 1.0***

**'European XFEL Detector Group'**

**Nov 16, 2018**

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Contents:

## INPUT PARAMETERS

# the folder to read data from, required

```
in_folder = '/gpfs/xfel/exp/FXE/201831/p900038/raw/'
```

# runs to process, required

```
run = 154
```

# the folder to output to, required

```
out_folder = '/gpfs/xfel/data/scratch/haufs/test/'
```

# path to constants extracted from the db into a file

```
calfile = '/gpfs/xfel/exp/FXE/201831/p900038/usr/calibration0818/cal_constants2.h5'
```

# sequences to correct, set to -1 for all, range allowed

```
sequences = [0]
```

# memory cells in data

```
mem_cells = 512
```

# set to True if existing data should be overwritten

```
overwrite = True
```

# do not do relative gain correction

```
no_relative_gain = False
```

# do not do flat field correction

```
no_flat_fields = False
```

None

```
cluster_profile = 'slurm_prof_f38d5dfe-f7e3-404a-ba9a-89fbc2328dd2'
```

None

```
max_pulses = 512
```

None

```
use_dir_creation_date = True
```

None

```
max_cells_db = 512
```

None

```
rawversion = 2
```

None

```
instrument = 'FXE'
```

None

```
capacitor = '5pF'
```

None

```
photon_energy = 9.2
```

# set to true if db input is to be avoided

```
nodb = False
```

# detector bias voltage

```
bias_voltage = 250
```

# the database interface to use

```
cal_db_interface = 'tcp://max-exfl016:8015#8025'
```

# the geometry file to use, MAR 2018

```
geometry_file = '/gpfs/xfel/d/cal/exchange/lpdMF_00.h5'
```

# offset from the beam center, MAR 2018

```
beam_center_offset = [1.5, 1]
```

# sequence files to process per node

```
sequences_per_node = 2
```

# timeout for calibration db requests in seconds

```
timeout_cal_db = 300000
```

## LPD OFFLINE CORRECTION. SEQUENCES = 0

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Author: European XFEL Detector Group, Version: 1.0

```
Applying FF corrections: True
Connecting to profile slurm_prof_f38d5dfe-f7e3-404a-ba9a-89fbc2328dd2_0
Outputting to /gpfs/xfel/data/scratch/haufs/test//r0154
Using 2018-08-28T15:35:58.968204 as creation time
```

### 2.1 Processed Files

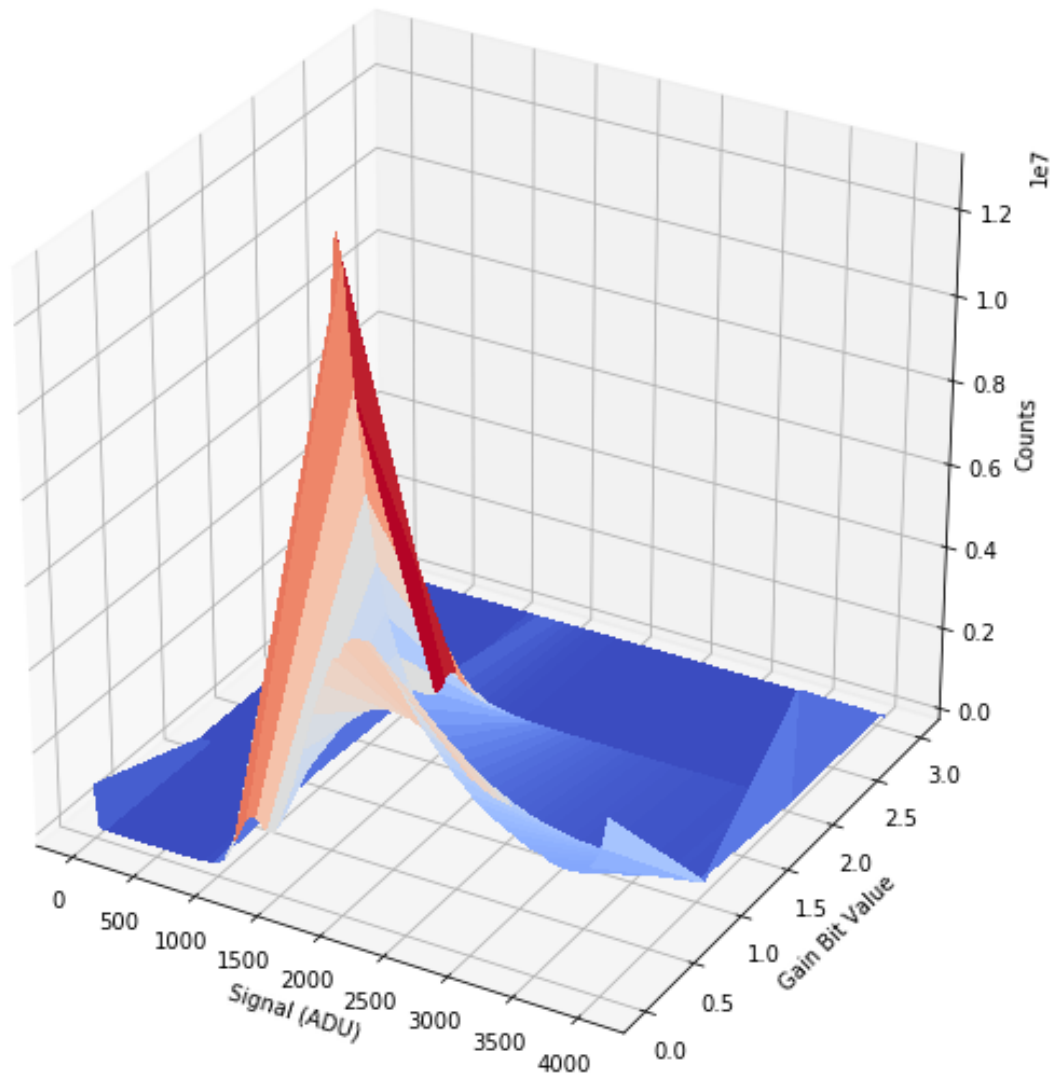
```
Processing a total of 16 sequence files in chunks of 16
```

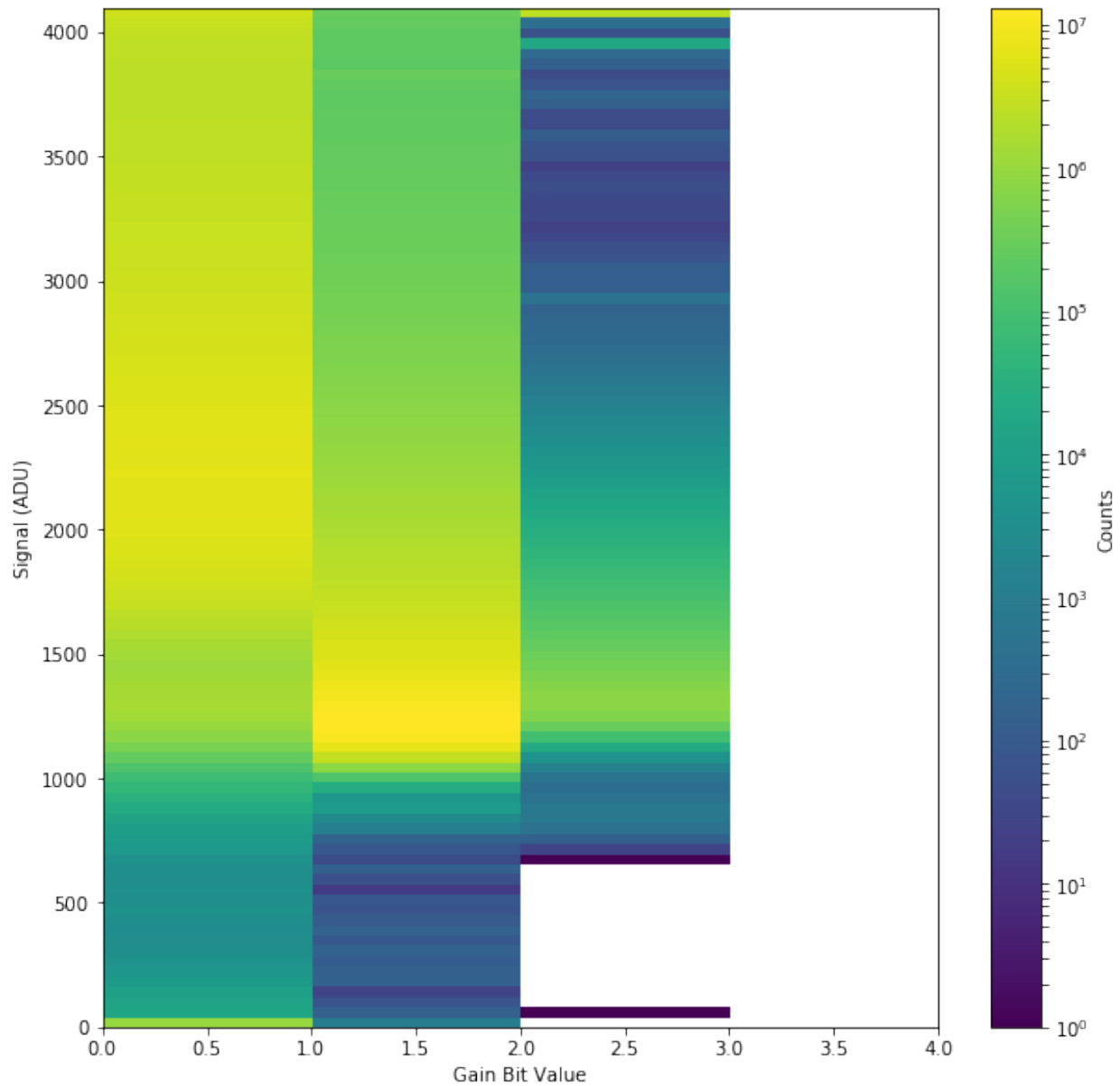
#	module	# module	file
0	Q1M1	0	/gpfs/xfel/exp/FXE/201831/p900038/raw/r0154/RAW-R0154-LPD00-S00000.h5
1	Q1M2	0	/gpfs/xfel/exp/FXE/201831/p900038/raw/r0154/RAW-R0154-LPD01-S00000.h5
2	Q1M3	0	/gpfs/xfel/exp/FXE/201831/p900038/raw/r0154/RAW-R0154-LPD02-S00000.h5
3	Q1M4	0	/gpfs/xfel/exp/FXE/201831/p900038/raw/r0154/RAW-R0154-LPD03-S00000.h5
4	Q2M1	0	/gpfs/xfel/exp/FXE/201831/p900038/raw/r0154/RAW-R0154-LPD04-S00000.h5
5	Q2M2	0	/gpfs/xfel/exp/FXE/201831/p900038/raw/r0154/RAW-R0154-LPD05-S00000.h5
6	Q2M3	0	/gpfs/xfel/exp/FXE/201831/p900038/raw/r0154/RAW-R0154-LPD06-S00000.h5
7	Q2M4	0	/gpfs/xfel/exp/FXE/201831/p900038/raw/r0154/RAW-R0154-LPD07-S00000.h5
8	Q3M1	0	/gpfs/xfel/exp/FXE/201831/p900038/raw/r0154/RAW-R0154-LPD08-S00000.h5
9	Q3M2	0	/gpfs/xfel/exp/FXE/201831/p900038/raw/r0154/RAW-R0154-LPD09-S00000.h5
10	Q3M3	0	/gpfs/xfel/exp/FXE/201831/p900038/raw/r0154/RAW-R0154-LPD10-S00000.h5
11	Q3M4	0	/gpfs/xfel/exp/FXE/201831/p900038/raw/r0154/RAW-R0154-LPD11-S00000.h5
12	Q4M1	0	/gpfs/xfel/exp/FXE/201831/p900038/raw/r0154/RAW-R0154-LPD12-S00000.h5
13	Q4M2	0	/gpfs/xfel/exp/FXE/201831/p900038/raw/r0154/RAW-R0154-LPD13-S00000.h5
14	Q4M3	0	/gpfs/xfel/exp/FXE/201831/p900038/raw/r0154/RAW-R0154-LPD14-S00000.h5
15	Q4M4	0	/gpfs/xfel/exp/FXE/201831/p900038/raw/r0154/RAW-R0154-LPD15-S00000.h5

```
Running 16 tasks parallel
```

### 2.2 Signal vs. Analogue Gain

The following plot shows plots signal vs. gain for the first 1280 images.

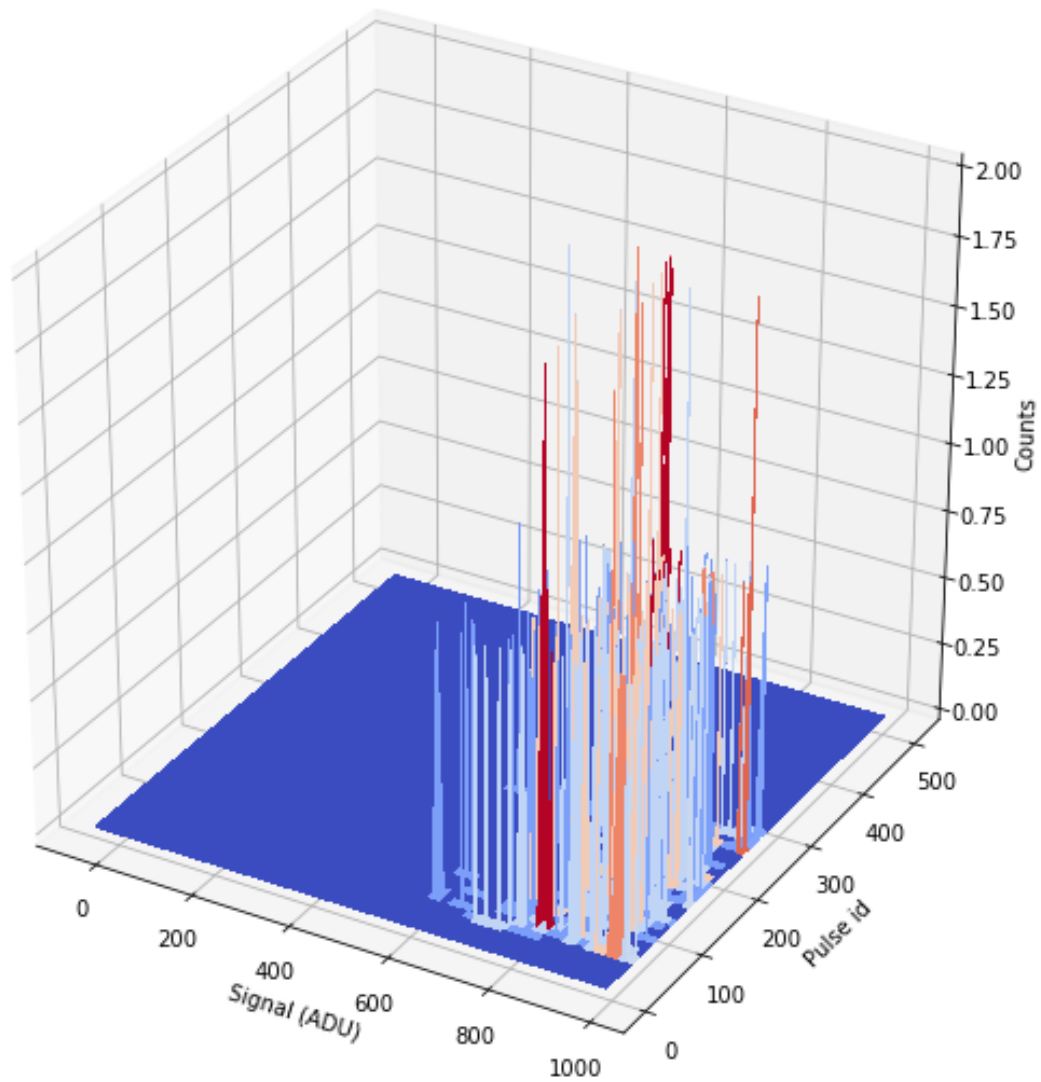


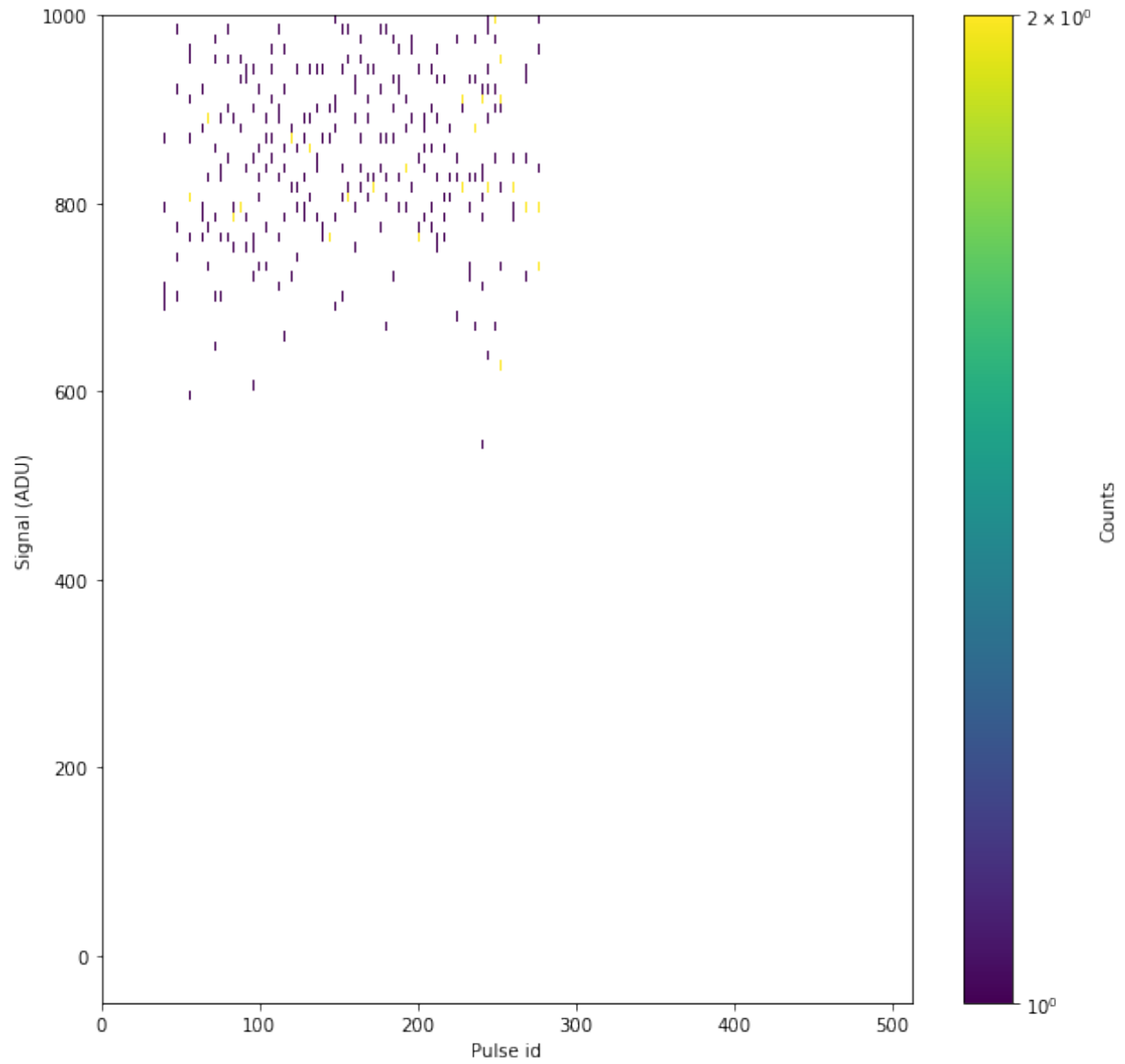


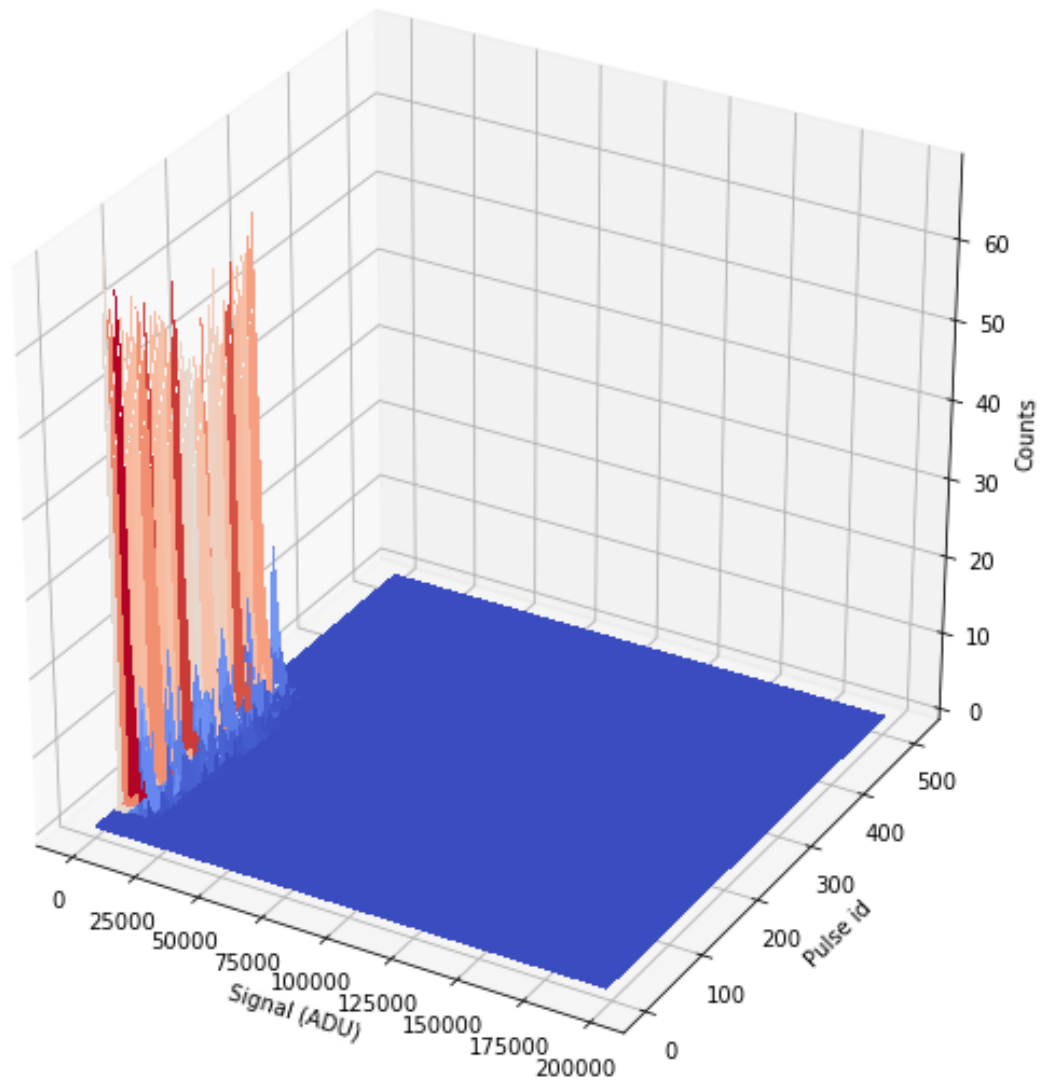
## 2.3 Mean Intensity per Pulse

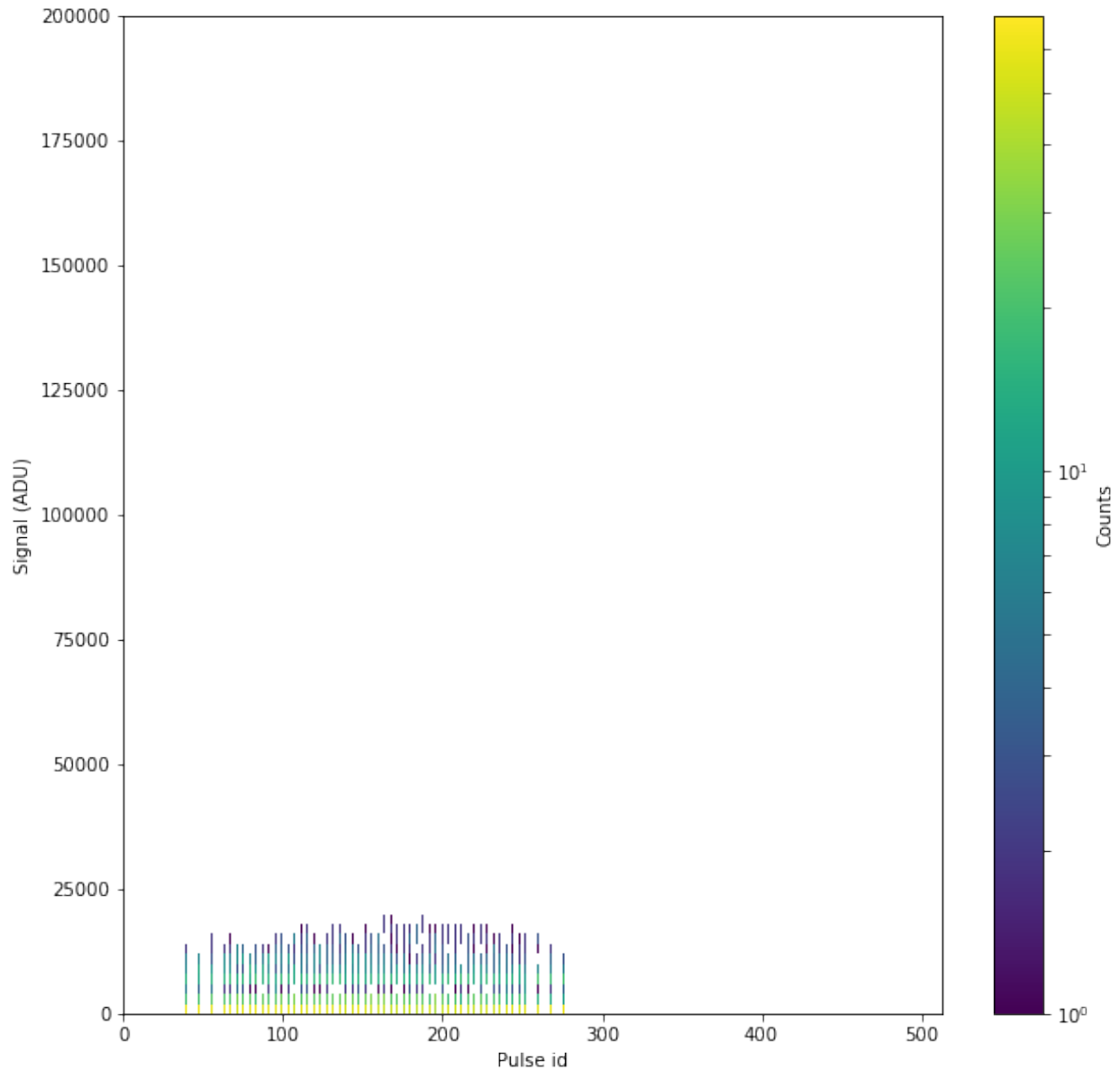
The following plots show the mean signal for each pulse in a detailed and expanded intensity region.











## 2.4 Data Preview

In the following geometry information from the LPD geometry file is applied. Quadrants are positioned to last known position. No bad pixel masking has been performed.

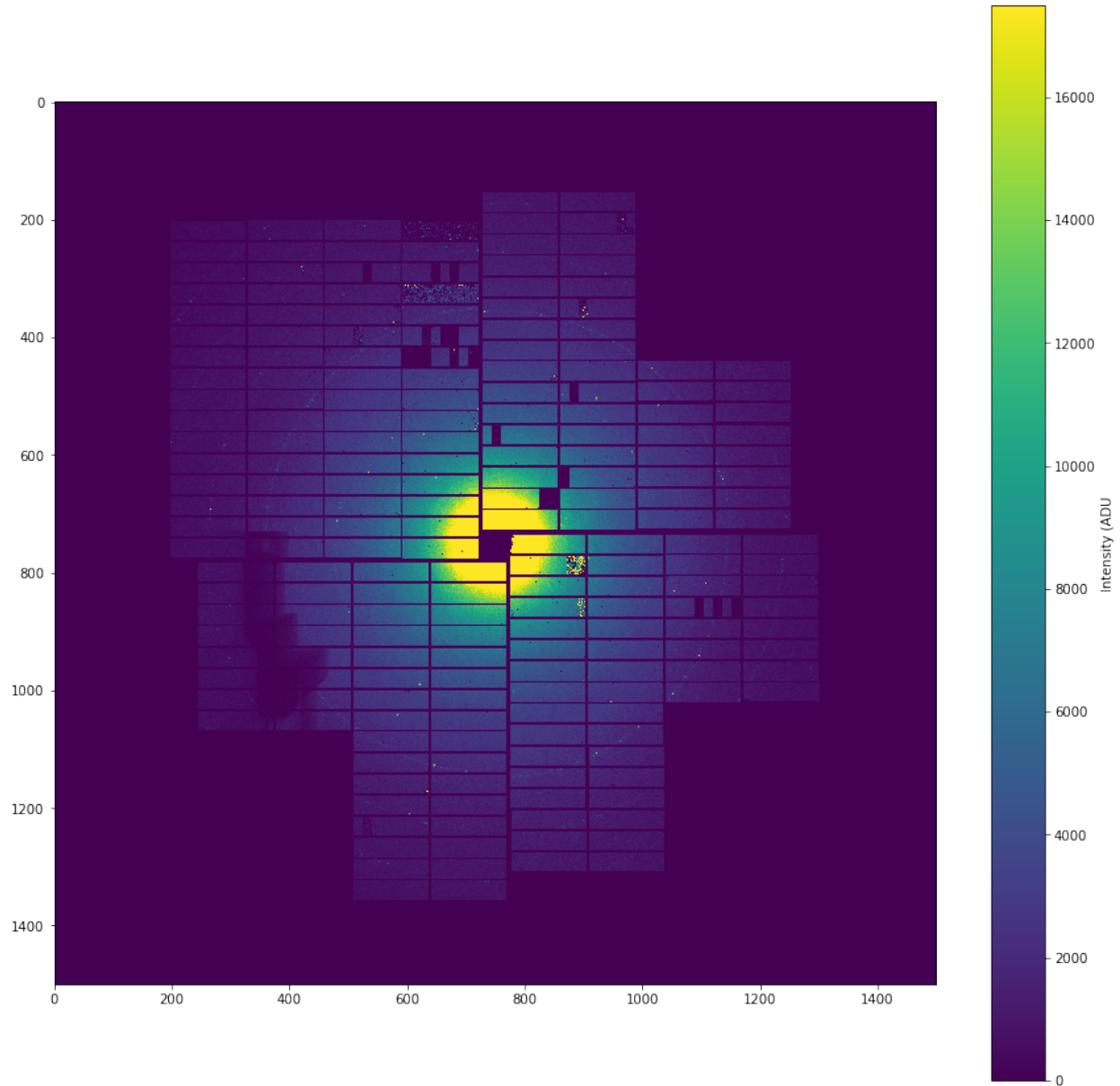
```
Preview is from /gpfs/xfel/data/scratch/haufs/test//r0154/CORR*S00000*.h5
```

```
/gpfs/xfel/data/scratch/haufs/test//r0154/CORR-R0154-LPD10-S00000.h5
Unable to open file (file signature not found)
/gpfs/xfel/data/scratch/haufs/test//r0154/CORR-R0154-LPD05-S00000.h5
Unable to open file (file signature not found)
/gpfs/xfel/data/scratch/haufs/test//r0154/CORR-R0154-LPD00-S00000.h5
Unable to open file (file signature not found)
/gpfs/xfel/data/scratch/haufs/test//r0154/CORR-R0154-LPD10-S00000.h5
```

```
Unable to open file (file signature not found)
/gpfs/exfel/data/scratch/haufs/test//r0154/CORR-R0154-LPD05-S00000.h5
Unable to open file (file signature not found)
/gpfs/exfel/data/scratch/haufs/test//r0154/CORR-R0154-LPD00-S00000.h5
Unable to open file (file signature not found)
```

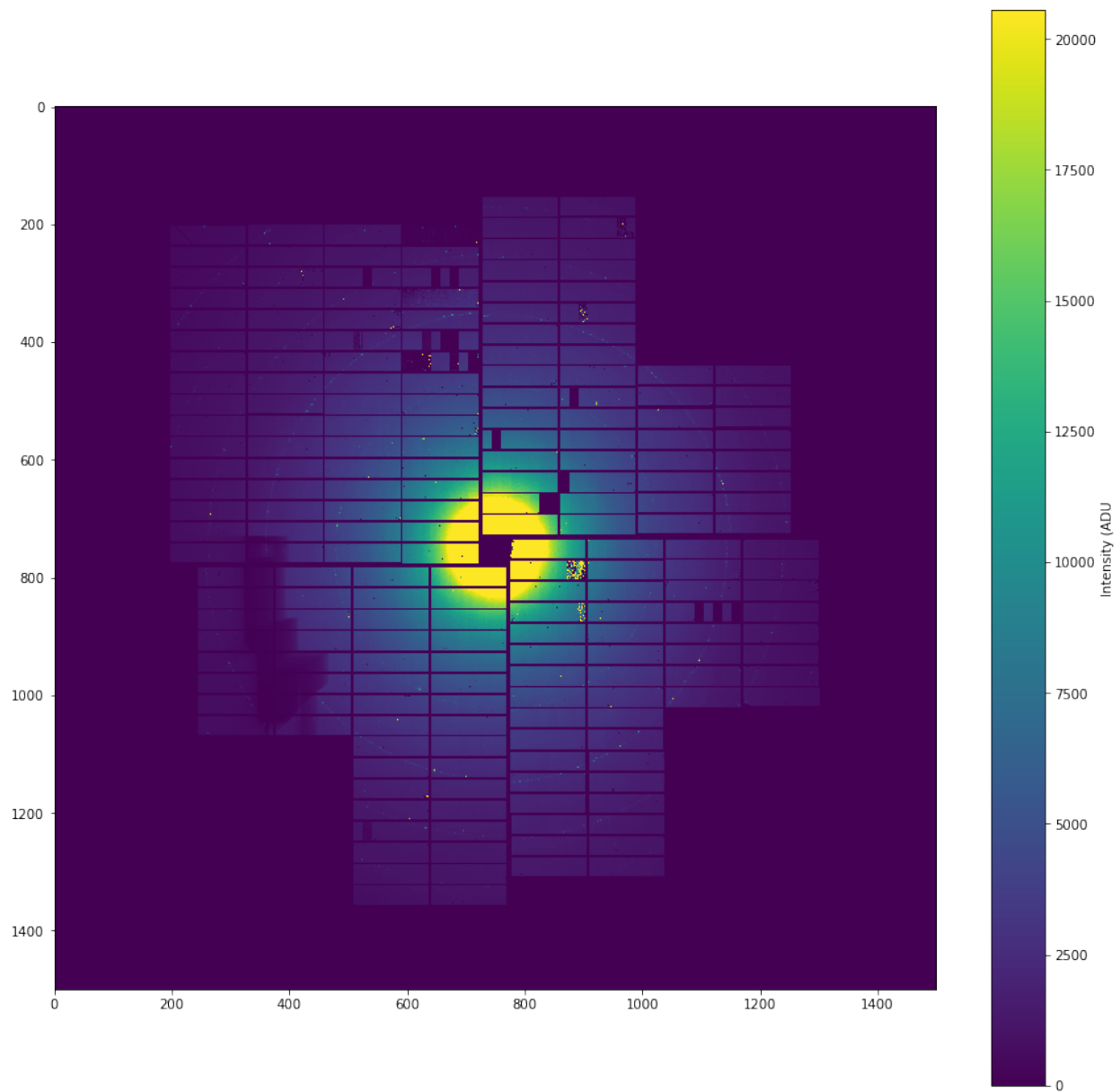
### 2.4.1 Single Short Preview

A single shot image from cell 5 of the first train



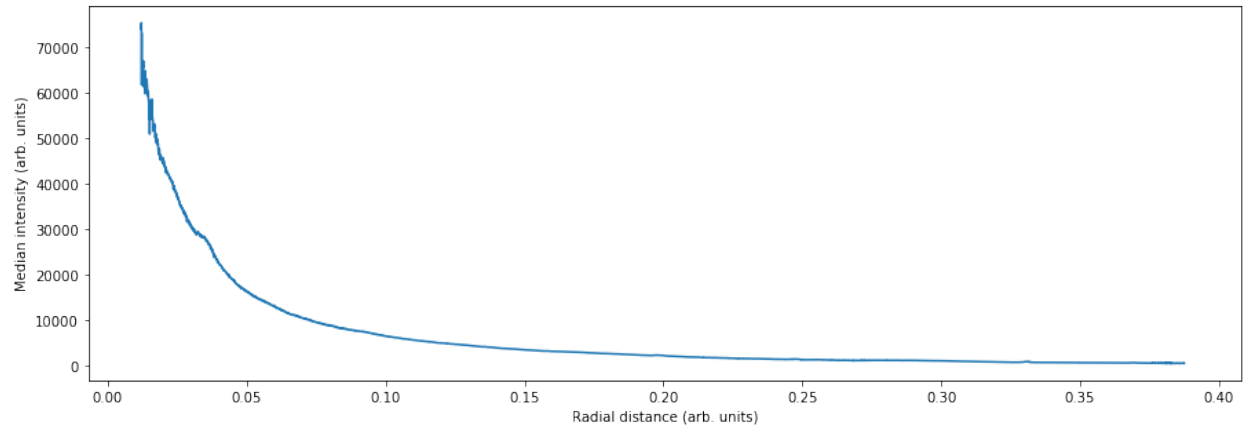
## 2.4.2 Pixel Mean Preview

The per pixel mean value of the first 100 images



## 2.4.3 Radial Profile

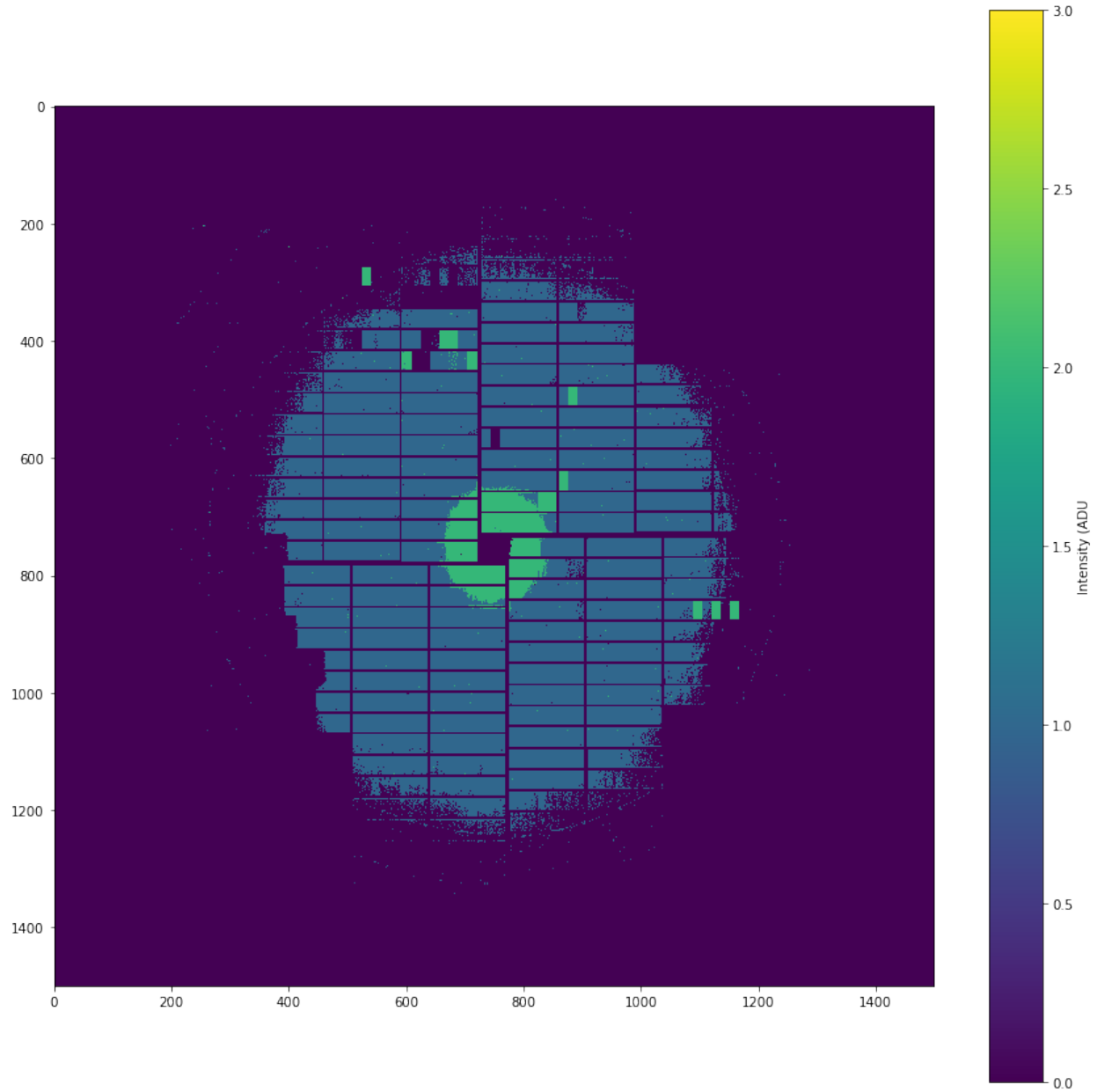
The simple azimuthally integrated profile plotted assumes the beam centered in the hole, it is thus not always fully accurate.



## 2.5 Maxium Gain Value Reached

The following plot shows the maximum gain value reached. It can be used as an indication of whether the detector went into saturation.

```
/gpfs/exfel/data/scratch/haufs/test//r0154/CORR-R0154-LPD10-S00000.h5
Unable to open file (file signature not found)
/gpfs/exfel/data/scratch/haufs/test//r0154/CORR-R0154-LPD05-S00000.h5
Unable to open file (file signature not found)
/gpfs/exfel/data/scratch/haufs/test//r0154/CORR-R0154-LPD00-S00000.h5
Unable to open file (file signature not found)
```





## INDICES AND TABLES

- `genindex`
- `modindex`
- `search`