ZTF gain correction

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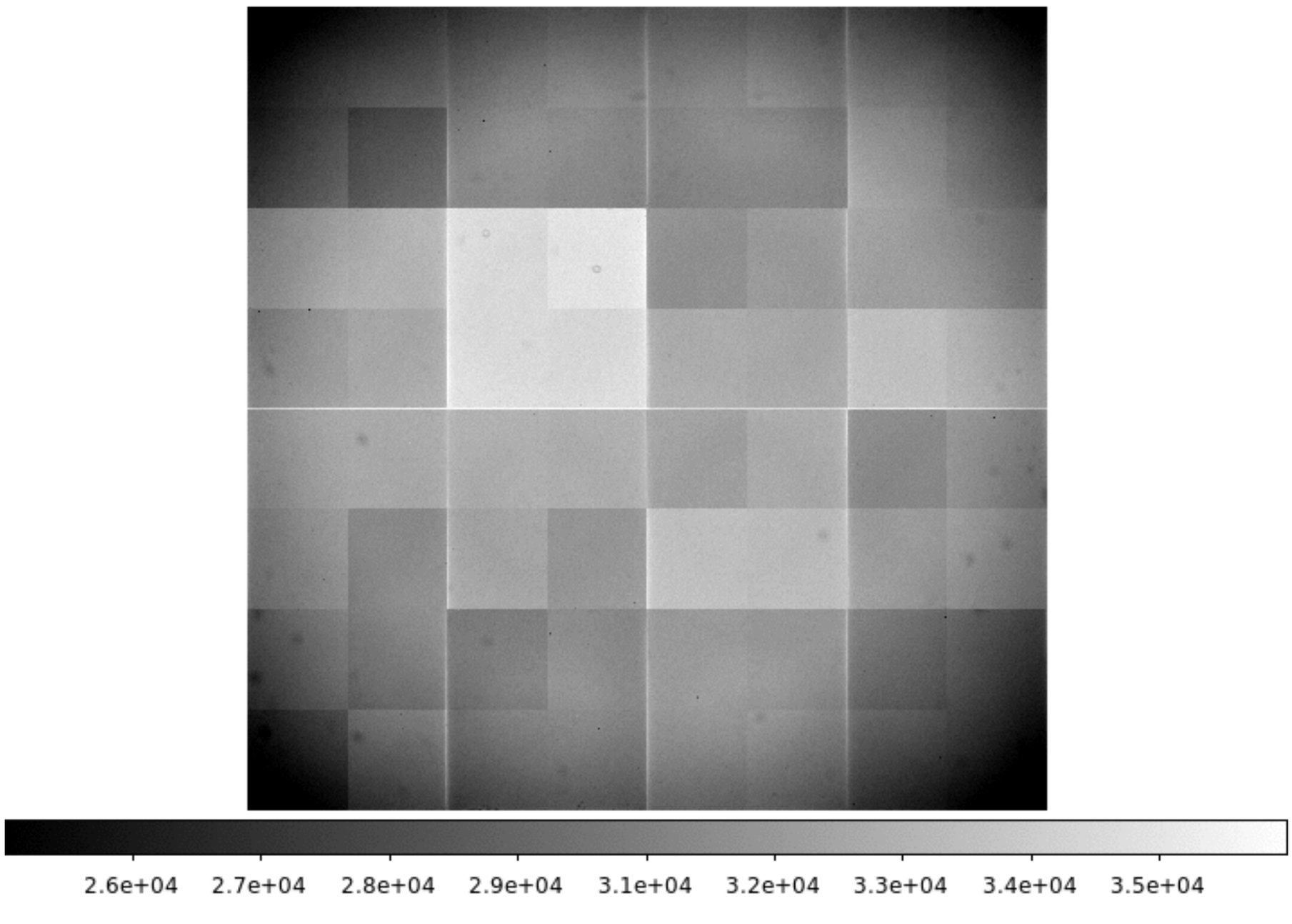
Wednesday 13th Dec 2017

Raw flat field (ztf_20171202036377_000000_zr_f_raw_mosaic.fits)

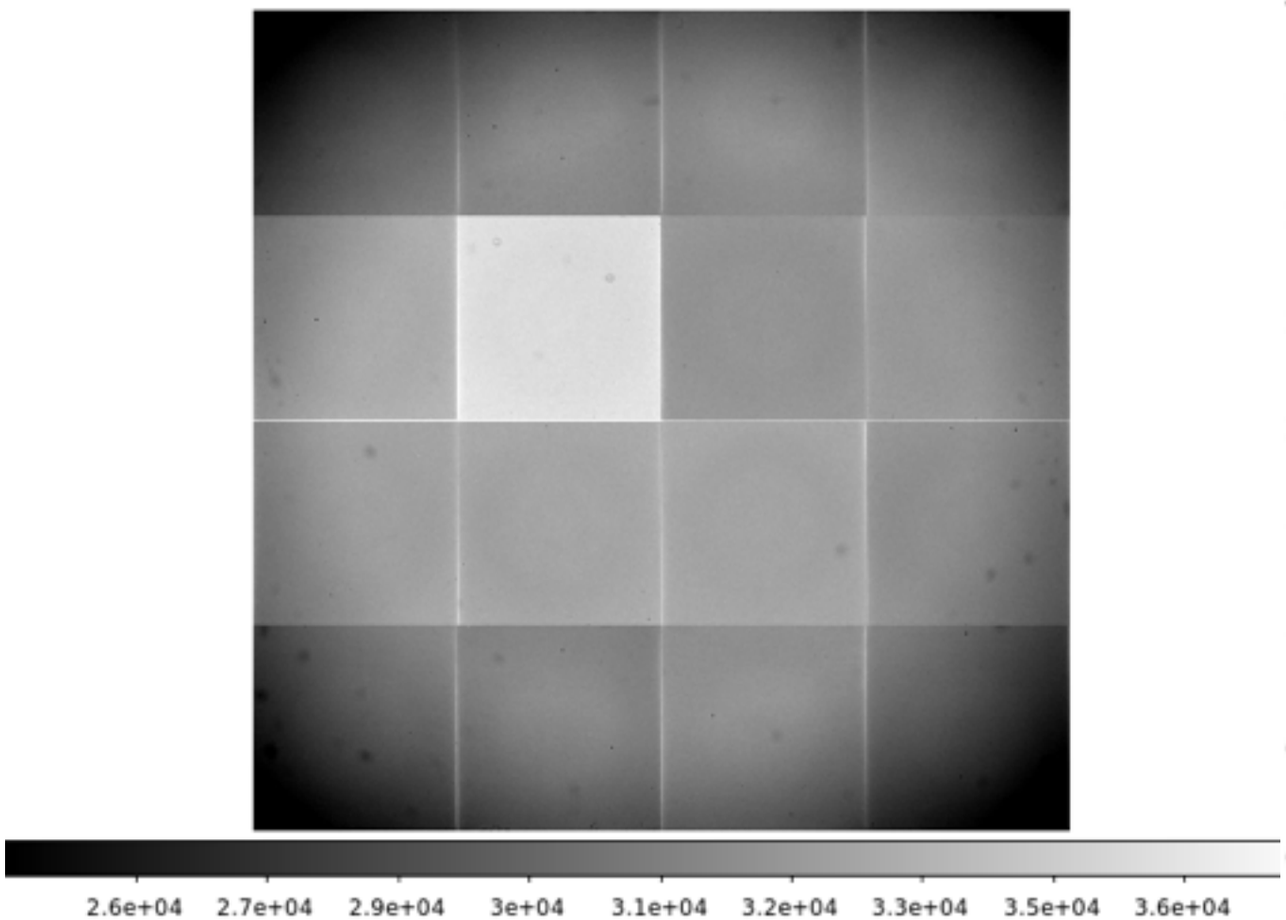


Steps

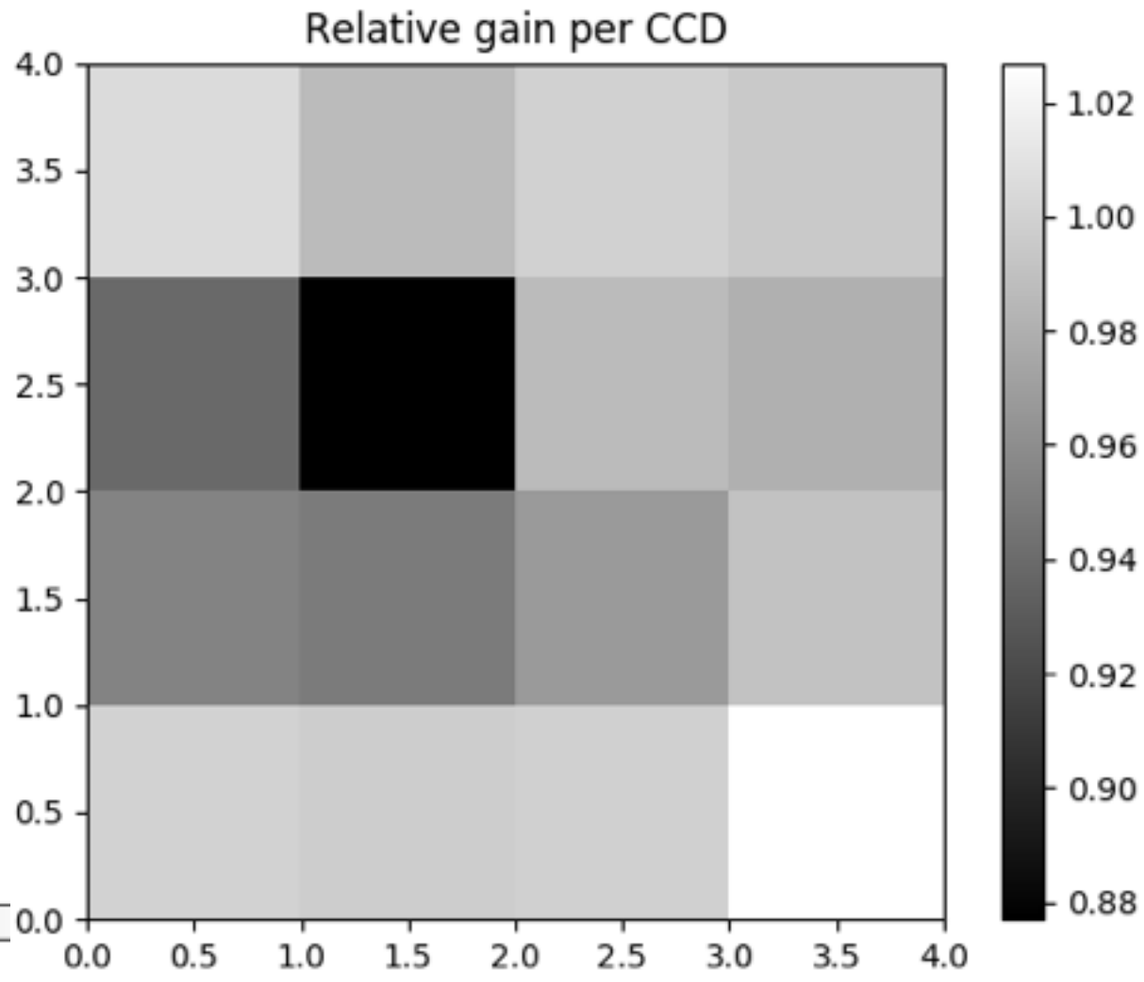
- Load each raw flat field
- Remove the overscan (basic nanmedian of all the counts for columns between 5 and 145).
- Match the number of counts in the edges of the quadrants.
- Match the levels between the rows.
    - Discard X pixels in the margin of each CCD to avoid too high level of counts
    - Equalise not all the CCD, but a stripe just in the middle with a width of ~100 pixels.
    - Adjust the levels taking dx pixels close to the border for each CCD (but not closer than the margin).
- Scale the gain corrections for each row to match the scale between the column levels.
- Store the gain corrected mosaic along with the corrections array

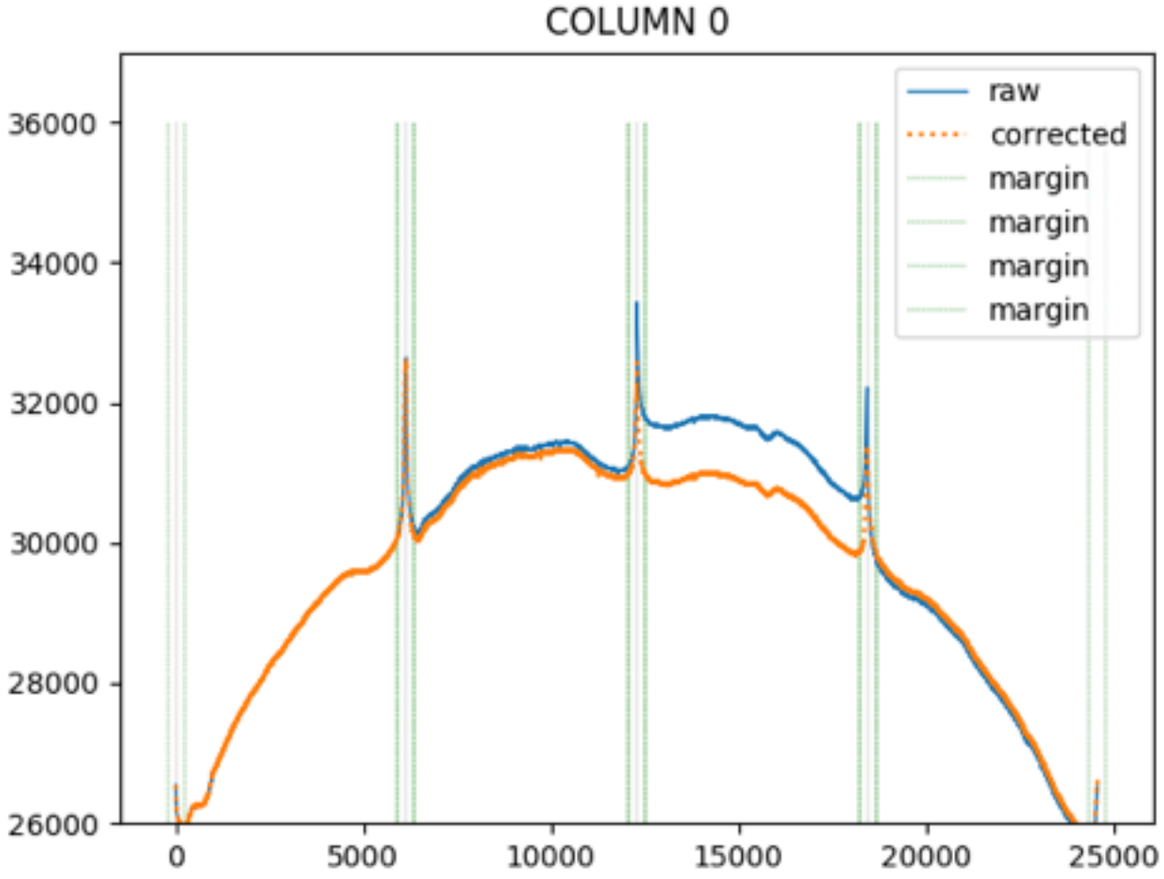
Raw flat field - quadrants corrected

Quadrant-Corrected



Correction

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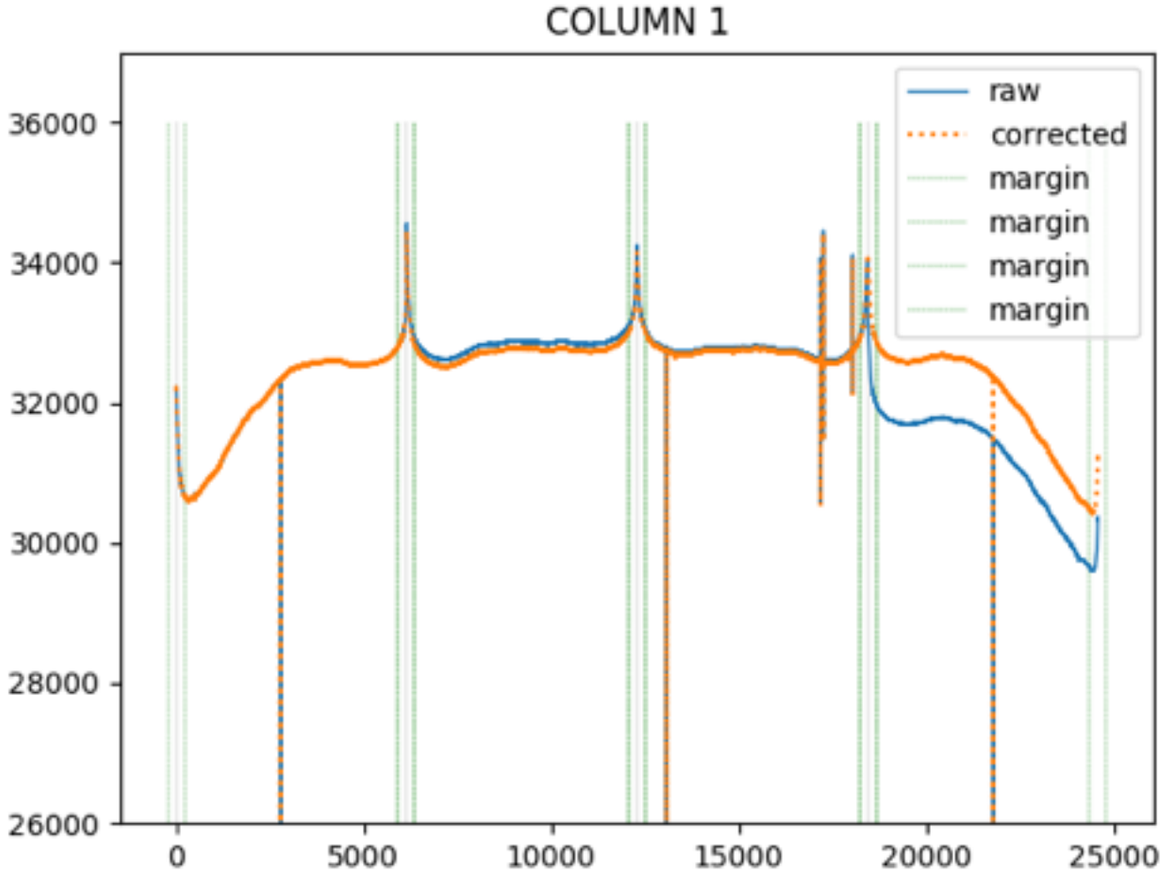
raw
corrected
margin
margin
margin
margin
36000
34000
32000
30000
28000
26000
0
5000
10000
15000
20000
25000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corrected
margin
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margin
margin
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28000
26000
0
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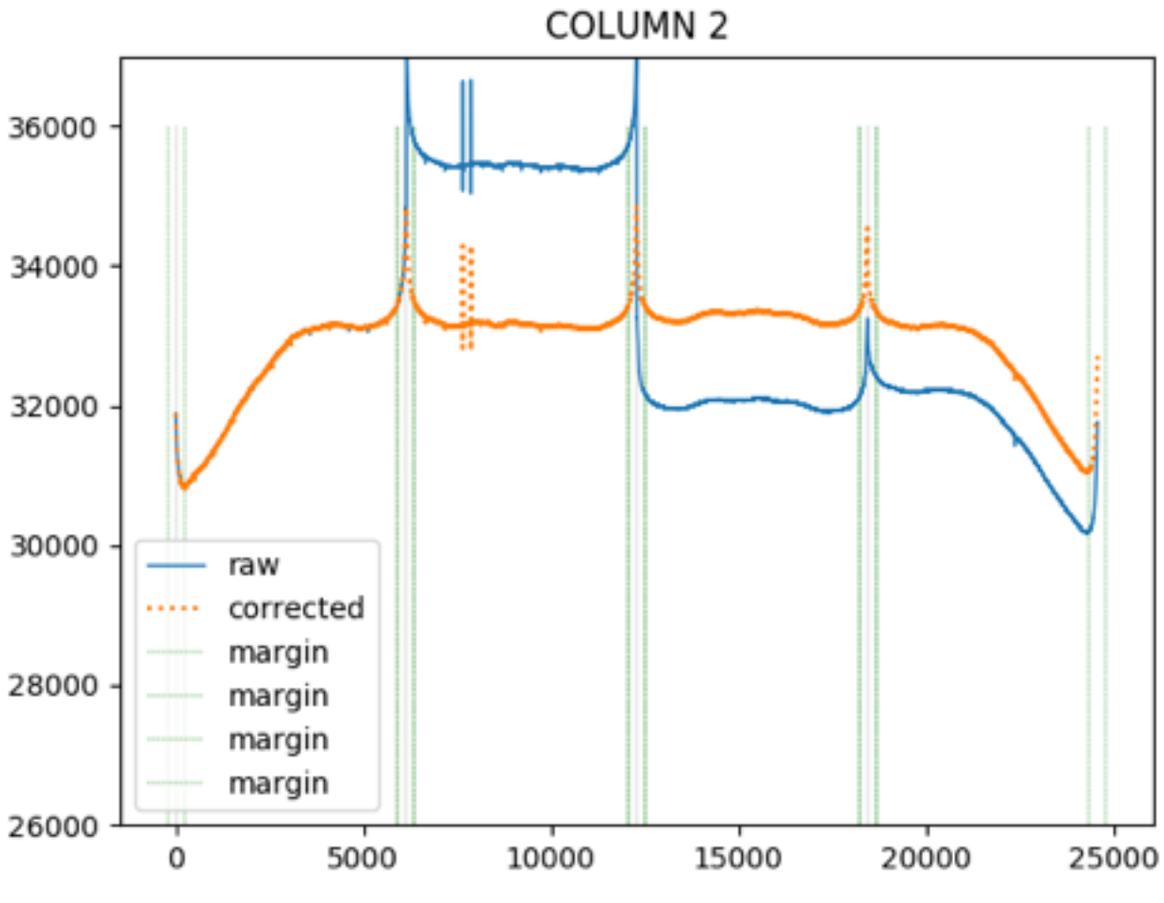
20000
25000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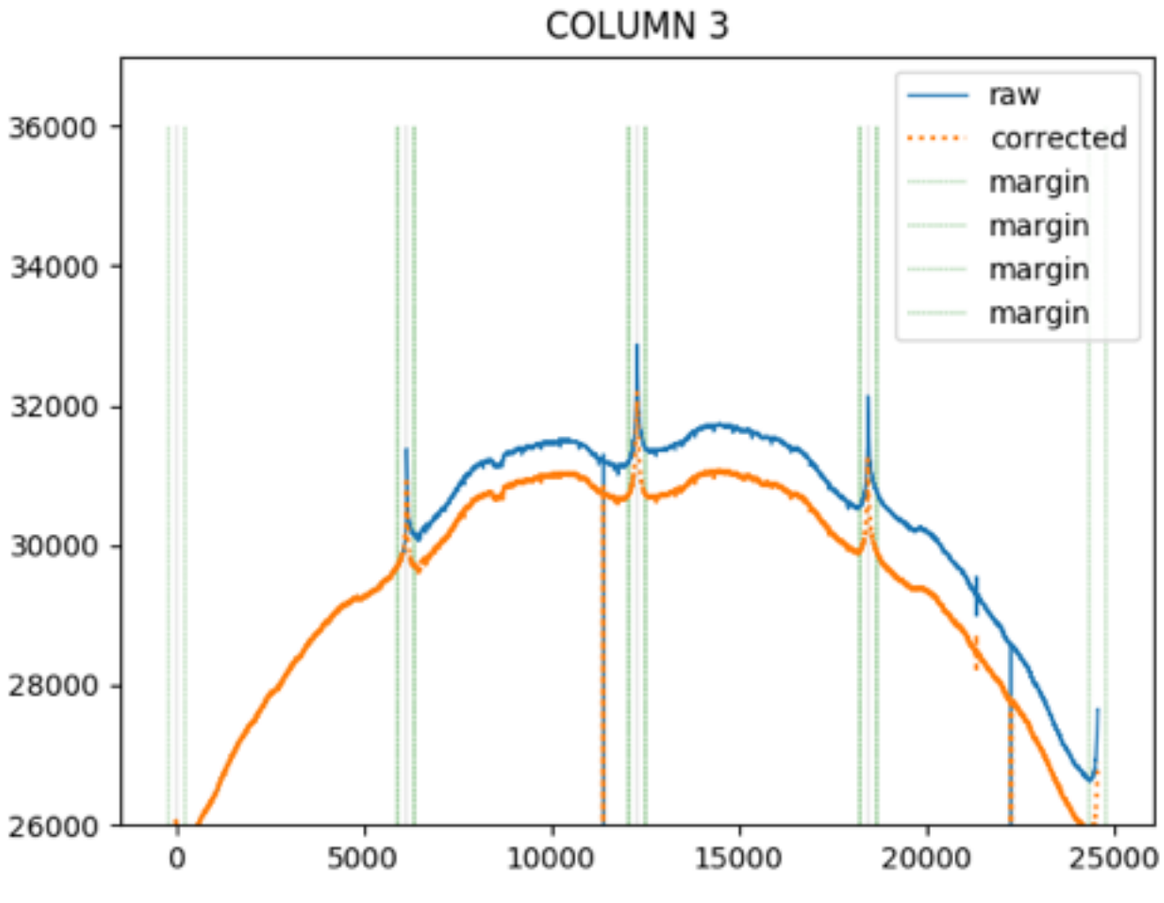
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corrected
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margin
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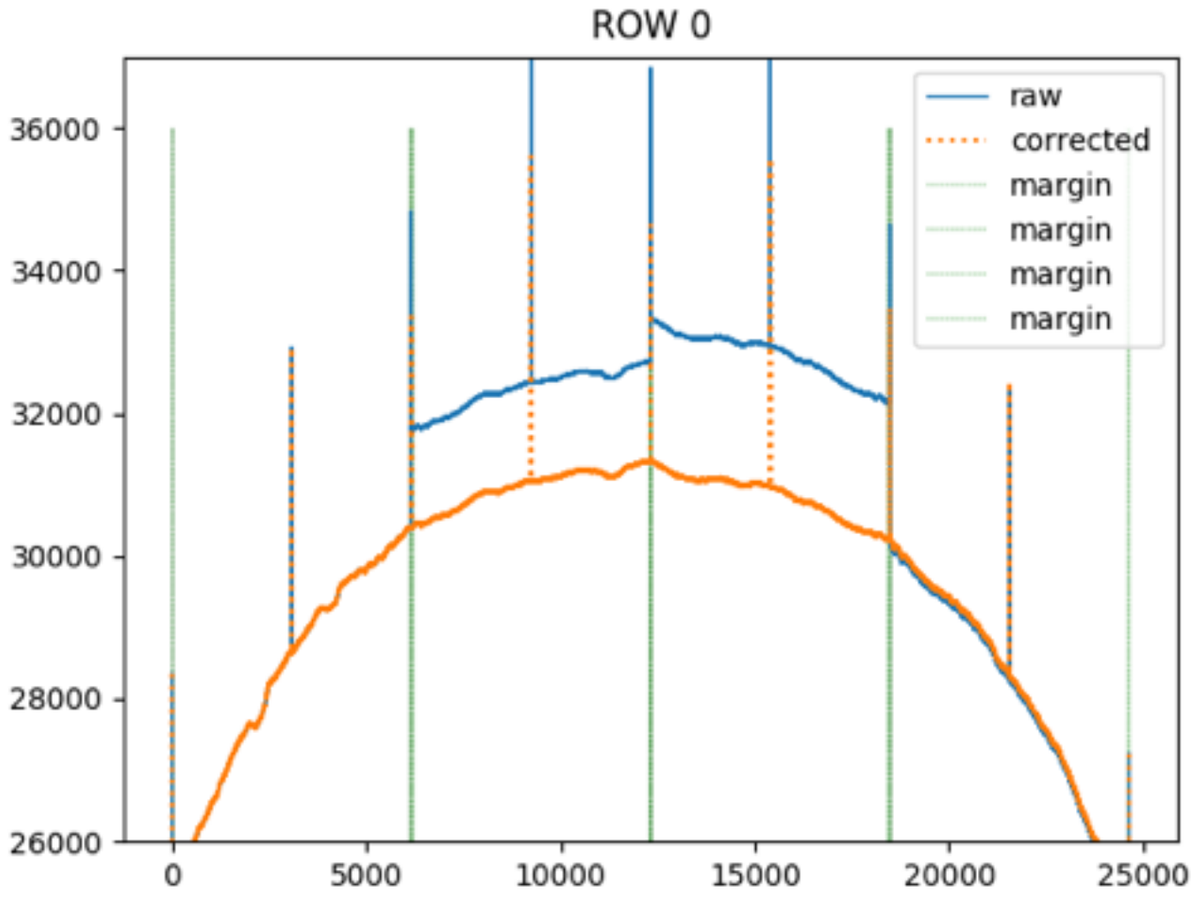
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raw
corrected
margin
margin
margin
margin
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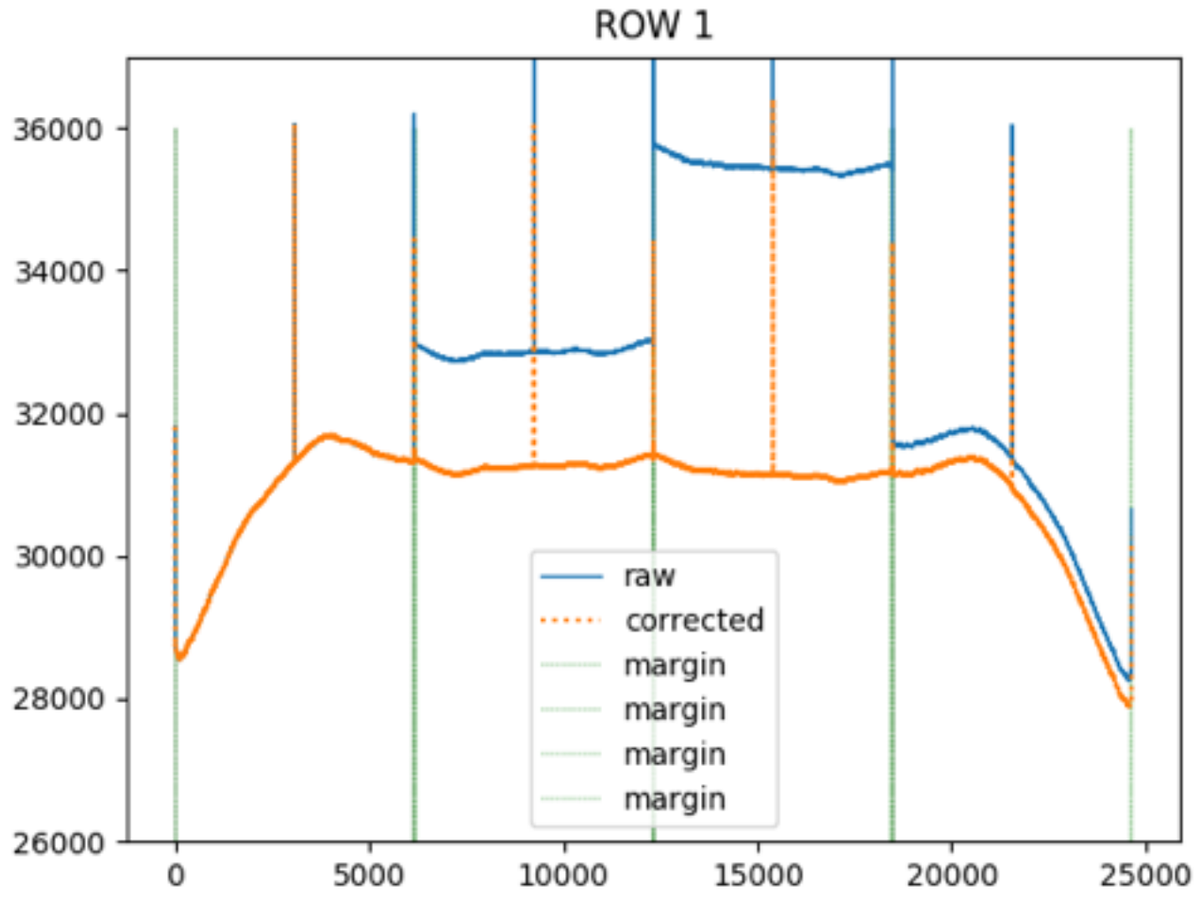
25000


ROW 1
raw
corrected
margin
margin
margin
margin
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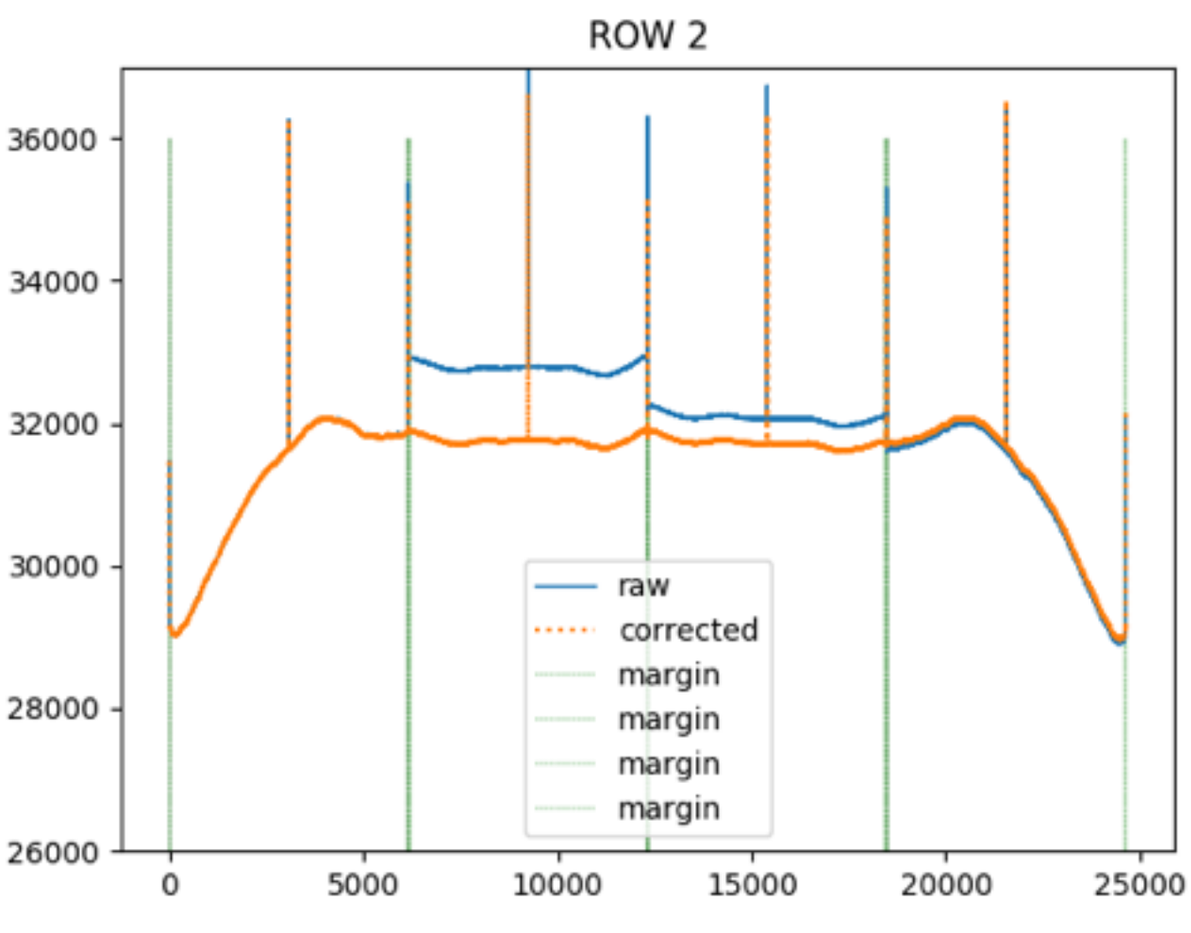
25000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margin
margin
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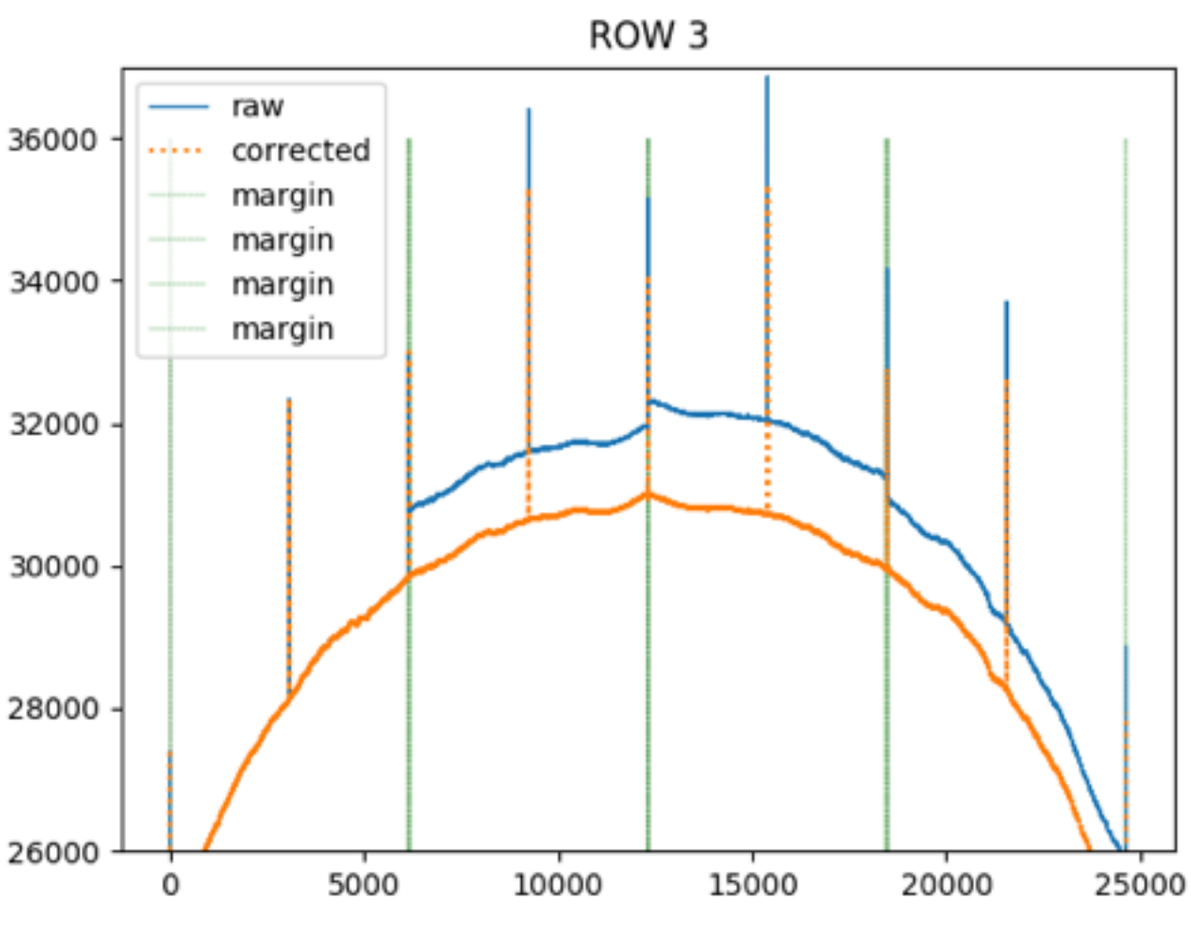
5000
10000
15000
20000
25000


ROW 3
raw
corrected
margin
margin
margin
margin
36000
34000
32000
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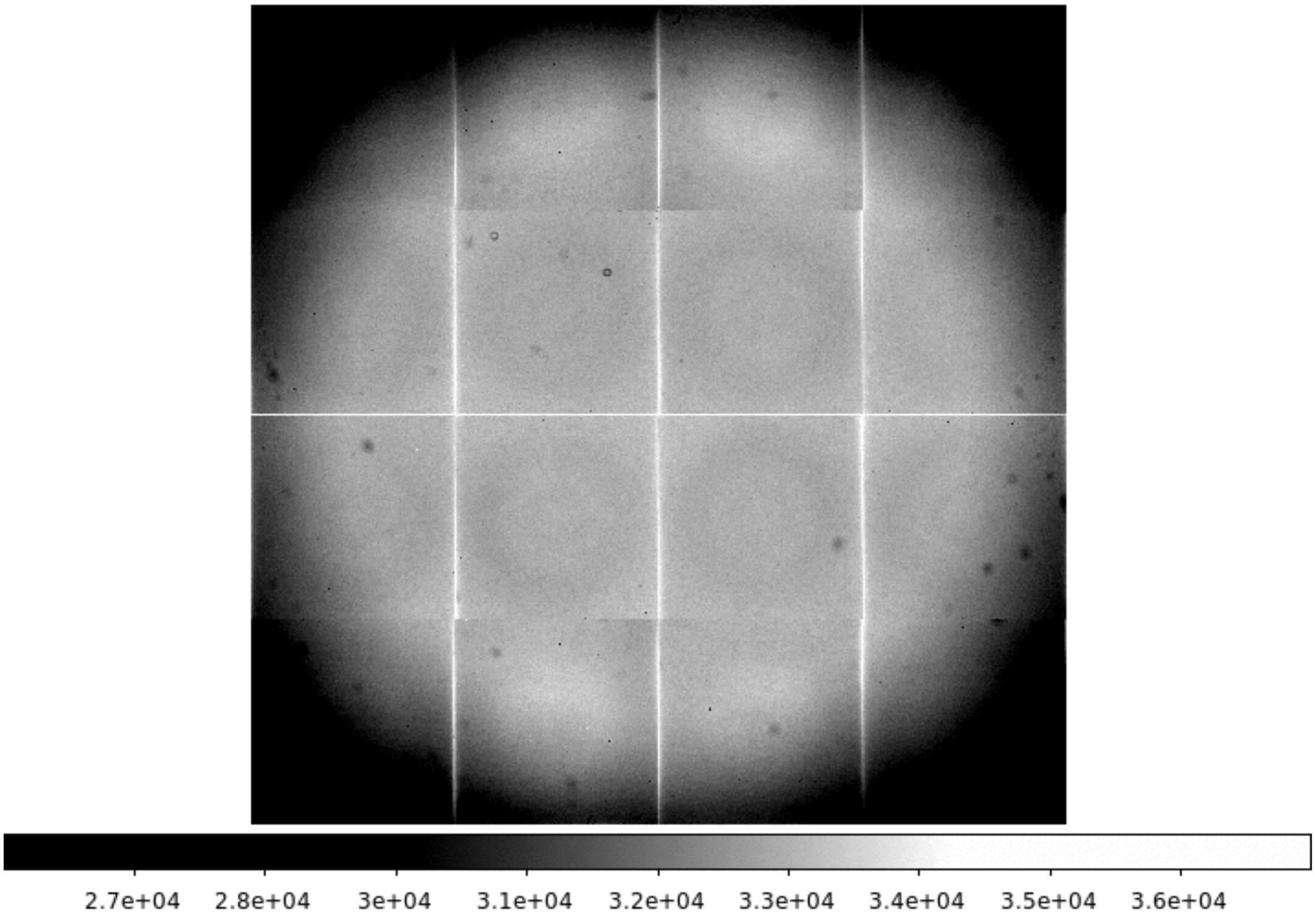
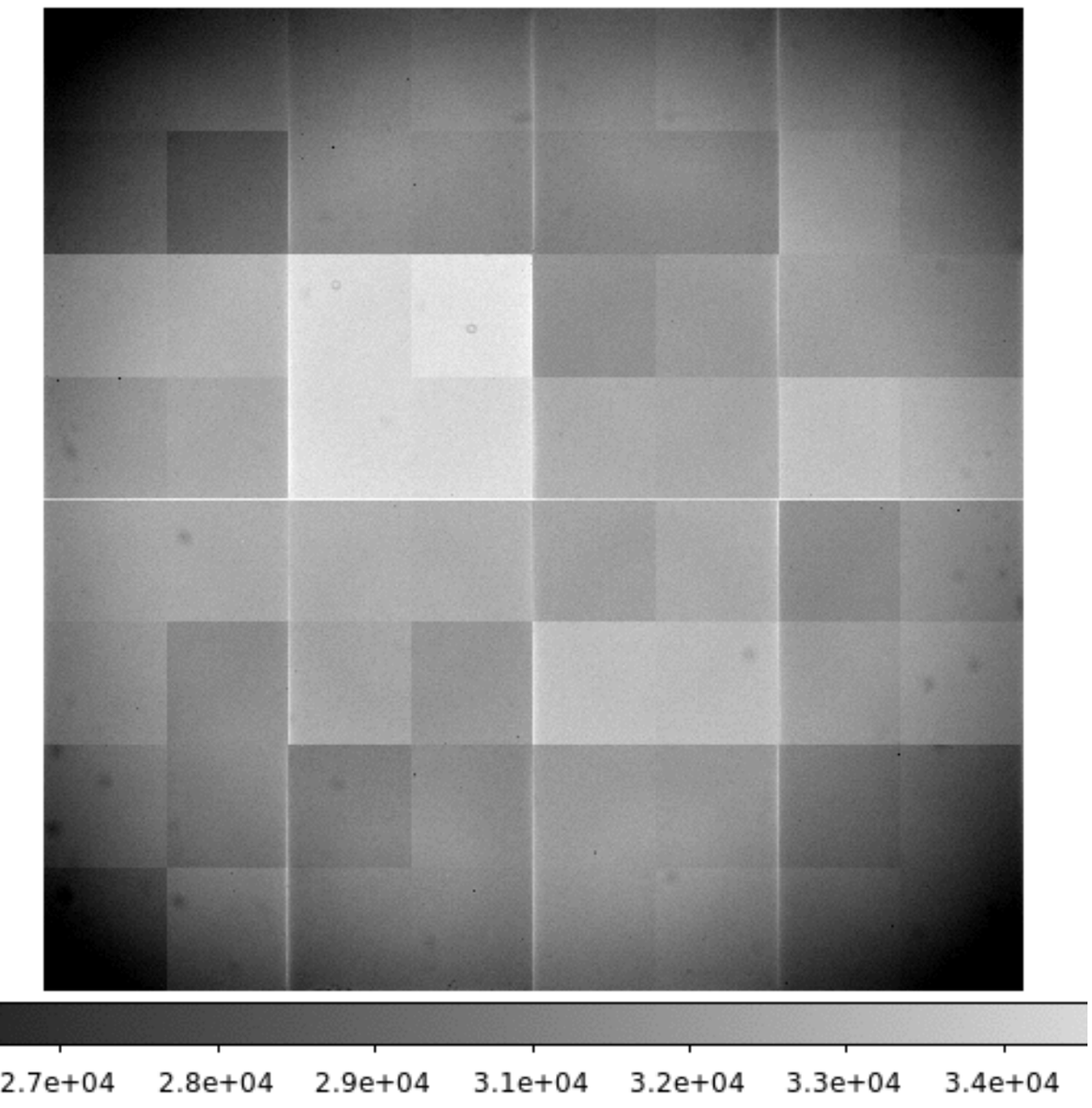
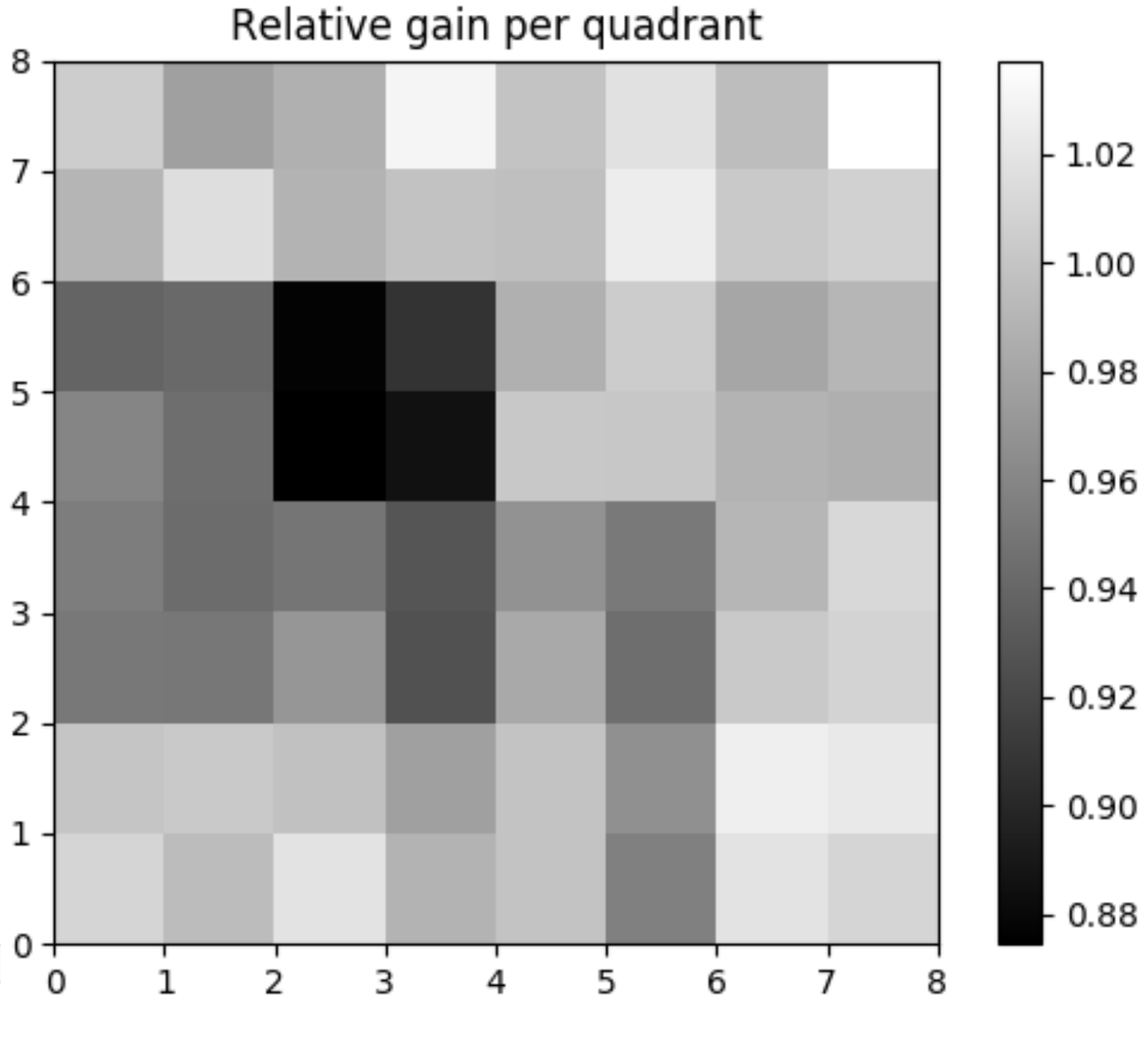
28000
26000
0
5000
10000
15000
20000
25000

Quadrants and CCD matched.



Raw vs correction





Correction vector

ccd1_q1, ccd1 q2…
ccd2_q1, ccd2 q2…

1.060034 1.071253 1.053720 1.062183
1.031099 1.028125 1.027828 1.020730
1.047872 1.071170 1.054638 1.052288
1.044476 1.027887 1.054612 1.013949
1.027959 1.050332 1.019193 1.006491
0.998871 1.021120 0.975313 0.977388
0.996940 0.994378 1.006925 1.030912
1.000000 1.001683 1.011545 1.044103
1.016599 1.016578 0.973160 0.982997
1.019872 1.035387 0.995830 1.003173
0.920750 0.934849 0.934205 0.936722
0.981861 0.978049 1.006747 0.999739
1.026256 1.018437 1.009574 1.023196
1.033493 1.045559 1.053137 1.056145
1.034502 1.043328 1.041053 1.045998
1.047193 1.054694 1.059972 1.091619