

Automatic Pedestal Optimisation

Preparation for the Offset Calibration

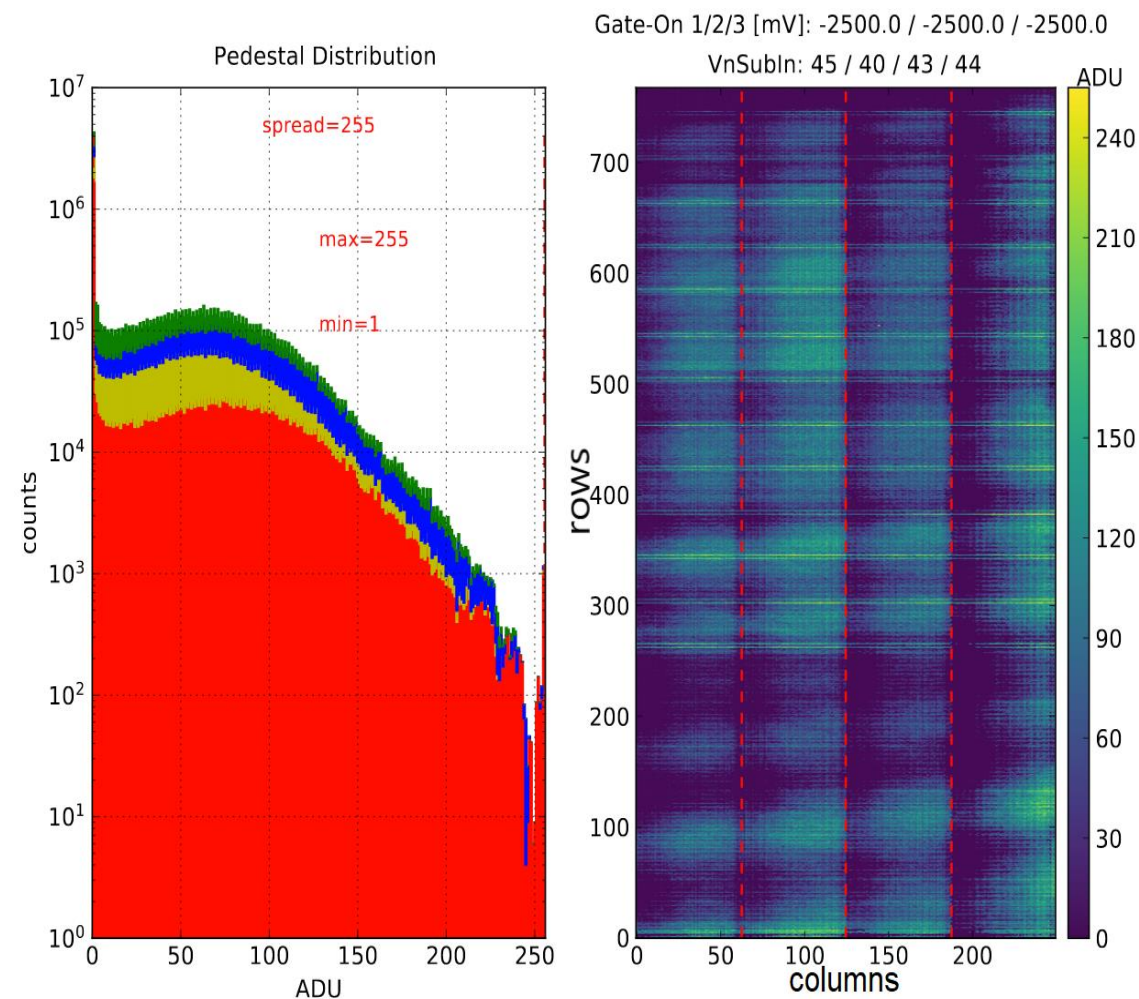
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PXD Workshop, Kloster Seeon

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Problem

- offset optimization needs pedestals in the lower region of dynamic range
- VNSubIn
 - current subtracted from each drain line
 - higher VNSubIn \rightarrow shift to left
 - at beginning of DCD
- currently done by hand
 \rightarrow takes a lot of time!



Mimic a shifter:

1. take pedestals

2. look at median of distribution

median: (1, 3, **7**, 20, 34)

3. determine new VNSubIns based on:

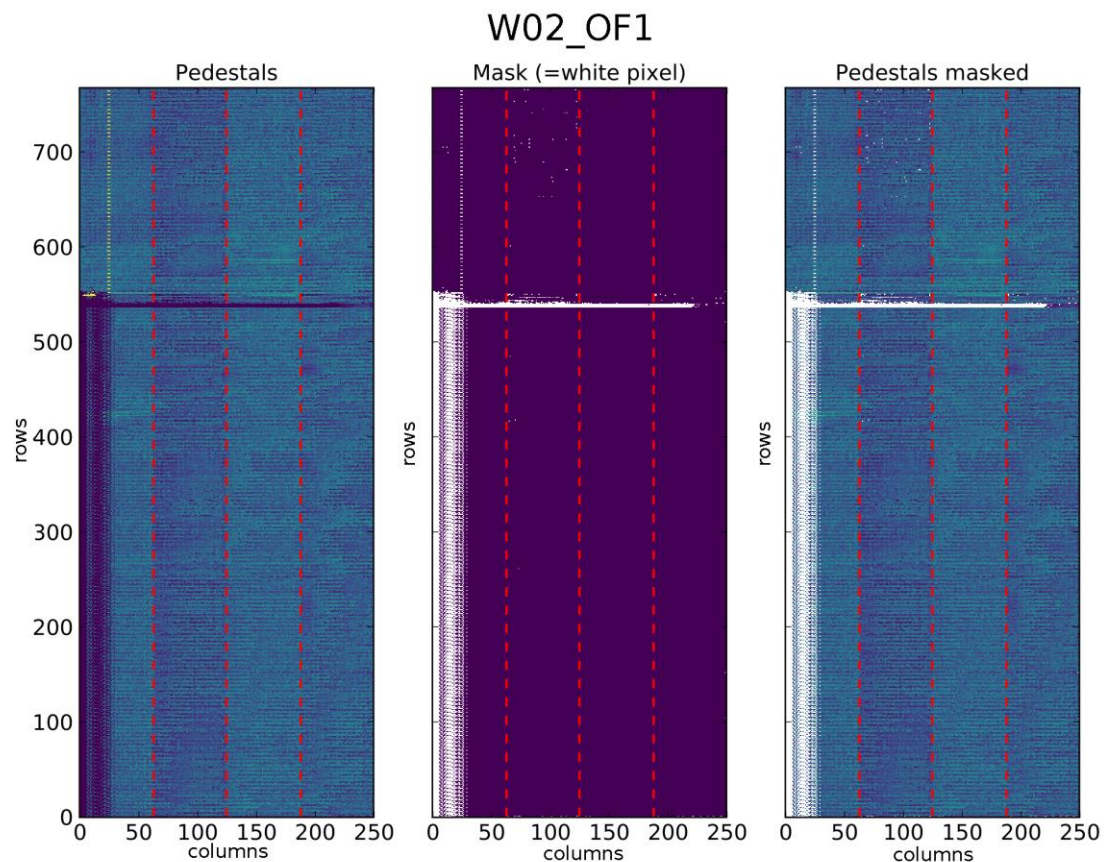
- median
- current VNSubIns
- wanted median

➤ repeat until new and old VNSubIns maximally differ by 1

Additional Features

- turn off ACMC for scan
→ ACMC cancel out shift of VNSubIn

- apply mask



Calculation of new VNSubIns

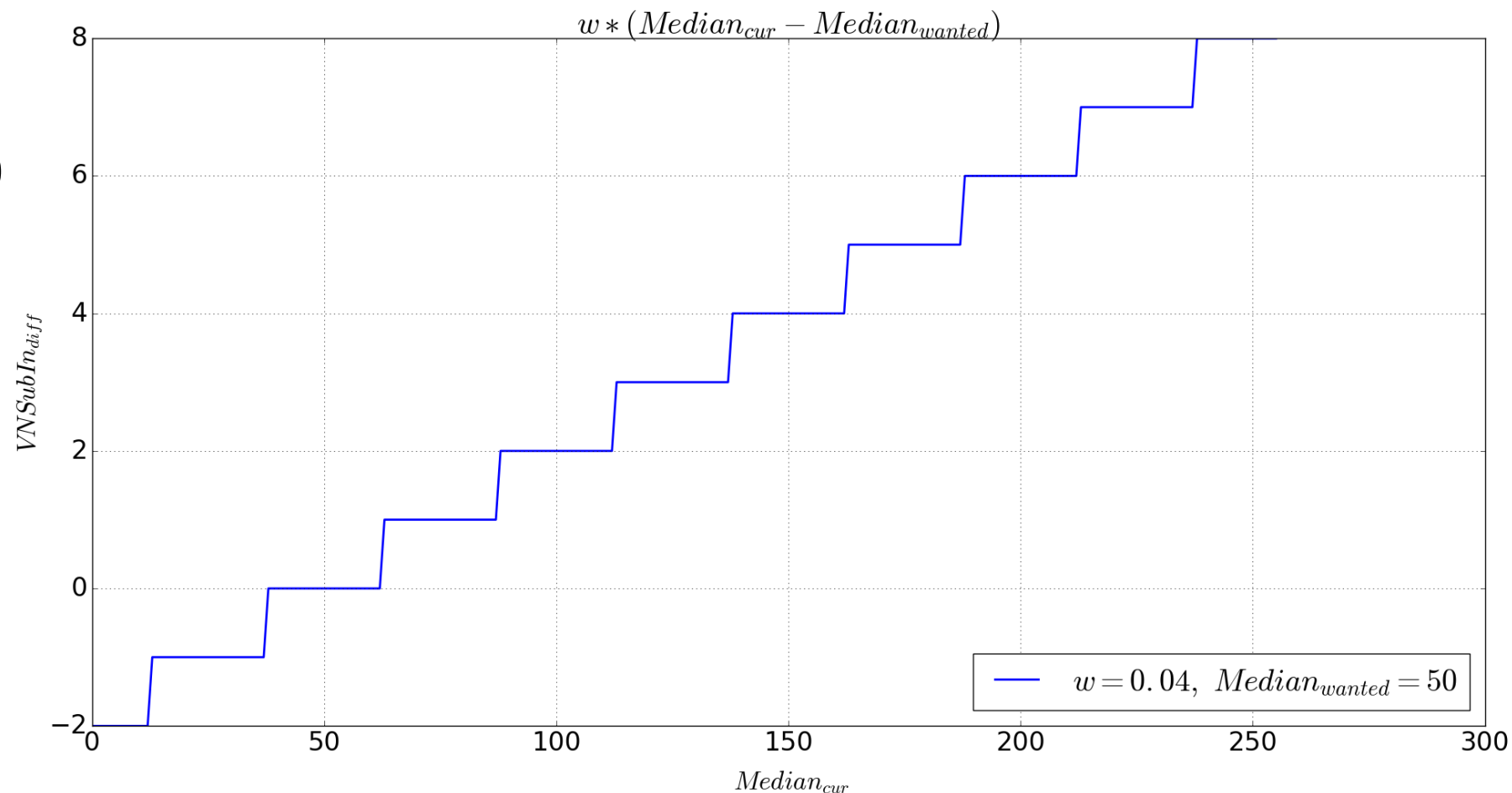
$$\text{VNSubIn}_{\text{new}} = \text{VNSubIn}_{\text{cur}} + w * (\text{Median}_{\text{cur}} - \text{Median}_{\text{wanted}})$$

- $w = 0.04$
- $\text{Median}_{\text{wanted}} = 50$

Calculation of new VNSubIns

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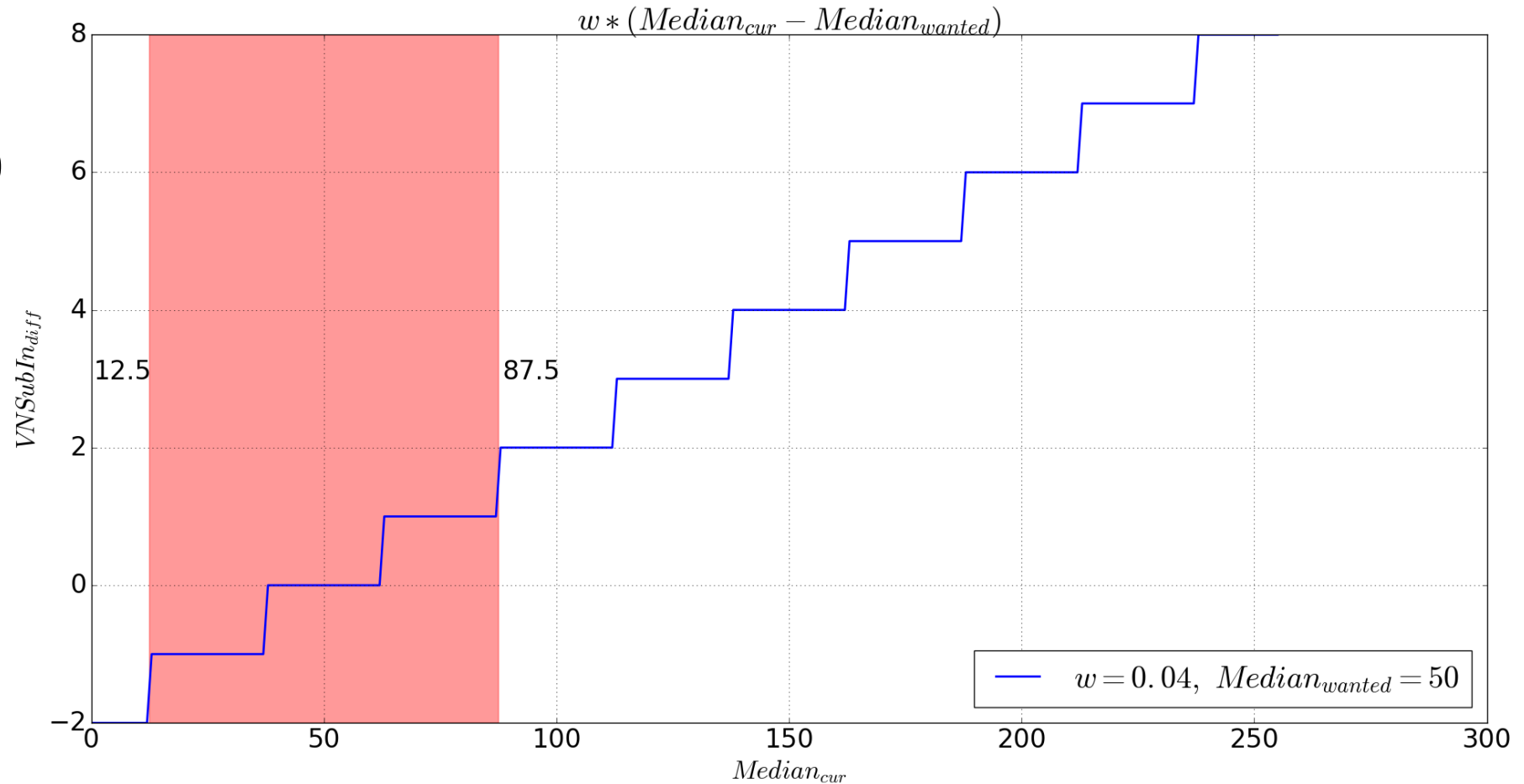
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Calculation of new VNSubIns

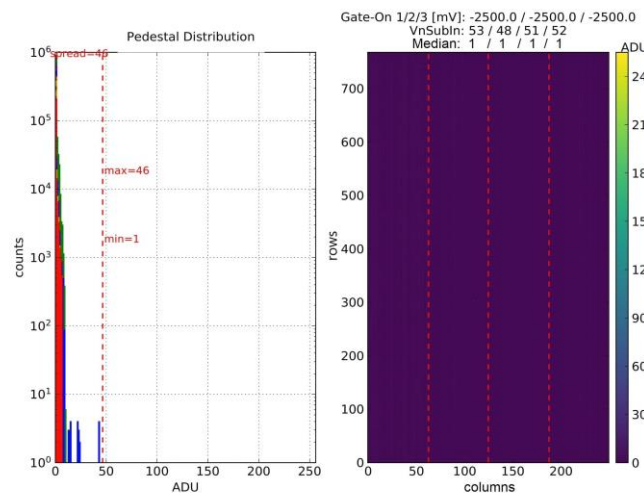
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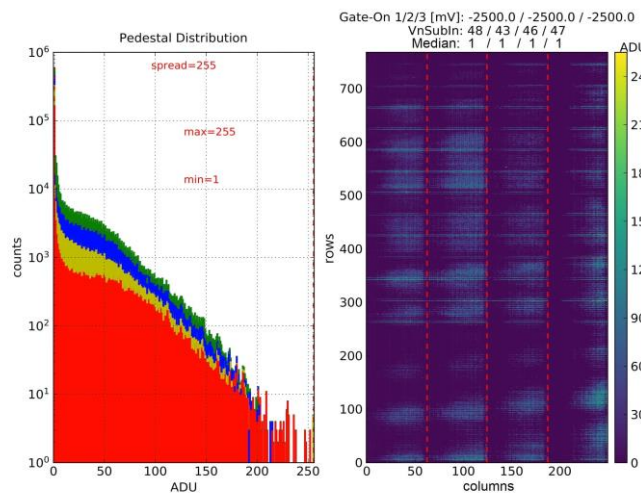


Execution at MPP

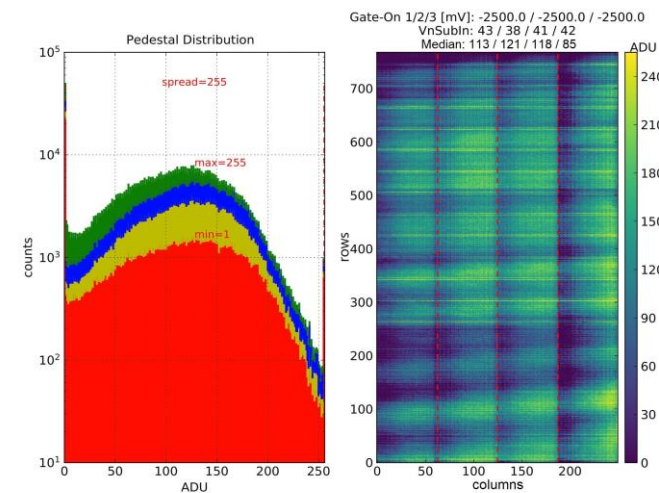
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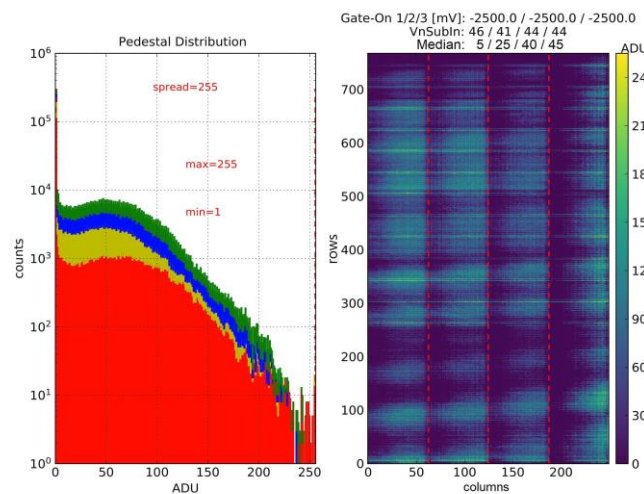
1



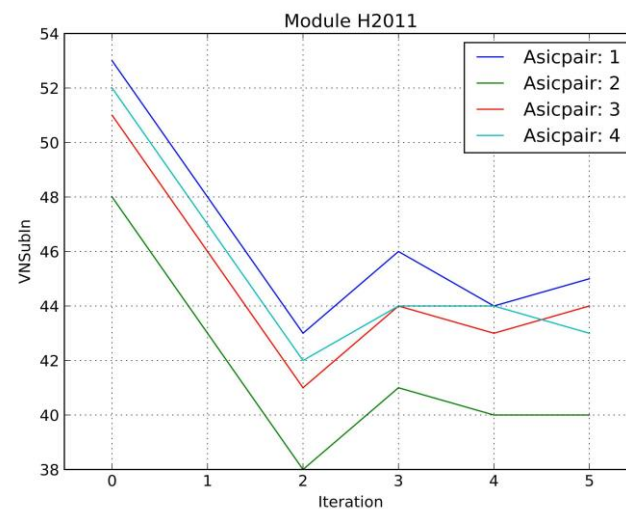
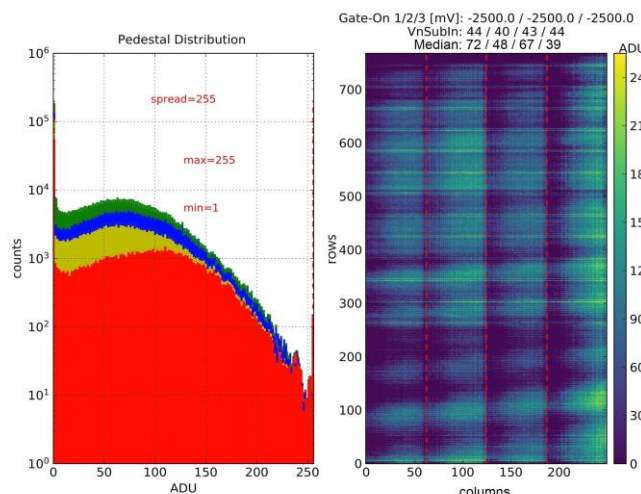
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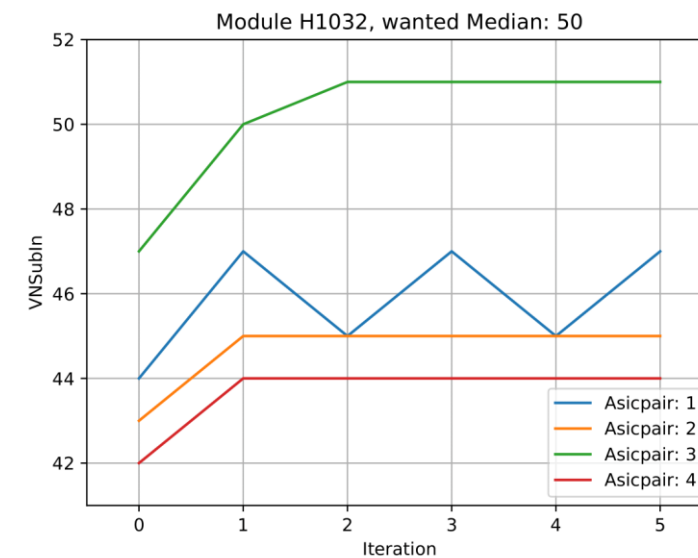
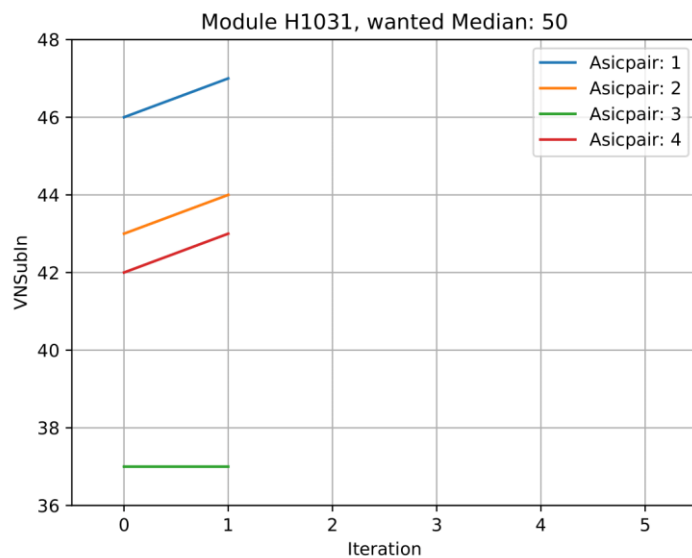
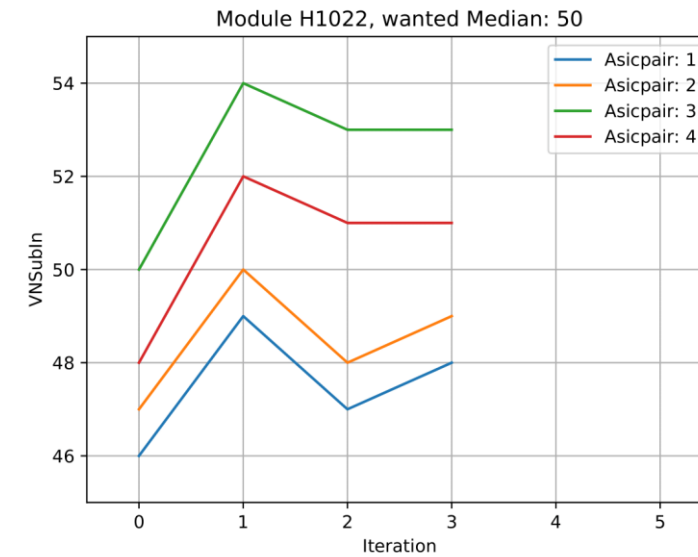
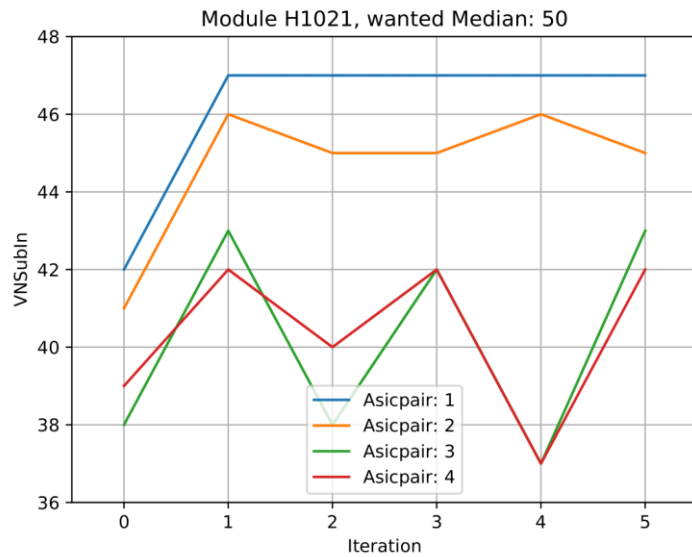
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4

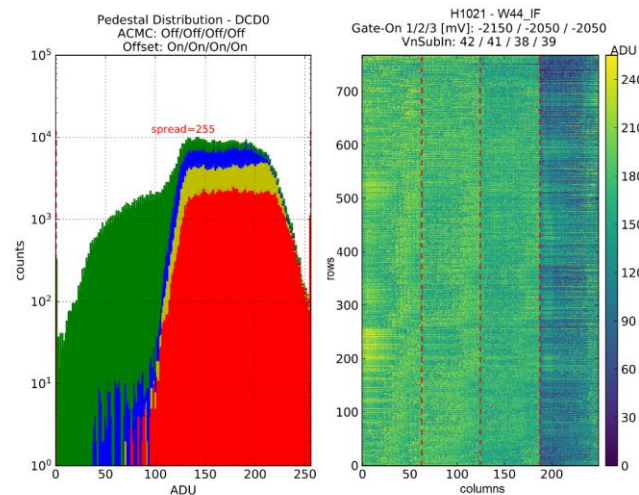


Execution at DESY

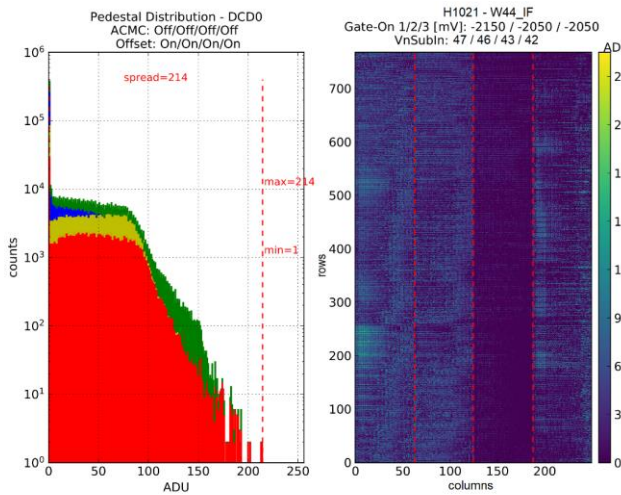


Execution at DESY

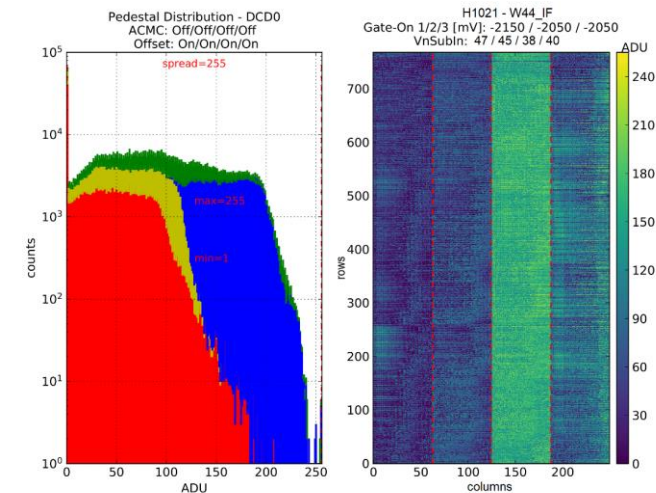
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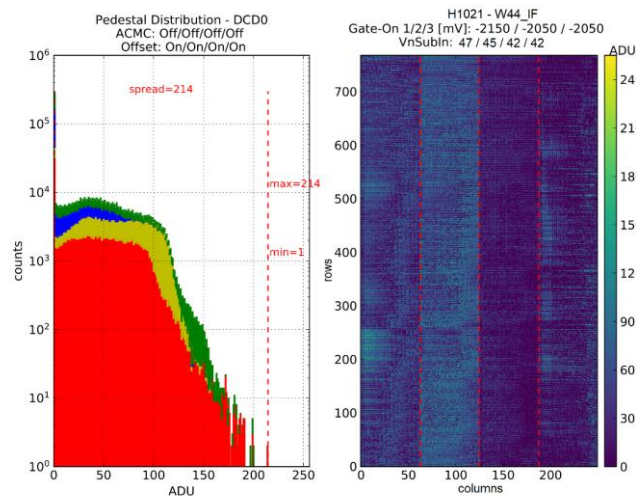
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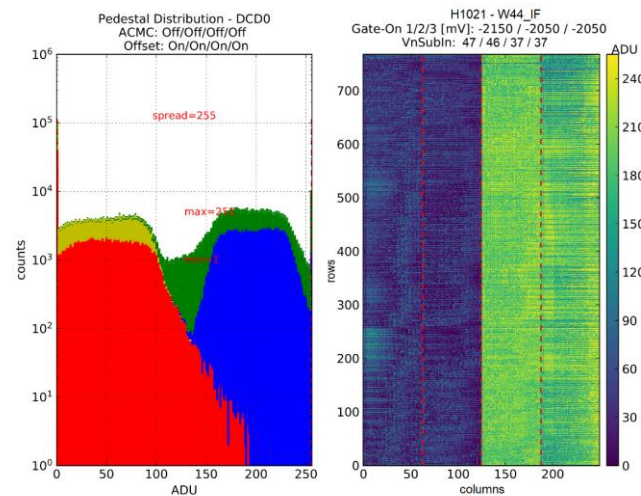
2



3



4



Summary and Outlook

- we have a script that automatically adjusts the pedestals to a starting position for the offset optimization
- should create an ELOG entry
- can be tested at KEK

Thank

you!