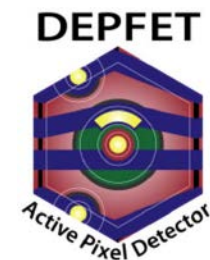




$$\Delta p \cdot \Delta q \geq \frac{1}{2} \hbar$$



Inventory and Review of Results of Layer 1

PXD modules

Felix Müller, MPP 06.12.2017



Characterization steps

See handbook for details:

https://stash.desy.de/projects/B2G/repos/pxd_sc_lab_framework/browse/handbook/handbook.pdf?at=refs%2Fheads%2Ffeature%2Fhandbook

Module:

- HS Link
- Delays
- Pedestals
- ADC Curves
- Dead Pixel Map
- Offsets
- Sampling Point Curve
- Source Scan

Ladder:

- Pedestals / Noise
- need software to compare results – how to compare, what to compare etc



Overview of Kapton attached modules

L1 BWD

P3-1:

- W01_IB (G94.4)
- W02_IB (M99)
- W46_IB (G99.5)
- W47_IB (G99.5)

P3-2:

- W03_IB (G100)
- W43_IB (G100)
- W44_IB (G100)
- W45_IB (G100)

P3-3:

- W09_IB (G100)
- W32_IB (G100)
- W41_IB (G100)
- W42_IB (G100)

L1 FWD

P3-1:

- W44_IF (G100)
- W45_IF (G100)
- W46_IF (G99.5)
- W47_IF (G99.5)

P3-2:

- W02_IF (G99)
- W03_IF (G99)
- W05_IF (G99.3)
- W43_IF (G100)

P3-3:

- W08_IF (G99.5)
- W32_IF (G100)
- W41_IF (G99.5)
- W42_IF (G99.3)



Problematic L1 FWD Modules

L1 FWD

P3-1:

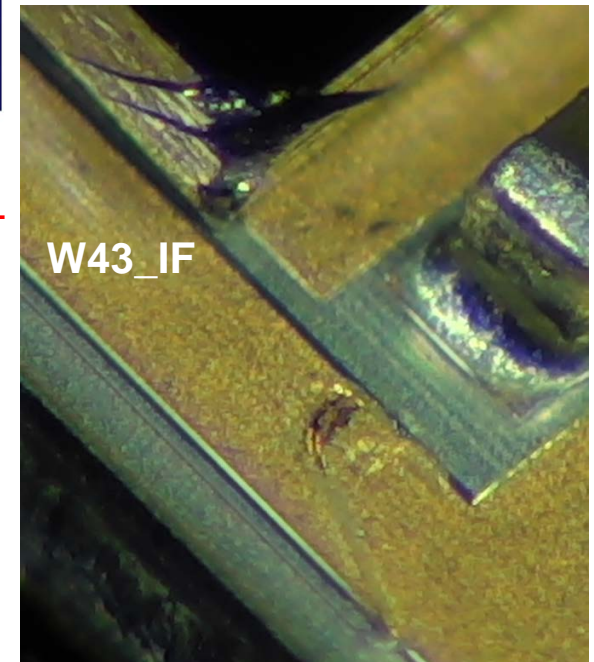
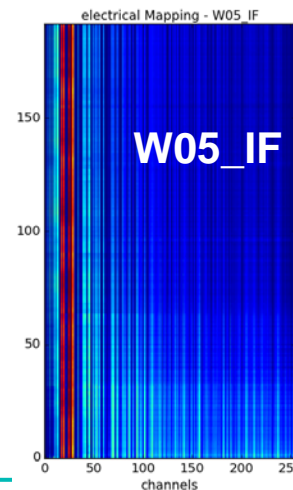
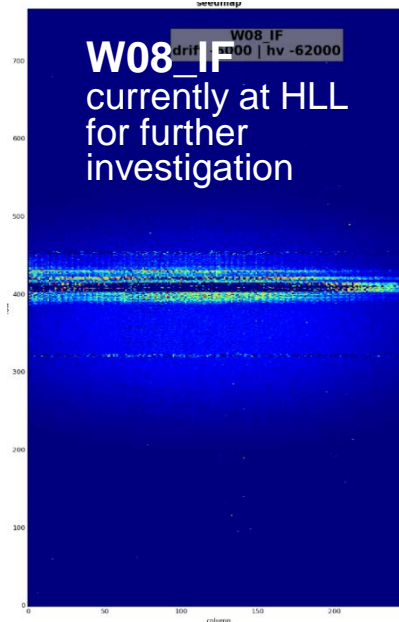
- W44_IF (G100)
- W45_IF (G100)
- W46_IF (G99.5)
- W47_IF (G99.5)

P3-2:

- W02_IF (G99)
- W03_IF (G99)
- W05_IF (G99.3) (short at 9 ADC channels) @HLL
- W43_IF (G100) (JTAG problem, DCD corner) @HLL

P3-3:

- W08_IF (G99.5) @HLL
- W32_IF (G100)
- W41_IF (G99.5)
- W42_IF (G99.3)





Overview L1 FWD Modules

L1 FWD

P3-1:

- W44_IF (G100) – L1_016
- W45_IF (G100) – L1_014
- W46_IF (G99.5) - (under test, HLL)
- W47_IF (G99.5) – L1_015

P3-2:

- W02_IF (G99) (double peak – need to repeat)
- W03_IF (G99) – L1_019 (ladder to be tested)
- W05_IF (G99.3) - (short at 9 ADC channels) @HLL
- W43_IF (G100) - (JTAG problem, DCD corner) @HLL

P3-3:

- W08_IF (G99.5) @HLL
- W32_IF (G100) – L1_017
- W41_IF (G99.5) – L1_018
- W42_IF (G99.3) - (under test)

Summary (FWD):

- Need 8 ladders for PXD
- Have 6 ladders now (wait for BWD)
- Need 2 ladders
- Have still 3 modules



Problematic L1_BWD Modules

L1 BWD

P3-1:

- W01_IB (G94.4)
- W02_IB (M99)
- W46_IB (G99.5)
- W47_IB (G99.5)

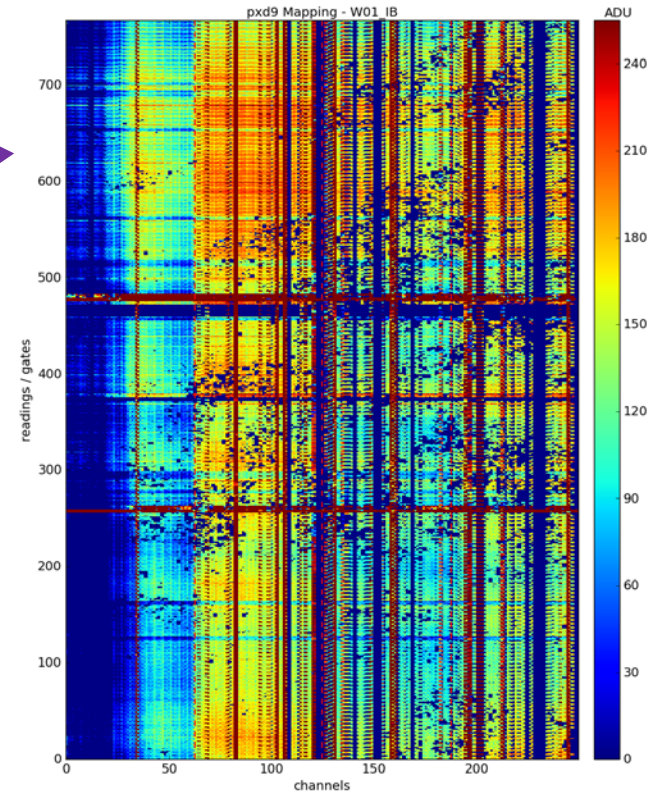


P3-2:

- W03_IB (G100)
- W43_IB (G100)
- W44_IB (G100)
- W45_IB (G100)

P3-3:

- W09_IB (G100) @HLL
- W32_IB (G100)
- W41_IB (G100)
- W42_IB (G100)



W09_IB

5000 mV	5000 mV	<input checked="" type="checkbox"/>	5018 mV	4993 mV	4 mA	gate-on2
5000 mV	5000 mV	<input checked="" type="checkbox"/>	-3487 mV	-3523 mV	15 mA	gate-on3
5000 mV	6000 mV	<input checked="" type="checkbox"/>	5026 mV	4997 mV	6 mA	gate-off
6000 mV	7000 mV	<input checked="" type="checkbox"/>	7041 mV	6003 mV	76 mA	source



Overview L1_BWD Modules

L1 BWD

P3-1:

- W01_IB (G94.4) – L1_014
- W02_IB (M99) – L1_015
- W46_IB (G99.5) – basic checks done
- W47_IB (G99.5) – L1_016

P3-2:

- W03_IB (G100) – (GOE under test)
- W43_IB (G100) – to be glued?
- W44_IB (G100) – L1_017
- W45_IB (G100) – (under test)

P3-3:

- W09_IB (G100) @HLL
- W32_IB (G100)
- W41_IB (G100) – L1_018
- W42_IB (G100) – L1_019 (ladder to be tested)

Summary (FWD):

- Need 8 ladders for PXD
- Have 6 ladders now -> only 5 ladders
- Need 3 ladders
- Have still 3 modules



Summary of L1_BWD & L1_FWD modules and ladders

Ladders:

- L1_014: W01_IB & W45_IF => should not be used due to many bad pixels
- L1_015: W02_IB & W47_IF ✓
- L1_016: W47_IB & W44_IF ✓
- L1_017: W44_IB & W32_IF ✓
- L1_018: W41_IB & W41_IF ✓
- L1_019: W43_IB & W03_IF (need to be tested)

FWD:

- W46_IF (G99.5) - (under test, HLL)
- W42_IF (G99.3) - (under test)
- W02_IF (G99) (double peak – need to repeat)

BWD:

- W46_IB (G99.5) – basic checks done
- W03_IB (G100) – (GOE under test)
- W45_IB (G100) – (under test)
- W32_IB (G100) - ?????? Philipp !!!!



Scans to be repeated

L1_014:

W01_IB:

- ADC curves
- offsets
- sampling point curve
- source

W45_IF:

- ADC curves
- offsets
- sampling point curve
- source

useful? do we really want to use L1_014 with W01_IB?



Scans to be repeated

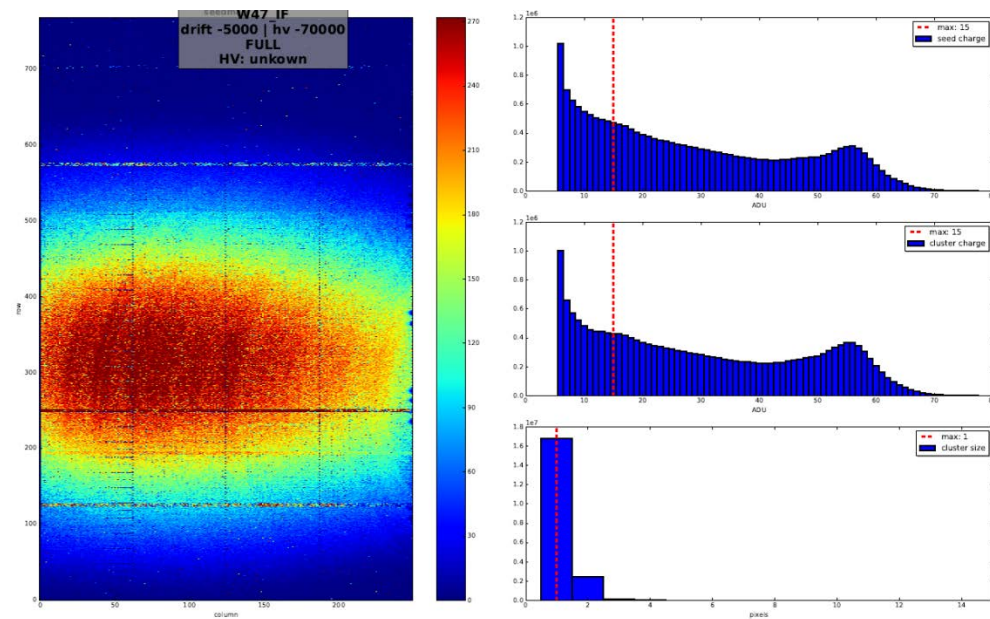
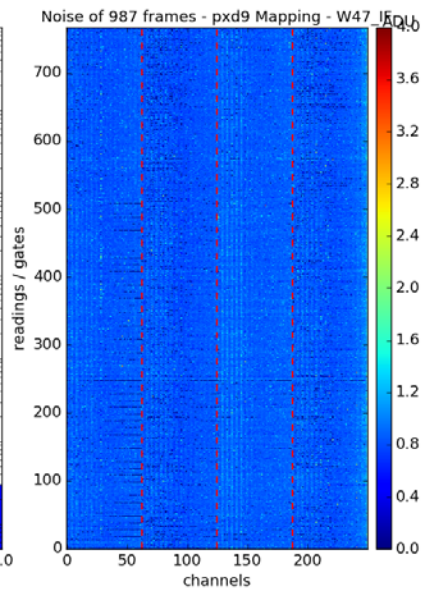
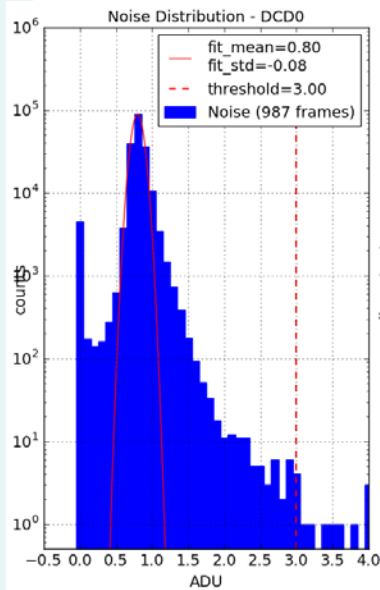
L1_015:

W02_IB:

- ADC curves

W47_IF:

- ADC curves
- sampling point curve





Scans to be repeated

L1_016:

W47_IB:

- ADC curves

W44_IF:

- ADC curves

Scans to be repeated



L1_017:

W44_IB:

- ADC curves
- sampling point curve

W32_IF:

- ADC curves

Scans to be repeated



L1_018:

W41_IB:

- ADC curves, ifpbias
- sampling point curve

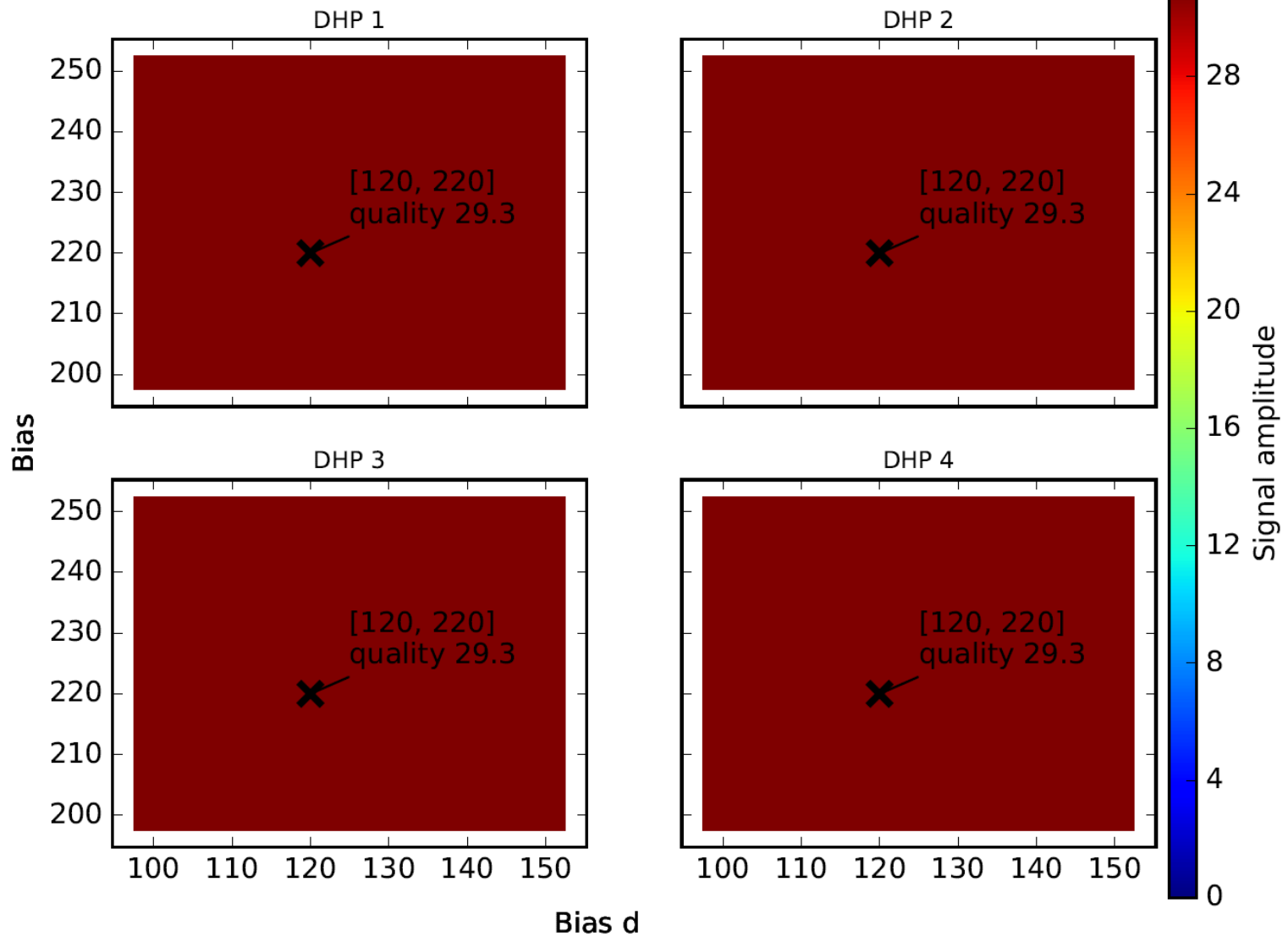
W41_IF:

- ADC curves, ifpbias



Examples of Measurements – High Speed Links

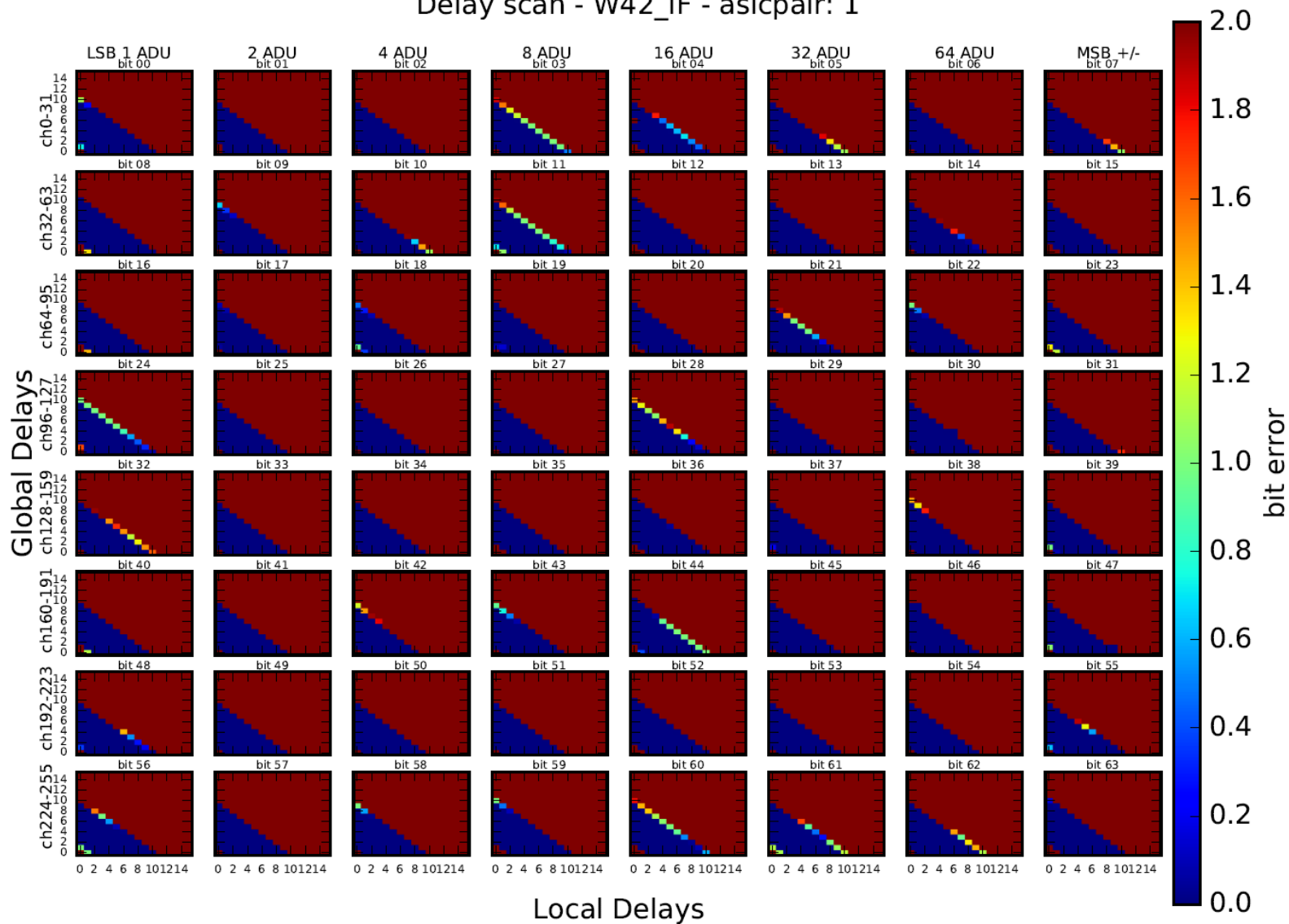
HS Link Scan - W41_IF - dly_sel=0





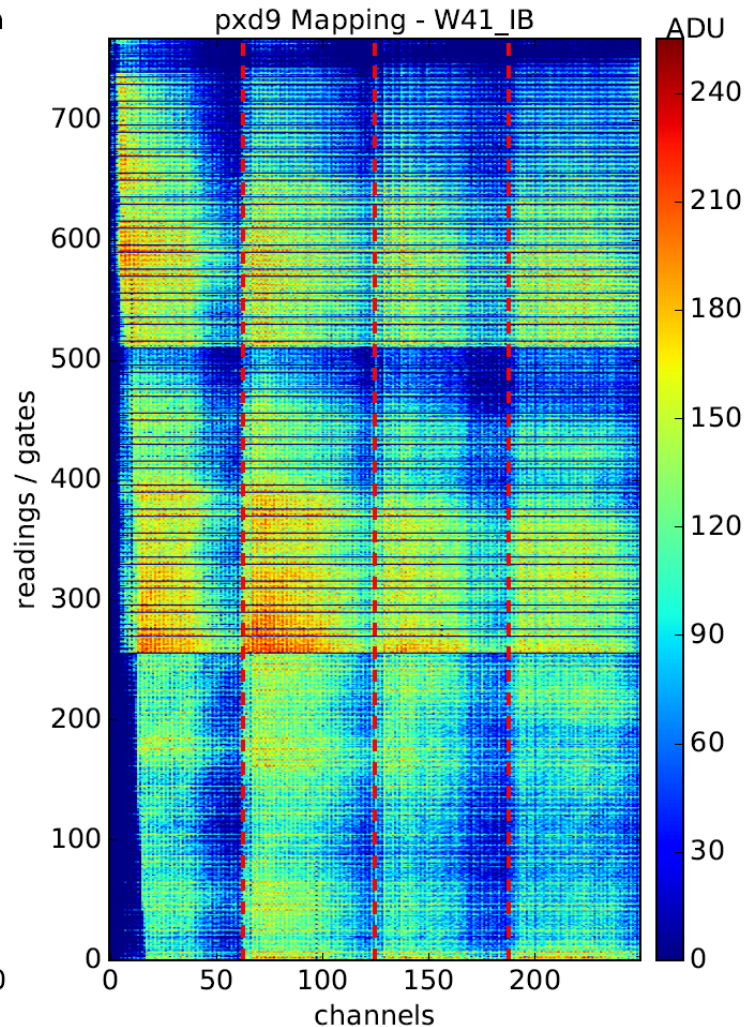
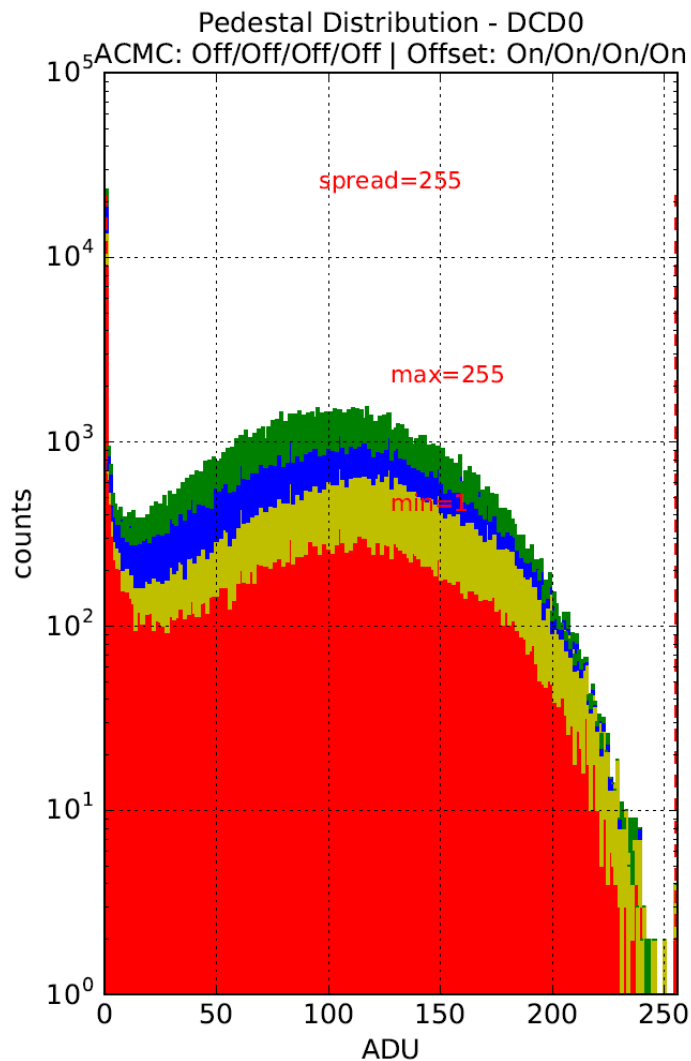
Examples of Measurements – Delays

Delay scan - W42_IF - asicpair: 1



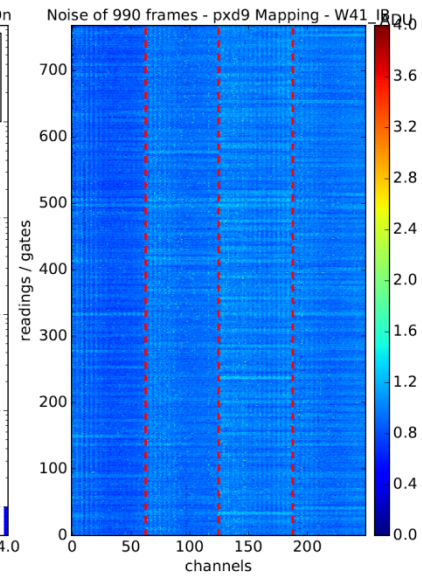
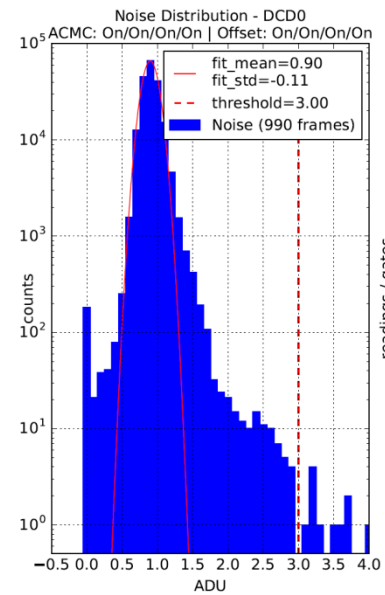
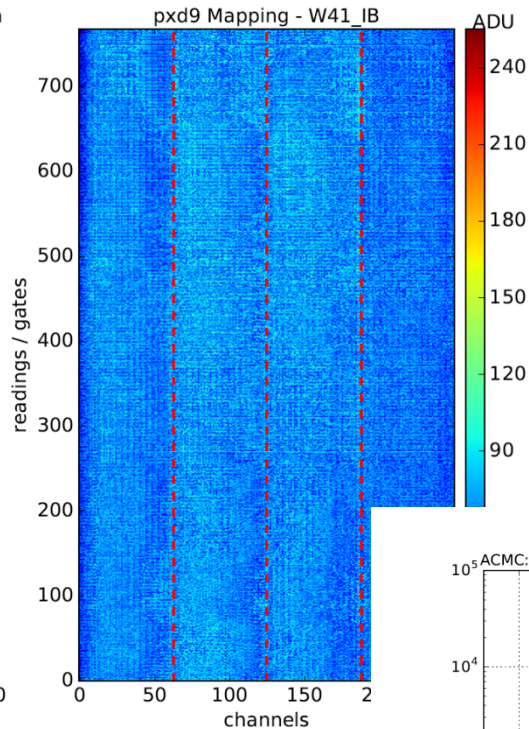
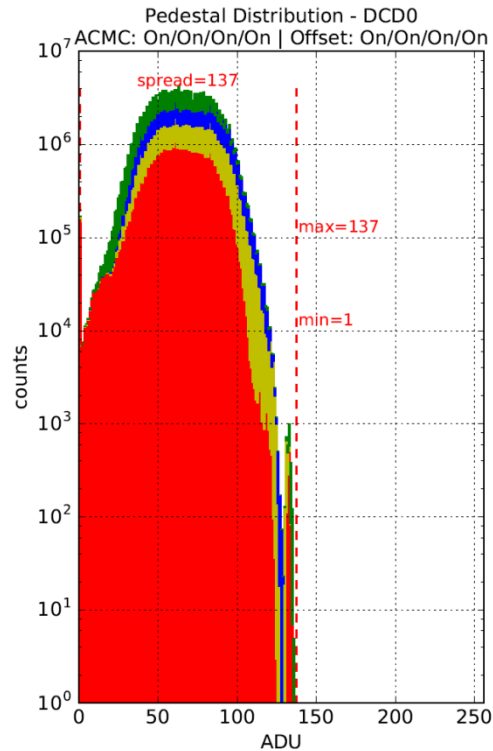


Examples of Measurements – Pedestals & Noise



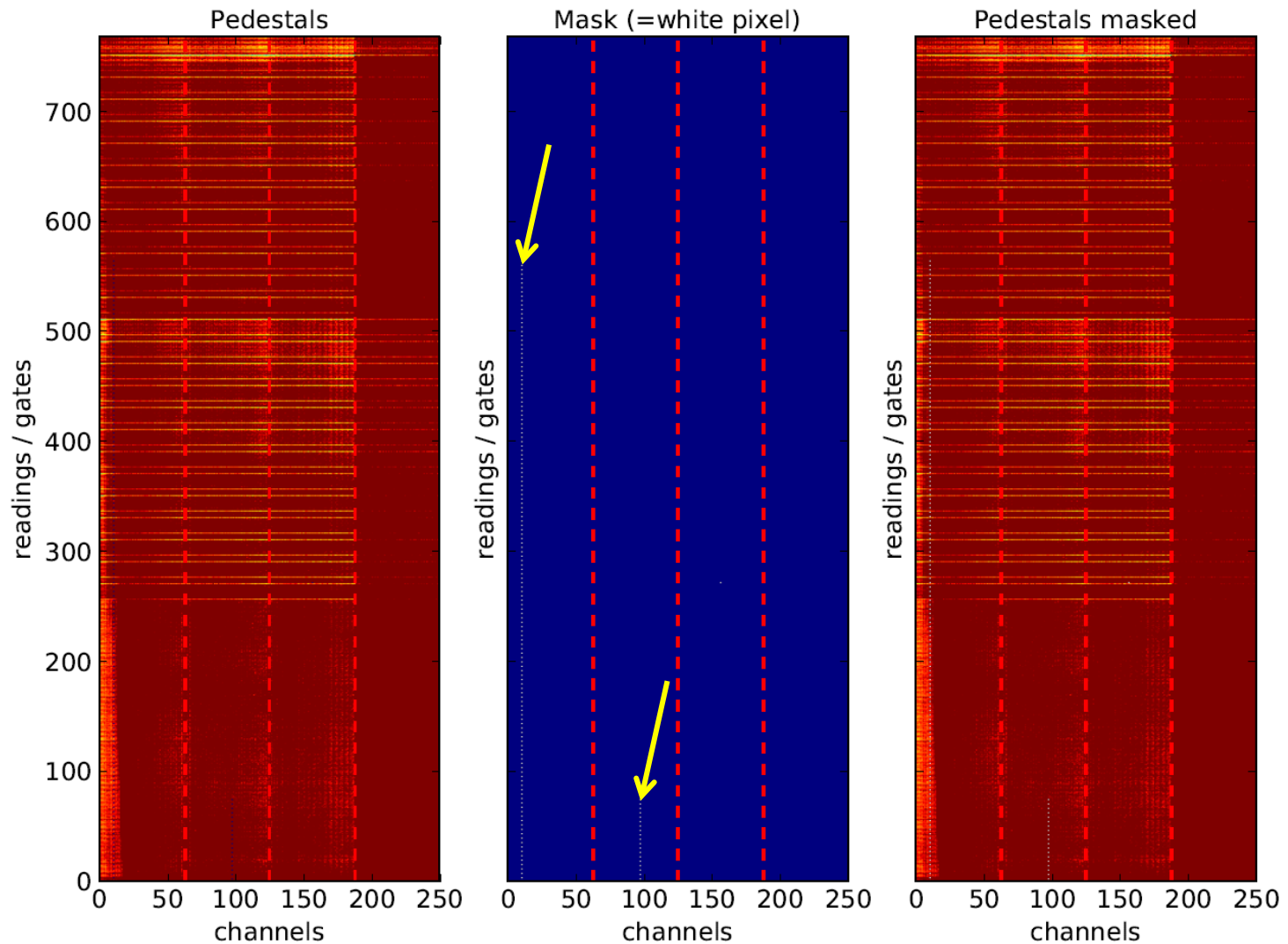


Examples of Measurements – Pedestals & Noise

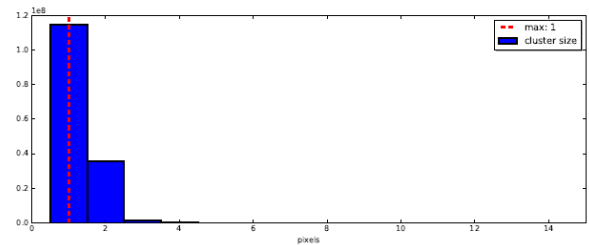
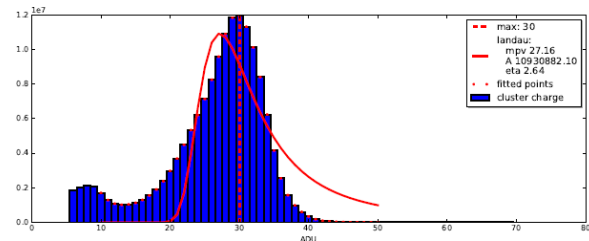
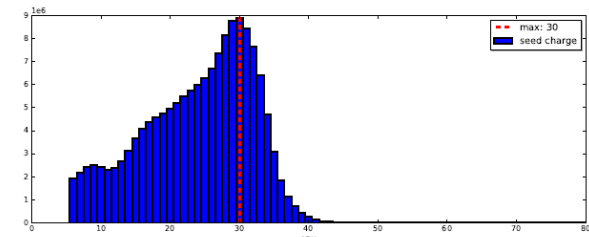
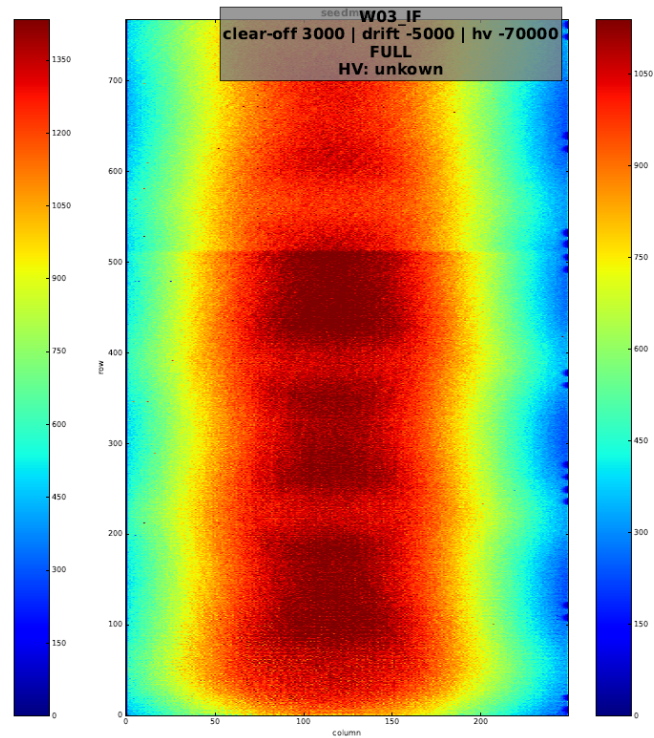
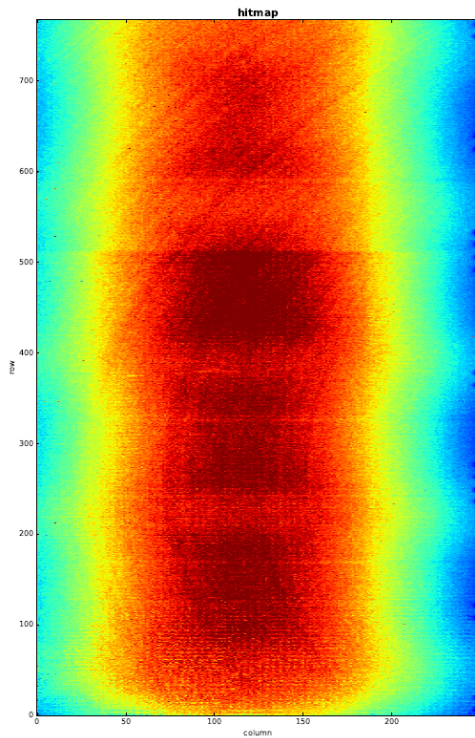




Examples of Measurements – Pedestal Mask



Examples of Measurements – Source Scan





W42_IF – Source Scan

