Open questions in x-ray measurement results

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26. March 2012

Overview

► Shift of threshold when doing s-curves under x-ray radiation

► Shift in pulse height when under x-ray radiation

► Strange behaviour with WBC $\rightarrow$ 0
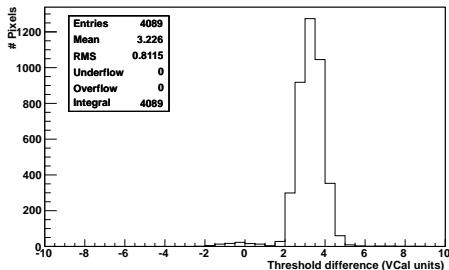
Threshold shift

Measurement and observations:

▶ S-curve test run without x-rays (just a scan varying VCal) [blue] compared to an s-curve test with x-rays on [red]

▶ Noise increases as one would expect
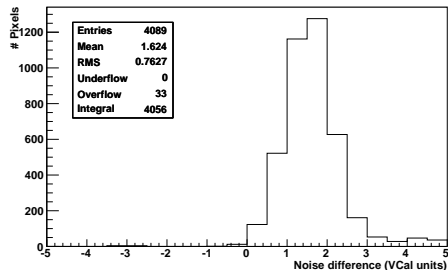
▶ Threshold seems to go up (or VCal weaker)
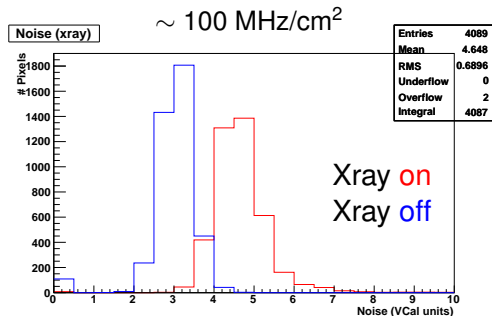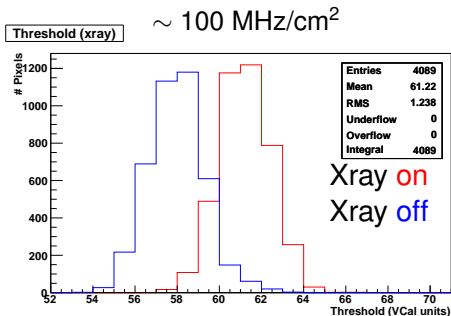
Threshold shift

Difference in threshold and noise for each pixel:

Pulse height shift
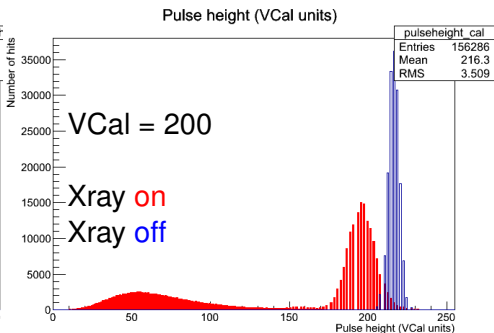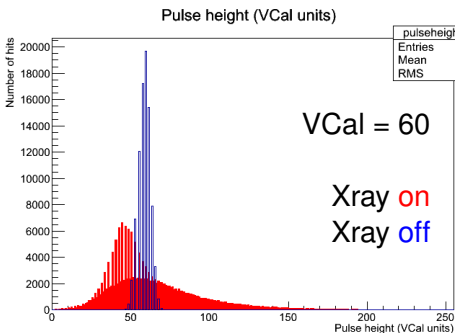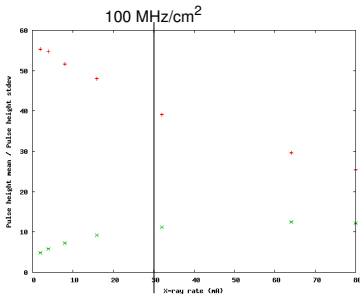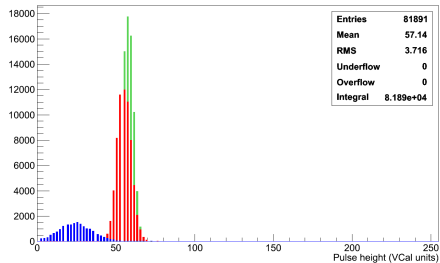
Measurement:

- ▶ High rate pixel map with additional calibrate signal into one pixel
- ▶ With [red] and without x-rays [blue]
- ▶ Pulse height for all pixels is stored in a histogram
- ▶ Pulse height (gain) calibration used to convert to VCal units

Pulse height shift

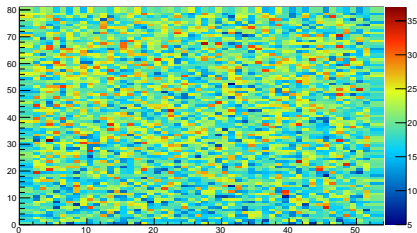Rate dependence (Xray: green = off, red = 2 mA, blue = 80 mA):

Strange WBC behaviour

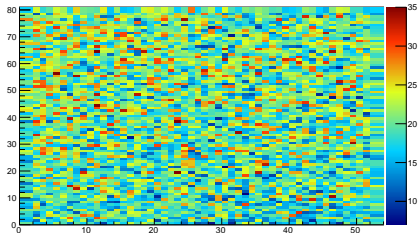Setting WBC to insensible values produces results nonetheless.

- ► Even WBC = 0 works
- ► Rate does not depend on WBC (at low rate)
- ► Pixel decoding errors occur below WBC = 20 and their rate increases toward WBC = 0

WBC = 1

WBC = 100

Strange WBC behaviour