



Update on the calibration activities of AGIPD

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Calibration meeting, Hamburg
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Progress on developing code (C code + ROOT framework) to cover different aspects of the calibration procedure:

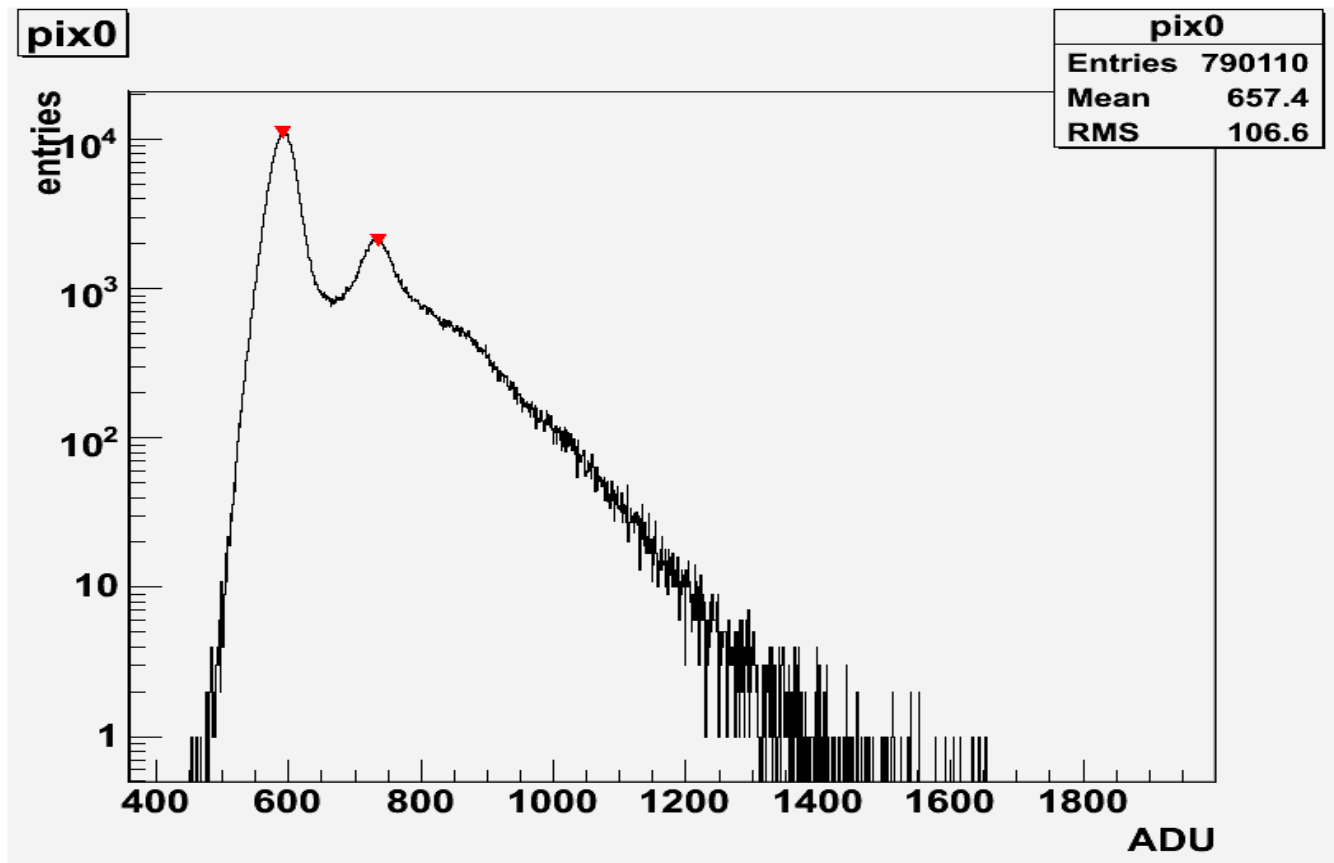
- calibration with radiation sources
- calibration with electrical source

- time estimate to fit large amount of data
- more on droop

Calibration with physical sources: Mo source



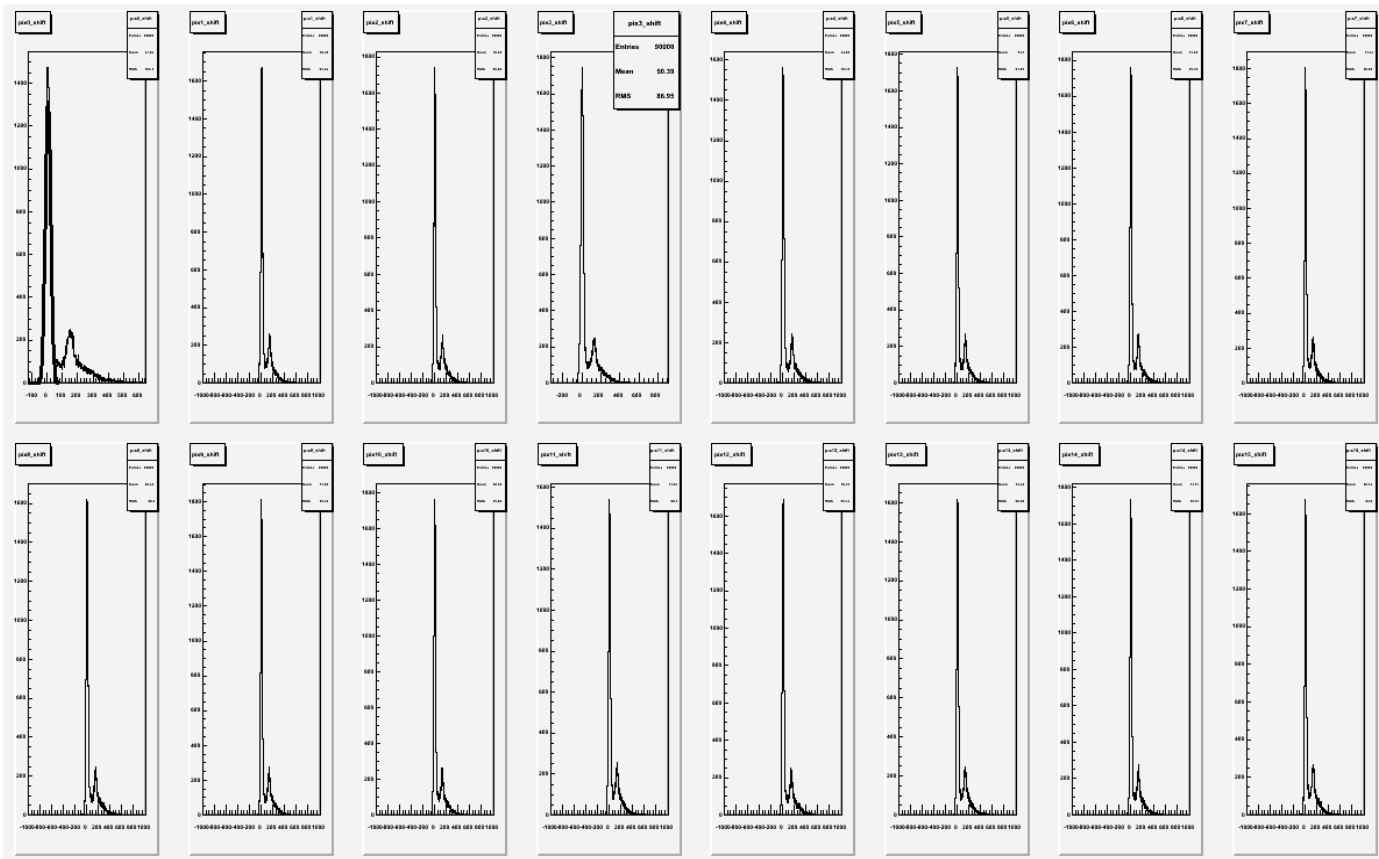
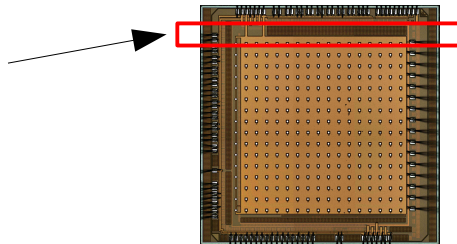
Calibration of AGIPD 0.4 using X-ray tube with Mo source



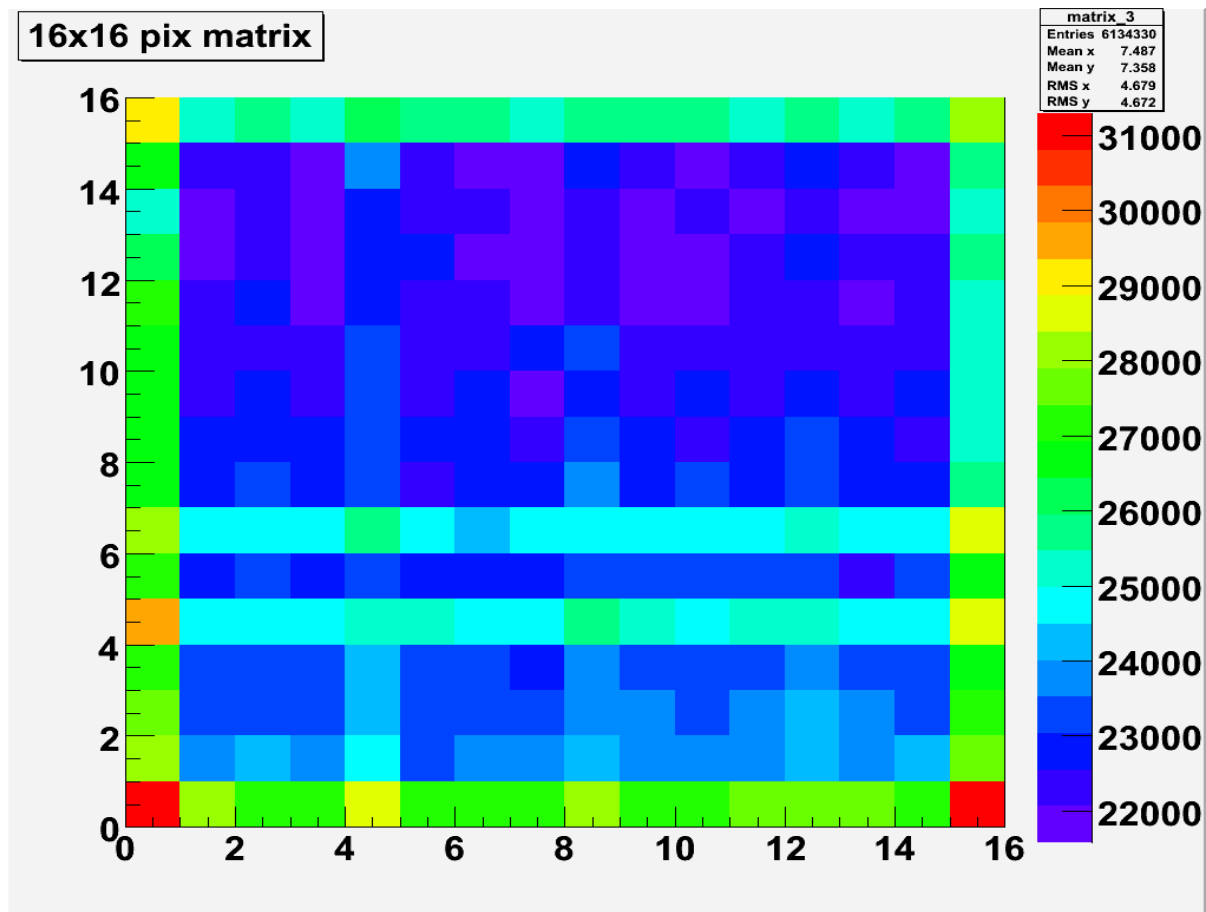
Spectra from Mo source



First row of pixels

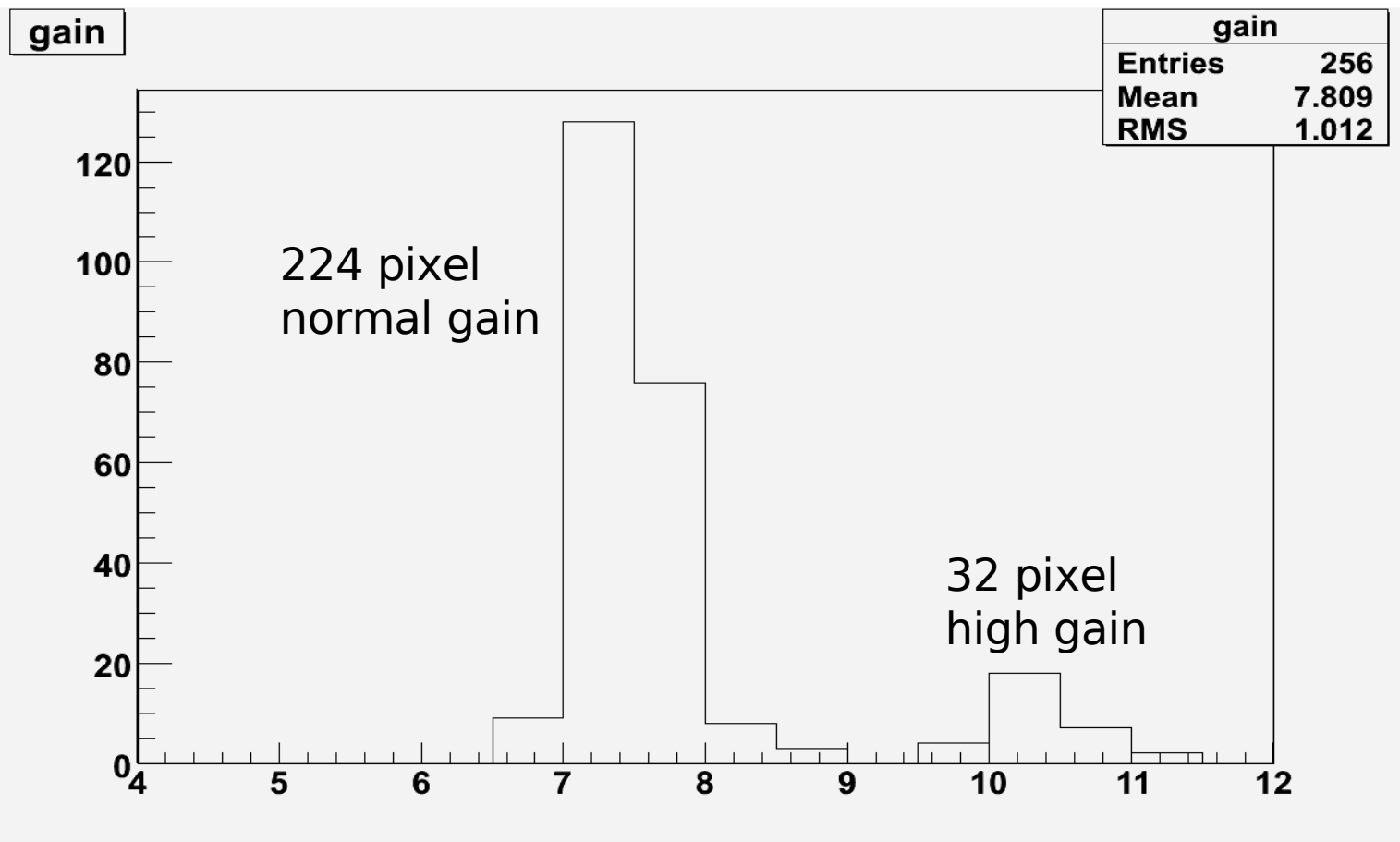


Full 16x16 pixel matrix



2 rows with higher gain pixels
Border effect

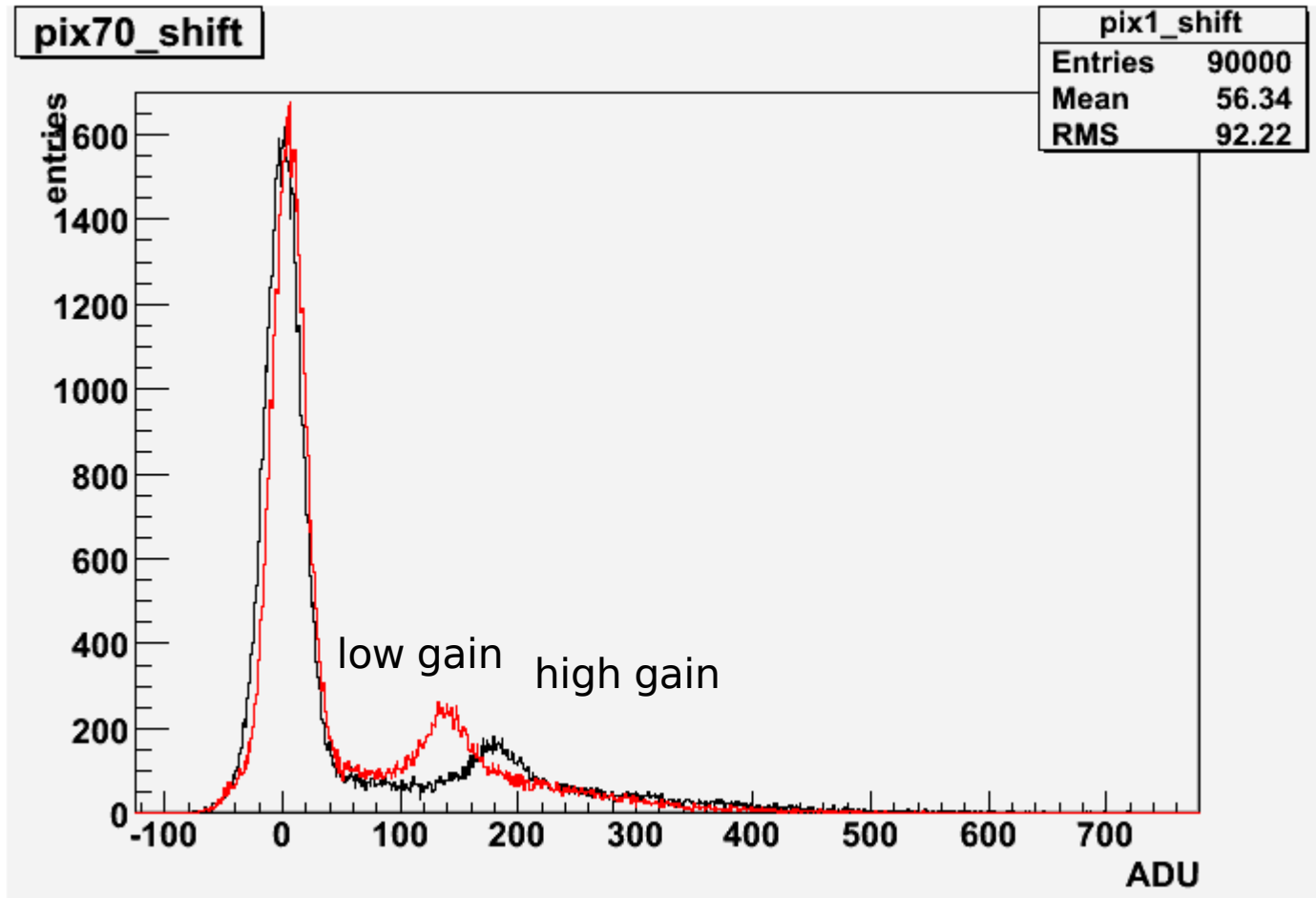
Gain distribution



High and low gain pixels



Comparison : high gain pixel and low gain pixel

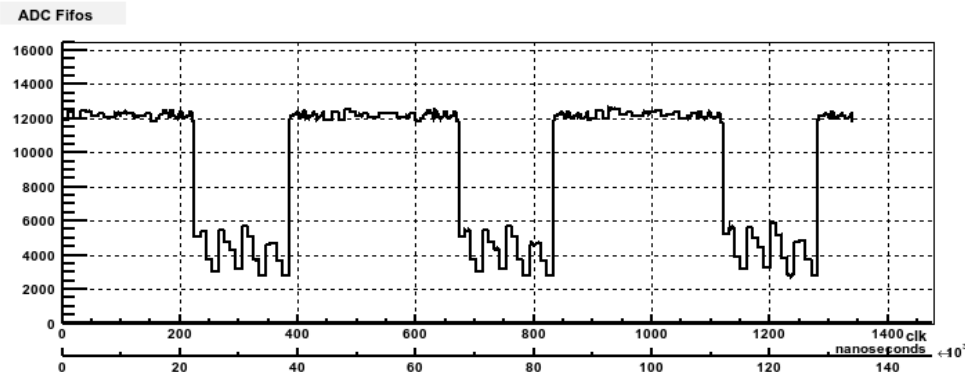
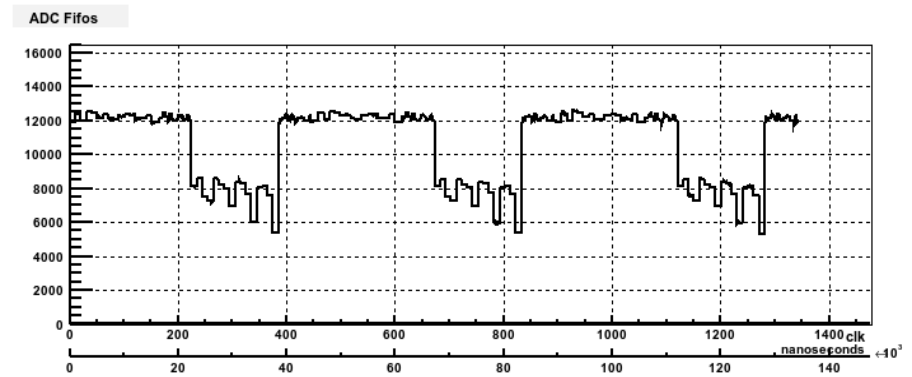
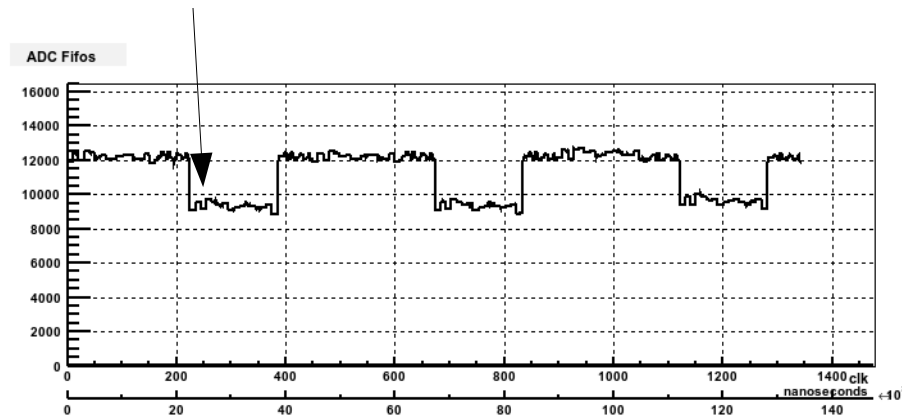


Calibration with electrical source



Proof of principle and code development:

Injecting different amount of charge into the pixel





Data acquisition



Data plot and fit



Extraction and recording of slope and offset

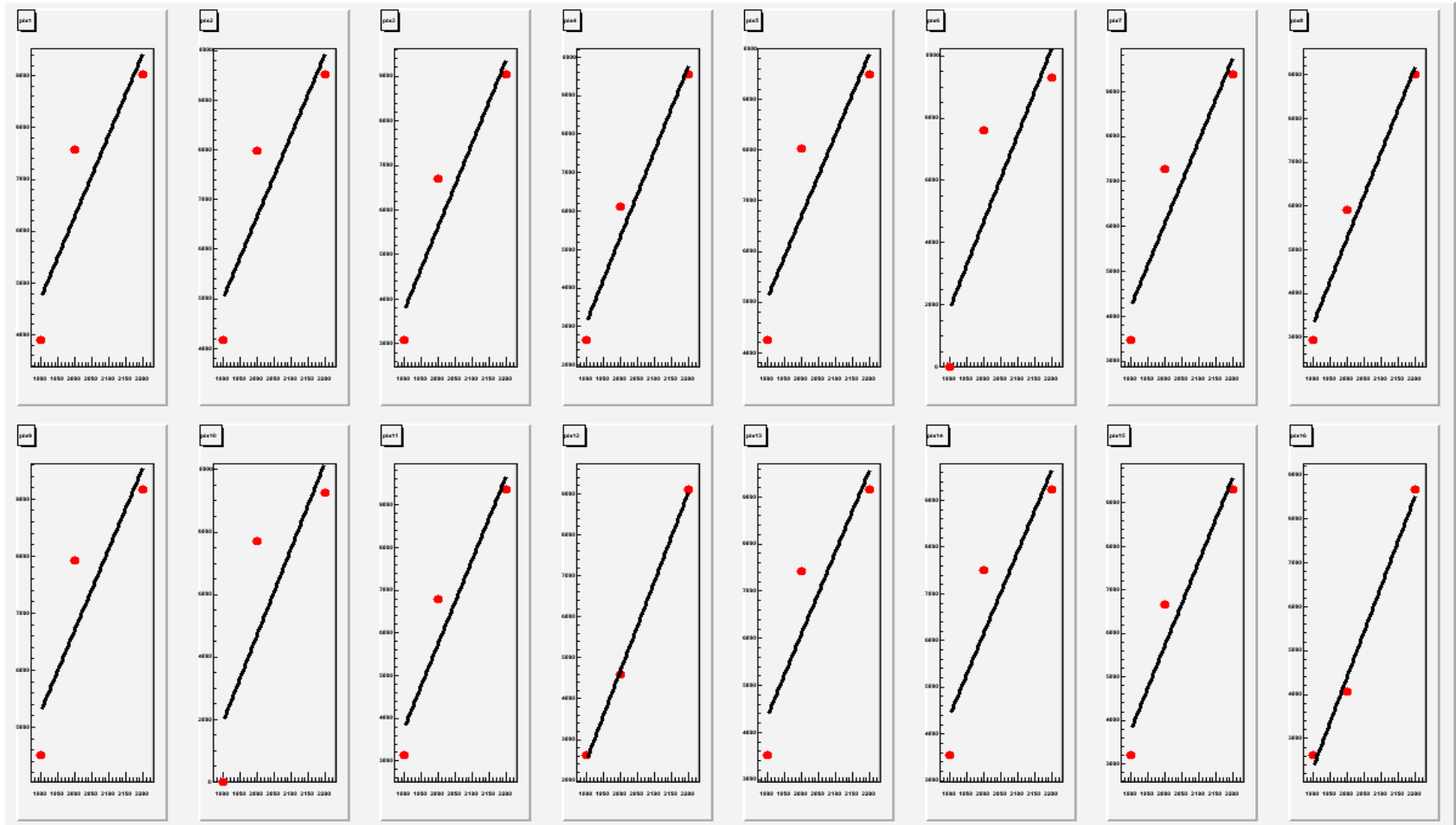
Pix #	Peak pos (ADU)	Charge injected(AU)	Gain (low,mid,high)
1	11889	1900	high
2	12392	1900	high
3	11924	1900	high
4	12528	1900	high
5	12345	1900	high
6	12165	1900	high
7	12054	1900	high

Example of data from the high gain data set

Calibration with 3 points with charge injector

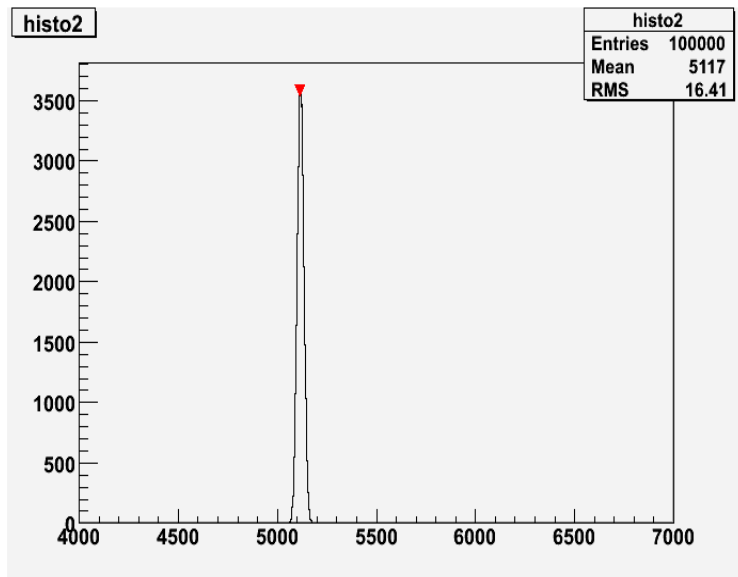


First row of 16 pixels





Time estimate for 1 M pixel Gaussian fitting with ROOT vs variance calculation

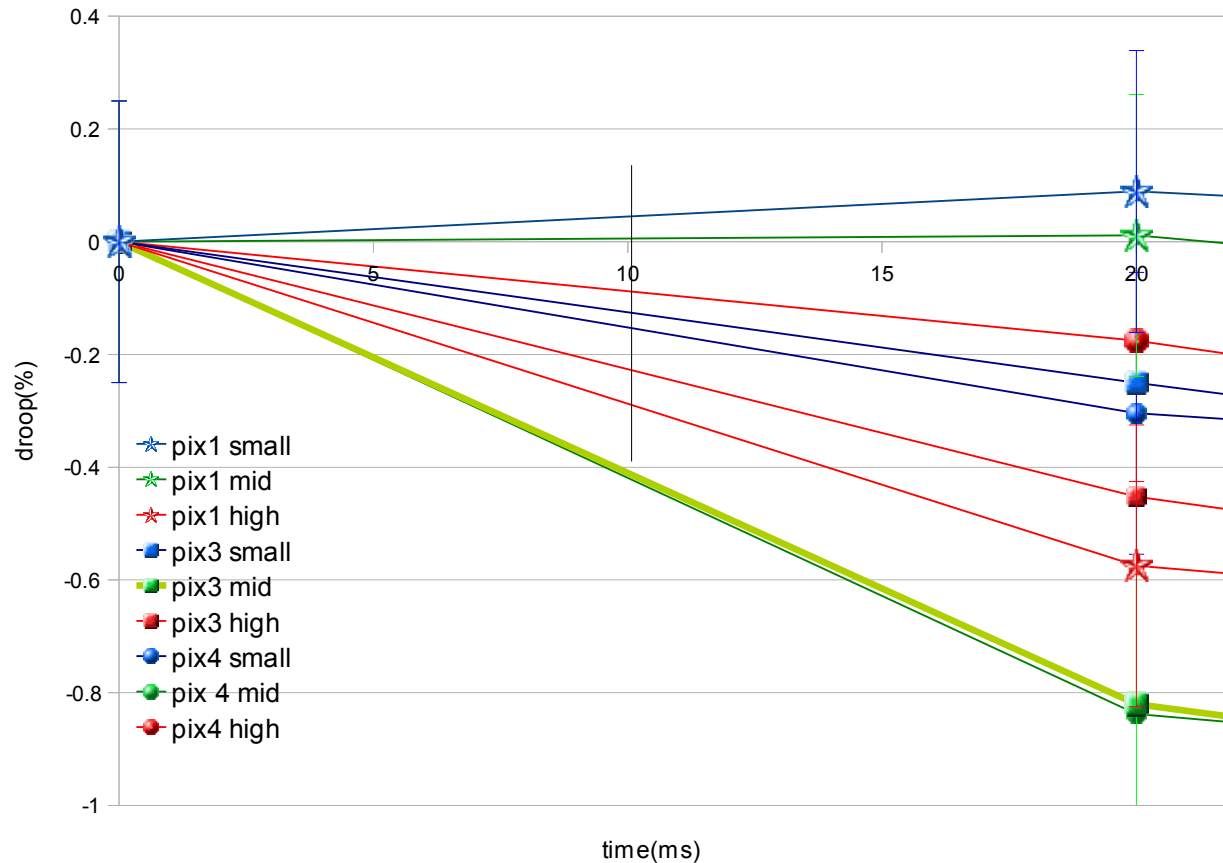


- Fit 1M Gaussian ~ 24 min
- 1M pixels variance and mean calculation < 1 sec

More investigation on droop



Injecting different amount of charge to check any dependence between droop % and charge.



Slight dependence still under investigation

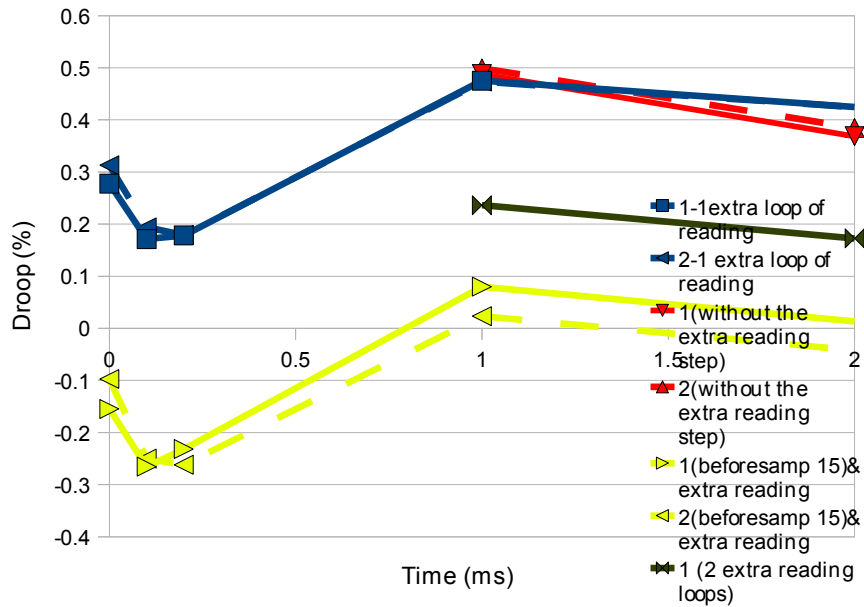
Room temperature



- Calibration with radiation source performed
- Calibration with electrical sources tested
- Time estimate for fitting procedure
- Ongoing investigation on droop and charge effect dependence



Droop trend with different reading conditions



DAC, before samp=15, 1 extra reading loop, pixel 1 -20

