

# Test of new sensors - 4 Feb 2011

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ID on Wafer	ID FE-I3	Sensor Type	Loaded	V bd (V)	comments
1	04052	4E	Yes		Tested
2	04051	4E	Yes		Tested
3	11041	4E			
4	10042	4E			
5	10041	4E			
7	09042	3E			Bollature
8	09041	3E	Yes		
9	08042	3E	Yes		
10	08041	3E	Yes		
11	07042	3E			
13	07041	2E	Yes		Bollature/ Tested
14		2E			
15		2E			
16		2E			
17		2E			

Sensors loaded on Genoa/BCN boards. Fix for USBpix will be put in place.

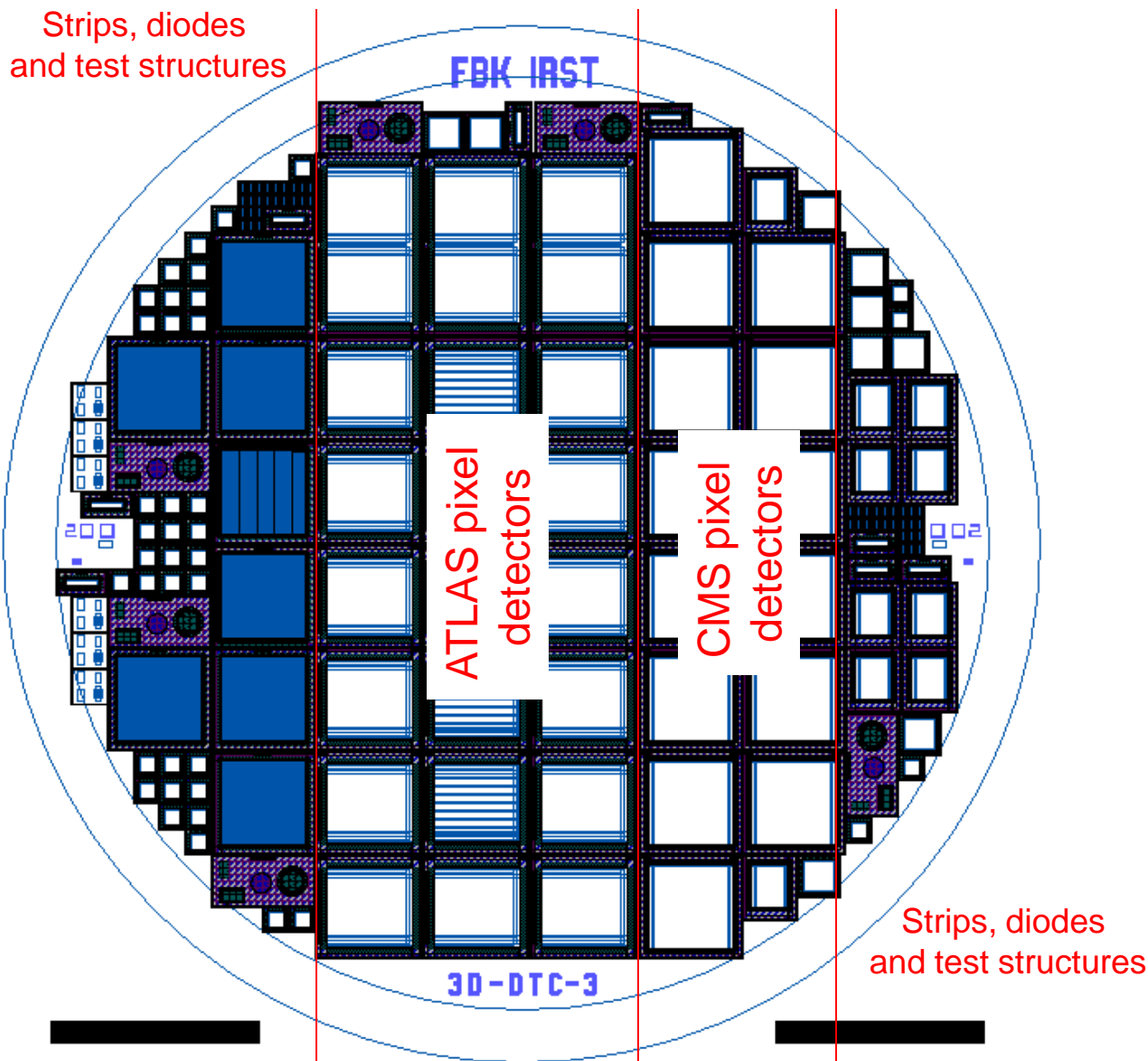
## TESTs:

- ✓ IV scan to choose the working point.
- ✓ Single chip tuned at
  - Threshold  $\sim 3200$  e
  - $TOT(Q=20ke) = 60$  BC
- ✓ Am Source scan to verify ToT tuning (0.5 Mhits,  $\sim 250$  entries per pixel)
- ✓ Noise scan vs HV

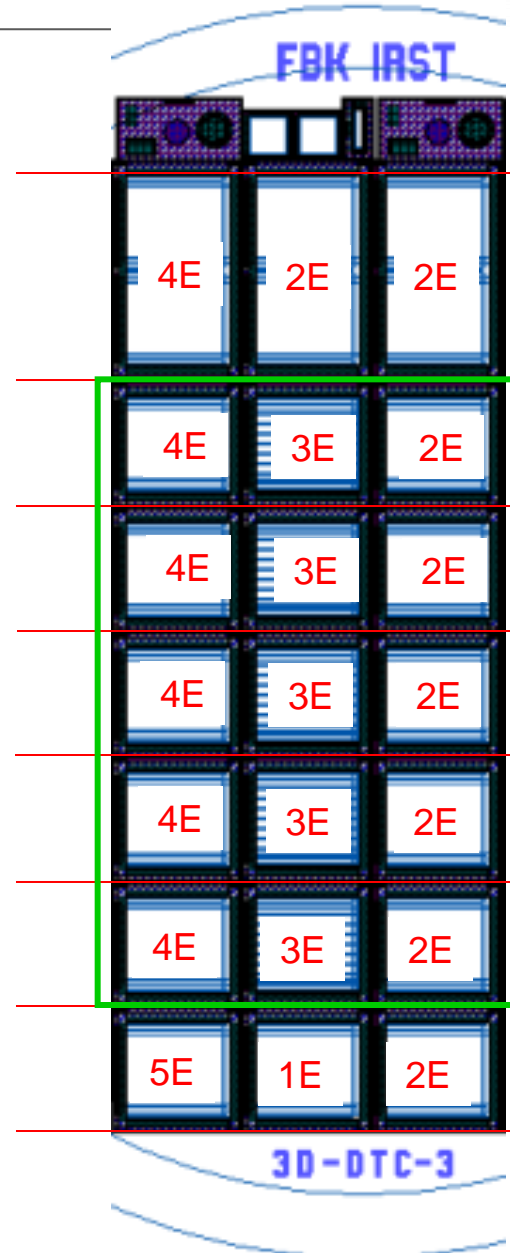
# New layout (3D-DTC-3)



Strips, diodes  
and test structures



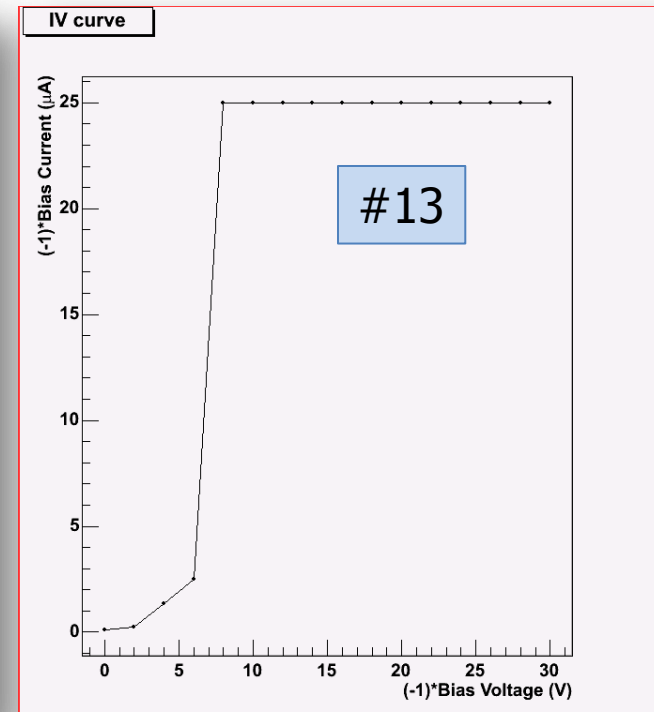
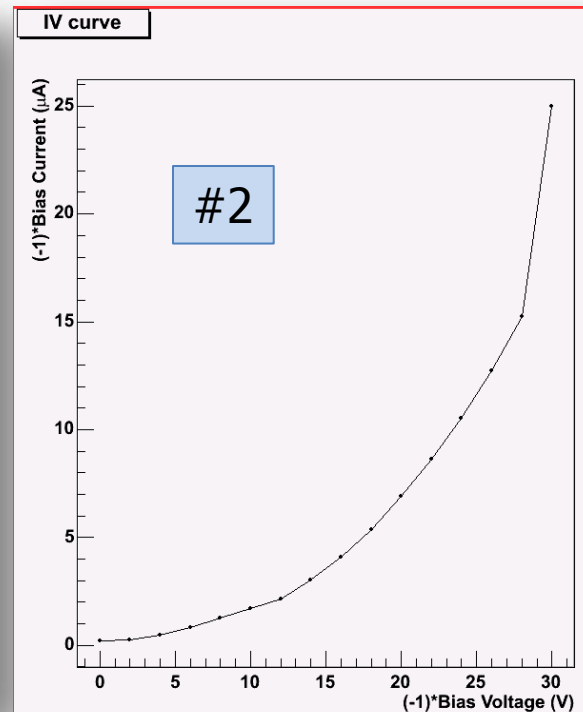
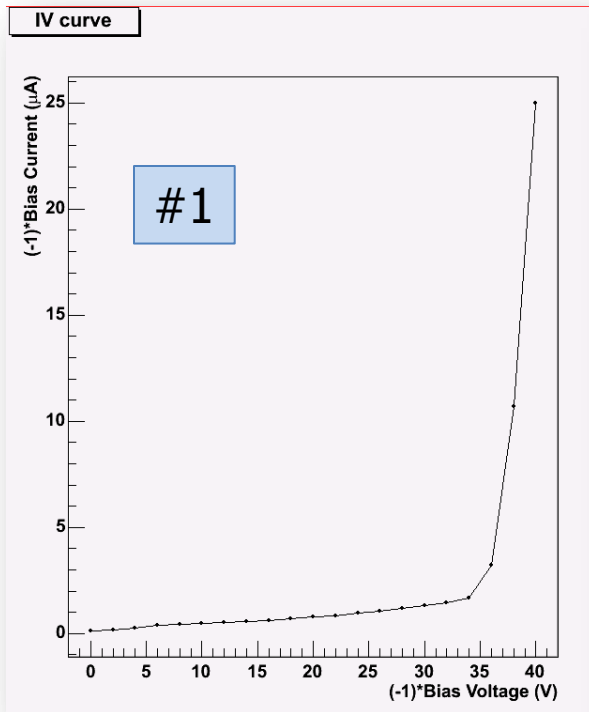
Strips, diodes  
and test structures



# IV scan



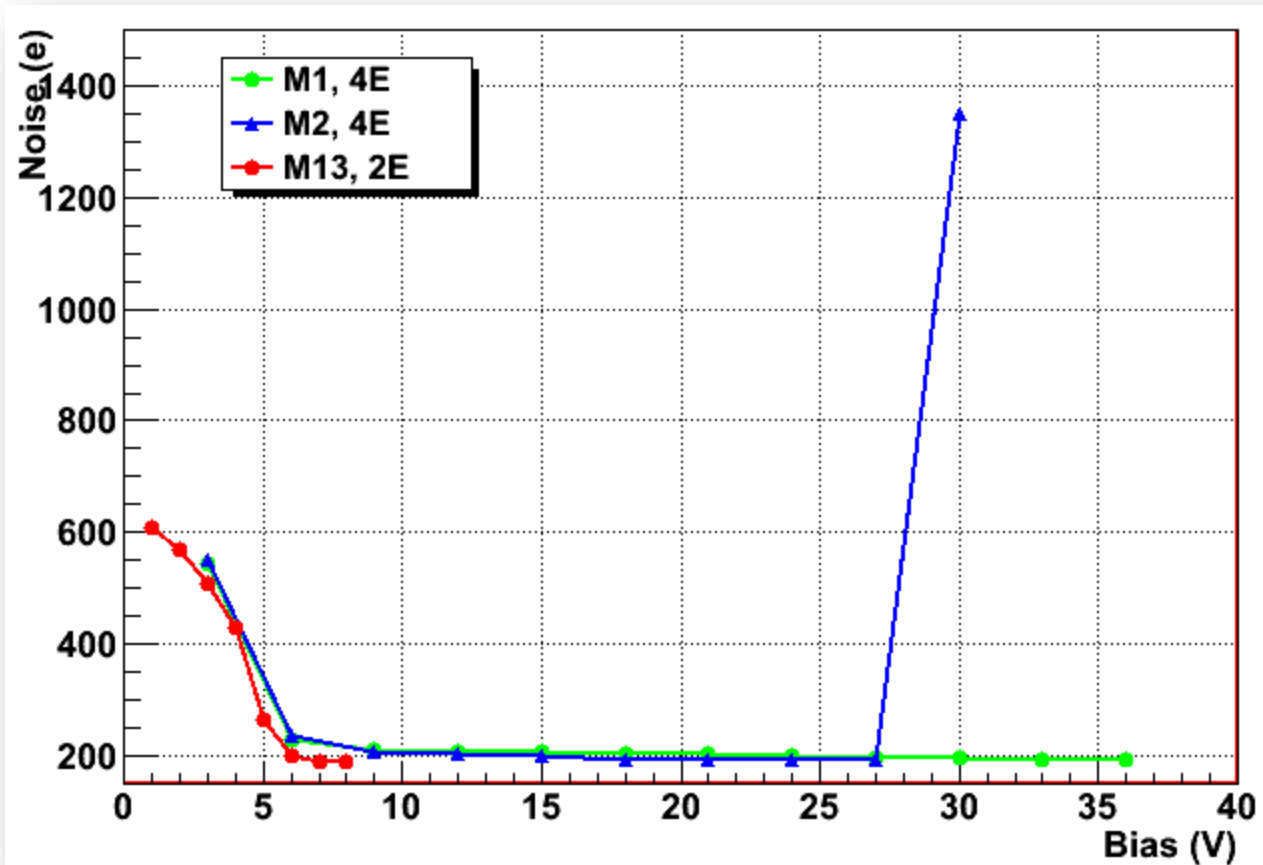
✓ Tests have been run at 20 V (#1, #2) and 7 V (#13)



# Noise vs $V$



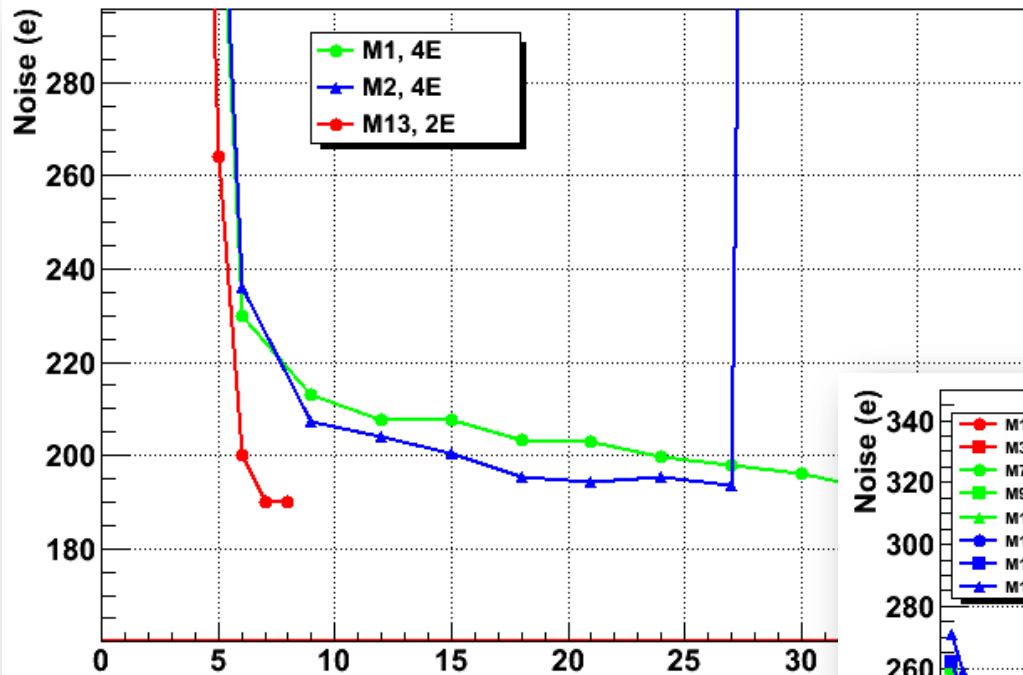
- ✓ The Noise vs HV scan is done with the device already tuned.
  - For M13 the scan is stopped at 8V.
  - Breakdown visible for M2
  - Maybe few points still needed for M1



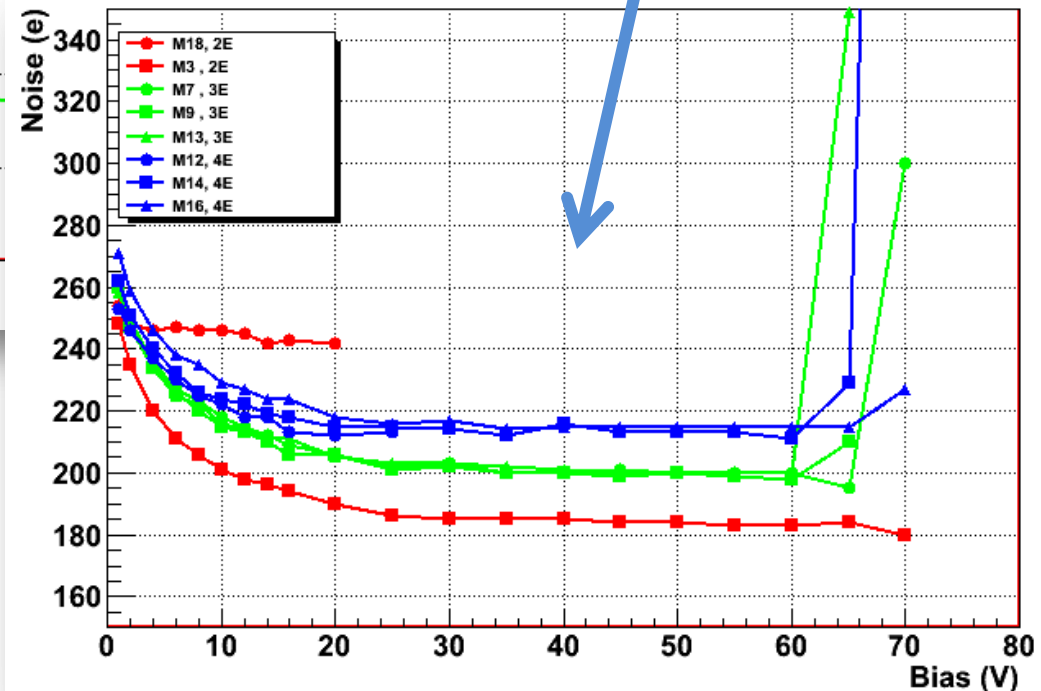
# Noise vs $V$



✓ Same plot: a zoom in the low noise region.



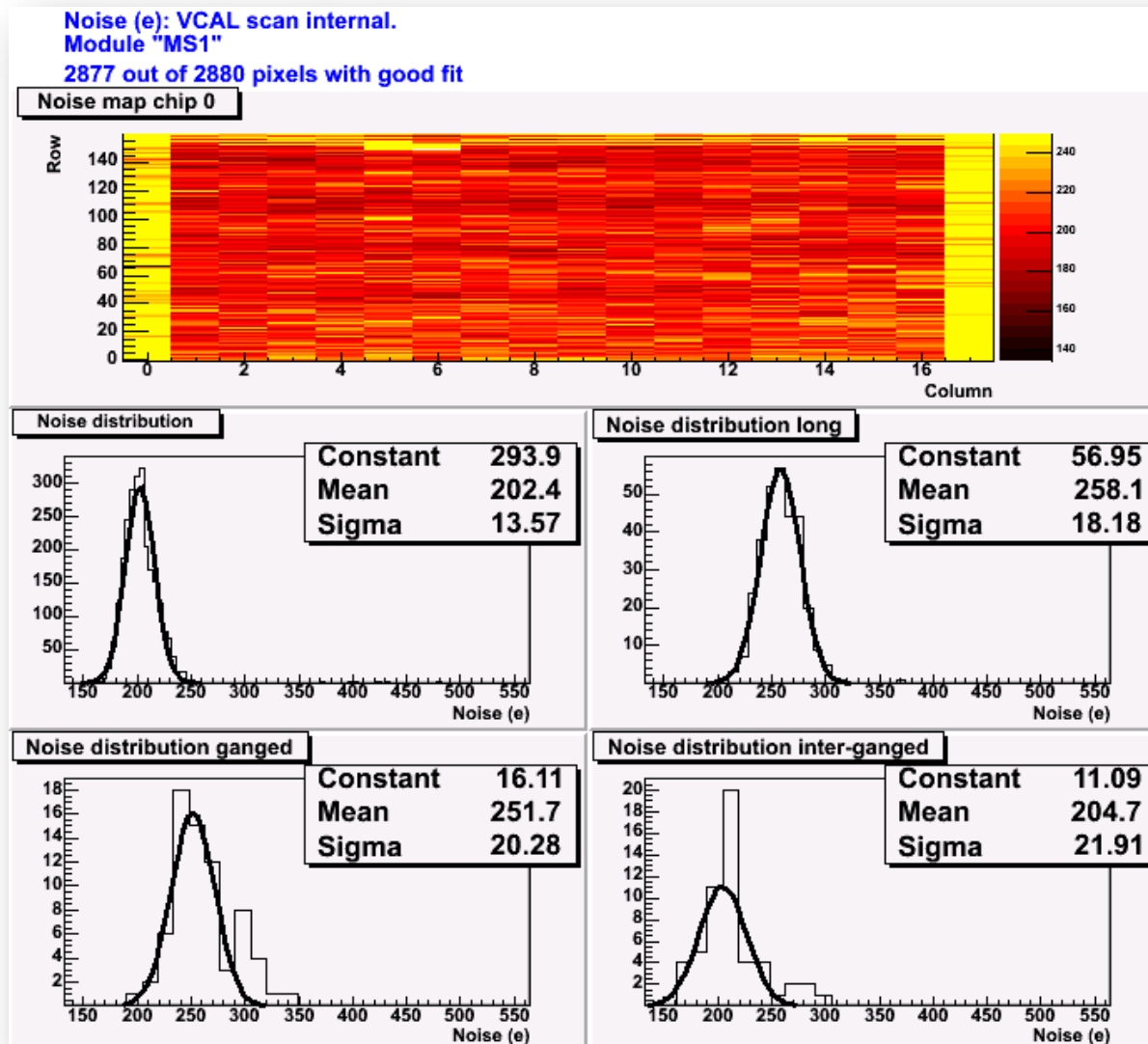
4E have noise  $\sim 200e$ , slightly lower than previous generation.



# 4E, Device#1: Noise



✓ Noise 2D map: homogenous, mean  $\sim 202e$

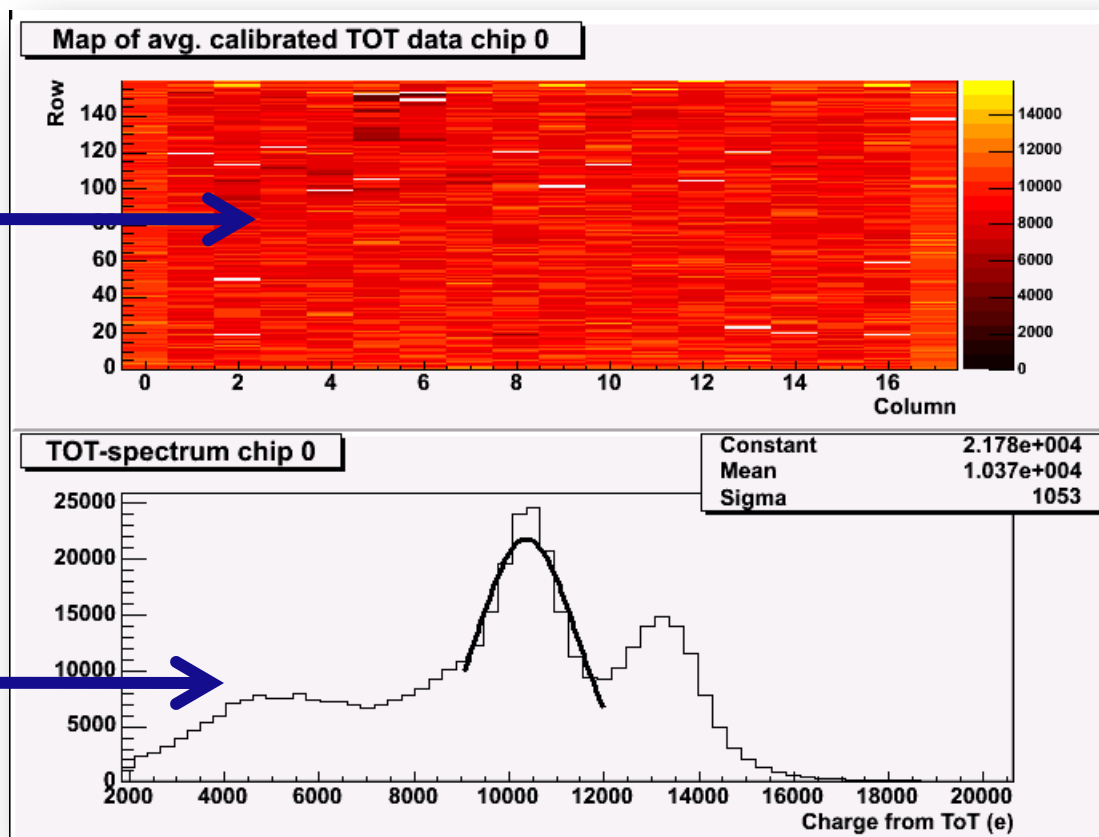


# 4E, Device#1: Source

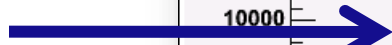


- ✓ Am spectra, two peaks visible (10.4 and 13.5 ke) in the hit charge spectrum

Map of the average charge



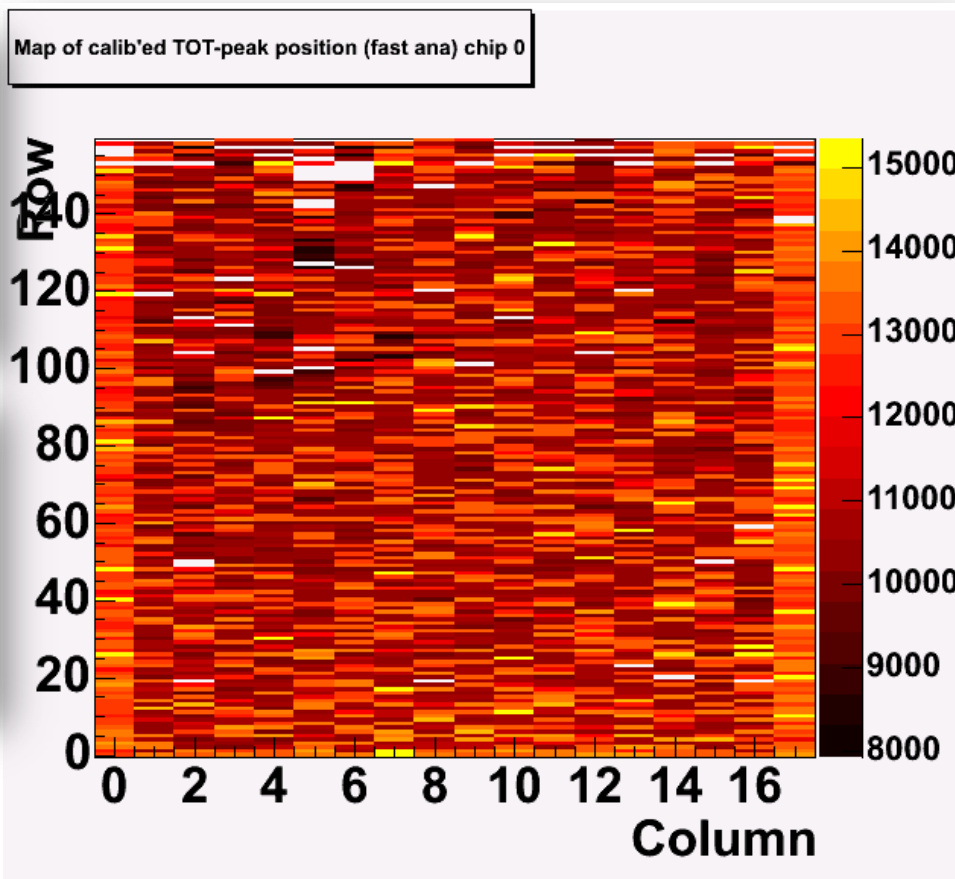
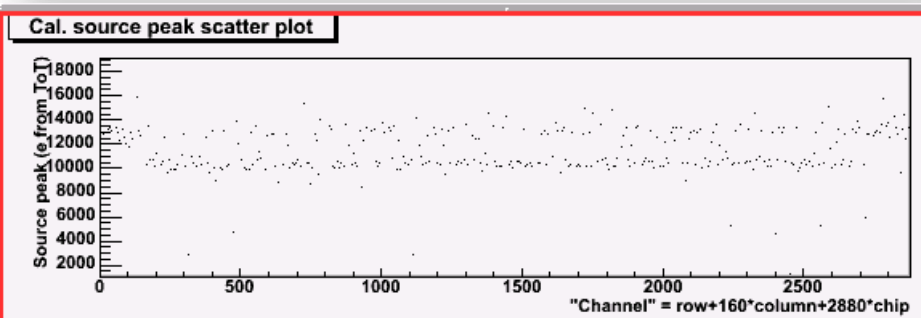
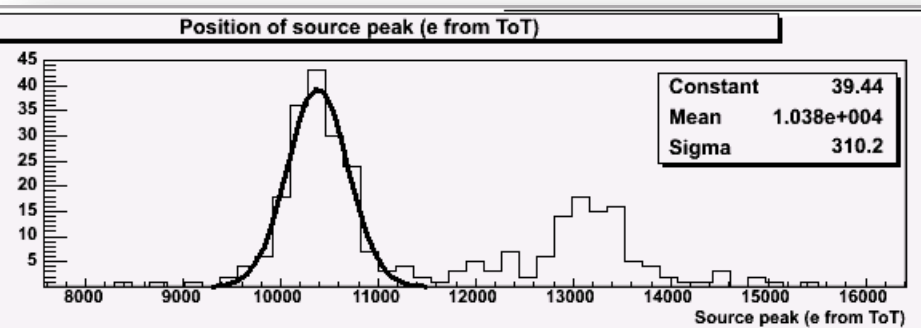
Charge spectrum of all hits



# 4E, Device#1: Source



- ✓ Asking to fit a peak in each pixel...
- 1d/2d Plots of the peak in each pixel
- It looks like there are pixels of two types, randomly distributed on the sensor



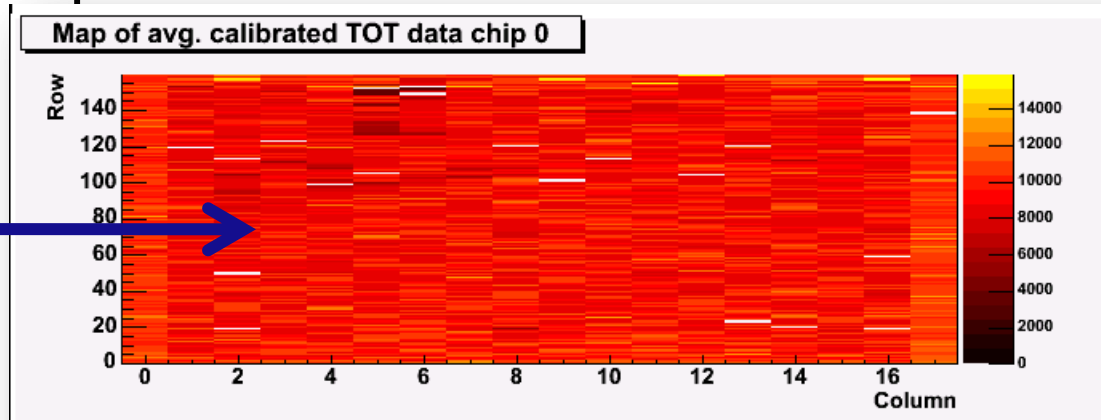


# 4E, Device#1: Source

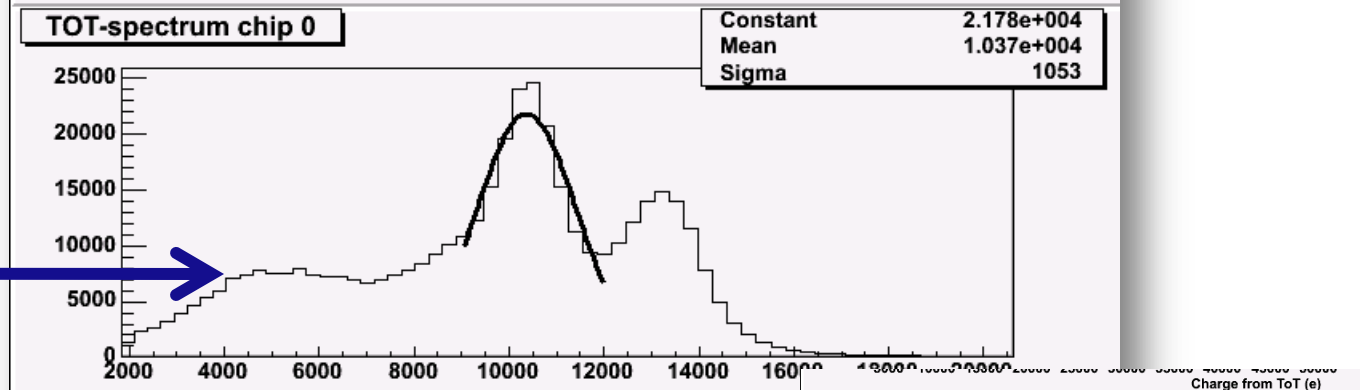


- ✓ Am spectra, two peaks visible (10.4 and 13.5 ke) in the hit charge spectrum

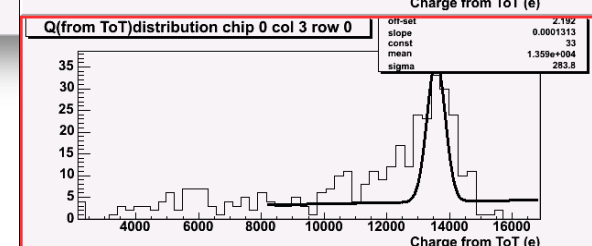
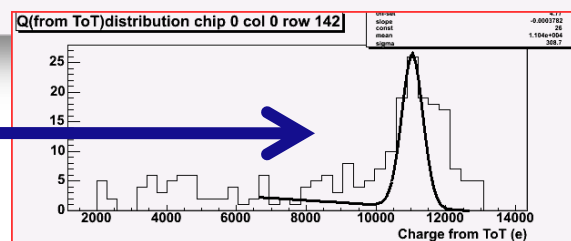
Map of the average charge



Charge spectrum of all hits



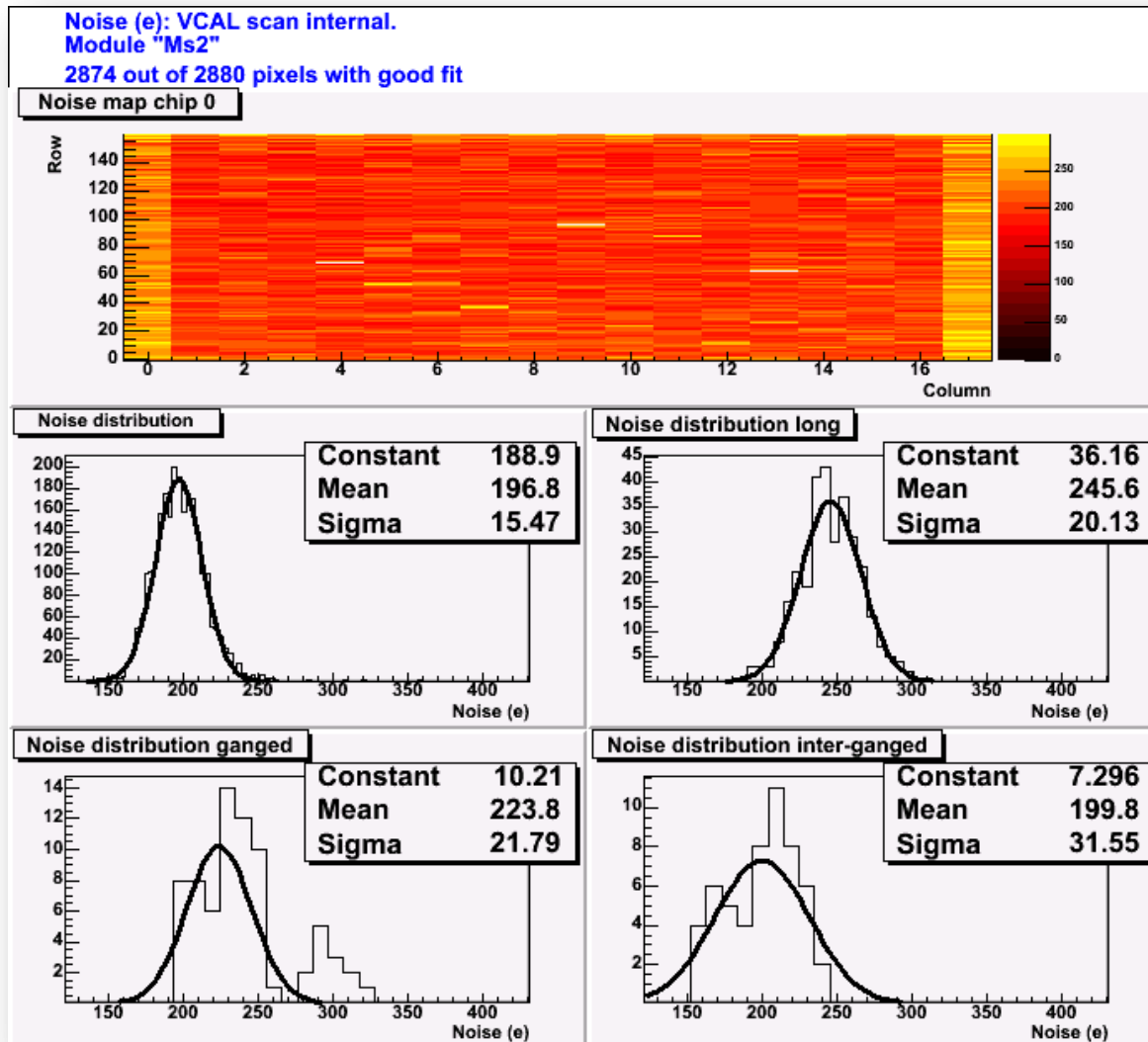
Charge spectrum in two specific pixel



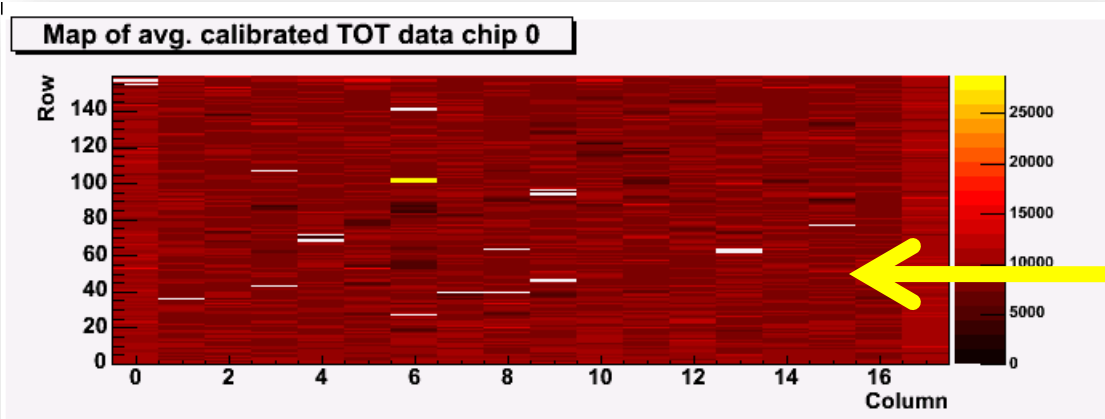
# 4E, Device#2: Noise



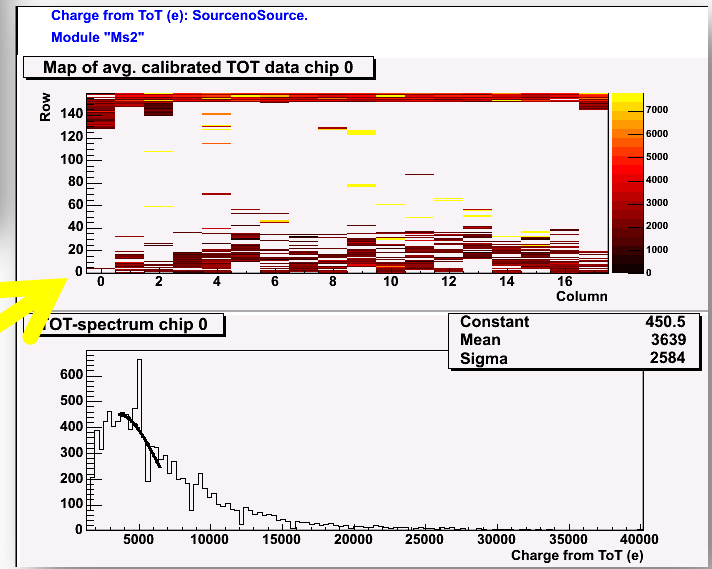
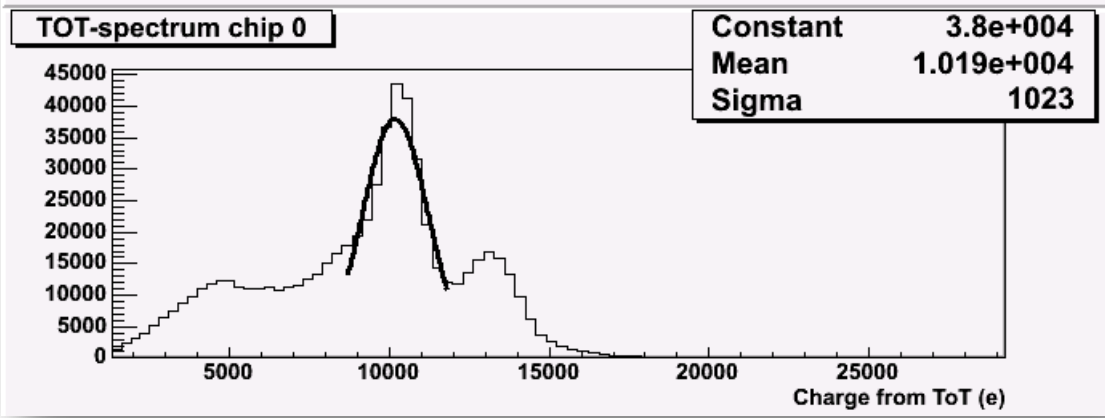
✓ Noise 2D map, mean noise 197e



# 4E, Device#2: Source



✓ Am spectra, two peaks visible (~10. and 13.5 ke).

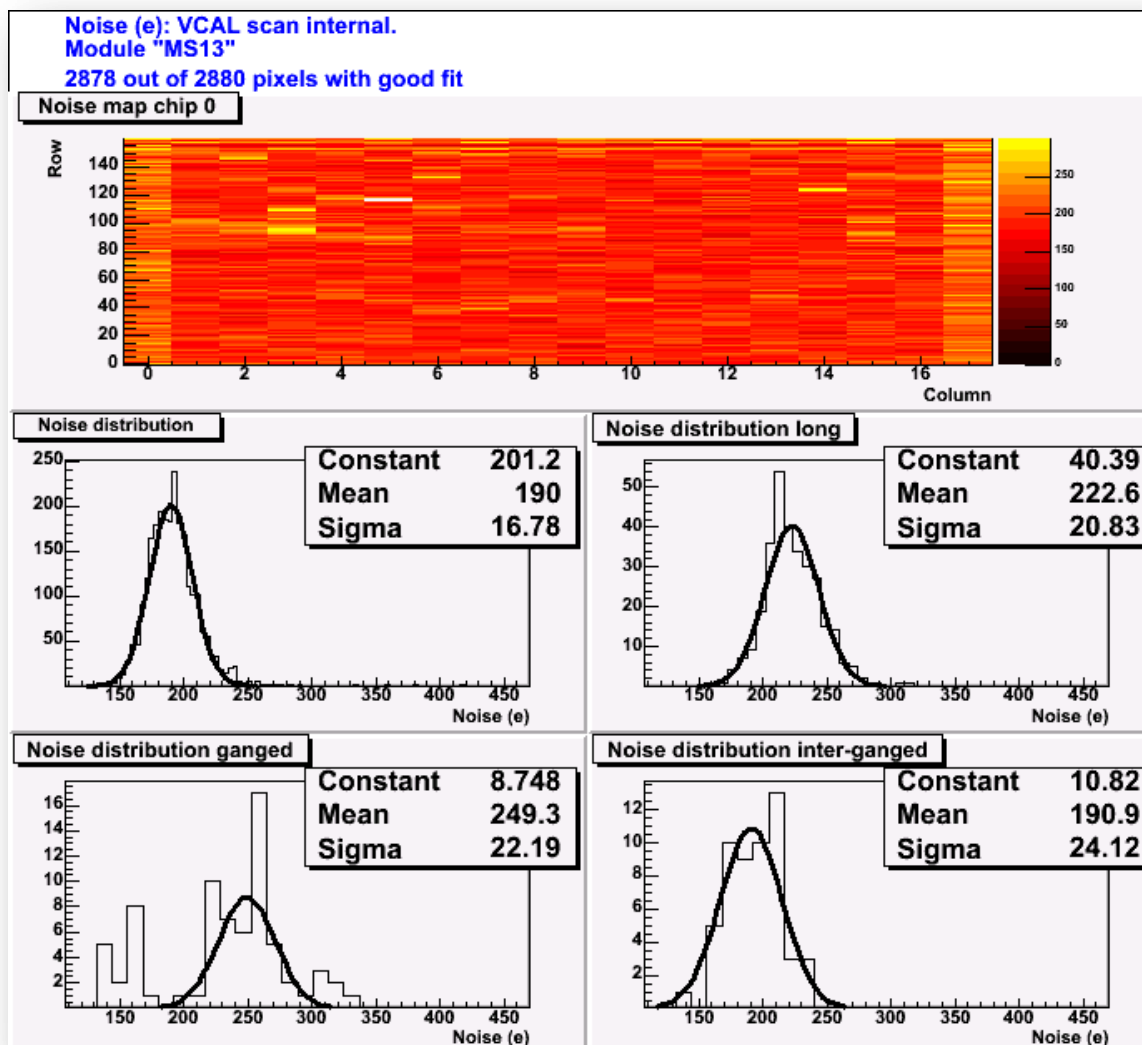


✓ Noise (self-trigger w/o source)

# 2E, Device#13: Noise



✓ Test done at 7V



# 2E, Device#13: Source



- ✓ Test done at 7V
- ✓ Two peaks are again visible.

