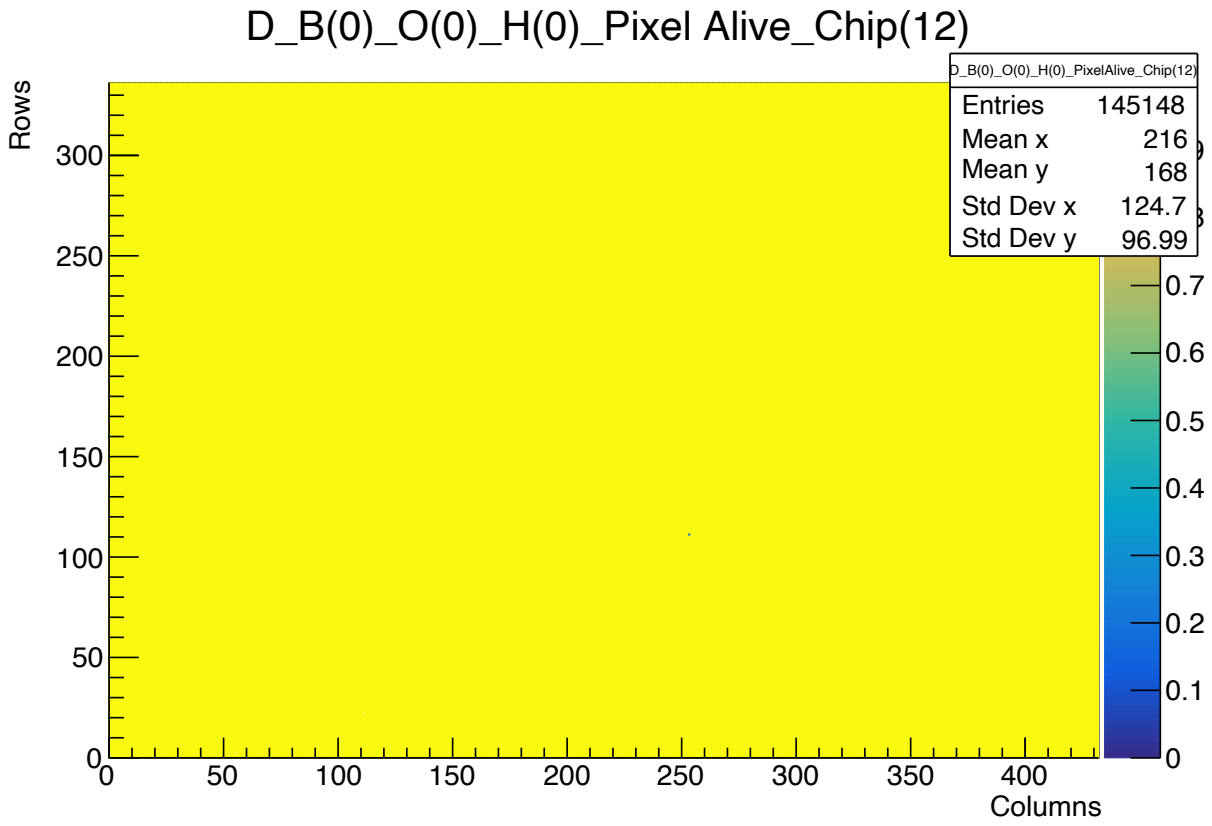
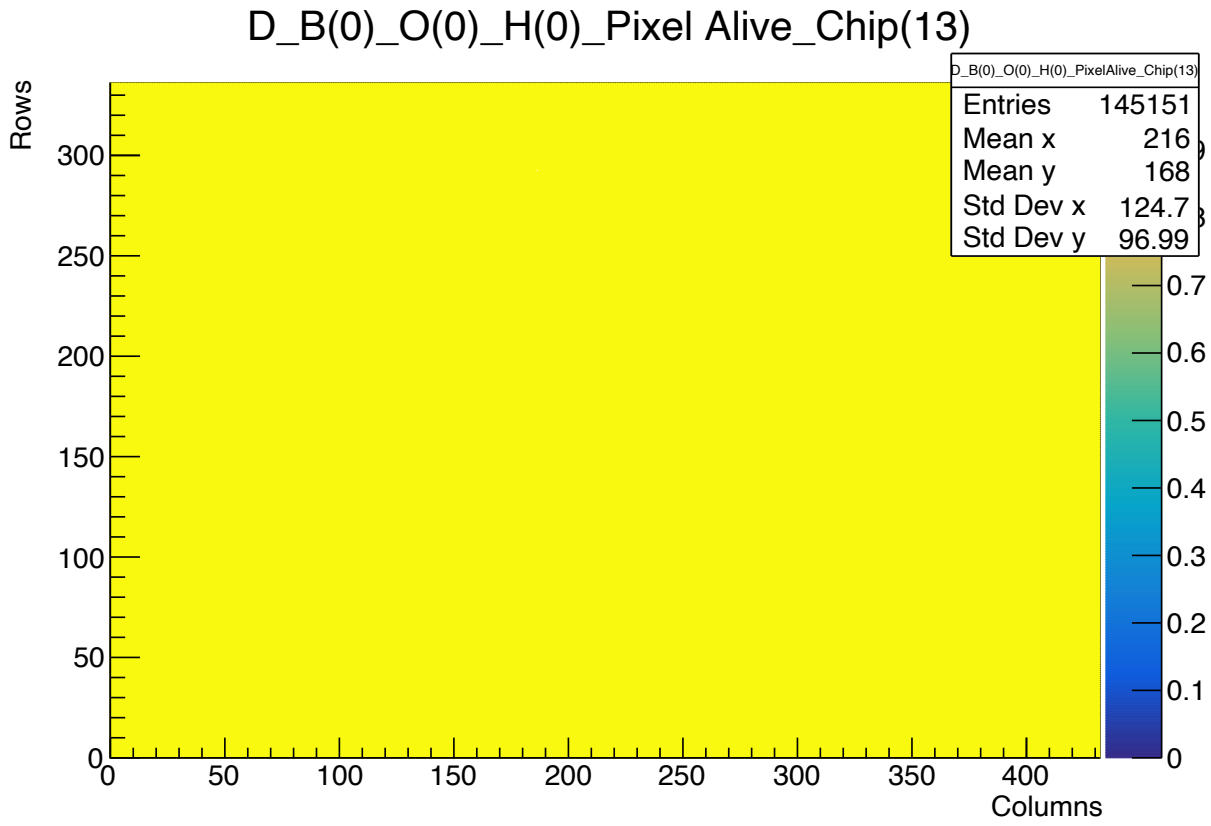
TFPX module RH0017 testing at Cornell
06-14-23

Test program

1) Pixelalive @ GDAC=500
2) Thradj @3500 e-
3) *threqu (default, DoNsteps=0)*
4) *Scurve*
4a) optional [Noise, Scurve]
5) thradj @1500 e-
6) threqu **with DoNsteps=3**
7) Scurve
7a) optional [Noise, Scurve]
8) thradj @1200 e-
*9) threqu **with DoNsteps=2***
10) Scurve
10a) optional [Noise, Scurve]
11) thradj @1000 e-
12) threqu **with DoNsteps=2**
13) Scurve
14) Noise
15) Scurve
16) thradj @900 e-)
17) threqu
18) Scurve
19) [Noise]
20)Scurve
21) thradj @800
22) threqu
23) Scurve
24) [Noise]
25) Scurve
26) Gain

Pixel Alive – pre-test @ GDAC=500

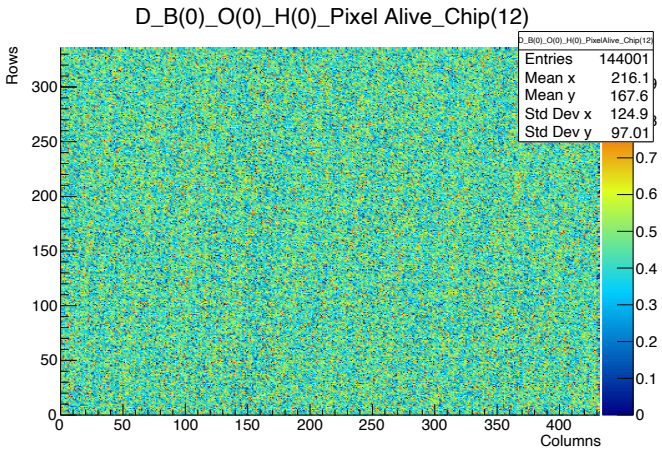


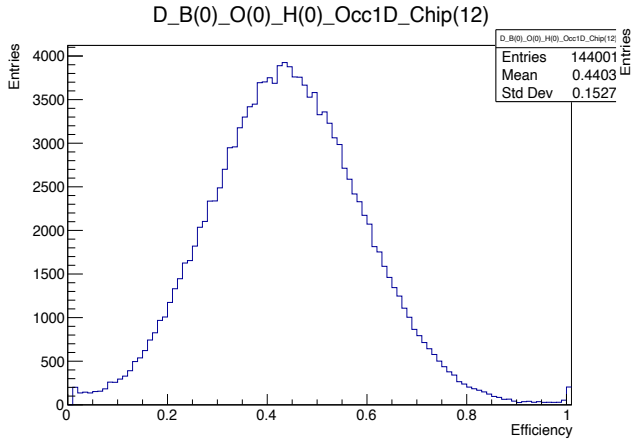


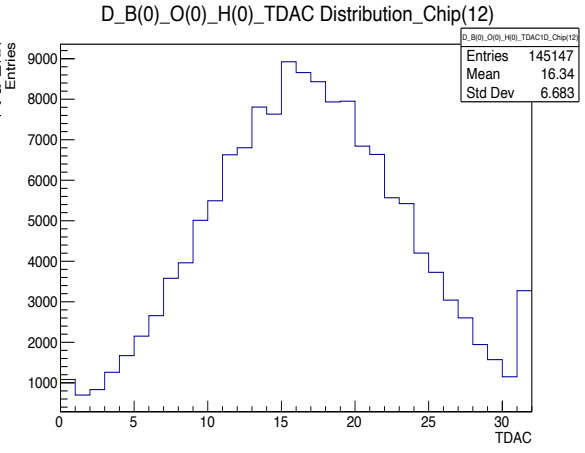
Run0000 pixelalive @GDAC 500, HV=-80V [3 min]

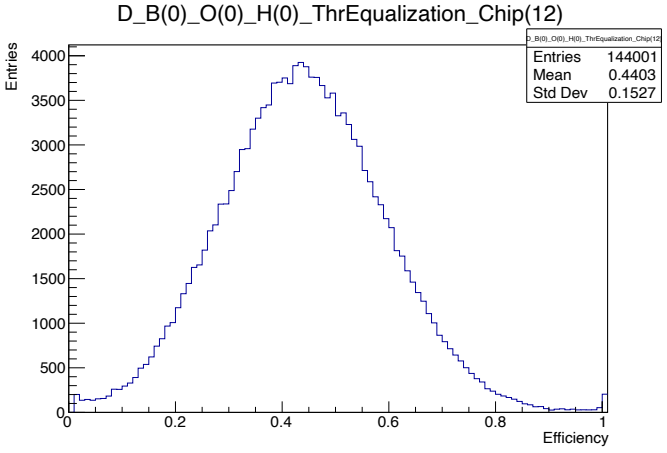
- Humidity: 50.90 %, Temp: 22.60 Celsius dewpoint calculated 11.6 C
- Cooling Base Plate Temp: 15.3C
- Pixel masked: 4(chip 12), 1(chip 13)

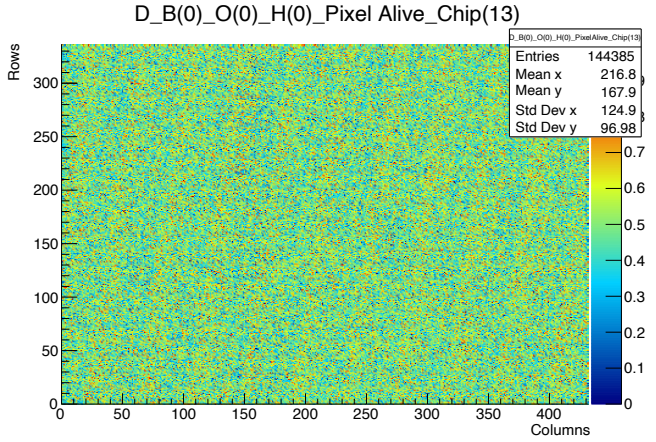
threqu @3500e-, DoNSteps=0

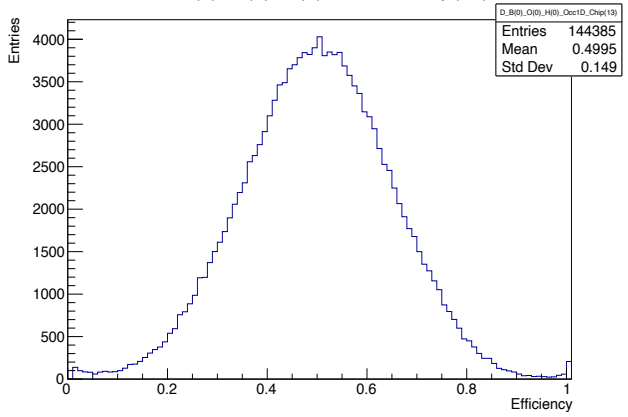


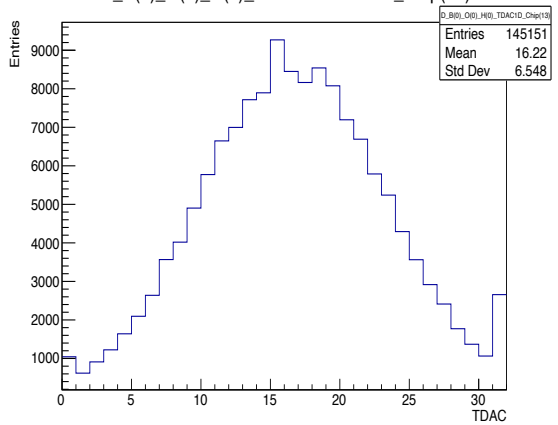


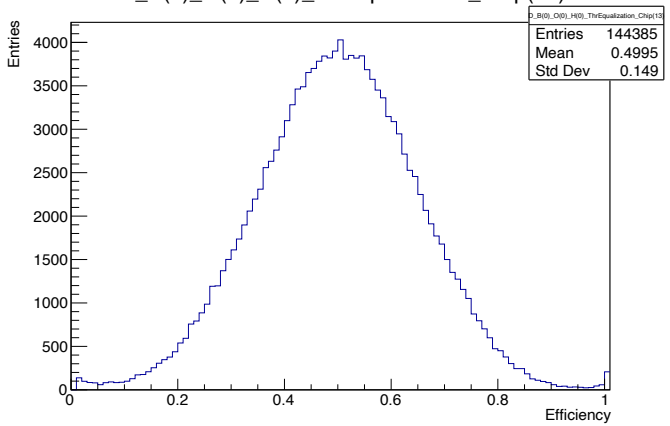








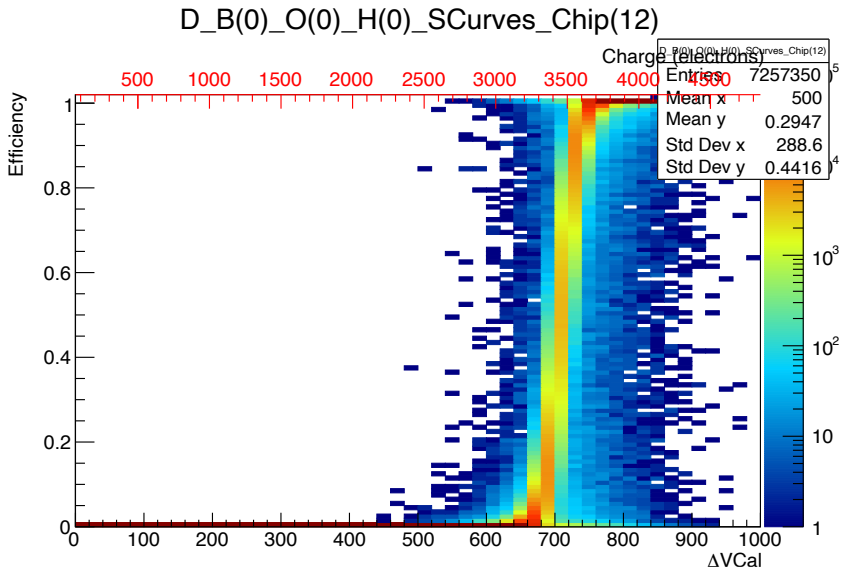


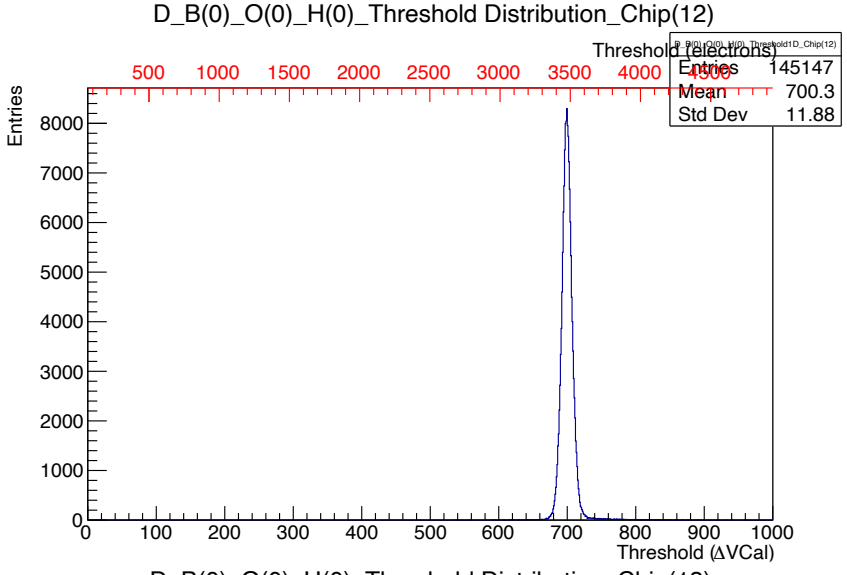


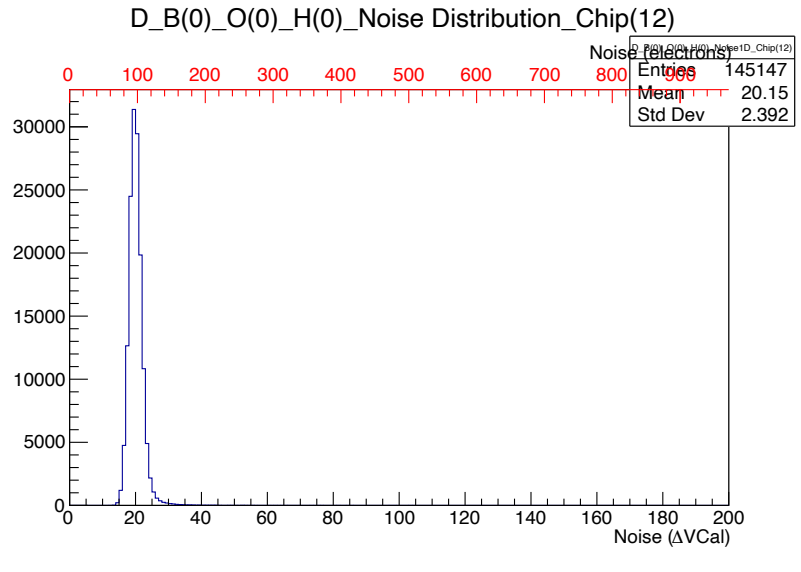
Note the bands' structure: more visible for chip 13

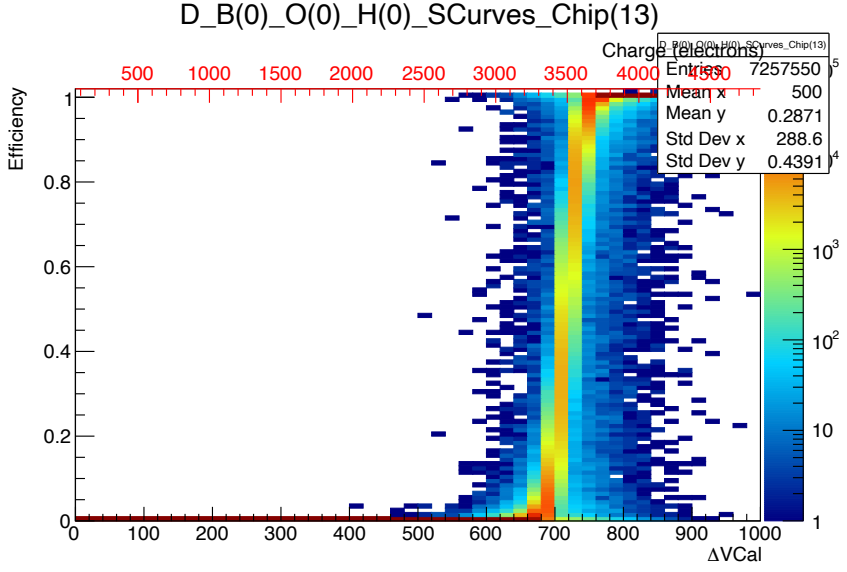
Masked pixels: 5,1; GDAC = 505,462

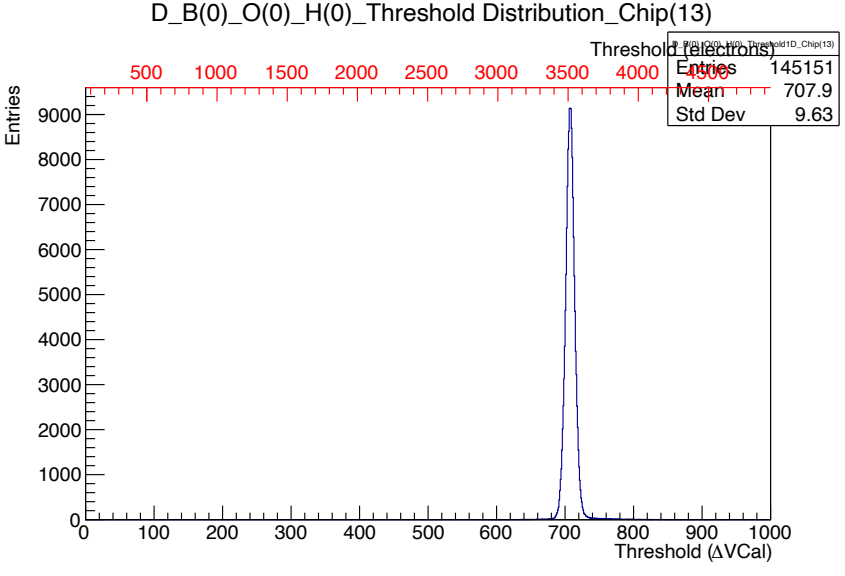
SCurve @3500e-

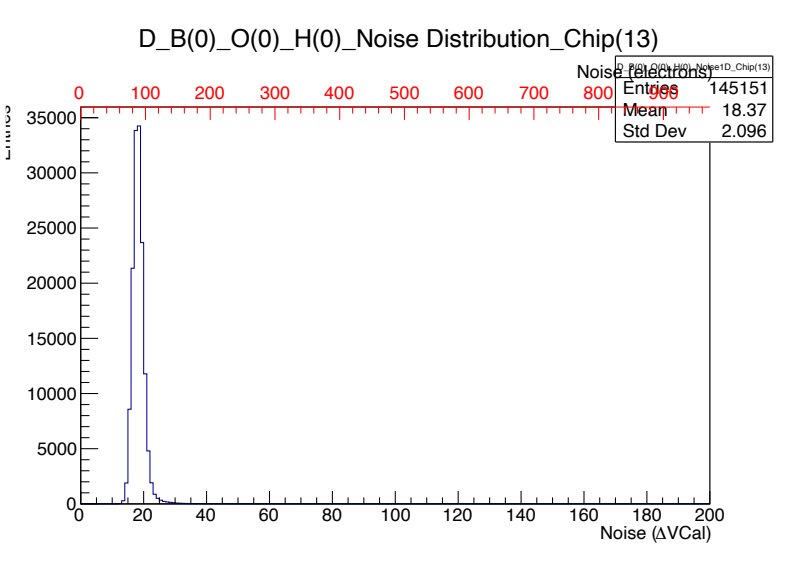




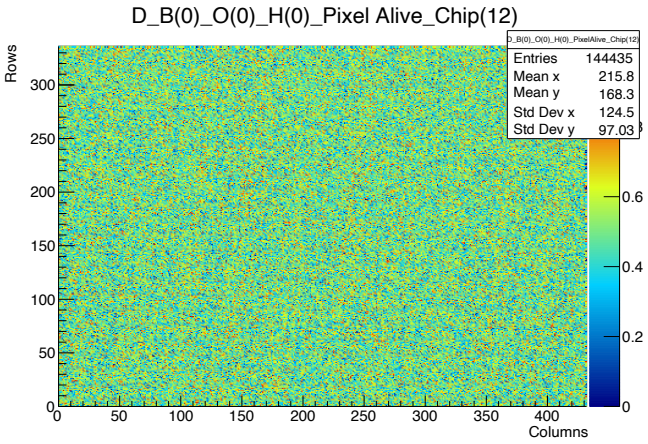


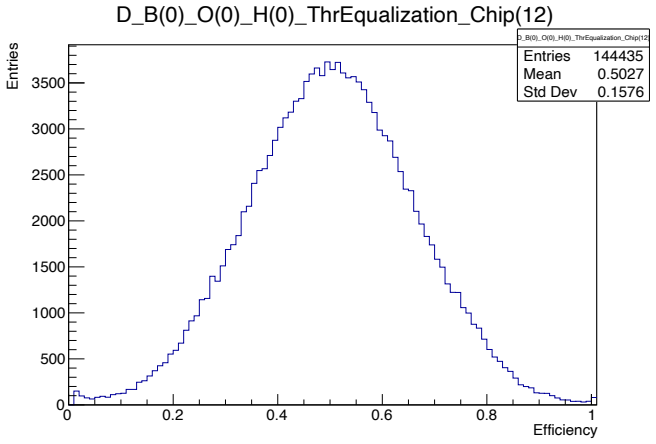


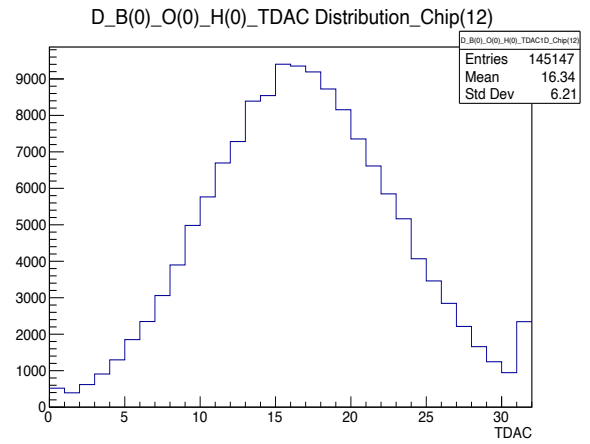


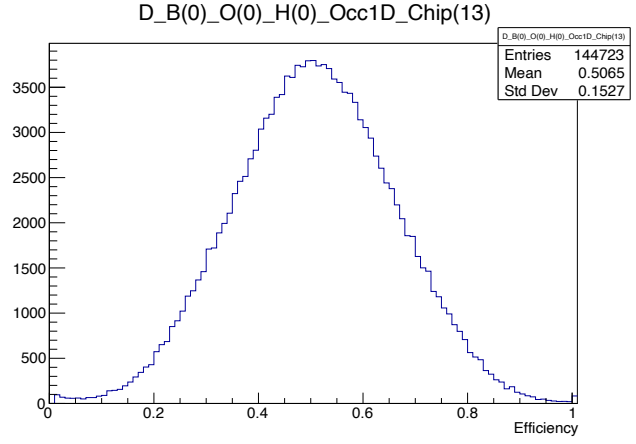


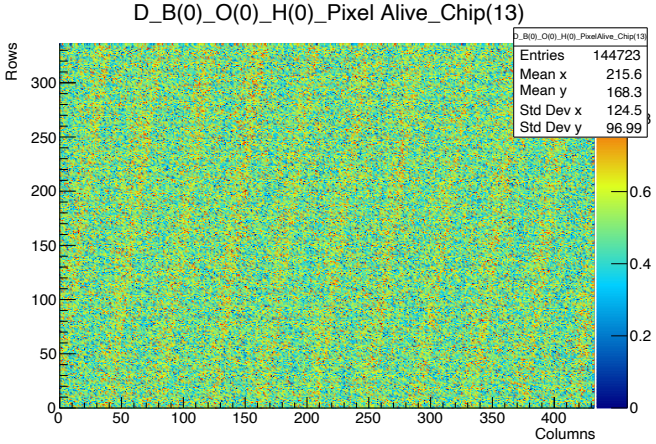
threqu @1500e-, DoNSteps=3

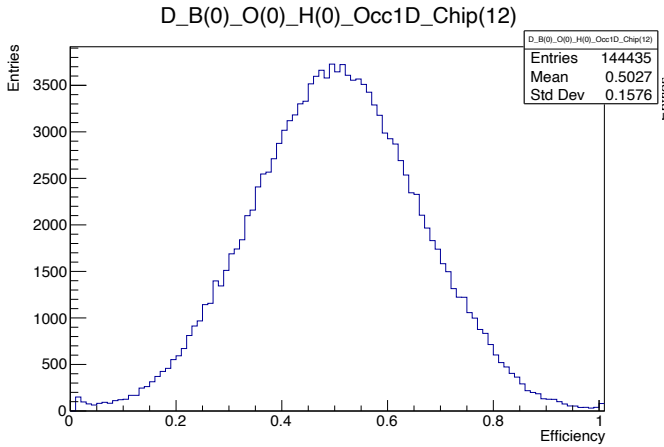


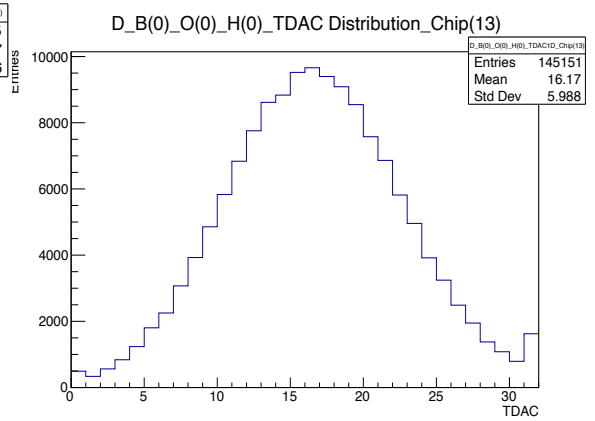


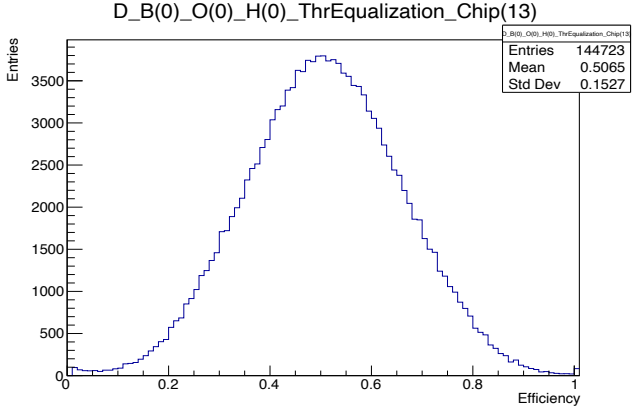






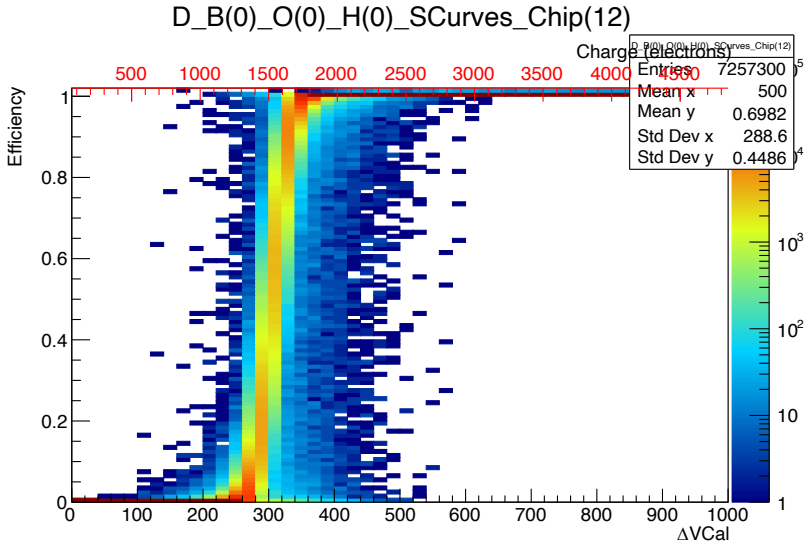


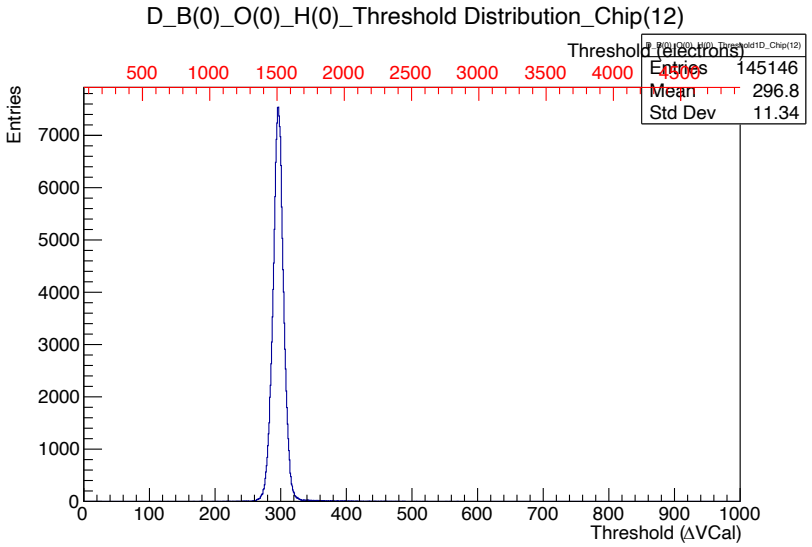


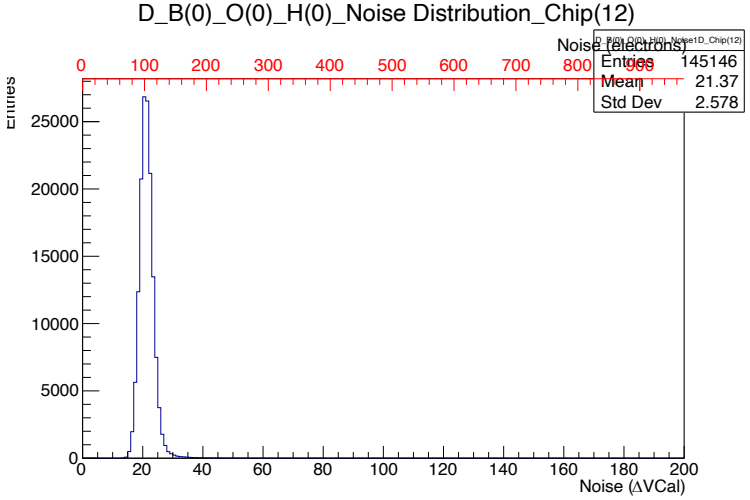


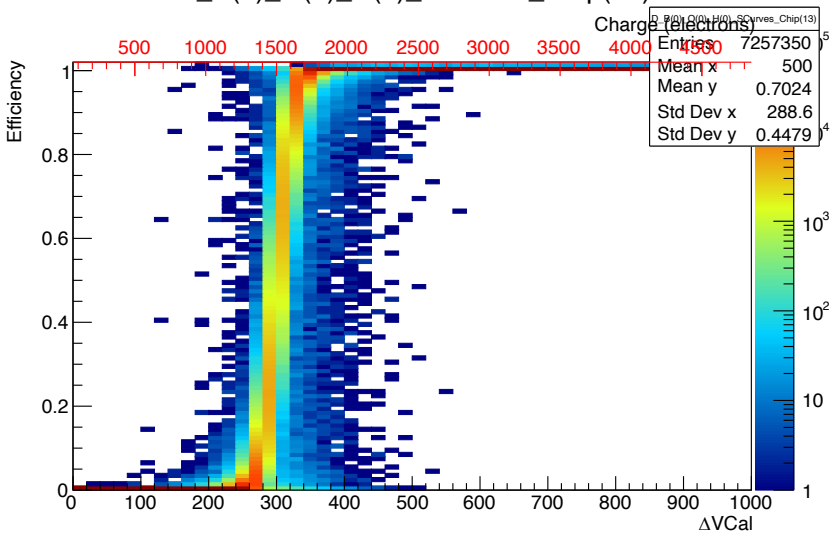
Masked pixels: 5,1; GDAC = 455,409

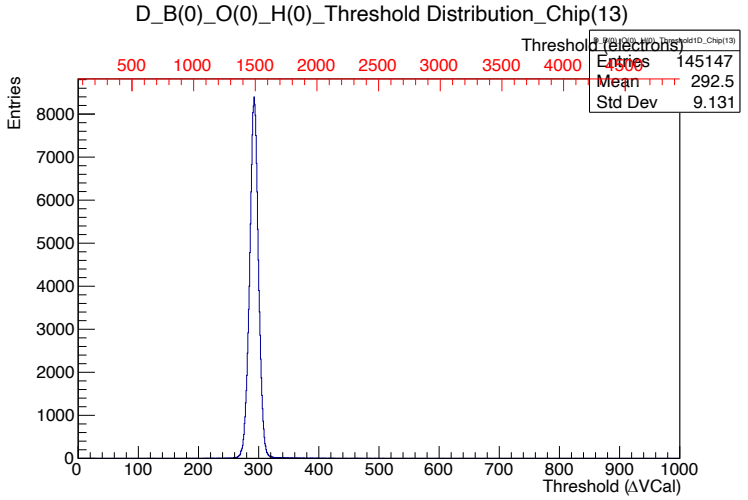
SCurve @1500e-

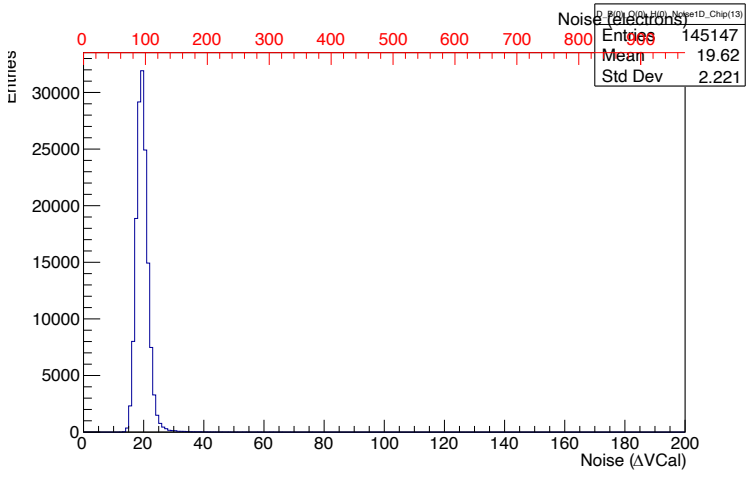




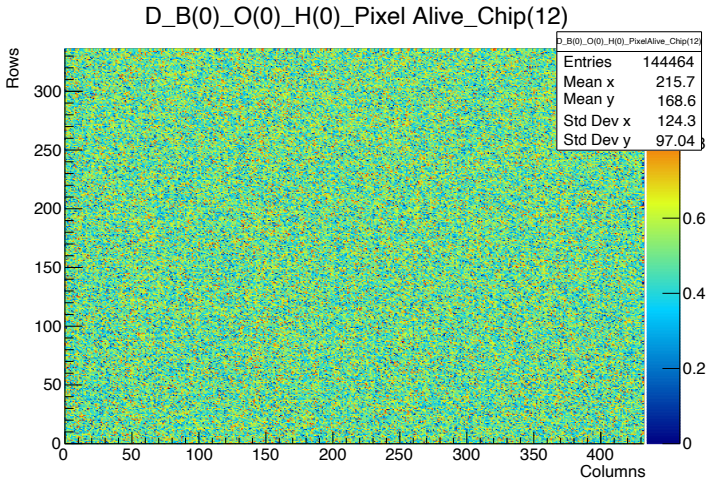


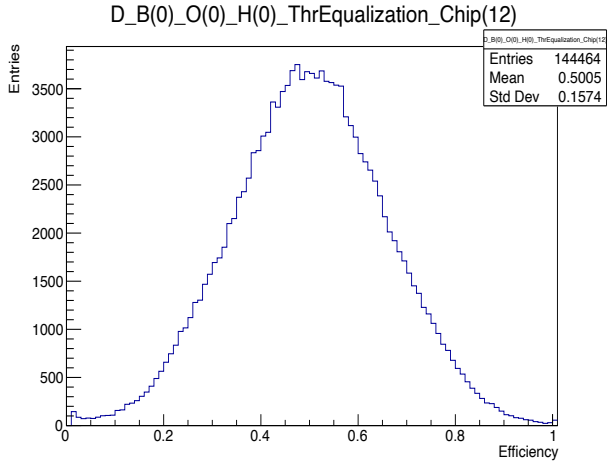


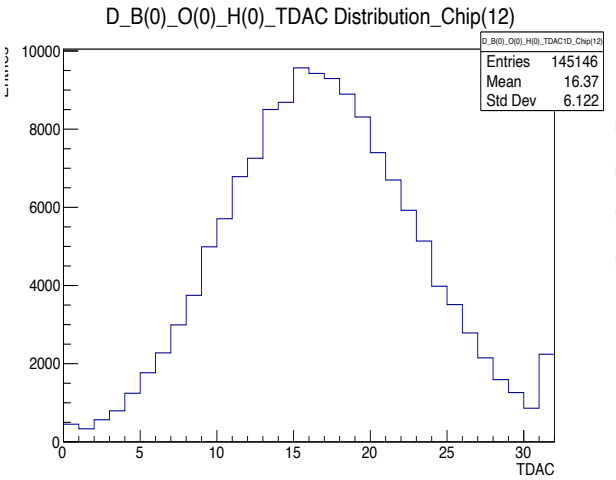


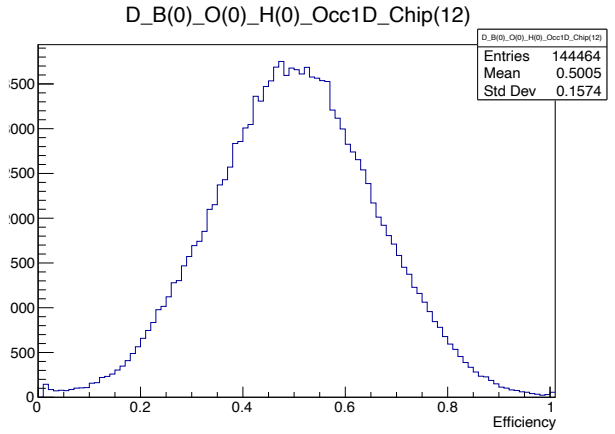


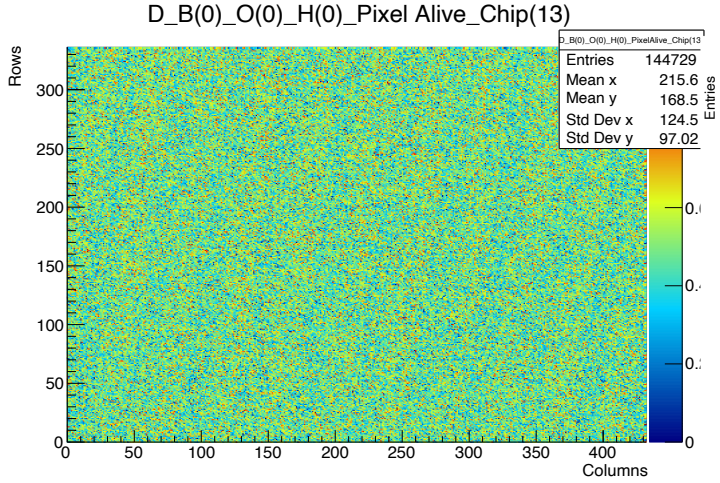
threqu @1200e-, DoNSteps=2

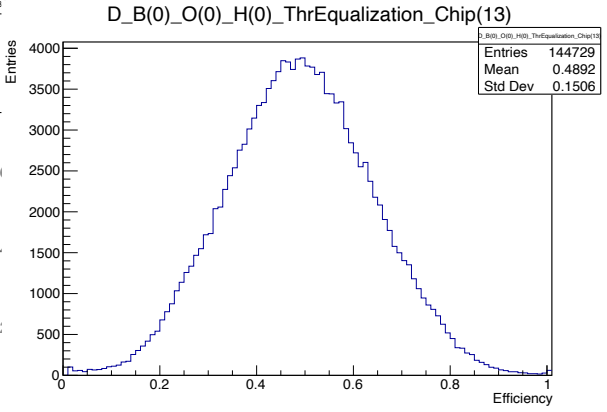


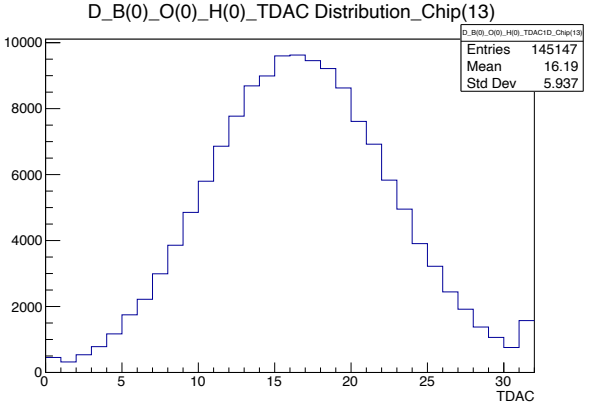


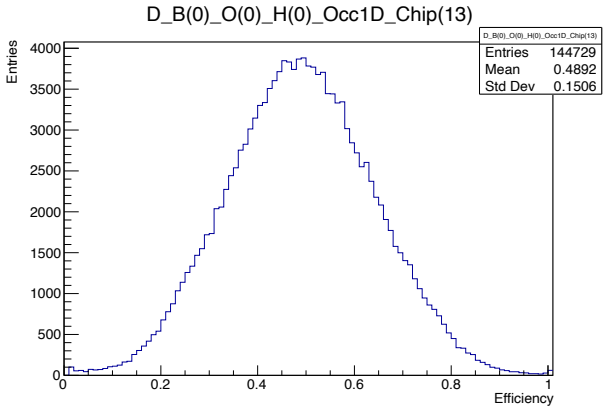






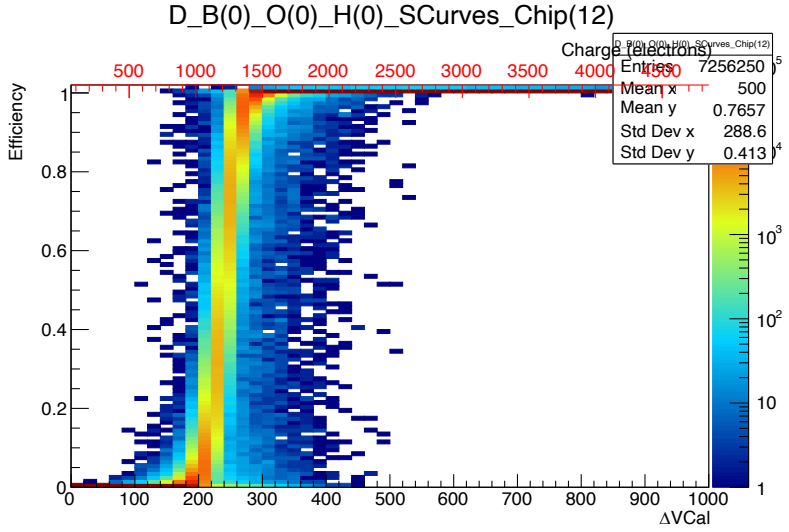


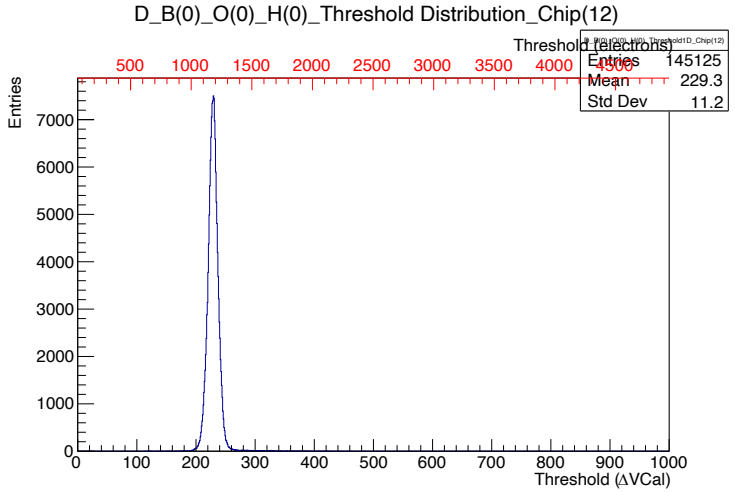


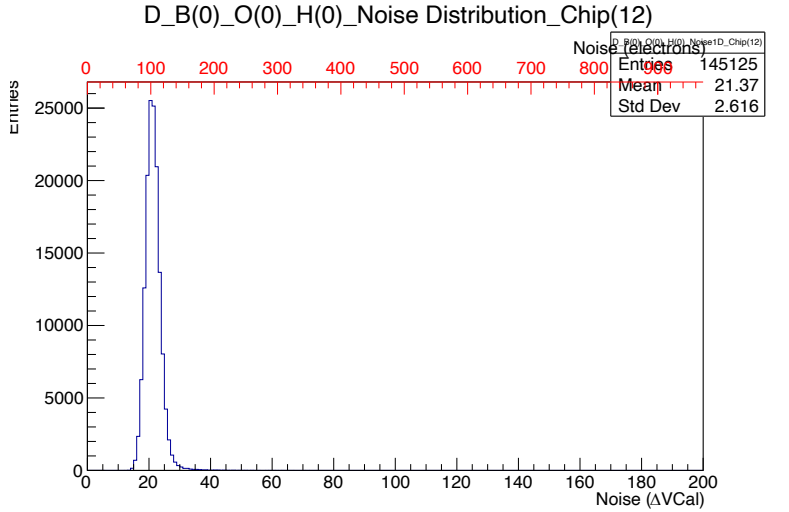


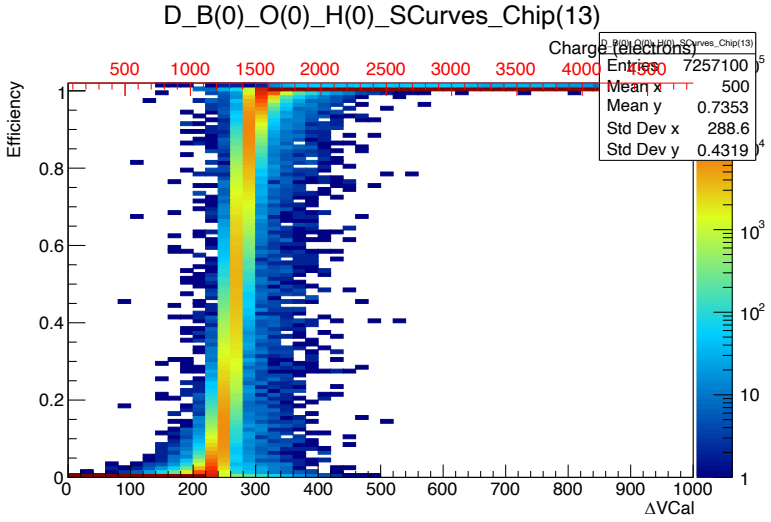
Masked pixels: 6,5; GDAC = 447,405

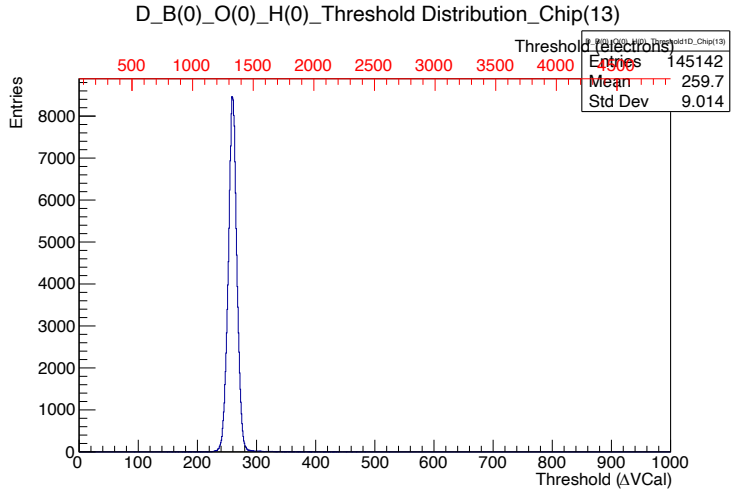
SCurve @1200e-

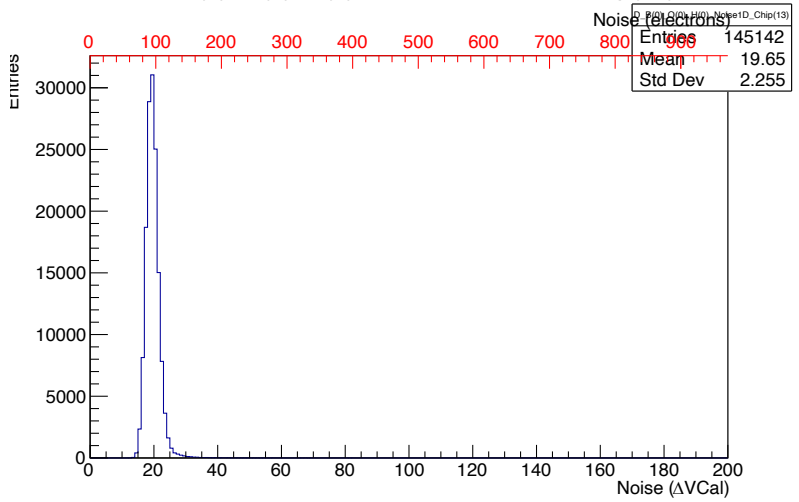




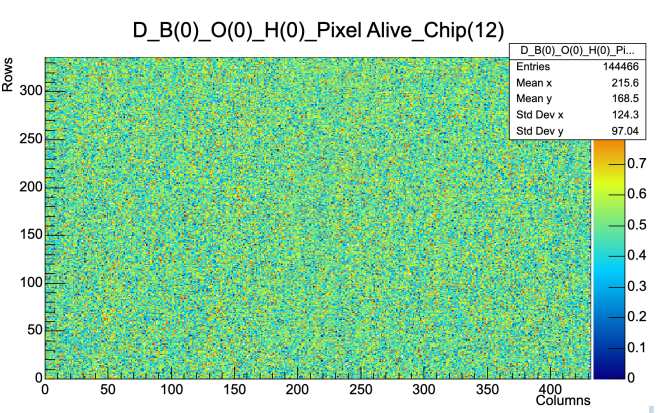


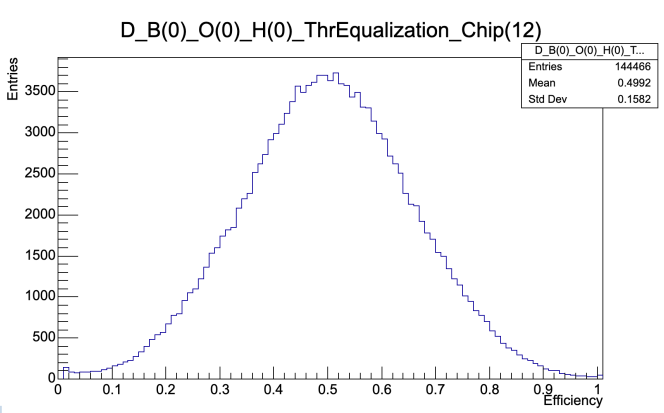


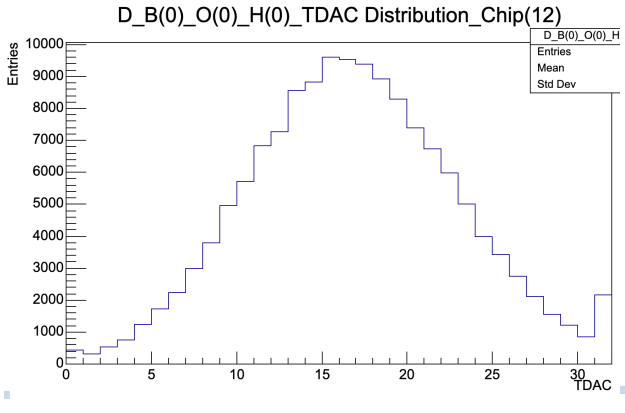


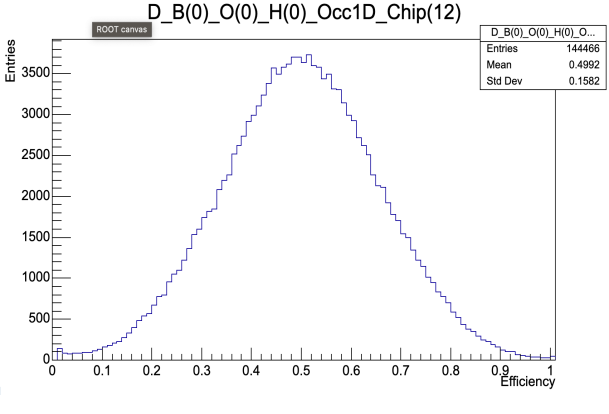


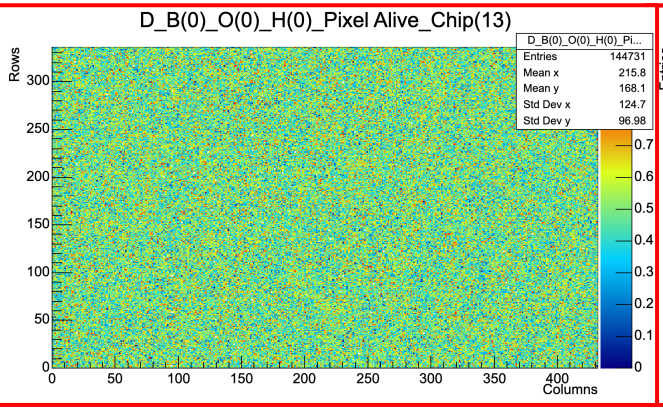
threqu @1000e-, DoNSteps=2

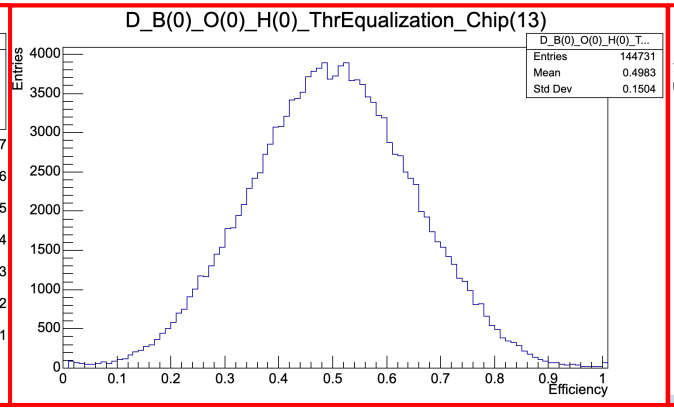


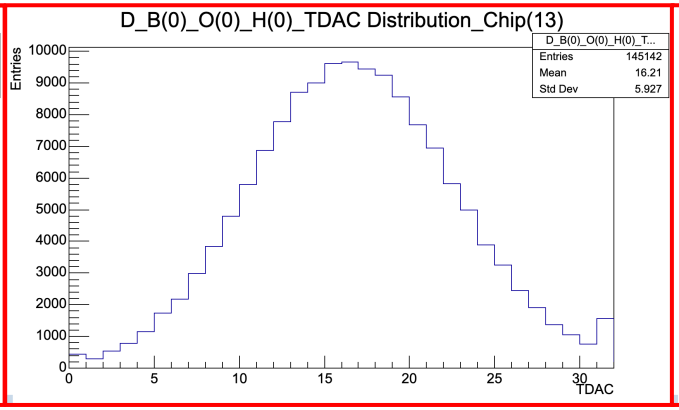


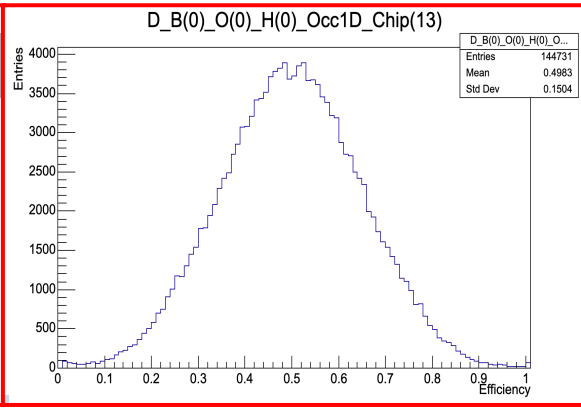






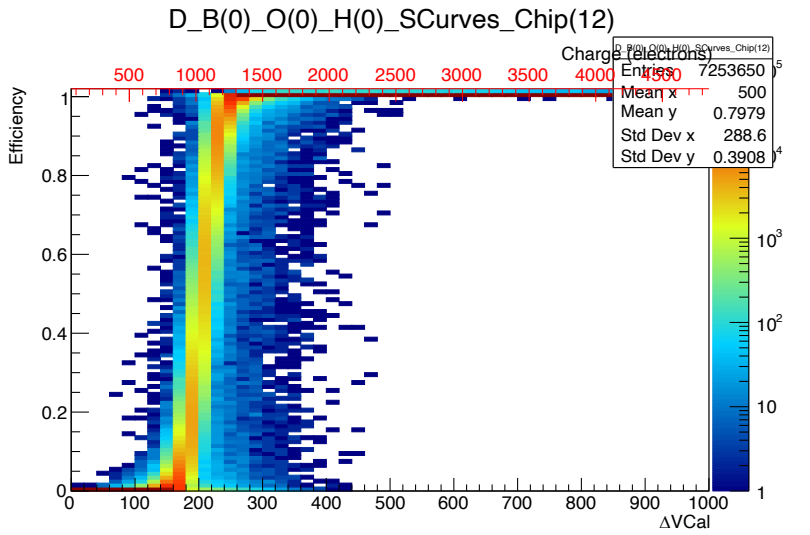


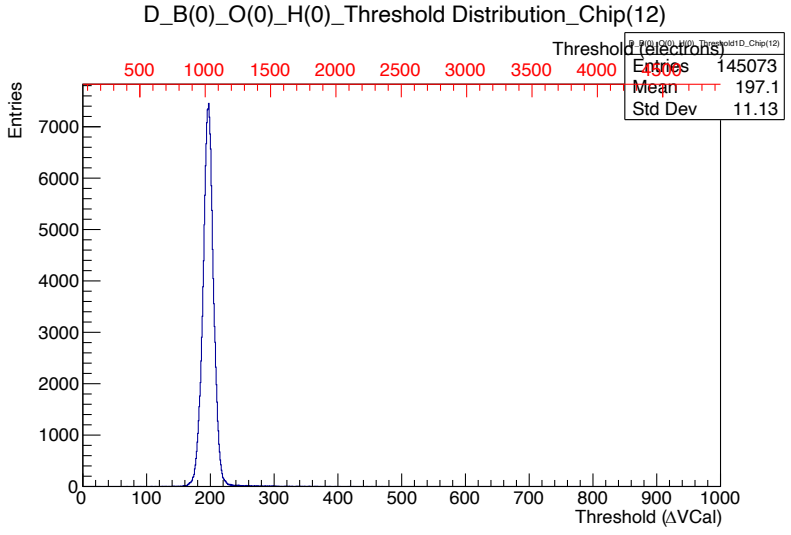


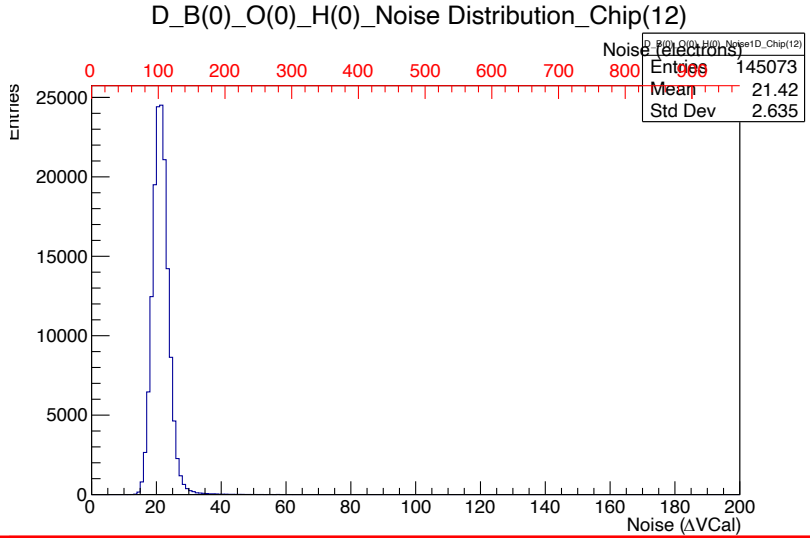


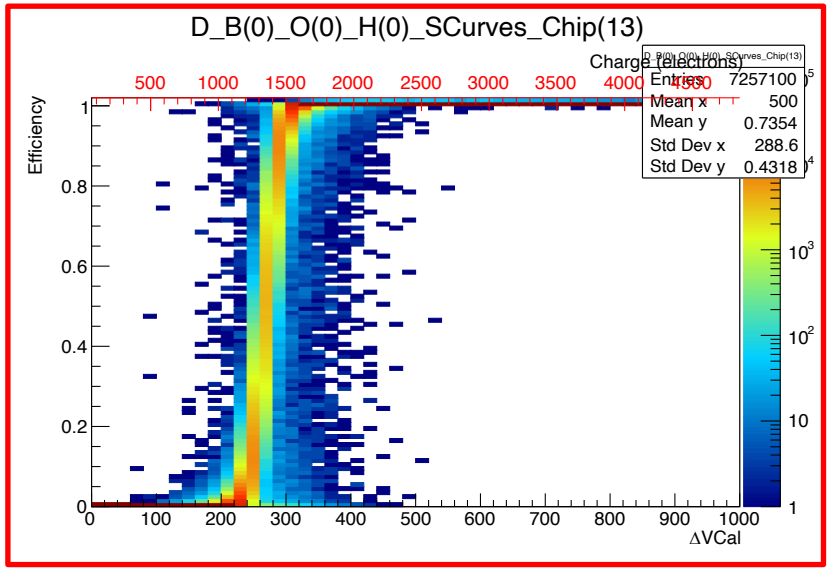
Masked pixels: 27,10; GDAC = 443,405

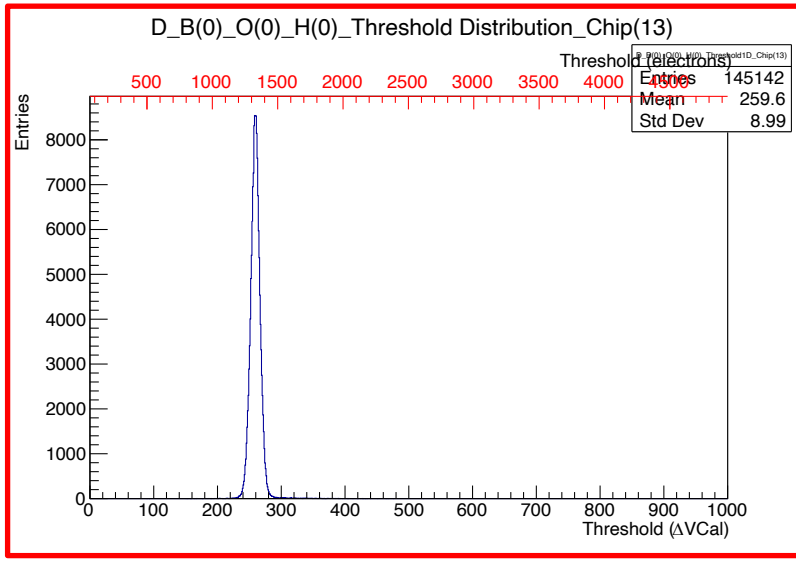
SCurve @1000e-

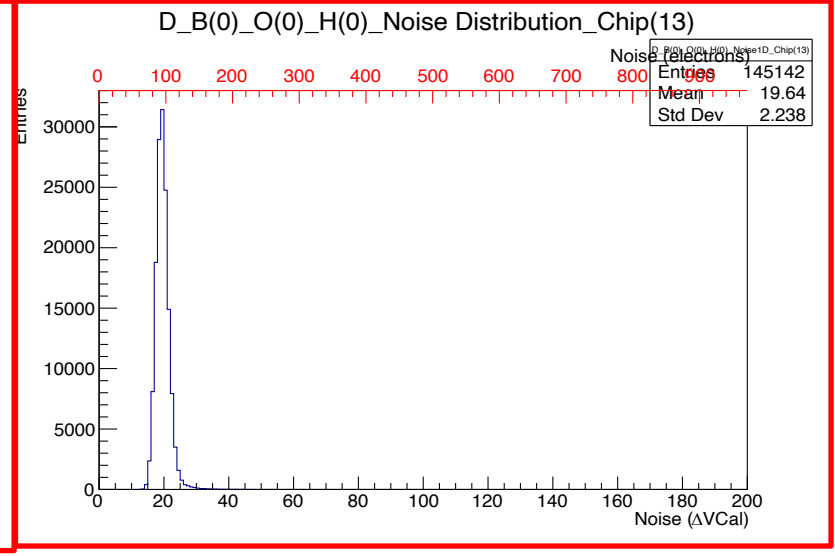






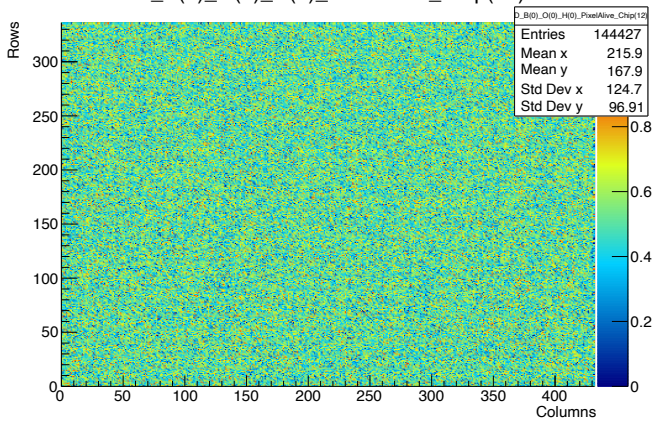




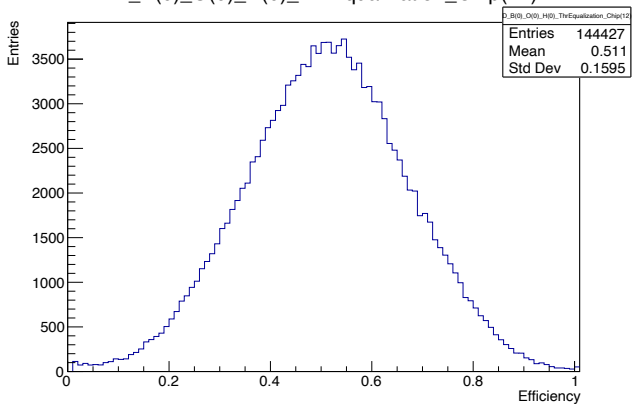


threqu @900e-, DoNSteps=1

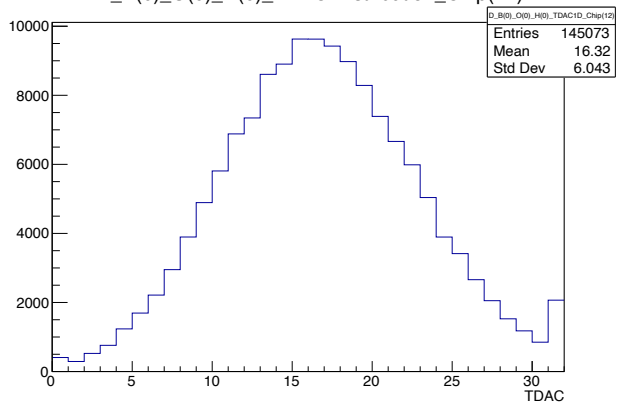
D_B(0)_O(0)_H(0)_Pixel Alive_Chip(12)



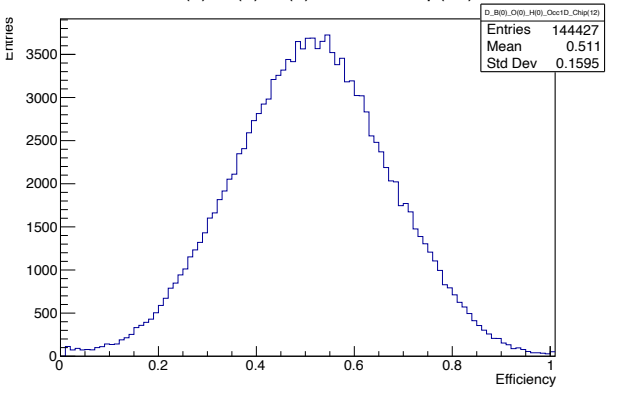
D_B(0)_O(0)_H(0)_ThrEqualization_Chip(12)



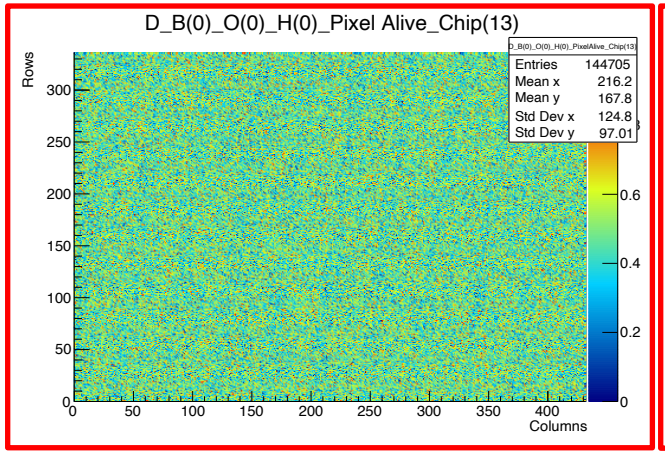
D_B(0)_O(0)_H(0)_TDAC Distribution_Chip(12)



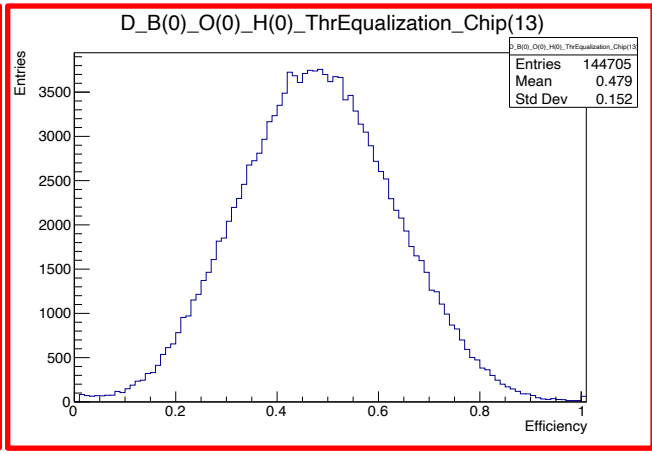
D_B(0)_O(0)_H(0)_Occ1D_Chip(12)



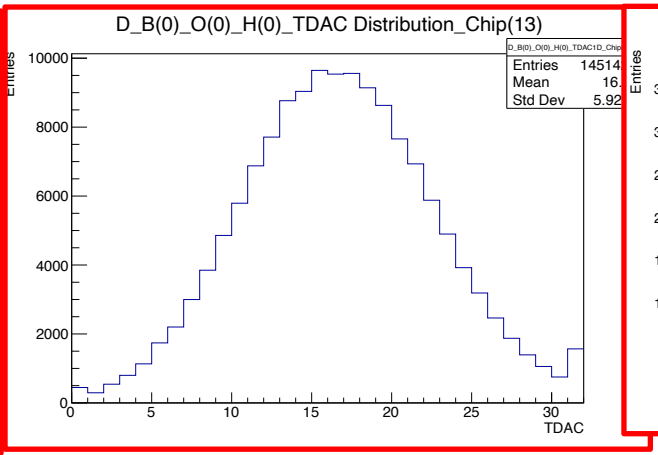
D_B(0)_O(0)_H(0)_Pixel Alive_Chip(13)



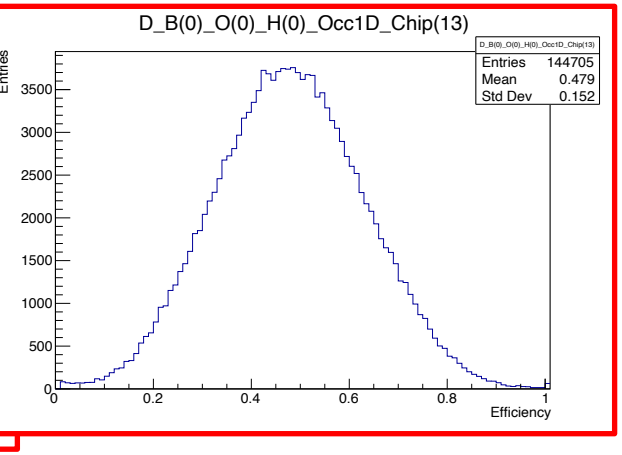
D_B(0)_O(0)_H(0)_ThrEqualization_Chip(13)



D_B(0)_O(0)_H(0)_TDAC Distribution_Chip(13)

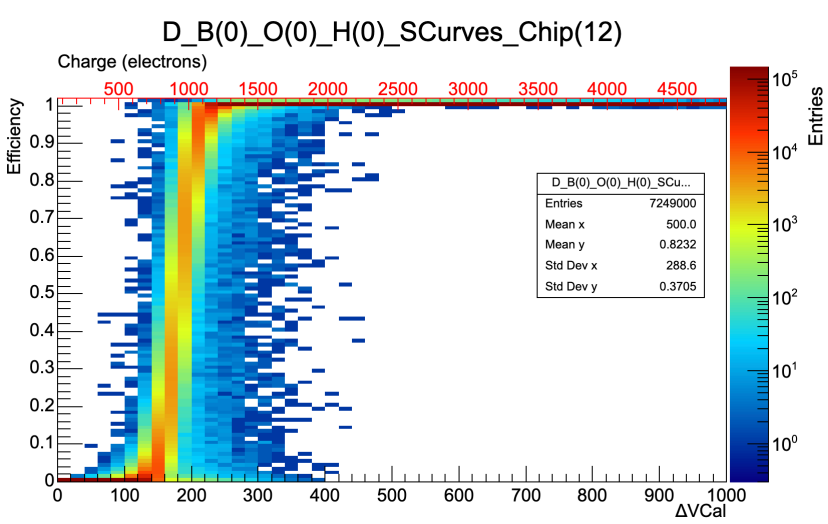


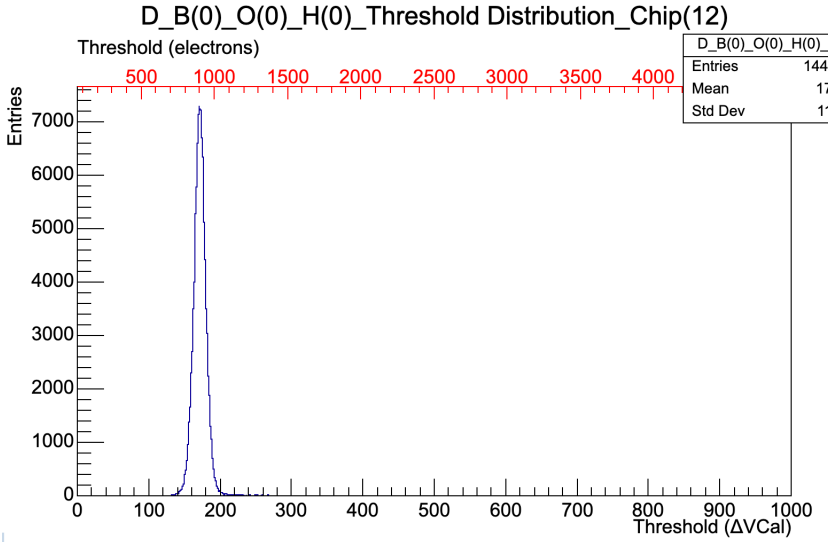
D_B(0)_O(0)_H(0)_Occ1D_Chip(13)

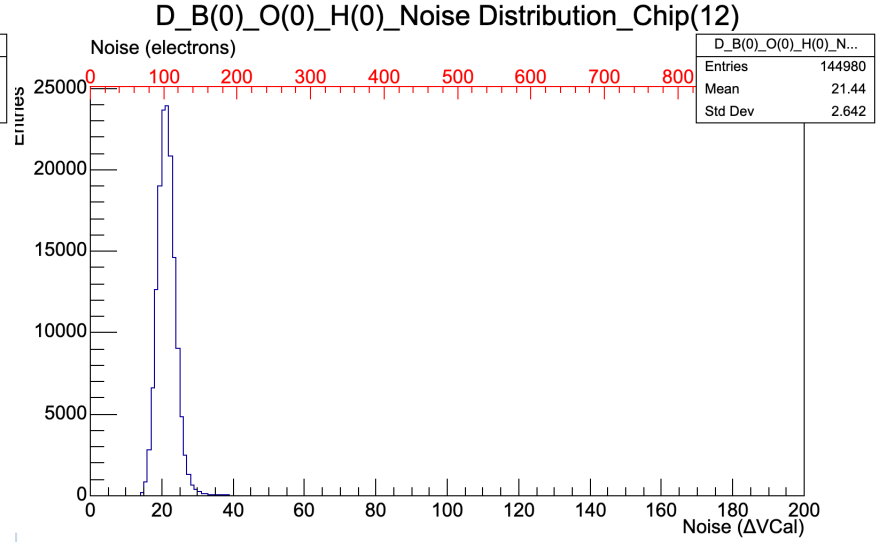


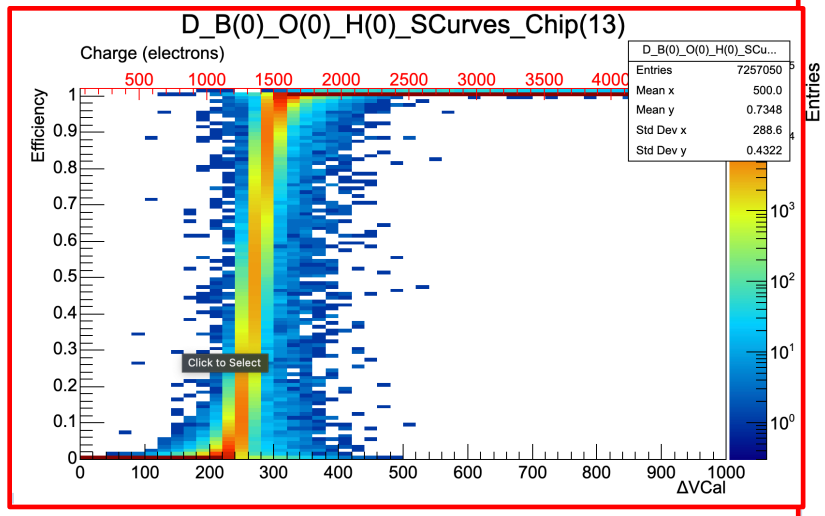
Masked pixels: 79,10; GDAC = 440,405

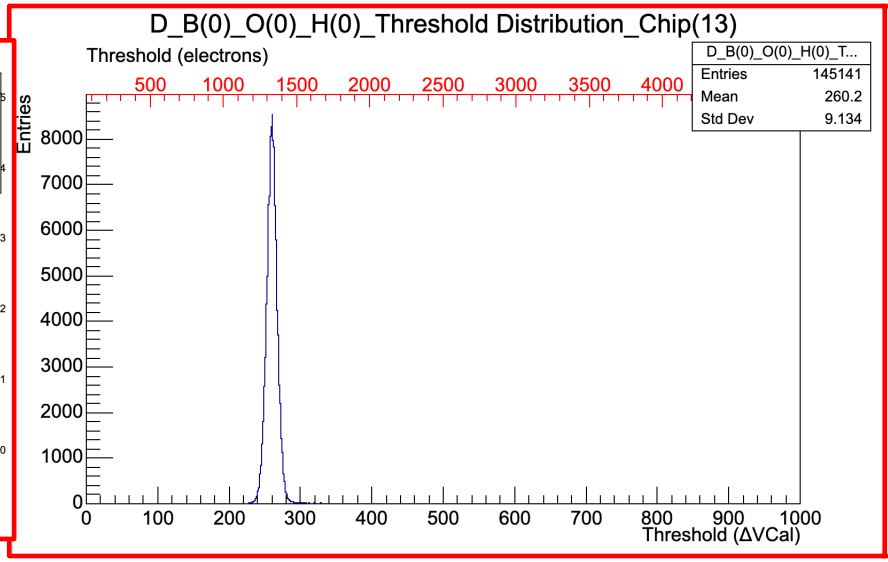
SCurve @900e-

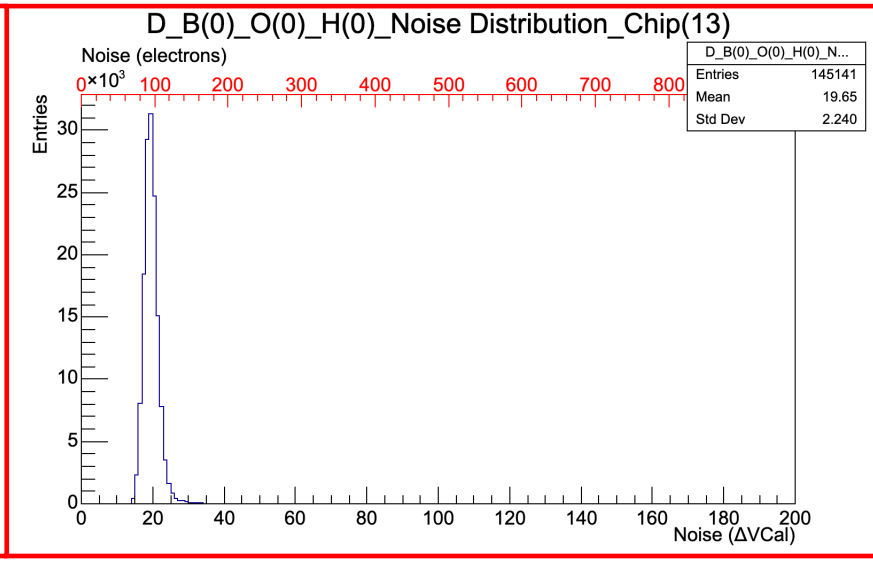

D_B(0)_O(0)_H(0)_SCurves_Chip(12)
Charge (electrons)
Efficiency
ΔVCal
D_B(0)_O(0)_H(0)_SCu...
Entries 7249000
Mean x 500.0
Mean y 0.8232
Std Dev x 288.6
Std Dev y 0.3705


D_B(0)_O(0)_H(0)_Threshold Distribution_Chip(12)
Threshold (electrons)
Entries
Threshold (ΔVCal)
D_B(0)_O(0)_H(0)_T...
Entries 144980
Mean 171.8
Std Dev 11.16

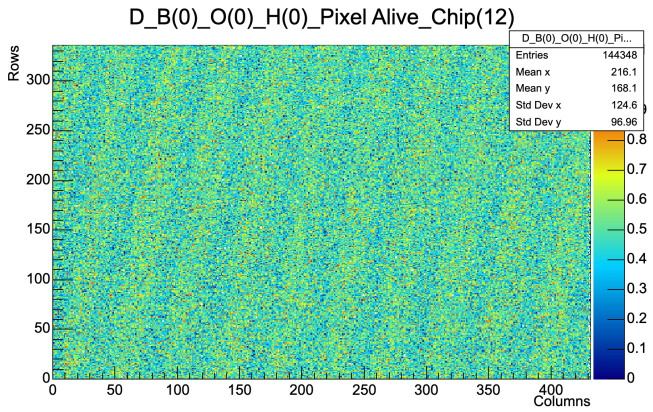

D_B(0)_O(0)_H(0)_Noise Distribution_Chip(12)
Noise (electrons)
Entries
Noise (ΔVCal)
D_B(0)_O(0)_H(0)_N...
Entries 144980
Mean 21.44
Std Dev 2.642

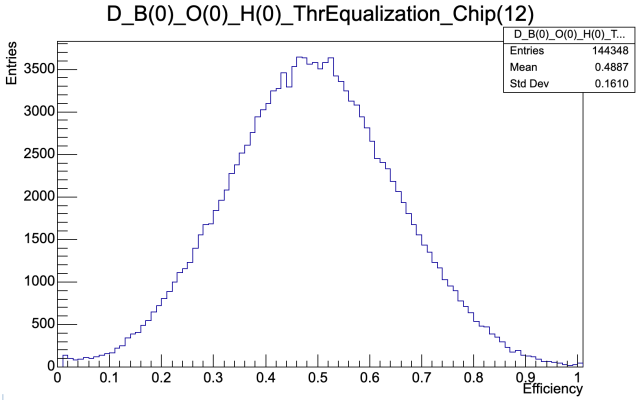

D_B(0)_O(0)_H(0)_SCurves_Chip(13)
Charge (electrons)
Efficiency
ΔVCal
Click to Select
D_B(0)_O(0)_H(0)_SCu...
Entries 7257050
Mean x 500.0
Mean y 0.7348
Std Dev x 288.6
Std Dev y 0.4322

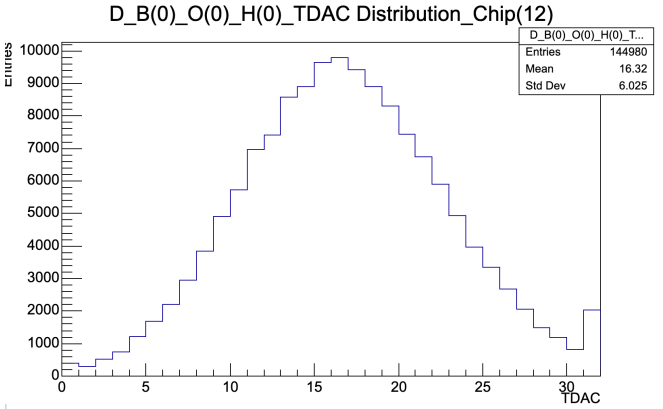

D_B(0)_O(0)_H(0)_Threshold Distribution_Chip(13)
Threshold (electrons)
Entries
Threshold (ΔVCal)
D_B(0)_O(0)_H(0)_T...
Entries 145141
Mean 260.2
Std Dev 9.134

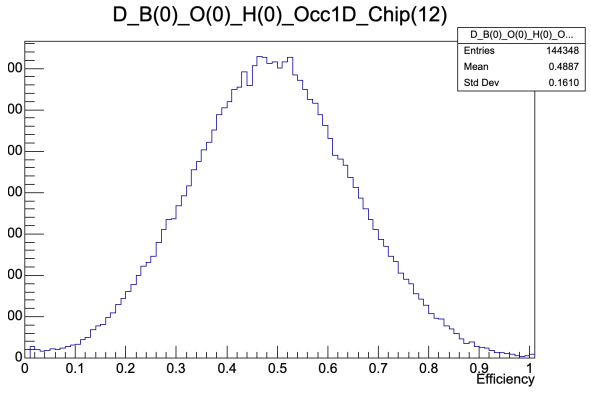

D_B(0)_O(0)_H(0)_Noise Distribution_Chip(13)
Noise (electrons)
Entries
Noise (ΔVCal)
D_B(0)_O(0)_H(0)_N...
Entries 145141
Mean 19.65
Std Dev 2.240

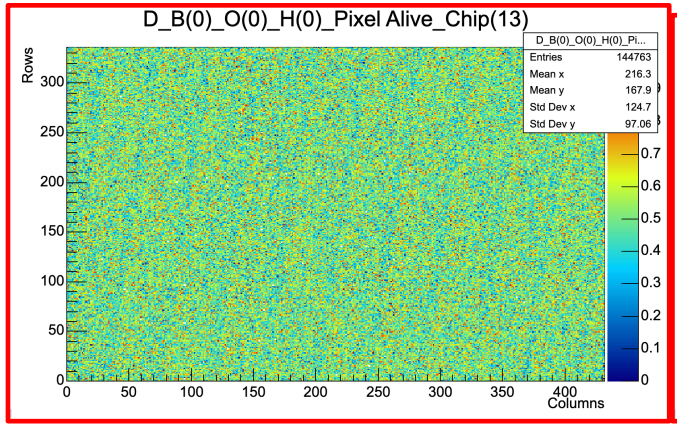
threqu @800e-, DoNSteps=1

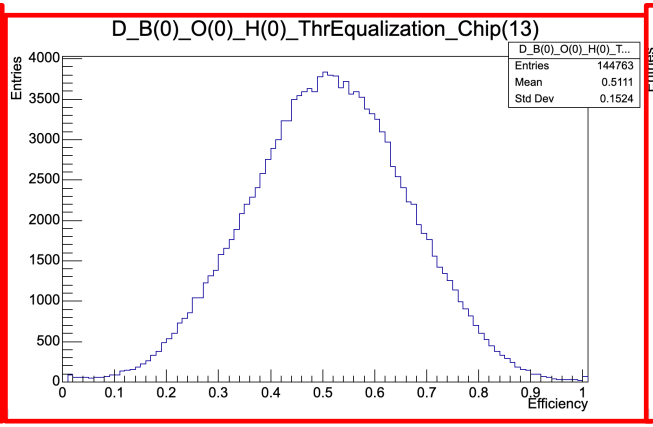


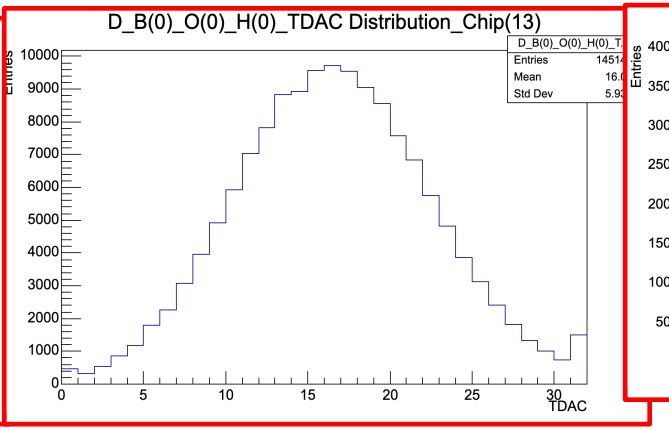


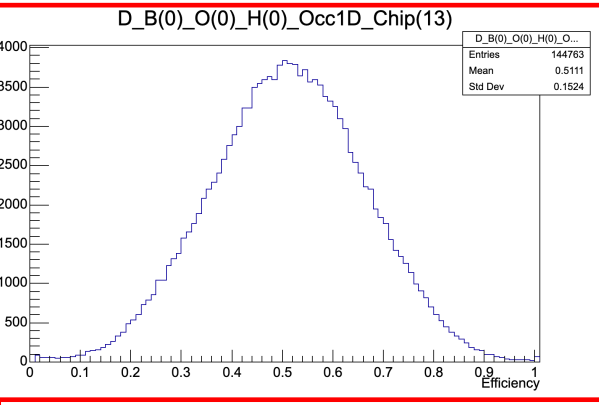






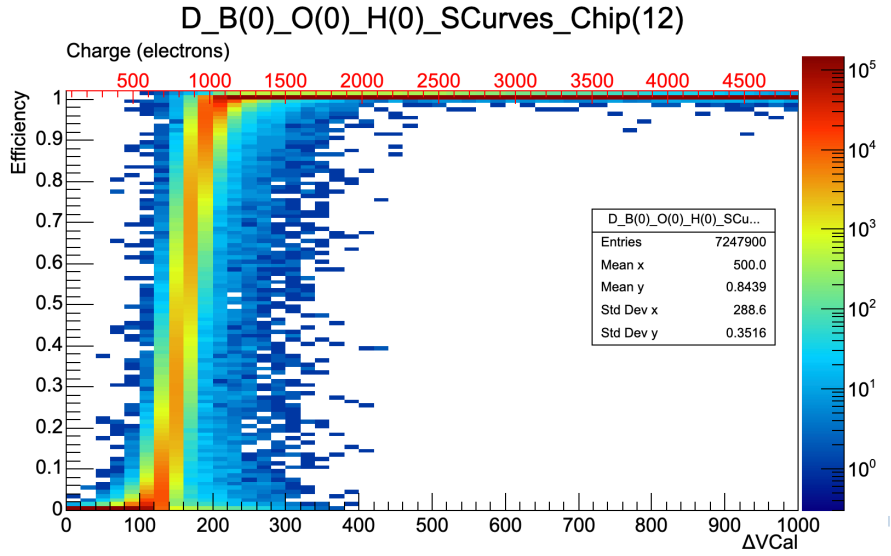


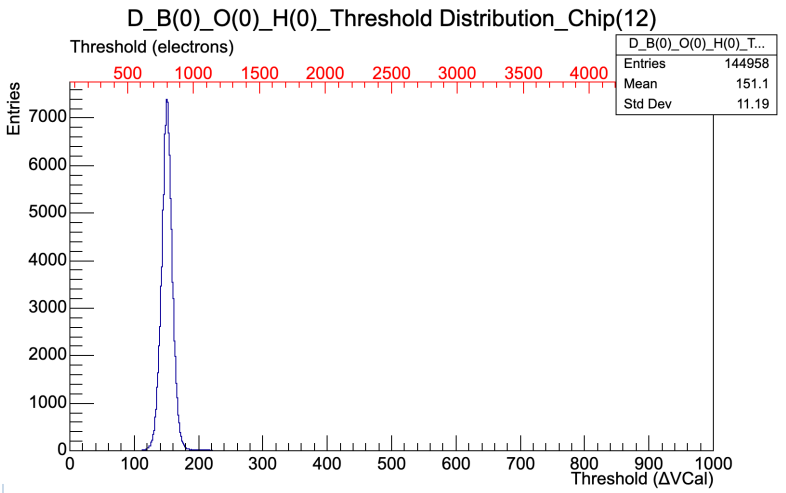


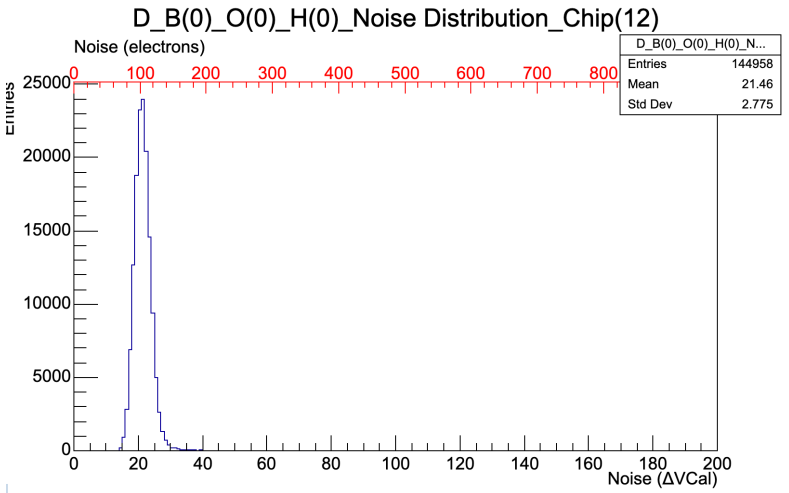


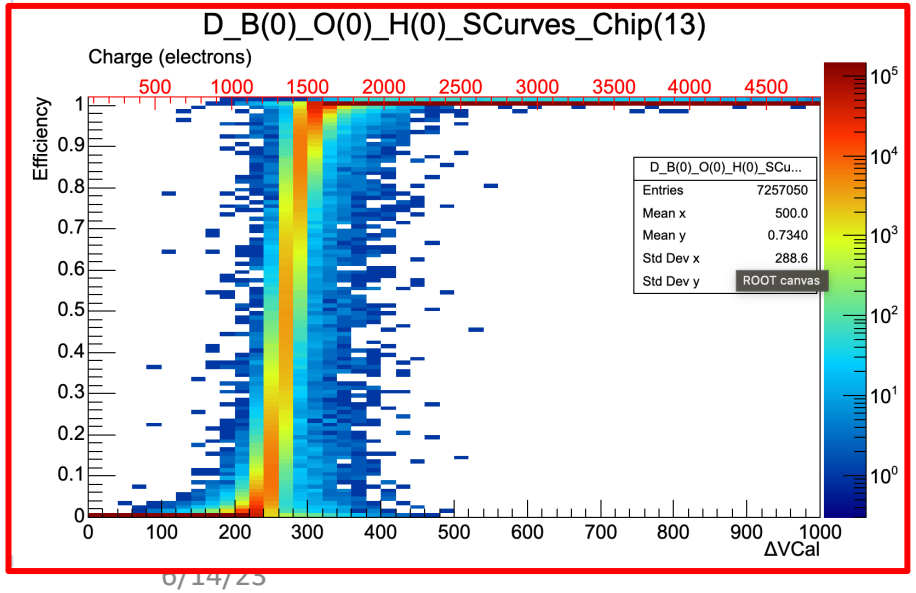
Masked pixels: 172,11; GDAC = 438,405

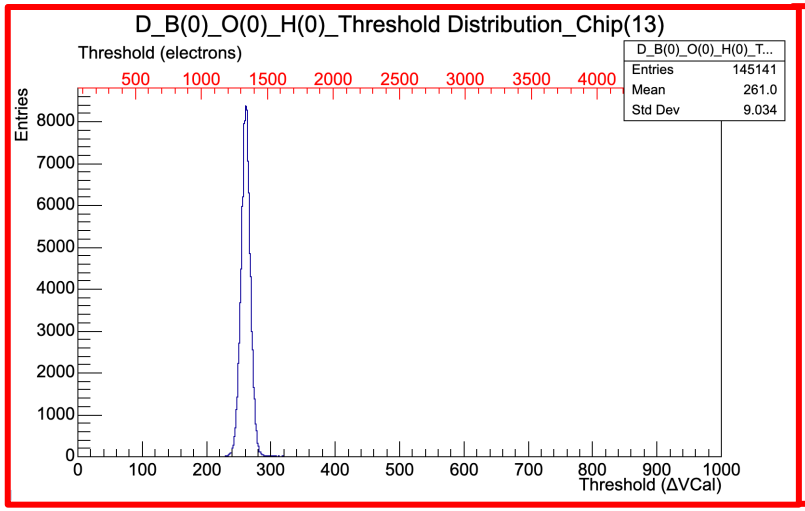
SCurve @800e-

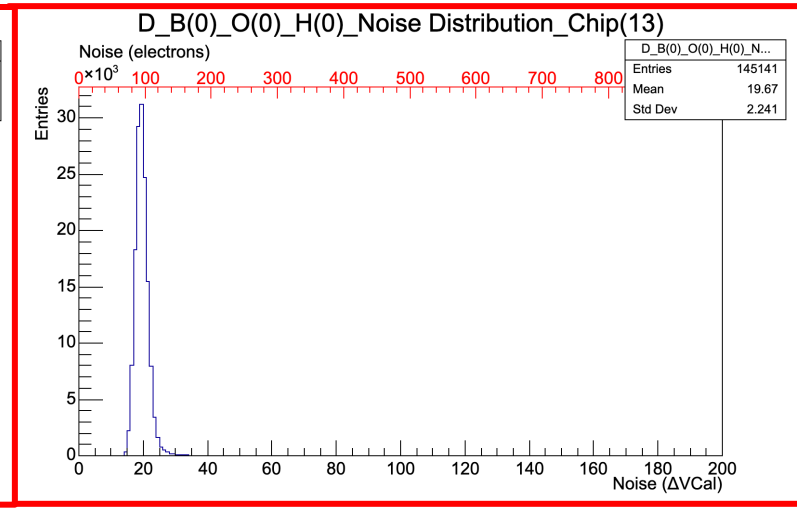

D_B(0)_O(0)_H(0)_SCurves_Chip(12)
Charge (electrons)
Efficiency
ΔVCal
D_B(0)_O(0)_H(0)_SCu...
Entries 7247900
Mean x 500.0
Mean y 0.8439
Std Dev x 288.6
Std Dev y 0.3516


D_B(0)_O(0)_H(0)_Threshold Distribution_Chip(12)
Threshold (electrons)
Entries
Threshold (ΔVCal)
D_B(0)_O(0)_H(0)_T...
Entries 144958
Mean 151.1
Std Dev 11.19

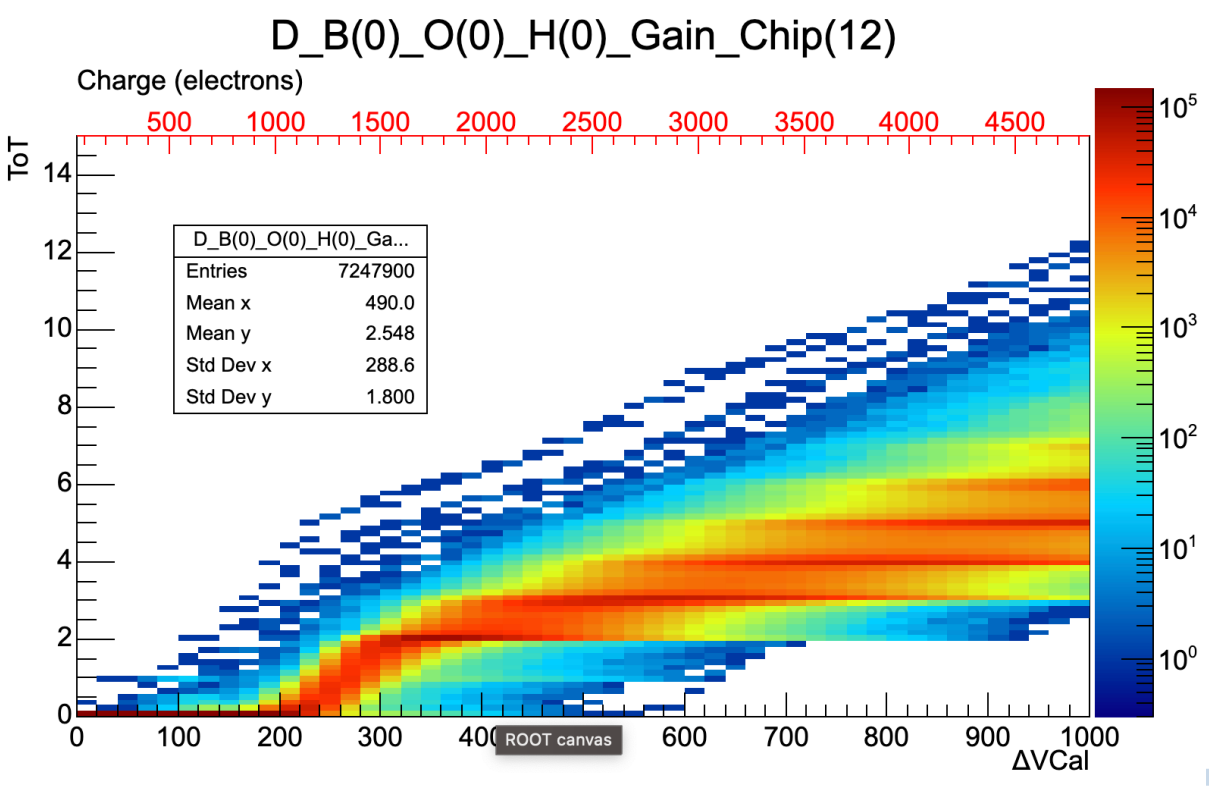

D_B(0)_O(0)_H(0)_Noise Distribution_Chip(12)
Noise (electrons)
Entries
Noise (ΔVCal)
D_B(0)_O(0)_H(0)_N...
Entries 144958
Mean 21.46
Std Dev 2.775

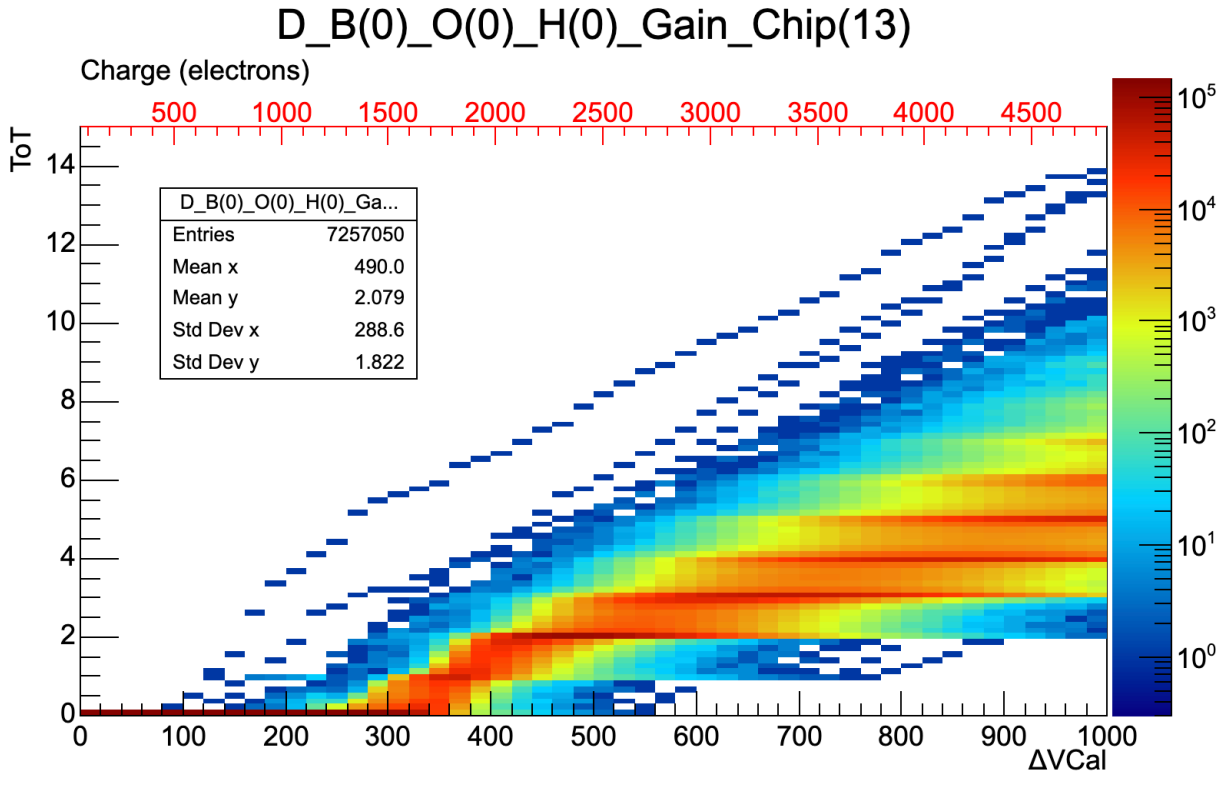

D_B(0)_O(0)_H(0)_SCurves_Chip(13)
Charge (electrons)
Efficiency
ΔVCal
D_B(0)_O(0)_H(0)_SCu...
Entries 7257050
Mean x 500.0
Mean y 0.7340
Std Dev x 288.6
Std Dev y
ROOT canvas


D_B(0)_O(0)_H(0)_Threshold Distribution_Chip(13)
Threshold (electrons)
Entries
Threshold (ΔVCal)
D_B(0)_O(0)_H(0)_T...
Entries 145141
Mean 261.0
Std Dev 9.034


D_B(0)_O(0)_H(0)_Noise Distribution_Chip(13)
Noise (electrons)
Entries
Noise (ΔVCal)
D_B(0)_O(0)_H(0)_N...
Entries 145141
Mean 19.67
Std Dev 2.241

Gain scan





Not sure how to interpret/read this plot

- Chip 12 normal behavior
- Chip 13 is not behaving well: further investigation needed
- Next: compare with results from other sites, Xuan and Joseph.