Update on HVStripV1

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Current situation

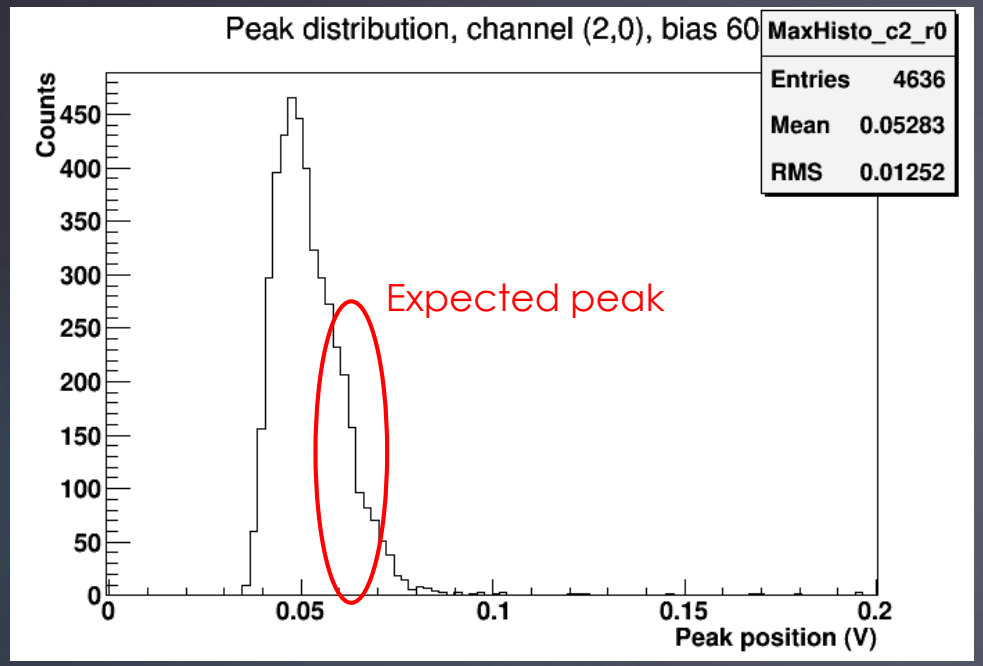
- 2 samples, MB06 and MB03 irradiated at about 10^{15} n_{eq} at Birmingham
- MB06 pre-irradiation characterization done at Glasgow
- MB03 pre-irradiation characterization done at Oxford
- MB06 partially studied at Oxford
- MB06 sent to Glasgow for further studies
- MB03 data taking currently starting

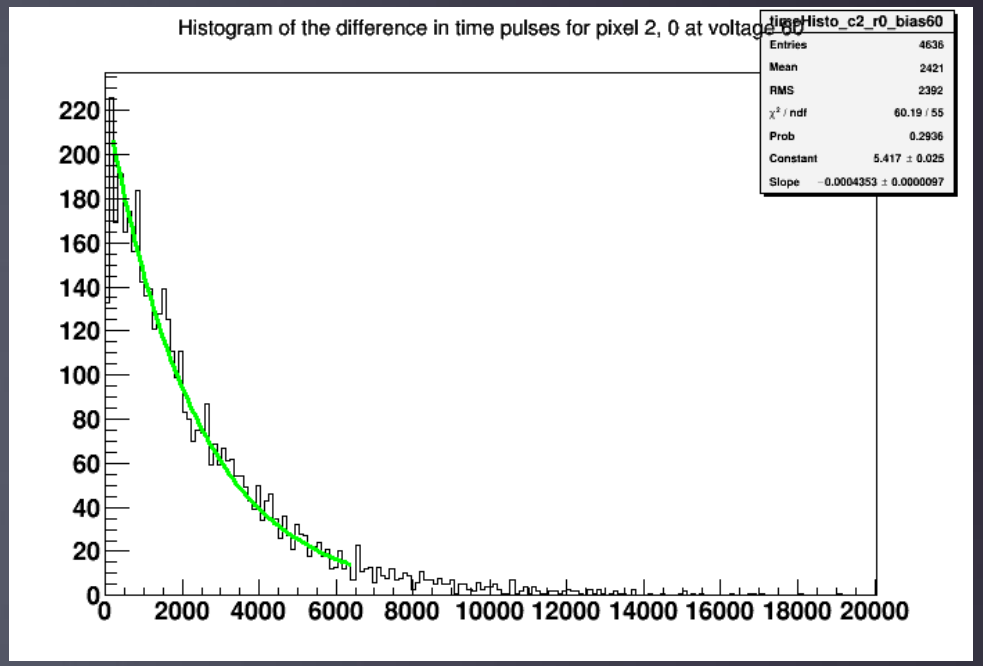
MB06 data

- Some Fe^{55} spectrum collected at bias of 60, 80 and 87
  - Increasing it, the leakage current would become higher than 100 nA
- 3 channels used: (2,0),(2,1),(16,0)
  - (2,1) seemed the most promising, with highest gain
- DAC6 set to 5 (high signal, high s/n) and 60 (low signal and s/n)

MB06 data, bias 60V, DAC6 = 5

Only channel (2,0)





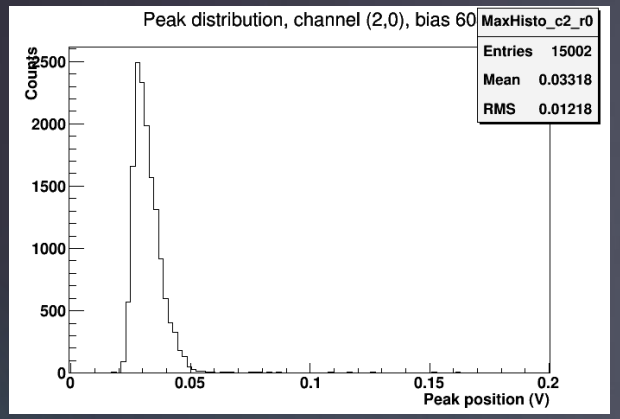
No peak seen

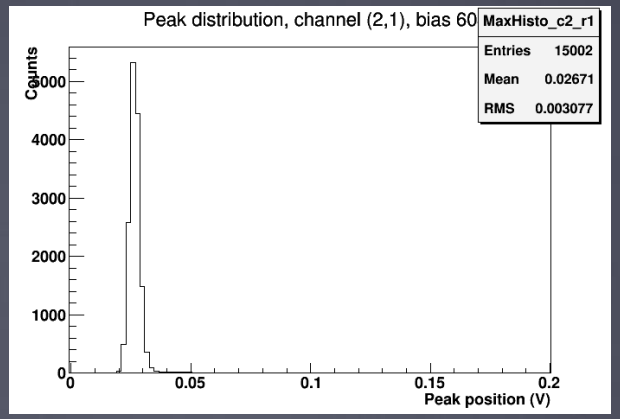
Source behavior

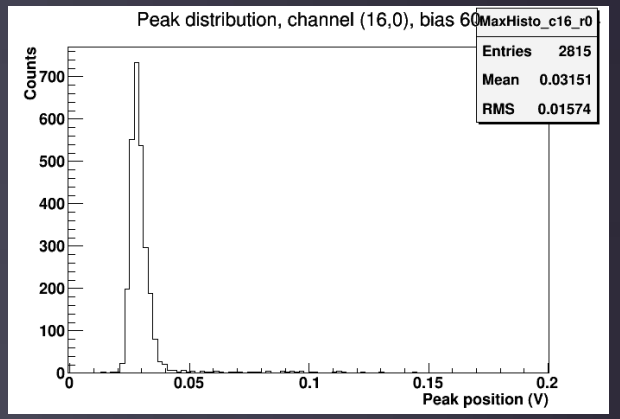
MB06 data, bias 60V, DAC6 = 60

(2,0) (2,1) (16,0)

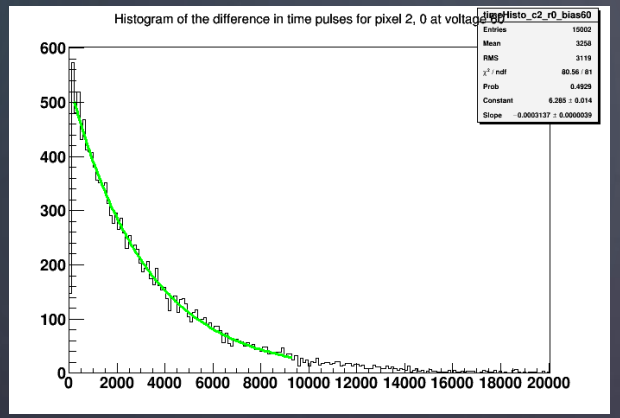
Spectrum

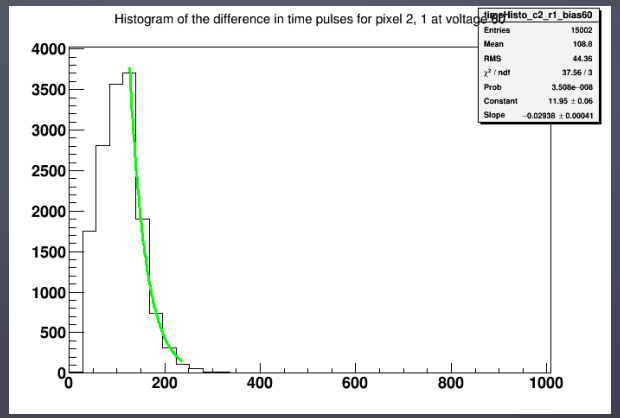


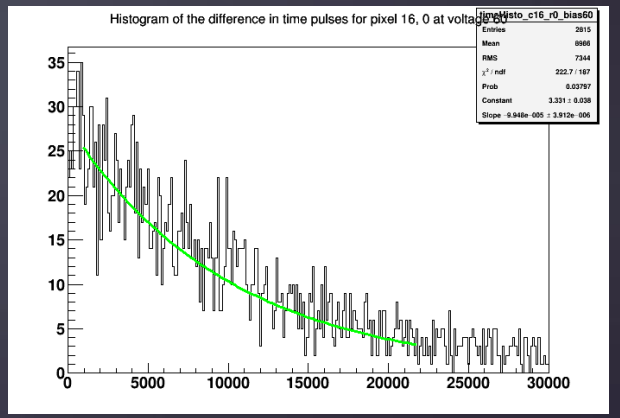




Time distribution

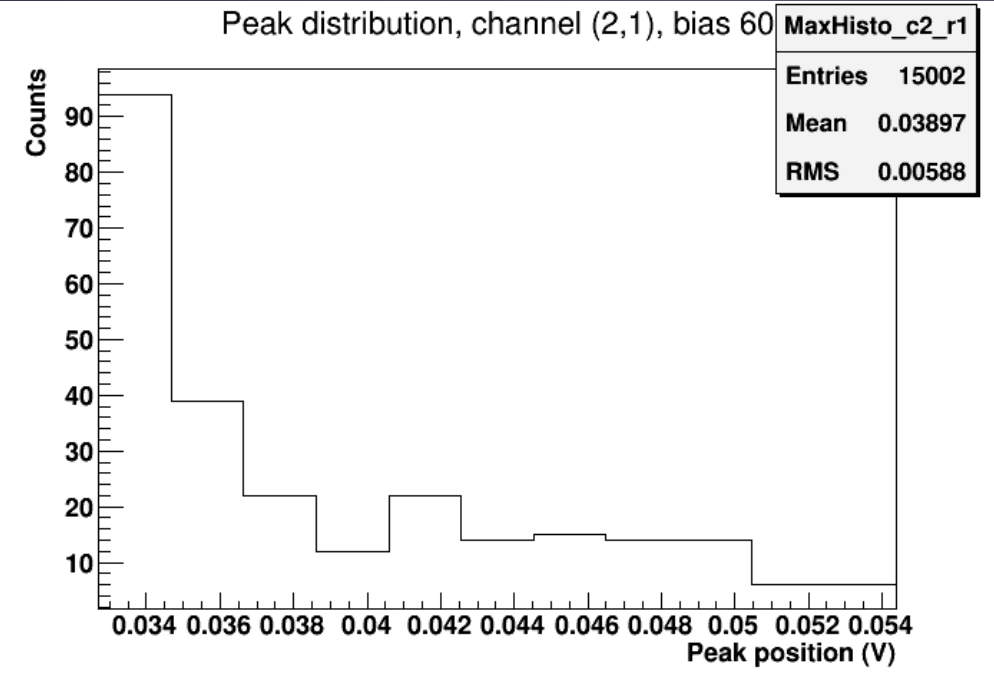






Mostly noise… (threshold too low)

MB06 data, bias 60V, DAC6 = 60

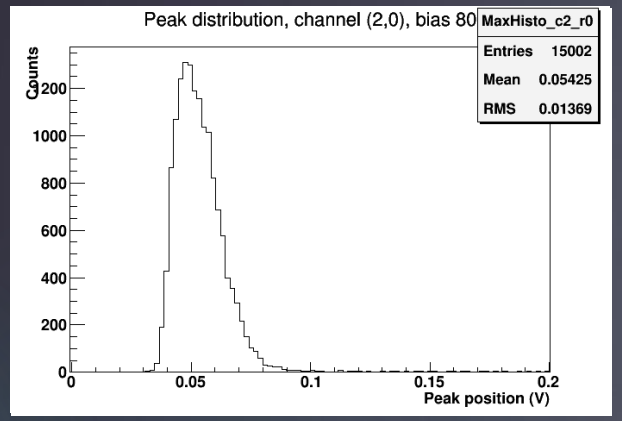


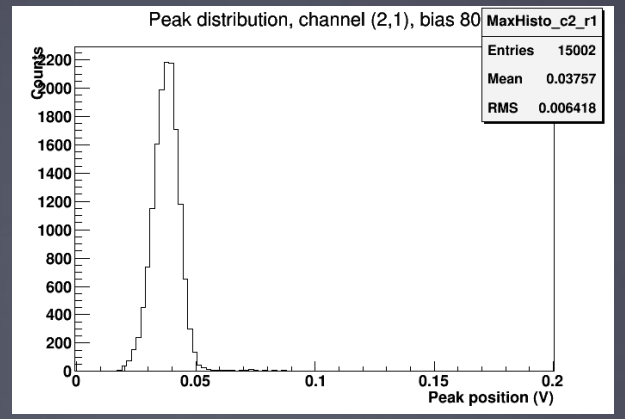
Focusing on the tail of channel (2,1)…

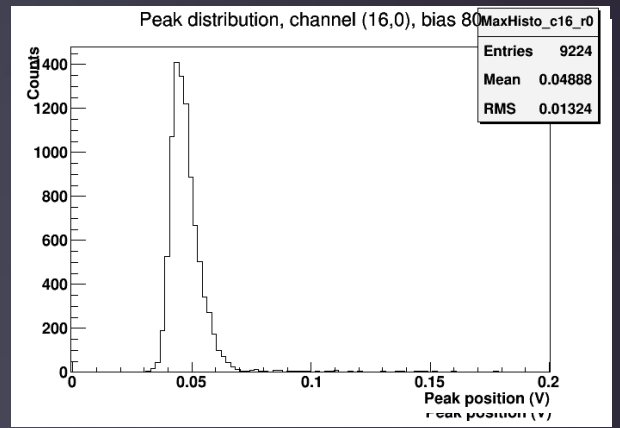
MB06 data, bias 80V, DAC6 = 5

(2,0) (2,1) (16,0)

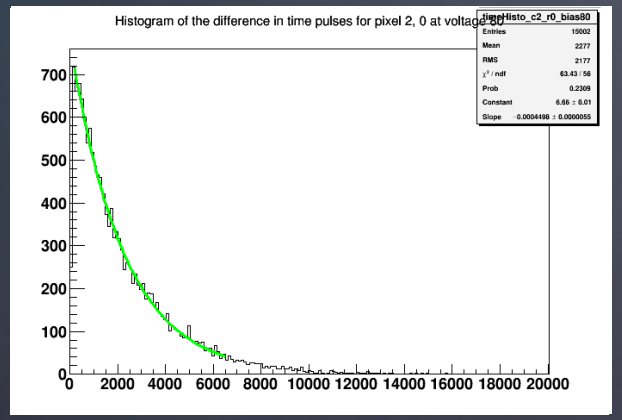
Spectrum

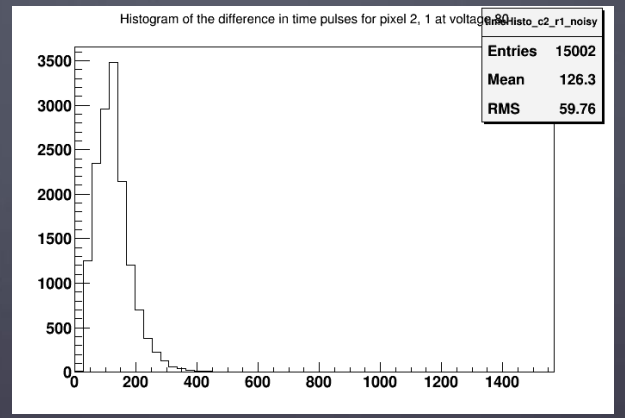


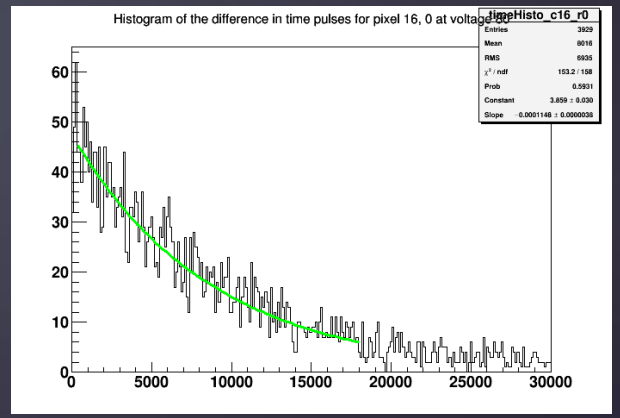




Time distribution

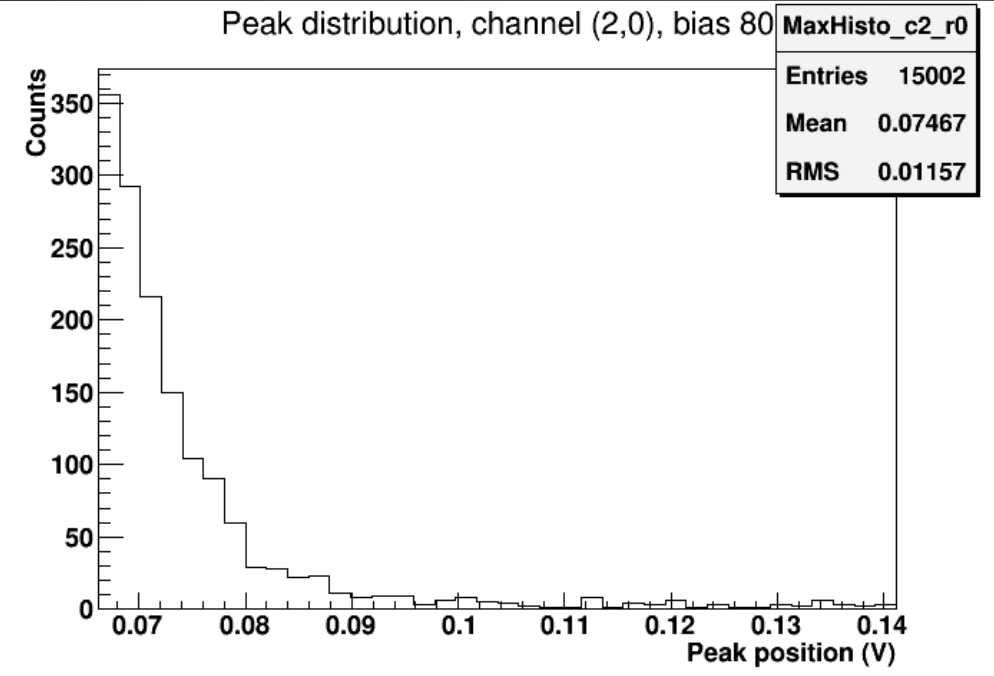






Mostly noise… (threshold too low)

MB06 data, bias 60V, DAC6 = 60

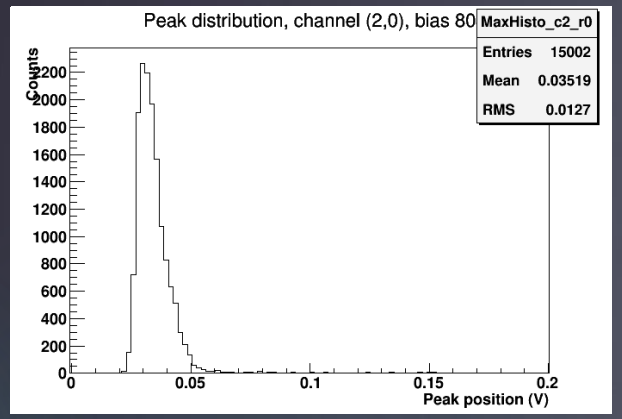


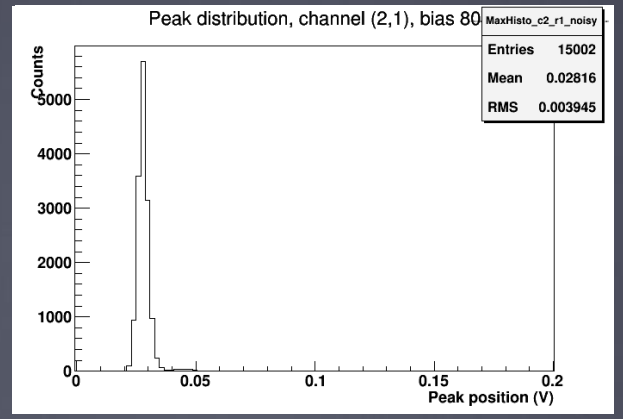
Focusing on the tail of channel (2,1)…

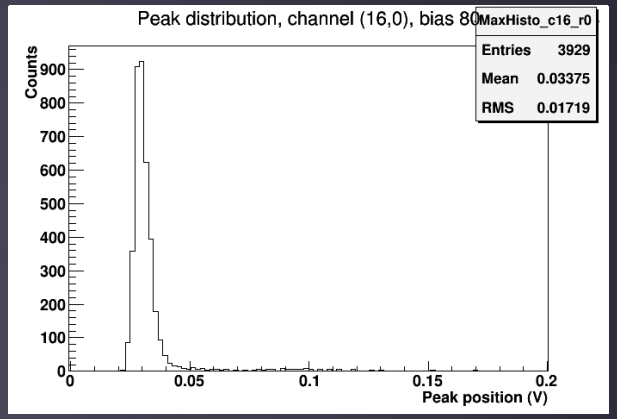
MB06 data, bias 80V, DAC6 = 60

(2,0) (2,1) (16,0)

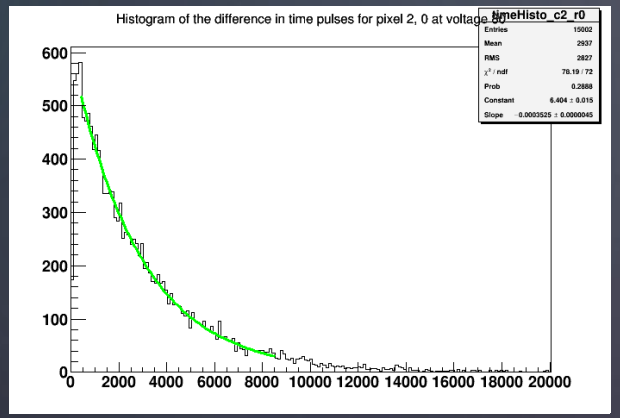
Spectrum

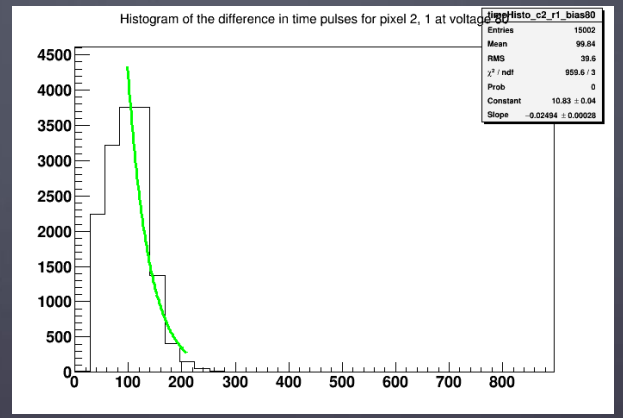


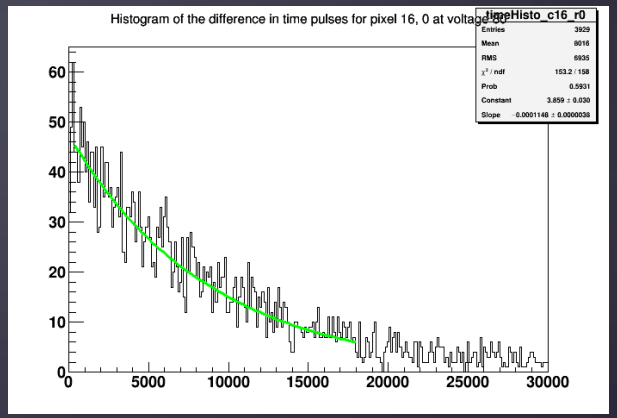




Time distribution

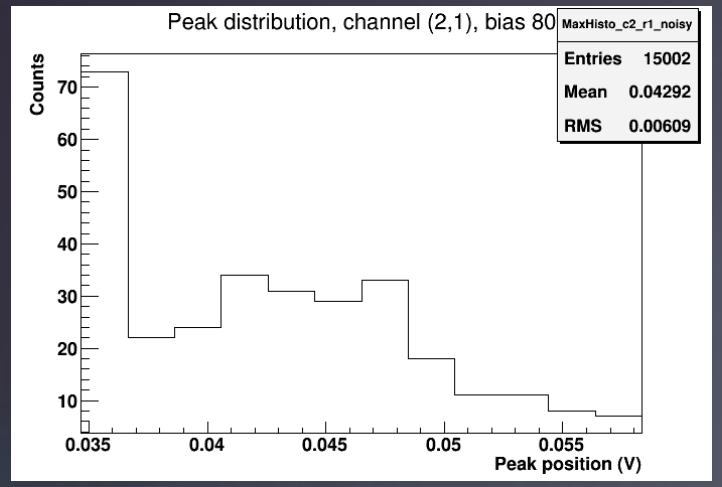






Mostly noise… (threshold too low)

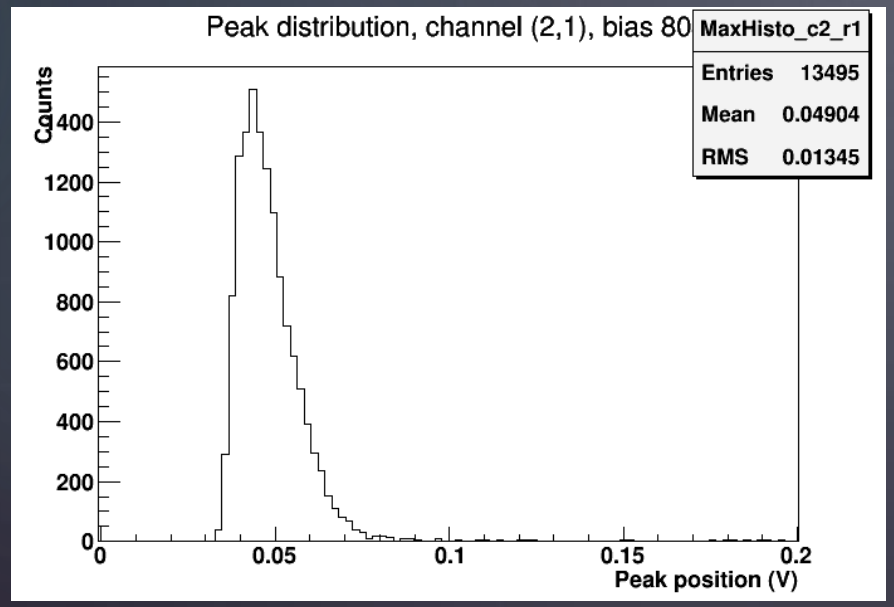
MB06 data, bias 80V, DAC6 = 60



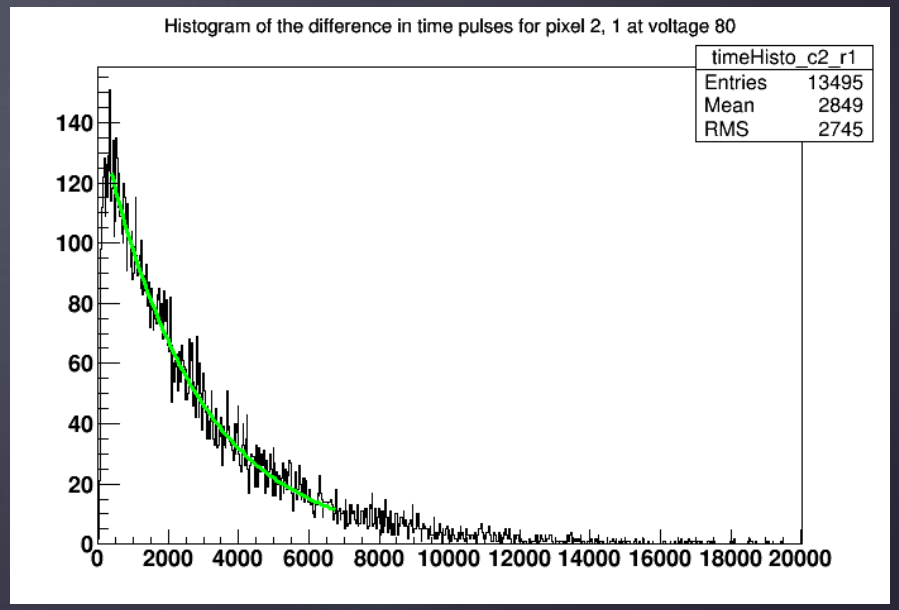
Focusing on the tail of channel (2,1)…

Could it be a peak?

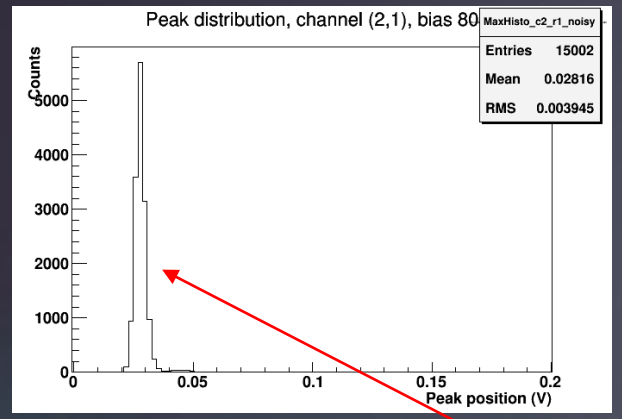
Set the threshold higher…



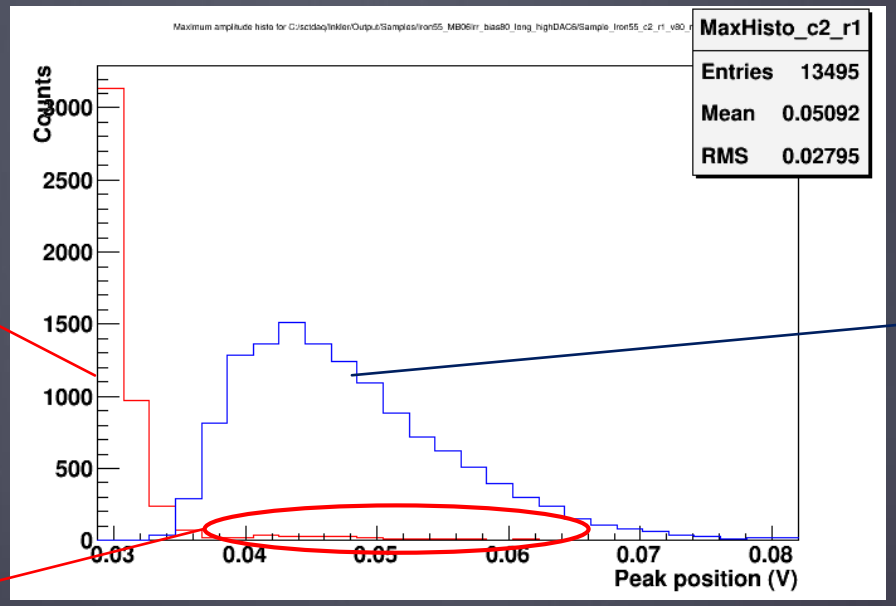
Time profile of the source

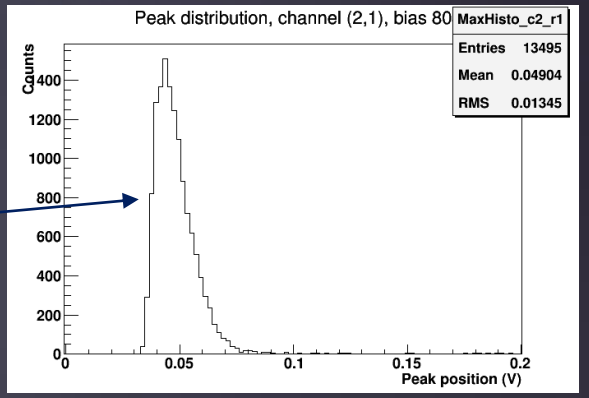


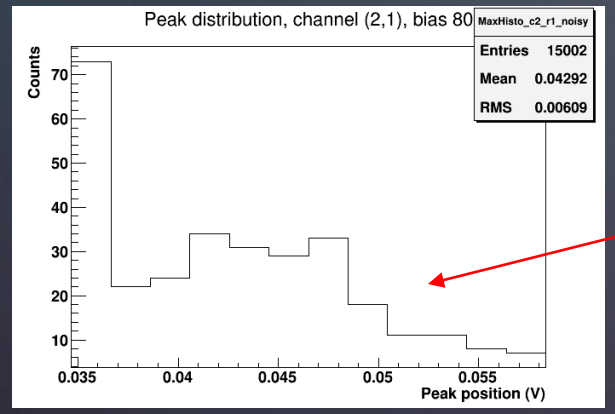
MB06 data, bias 80V, DAC6 = 60



Superimposing noise and source





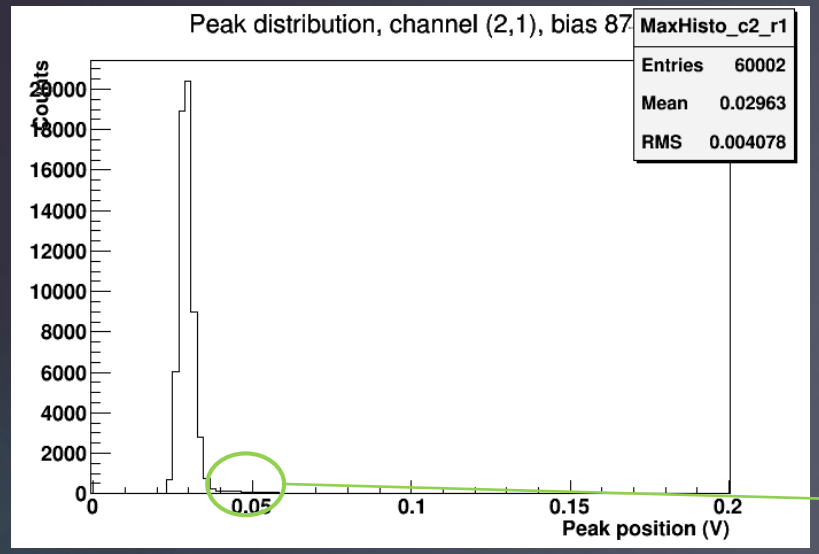


We can state we distinguish Fe^{55} from the noise!

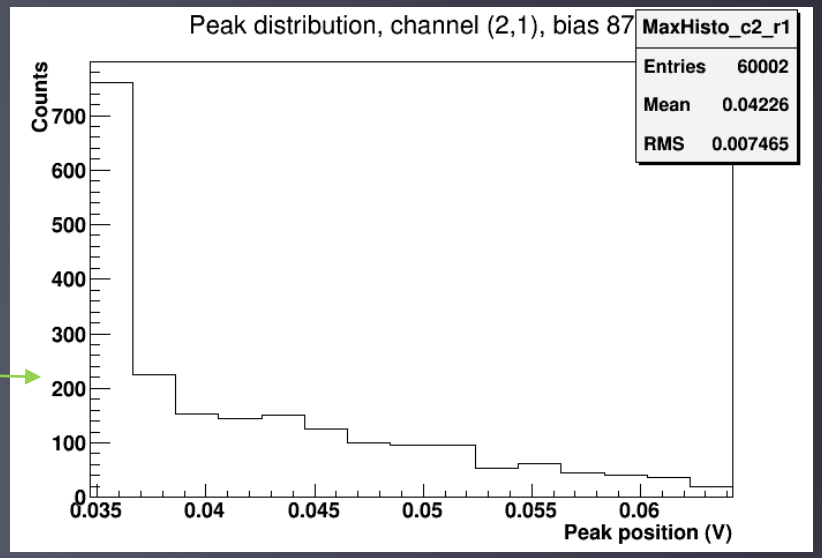
MB06 data, bias 87V, DAC6 = 60

Trial with lot of events on channel (2,1) at low threshold

Spectrum

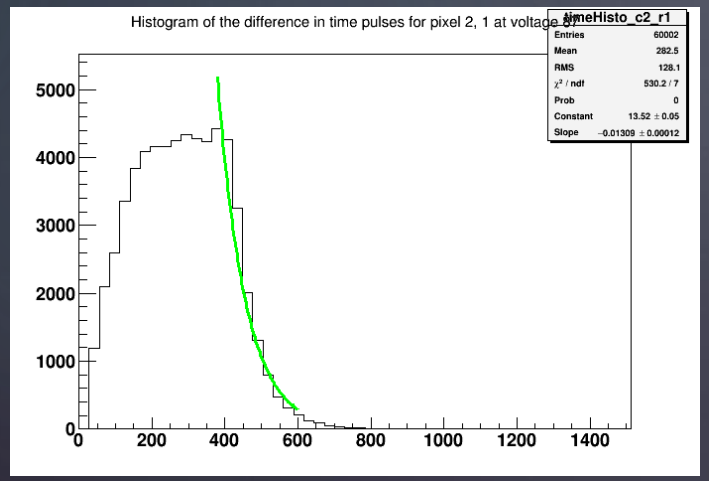


Zoom



Peak not so defined… noise too high?

Time distribution



MB03 data

- At the moment MB03 is in the freezer hooked-up to the DAQ
- Leakage current slightly higher than MB06 (about 70 nA at -40 degrees)
- This one seems to be irresponsive, as no signal is extracted even from charge injection
- It had a low gain even before irradiation
- More work on it the next days

Conclusions

- MB06 seems to have survived irradiation very well:
  - Leakage current very low (below 10nA at -40 degree)
  - It can be biased up to about 87V without great increase in current
  - At 80V bias we can see Fe^{55} spectrum very well on one channel
- We can't say the same on MB03
  - Production problems?
  - Condensation on connections?

→ If it can't be recovered we will verify it…