

APD experiment

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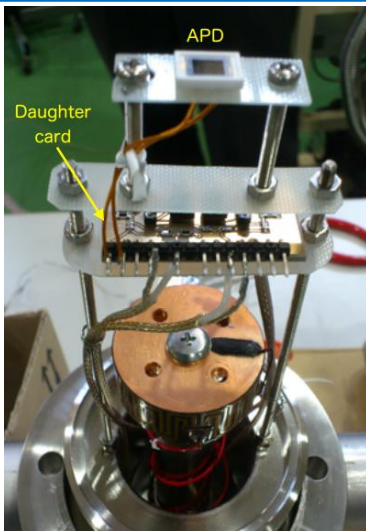


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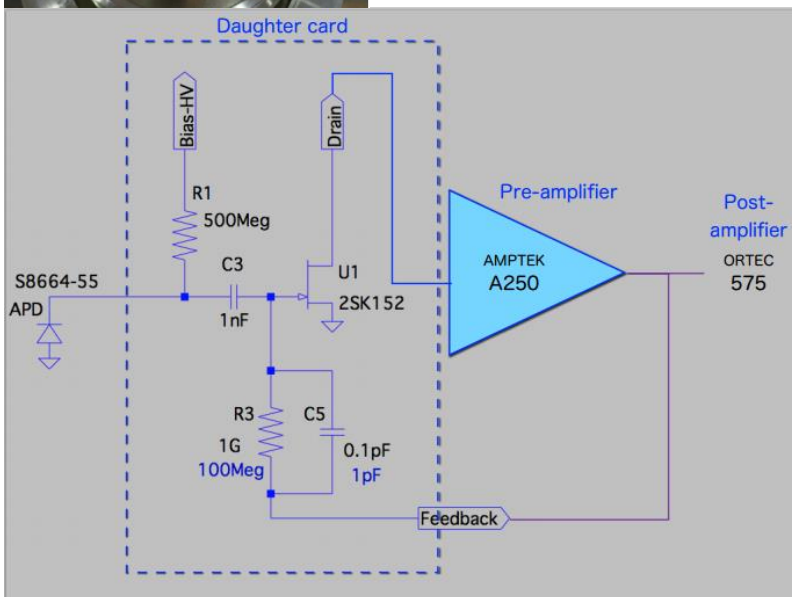
APD experiment

Set up



- Voltage
 - 300 – 333 V (^{137}Cs & LXe)
 - 290 – 332 V (^{241}Am & LXe)

*if bias voltage is set more over 334 V, output of preamp shows saturation.

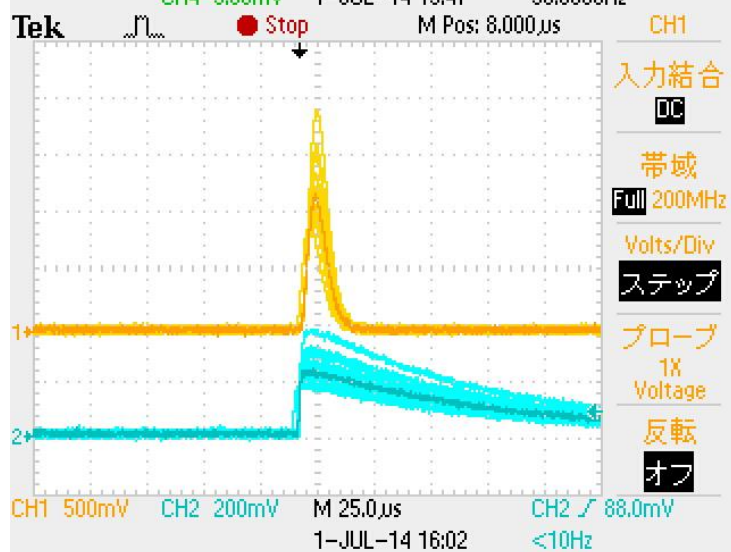


Kromek
K102

Waveforms

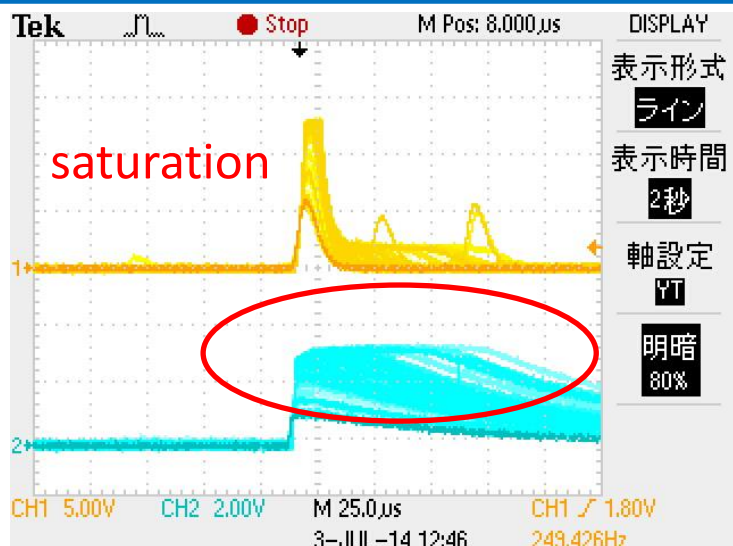


- Input : test pulse
 - Yellow : postamp
 - Blue : preamp
 - Green : function generator

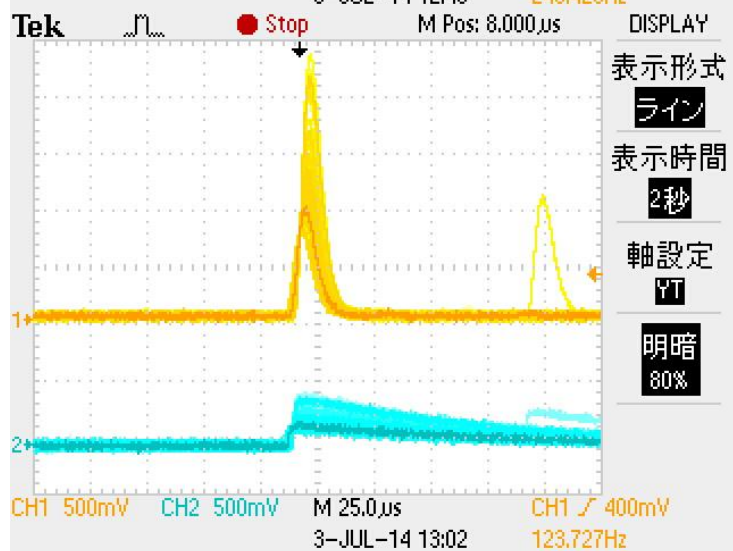


- Input : APD (^{137}Cs & LXe, bias : 333 V)
 - Yellow : postamp
 - Blue : preamp

Waveforms



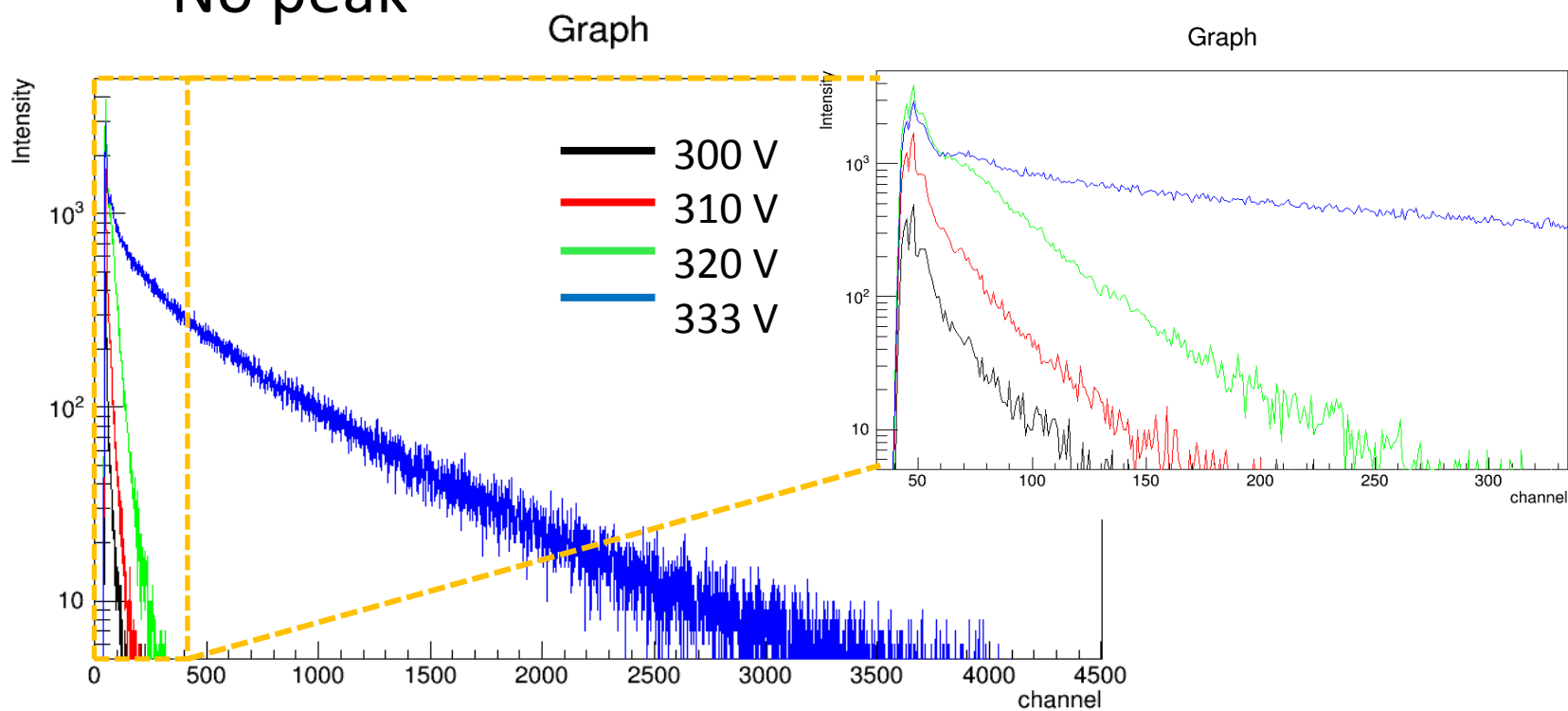
- Input : APD
 (^{241}Am & LXe, bias : 334 V)
 - Yellow : postamp
 - Blue : preamp



- Input : APD
 (^{241}Am & LXe, bias : 332 V)
 - Yellow : postamp
 - Blue : preamp

Result

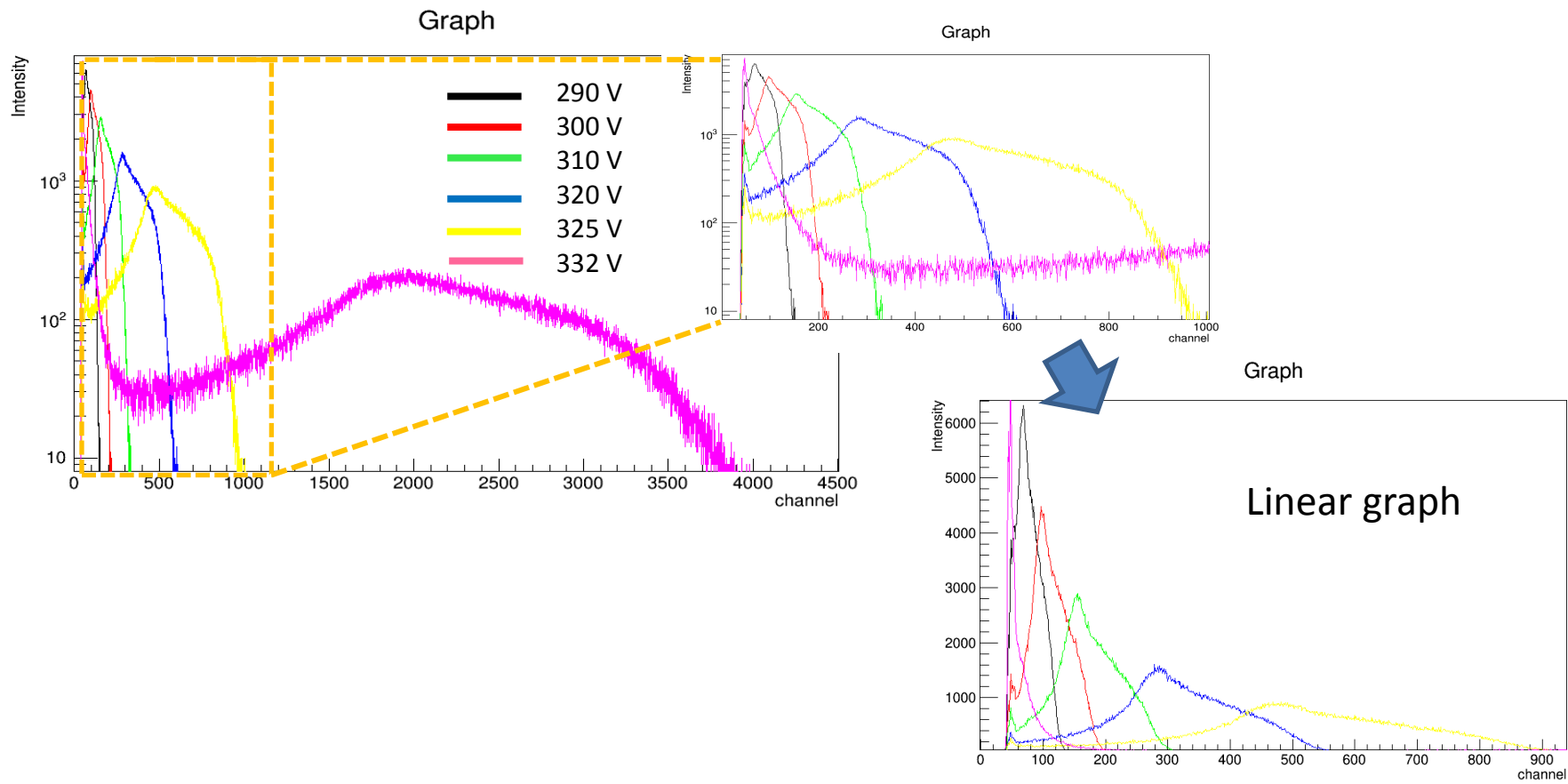
- ^{137}Cs & LXe (time : 1800 s)
 - No peak



Number of photon is very low... ?

Result

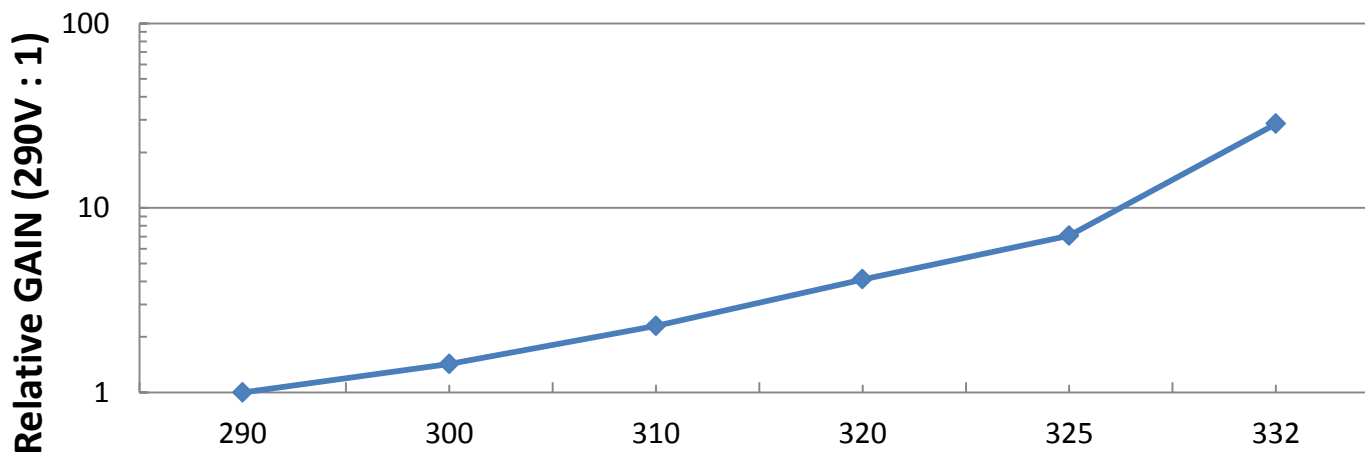
- ^{241}Am & LXe (time : 1800 s)
 - One peak?



Relative GAIN

- Got peak point by Excel function and made Voltage – channel (of MCA)

Voltage - Channel



Voltage [V]

Voltage	cnt	ch	ch-normalized
290	6320	68	1
300	4489	97	1.426470588
310	2894	156	2.294117647
320	1607	279	4.102941176
325	924	481	7.073529412
332	236	1940	28.52941176

Conclusion

- Got the spectrum with liquid xenon and ^{137}Cs and ^{241}Am
- Found no peaks about ^{137}Cs spectrum
- Found one (or two) peak about ^{241}Am
 - Got the peak channel without fitting because shape of spectrum is not gauss.
 - Made (Voltage – Relative GAIN) graph from peak channel