# Progress report

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# What I have done

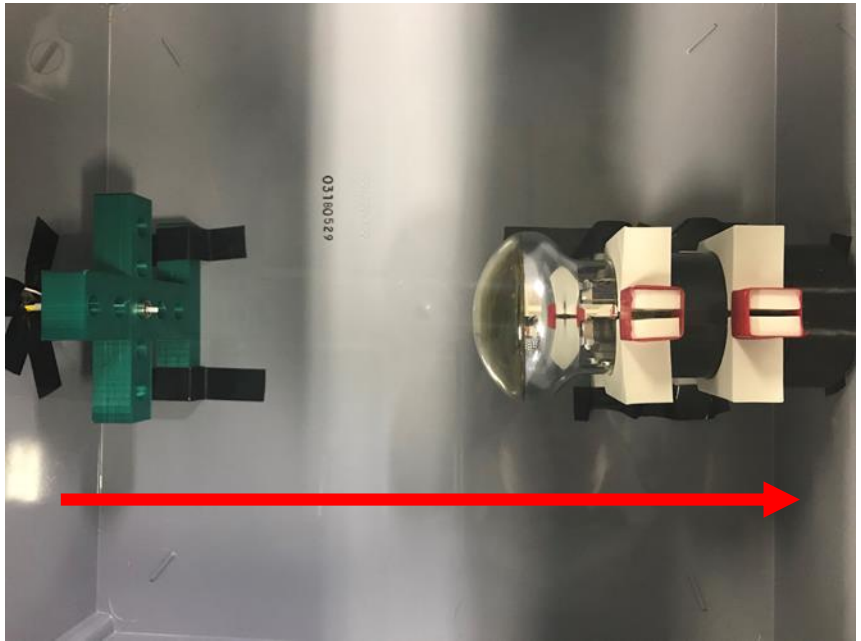
I made B-field in the direction perpendicular to PMT's photoelectric surface.

Then, I measured PMT's efficiency.

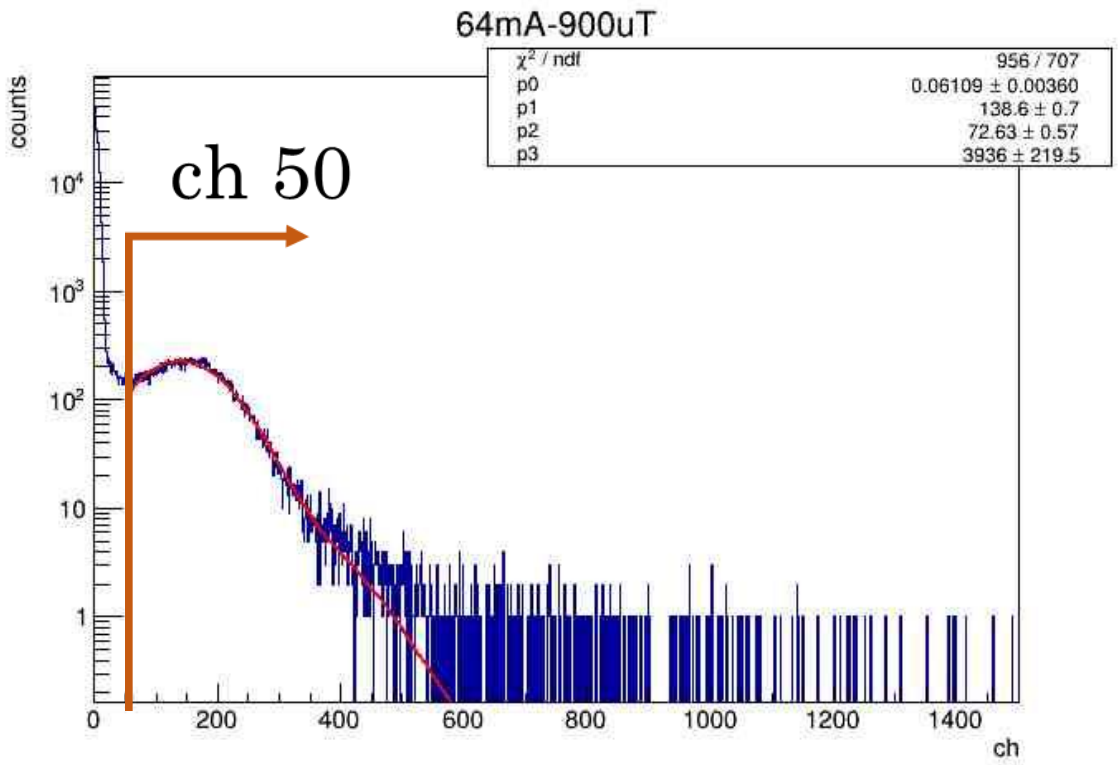
I defined this red arrow as positive direction of B-field.

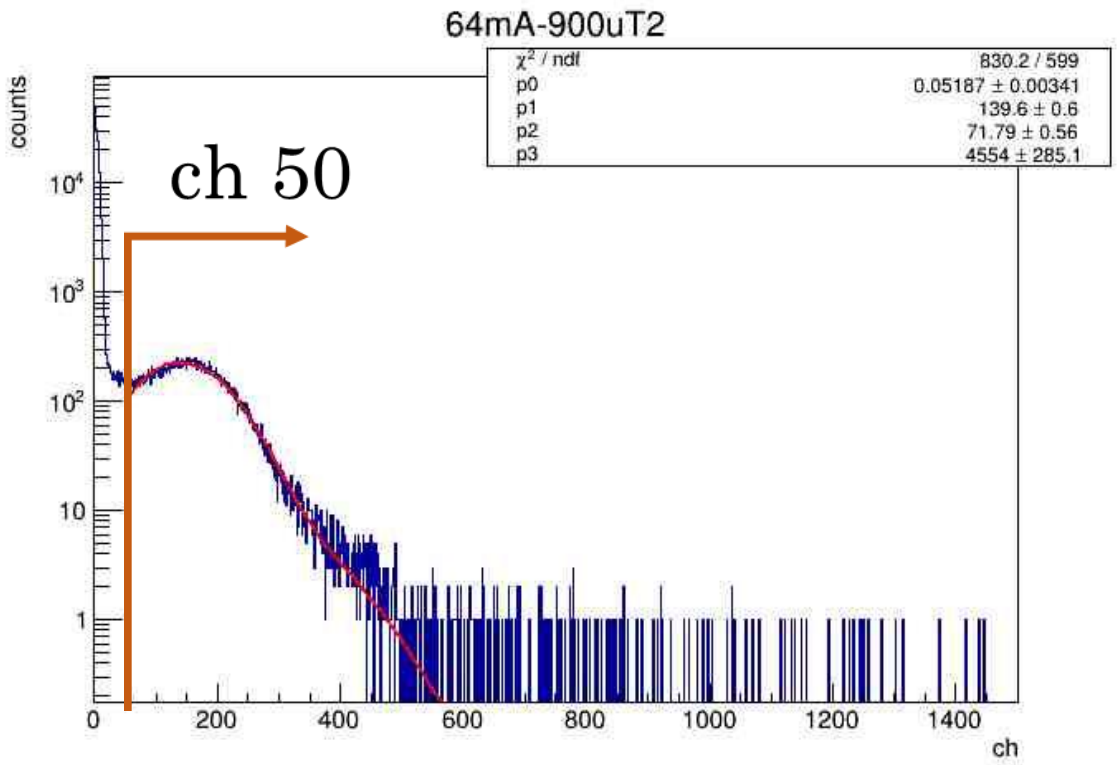
I used three types of B-filed:-900 uT, 0 uT, and 900 uT.

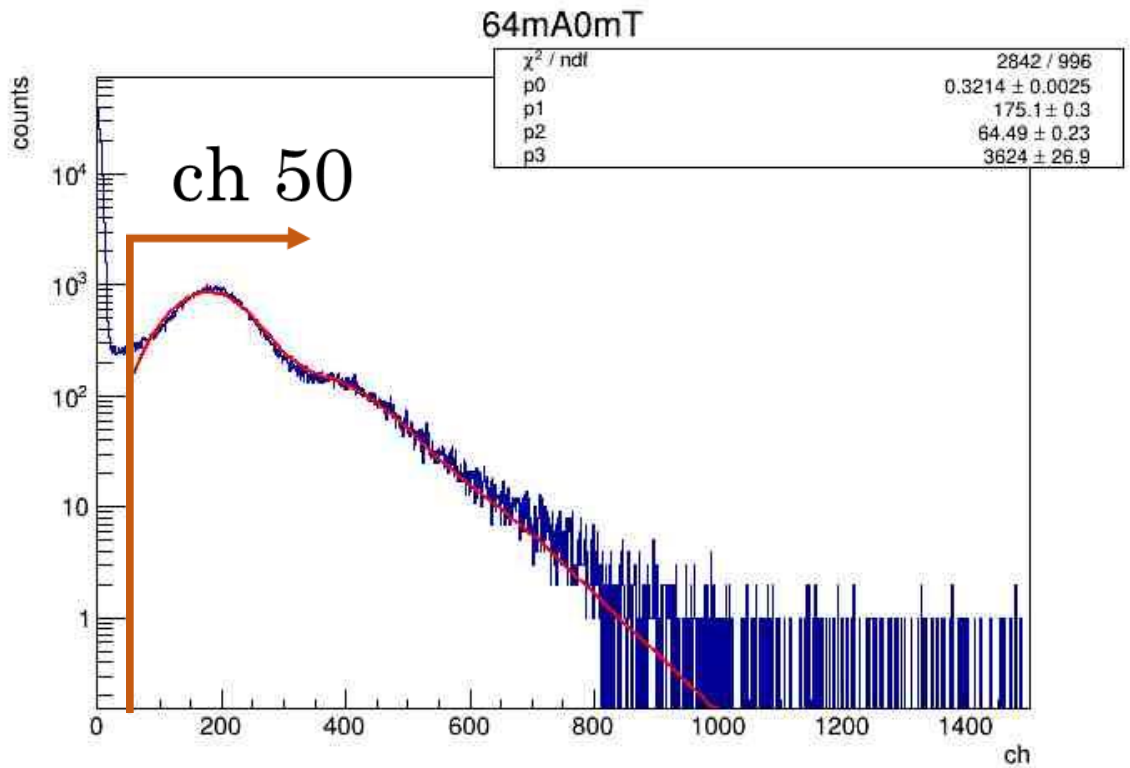
I  measured the efficiency in each B-field two times.

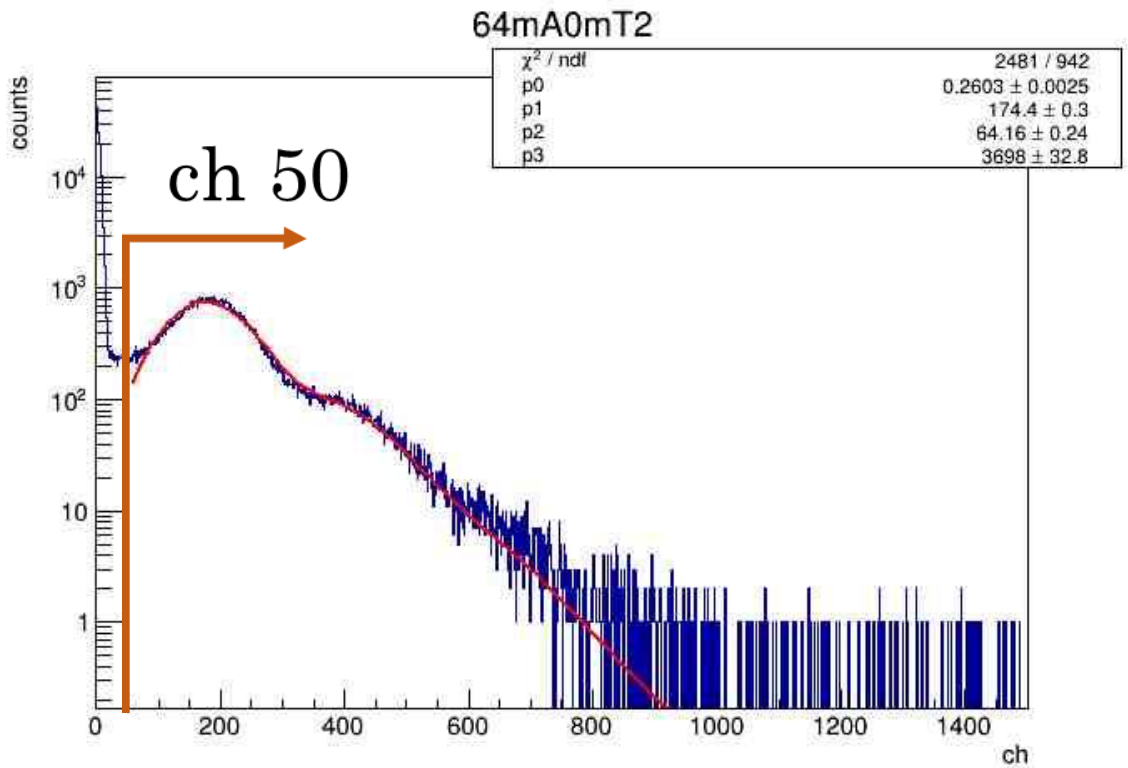


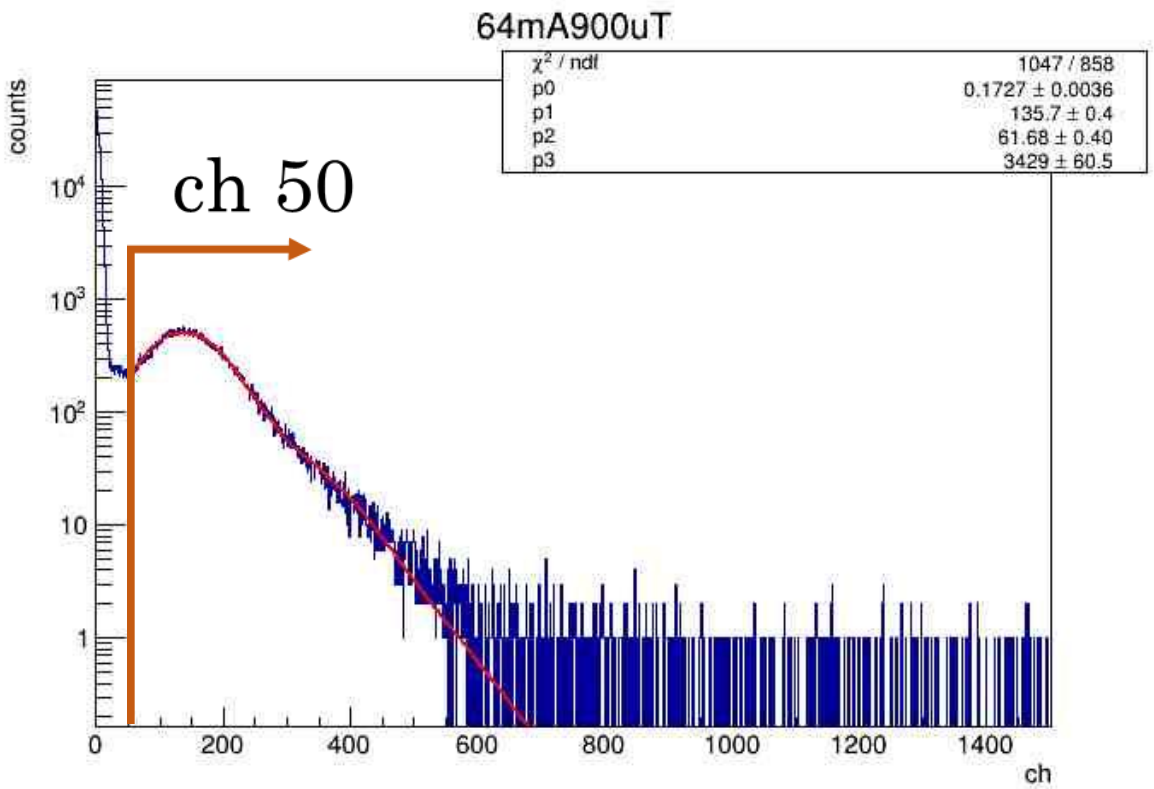
# Results

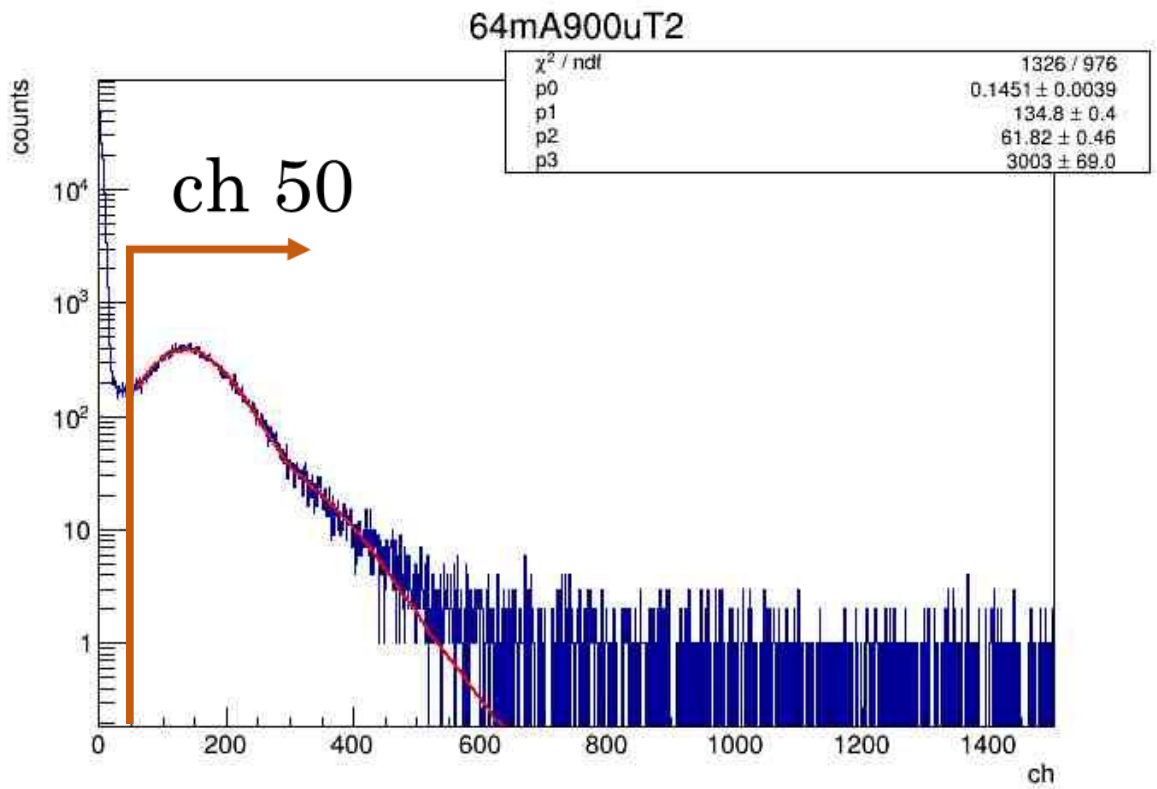

64mA-900uT
χ² / ndf 956 / 707
p0 0.06109 ± 0.00360
p1 138.6 ± 0.7
p2 72.63 ± 0.57
p3 3936 ± 219.5
ch 50
counts
ch


64mA-900uT2
χ² / ndf 830.2 / 599
p0 0.05187 ± 0.00341
p1 139.6 ± 0.6
p2 71.79 ± 0.56
p3 4554 ± 285.1
ch 50
counts
ch


64mA0mT
χ² / ndf 2842 / 996
p0 0.3214 ± 0.0025
p1 175.1 ± 0.3
p2 64.49 ± 0.23
p3 3624 ± 26.9
ch 50
counts
ch


64mA0mT2
χ² / ndf 2481 / 942
p0 0.2603 ± 0.0025
p1 174.4 ± 0.3
p2 64.16 ± 0.24
p3 3698 ± 32.8
ch 50
counts
ch

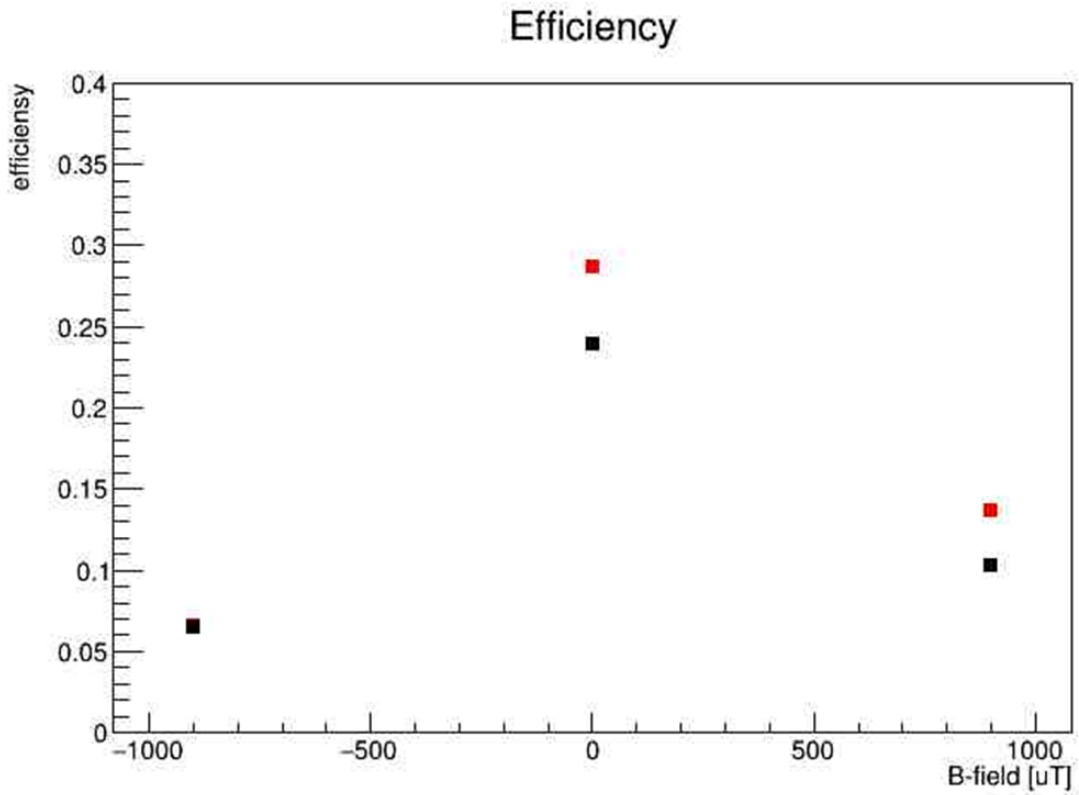

64mA900uT
χ² / ndf 1047 / 858
p0 0.1727 ± 0.0036
p1 135.7 ± 0.4
p2 61.68 ± 0.40
p3 3429 ± 60.5
ch 50
counts
ch


64mA900uT2
χ² / ndf 1326 / 976
p0 0.1451 ± 0.0039
p1 134.8 ± 0.4
p2 61.82 ± 0.46
p3 3003 ± 69.0
ch 50
counts
ch

The number of clock generator's signal for ten mins.
This frequency is 1 kHz.

| count |
|---|
| 599767 |

red : 1st time
black: 2nd time




Efficiency of PMT

| | -900uT | -900uT2 | 0mT | 0mT2 | 900uT | 900uT2 |
|---|---|---|---|---|---|---|
| count | 39496 | 38588 | 172074 | 143646 | 82079 | 61464 |
| efficiency | 0.065852 | 0.064338 | 0.286901 | 0.239503 | 0.136851 | 0.10248 |

# To the next

- I’m going to measure PMT’s efficiency in lower B-field.
- I’m going to make B-field in the direction parallel to PMT’s photoelectric surface and measure PMT’s efficiency.

Note: Earth’s magnetic field is about 30 uT.