# S-2S MEMO

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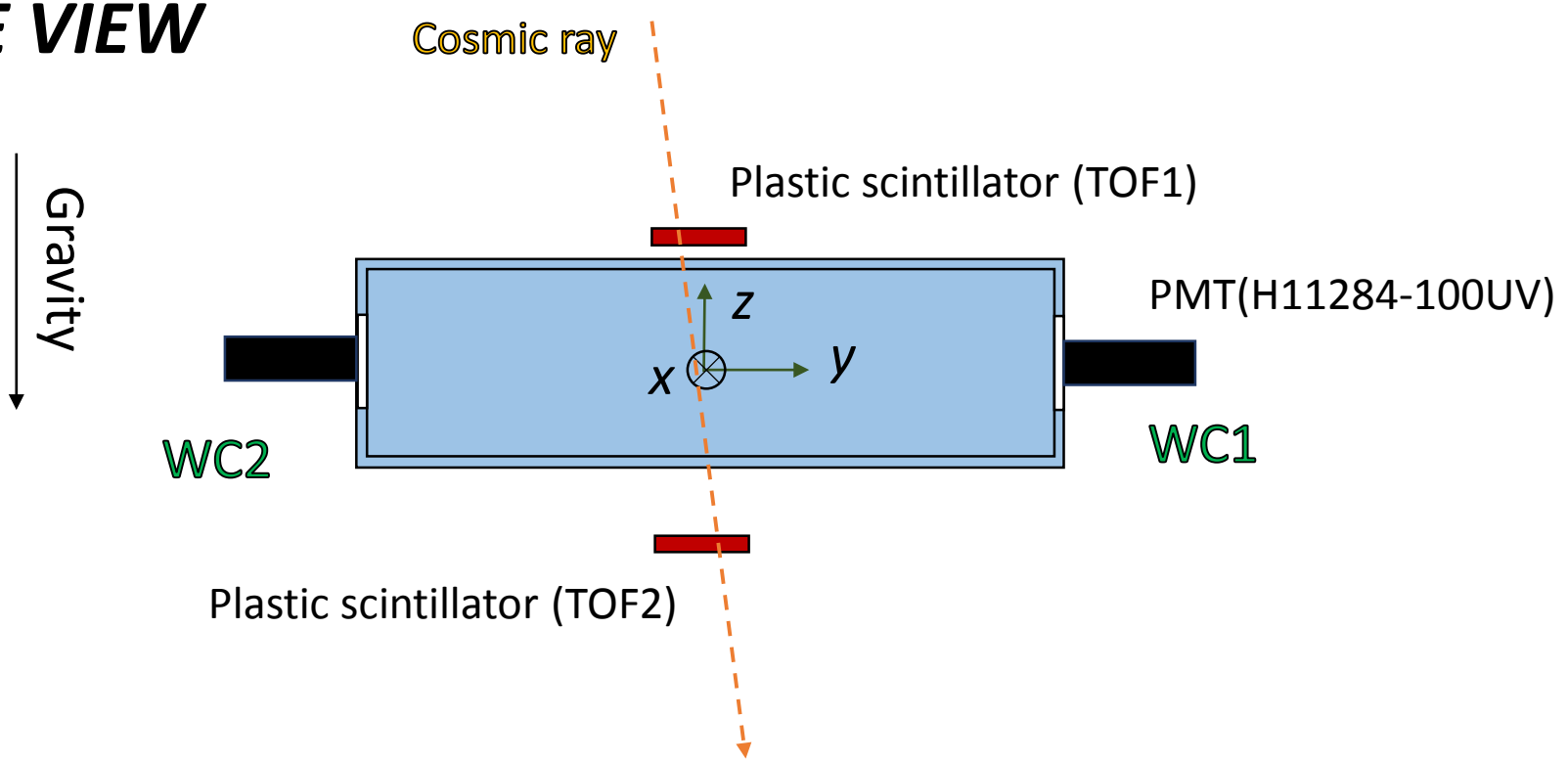
# Contents

Analysis results of WC test

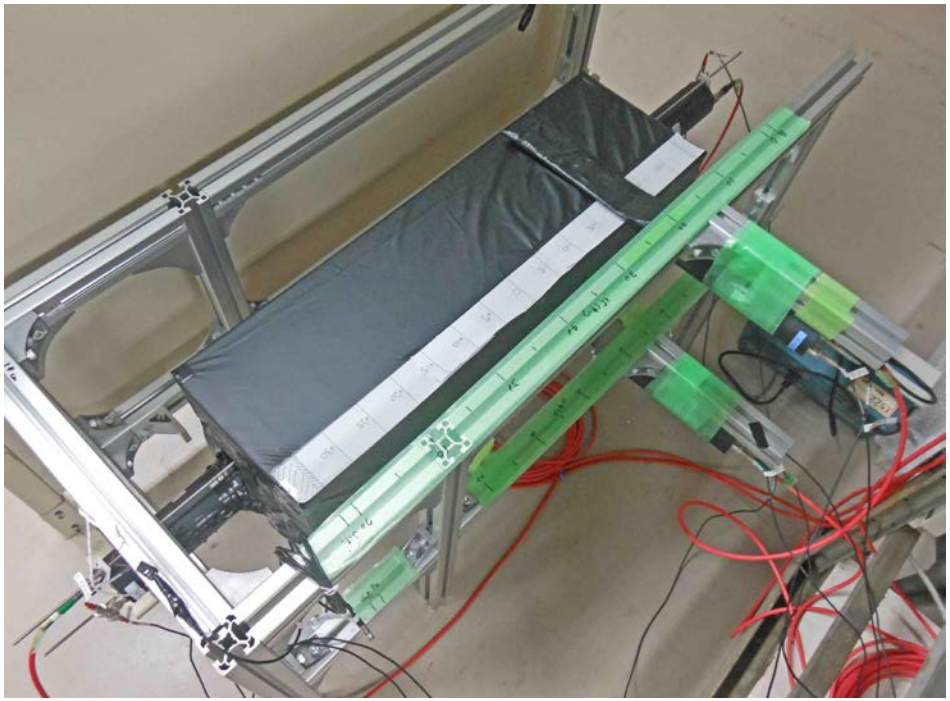
# Experimental setup

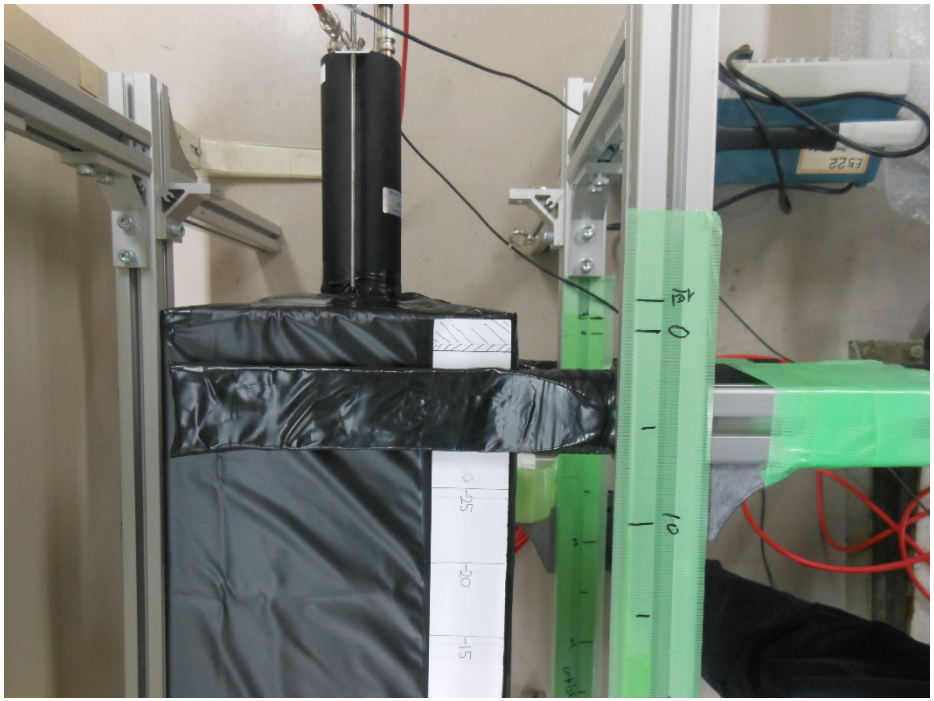
***SIDE VIEW***




Outer size: $730^{h} \times 230^{w} \times 180^{t}$

# Pictures of WC
# at room.319 in Kyoto Univ.



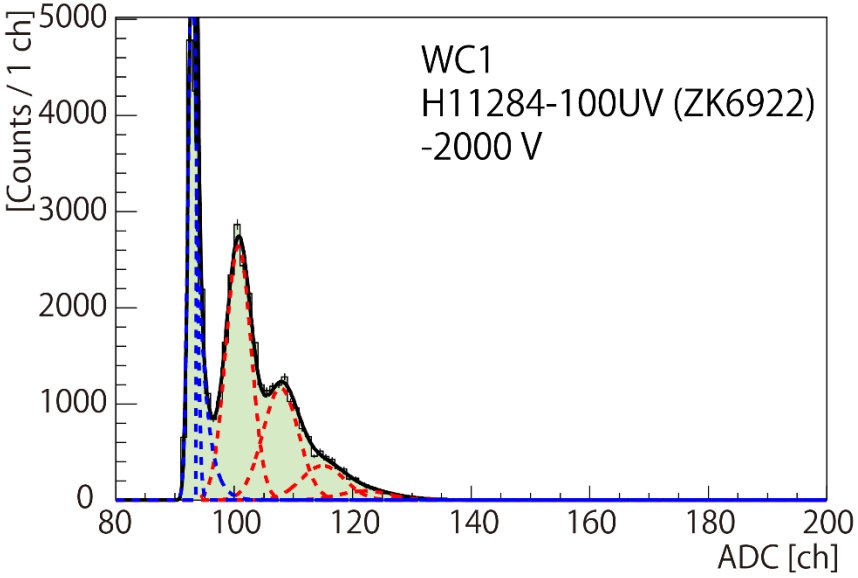


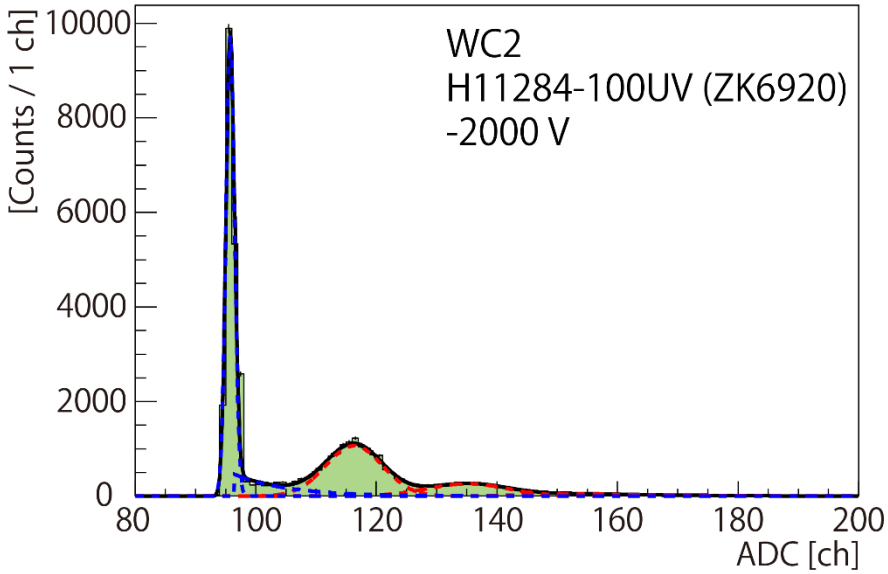
# Run summary

http://www-nh.scphys.kyoto-u.ac.jp/~gogami/s-2s/doc/wctest2015/RunSummary_wctest2015.pdf

# Analysis

# NPE calibration using LED




Obtain ADC channels per NPE

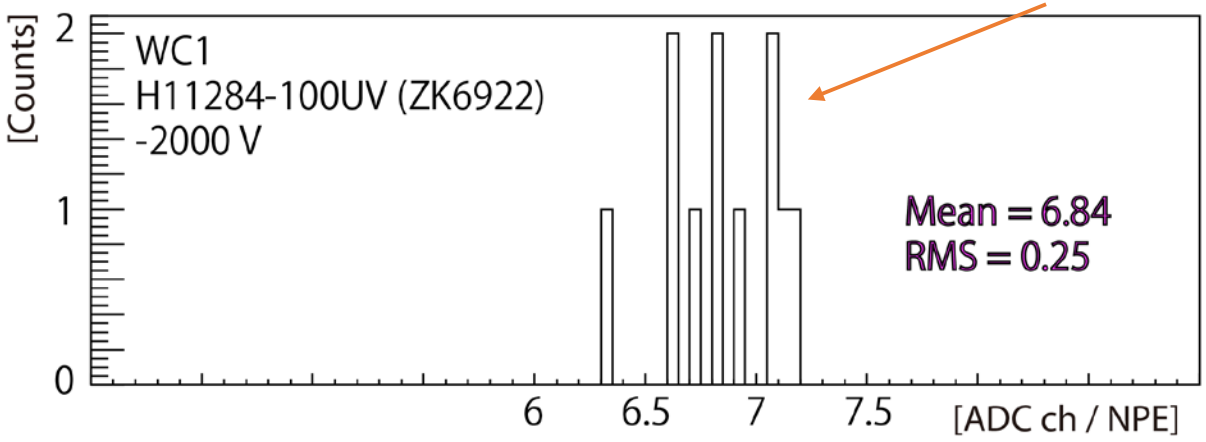
But !!!

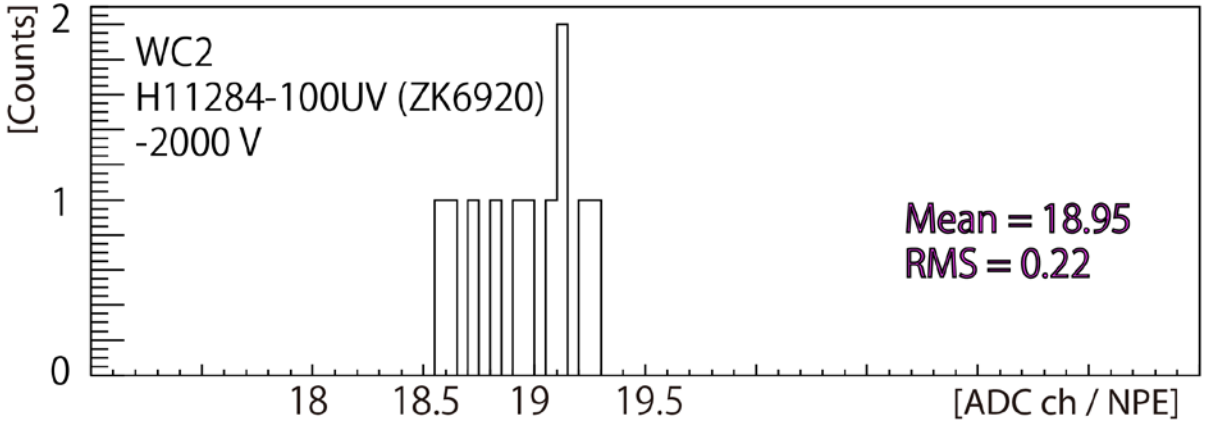
Fluctuate from time to time due to:

- ✓ Fitting results
- ✓ Performance fluctuations of electric circuit and PMT *etc.*

# Ensemble of calibration data

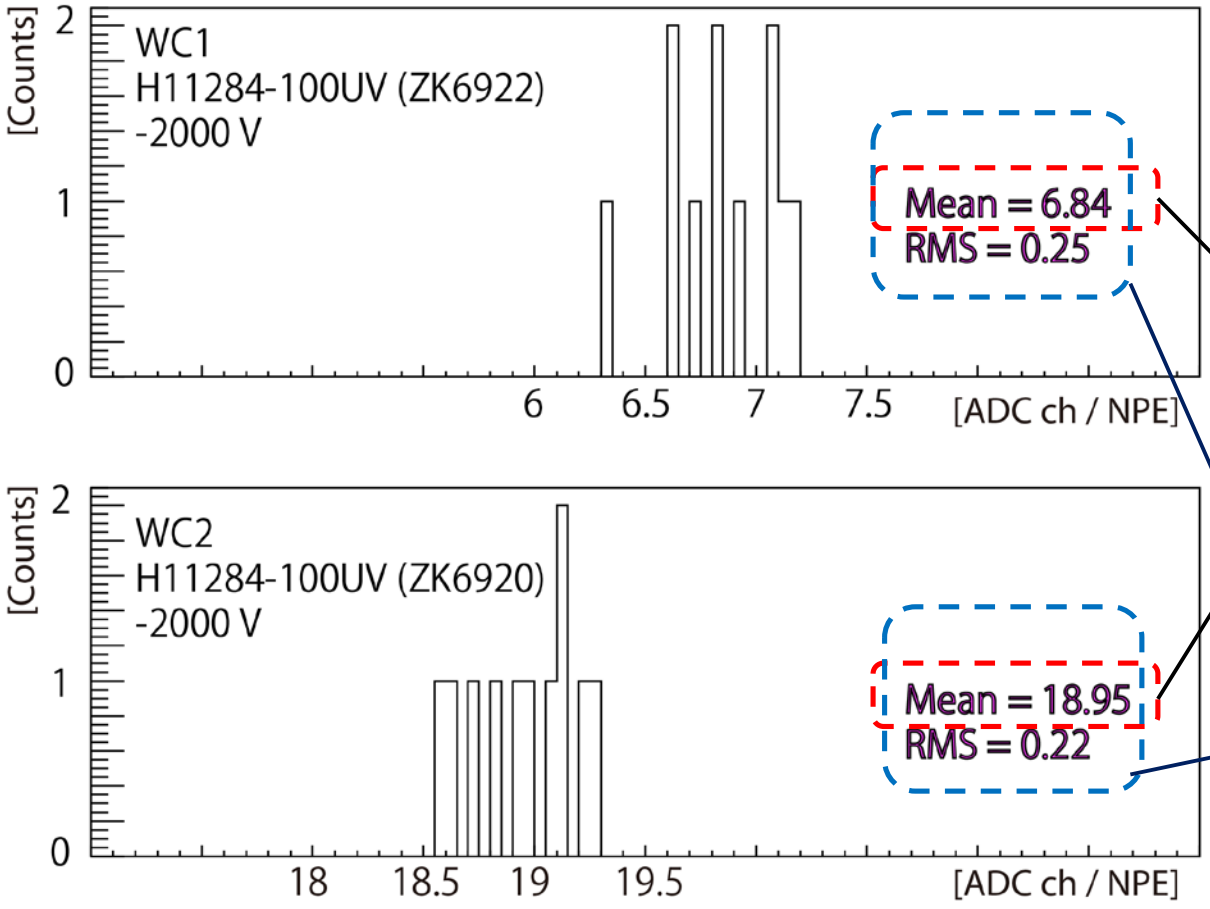
Filled fitting results of each calibration run.




Run ID:
3, 5, 7, 9, 11, 13, 15, 17, 18 , 20 and 21

# Ensemble of calibration data




Used for a conversion from ADC ch to NPE

Systematic error:
0.25 / 6.84 for WC1
0.22 / 18.95 for WC2

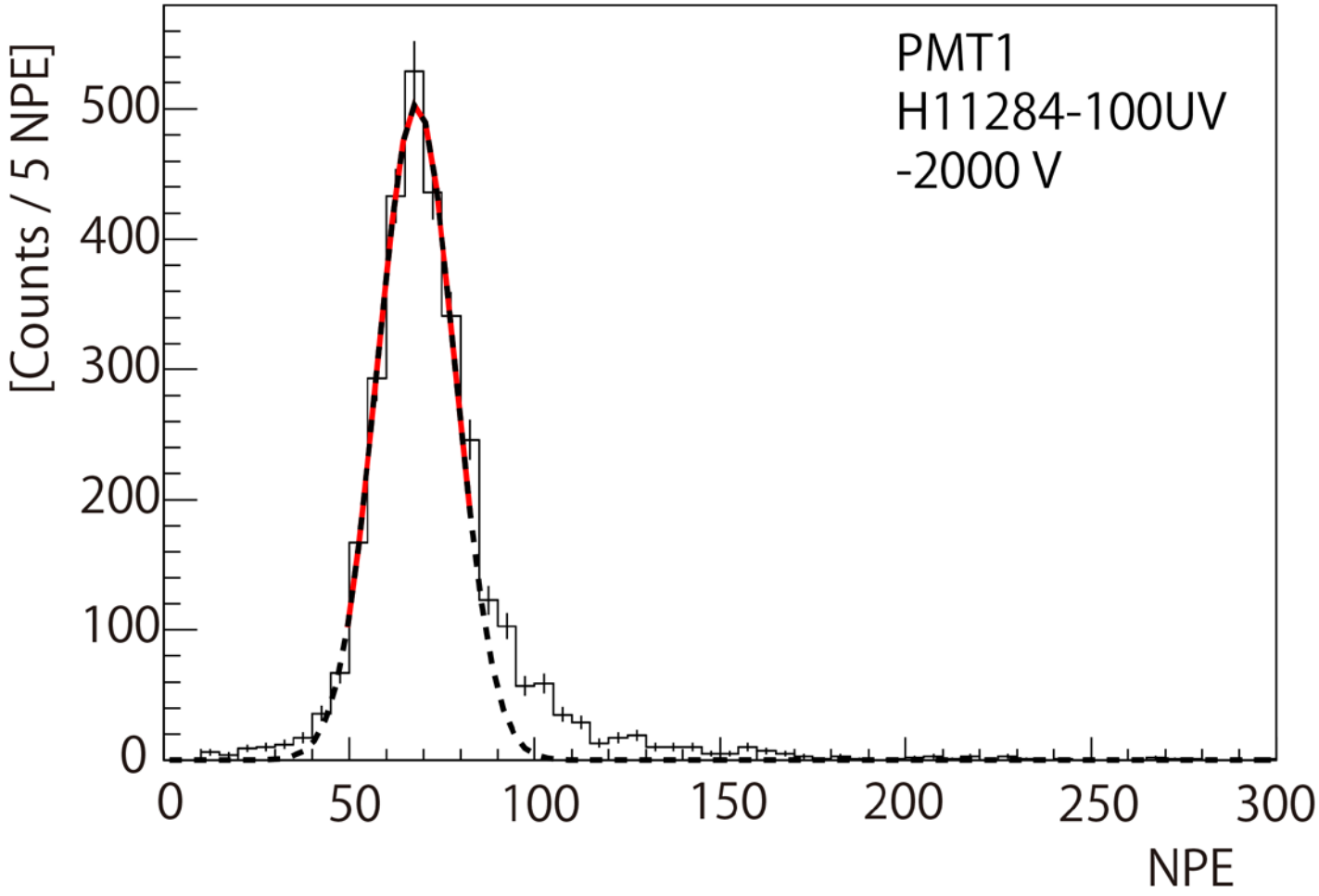
Run ID:
3, 5, 7, 9, 11, 13, 15, 17, 18 , 20 and 21

# NPE derivation from NPE histograms

Used function: Single Gaussian function

1. Scan a fitting range to minimize the fitting chi-square
2. Obtain the mean value → Used as a result

# A typical NPE histogram with a fitting result

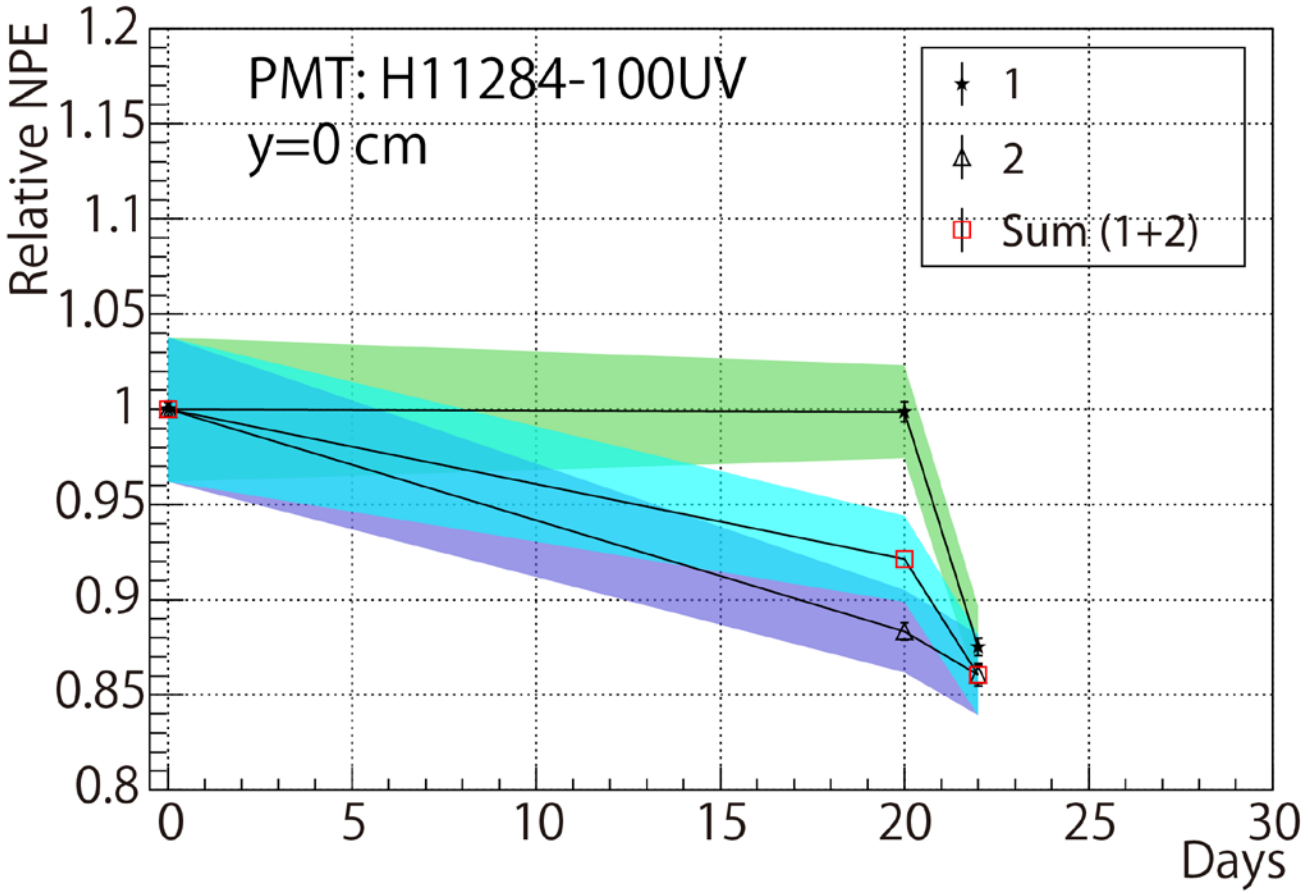



Run37 for y=0 cm

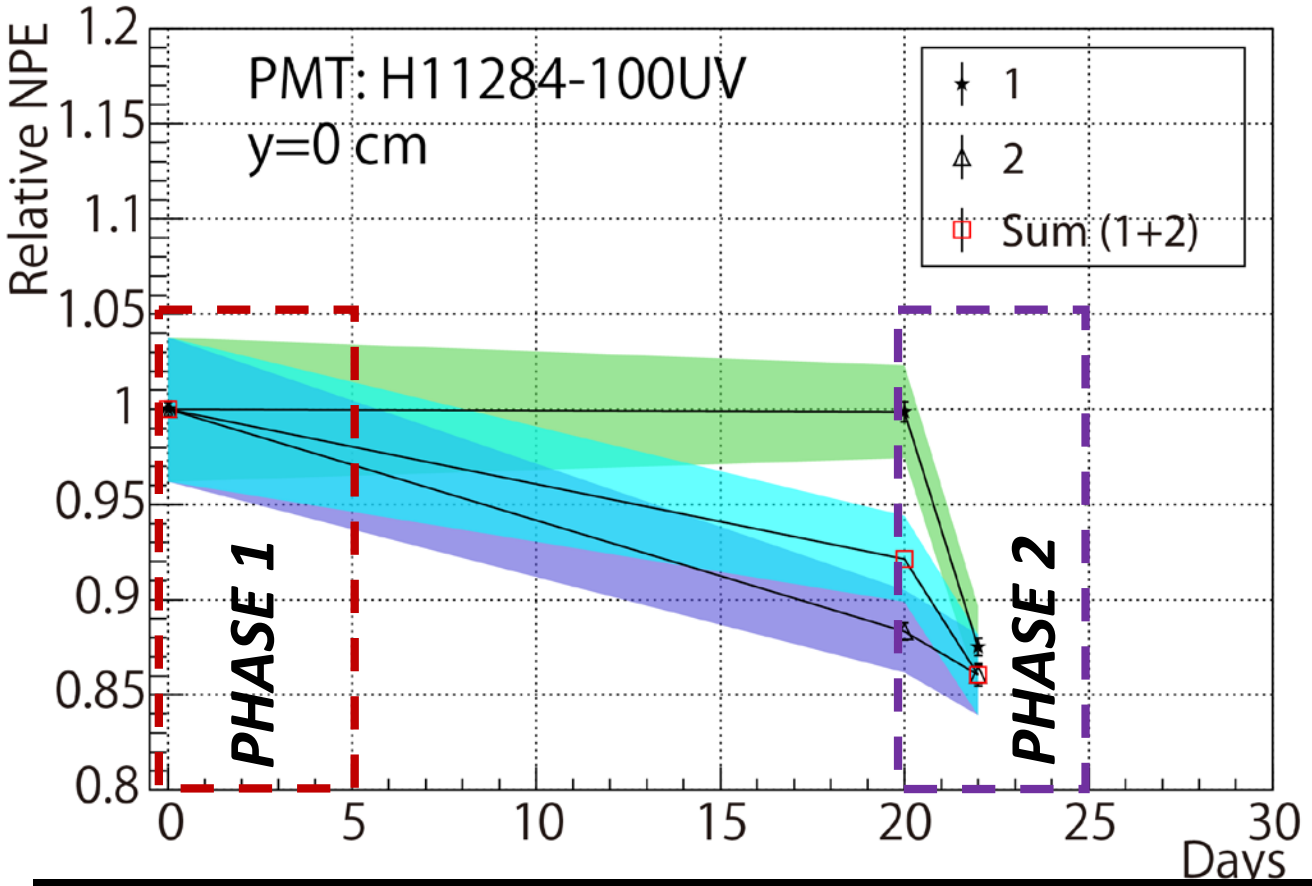
# Data phase

- Phase 1 (4/21 – 4/25)
- Phase 2 (5/11 – )

# NPE comparison between Phase1 and Phase2 at y=0

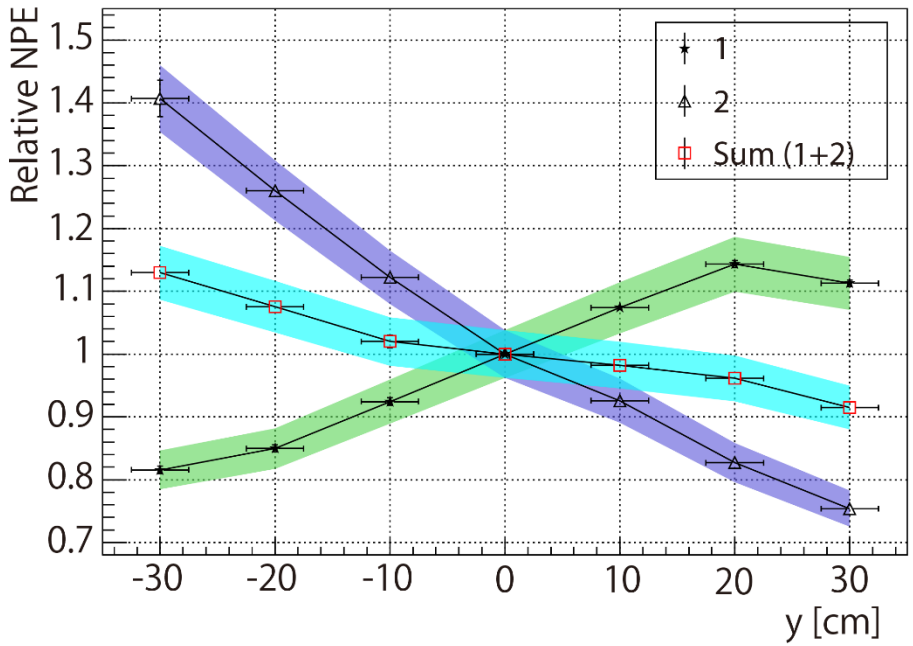


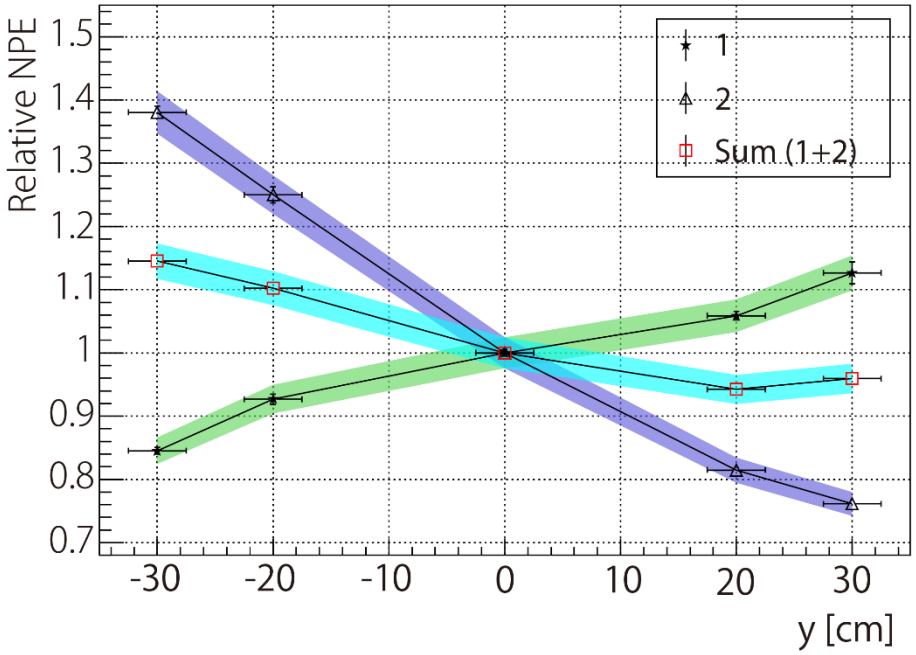
# NPE comparison between Phase1 and Phase2 at y=0




Reducing ? → will keep taking data more.

# y-dependence for Phase 1 and 2

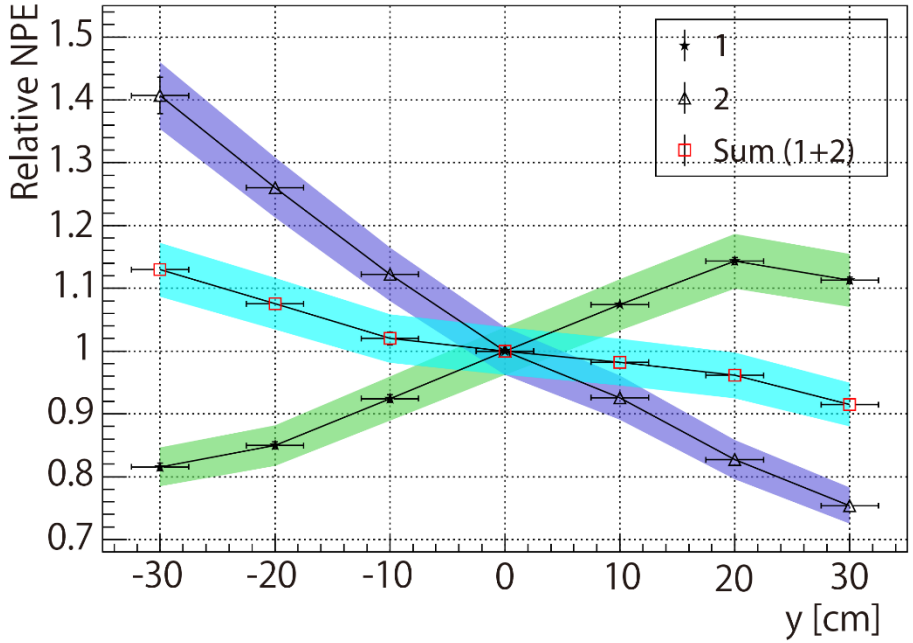


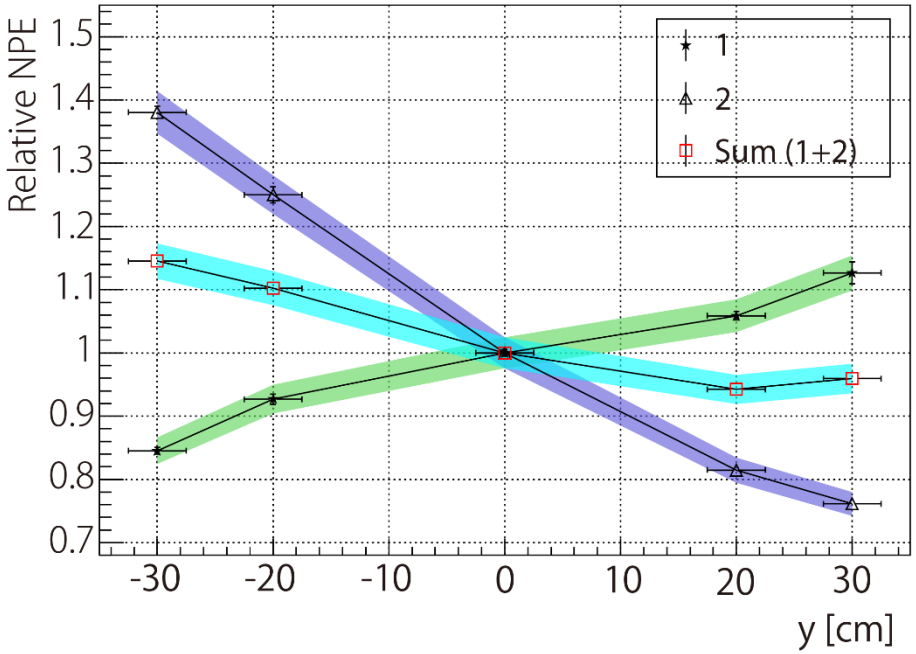




Phase 1 ⟷ Phase 2

Tendency is consistent with the errors.

# y-dependence for Phase 1 and 2




Phase 1 ⟷ Phase 2

Tendency is consistent with the errors.

At y = 0 cm,
(PMT1, PMT2, Sum )
= (77.8±0.3, 99.0±0.4, 176.5±0.7)

*REDUCED !!*

At y = 0 cm,
(PMT1, PMT2, Sum )
= (68.0±0.5, 86.3±0.6, 154.0±0.7)

# Summary

NPE is reducing…

The reduction may be caused by water deterioration due to caulking material (Bathcaulk-N).

Further studies will be done !!