

# S-2S meeting

Toshiyuki Gogami

28 Oct 2014

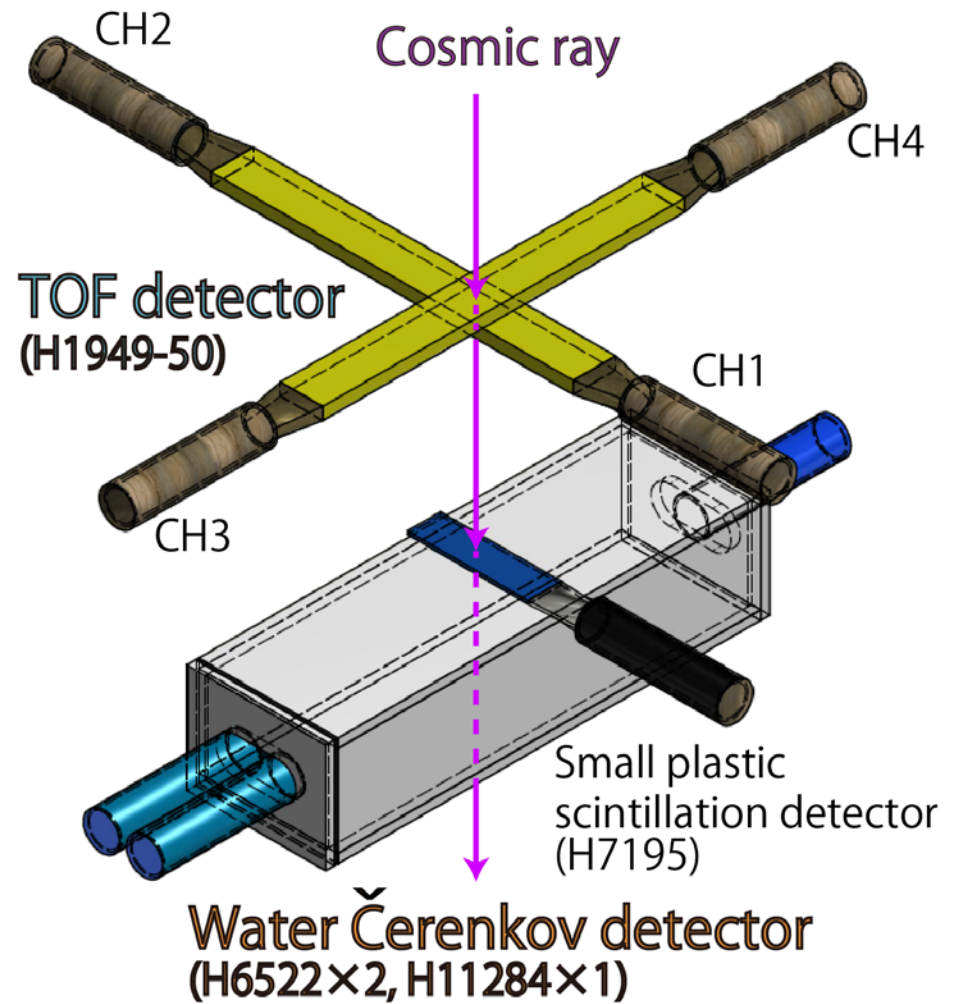
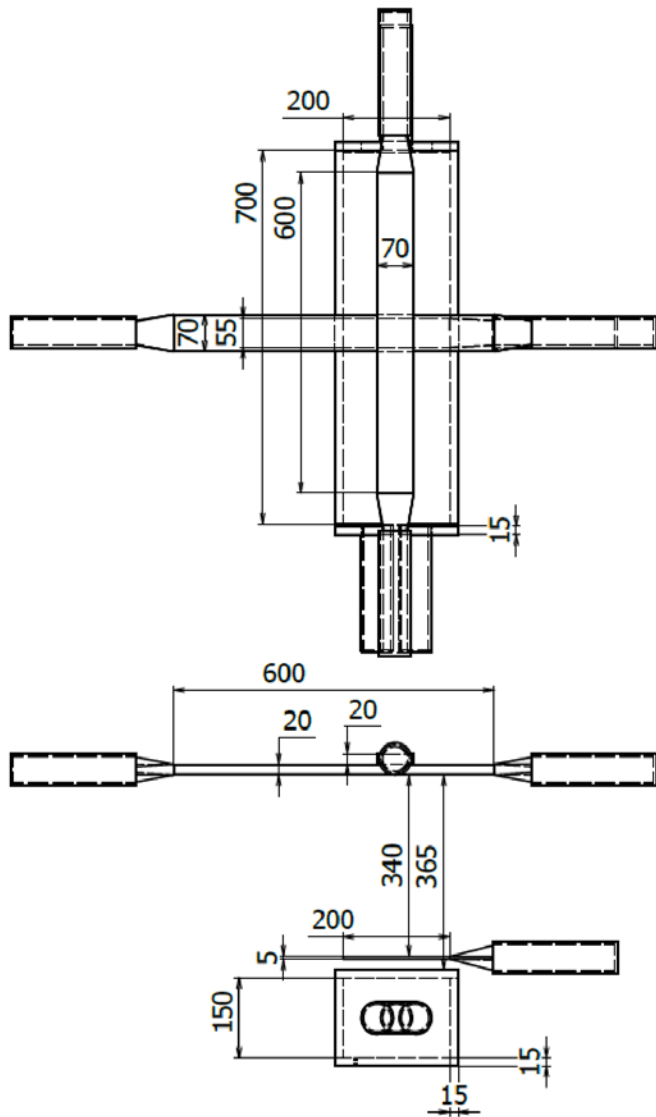


# Contents

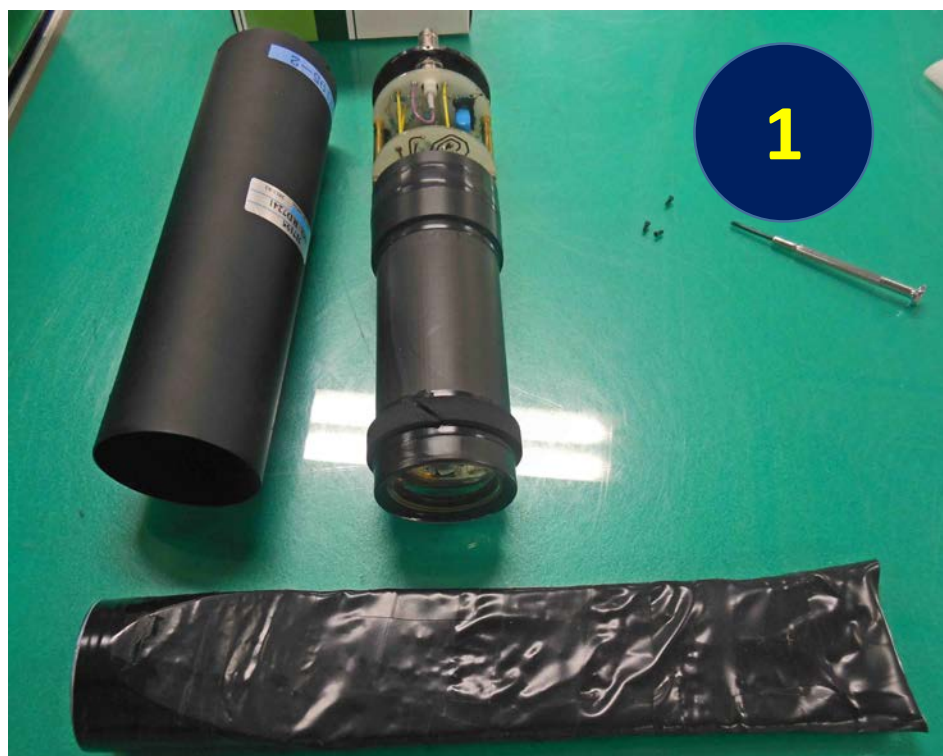
Water Cherenkov detector test with cosmic ray.

- H11284 × 1 vs. H6522 × 2

# Experimental setup



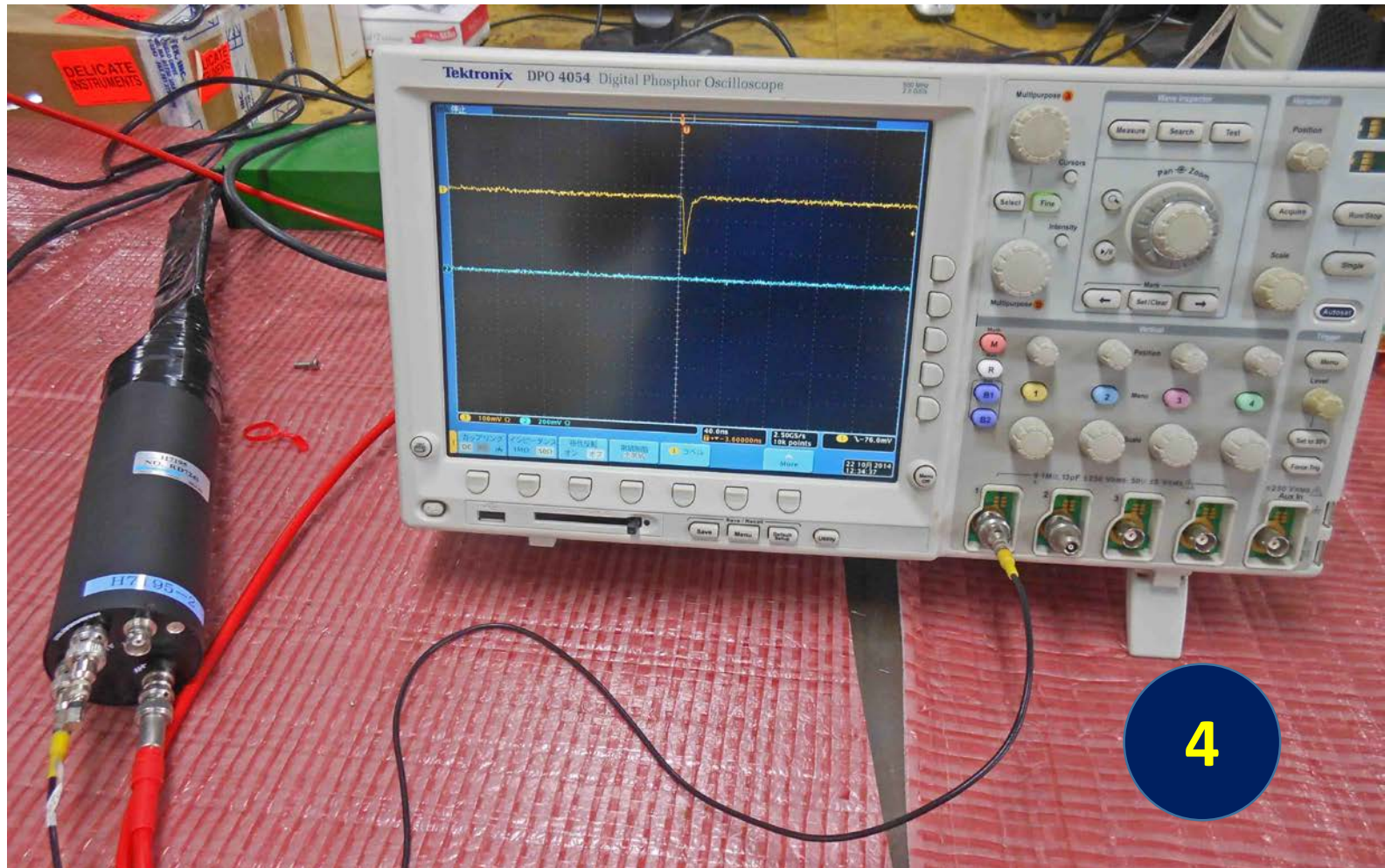
# Small plastic scintillation detector



H7195 (RD7241)

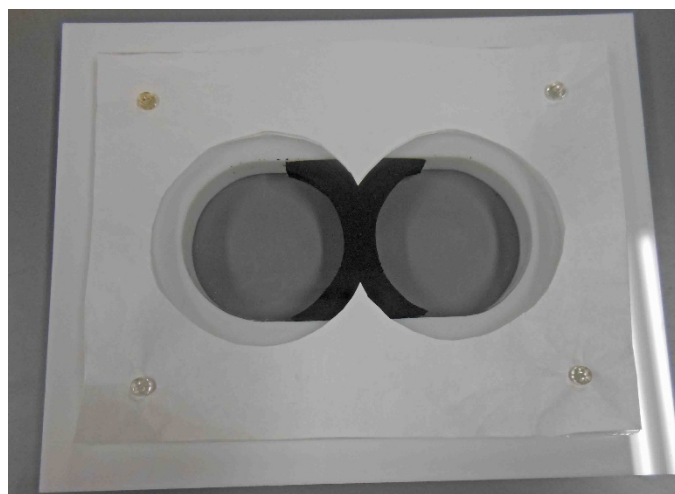
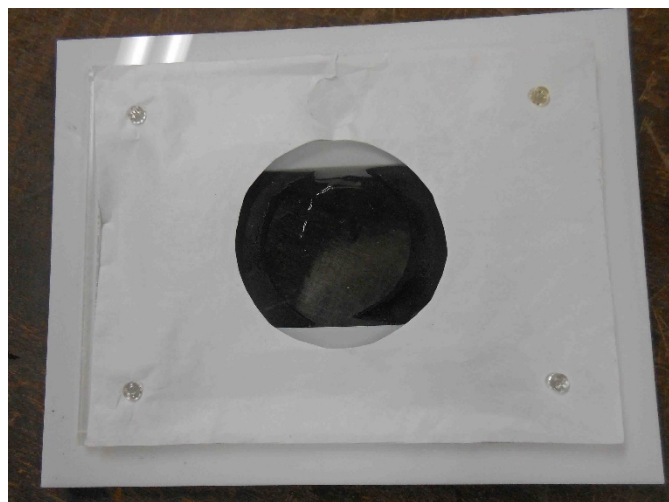
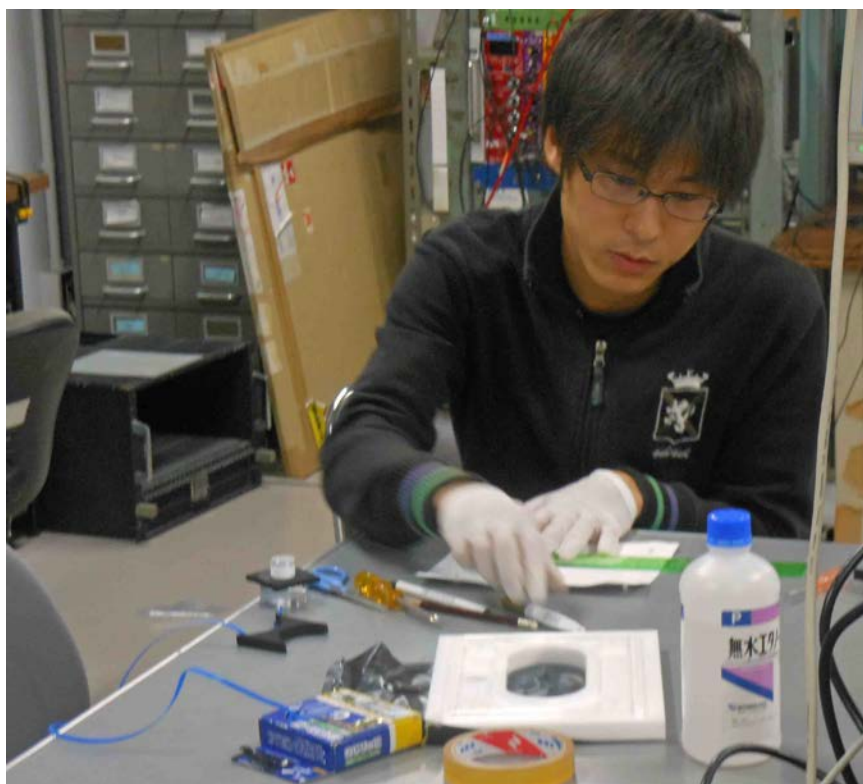


# Small plastic scintillation detector



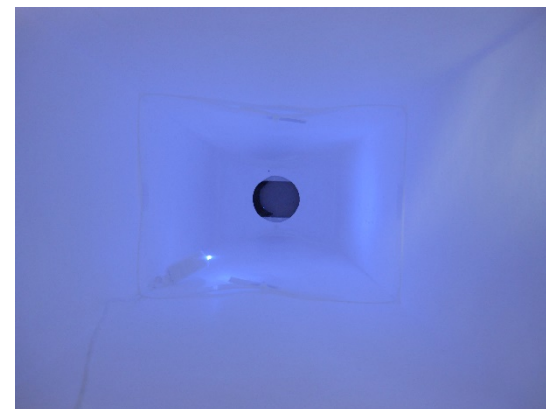
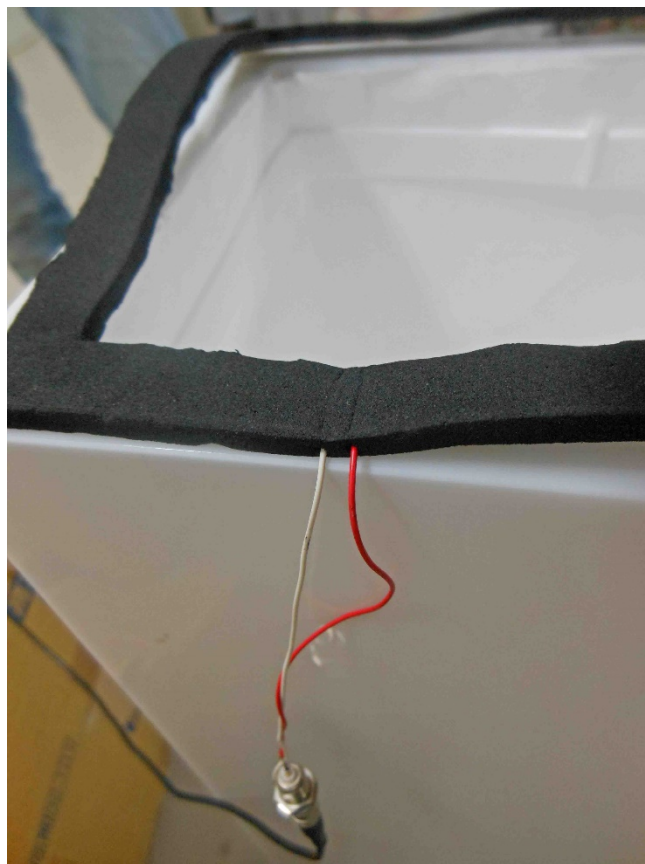
4

# WC preparation (windows)

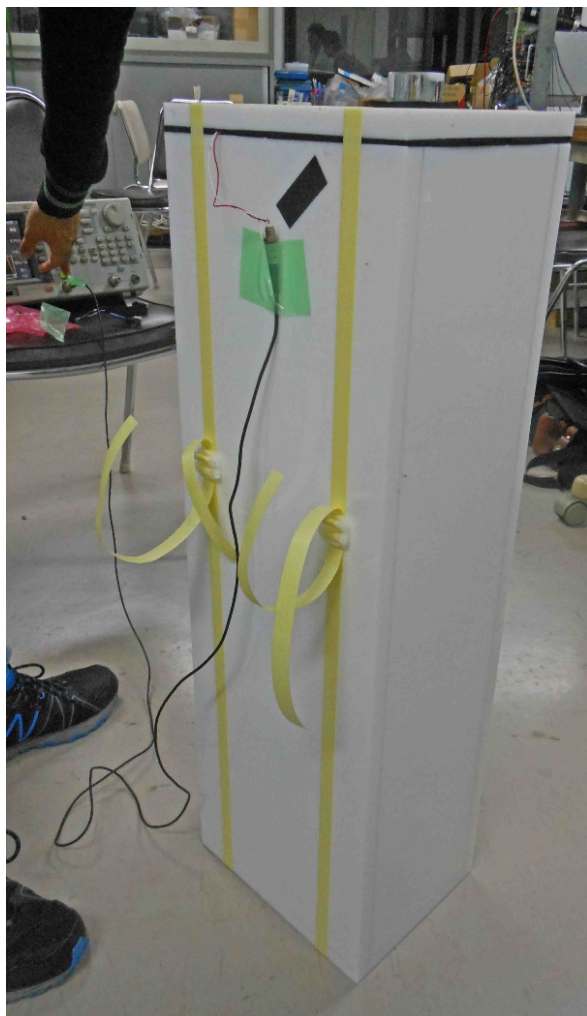




# WC preparation (LED system)

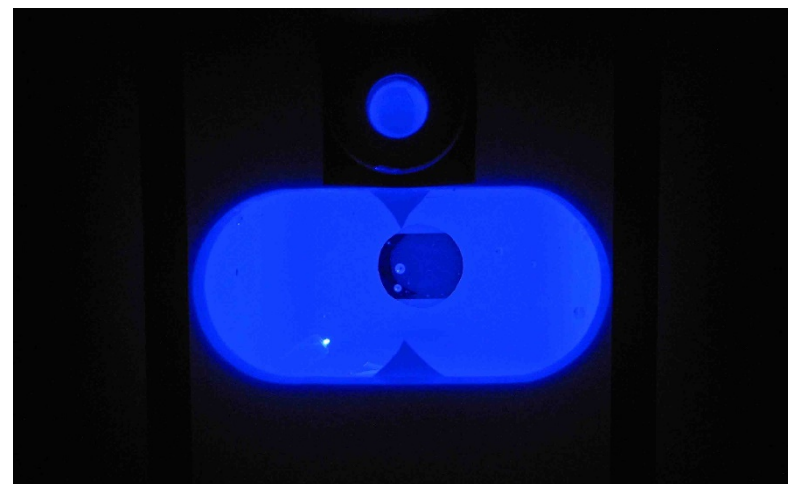


# WC preparation (pouring water)

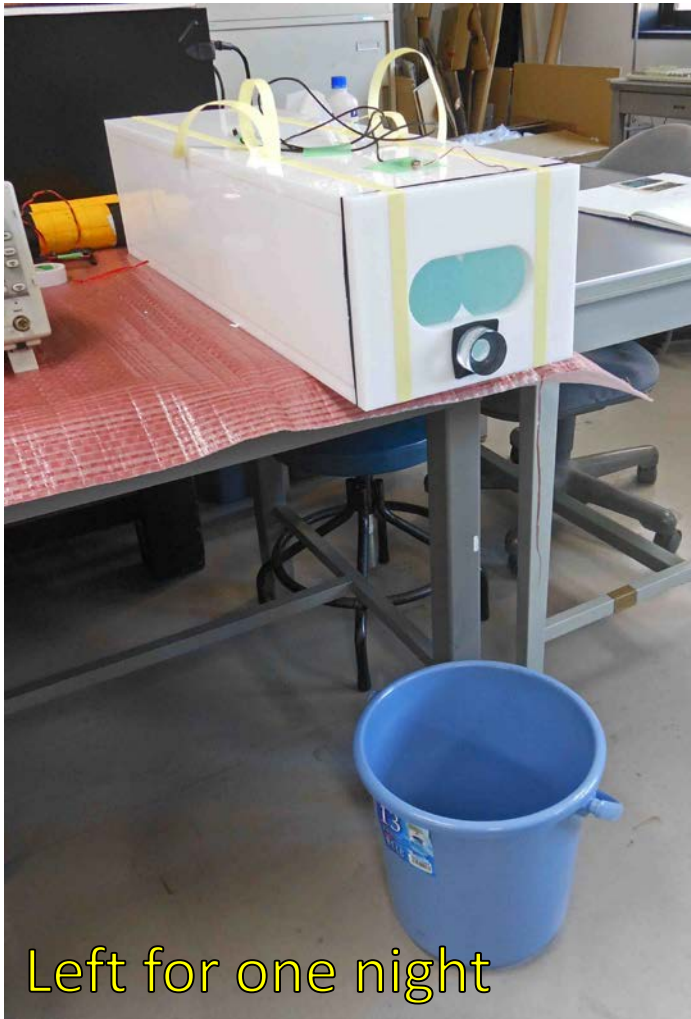




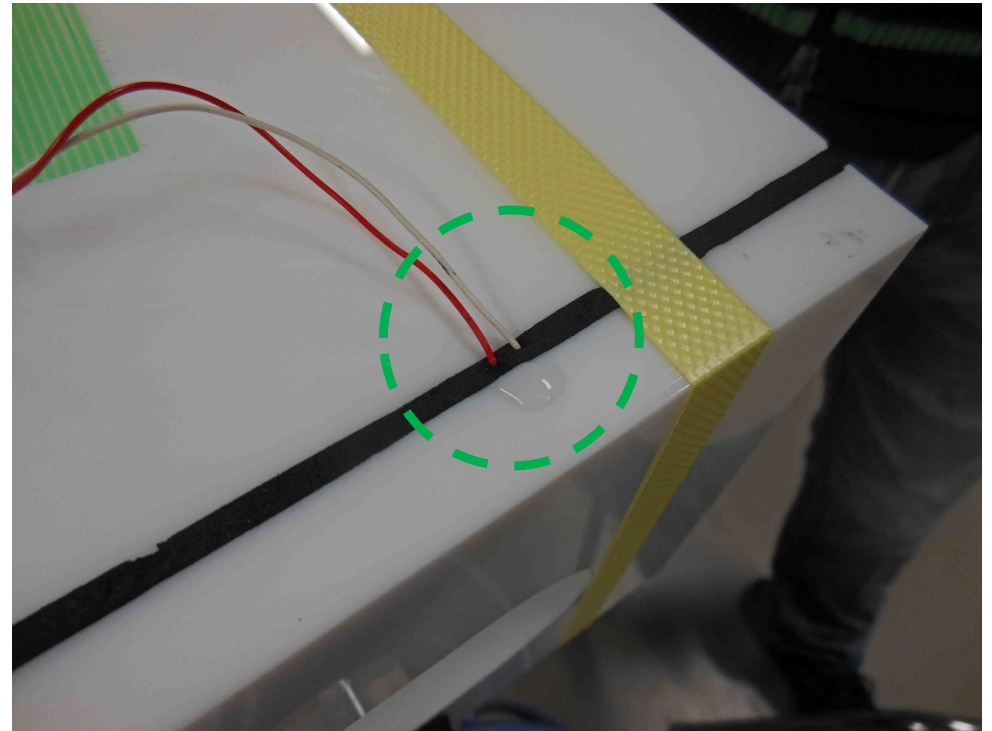
# WC preparation (LED system check)



# WC preparation (Water leakage check)

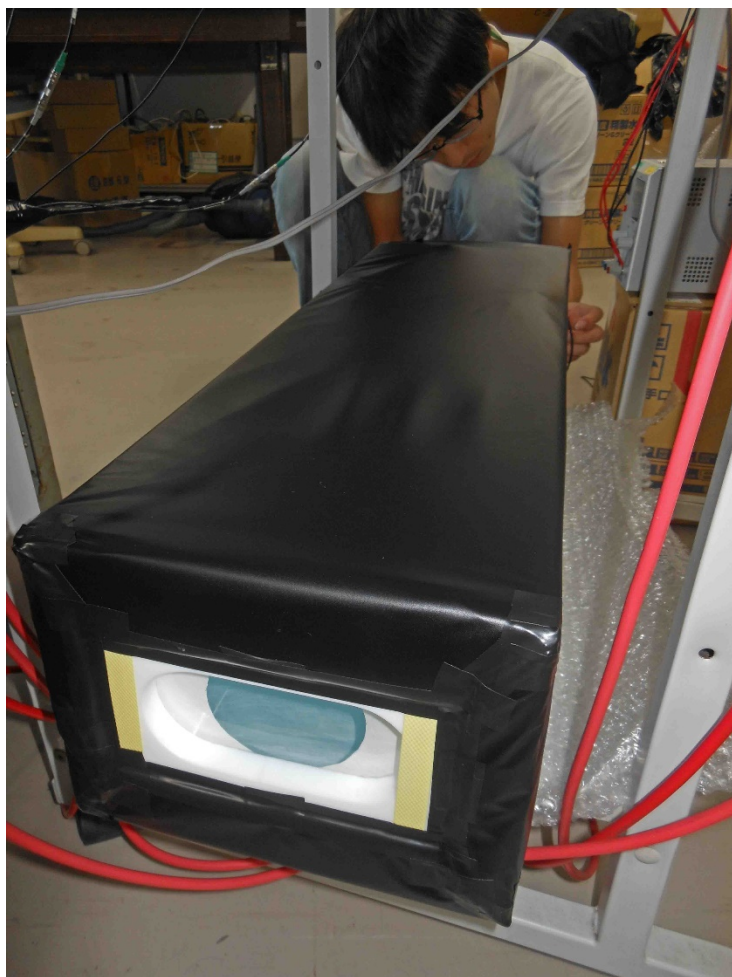


Left for one night

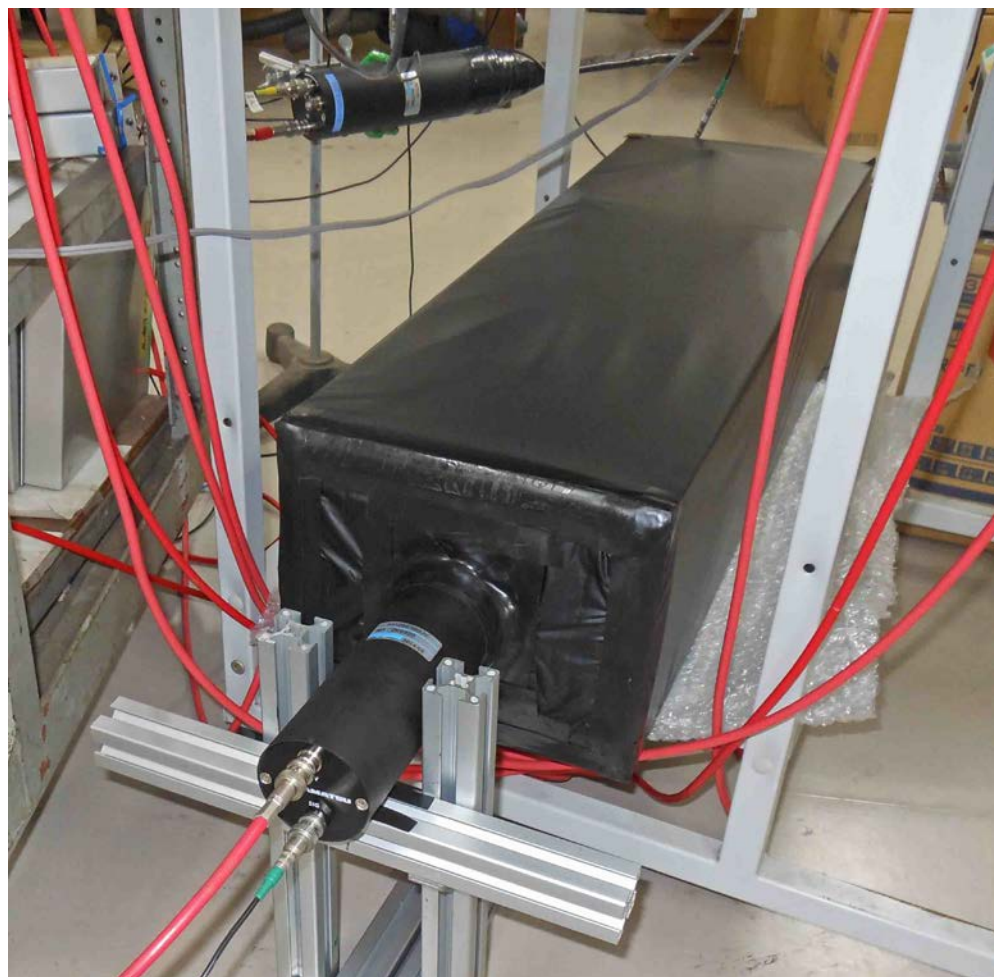


Just after water box was closed.

# WC preparation (Light tight)



Three-turn wrap

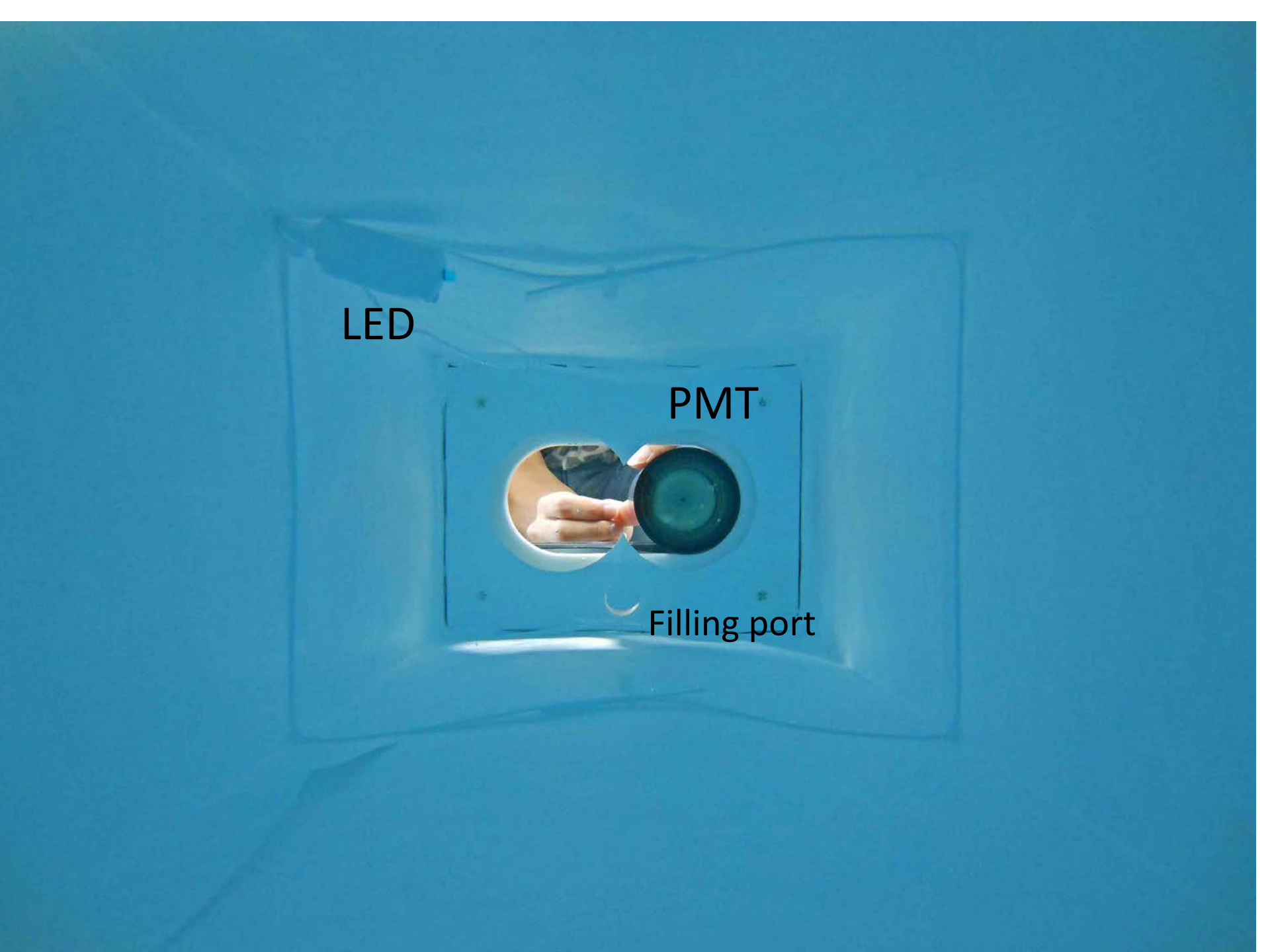




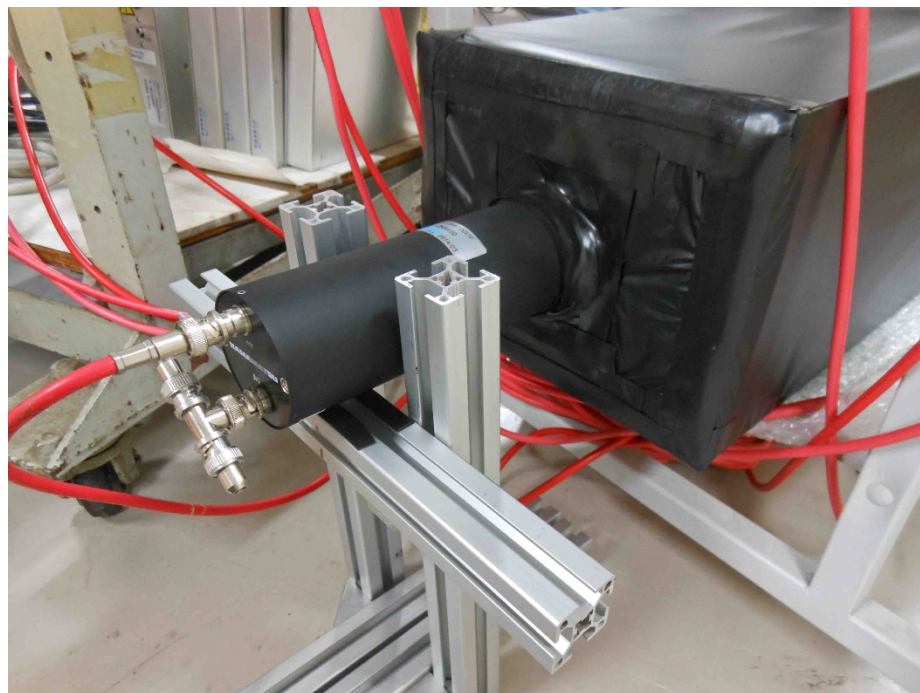
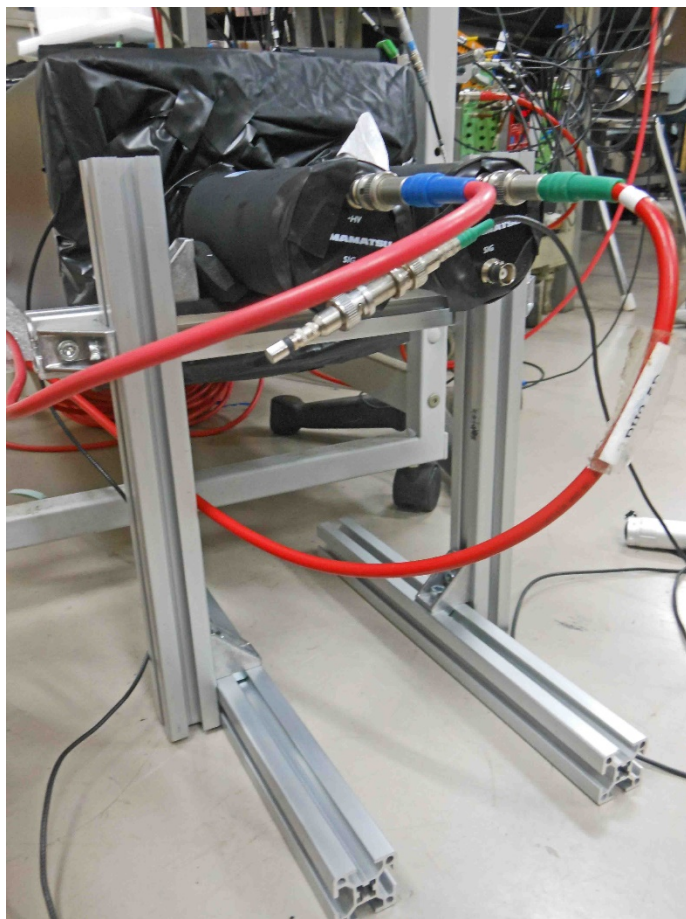
LED

PMT

Filling port



# WC preparation (PMT holder)



# Small scintillation detector

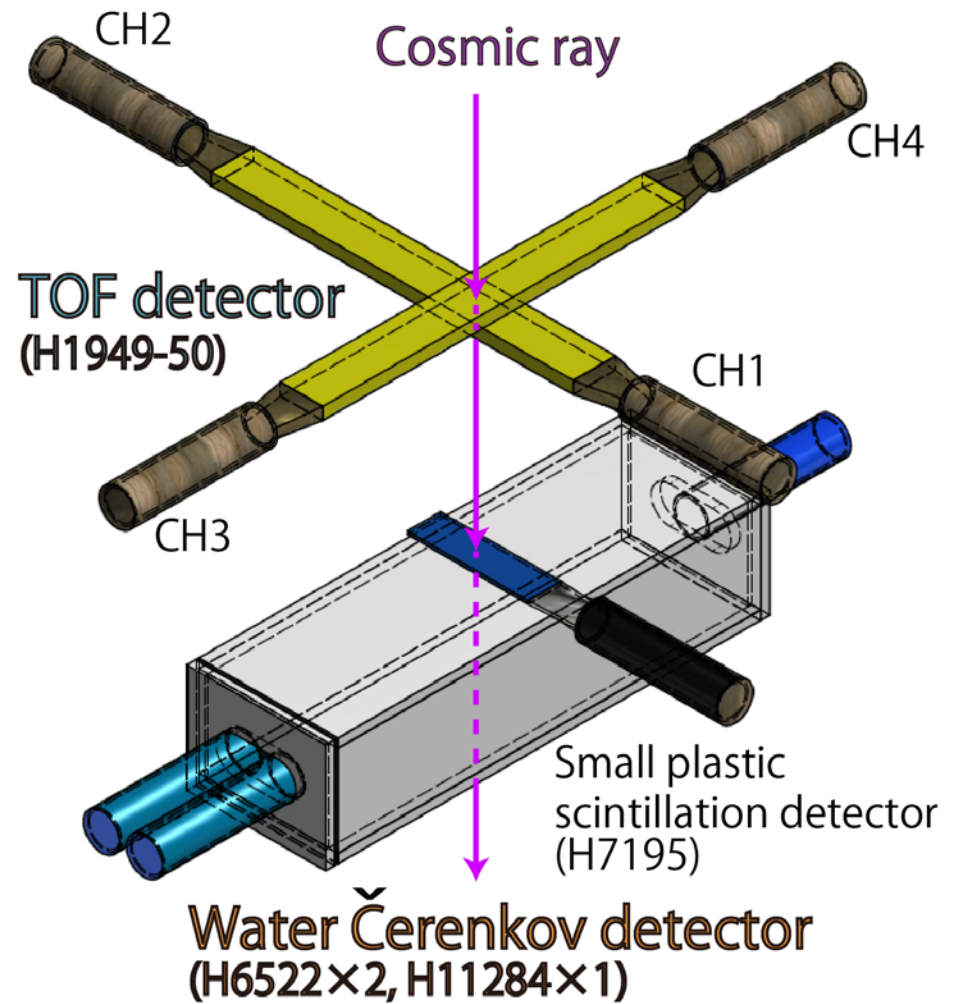
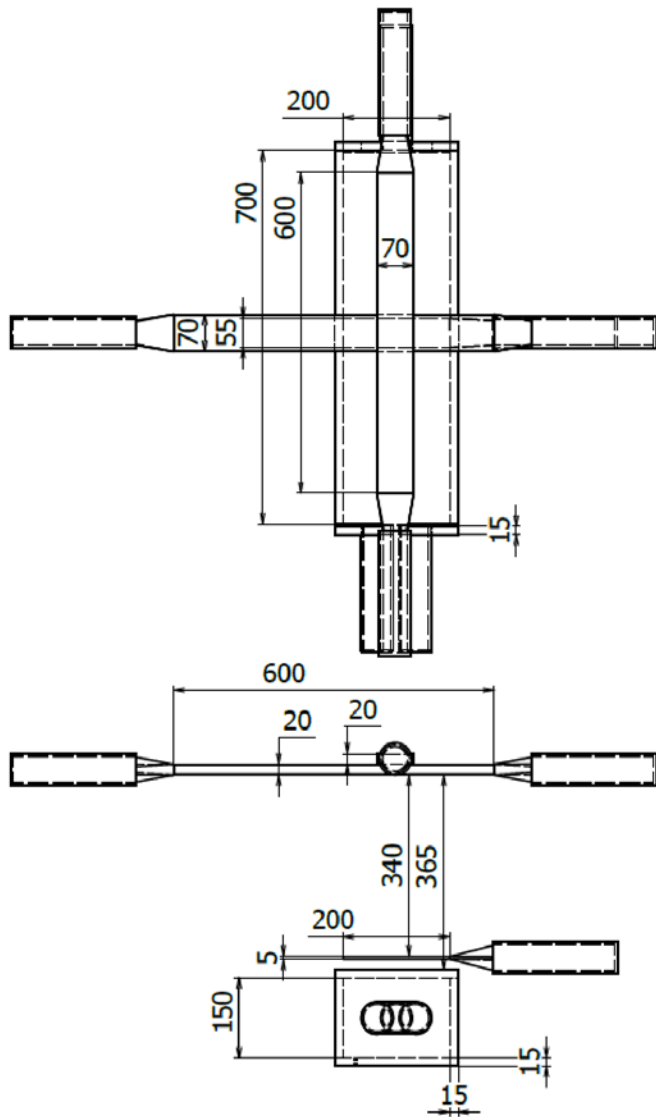


Scintillation detector

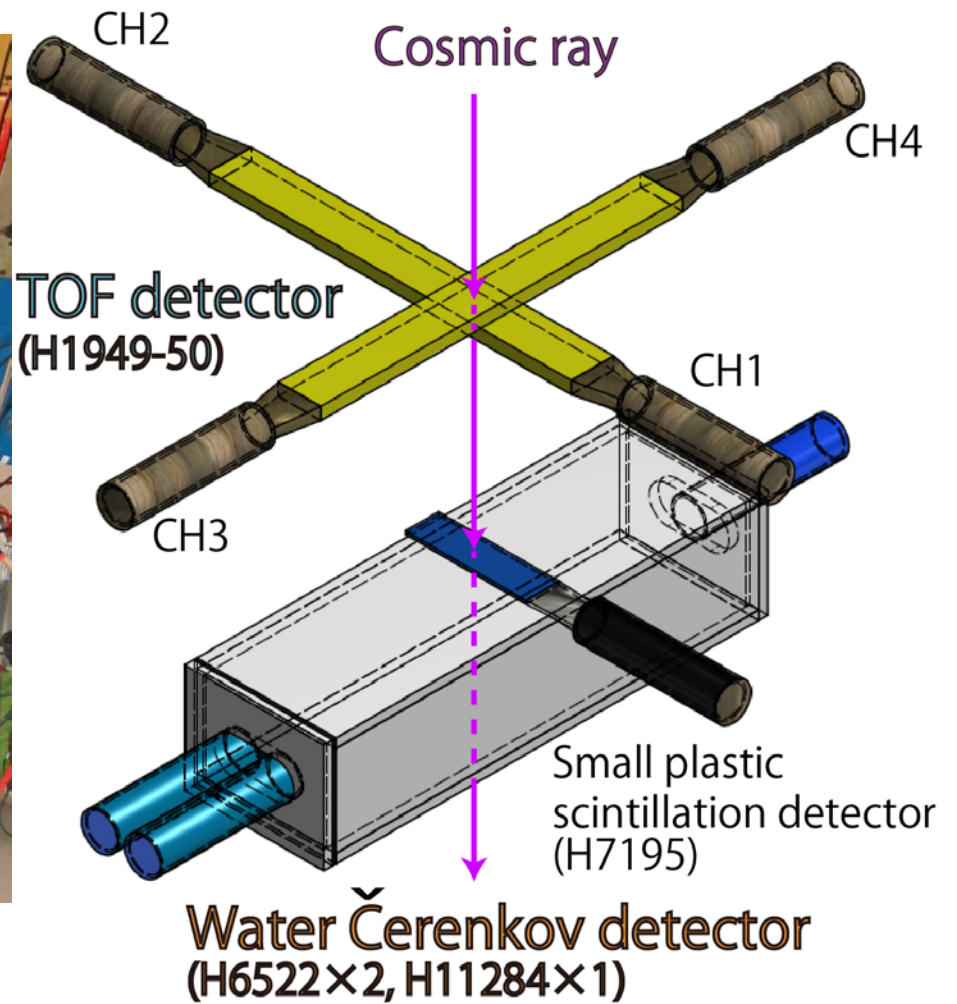
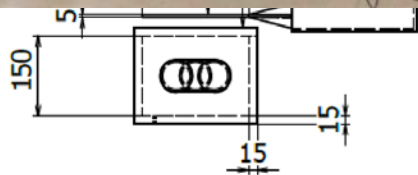
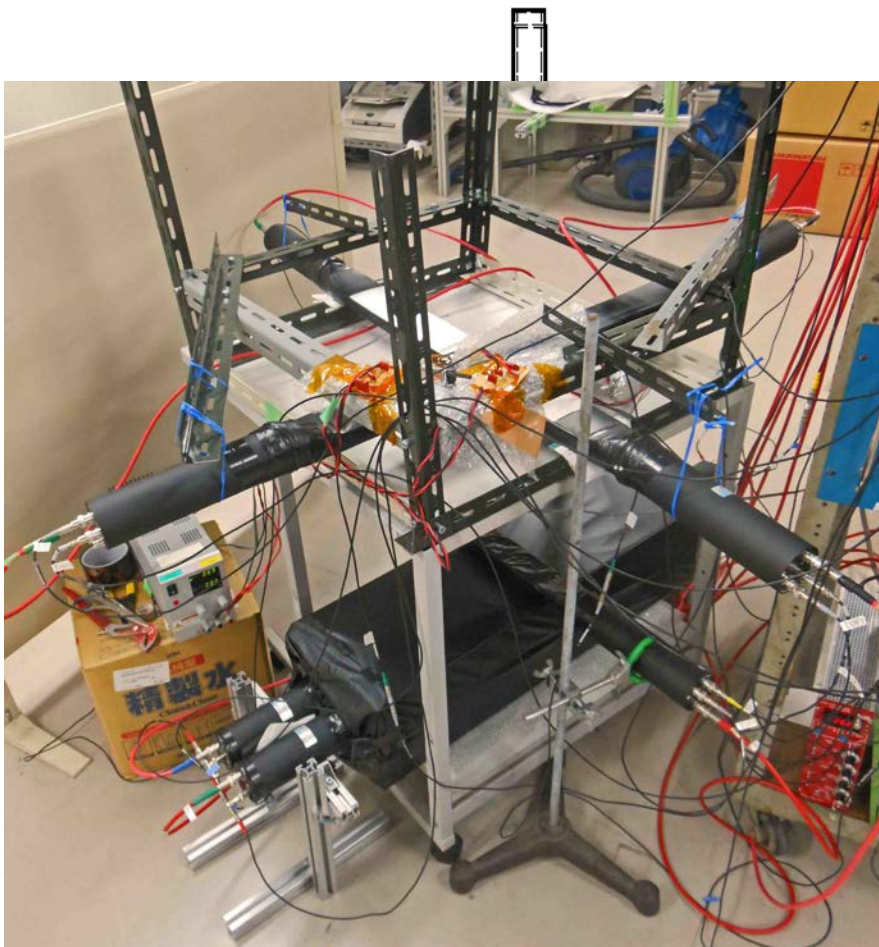
Water Cherenkov detector



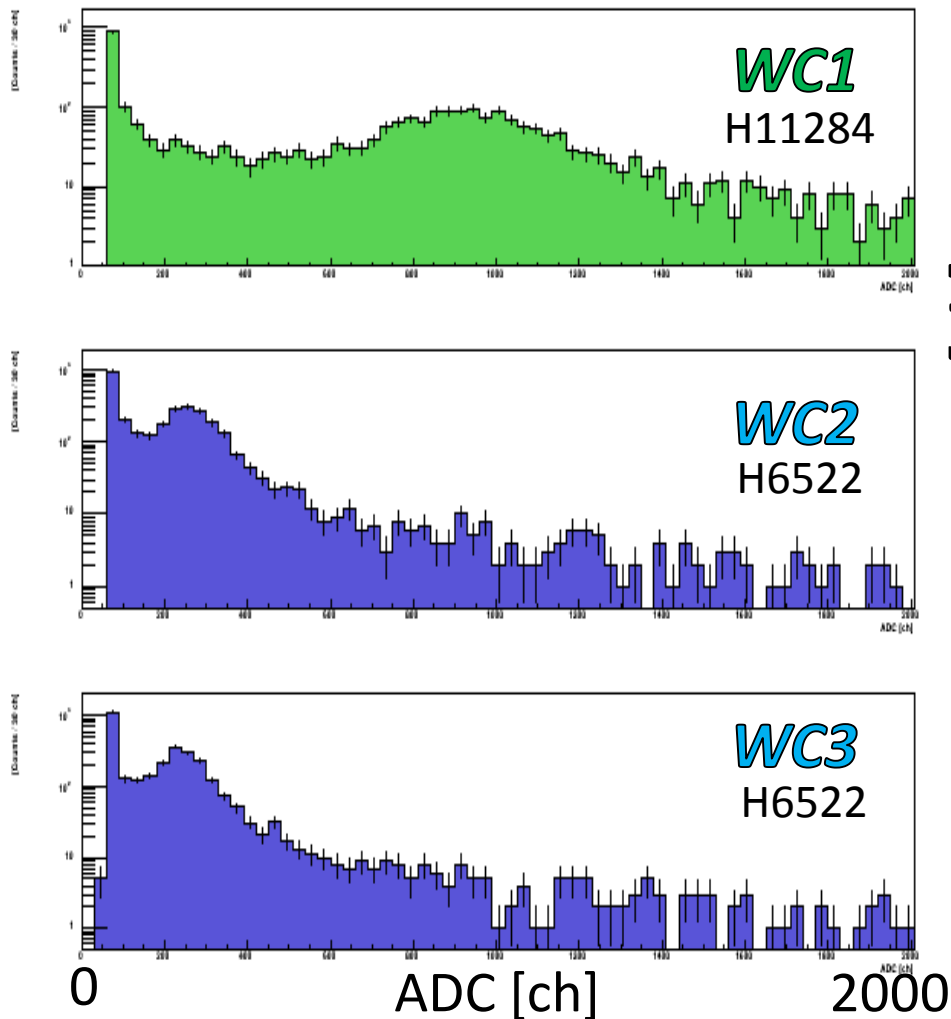
# Experimental setup



# Experimental setup

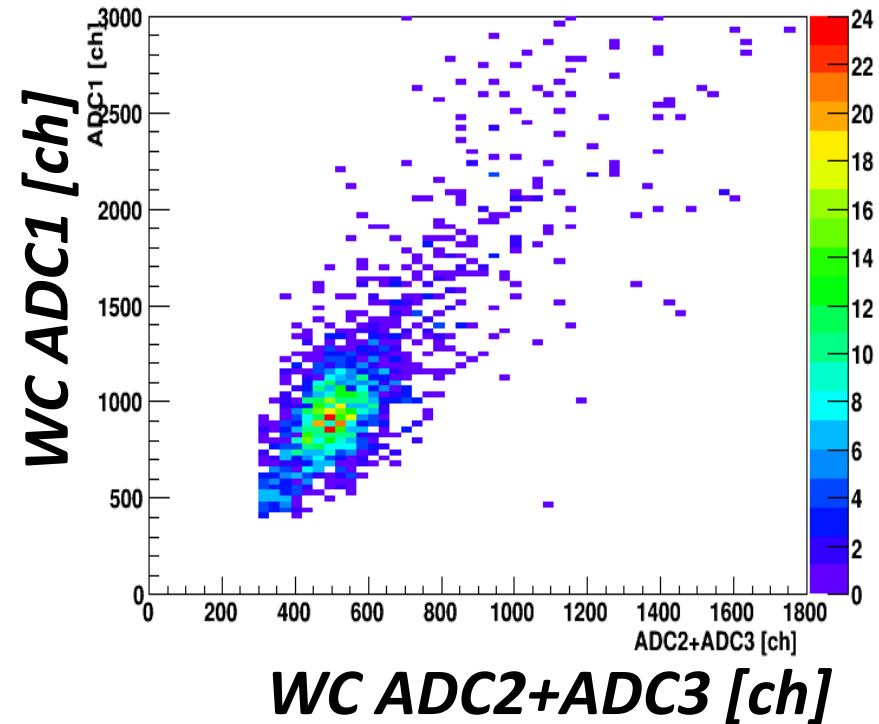


# ADC spectra of Water Cherenkov detector



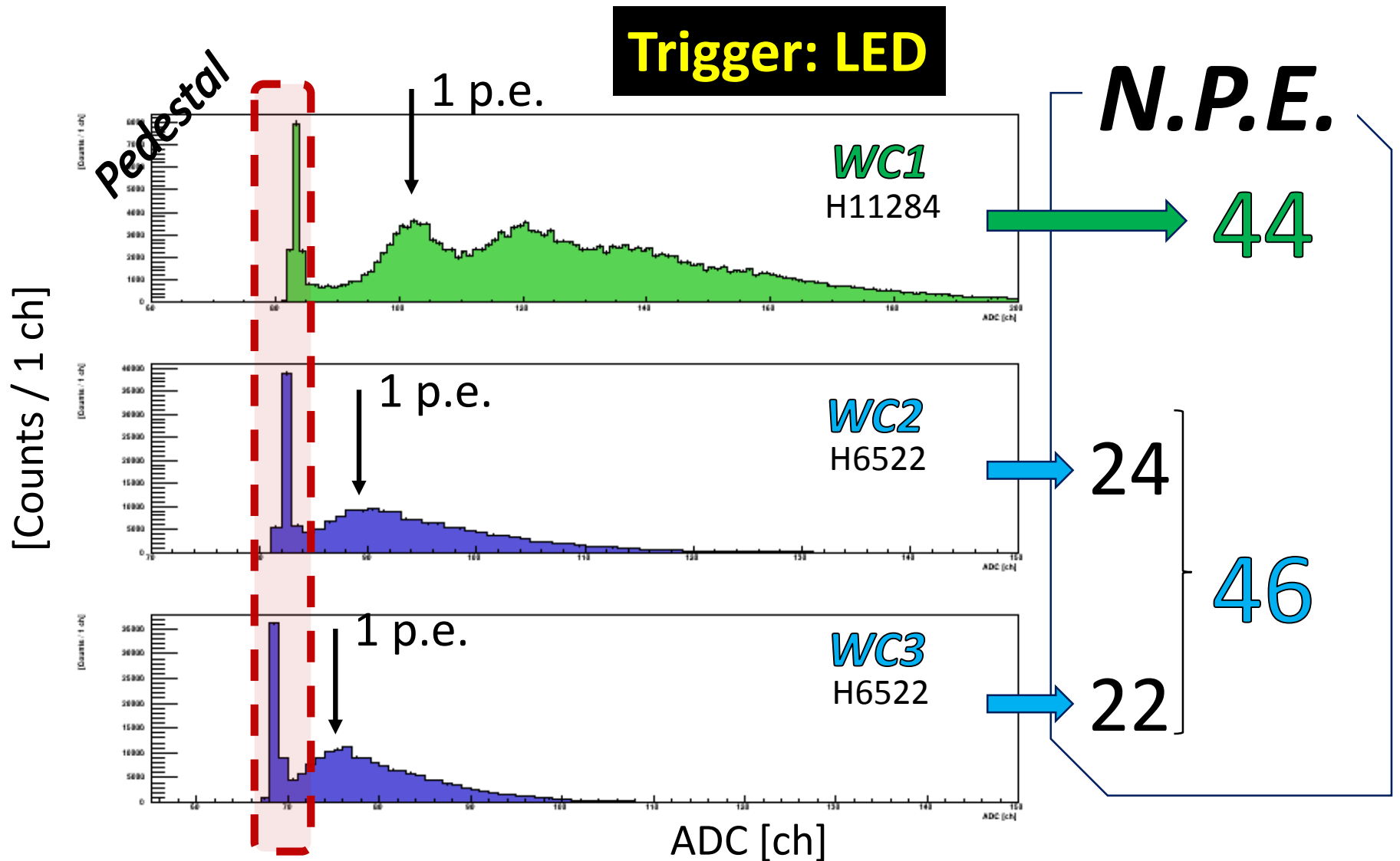
**Trigger: TOF detector**

Plot condition: hit the small scintillator





# Rough analysis (N.P.E.)



# Summary

## Usage of H11284( × 1) compared to that of H6522( × 2)

- ❑ No big difference in their performance  
(according to rough analyses. Further analyses will be done. ).
- ❑ Can save:
  1. manpower (light-tight *etc.*),
  2. channels,
  3. Analysis works (calibration).

# About other data

Details on web:

<http://www-nh.scphys.kyoto-u.ac.jp/~gogami/s-2s/doc/tof/toftest2014/>

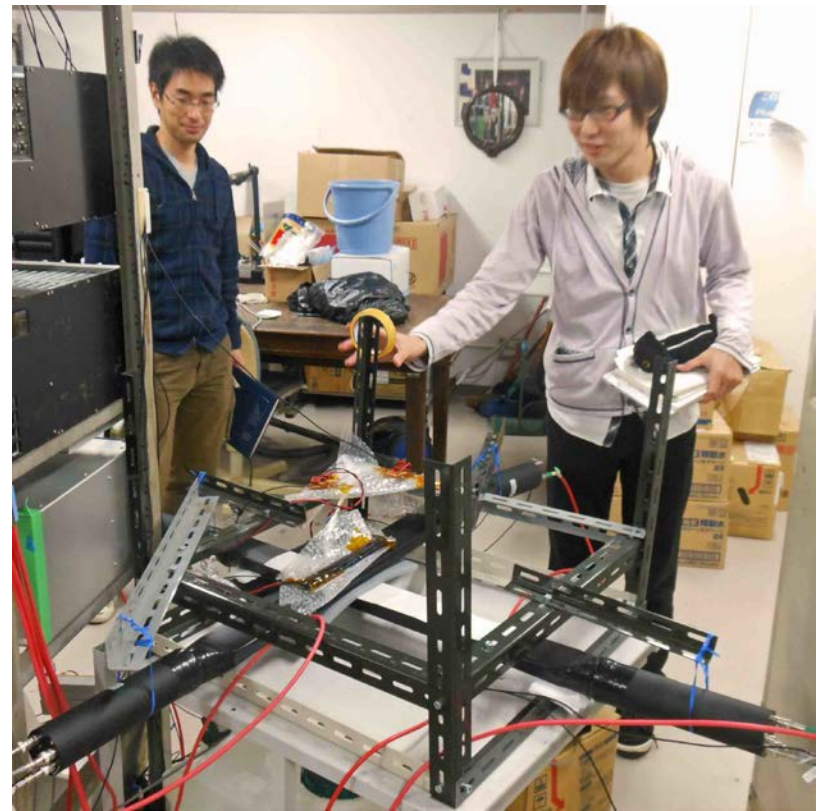
- Run summary
- CAD drawing
- Raw DATA
- Sample analysis code (P.H. correction, text → ROOT)
- Pictures



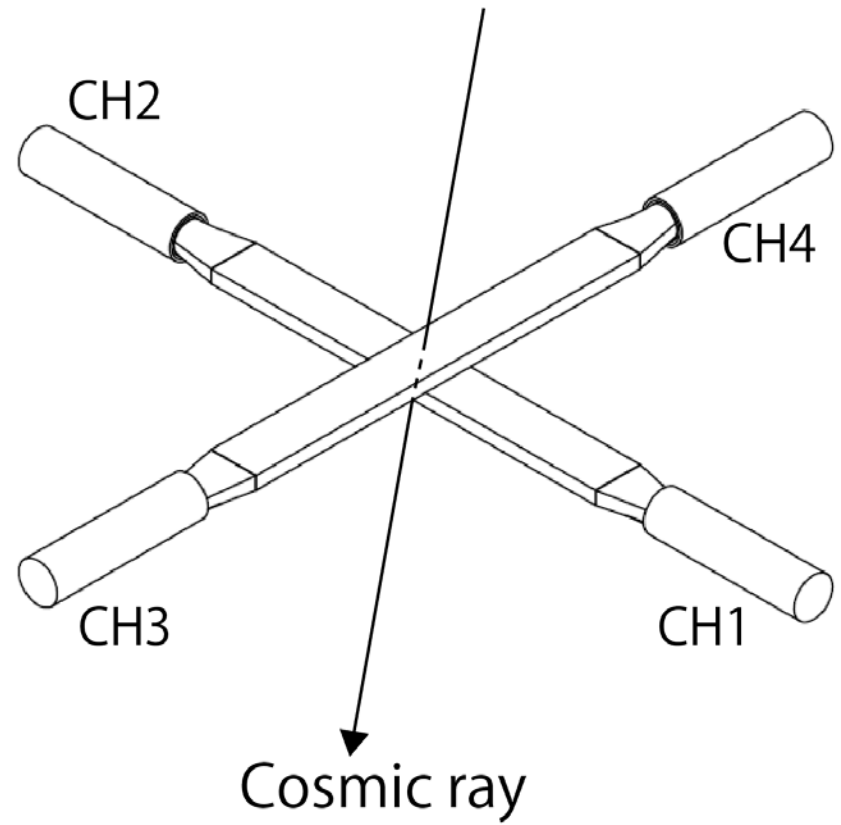
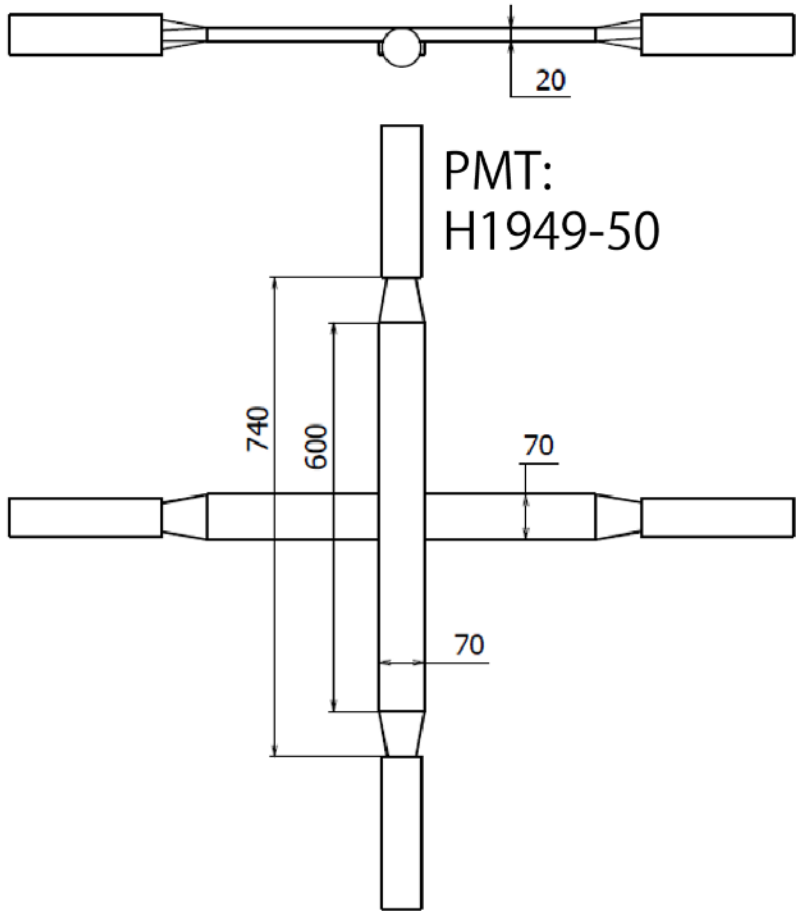
END



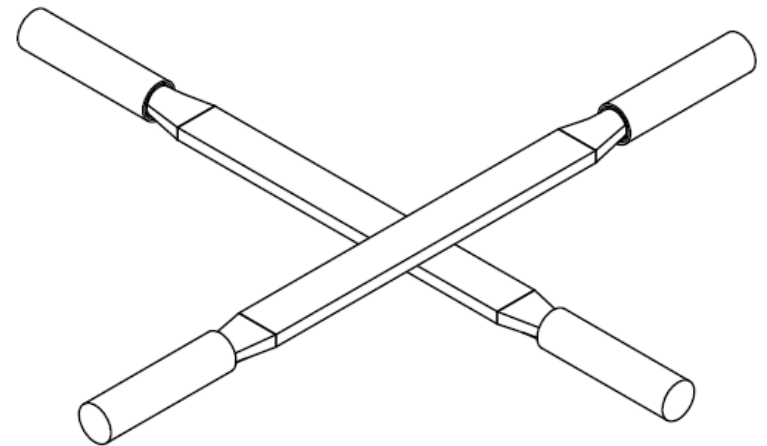
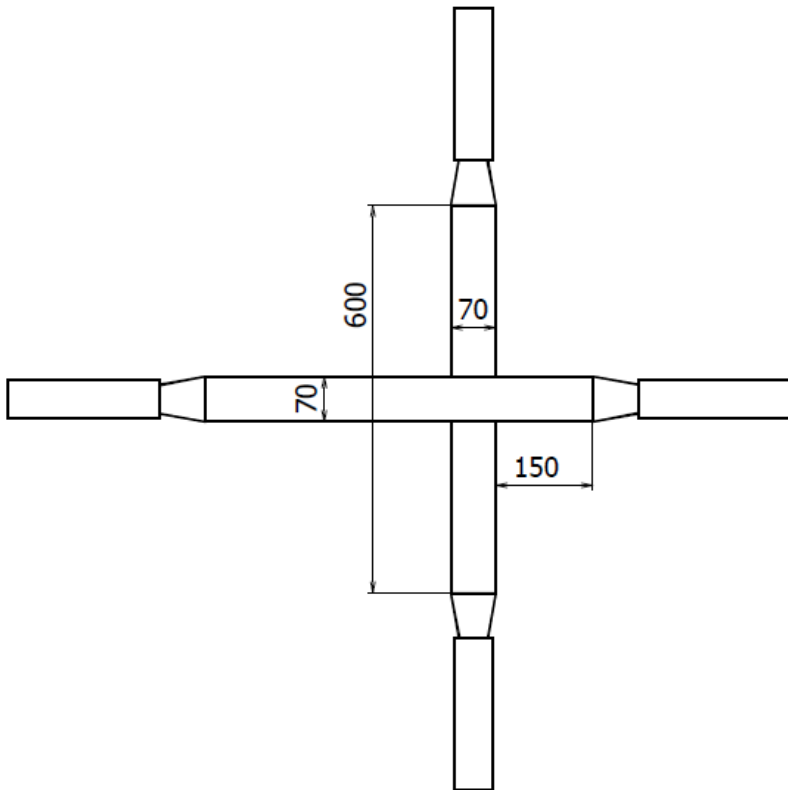
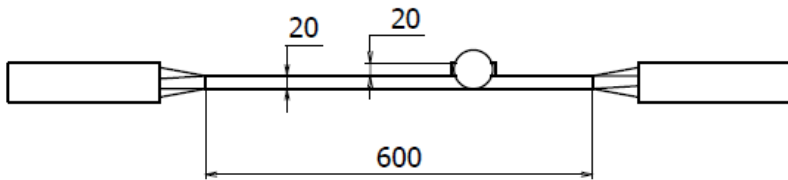
# Backup



# Setup 1 (run1-run56)

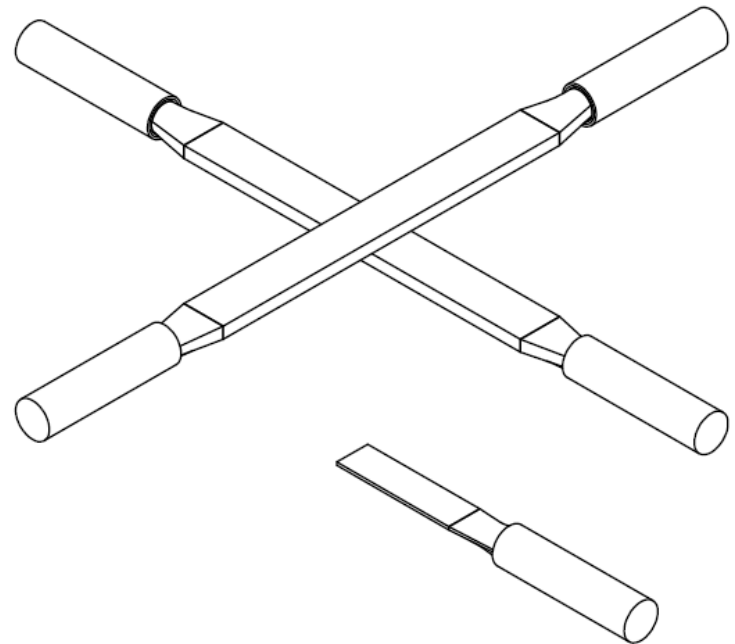
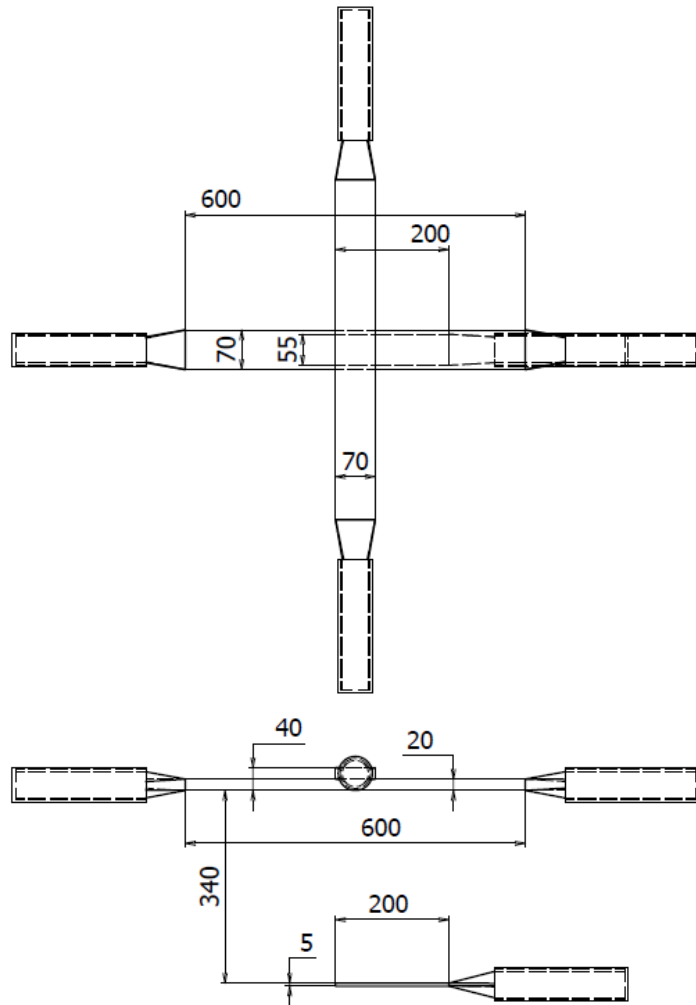


# Setup 2 (run57-run93)

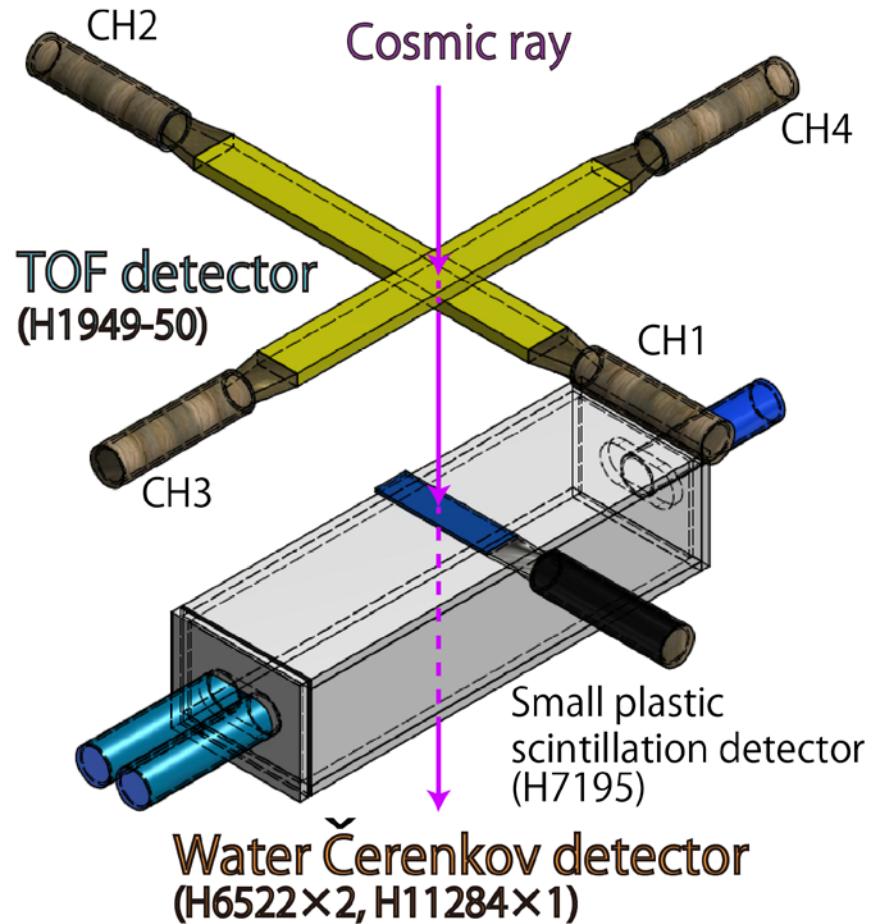
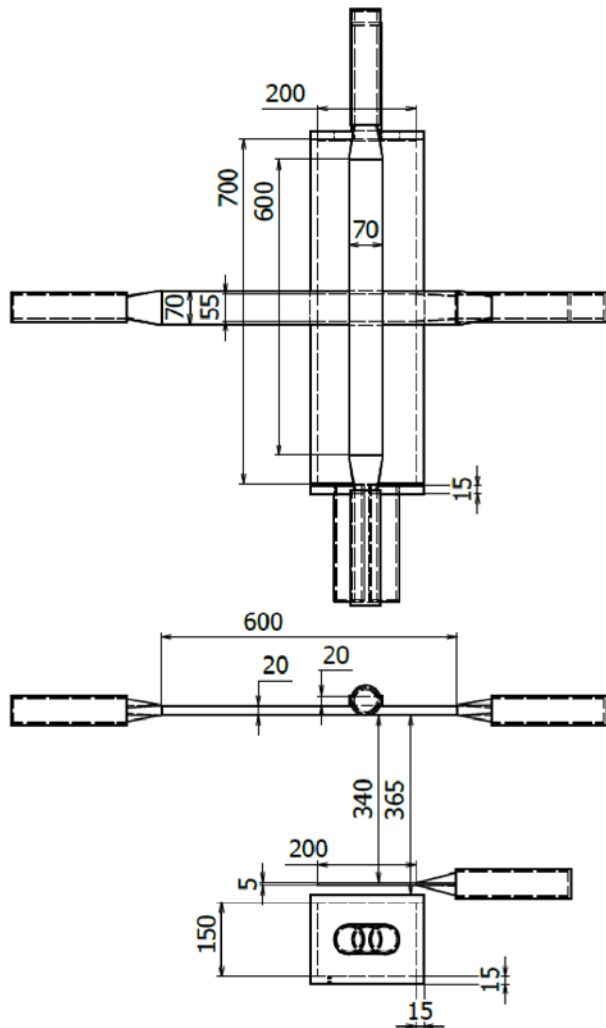




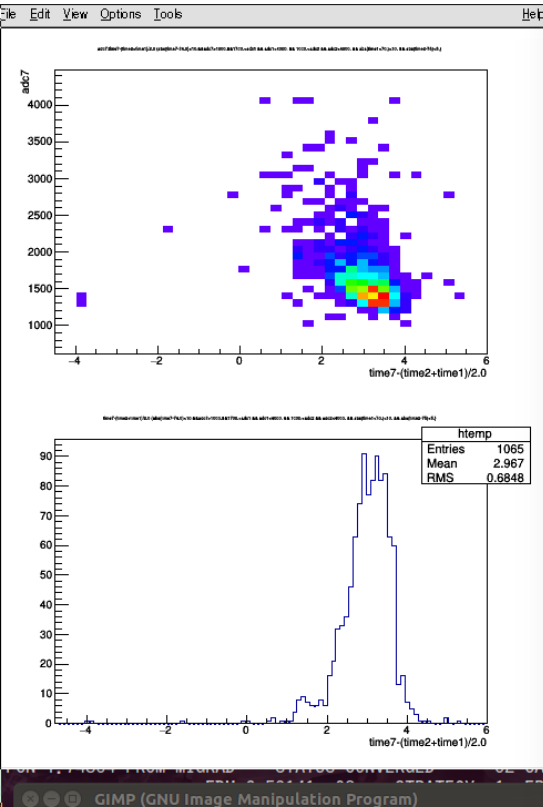
# Setup 3 (run94-run113)



# Setup 4 (run114- )



# TOF resolution (time7-time1,2)



```

EXT PARAMETER
NO. NAME VALUE ERROR STEP FIRST
1 Constant 8.59786e+01 3.74376e+00 4.06406e-03 -9.15337e-06
2 Mean 3.18203e+00 3.75304e-02 3.82884e-05 1.08701e-03
3 Sigma 5.85329e-01 4.04923e-02 2.37386e-05 -1.04929e-03

root [27] 0.6 * 0.05
(double) 3.000000e-02
root [28] tree->Draw("time7-(time2+time1)/2.0:adc7", "abs(time7-74.0)<10. &&
(Long64_t) 1065<adc1 && adc1<4000. && 1000.<adc2 && adc2<4000. && abs(time1
root [29] tree->Draw("time7-(time2+time1)/2.0:adc1", "abs(time7-74.0)<10. &&
(Long64_t) 1065<adc1 && adc1<4000. && 1000.<adc2 && adc2<4000. && abs(time1
root [30] tree->Draw("time7-(time2+time1)/2.0:adc2", "abs(time7-74.0)<10. &&
(Long64_t) 1065<adc1 && adc1<4000. && 1000.<adc2 && adc2<4000. && abs(time1
root [31] tree->Draw("time7-(time2+time1)/2.0:adc7", "abs(time7-74.0)<10. &&
(Long64_t) 1065<adc1 && adc1<4000. && 1000.<adc2 && adc2<4000. && abs(time1
root [32] TCanvas* c1 = new TCanvas("c1","c1")
Warning in <TCanvas::Constructor>: Deleting canvas with same name: c1
(class TCanvas *) 0xa541410
root [33] c1->Divide(1,2);
root [34] c1->cd(1)
at.r(class TVirtualPad *) 0xa32a578
at.root [35] tree->Draw("time7-(time2+time1)/2.0", "abs(time7-74.0)<10. &&adc7>
st.c(Long64_t) 1065 && adc1<4000. && 1000.<adc2 && adc2<4000. && abs(time1<70.
root [36] c1->cd(2)
201(class TVirtualPad *) 0x9e085f0
rurroot [37] tree->Draw("time7-(time2+time1)/2.0:adc7", "abs(time7-74.0)<10. &&
(Long64_t) 1065<adc1 && adc1<4000. && 1000.<adc2 && adc2<4000. && abs(time1
root [38] c1->cd(1)
(class TVirtualPad *) 0xa32a578
root [39]
root [39] tree->Draw("adc7:time7-(time2+time1)/2.0", "abs(time7-74.0)<10. &&
(Long64_t) 1065<adc1 && adc1<4000. && 1000.<adc2 && adc2<4000. && abs(time1
root [40] tree->Draw("adc7", "abs(time7-74.0)<10. &&adc7>1000. &&1700.<adc1 &&
(Long64_t) 1065000.<adc2 && adc2<4000. && abs(time1<70.)<10. && abs(time2-7
root [41] tree->Draw("adc7:time7-(time2+time1)/2.0", "abs(time7-74.0)<10. &&
(Long64_t) 1065<adc1 && adc1<4000. && 1000.<adc2 && adc2<4000. && abs(time1
root [42] c1->cd(2)
(class TVirtualPad *) 0x9e085f0
root [43]
root [43] tree->Draw("time7-(time2+time1)/2.0", "abs(time7-74.0)<10. &&adc7>
(Long64_t) 1065 && adc1<4000. && 1000.<adc2 && adc2<4000. && abs(time1<70.
root [44] [time2-75)<5.", "col")
  
```

```

tree->Draw("time7-(time2+time1)/2.0:adc7",
"abs(time7-74.0)<10.
&&ad(Long64_t) 1065<adc1
&& adc1<4000.
&& 1000.<adc2 && adc2<4000.
&& abs(time1<root [32] & abs(time2-75)<5.", "col")
  
```

→  
TOF (time7-time1,2) resolution:  
~ 600 ps (sigma)  
w/o correction.

# 切ったブラックシート

92 × 322 cm → 二切れできる → 一つ使った