ID	Date	Author	Type	Category	Subject
186	Tue Mar 29 10:12:05 2016	Toshiyuki Gogami	Routine	General	Temperature of Helmholtz coil in run174
10:12 HC: 3.41 V, 4.38 A, 16.0 C 14:37 HC: 3.41 V, 4.38 A, 18.0 C					
185	Tue Mar 29 10:10:37 2016	Toshiyuki Gogami	Routine	General	Run174 for cosmic-ray data at y = 0 cm is started (5 G, 0 A)
Run174 for cosmic-ray data at y = 0 cm is started. PTM: WC2 (BOTTOM) side, H11284-100UV, ZK6920, -2100 V Helmholtz coil: 4.33 A (5 G) Bucking coil: 20 turns, 0 A					
184	Mon Mar 28 19:11:07 2016	T.Nanamura	Routine		Run173 for LED calibration at B = 5 G is started.
Run173 for LED calibration at B = 5 G is started. LED -->> WC2: ZK6920, -2100 V Period: 50 us Hight: 4.25 V Low: 0.00 V Leading and Trailing: 5 ns Width: 10 ns					
183	Mon Mar 28 19:06:58 2016	T.Nanamura	Routine		Run172 was stopped at 19:05.
Run172 was stopped at 19:05. Event Number was 3600. (I said I would wait for 4000 events, but It seems to require more than 1 hour, I stopped run.)					
182	Mon Mar 28 16:24:07 2016	Toshiyuki Gogami	Routine	General	Temperature of Helmholtz coil: 17.6 C (3.41 V, 4.33 A)
HC: 3.41 V, 4.33 A, 17.6 C					
181	Mon Mar 28 10:12:25 2016	Toshiyuki Gogami	Routine	General	Run172 for cosmic-ray data at y = 0 cm is started
Run172 for cosmic-ray data at y = 0 cm is started. PTM: WC2 (BOTTOM) side, H11284-100UV, ZK6920, -2100 V Helmholtz coil: 4.33 A (5 G) Bucking coil: 20 turns, 0 A					
180	Mon Mar 28 10:06:33 2016	Toshiyuki Gogami	Routine	General	Helmholtz coil was turned on with a setting to 5 G

Helmholtz coil was turned on with a setting to 5 G.
(before run170)

HC: 3.38 V, 4.33 A, 16C

179	Mon Mar 28 10:04:09 2016	Toshiyuki Gogami	Routine	General	Run170/171 for LED calibration at B = 5 G is started

Run170/171 for LED calibration at B = 5 G is started.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.25 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

178	Mon Mar 28 09:53:36 2016	Toshiyuki Gogami	Routine	General	Run169 for LED calibration is started

Run169 for LED calibration is started.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.15 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

177	Fri Mar 25 21:11:18 2016	T.Nanamura	Routine		Run168 for cosmic-ray data at y = 0 cm is started.

Run168 for cosmic-ray data at y = 0 cm is started.

PTM: WC2 (BOTTOM) side, H11284-100UV, ZK6920, -2100 V
Helmholtz coil: 0 A (0 G)
Bucking coil: 20 turns, 0 A

176	Fri Mar 25 21:05:36 2016	T.Nanamura	Routine		Run167 for LED calibration data is started (B = 0 G).

I forgot to connect LED with Function generator,after connecting, I get data successfully.

Run167 for LED calibration data is started (B = 0 G).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.15 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

175	Fri Mar 25 20:47:07 2016	T.Nanamura	Problem		Light leak?

Run 164 to Run166, histogram shape is different from run 161,162

I checked raw signal, I saw signal like Light leak.When I turned off room light , this signals banished.

I tried to remove light leak with Kanatsuki-san for an hours, but We couldn't do it.

174	Fri Mar 25 19:40:42 2016	T.Nanamura	Routine		Run165 /Run166 for LED calibration data is started (B = 0 G).

Run165 /Run166 for LED calibration data is started (B = 0 G).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.15 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

173	Fri Mar 25 19:33:55 2016	T.Nanamura	Routine		Run164 for LED calibration data is started (HC: 5 G, BC: 4.5 A).

Run164 for LED calibration data is started (HC: 5 G, BC: 4.5 A).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.15 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

172	Fri Mar 25 19:32:22 2016	T.Nanamura	Routine		Run 163 was stopped at 19:31

Run163 was stopped at 19:31.

Number of Events was 4012.

171	Fri Mar 25 18:05:55 2016	T.Nanamura	Analysis		calibration and NP for run 163

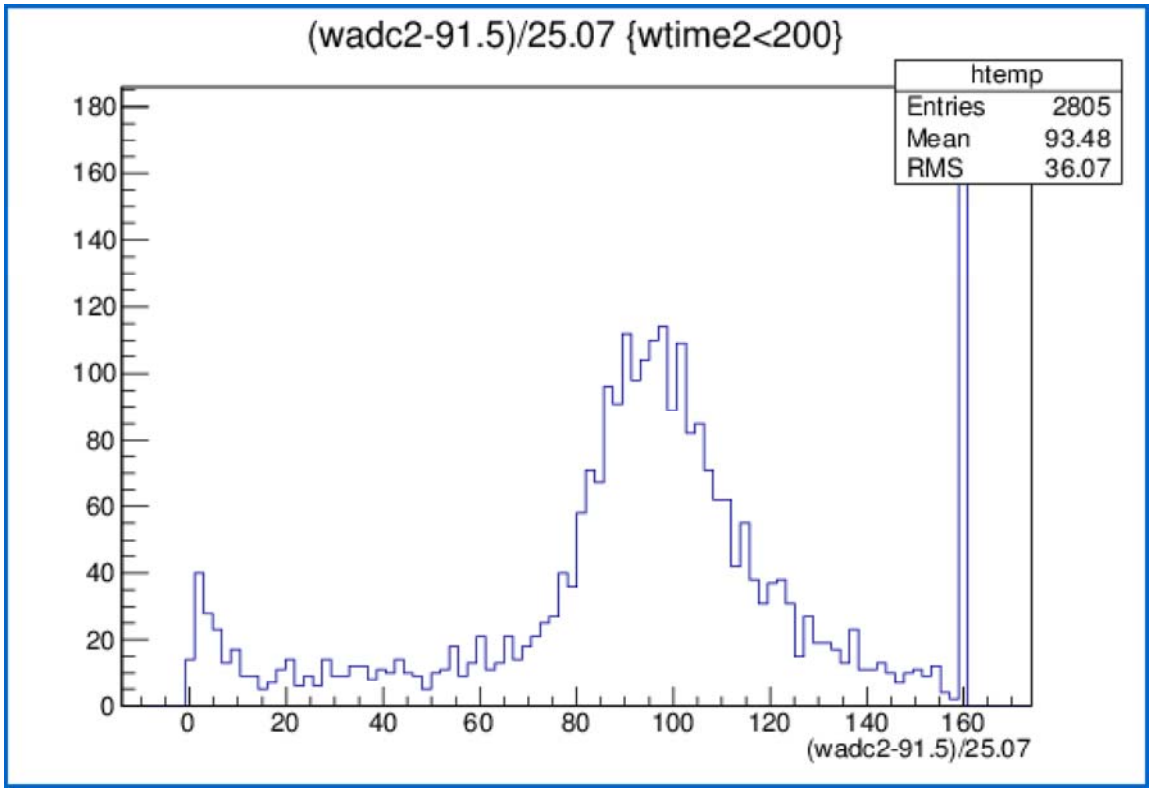
Using run 162 data, I got parameters

pedestal ch : 91.5

channel shift for one photon :25.07.

from these parameters, mean NP of peak is 95.7.

Attachment 1: wadc2wMF2.eps



170	Fri Mar 25 16:54:30 2016	T.Nanamura	Analysis		calibration and NP for run160

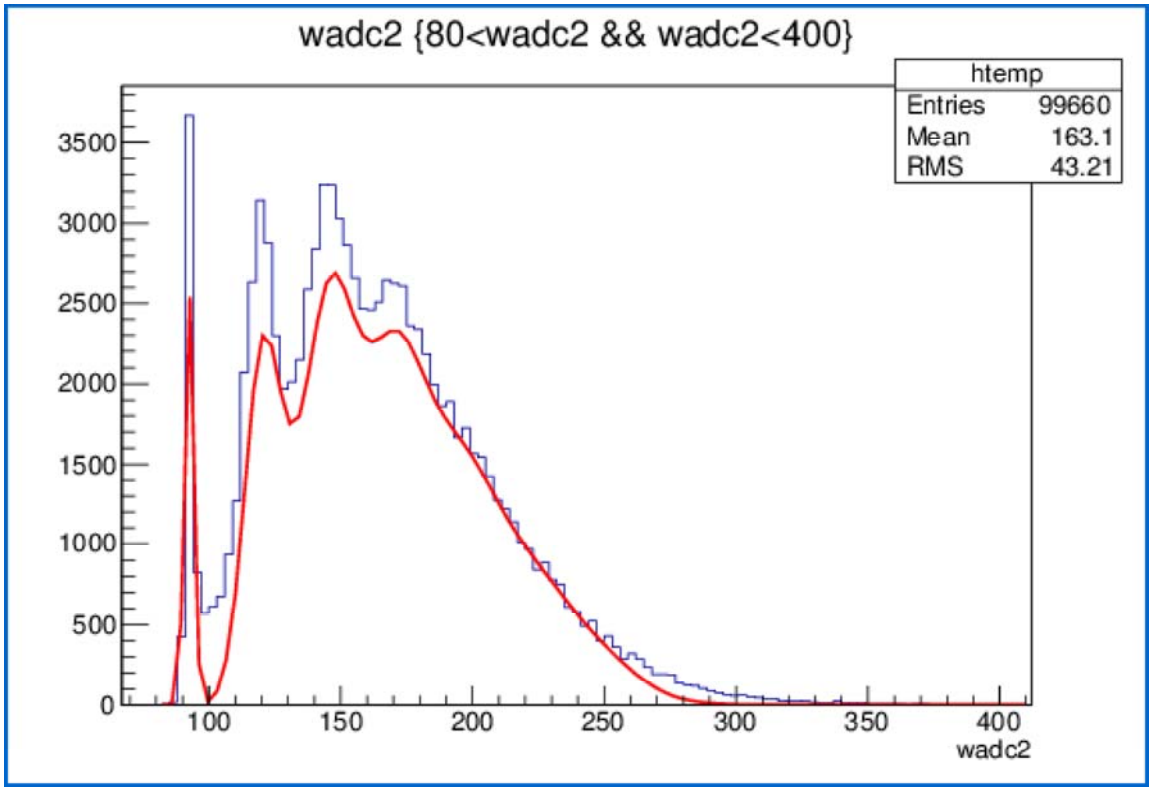
using run 161 data, I got parameters

pedestal ch : 92.5

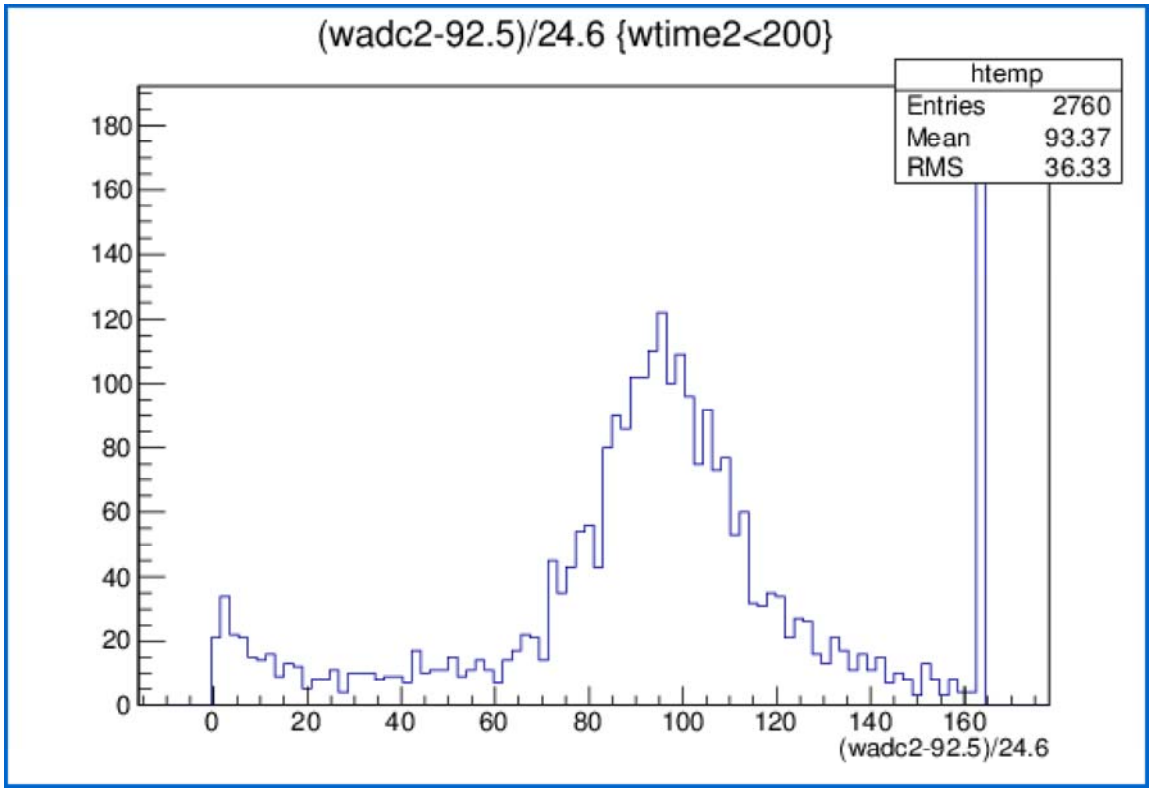
channel shift for one photon :24.6.

from these parameters, mean NP of peak are 97.9.

Attachment 1: wadc2noMF.eps



Attachment 2: wadc2noMF-Cosmic.eps



168	Fri Mar 25 16:03:16 2016	Toshiyuki Gogami	Analysis	General	ADC channels per single photoelectron

The results with statistical errors are in the following table:

Magnetic field [G]	Run#	ADC/NPE
0	93,94	25.2 +/- 0.1
3	95	22.5 +/- 0.1
5	98,99	21.7 +/- 0.2
8	100	22.3 +/- 0.1
10	101	21.6 +/- 0.2

Note that a systematic error on the value of ADC/NPE was
estimated to be 1%.

167	Fri Mar 25 13:58:05 2016	Toshiyuki Gogami	Analysis	General	Relative gain vs. bucking-coil current (Fitting results)

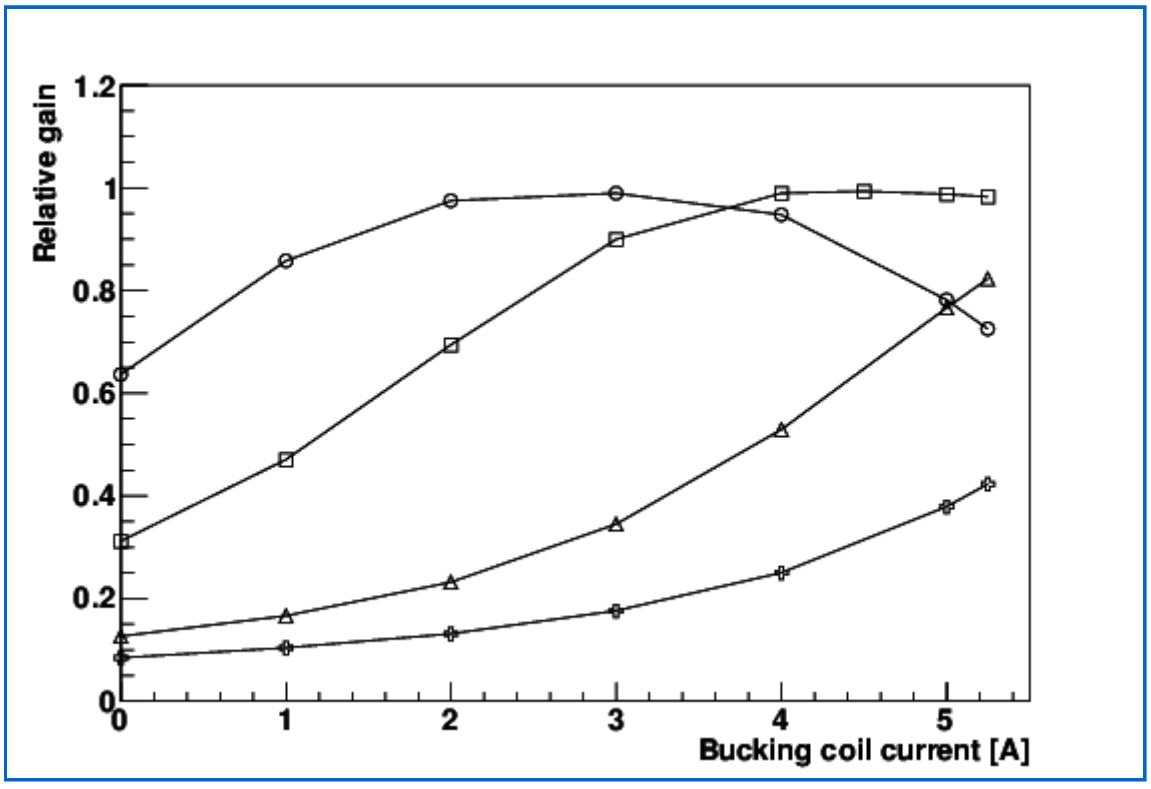
Relative gain vs. bucking coil current:

Helmholtz_5G
(reference = 2993 [ch])
5 0 0.312 0.000108
5 1 0.47 0.000163
5 2 0.694 0.00024
5 3 0.899 0.000311
5 4 0.989 0.000342
5 4.5 0.993 0.000344
5 5 0.988 0.000342
5 5.25 0.982 0.00034

Helmholtz_3G
(reference = 2993 [ch])
3 0 0.636 0.000108
3 1 0.858 0.000163
3 2 0.975 0.00024

```
3 3 0.989 0.000311
3 4 0.948 0.000342
3 5 0.781 0.000344
3 5.25 0.725 0.000342

Helmholtz_8G
(reference = 2993 [ch])
8 0 0.126 0.000108
8 1 0.166 0.000163
8 2 0.231 0.00024
8 3 0.345 0.000311
8 4 0.529 0.000342
8 5 0.766 0.000344
8 5.25 0.822 0.000342

Helmholtz_10G
(reference = 2993 [ch])
10 0 0.0838 0.000108
10 1 0.104 0.000163
10 2 0.131 0.00024
10 3 0.175 0.000311
10 4 0.25 0.000342
10 5 0.378 0.000344
10 5.25 0.423 0.000342

(Pedestal = 91.5 ch)
```

Attachment 1: gain_buckingcoil_20160325.eps



166	Fri Mar 25 10:07:23 2016	Toshiyuki Gogami	Routine	General	Temperature of Helmholtz coil: 16.8 C (3.39 V, 4.33 A)

```
Temperature of Helmholtz coil:

10:07 16.8 C (3.39 V, 4.33 A)
10:57 17.3 C (3.40 V, 4.33 A)
11:43 17.4 C (3.40 V, 4.33 A)
12:52 17.6 C (3.41 V, 4.33 A)
13:59 17.7 C (3.41 V, 4.33 A)
15:02 17.9 C (3.41 V, 4.33 A)
16:01 18.1 C (3.41 V, 4.33 A)
```

16:59 18.3 C (3.41 V, 4.33 A)
18:00 18.3 C (3.41 V, 4.33 A)
19:00 18.2 C (3.41 V, 4.33 A)

165	Fri Mar 25 09:55:01 2016	Toshiyuki Gogami	Routine	General	Run163 for cosmic-ray data at y = 0 cm is started (HC: 5 G, BC: 4.5 A)

Run163 for cosmic-ray data at y = 0 cm is started (HC: 5 G, BC: 4.5 A).

Helmholtz coil: 3.37 V, 4.33 A (5 G setting)
Bucking coil: 4.5 A
PMT: WC2 side (BOTTOM), H11284-100UV, ZK6920, -2000 V
PMTs for scintillation detectors: -2000 V
Trigger: TOF1 x TOF2 = 0.1 Hz

164	Fri Mar 25 09:51:13 2016	Toshiyuki Gogami	Routine	General	Run162 for LED calibration data is started (HC: 5 G, BC: 4.5 A)

Run162 for LED calibration data is started (HC: 5 G, BC: 4.5 A).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.15 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

163	Fri Mar 25 09:44:45 2016	Toshiyuki Gogami	Routine	General	Run161 for LED calibration data is started (B = 0 G)

Run161 for LED calibration data is started (B = 0 G).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.15 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

162	Fri Mar 25 09:39:31 2016	T. Gogami and T. Nanamura	Routine	General	Run160 was stopped at 1:36 on 3/25

Run160 was stopped at 1:36 on 3/25.

Quote:

Run160 for cosmic-ray data at y = 0 cm is started.

PTM: WC2 (BOTTOM) side, H11284-100UV, ZK6920, -2100 V
Helmholtz coil: 0 A (0 G)
Bucking coil: 20 turns, 0 A

161	Thu Mar 24 18:36:43 2016	T. Gogami and T. Nanamura	Routine	General	Run160 for cosmic-ray data at y = 0 cm is started

Run160 for cosmic-ray data at y = 0 cm is started.

PTM: WC2 (BOTTOM) side, H11284-100UV, ZK6920, -2100 V
Helmholtz coil: 0 A (0 G)
Bucking coil: 20 turns, 0 A

160	Thu Mar 24 17:58:52 2016	T. Gogami and T. Nanamura	Routine	General	Run158/159 is started (B=10 G, BC: 20 turns + 5.26 A)

Run158/159 is started (B=10 G, BC: 20 turns + 5.26 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

159	Thu Mar 24 17:56:53 2016	T. Gogami and T. Nanamura	Routine	General	Run157 is started (B=10 G, BC: 20 turns + 5 A)

Run157 is started (B=10 G, BC: 20 turns + 5 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

158	Thu Mar 24 17:56:19 2016	T. Gogami and T. Nanamura	Routine	General	Run156 is started (B=10 G, BC: 20 turns + 4 A)

Run156 is started (B=10 G, BC: 20 turns + 4 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

157	Thu Mar 24 17:52:06 2016	T. Gogami and T. Nanamura	Routine	General	Run154/155 is started (B=10 G, BC: 20 turns + 3 A)

Run154/155 is started (B=10 G, BC: 20 turns + 3 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

156	Thu Mar 24 17:51:23 2016	T. Gogami and T. Nanamura	Routine	General	Run153 is started (B=10 G, BC: 20 turns + 2 A)

Run153 is started (B=10 G, BC: 20 turns + 2 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

155	Thu Mar 24 17:48:29 2016	T. Gogami and T. Nanamura	Routine	General	Run152 is started (B=10 G, BC: 20 turns + 1 A)

Run152 is started (B=10 G, BC: 20 turns + 1 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

154	Thu Mar 24 17:45:36 2016	T. Gogami and T. Nanamura	Routine	General	Run150/151 is started (B=10 G, BC: 20 turns + 0 A)

Run150/151 is started (B=10 G, BC: 20 turns + 0 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

153	Thu Mar 24 17:41:17 2016	T. Gogami and T. Nanamura	Routine		Run149 is started (B=8 G, BC: 20 turns + 5.26 A)

Run149 is started (B=8 G, BC: 20 turns + 5.26 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

152	Thu Mar 24 17:40:38 2016	T. Gogami and T. Nanamura	Routine	General	Run148 is started (B=8 G, BC: 20 turns + 5 A)

Run148 is started (B=8 G, BC: 20 turns + 5 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

151	Thu Mar 24 17:36:59 2016	T. Gogami and T. Nanamura	Routine	General	Run146/147 is started (B=8 G, BC: 20 turns + 4 A)

Run146/147 is started (B=8 G, BC: 20 turns + 4 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

150	Thu Mar 24 17:36:18 2016	T. Gogami and T. Nanamura	Routine	General	Run145 is started (B=8 G, BC: 20

					turns + 3 A)

```
Run145 is started (B=8 G, BC: 20 turns + 3 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns
```

149	Thu Mar 24 17:34:01 2016	T. Gogami and T. Nanamura	Routine	General	Run144 is started (B=8 G, BC: 20 turns + 2 A)

```
Run144 is started (B=8 G, BC: 20 turns + 2 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns
```

148	Thu Mar 24 17:31:14 2016	T. Gogami and T. Nanamura	Routine	General	Run143 is started (B=8 G, BC: 20 turns + 1 A)

```
Run143 is started (B=8 G, BC: 20 turns + 1 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns
```

147	Thu Mar 24 17:26:57 2016	T. Gogami and T. Nanamura	Routine	General	Run141/142 is started (B=8 G, BC: 20 turns + 0 A)

```
Run141/142 is started (B=8 G, BC: 20 turns + 0 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns
```

146	Thu Mar 24 17:21:51 2016	T. Gogami and T. Nanamura	Routine	General	Run140 is started (B=3 G, BC: 20 turns + 5.25 A)

```
Run140 is started (B=3 G, BC: 20 turns + 5.25 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns
```

145	Thu Mar 24 17:18:58 2016	T. Gogami and	Routine	General	Run139 is started (B=3 G, BC: 20

		T. Nanamura			turns + 5 A)

Run139 is started (B=3 G, BC: 20 turns + 5 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

144	Thu Mar 24 17:15:42 2016	T. Gogami and T. Nanamura	Routine	General	Run137/138 is started (B=3 G, BC: 20 turns + 4 A)

Run137/138 is started (B=3 G, BC: 20 turns + 4 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

143	Thu Mar 24 17:13:57 2016	T. Gogami and T. Nanamura	Routine	General	Run136 is started (B=3 G, BC: 20 turns + 3 A)

Run136 is started (B=3 G, BC: 20 turns + 3 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

142	Thu Mar 24 17:11:45 2016	T. Gogami and T. Nanamura	Routine	General	Run135 is started (B=3 G, BC: 20 turns + 2 A)

Run135 is started (B=3 G, BC: 20 turns + 2 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

141	Thu Mar 24 17:10:15 2016	T. Gogami and T. Nanamura	Routine	General	Run134 is started (B=3 G, BC: 20 turns + 1 A)

Run134 is started (B=3 G, BC: 20 turns + 1 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

		T. Gogami and			Run132/133 is started (B=3 G,

140	Thu Mar 24 16:59:30 2016	T. Nanamura	Routine		BC: 20 turns + 0 A)

Run132/133 is started (B=3 G, BC: 20 turns + 0 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

139	Thu Mar 24 16:55:14 2016	T. Gogami and T. Nanamura	Routine	General	Run131 is started (B=5 G, BC: 20 turns + 4.5 A)

Run131 is started (B=5 G, BC: 20 turns + 4.5 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

138	Thu Mar 24 16:52:15 2016	T. Gogami and T. Nanamura	Routine	General	Run130 is started (B=5 G, BC: 20 turns + 5.25 A)

Run130 is started (B=5 G, BC: 20 turns + 5.25 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

137	Thu Mar 24 16:47:43 2016	T. Gogami and T. Nanamura	Routine	General	Run128/129 is started (B=5 G, BC: 20 turns + 5 A)

Run128/129 is started (B=5 G, BC: 20 turns + 5 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

136	Thu Mar 24 16:46:10 2016	T. Gogami and T. Nanamura	Routine	General	Run127 is started (B=5 G, BC: 20 turns + 4 A)

Run127 is started (B=5 G, BC: 20 turns + 4 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

					Run126 is started

135	Thu Mar 24 16:43:34 2016	T. Gogami and T. Nanamura	Routine	General	(B=5 G, BC: 20 turns + 3 A)

```
Run126 is started (B=5 G, BC: 20 turns + 3 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns
```

134	Thu Mar 24 16:38:40 2016	T. Gogami and T. Nanamura	Routine	General	Run124/125 is started (B=5 G, BC: 20 turns + 2 A)

```
Run124/125 is started (B=5 G, BC: 20 turns + 2 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns
```

133	Thu Mar 24 16:38:07 2016	T. Gogami and T. Nanamura	Routine	General	Run123 is started (B=5 G, BC: 20 turns + 1 A)

```
Run123 is started (B=5 G, BC: 20 turns + 1 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns
```

132	Thu Mar 24 16:34:42 2016	T. Gogami and T. Nanamura	Routine	General	Run122 is started (B=5 G, BC: 20 turns + 0 A)

```
Run122 is started (B=5 G, BC: 20 turns + 0 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns
```

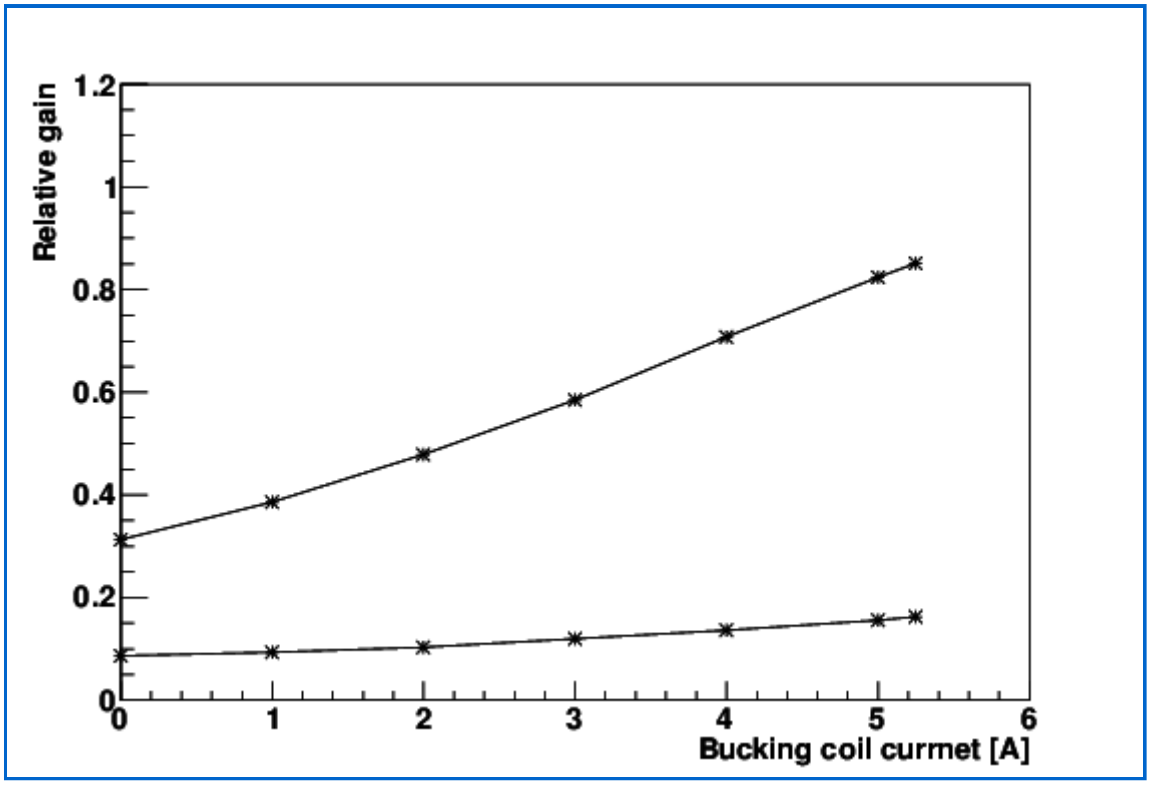
131	Thu Mar 24 16:28:55 2016	T. Gogami and T. Nanamura	Routine	General	Run120/121 is started (B=0 G, BC: 20 turns + 0 A)

```
Run120/121 is started (B=0 G, BC: 20 turns + 0 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns
```

130	Thu Mar 24 16:26:00 2016	Toshiyuki Gogami	Analysis	General	Relative gain vs. bucking-coil current [Quick analysis]

Relative gain vs. bucking-coil current [Quick analysis]

Attachment 1: gain_buckingcurrent_20160324.eps



129	Thu Mar 24 15:31:40 2016	T. Gogami and T. Nanamura	Routine	General	Run118 is started (B=5 G, BC: 10 turns + 5 A)

Run118 is started (B=5 G, BC: 10 turns + 5 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

128	Thu Mar 24 15:26:55 2016	T. Gogami and T. Nanamura	Routine	General	Run116/117 is started (B=5 G, BC: 10 turns + 4 A)

Run116/117 is started (B=5 G, BC: 10 turns + 4 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

127	Thu Mar 24 15:25:19 2016	T. Gogami and T. Nanamura	Routine	General	Run115 is started (B=5 G, BC: 10 turns + 3 A)

Run115 is started (B=5 G, BC: 10 turns + 3 A).

PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

126	Thu Mar 24 15:24:44 2016	T. Gogami and T. Nanamura	Routine	General	Run114 is started (B=5 G, BC: 10 turns + 2 A)

Run114 is started (B=5 G, BC: 10 turns + 2 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

125	Thu Mar 24 15:24:10 2016	T. Gogami and T. Nanamura	Routine	General	Run113 is started (B=10 G, BC: 10 turns + 1 A)

Run113 is started (B=10 G, BC: 10 turns + 1 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

124	Thu Mar 24 15:16:37 2016	T. Gogami and T. Nanamura	Routine	General	Run112 is started (B=10 G, BC: 10 turns + 0 A)

Run112 is started (B=10 G, BC: 10 turns + 0 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

123	Thu Mar 24 15:15:58 2016	T. Gogami and T. Nanamura	Routine	General	Run111 is started (B=5 G, BC: 10 turns + 5.25 A)

Run111 is started (B=5 G, BC: 10 turns + 5.25 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

122	Thu Mar 24 15:06:16 2016	T. Gogami and T. Nanamura	Routine	General	Run110 is started (B=5 G, BC: 10 turns + 5 A)

Run110 is started (B=5 G, BC: 10 turns + 5 A).

PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

121	Thu Mar 24 15:05:32 2016	T. Gogami and T. Nanamura	Routine	General	Run109 is started (B=5 G, BC: 10 turns + 4 A)

Run109 is started (B=5 G, BC: 10 turns + 4 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

120	Thu Mar 24 15:01:41 2016	T. Gogami and T. Nanamura	Routine	General	Run108 is started (B=5 G, BC: 10 turns + 3 A)

Run108 is started (B=5 G, BC: 10 turns + 3 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

119	Thu Mar 24 14:56:55 2016	T. Gogami and T. Nanamura	Routine	General	Run106/107 is started (B=5 G, BC: 10 turns + 2 A)

Run106/107 is started (B=5 G, BC: 10 turns + 2 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

118	Thu Mar 24 14:54:15 2016	T. Gogami and T. Nanamura	Routine	General	Run105 is started (B=5 G, BC: 10 turns + 1 A)

Run105 is started (B=5 G, BC: 10 turns + 1 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

117	Thu Mar 24 14:51:51 2016	T. Gogami and T. Nanamura	Routine	General	Run104 is started (B=5 G, BC: 10 turns + 0 A)

Run104 is started (B=5 G, BC: 10 turns + 0 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

116	Thu Mar 24 14:49:28 2016	T. Gogami and T. Nanamura	Routine	General	Run103 is started (B=0 G, BC: 10 turns + 0 A)

Run103 is started (B=0 G, BC: 10 turns + 0 A).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

115	Thu Mar 24 13:48:08 2016	T. Gogami and T. Nanamura	Routine	General	Run101 for LED calibration at B = 10 G is started

Run101 for LED calibration at B = 10 G is started.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.36 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

4.32 x
4.36 o

114	Thu Mar 24 13:42:11 2016	T. Gogami and T. Nanamura	Routine	General	Run100 for LED calibration at B = 8 G is started

Run100 for LED calibration at B = 8 G is started.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.32 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

4.25 x
4.29 x
4.32 o

113	Thu Mar 24 13:25:11 2016	T. Gogami and T. Nanamura	Routine	General	Run98/99 for LED calibration at B = 5 G is started

Run98/99 for LED calibration at B = 5 G is started.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.25 V
Low: 0.00 V
Leading and Trailing: 5 ns

```
Width: 10 ns


1.15 x
4.18 x
4.20 x
4.25 o
4.30 x
```

112	Thu Mar 24 13:20:16 2016	T. Gogami and T. Nanamura	Routine	General	Run96/97 for LED calibration at B = 5 G is started

```
Run96/97 for LED calibration at B = 5 G is started.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.15 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns
```

111	Thu Mar 24 13:17:56 2016	T. Gogami and T. Nanamura	Routine	General	Run95 for LED calibration at B = 3 G is started

```
Run95 for LED calibration at B = 3 G is started.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.15 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns
```

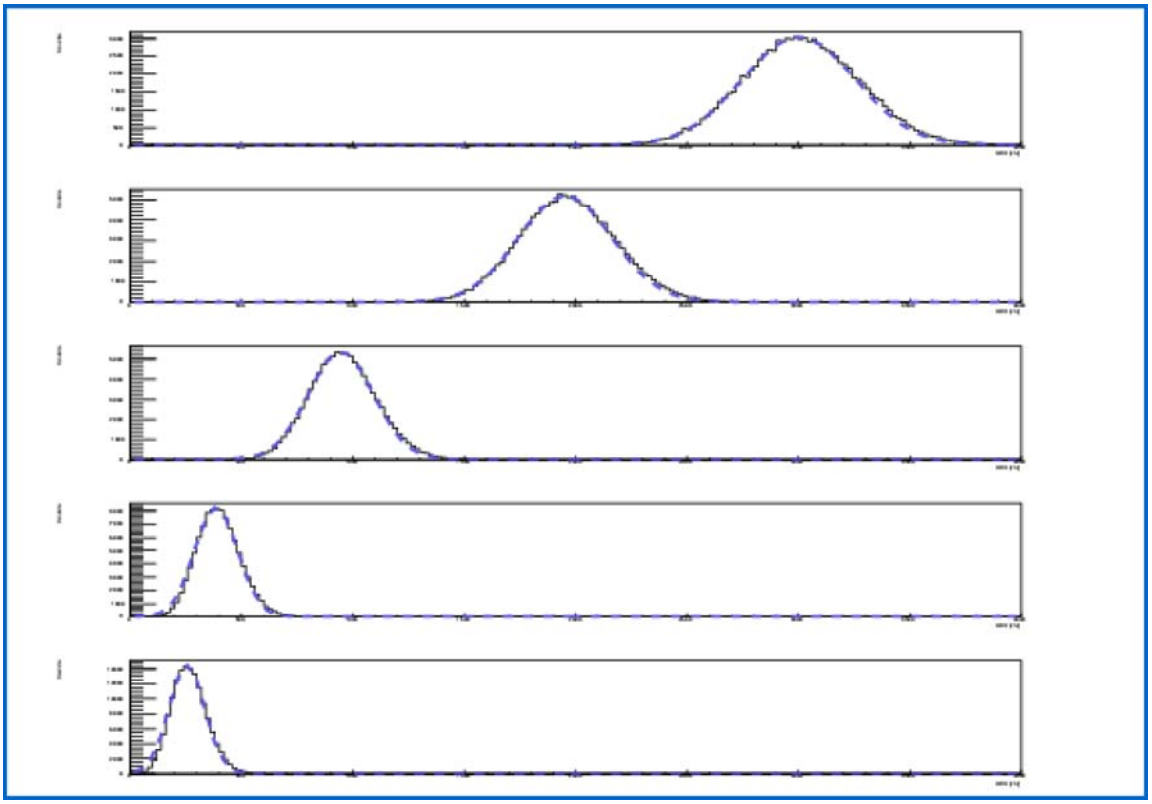
110	Thu Mar 24 13:10:58 2016	T. Gogami and T. Nanamura	Routine	General	Run93/94 for LED calibration at B = 0 G is started

```
Run93/94 for LED calibration at B = 0 G is started.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.15 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns
```

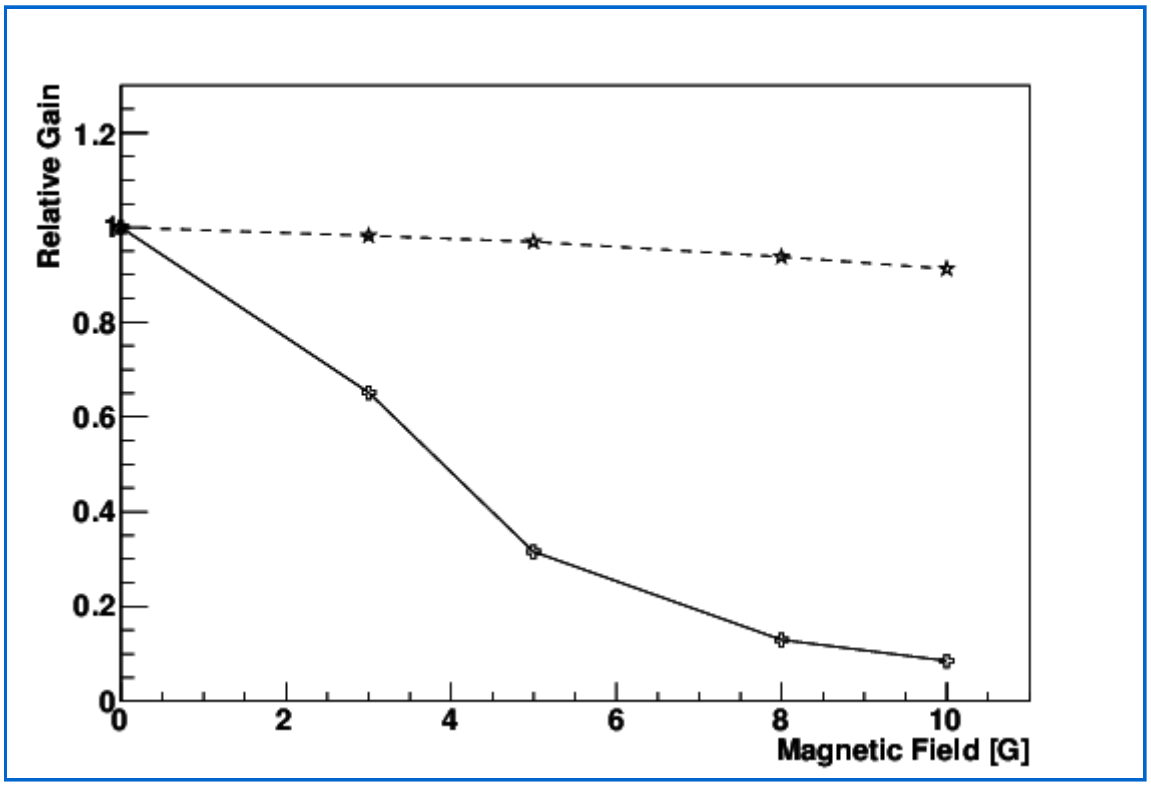
109	Thu Mar 24 11:57:51 2016	Toshiyuki Gogami	Analysis	General	Gain vs. Magnetic field (theta = 0 and 90 degrees)

```
Theta = 0 deg (PMT was put on WC):
MF[G] ROOT_file Fit_min Fit_max Fit_chi2 Mean Mean_error
0 ../../ROOT/run85.dat.root 1771.48 3171.48 1.13068 3002.57 2.22357
3 ../../ROOT/run86-87.root 1603 2123 1.00453 1953.93 1.55226
5 ../../ROOT/run88.dat.root 716.606 1116.61 1.07678 947.575 0.806637
8 ../../ROOT/run89.dat.root 276.785 476.785 1.52584 388.123 0.683721
10 ../../ROOT/run90-91.root 186.179 346.179 2.05891 255.833 0.472956

Theta = 90 deg (PMT was NOT put on WC):
MF[G] ROOT_file Fit_min Fit_max Fit_chi2 Mean Mean_error
0 ../../../ROOT/run63.dat.root 2322.35 2802.35 1.00123 2642.82 1.39617
3 ../../../ROOT/run58.dat.root 2357.98 2837.98 1.00724 2595.84 0.938743
5 ../../../ROOT/run59.dat.root 1886.61 2886.61 1.01958 2560.11 0.702216
8 ../../../ROOT/run60-61.root 2158.08 2558.08 1.02655 2477.95 2.25442
10 ../../../ROOT/run62.dat.root 2069.88 2509.88 1.00049 2411.8 2.60353

(pedestal = 91.5 ch)
```

Attachment 1: adchist_magneticfield_20160324.eps



Attachment 2: gain_magneticfield_20160324.eps



108	Thu Mar 24 09:38:34 2016	Toshiyuki Gogami	Routine	General	HV is turned on

HV is turned ON.

107	Wed Mar 23 20:04:16 2016	T. Gogami and T. Nanamura	Routine	General	Run92 is for LED calibration of PMT2 (B = 0 G)

Search for good LED condition for PMT2 calibration.
--> 4.15 is OK, so will keep taking data with this condition

for LED calibration.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.15 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

Hight:
4.15 OK !!!!
4.20 x

106	Wed Mar 23 19:55:57 2016	T. Gogami and T. Nanamura	Routine	General	Run90/91 is started (B=10 G, theta = 0 deg, phi = 0 deg)

Run90/91 is started (B=10 G, theta = 0 deg, phi = 0 deg).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

105	Wed Mar 23 19:53:56 2016	Toshiyuki Gogami	Routine	General	Run89 is started (B=8 G, theta = 0 deg, phi = 0 deg)

Run89 is started (B=8 G, theta = 0 deg, phi = 0 deg).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

104	Wed Mar 23 19:51:27 2016	T. Gogami and T. Nanamura	Routine	General	Run88 is started (B=5 G, theta = 0 deg, phi = 0 deg)

Run88 is started (B=5 G, theta = 0 deg, phi = 0 deg).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

103	Wed Mar 23 19:48:33 2016	T. Gogami and T. Nanamura	Routine	General	Run86/87 is started (B=3 G, theta = 0 deg, phi = 0 deg)

Run86 and Run87 are started (B=3 G, theta = 0 deg, phi = 0 deg).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns

Width: 10 ns

102	Wed Mar 23 19:32:16 2016	T. Gogami and T. Nanamura	Routine	General	Run85 is started (B=0 G)

Run85 is started (B=0 G, theta = 0 deg, phi = 0 deg).
PMT is put on the water Chernkov detector.

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Hight: 4.53 V
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns

Hight:
4.60 V (Overflow)
4.53 V (120 p.e.)
4.40 V (35 p.e.)
4.30 V (12 p.e.)
4.10 V (1 p.e.)

101	Wed Mar 23 18:39:35 2016	T. Gogami and T. Nanamura	Configuration	Hardware	Configureation changed [PMTs on water Cherenkov]

There was a dependence on PMT phi.
This is considered to be caused by ununiformity of
LED light on the PMT photocathode.

In order to make the LED light uniform on
the PMT photocathode, we decided to put PMTs on
the water Cherenkov detector, and
measure ADC in WC2 with the LED installed beside WC1.

100	Wed Mar 23 16:04:56 2016	Toshiyuki Gogami	Routine	General	Run84 is started (B=3 G, theta = 0 deg, phi = 0 deg) ..... LED fixed !!!!!

Run84 is started (B=3 G, theta = 0 deg, phi = 0 deg).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

99	Wed Mar 23 16:04:20 2016	Toshiyuki Gogami	Routine	General	Run83 is started (B=0 G, theta = 0 deg, phi = 0 deg).... LED fixed !!!!

Run83 is started (B=0 G, theta = 0 deg, phi = 0 deg).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

98	Wed Mar 23 15:46:14 2016	Toshiyuki Gogami	Routine	General	run82 is junk

run82 is junk

		Toshiyuki			Run82 is started (B=5 G, theta = 0

97	Wed Mar 23 15:42:24 2016	Gogami	Routine	General	deg, phi = 135 deg)

```
Run82 is started (B=5 G, theta = 0 deg, phi = 135 deg).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns
```

96	Wed Mar 23 15:39:36 2016	Toshiyuki Gogami	Routine	General	Run80 is started (B=3 G, theta = 0 deg, phi = 135 deg)

```
Run80 is started (B=3 G, theta = 0 deg, phi = 135 deg).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns
```

95	Wed Mar 23 15:39:03 2016	Toshiyuki Gogami	Routine	General	Run79 is started (B=0 G, theta = 0 deg, phi = 135 deg)

```
Run79 is started (B=0 G, theta = 0 deg, phi = 135 deg).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns
```

94	Wed Mar 23 15:38:29 2016	Toshiyuki Gogami	Routine	General	Run78 is started (B=10 G, theta = 0 deg, phi = 45 deg).

```
Run78 is started (B=10 G, theta = 0 deg, phi = 45 deg).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns
```

93	Wed Mar 23 15:28:56 2016	Toshiyuki Gogami	Routine	General	Run77 is started (B=10 G, theta = 0 deg, phi = 45 deg)

```
Run77 is started (B=10 G, theta = 0 deg, phi = 45 deg).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns
```

92	Wed Mar 23 15:27:02 2016	Toshiyuki Gogami	Routine	General	Run76 is started (B=8 G, theta = 0 deg, phi = 45 deg).

```
Run76 is started (B=8 G, theta = 0 deg, phi = 45 deg).
```

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

91	Wed Mar 23 15:26:25 2016	Toshiyuki Gogami	Routine	General	Run75 is started (B=5 G, theta = 0 deg, phi = 45 deg)

Run75 is started (B=5 G, theta = 0 deg, phi = 45 deg).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

90	Wed Mar 23 15:21:36 2016	Toshiyuki Gogami	Routine	General	Run73,74 are started (B=3 G, theta = 0 deg, phi = 45 deg)

Run73,74 are started (B=3 G, theta = 0 deg, phi = 45 deg).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

89	Wed Mar 23 15:16:30 2016	Toshiyuki Gogami	Routine	General	Run72 is started (B=0 G, theta = 0 deg, phi = 45 deg)

Run72 is started (B=0 G, theta = 0 deg, phi = 45 deg).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

88	Wed Mar 23 15:10:59 2016	Toshiyuki Gogami	Routine	General	Run71 is started (B=10 G, theta = 0 deg, phi = 90 deg)

Run71 is started (B=10 G, theta = 0 deg, phi = 90 deg).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

87	Wed Mar 23 15:08:31 2016	Toshiyuki Gogami	Routine	General	Run70 is started (B=8 G, theta = 0 deg, phi = 90 deg)

Run70 is started (B=8 G, theta = 0 deg, phi = 90 deg).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us

Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

86	Wed Mar 23 15:08:00 2016	Toshiyuki Gogami	Routine	General	Run69 is started (B=5 G, theta = 0 deg, phi = 90 deg).

Run69 is started (B=5 G, theta = 0 deg, phi = 90 deg).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

85	Wed Mar 23 15:03:44 2016	Toshiyuki Gogami	Routine	General	Run68 is started (B=5 G, theta = 0 deg, phi = 90 deg)

Run68 is started (B=5 G, theta = 0 deg, phi = 90 deg).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

84	Wed Mar 23 15:01:19 2016	Toshiyuki Gogami	Routine	General	Run67 is started (B=3 G, theta = 0 deg, phi = 90 deg)

Run67 is started (B=3 G, theta = 0 deg, phi = 90 deg).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

83	Wed Mar 23 14:58:15 2016	Toshiyuki Gogami	Routine	General	Run66 is started (B=0 G, theta = 0 deg, phi = 90 deg)

Run66 is started (B=0 G, theta = 0 deg, phi = 90 deg).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

82	Wed Mar 23 14:54:42 2016	Toshiyuki Gogami	Routine	General	run65 for pedestal

run65 for pedestal

81	Wed Mar 23 14:51:21 2016	Toshiyuki Gogami	Routine	General	Run64 is started (B=0 G, theta = 0 deg, phi = 90 deg)

Run64 is started (B=0 G, theta = 0 deg, phi = 90 deg).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V

Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

80	Wed Mar 23 14:43:00 2016	Toshiyuki Gogami	Routine	General	Run63 is started (B=0 G, theta = 90 deg, phi = 0)

Run63 is started (B=0 G, theta = 90 deg, phi = 0).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

79	Wed Mar 23 14:41:05 2016	Toshiyuki Gogami	Routine	General	Run62 is started (B=10 G, theta = 90 deg, phi = 0)

Run62 is started (B=10 G, theta = 90 deg, phi = 0).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

78	Wed Mar 23 14:38:55 2016	Toshiyuki Gogami	Routine	General	Run61 is started (B=8 G, theta = 90 deg, phi = 0)

Run61 is started (B=8 G, theta = 90 deg, phi = 0).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

77	Wed Mar 23 14:27:58 2016	Toshiyuki Gogami	Routine	General	Run60 is started (B=8 G, theta = 90 deg, phi = 0)

Run60 is started (B=8 G, theta = 90 deg, phi = 0).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

76	Wed Mar 23 14:26:03 2016	Toshiyuki Gogami	Routine	General	Run59 is started (B=5 G, theta = 90 deg, phi = 0)

Run59 is started (B=5 G, theta = 90 deg, phi = 0).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

75	Wed Mar 23 14:23:39 2016	Toshiyuki	Routine	General	Run58 is started (B=3 G, theta = 90

		Gogami			deg, phi = 0)

Run58 is started (B=3 G, theta = 90 deg, phi = 0).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

74	Wed Mar 23 14:22:56 2016	Toshiyuki Gogami	Routine	General	Run57 is started (B=10 G, theta = 45 deg, phi = 0)

Run57 is started (B=10 G, theta = 45 deg, phi = 0).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

73	Wed Mar 23 14:13:07 2016	Toshiyuki Gogami	Routine	General	Run56 is started (B=10 G, theta = 45 deg, phi = 0)

Run56 is started (B=10 G, theta = 45 deg, phi = 0).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

72	Wed Mar 23 14:11:07 2016	Toshiyuki Gogami	Routine	General	Run55 is started (B=8 G, theta = 45 deg, phi = 0)

Run55 is started (B=8 G, theta = 45 deg, phi = 0).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

71	Wed Mar 23 14:08:44 2016	Toshiyuki Gogami	Routine	General	Run54 is started (B=5 G, theta = 45 deg, phi = 0)

Run54 is started (B=5 G, theta = 45 deg, phi = 0).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

70	Wed Mar 23 14:08:07 2016	Toshiyuki Gogami	Routine	General	Run53 is started (B=3 G, theta = 45 deg, phi = 0)

Run53 is started (B=3 G, theta = 45 deg, phi = 0).

LED -->
WC2: ZK6920, -2100 V

Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

69	Wed Mar 23 14:05:30 2016	Toshiyuki Gogami	Routine	General	Run53 is started (B=3 G, theta = 45 deg, phi = 0)

Run53 is started (B=3 G, theta = 45 deg, phi = 0).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

68	Wed Mar 23 13:54:48 2016				

10 2.0
8 3.0
5 14.0
3 51.0
0 102

67	Wed Mar 23 13:53:51 2016	Toshiyuki Gogami	Routine	General	Run52 is started (B=10 G, theta = 0, phi = 0)

Run52 is started (B=10 G, theta = 0, phi = 0).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

66	Wed Mar 23 13:51:42 2016	Toshiyuki Gogami	Routine	General	Run51 is started (B=8 G, theta = 0, phi = 0).

Run51 is started (B=8 G, theta = 0, phi = 0).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

65	Wed Mar 23 13:48:10 2016	Toshiyuki Gogami	Routine	General	Run50 is started (B=5 G, theta = 0, phi = 0)

Run50 is started (B=5 G, theta = 0, phi = 0).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

64	Wed Mar 23 13:45:30 2016	Toshiyuki Gogami	Routine	General	Run49 is started (B=5 G, theta = 0, phi = 0)

Run49 is started (B=5 G, theta = 0, phi = 0).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

63	Wed Mar 23 13:43:08 2016	Toshiyuki Gogami	Routine	General	Run48 is started (B=3 G, theta = 0, phi = 0)

Run48 is started (B=3 G, theta = 0, phi = 0).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

62	Wed Mar 23 13:41:09 2016	Toshiyuki Gogami	Routine	General	Run47 is started (B=0 G, theta = 0, phi = 0)

Run47 is started (B=0 G, theta = 0, phi = 0).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

61	Wed Mar 23 11:44:09 2016	Toshiyuki Gogami	Routine	General	Run46 is started (B=0 G, theta = 0, phi = 0)

Run46 is started (B=0 G, theta = 0, phi = 0).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.22 V
Leading and Trailing: 5 ns
Width: 10 ns

60	Wed Mar 23 11:38:56 2016	Toshiyuki Gogami	Routine	General	Run45 is started (B=0 G, theta = 0, phi = 0)

Run45 is started (B=0 G, theta = 0, phi = 0).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.25 V
Leading and Trailing: 5 ns
Width: 10 ns

59	Wed Mar 23 11:34:47 2016	Toshiyuki Gogami	Routine	General	Run44 is started (B=0 G, theta = 0, phi = 0)

Run44 is started (B=0 G, theta = 0, phi = 0).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.20 V

Leading and Trailing: 5 ns
Width: 10 ns

58	Wed Mar 23 11:28:59 2016	Toshiyuki Gogami	Routine	General	Run43 is started (B=0 G, theta = 0, phi = 0)

Run43 is started (B=0 G, theta = 0, phi = 0).

LED -->
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.18 V
Leading and Trailing: 5 ns
Width: 10 ns

57	Wed Mar 23 11:19:40 2016	Toshiyuki Gogami	Routine	General	Run42 is started (B=0 G, theta = 0, phi = 0)

Run42 is started (B=0 G, theta = 0, phi = 0).

LED:

WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 4.00 V
Leading and Trailing: 5 ns
Width: 10 ns

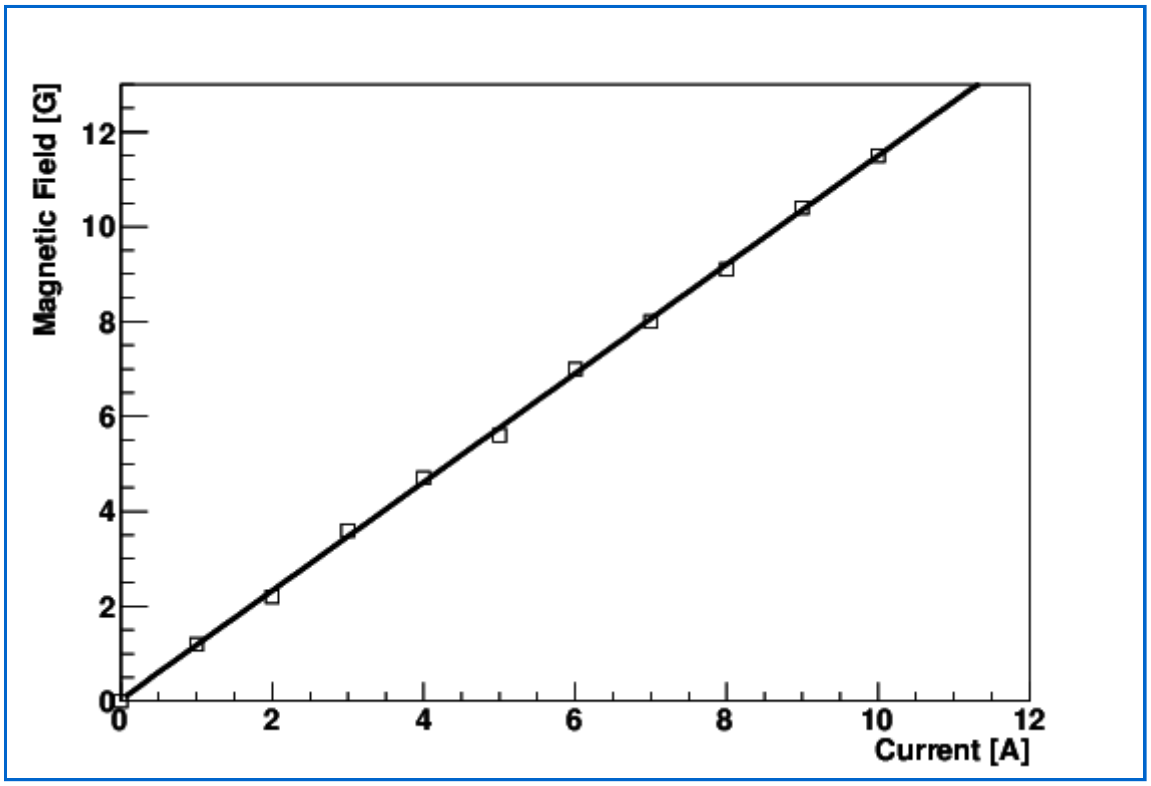
56	Wed Mar 23 10:30:13 2016	Toshiyuki Gogami	Analysis	Hardware	BI relation of Helmholtz coil

BI relation:
// ====== Data =========
const int n = 11;
double x[n] = {0.0, 1.0, 2.0, 3.0, 4.0,
5.0, 6.0, 7.0, 8.0, 9.0, 10.0};
double y[n] = {0.0, 1.2, 2.2, 3.6, 4.7,
5.6, 7.0, 8.0, 9.1, 10.4, 11.5};

===== Fitting Results ========================
p0 = 0.0227273 +/- 0.0566634
p1 = 1.14636 +/- 0.00957787

0 G: 0.0 A
3 G: 2.59715 A
5 G: 4.34179 A
8 G: 6.95876 A
10 G: 8.70341 A

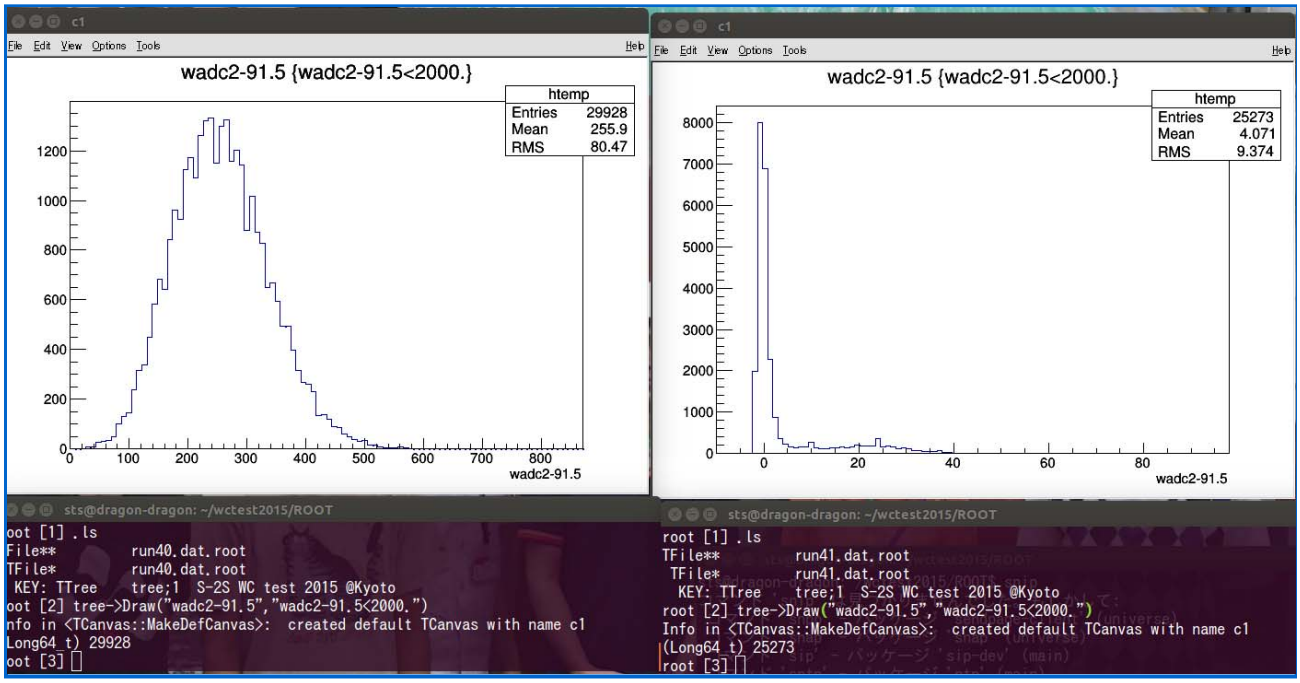
Attachment 1: BI_Helmholtz.eps



55	Tue Mar 22 19:11:52 2016	Toshiyuki Gogami	Routine	General	ADC comparison between run40 (0 G) and run41 (11.5 G)

Comparison between run40 (0 G) and run41 (11.5 G).

Attachment 1: gain_reduction_test20160322_10G_-2000V.png



54	Tue Mar 22 19:10:46 2016	Toshiyuki Gogami	Routine	General	run41 for test with 11.5 G.

run41 for test without magnetic field.

PMT HV = -2100 V

Coil: 10 A (11.5 G)

53	Tue Mar 22 18:52:11 2016	Toshiyuki Gogami	Routine	General	run40 for test without magnetic field.

```
run40 for test without magnetic field.

PMT HV = -2100 V
```

52	Thu Mar 17 10:44:35 2016	Toshiyuki Gogami	Routine	General	Run38 and Run39 are for LED calibration of WC1 and 2

```
Run38 for LED calibration of WC1.

WC1: ZK6922, -2100 V
WC2: ZK6920, -2000 V
Period: 50 us
Low: 0.00 V
Hight: 5.50 V
Leading and Trailing: 5 ns
Width: 10 ns

------------------------------
Run39 for LED calibration of WC2.

WC1: ZK6922, -2100 V
WC2: ZK6920, -2000 V
Period: 50 us
Low: 0.00 V
Hight: 5.90 V
Leading and Trailing: 5 ns
Width: 10 ns
```

51	Thu Mar 17 10:39:05 2016	Toshiyuki Gogami	Routine	General	run37 is terminated

```
run37 is terminated.
```

50	Wed Mar 16 19:06:11 2016	Toshiyuki Gogami	Routine	General	Run37 for cosmic-ray data at y=0 cm is started

```
Run37 for cosmic ray data is started.

y: 0.0 cm
TOF1: -2100 V
TOF2: -2100 V
WC1: ZK6922, -2100 V
WC2: ZK6920, -2000 V
Trigger: TOF1 and TOF2
```

49	Wed Mar 16 16:41:37 2016	Toshiyuki Gogami	Routine	General	run36 for LED calibaration is started

```
Run36 for LED calibration of WC2.

WC1: ZK6922, -2100 V
WC2: ZK6920, -2000 V
Period: 50 us
Low: 0.00 V
Hight: 5.90 V
Leading and Trailing: 5 ns
Width: 10 ns
```

48	Wed Mar 16 16:35:33 2016	Toshiyuki Gogami	Routine	General	Run35 for LED calibration of WC1 is started

```
Run35 for LED calibration of WC1.

WC1: ZK6922, -2100 V
WC2: ZK6920, -2000 V
Period: 50 us
Low: 0.00 V
```

Hight: 5.50 V
Leading and Trailing: 5 ns
Width: 10 ns

47	Wed Mar 16 14:47:59 2016	Toshiyuki Gogami	Analysis	General	Position dependence summary

Position dependence summary:

NDATA 7

../../ROOT/run20.dat.root 1 1 0 0 77.5984 112.598 1.38467 99.3376 0.115727
../../ROOT/run20.dat.root 1 2 0 0 81.8269 111.827 3.84851 99.1065 0.156055
../../ROOT/run20.dat.root 1 3 0 0 148.408 213.408 6.08773 197.126 0.228449

../../ROOT/run32.dat.root 1 1 0 -30 79.3727 119.373 1.22193 96.936 0.230761
../../ROOT/run32.dat.root 1 2 0 -30 113.397 163.397 1.55479 142.878 0.383206
../../ROOT/run32.dat.root 1 3 0 -30 199.881 249.881 3.22872 234.452 0.686838

../../ROOT/run27.dat.root 1 1 0 -22.5 63.229 98.229 2.25495 75.3913 0.591037
../../ROOT/run27.dat.root 1 2 0 -22.5 102.097 152.097 7.26385 120.143 0.295734
../../ROOT/run27.dat.root 1 3 0 -22.5 150.167 220.167 2.73442 194.636 0.398137

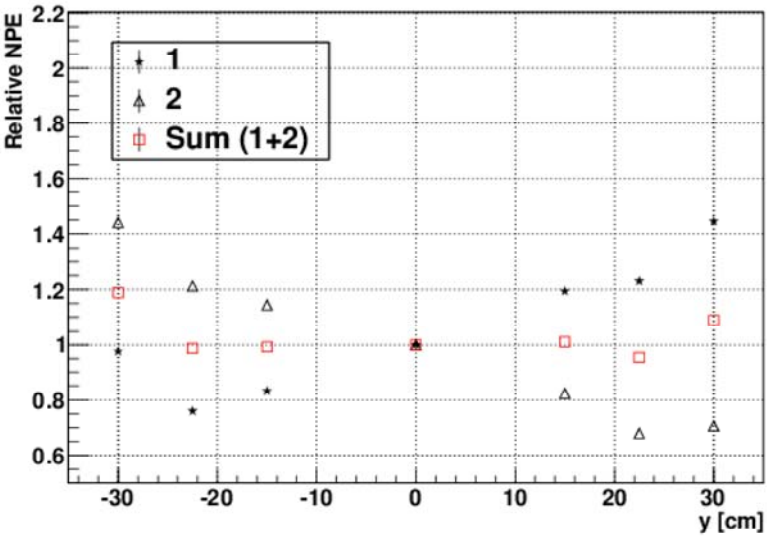
../../ROOT/run17.dat.root 1 1 0 -15 66.1729 96.1729 7.89952 82.607 0.204887
../../ROOT/run17.dat.root 1 2 0 -15 92.1696 127.17 2.27907 113.407 0.256335
../../ROOT/run17.dat.root 1 3 0 -15 167.655 212.655 3.67561 195.753 0.432487

../../ROOT/run23.dat.root 1 1 0 15 103.077 133.077 3.82637 118.701 0.335315
../../ROOT/run23.dat.root 1 2 0 15 69.3863 94.3863 4.87049 81.527 0.186169
../../ROOT/run23.dat.root 1 3 0 15 171.017 216.017 5.23993 199.216 0.356772

../../ROOT/run28.dat.root 1 1 0 22.5 105.454 155.454 7.22907 122.235 0.357815
../../ROOT/run28.dat.root 1 2 0 22.5 39.3625 79.3625 12.1449 67.2777 0.155097
../../ROOT/run28.dat.root 1 3 0 22.5 143.804 203.804 5.06519 188.107 0.439657

../../ROOT/run24.dat.root 1 1 0 30 116.493 181.493 6.63485 143.655 0.444654
../../ROOT/run24.dat.root 1 2 0 30 52.1404 82.1404 1.60461 69.9458 0.144556
../../ROOT/run24.dat.root 1 3 0 30 180.366 260.366 6.29188 214.778 0.437388

Attachment 1: posdep_wc_20160316.pdf



46	Wed Mar 16 11:17:59 2016	Toshiyuki Gogami	Routine	General	Run34 for LED calibration of WC2 is started

```
Run34 for LED calibration of WC2.

WC1: ZK6922, -2100 V
WC2: ZK6920, -2000 V
Period: 50 us
Low: 0.00 V
Hight: 5.90 V
Leading and Trailing: 5 ns
Width: 10 ns
```

45	Wed Mar 16 11:15:28 2016	Toshiyuki Gogami	Routine	General	Run33 for LED calibration of WC1 is started

```
Run33 for LED calibration of WC1.

WC1: ZK6922, -2100 V
WC2: ZK6920, -2000 V
Period: 50 us
Low: 0.00 V
Hight: 5.50 V
Leading and Trailing: 5 ns
Width: 10 ns
```

44	Wed Mar 16 11:12:56 2016	Toshiyuki Gogami	Routine	General	run32 is terminated

```
run32 is terminated.
```

43	Wed Mar 16 11:00:46 2016	Toshiyuki Gogami	Routine	General	Cable for coil

```
Cable for coil

http://www.monotaro.com/p/1113/8452/
```

42	Tue Mar 15 10:47:52 2016	Toshiyuki Gogami	Routine	General	Run32 for cosmic ray data at y = -30 cm is started

```
Run32 for cosmic ray data is started.

y: -30.0 cm (closer to WC2, BOTTOM)
TOF1: -2100 V
TOF2: -2100 V
WC1: ZK6922, -2100 V
WC2: ZK6920, -2000 V
Trigger: TOF1 and TOF2
```

41	Tue Mar 15 10:27:38 2016	Toshiyuki Gogami	Routine	General	Run31 for LED calibration of WC2 (-2000 V)

```
Run31 for LED calibration of WC2.

WC1: ZK6922, -2100 V
WC2: ZK6920, -2000 V
Period: 50 us
Low: 0.00 V
Hight: 5.90 V
Leading and Trailing: 5 ns
Width: 10 ns
```

40	Tue Mar 15 10:23:27 2016	Toshiyuki Gogami	Configuration	Hardware	WC2: -2100 V --> -2000 V

```
HV for WC2 (H11284-100UV: ZK6920) is changed to -2000 V from -2100 V
becasue ADC was overflowed when a cosmic-ray data at y = -30 cm was taken.
```

39	Tue Mar 15 10:16:54 2016	Toshiyuki Gogami	Routine	General	Run30 for LED calibration of WC2 is started

```
Run30 for LED calibration of WC2.

WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 5.90 V
Leading and Trailing: 5 ns
Width: 10 ns
```

38	Tue Mar 15 10:13:21 2016	Toshiyuki Gogami	Routine	General	Run29 for LED calibration of WC1 is started

```
Run29 for LED calibration of WC1.

WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 5.50 V
Leading and Trailing: 5 ns
Width: 10 ns
```

37	Tue Mar 15 10:07:58 2016	Toshiyuki Gogami	Routine	General	run28 is terminated.

```
run28 is terminated.
```

36	Mon Mar 14 18:36:59 2016	Toshiyuki Gogami	Routine	General	Run28 for cosmic ray data at y = +22.5 cm is started

```
Run28 for cosmic ray data is started.

y: +22.5 cm (closer to WC1, TOP)
TOF1: -2100 V
TOF2: -2100 V
WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
```

Trigger: TOF1 and TOF2

35	Mon Mar 14 18:26:57 2016	Toshiyuki Gogami	Routine	General	run27 is terminated

run27 is terminated.

34	Mon Mar 14 10:13:54 2016	Toshiyuki Gogami	Routine	General	Run27 for cosmic ray data at y = -22.5 cm is started

Run27 for cosmic ray data is started.

y: -22.5 cm (closer to WC2, BOTTOM)
TOF1: -2100 V
TOF2: -2100 V
WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Trigger: TOF1 and TOF2

33	Mon Mar 14 09:59:01 2016	Toshiyuki Gogami	Routine	General	Run26 for LED calibration of WC2 is started

Run26 for LED calibration of WC2.

WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 5.90 V
Leading and Trailing: 5 ns
Width: 10 ns

32	Mon Mar 14 09:56:01 2016	Toshiyuki Gogami	Routine	General	Run25 for LED calibration of WC1 is started

Run25 for LED calibration of WC1.

WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 5.50 V
Leading and Trailing: 5 ns
Width: 10 ns

31	Mon Mar 14 09:52:27 2016	Toshiyuki Gogami	Routine	General	DQA PC was rebooted.

DQA PC was rebooted.

30	Mon Mar 14 09:47:33 2016	Toshiyuki Gogami	Routine	General	run24 was stopped at 1:50 on 3/7

run24 was stopped at 1:50 on 3/7.

29	Sat Mar 5 18:02:36 2016	Toshiyuki Gogami	Routine	General	Run24 for cosmic ray data at y = +30 cm is started

Run24 for cosmic ray data is started.

y: +30 cm (closer to WC1, TOP)
TOF1: -2100 V
TOF2: -2100 V
WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Trigger: TOF1 and TOF2, 0.1 Hz

28	Sat Mar 5 17:53:38 2016	Toshiyuki Gogami	Routine	General	Run23 is terminated.

Run23 is terminated.

27	Fri Mar 4 16:11:32 2016	Toshiyuki	Routine	General	Run23 for cosmic ray data at y = +

		Gogami			15 cm is started

Run23 for cosmic ray data is started.

y: +15 cm (closer to WC1, TOP)
TOF1: -2100 V
TOF2: -2100 V
WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Trigger: TOF1 and TOF2, 0.1 Hz

26	Fri Mar 4 15:54:50 2016	Toshiyuki Gogami	Routine	General	Run22 for LED calibration of WC2 is started

Run22 for LED calibration of WC2.

WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 5.90 V
Leading and Trailing: 5 ns
Width: 10 ns

25	Fri Mar 4 15:52:20 2016	Toshiyuki Gogami	Routine	General	Run21 for LED calibration of WC1 is started

Run21 for LED calibration of WC1.

WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 5.50 V
Leading and Trailing: 5 ns
Width: 10 ns

24	Fri Mar 4 15:49:27 2016	Toshiyuki Gogami	Routine	General	Run20 was stopped at 18:20 on 2/29.

Run20 was stopped at 18:20 on 2/29.

23	Sat Feb 27 10:22:38 2016	Toshiyuki Gogami	Routine	General	Run20 for cosmic ray data at y = 0 cm is started

Run20 for cosmic ray data is started.

y: 0 cm
TOF1: -2100 V
TOF2: -2100 V
WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Trigger: TOF1 and TOF2, 0.1 Hz

22	Sat Feb 27 10:16:26 2016	Toshiyuki Gogami	Routine	General	Run19 for LED calibration of WC2 is started

Run19 for LED calibration of WC2.

WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 5.90 V
Leading and Trailing: 5 ns
Width: 10 ns

21	Sat Feb 27 10:12:33 2016	Toshiyuki Gogami	Routine	General	Run18 for LED calibration of WC1 is started

Run18 for LED calibration of WC1.

WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 5.50 V
Leading and Trailing: 5 ns
Width: 10 ns

19	Sat Feb 27 10:09:03 2016	Toshiyuki Gogami	Routine	General	Run17 is terminated

Run17 is terminated.

18	Fri Feb 26 16:05:16 2016	Toshiyuki Gogami	Routine	General	Run17 for cosmic ray data is REstarted.

Run17 for cosmic ray data is REstarted.

y: -15 cm
TOF1: -2100 V
TOF2: -2100 V
WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Trigger: TOF1 and TOF2, 0.1 Hz

17	Fri Feb 26 12:59:13 2016	Toshiyuki Gogami	Routine	General	Run17 for cosmic ray data at y = -15 cm is started.

Run17 for cosmic ray data is started.

y: -15 cm
TOF1: -2100 V
TOF2: -2100 V
WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Trigger: TOF1 and TOF2, 0.1 Hz

16	Fri Feb 26 12:55:02 2016	Toshiyuki Gogami	Routine	General	Run16 is terminated

Run16 is terminated.

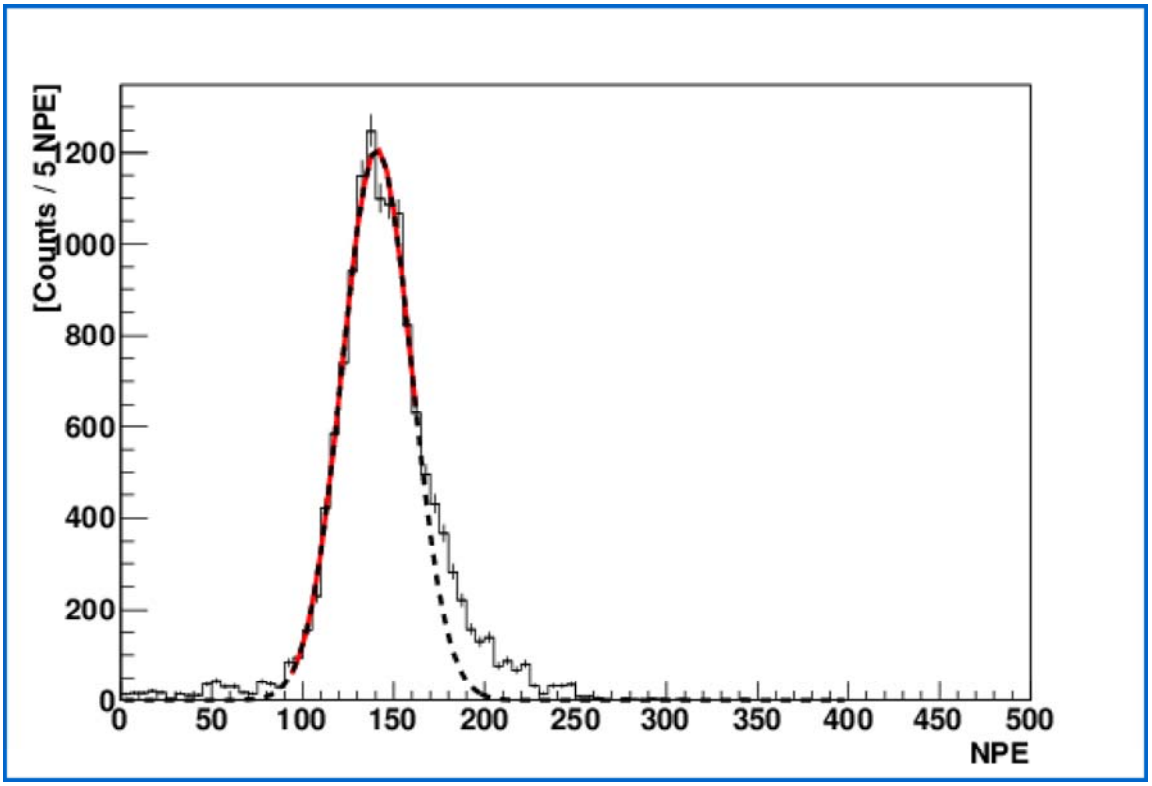
15	Fri Feb 26 10:28:33 2016	Toshiyuki Gogami	Analysis	General	Number of photoelectrons at y = 0 cm.

I analyzed run13 which is for a cosmic-ray data at y = 0 cm.
Mean NPEs (MNPEs) for top, bottom and sum of them are obtained to be:
140.8 \pm 0.3,
128.5 \pm 0.4,
269.2 \pm 0.5, respectively.

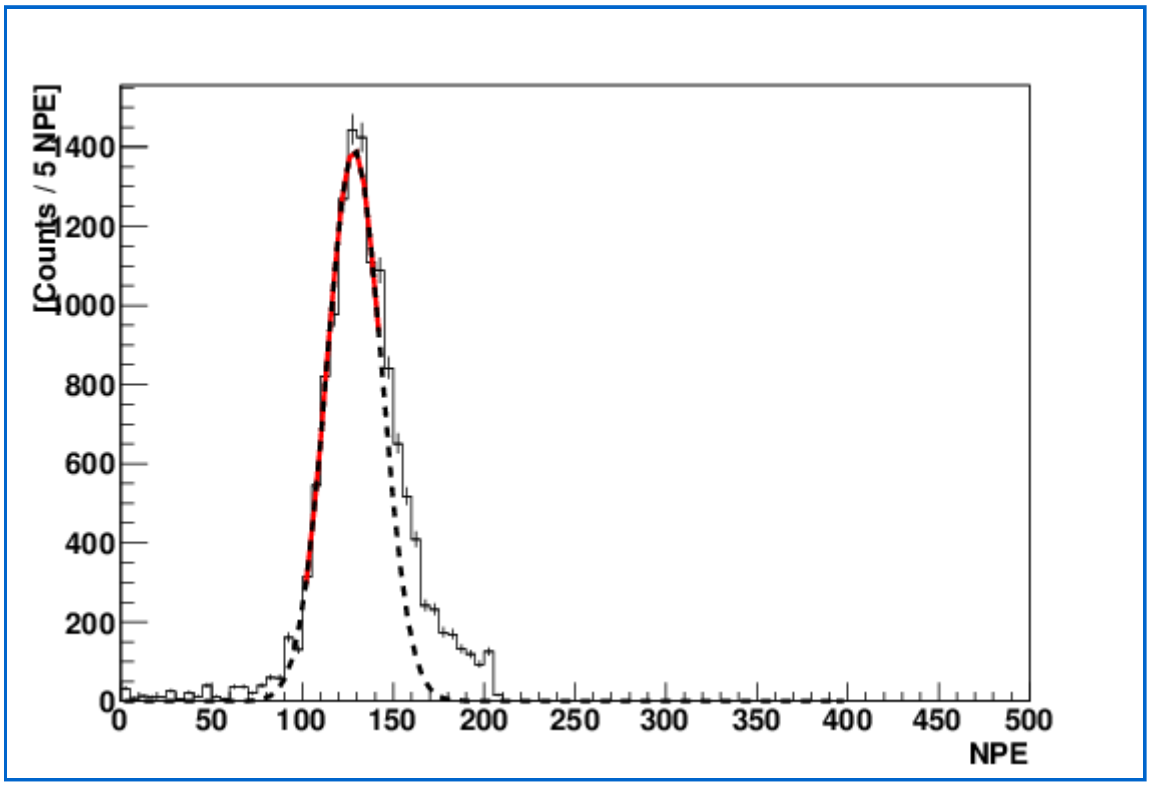
The results are much better than that of the latest prototype !!!
(Why ?)

ROOT_File POS(1:TOP,2:BOT,3:SUM) Fit_min Fit_max chi2 MNPE MNPE_error
../../ROOT/run13.dat.root 1 0 93.9906 163.991 2.5061 140.821 0.281892
../../ROOT/run13.dat.root 2 0 102.494 142.494 3.82048 128.531 0.405777
../../ROOT/run13.dat.root 3 0 239.167 304.167 5.55986 269.181 0.543545

Attachment 1: npe_run13_0cm_top.eps



Attachment 2: npe_run13_0cm_bot.eps



Attachment 3: npe_run13_0cm_sum.eps

14	Fri Feb 26 09:20:08 2016	Toshiyuki Gogami	Analysis	General	ADC and TDC spectra of run13 (y=0 cm)

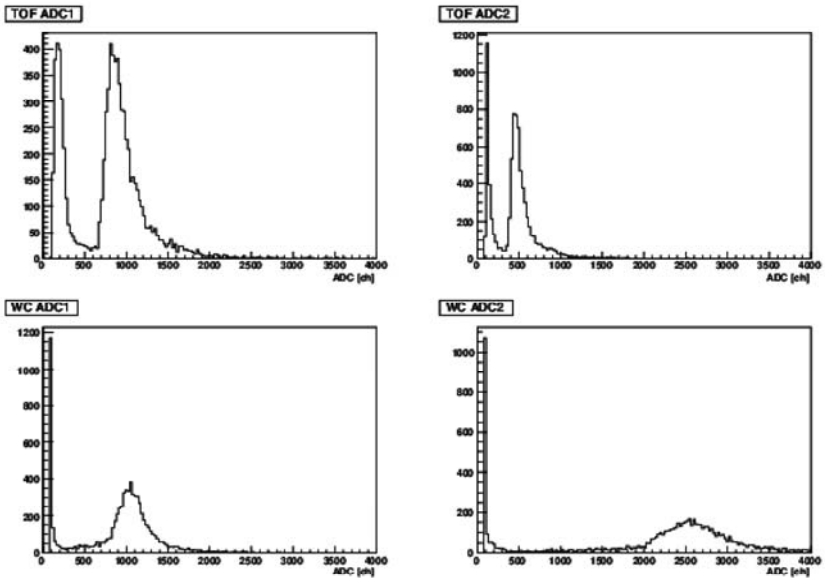
ADC and TDC spectra of run13 (y=0 cm)

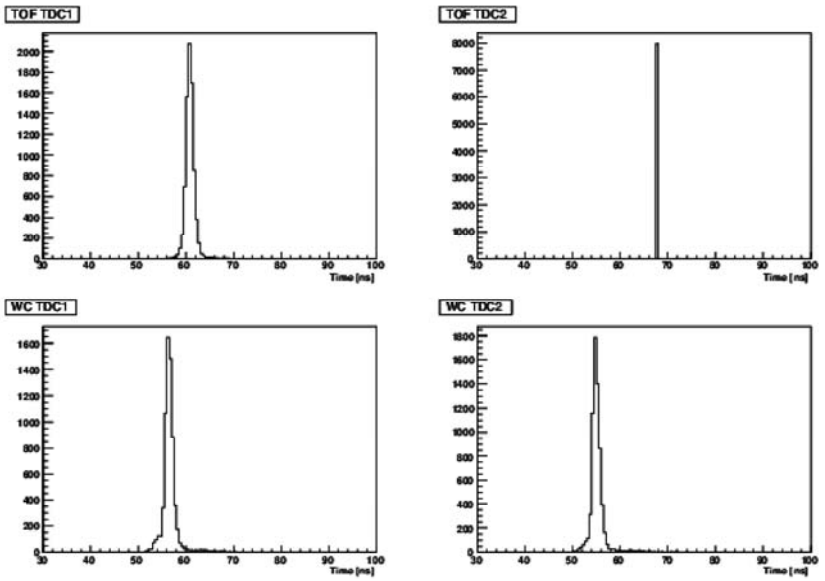
Quote:

Run13 for cosmic ray data is restarted
after the position of TOF2 was adjusted.

y: 0 cm
TOF1: -2100 V
TOF2: -2100 V
WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Trigger: TOF1 and TOF2, 0.1 Hz

Attachment 1: hist-run13_20160226.pdf





13	Fri Feb 26 09:17:38 2016	Toshiyuki Gogami	Routine	General	Run16 for cosmic ray data at y=-30

					cm is started.

Run16 for cosmic ray data is started.

y: -30 cm
TOF1: -2100 V
TOF2: -2100 V
WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Trigger: TOF1 and TOF2, 0.1 Hz

12	Fri Feb 26 09:07:47 2016	Toshiyuki Gogami	Routine	General	Run15 for LED calibration of WC2 is started.

Run15 for LED calibration of WC2.

WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 5.90 V
Leading and Trailing: 5 ns
Width: 10 ns

10	Fri Feb 26 09:02:48 2016	Toshiyuki Gogami	Routine	General	Run13 is terminated.

Run13 is terminated.

9	Thu Feb 25 18:02:43 2016	Toshiyuki Gogami	Routine	General	Run13 for cosmic ray data at y=0 cm is restarted

Run13 for cosmic ray data is restarted
after the position of TOF2 was adjusted.

y: 0 cm
TOF1: -2100 V
TOF2: -2100 V
WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Trigger: TOF1 and TOF2, 0.1 Hz

8	Thu Feb 25 18:01:55 2016	Toshiyuki Gogami	Configuration	Hardware	PoPosition of TOF2 was adjusted.

Position of TOF2 was adjusted.

7	Thu Feb 25 17:47:20 2016	Toshiyuki Gogami	Routine	General	Run13 for cosmic ray data at y=0 cm is started.

Run13 for cosmic ray data is started.

y: 0 cm
TOF1: -2100 V
TOF2: -2100 V
WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Trigger: TOF1 and TOF2, 0.1 Hz

6	Thu Feb 25 17:34:12 2016	Toshiyuki Gogami	Routine	General	Run12 for LED calibration of WC1.

Run12 for LED calibration of WC1.

WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 5.50 V
Leading and Trailing: 5 ns
Width: 10 ns

5	Thu Feb 25 17:32:10 2016	Toshiyuki Gogami	Routine	General	Run11 for LED calibration of WC2.

```
Run11 for LED calibration of WC2.

WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Hight: 5.90 V
Leading and Trailing: 5 ns
Width: 10 ns
```

4	Thu Feb 25 17:10:04 2016	Toshiyuki Gogami	Analysis	General	run11 to find LED setting for calibration.

```
LED setting for calibration.

---
WC1: ZK6922, -2100 V
WC2: ZK6920, -2100 V
Period: 50 us
Low: 0.00 V
Leading and Trailing: 5 ns
Width: 10 ns
----------------------------
High[V] WC1 WC2
5.00 x x
5.20 x x
5.50 o x
5.70 x A
5.90 x o
----------------------------

5.50 and 5.90 V will be used for
calibrations of WC1 and WC2, respectively.
```

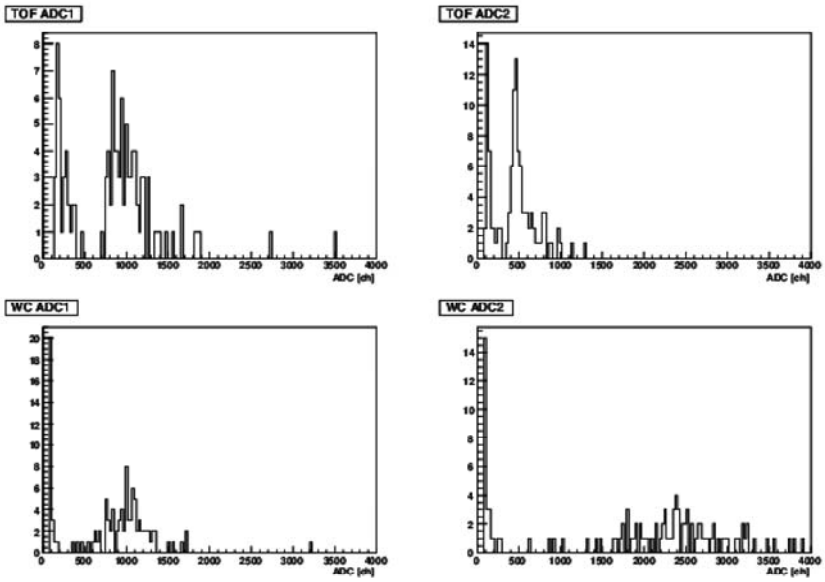
3	Thu Feb 25 16:59:20 2016	Toshiyuki Gogami	Routine	General	Run 10 is stopped

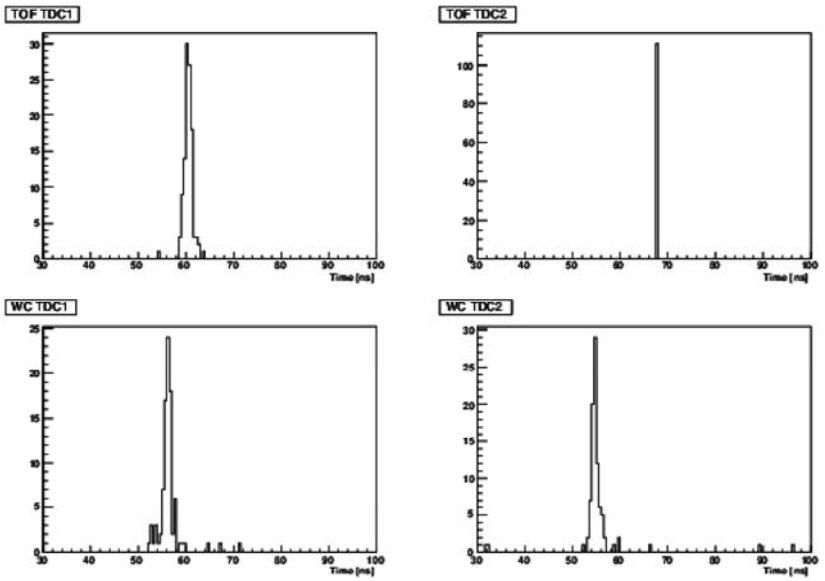
```
Run 10 is stopped.
```

2	Thu Feb 25 16:17:34 2016	Toshiyuki Gogami	Routine	General	Histogram check for run10 --> OK

```
Histogram check for run10 --> OK.

will keep taking data.
```

Attachment 1: hist-run10_20160225.pdf





1	Thu Feb 25 16:10:56 2016	Toshiyuki Gogami	Routine	General	Water Cherenkov detector test is

started !!!!

A water Cherenkov detector which will be used for the S-2S experiment is being started testing.

Run10 is for a test run with cosmic-rays.

Trigger: TOF1 (-2100 V) and TOF2 (-2000V).
WC1 (H11284-100UV, ZK6922, -2100 V)
WC2 (H11284-100UV, ZK6920, -2100 V)

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