



Status of DCV

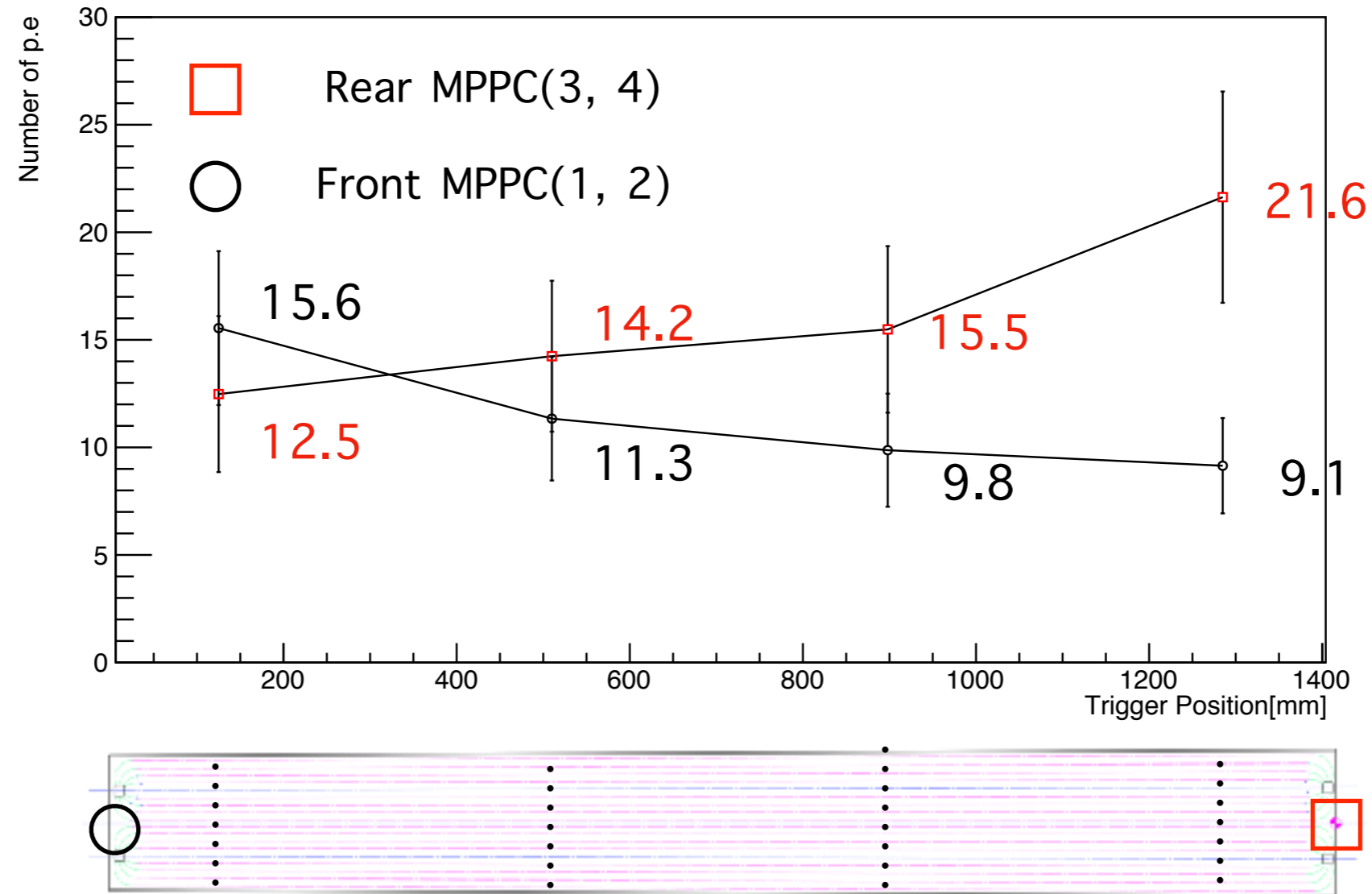
Chonbuk National University

HongMin KIM

28 June, 2019

KOTO Collaboration Meeting

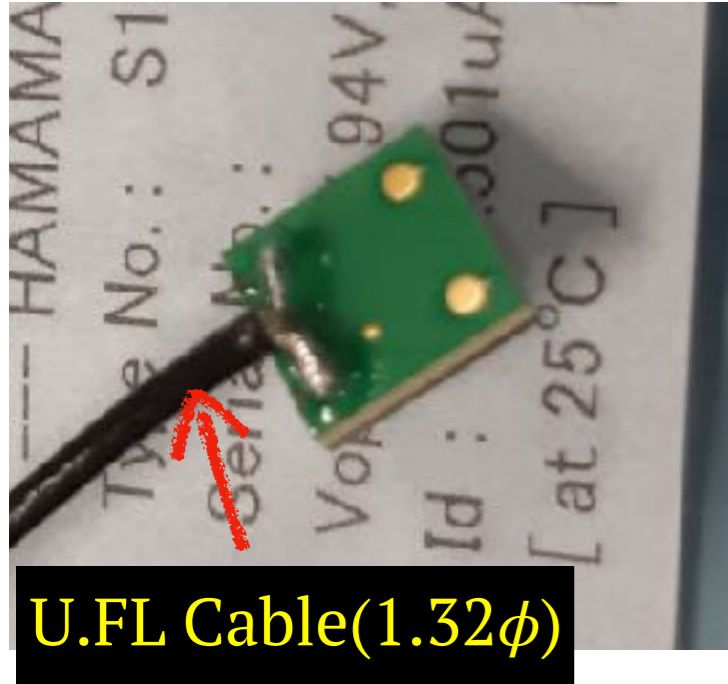
Last Coll. Meeting(Prototype Test)



After the prototype test

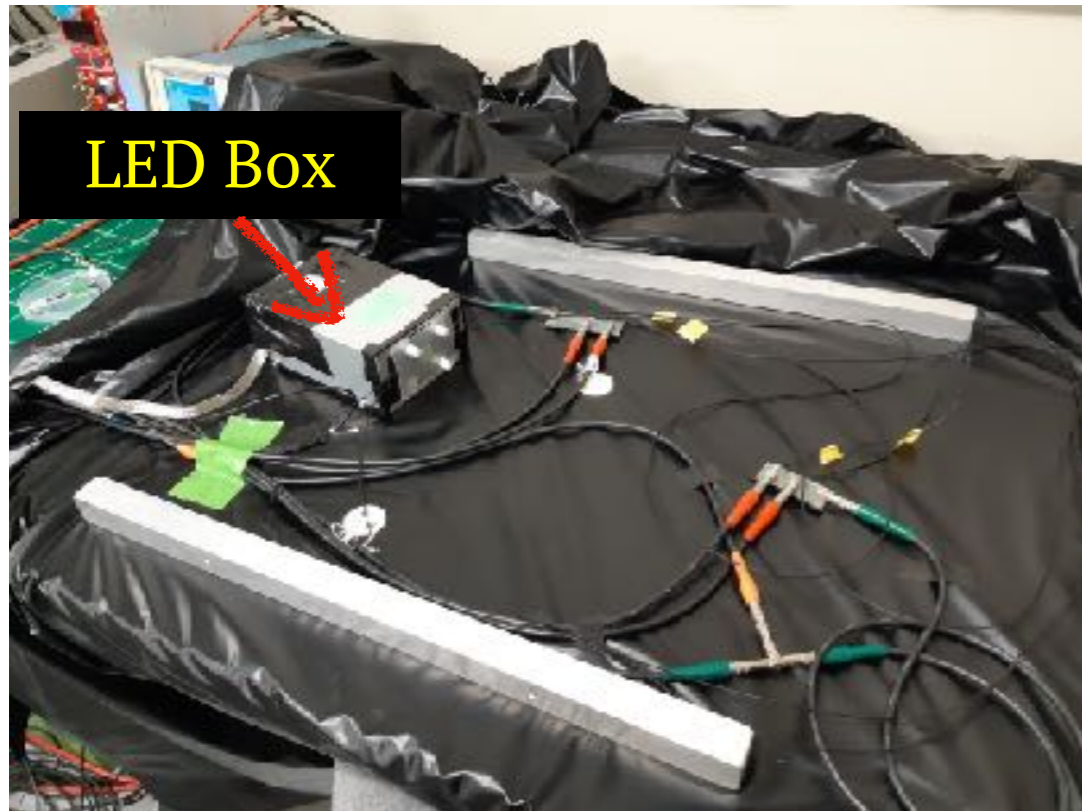
- Scintillator type was changed to EJ200 from ELJEN company.
- All WLS Fiber was used as S-type Y-11 from Kuraray.
- We accomplished the production process more skillfully.

Measurement of the single photon gain



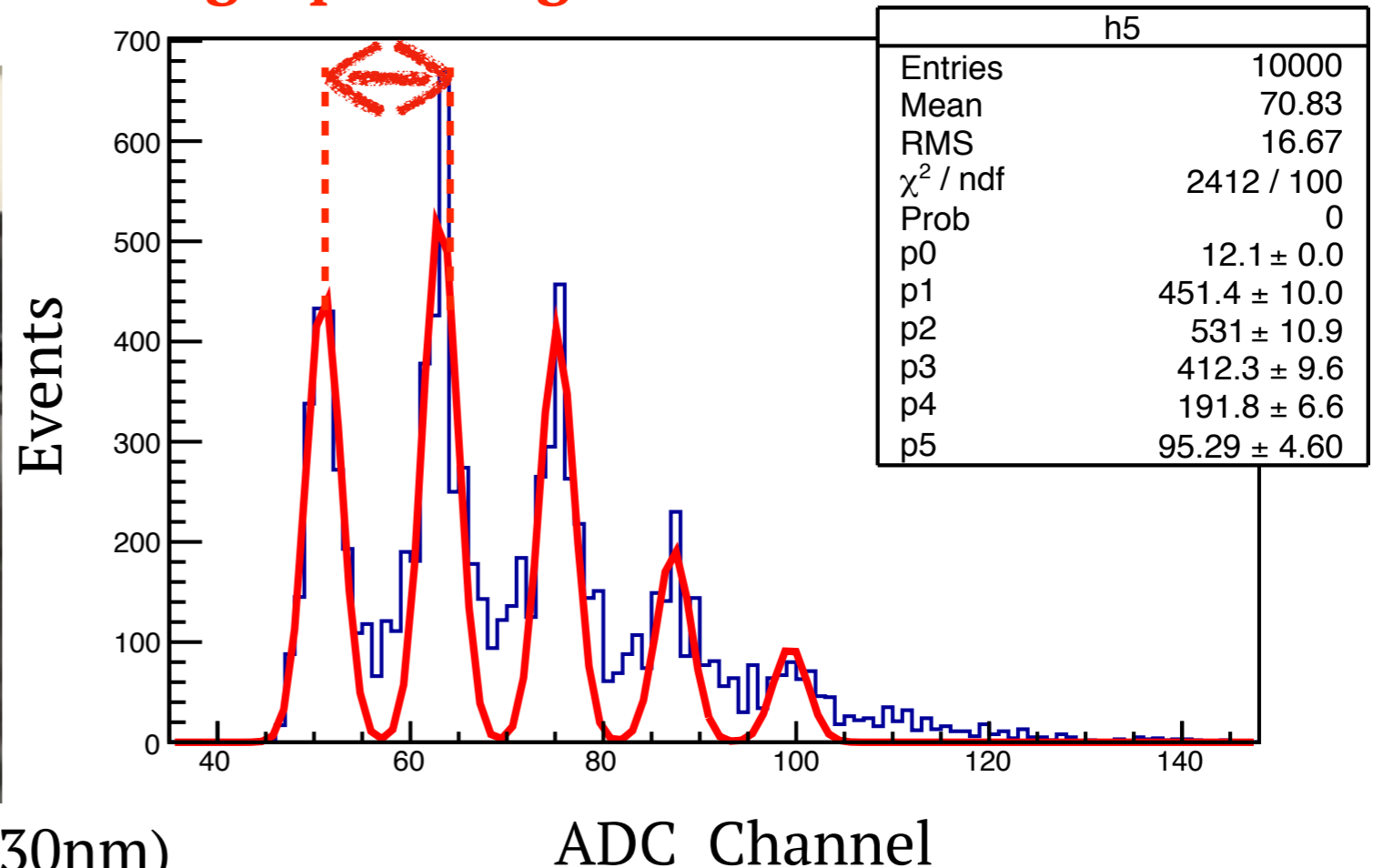
Type No.	HAMAMATSU S13360-6050PE
Effective photosensitive area	6.0 mm × 6.0 mm
Material size	7.35 mm × 6.85 mm × 1.45 mm
Spectral response range λ	320 nm ~ 900 nm

U.FL Cable(1.32 ϕ)



LED Box

Single photon gain h5

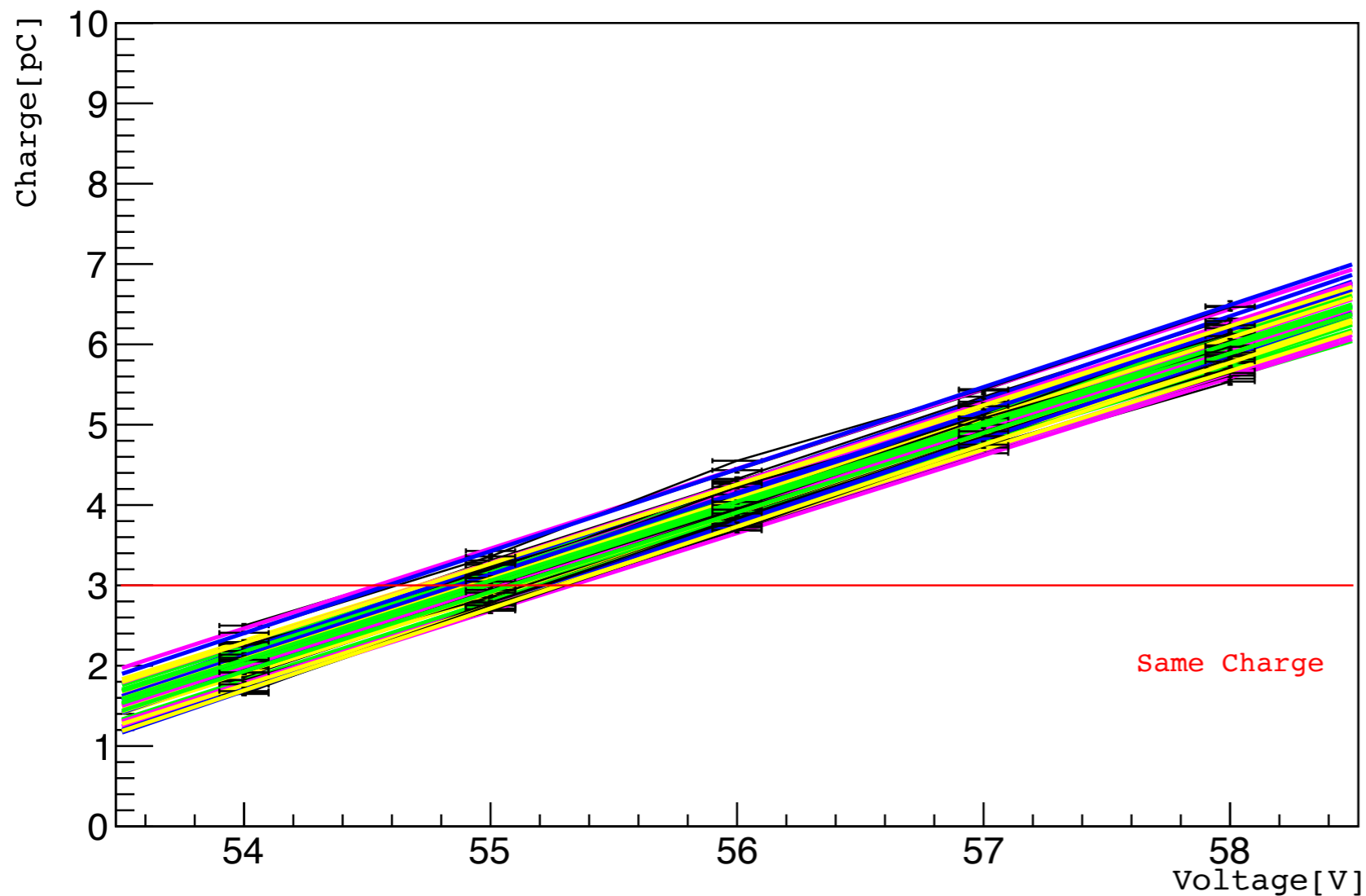


Single photon measurement by LED(430nm)

Grouping the MPPCs

ADC Channel \rightarrow Charge

Charge of the MPPC single photon signal



40 MPPCs were tested.

ADC Channel = 12

S.N.	Voltage	
12686	54.7099	DCV1 (module 0)
12705	54.7202	
12685	54.7262	
12697	54.7742	
12693	54.7843	DCV1 (module 1)
12679	54.8381	
12692	54.8428	
12708	54.8495	
		●
		●
		●

→ 54.7 V
→ 54.8 V

Fiber test

Test bench



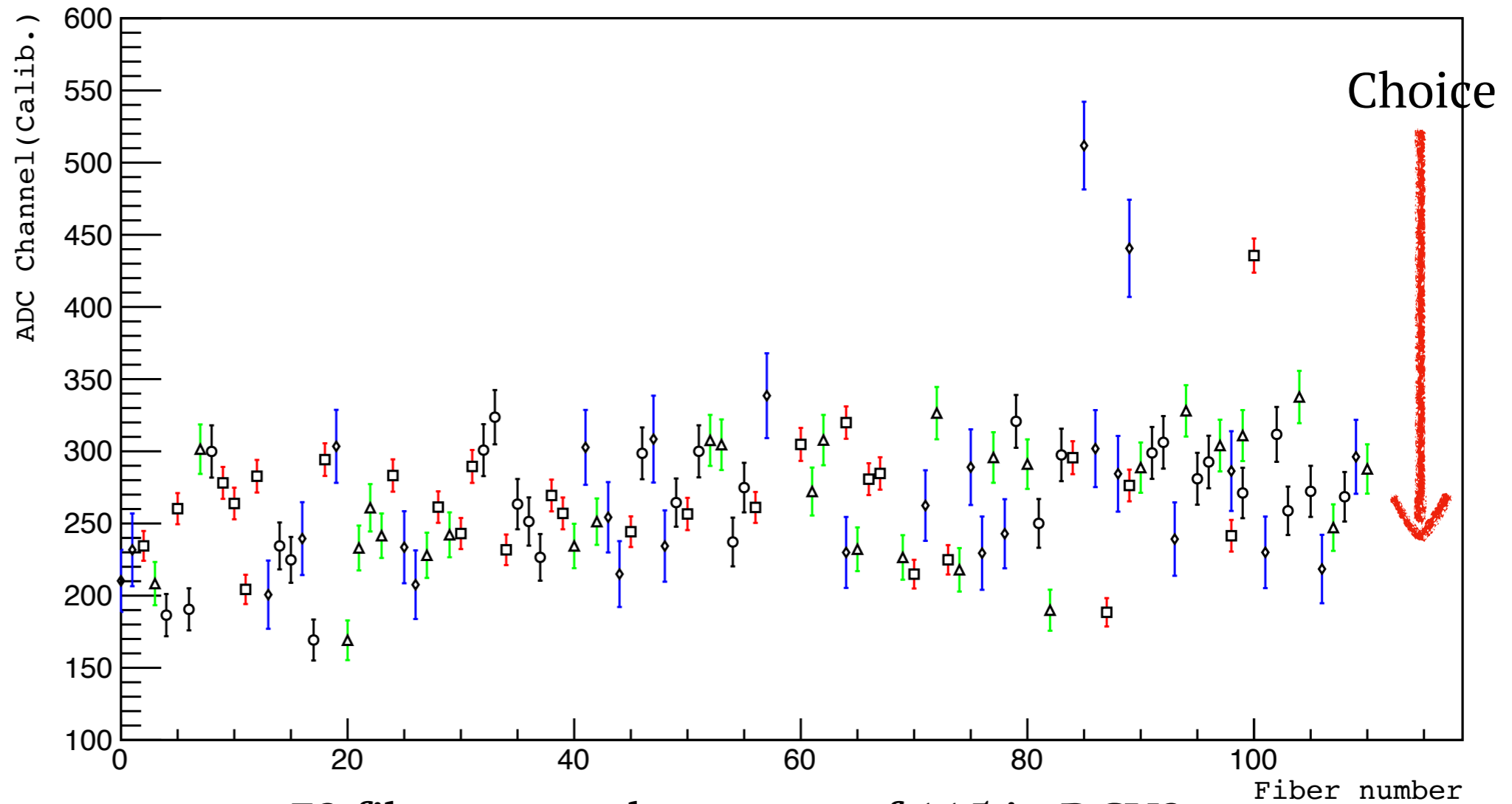
MPPC



LED(430nm)

Fiber Type	Kuraray, Y-11, 1mm
Fiber Length[mm]	1600

ADC Channel(Calib.) by fiber number for DCV2



72 fibers were chosen out of 115 in DCV2
 (72 fibers were chosen out of 94 in DCV1)

Detector manufacturing process

Fiber gluing



Scintillator : ELJEN EJ-200
Glue : Saint Gobain BC-600

Evacuation
by vacuum chamber



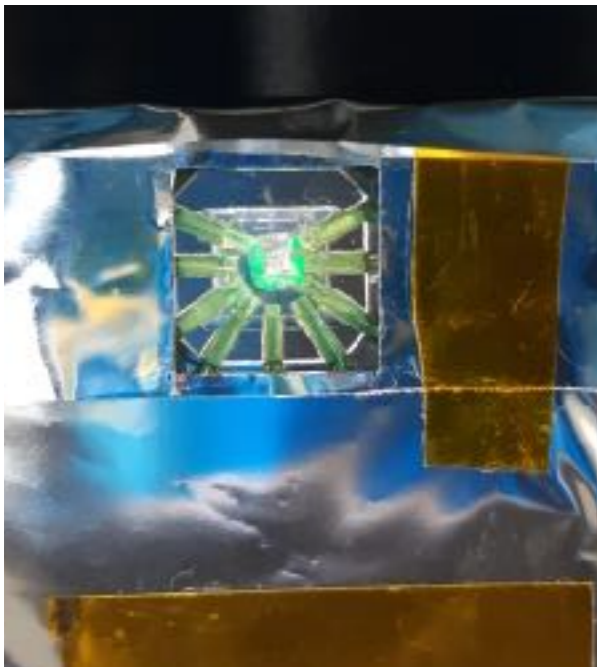
Less than 1 pa. Over the 48 hr
Extracting outgas

Wrapping

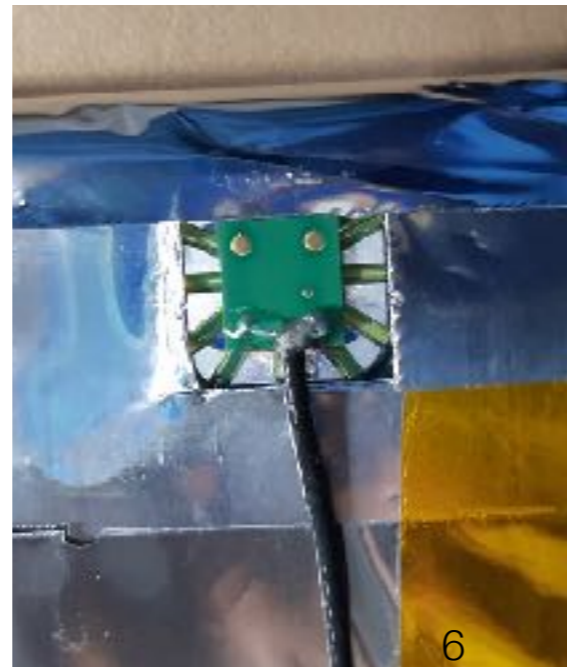


12 μm aluminized film

Light guide

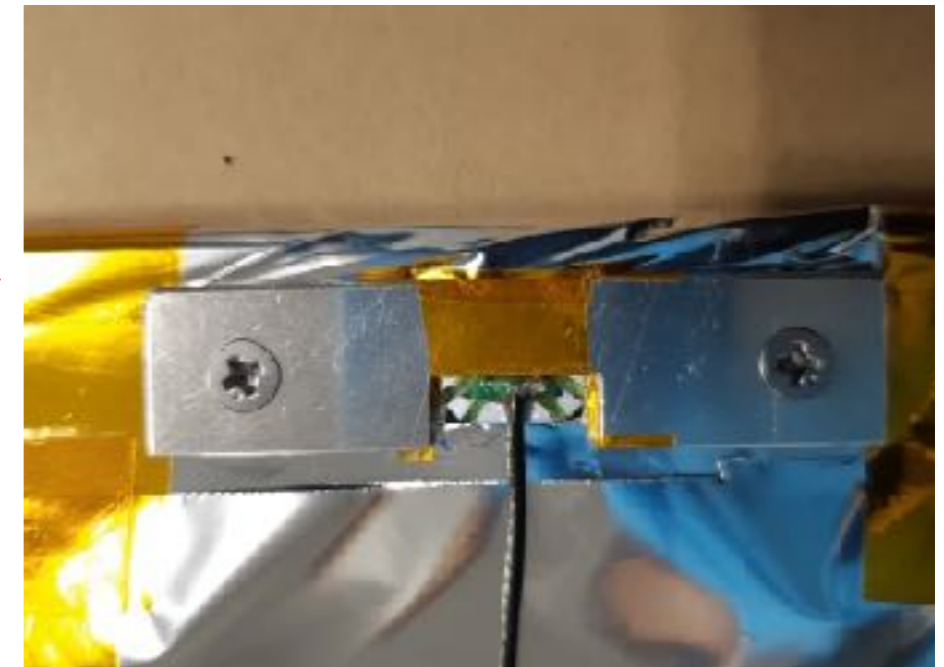


Put the MPPC



6

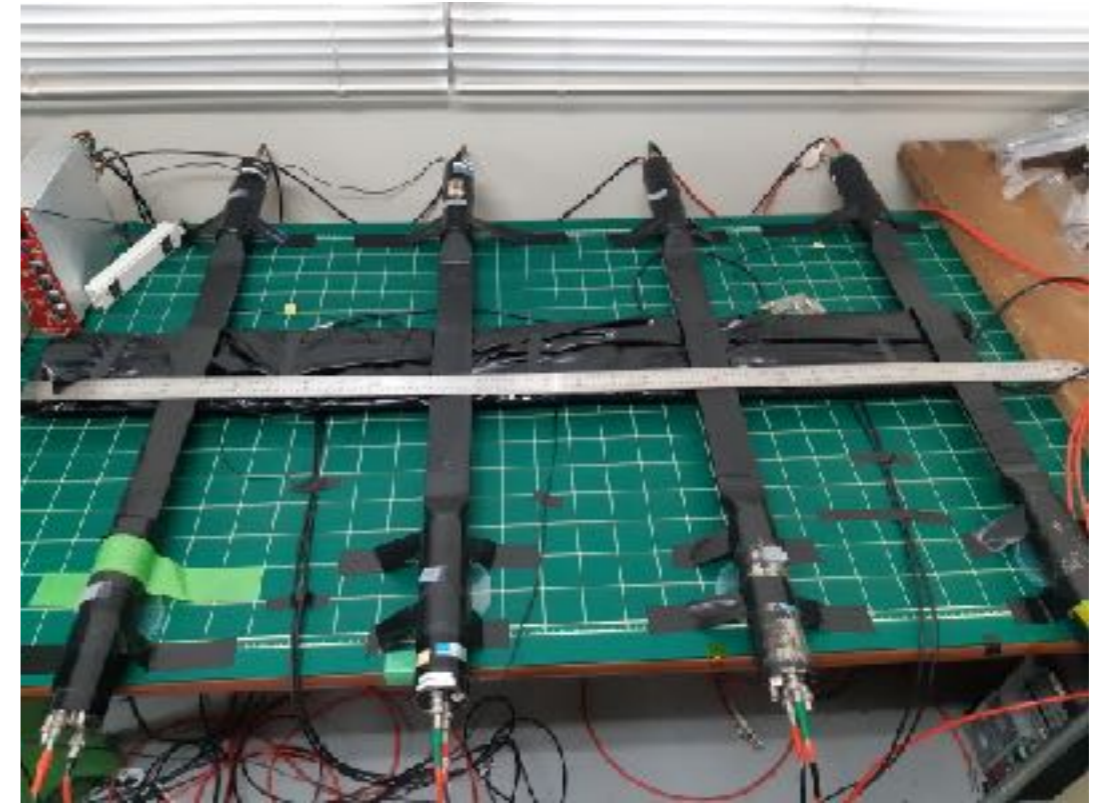
Cover the MPPC



Cosmic ray test of DCV

Position1 = 125,510,898,1285

Position2 = 317,705,1092,1380.5



DCV 1

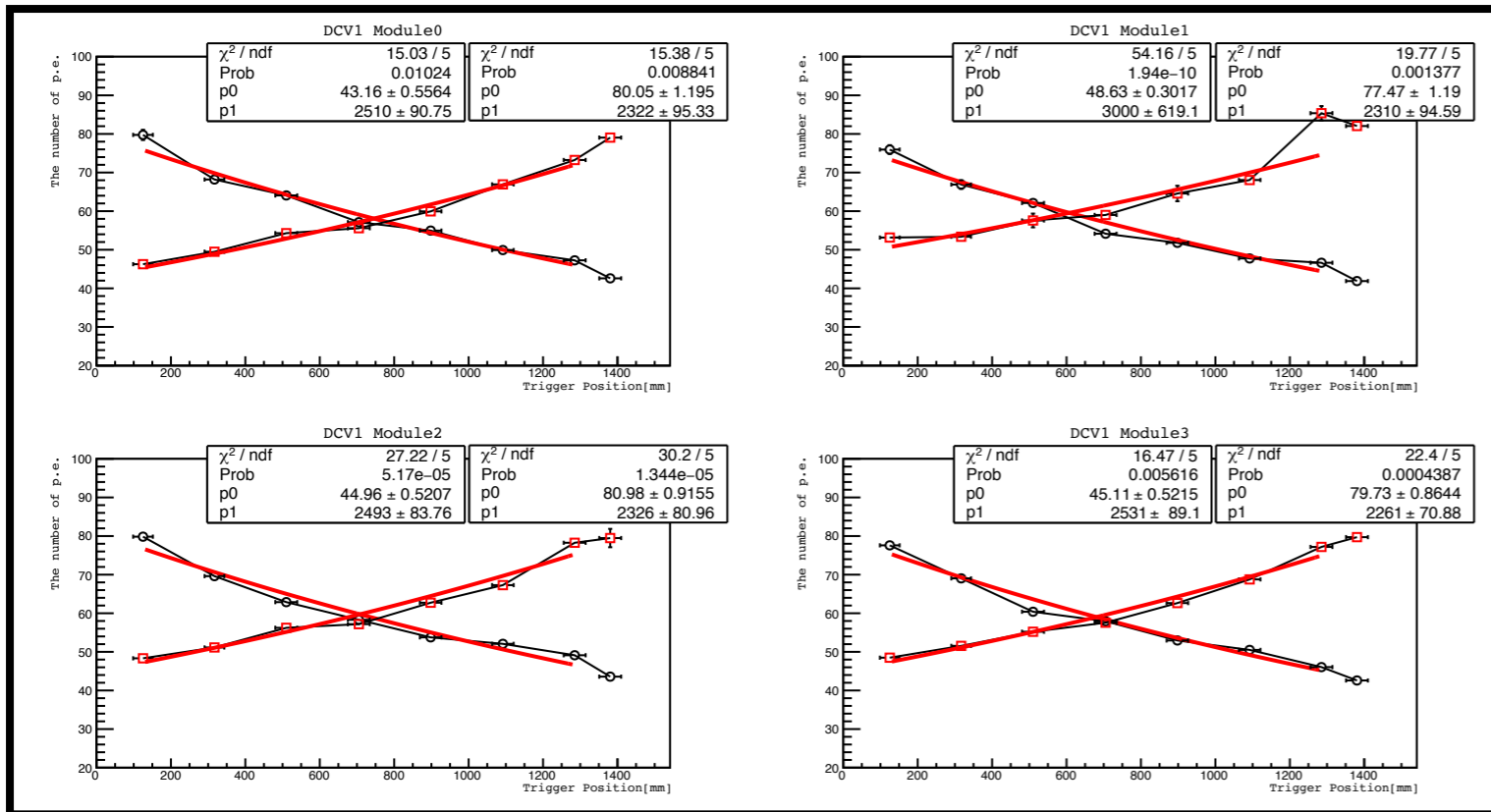
Position1 = 26.5,428,829,1231

Position2 = 227,628,1030,1432.5



DCV2

Measurement of P.E. and Attenuation length

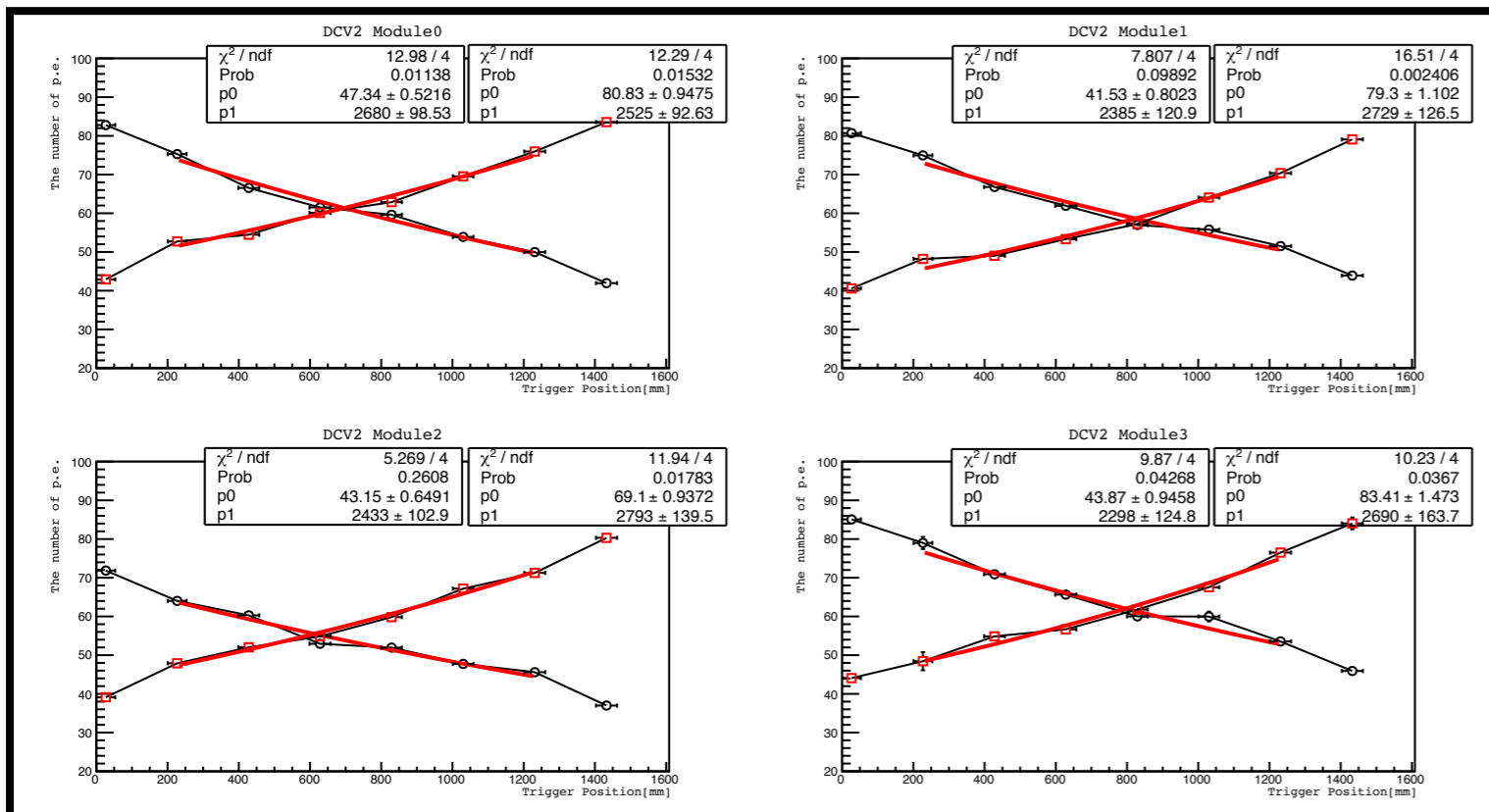


P.E.
for 1 MeV

- DCV1
Min : 41.88 / Max : 82.05
- DCV2
Min : 36.98 / Max : 85.08

Fitting
Function

$$f(x) = [0] * \exp(\pm x / [1])$$



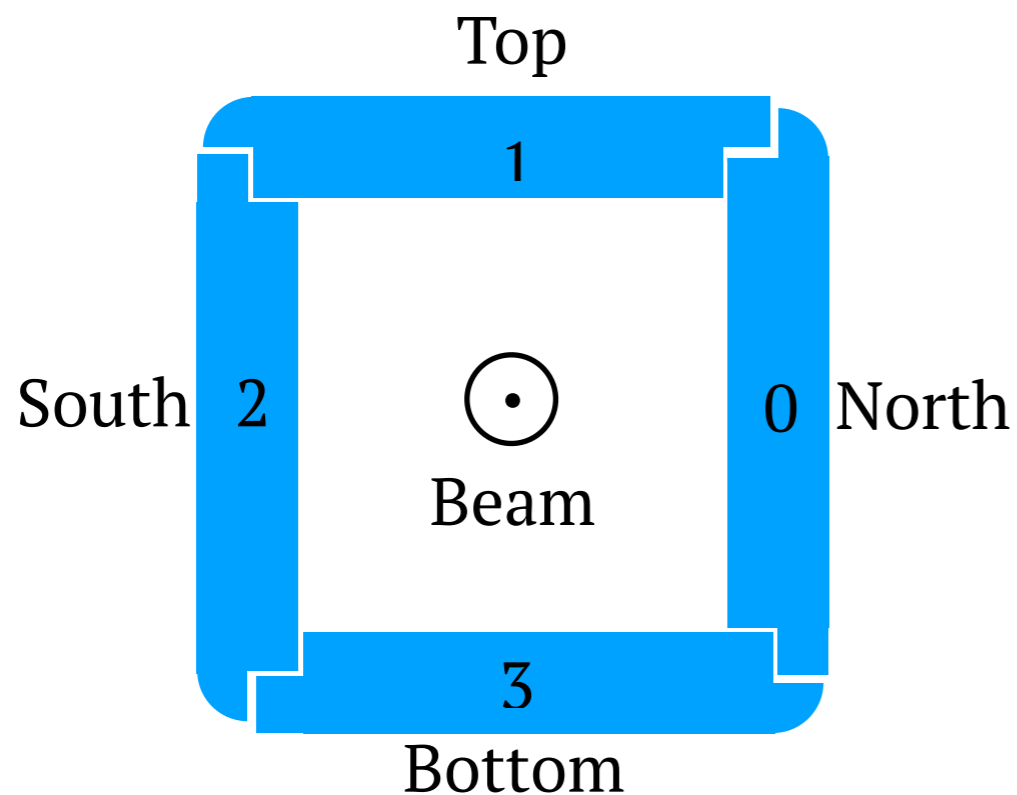
Fitting
Range

- DCV1 : 128 ~ 1285
(DCV1 Length = 1410 mm)
- DCV2 : 227 ~ 1231
(DCV2 Length = 1460 mm)

Average
Attenuatio
n Length

- DCV1 : 2469 mm
- DCV2 : 2567 mm

Making the scintillator pipes



(View from downstream)

DCV1

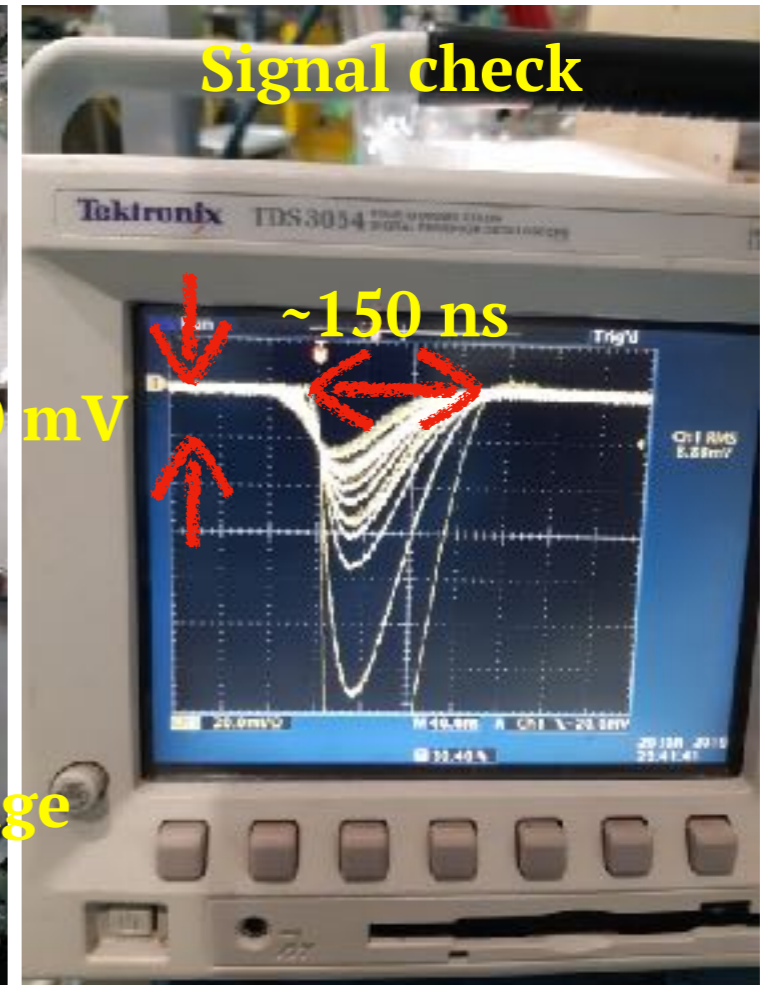
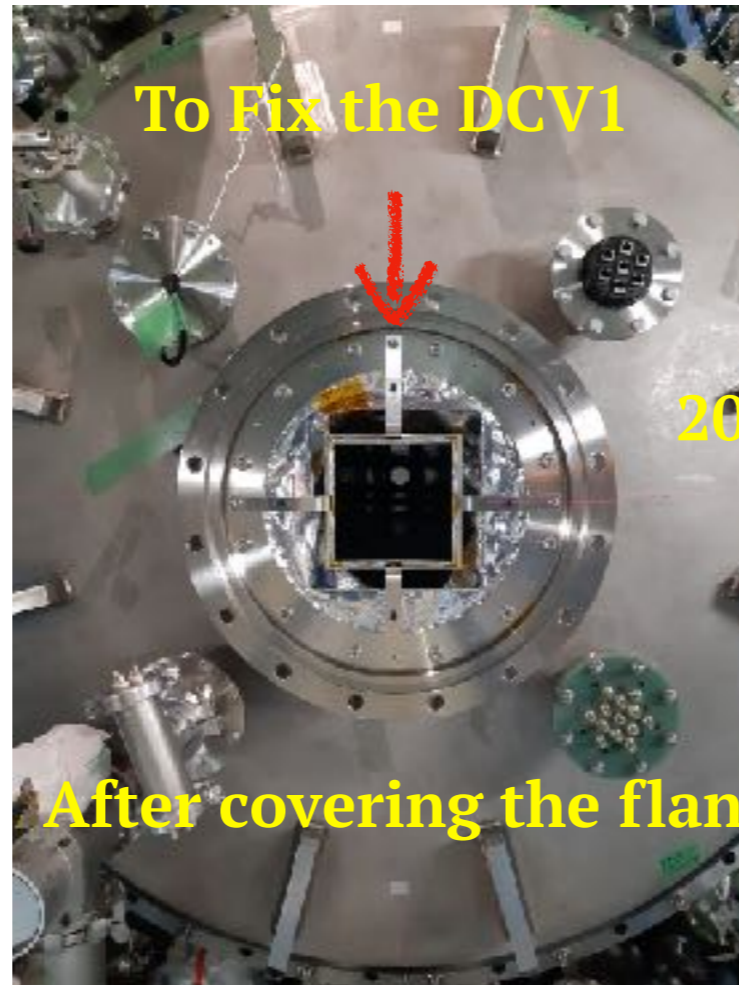
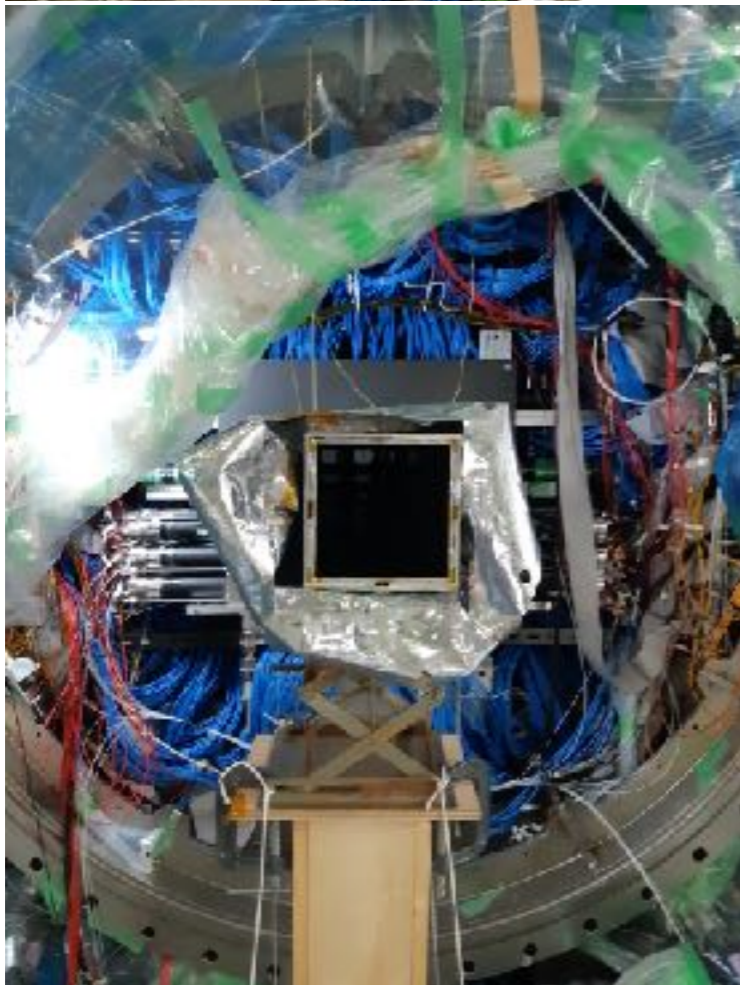


Center Line for beam alignment

DCV2



Installation of DCV1



Installation of DCV2



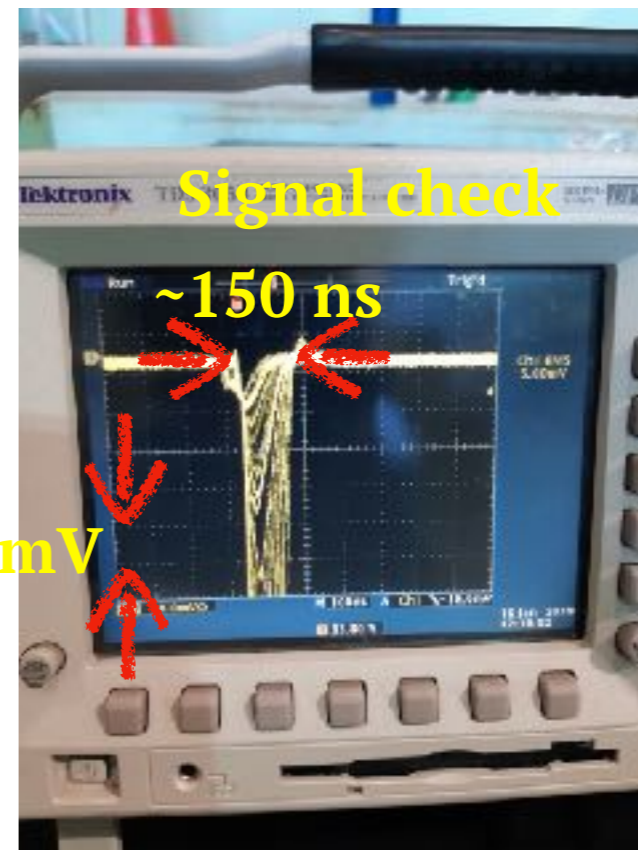
Feed through



Spacer to fix the DCV2



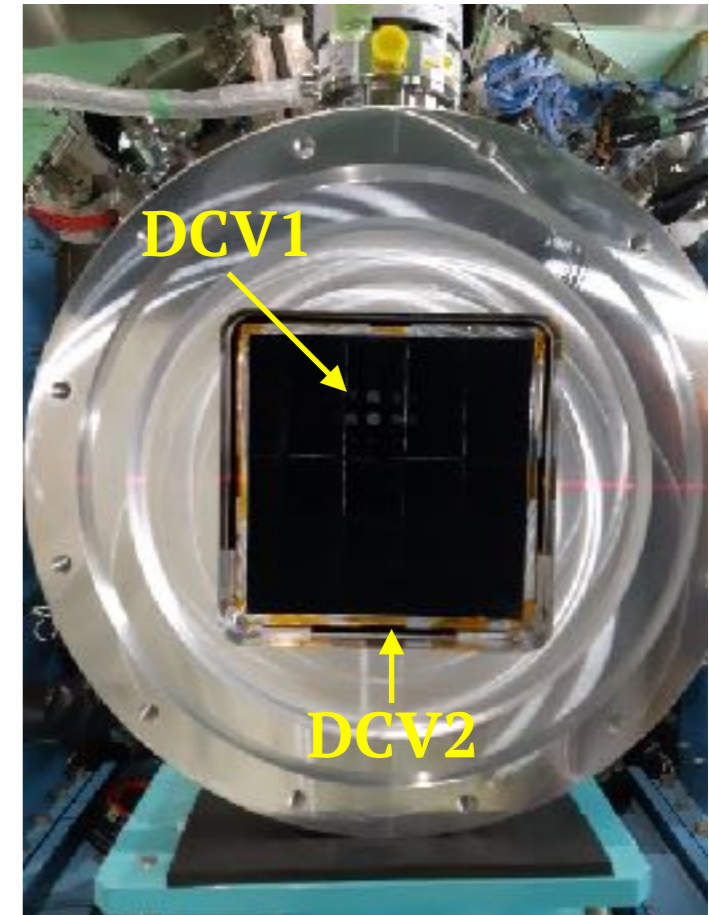
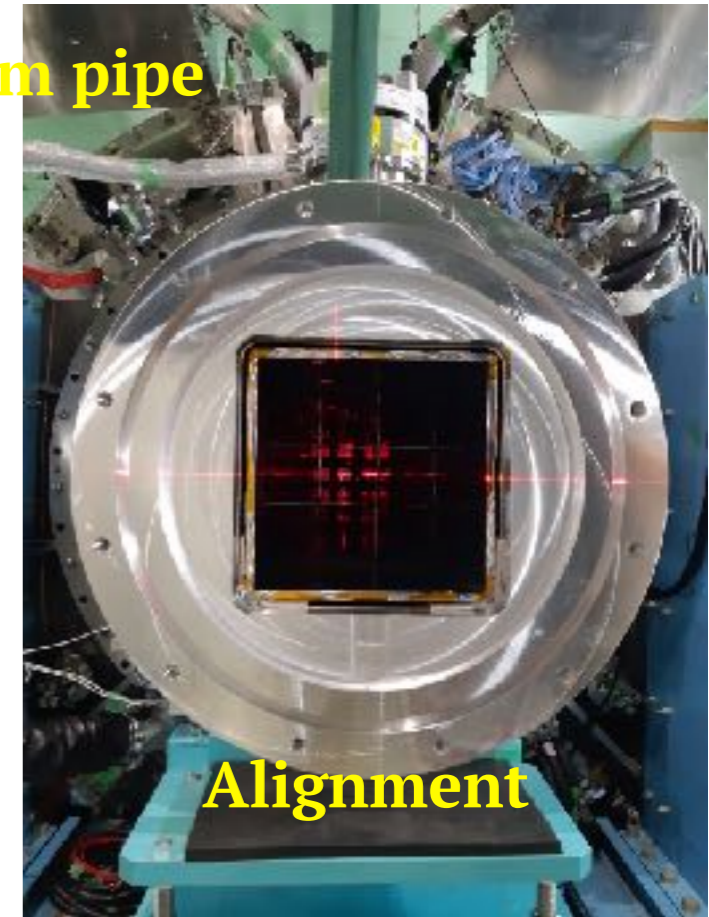
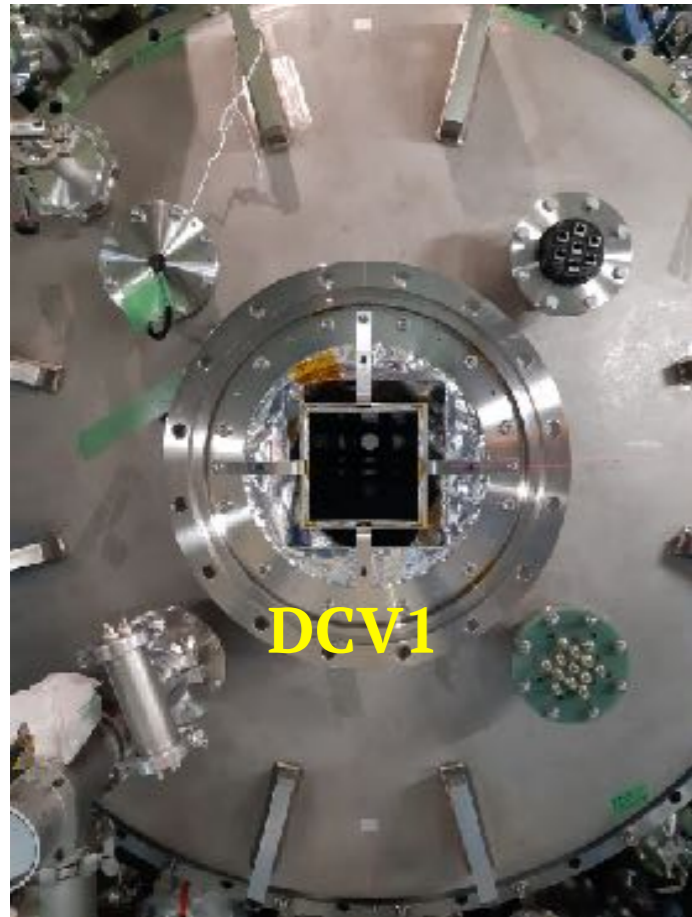
Downstream square beam pipe



Signal check

~150 ns

10 mV



DCV Amplifier board

Test pulse input (LEMO)

U.FL Connector for MPPC

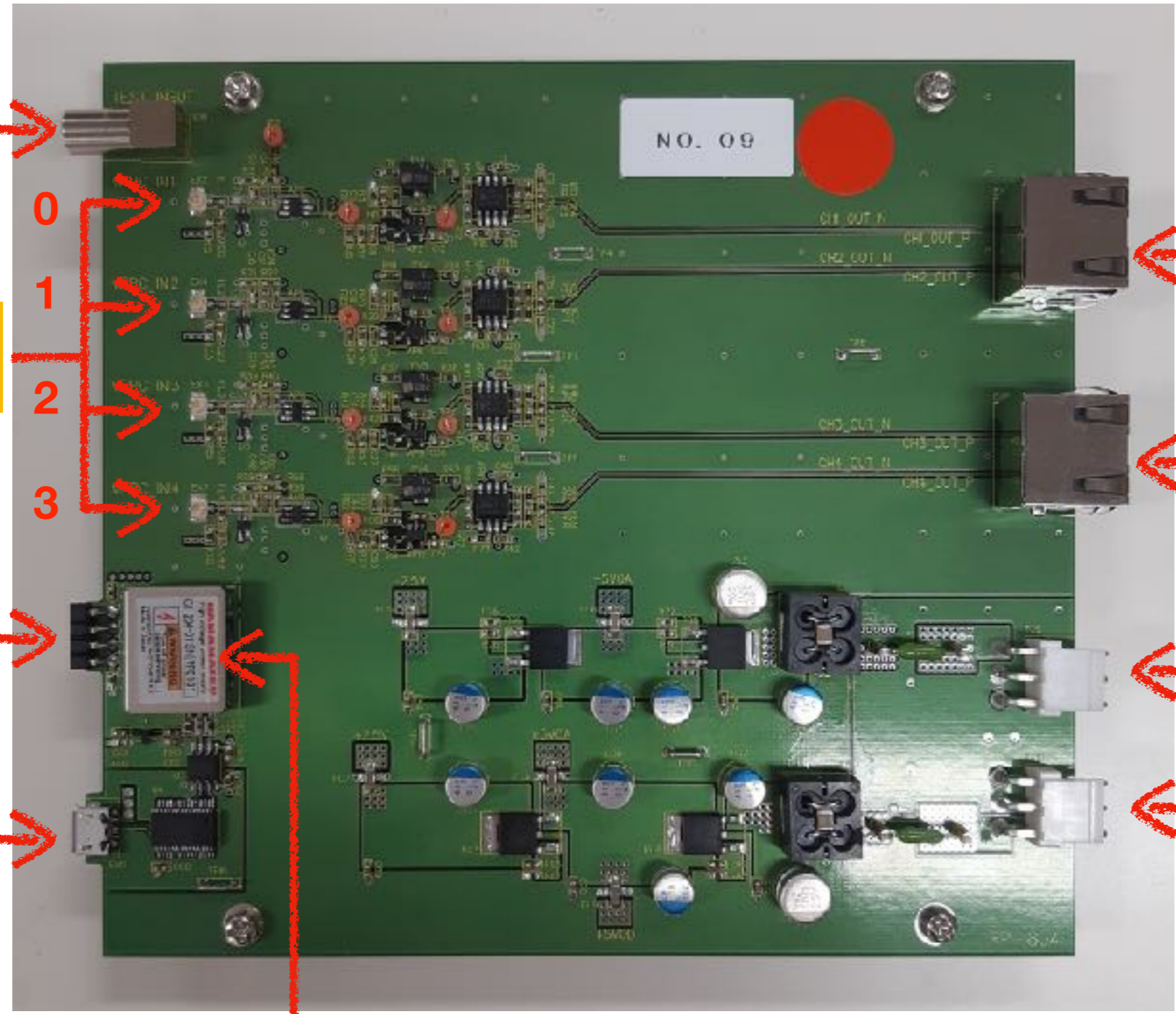
Voltage Monitor Connector

Voltage Control Connector (Micro 5-pin)

Voltage Controller

LAN Connector

Voltage Input Connector



0
1
2
3

1
0
3
2

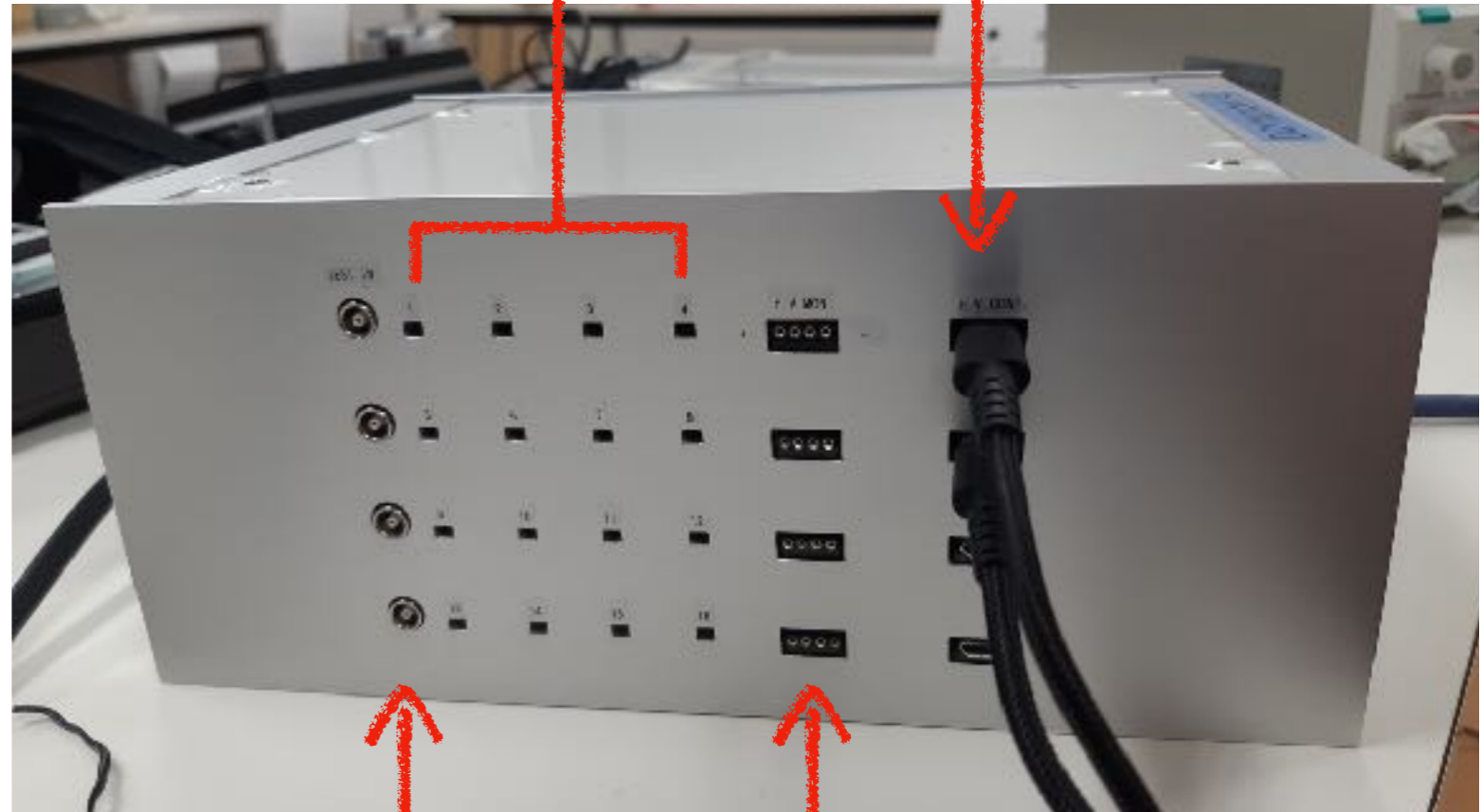
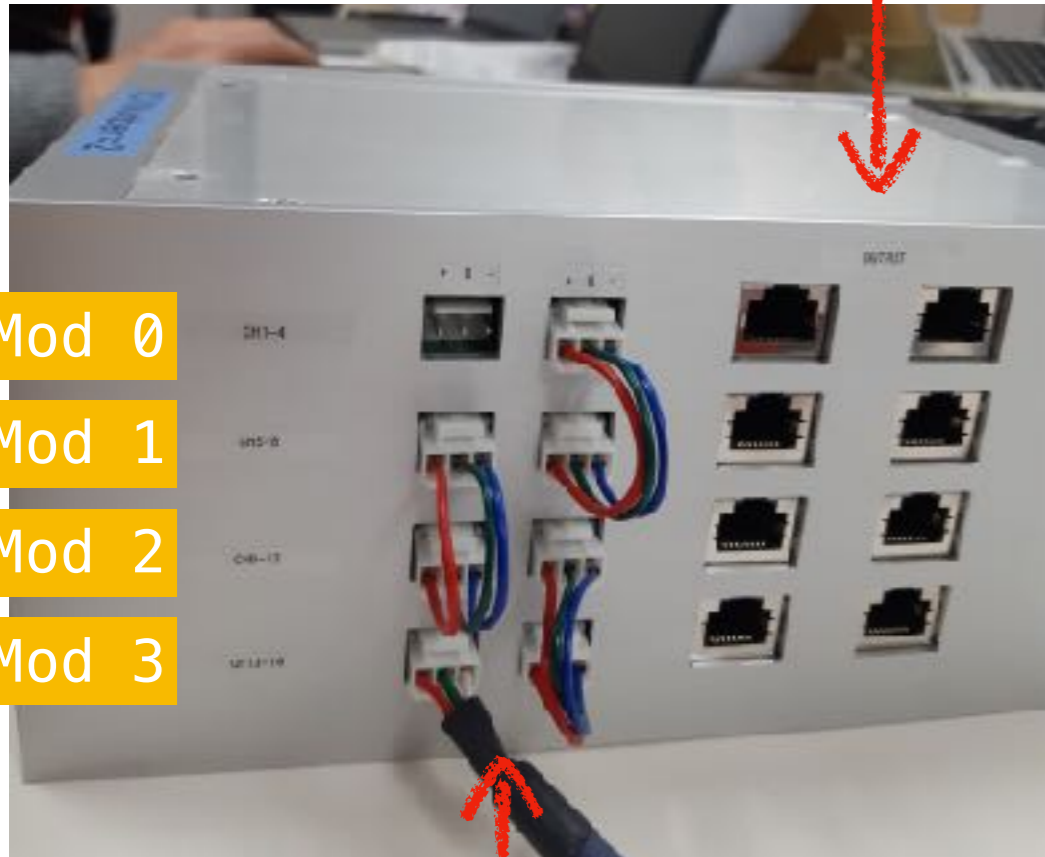
DCV Amplifier board

[There are 4 board in one box.]

LAN Connector

U.FL Connector
for MPPC

Voltage Control
Connector
(Micro 5-pin)



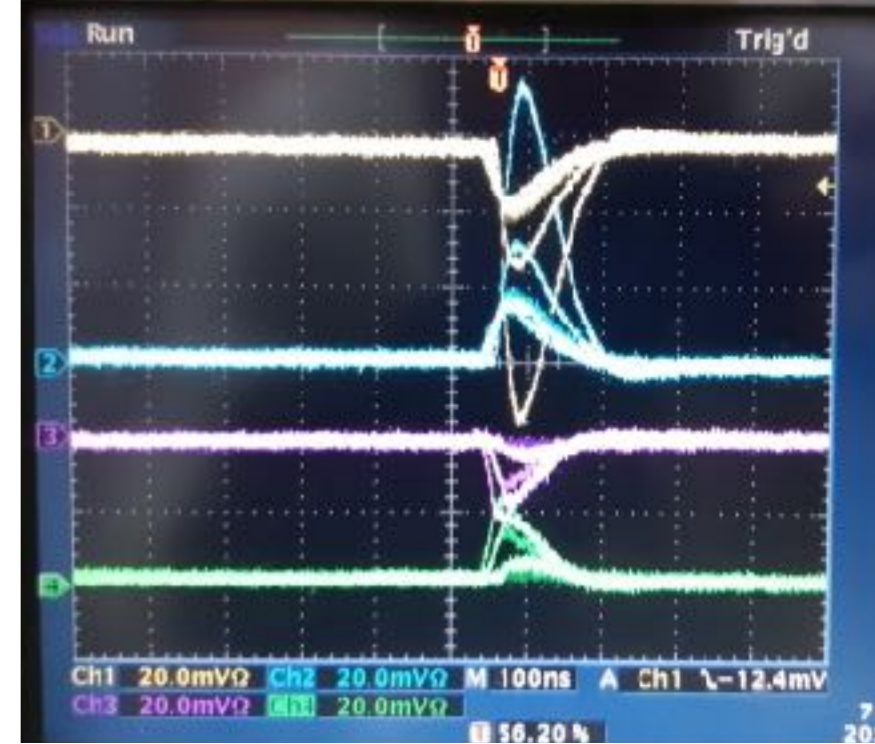
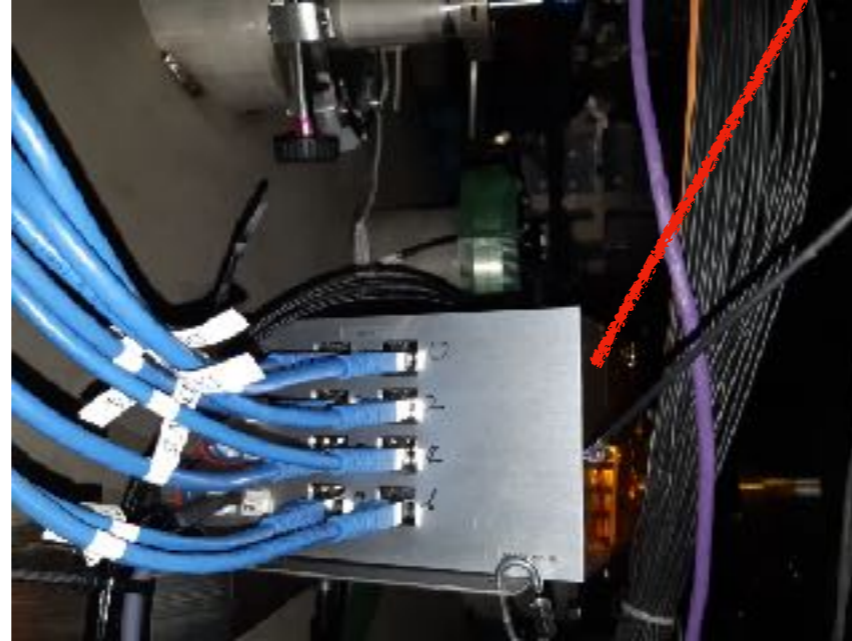
Voltage
Input
Connector

Test pulse input
(LEMO)

Voltage
Monitor
Connector

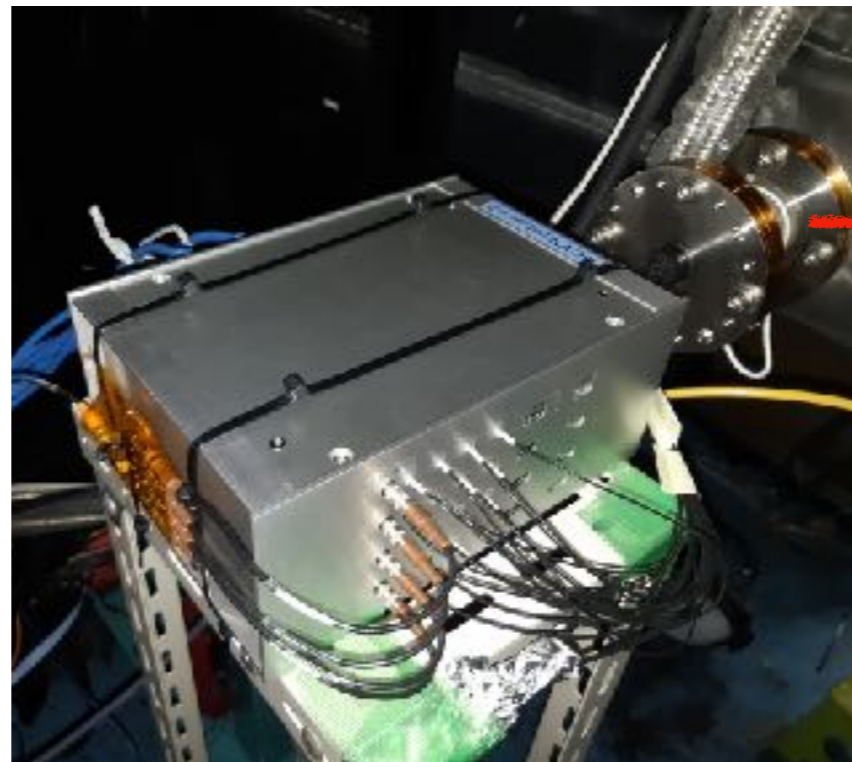
DCV1

Fixed by clamp



LAN Cable No. 7
(ADC 14, 15)

DCV2



DCV2 feedthrough

Issues during the installation of DCV

- The depth of feedthrough at downstream square beam pipe was short.
 - Extend the feedthrough about 90 mm.
- U.FL Cables were stressed between feedthrough flanges and surface of the DCV1 pipe. So there were no signal.
 - The defective MPPCs were replaced with a new one with a gain as close as possible. (DCV1 module3 MPPC 2, DCV2 module 2 MPPC 4)
- DCV2 beam pipe spacers were not fit.
 - We had polished the spacers to fit.
- DCV Pulse was inverted to negative sign.
 - Converting board from Osaka University was installed.
- ADC channel of a pair of MPPCs were switched (1 ↔ 2, 3 ↔ 4)
 - DCV Map was modified at 20 Feb, 2019

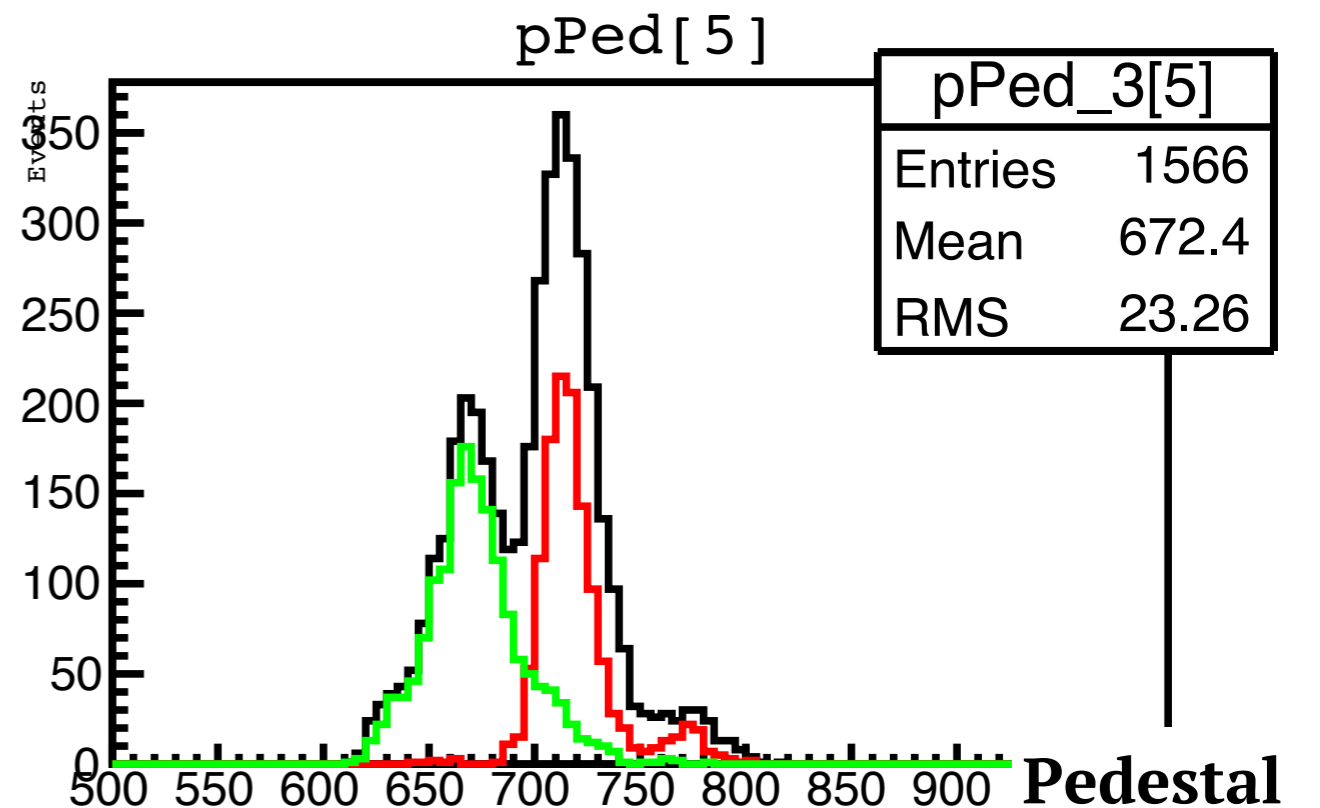
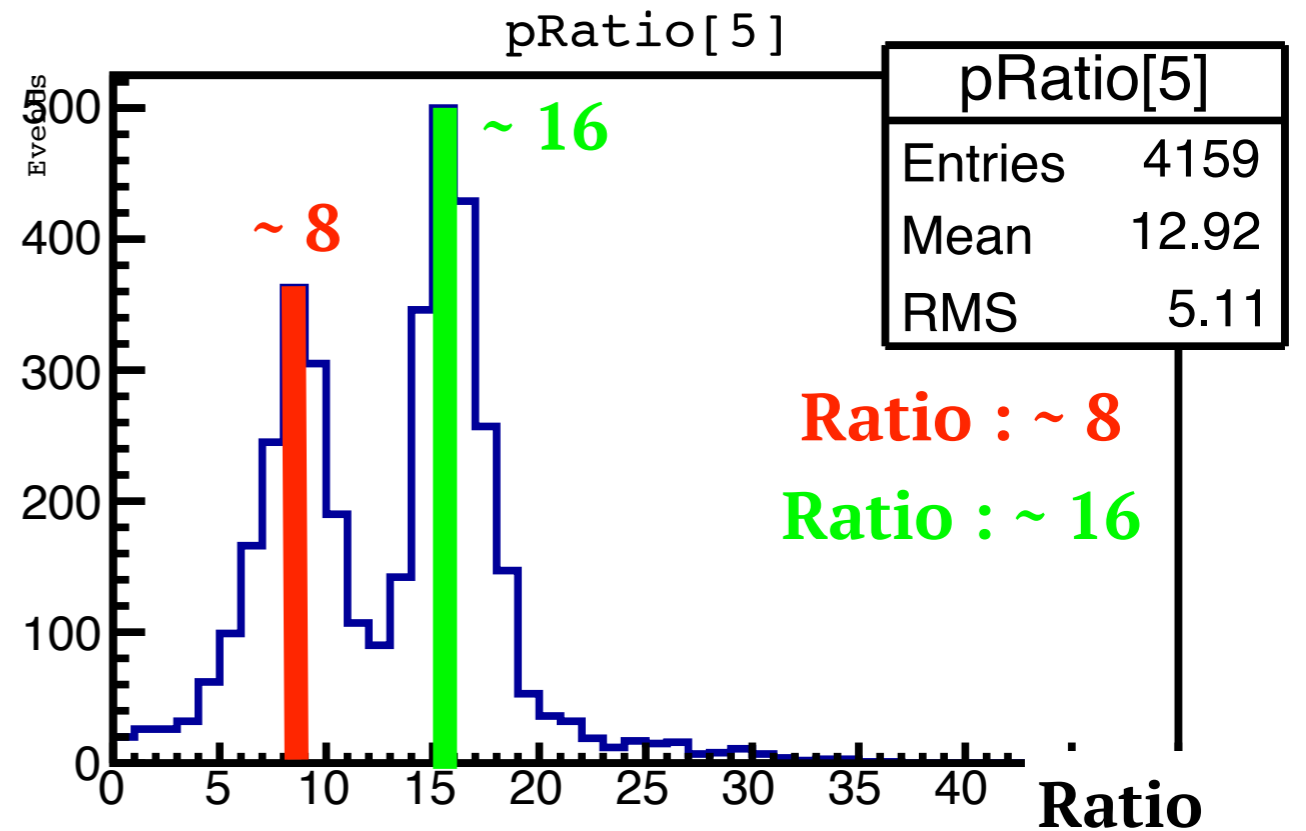
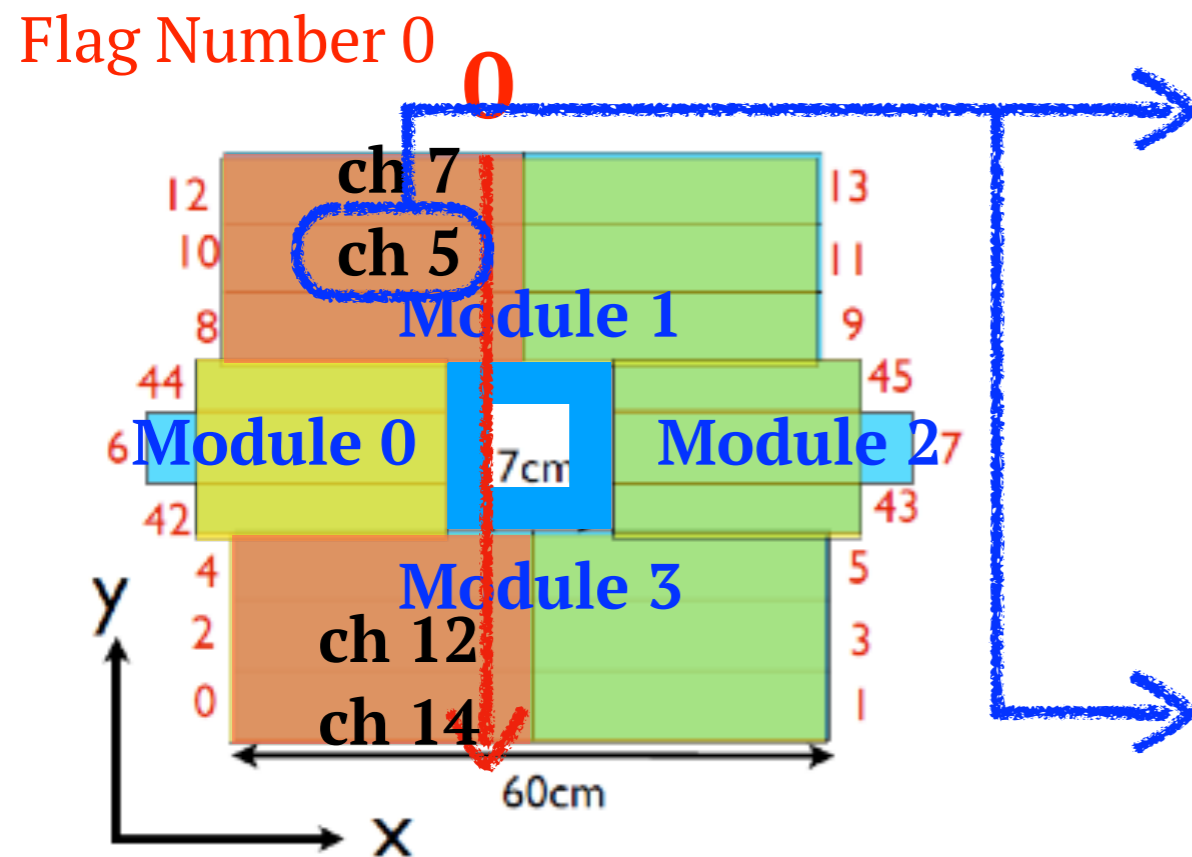
Define the Run Period for the calibration by cosmic ray

Run	Period	RunID	Date
81	0	30776 ~ 30787	2019.3.1. 01:30:52 ~ 2019.3.1. 09:10:48
	1	30910 ~ 31035	2019.3.4. 11:01:48 ~ 2019.3.8. 10:21:00
	2	31240 ~ 31373	2019.3.14. 15:04:25 ~ 2019.3.18. 22:36:06
	3	31374 ~ 31389	2019.3.18. 23:56:46 ~ 2019.3.19. 17:44:15
	4	31422 ~ 31446	2019.3.20. 20:56:08 ~ 2019.3.21. 18:24:10
	5	31447 ~ 31506	2019.3.21. 18:30:47 ~ 2019.3.23. 20:38:25
82	6	31533 ~ 31553	2019.4.3. 23:39:44 ~ 2019.4.4. 16:28:03
	7	31747 ~ 31772	2019.4.10. 09:05:19 ~ 2019.4.11. 05:11:42
	8	31984 ~ 31996	2019.4.17. 05:35:27 ~ 2019.4.17. 16:24:26
	9	32202 ~ 32220	2019.4.24. 09:28:03 ~ 2019.4.25. 01:31:45

Using the DCVPeak for calibration.

(Cal Period1)

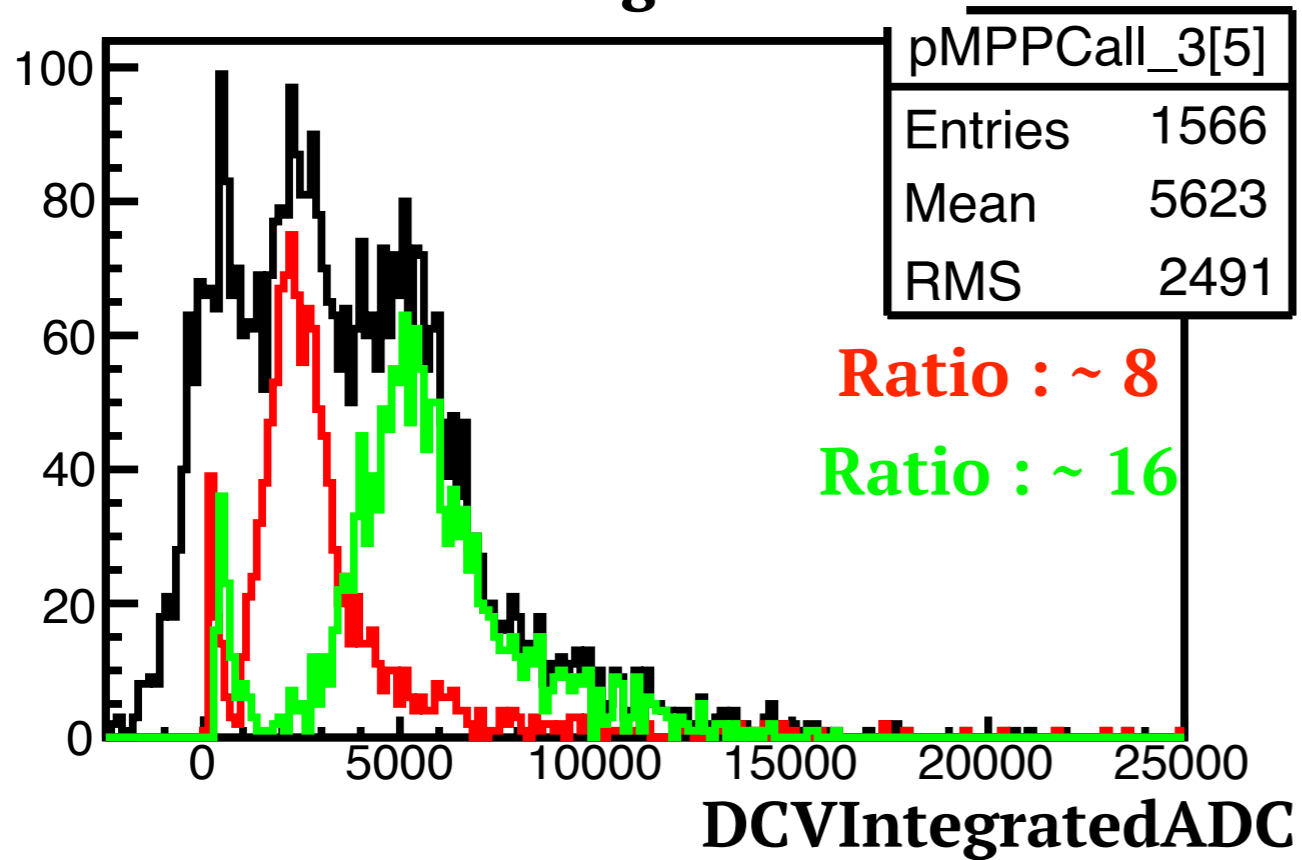
$$\text{Ratio} = \text{DCVIntegratedADC} / \text{DCVPeak}$$



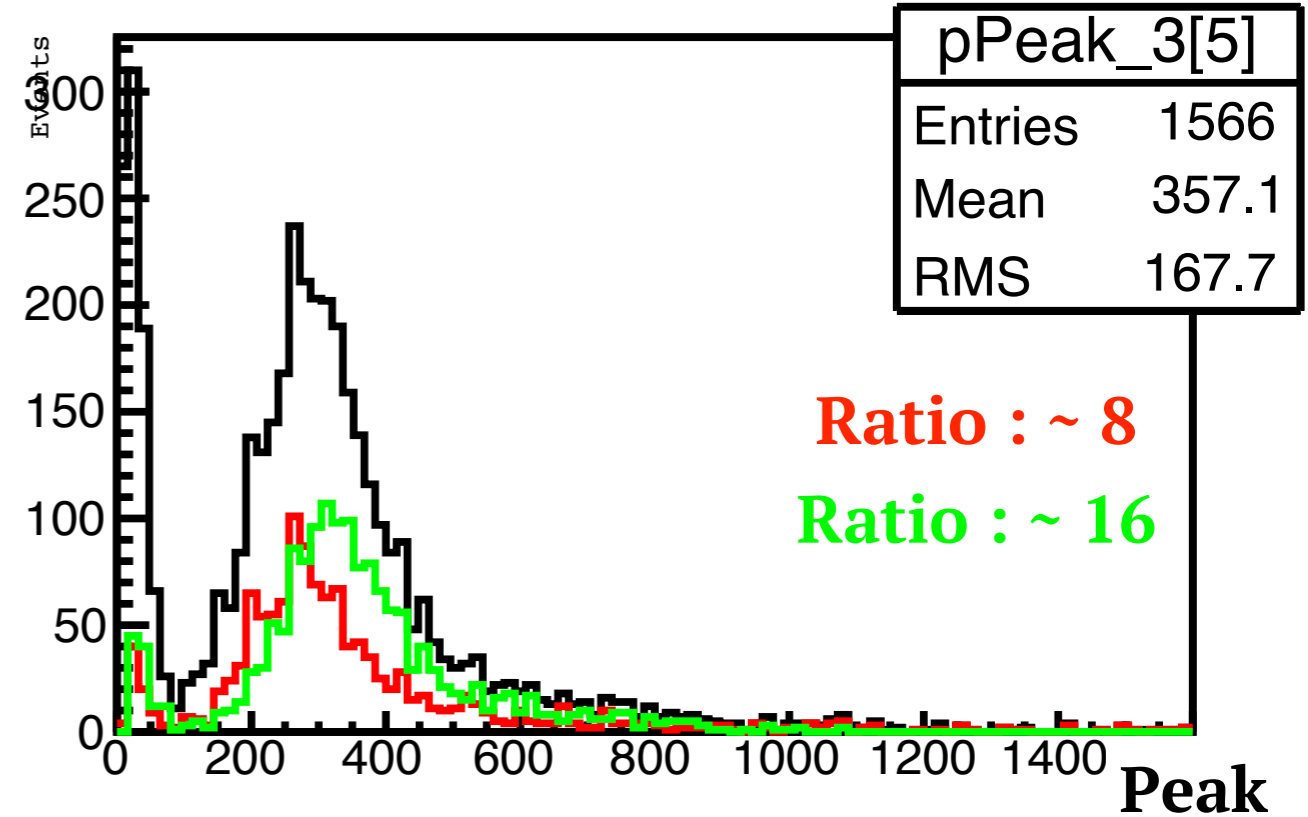
- DCV had the 2 type of Ratio and Pedestal.

Using the DCVPeak for calibration.

DCVIntegratedADC



DCVPeak



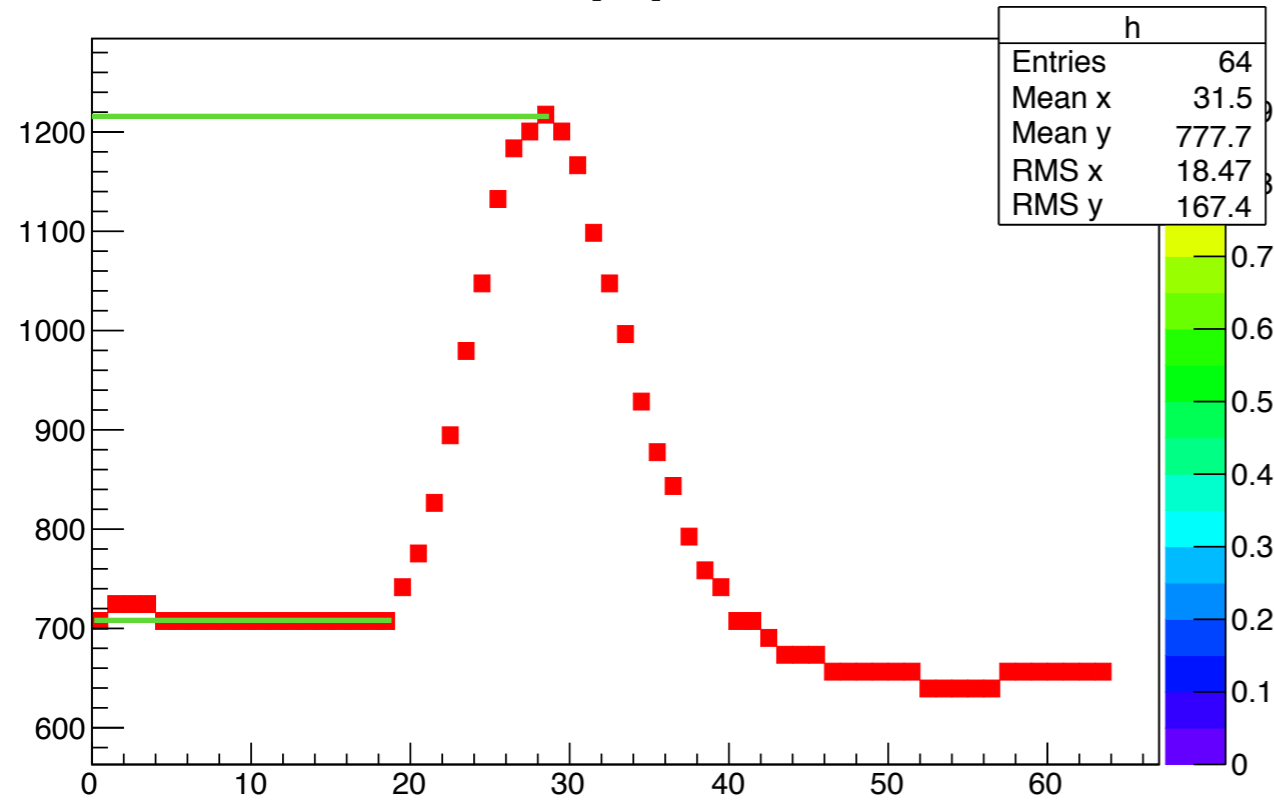
- DCVIntegratedADC and DCVPeak distribution were constructed different shape based on the selected ratio value.

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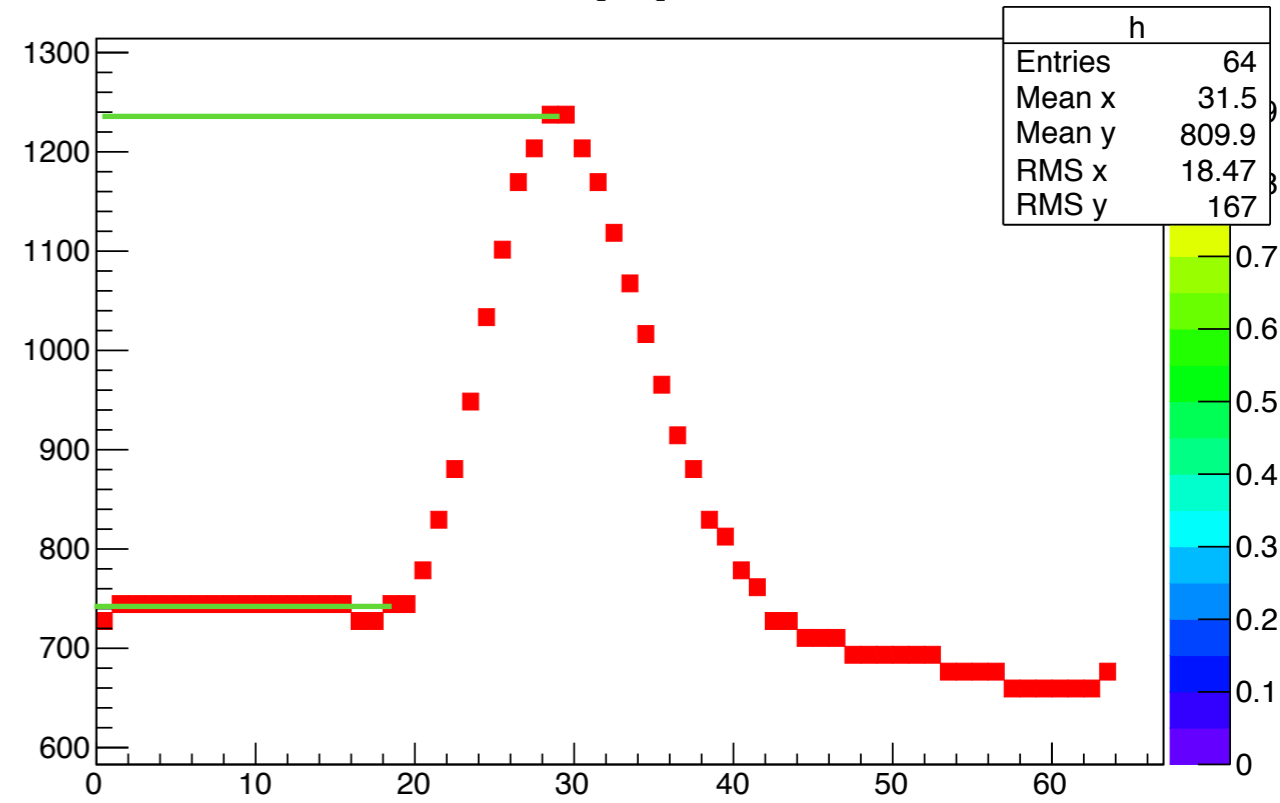
Enrty(i) : 105, EventID : 640, ID : 11, Ped : 714.222, Time : 27.8241, Peak : 503, ADC : 4061.78, Ratio: 8
Enrty(i) : 286, EventID : 544, ID : 10, Ped : 743.889, Time : 28.5842, Peak : 488, ADC : 4227.12, Ratio: 8
Enrty(i) : 286, EventID : 544, ID : 15, Ped : 802.445, Time : 28.4231, Peak : 1221, ADC : 10132.6, Ratio: 8
Enrty(i) : 413, EventID : 56, ID : 23, Ped : 565.556, Time : 29.8051, Peak : 366, ADC : 3220.44, Ratio: 8

```

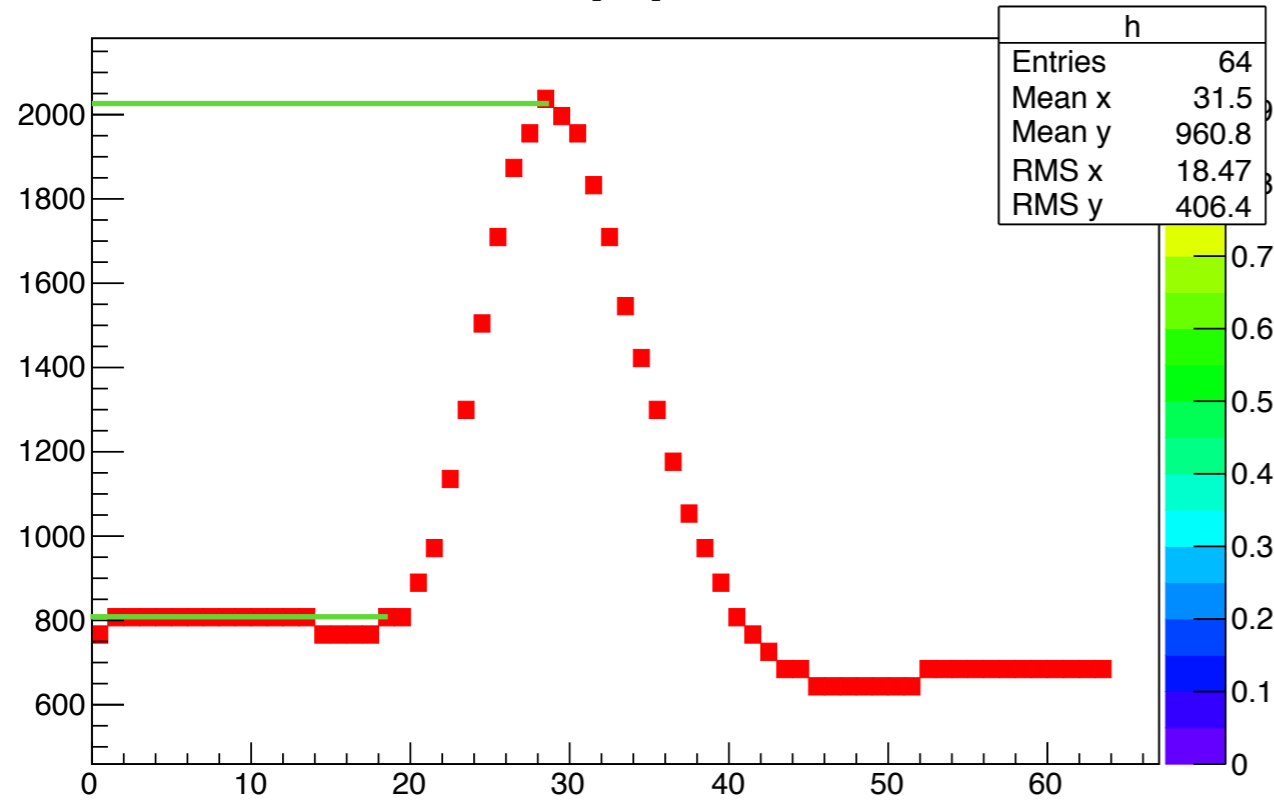
DCV.Data[11]:Iteration\$



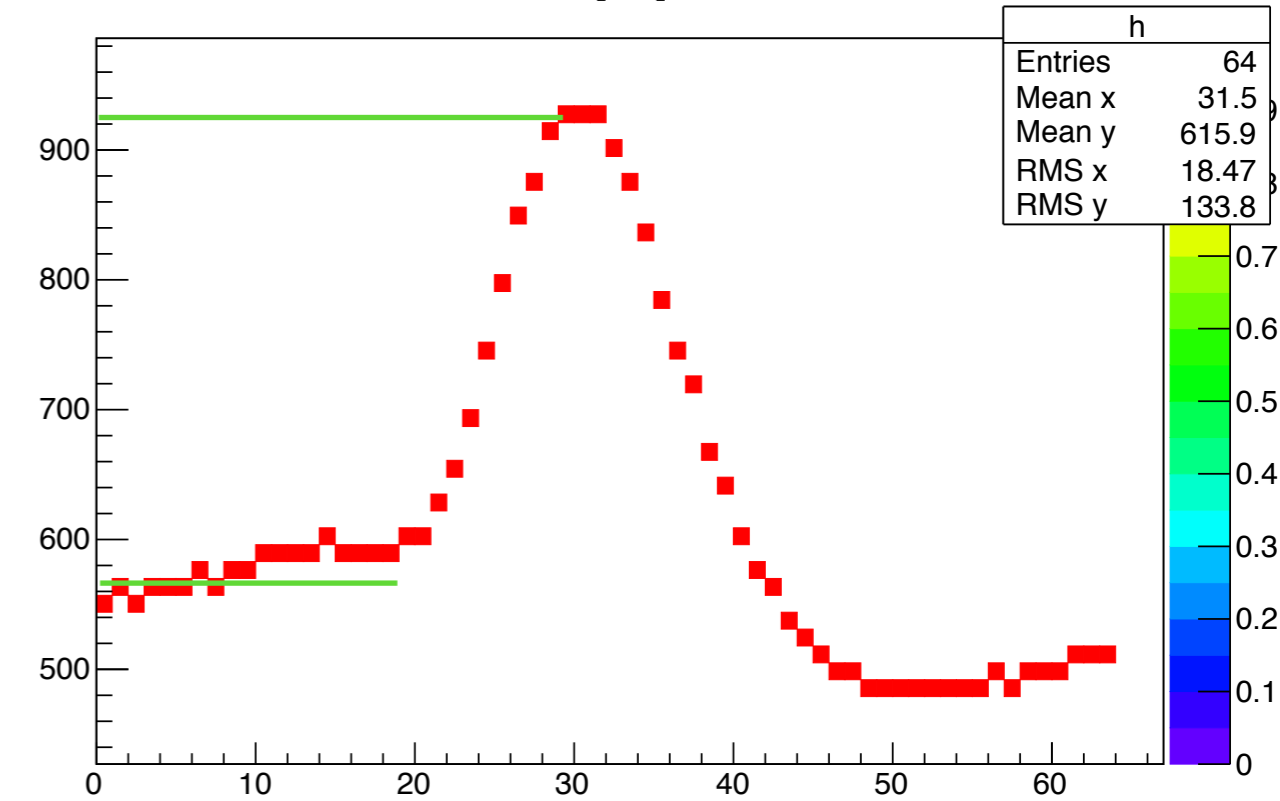
DCV.Data[10]:Iteration\$



DCV.Data[15]:Iteration\$



DCV.Data[23]:Iteration\$

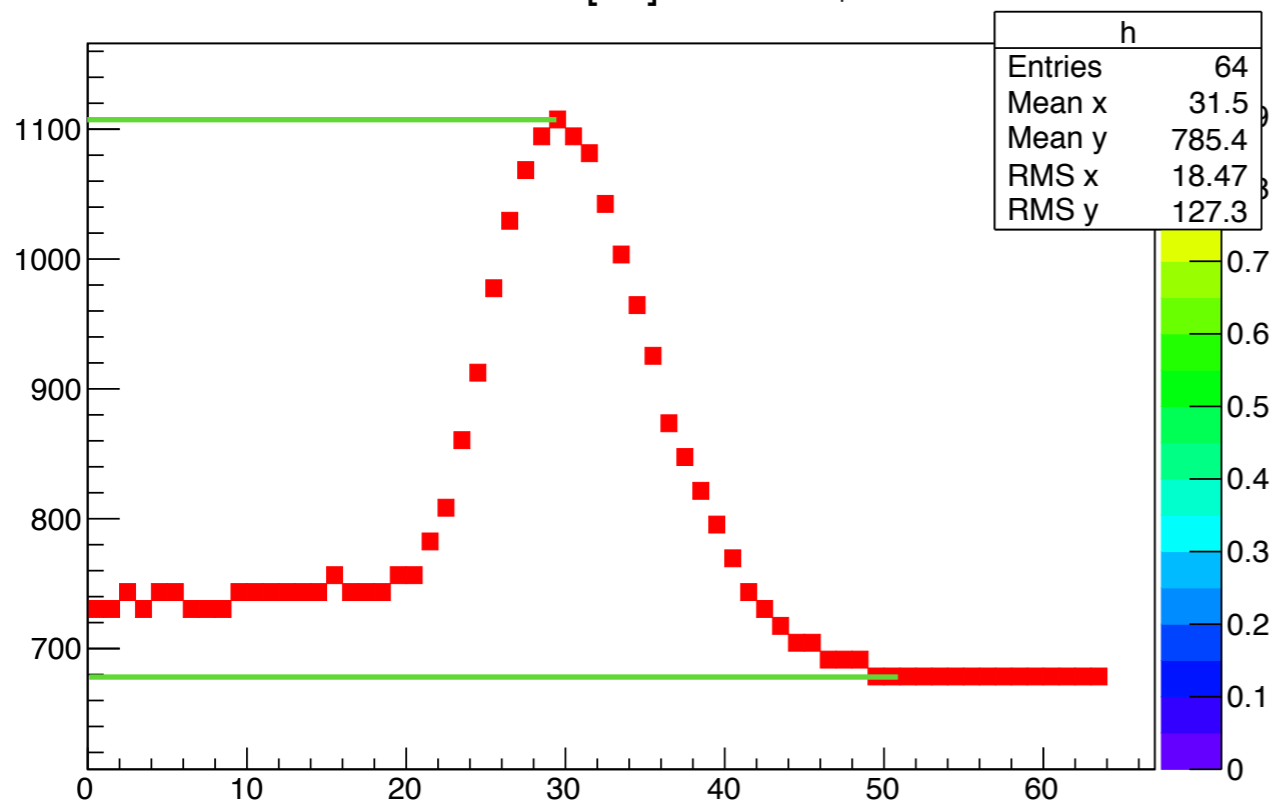


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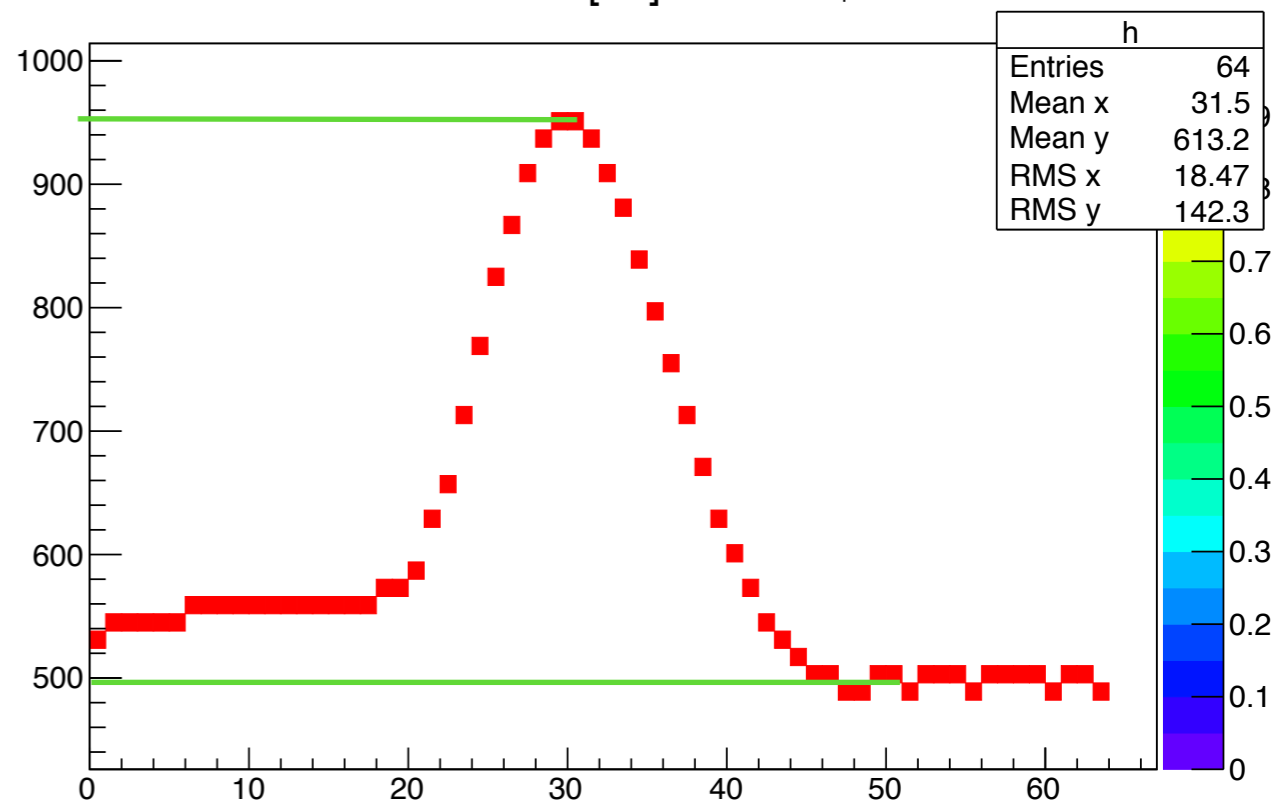
Enrty(i) : 98, EventID : 472, ID : 12, Ped : 675.778, Time : 29.1579, Peak : 437, ADC : 7017.22, Ratio: 16
Enrty(i) : 104, EventID : 616, ID : 29, Ped : 497.889, Time : 29.5794, Peak : 454, ADC : 7378.12, Ratio: 16
Enrty(i) : 105, EventID : 640, ID : 13, Ped : 751.333, Time : 28.4048, Peak : 149, ADC : 2481.67, Ratio: 16
Enrty(i) : 286, EventID : 544, ID : 14, Ped : 676.889, Time : 28.5667, Peak : 265, ADC : 4481.12, Ratio: 16

```

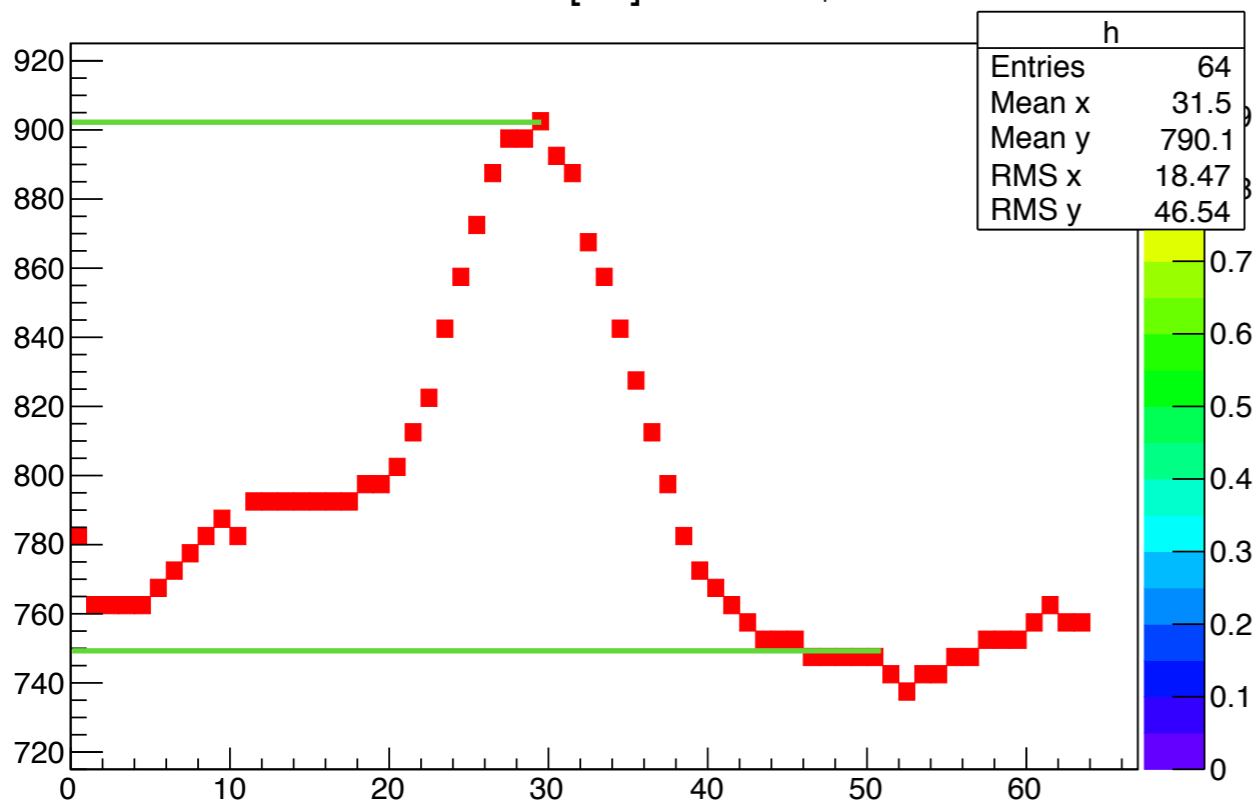
DCV.Data[12]:Iteration\$



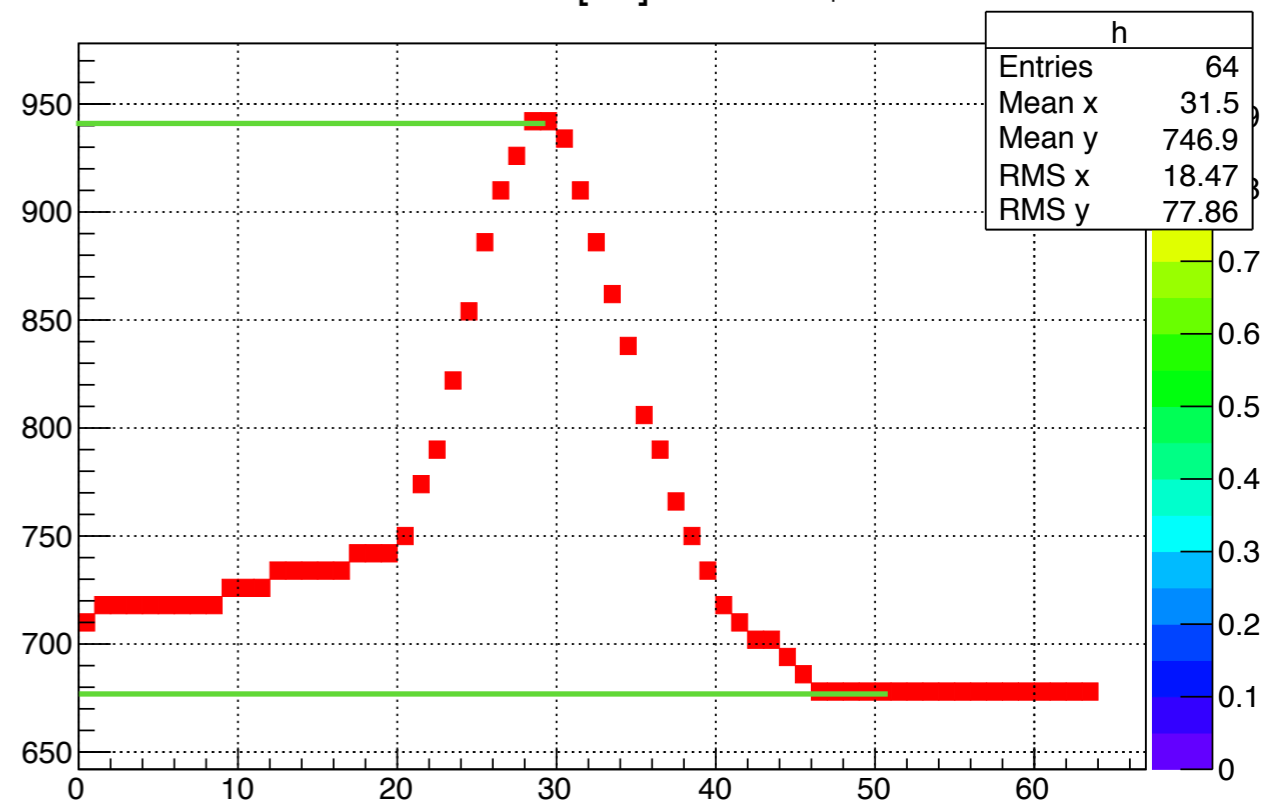
DCV.Data[29]:Iteration\$



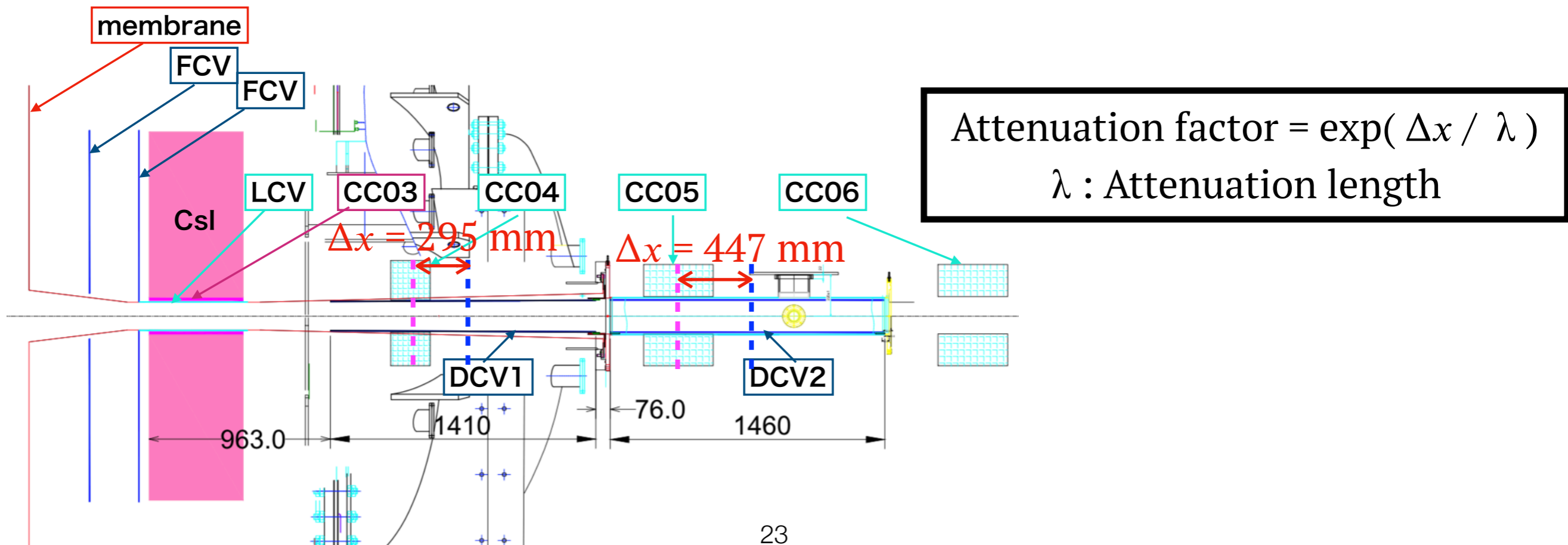
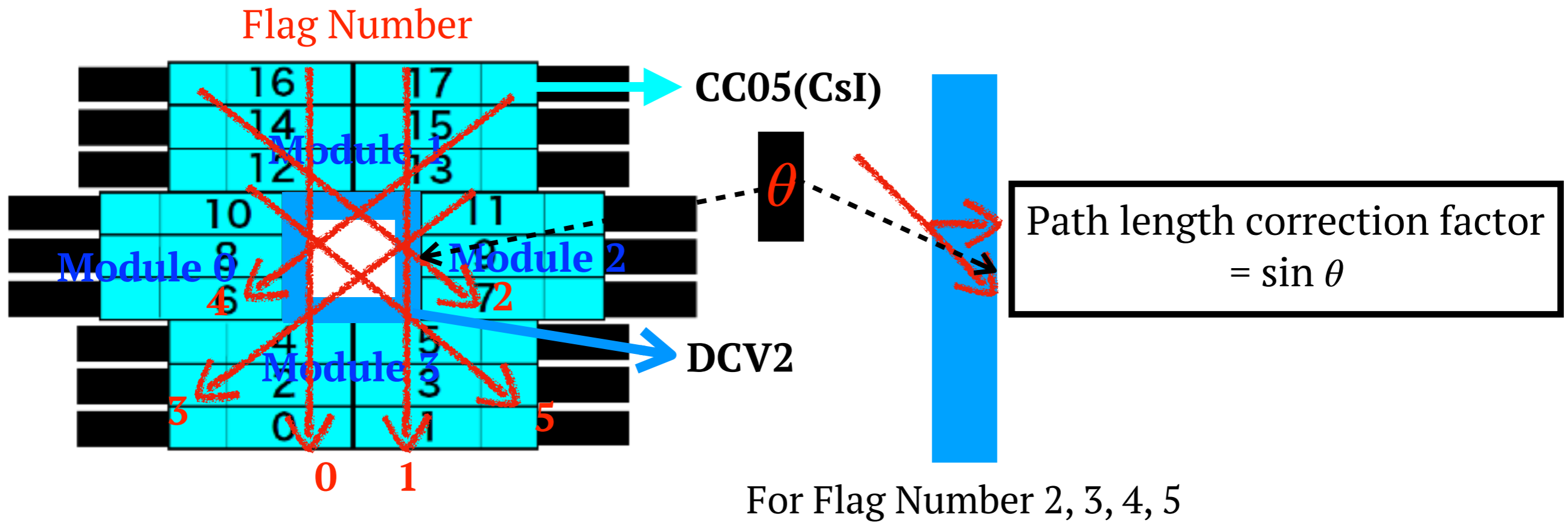
DCV.Data[13]:Iteration\$



DCV.Data[14]:Iteration\$

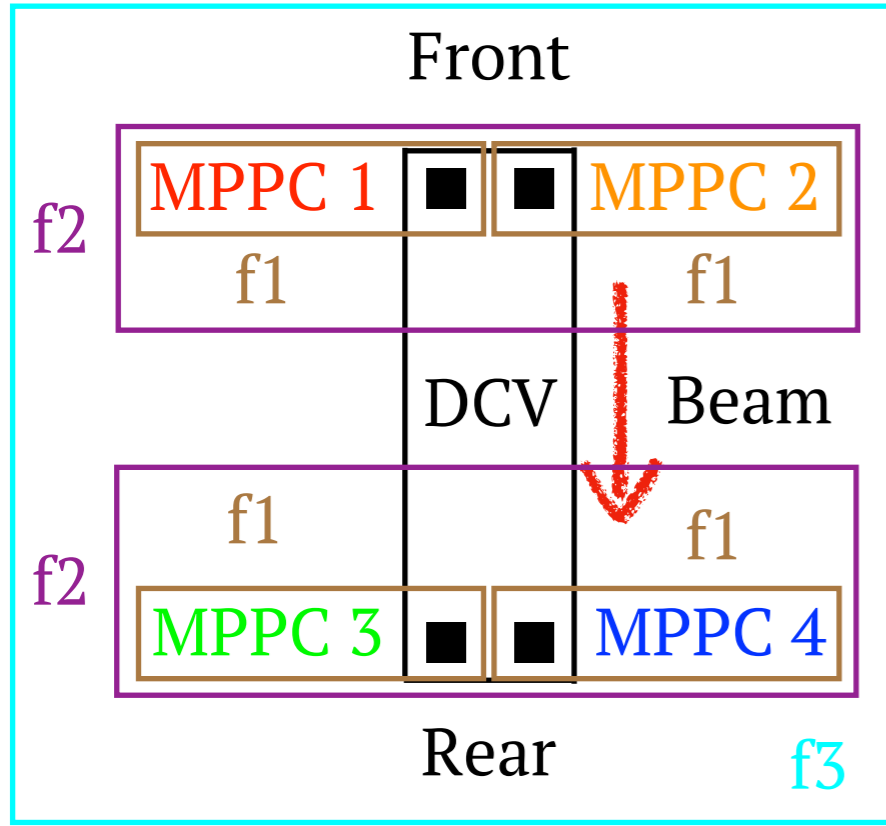


Calibration of DCV (Path length, Attenuation)

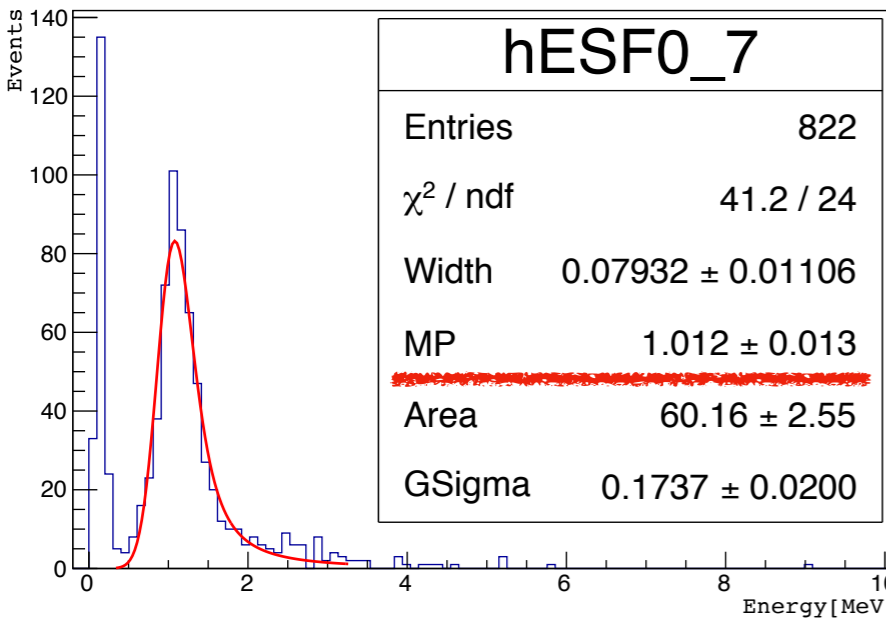


Calibration of DCV

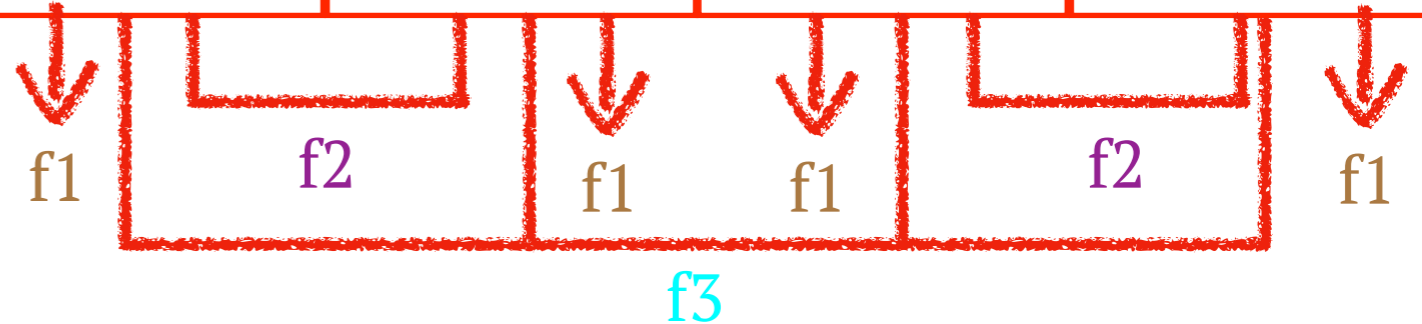
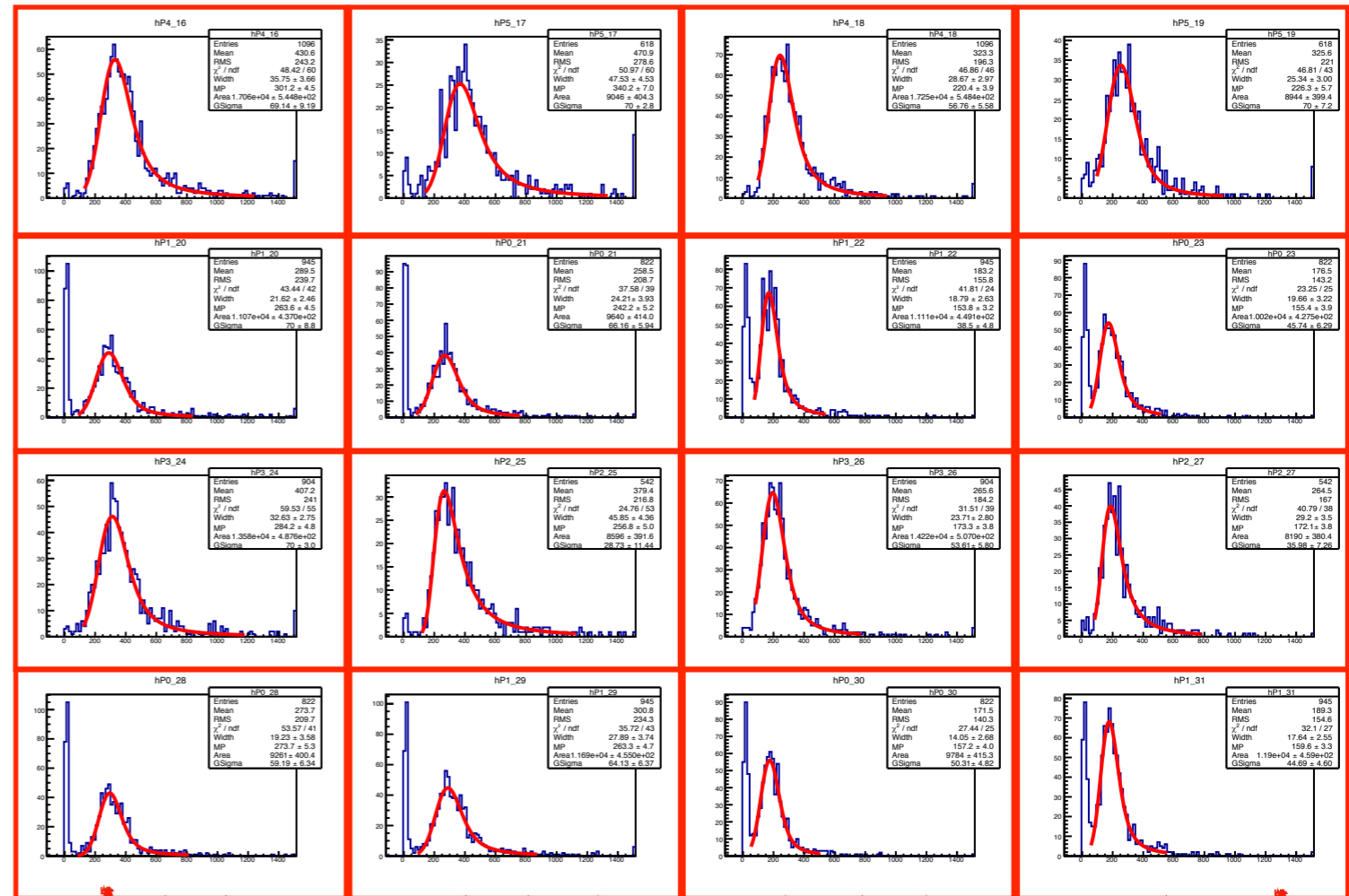
Fitting function : Landau convoluted with gaussian



DCV2 Module3 Flag0



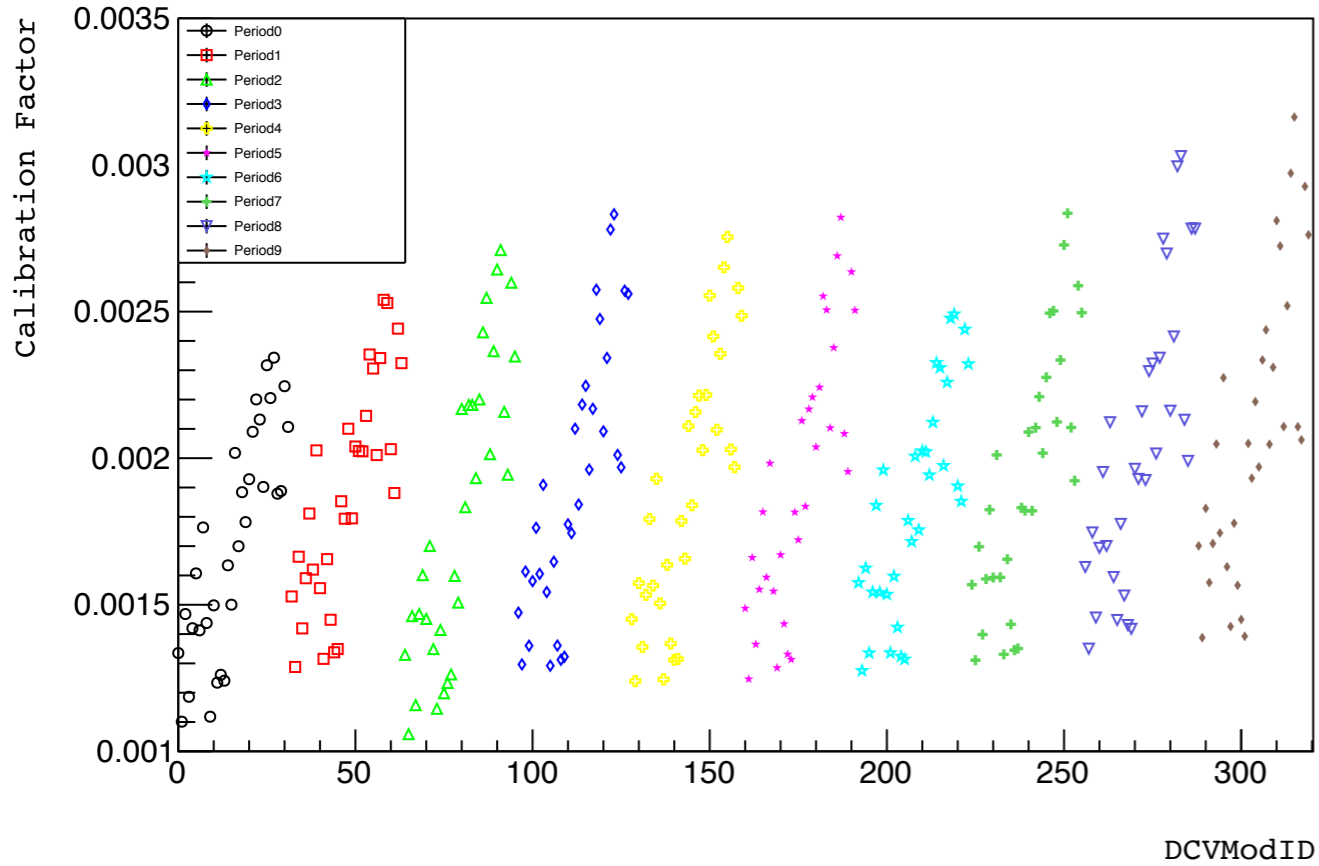
MPPC 1 MPPC 2 MPPC 3 MPPC 4



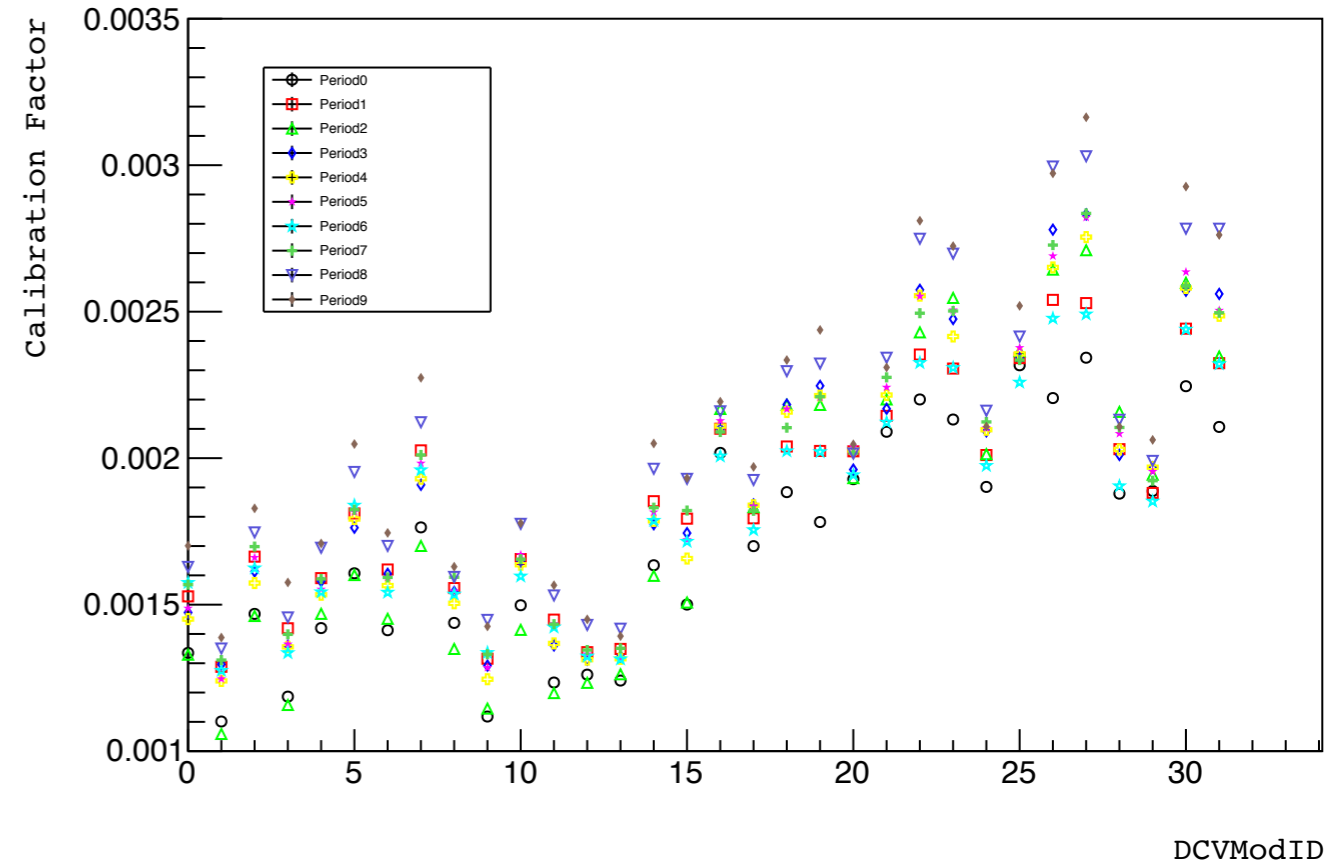
Calibration factor = Attenuation factor / (f1 × f2 × f3 × Path length correction factor)

Calibration Factor by run period

Calibration Factor by run period



Calibration Factor by run period



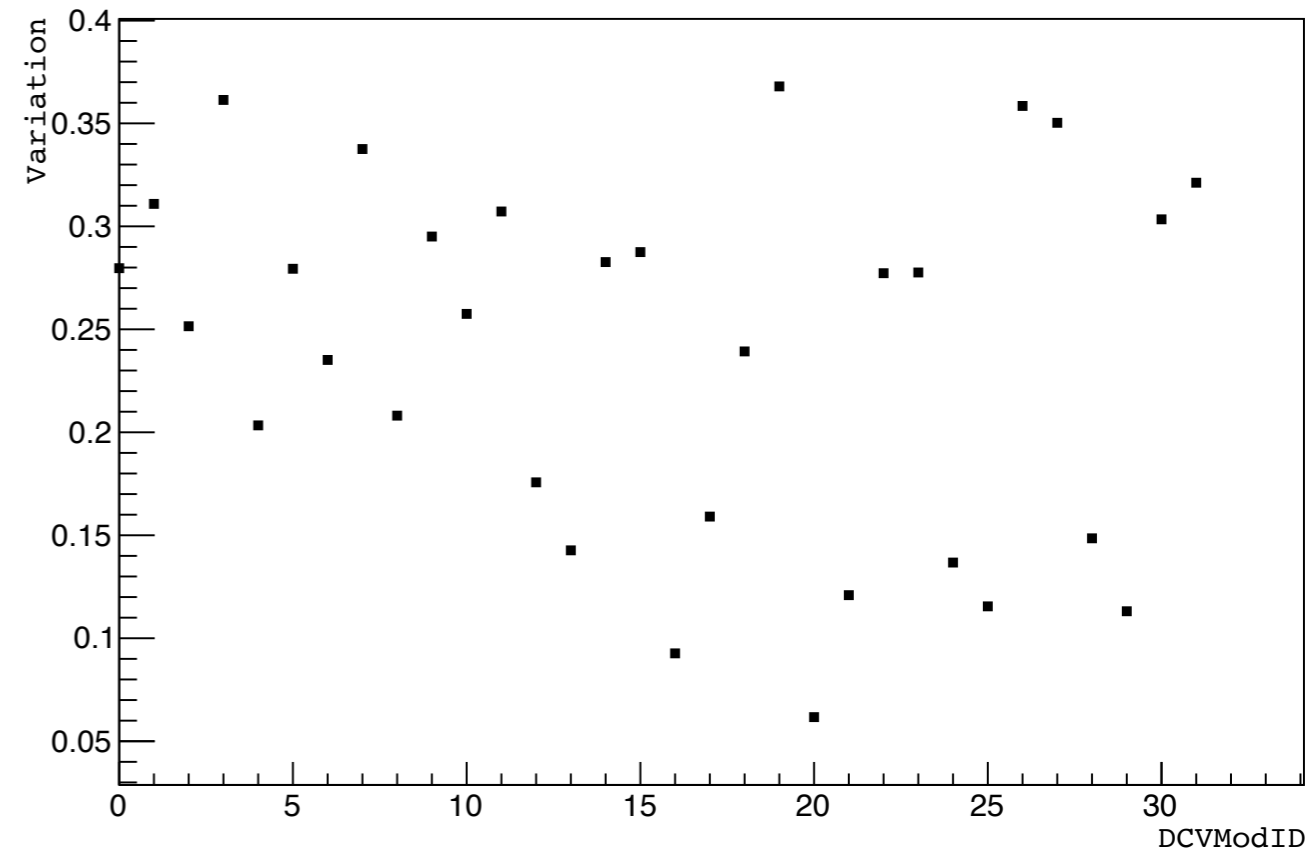
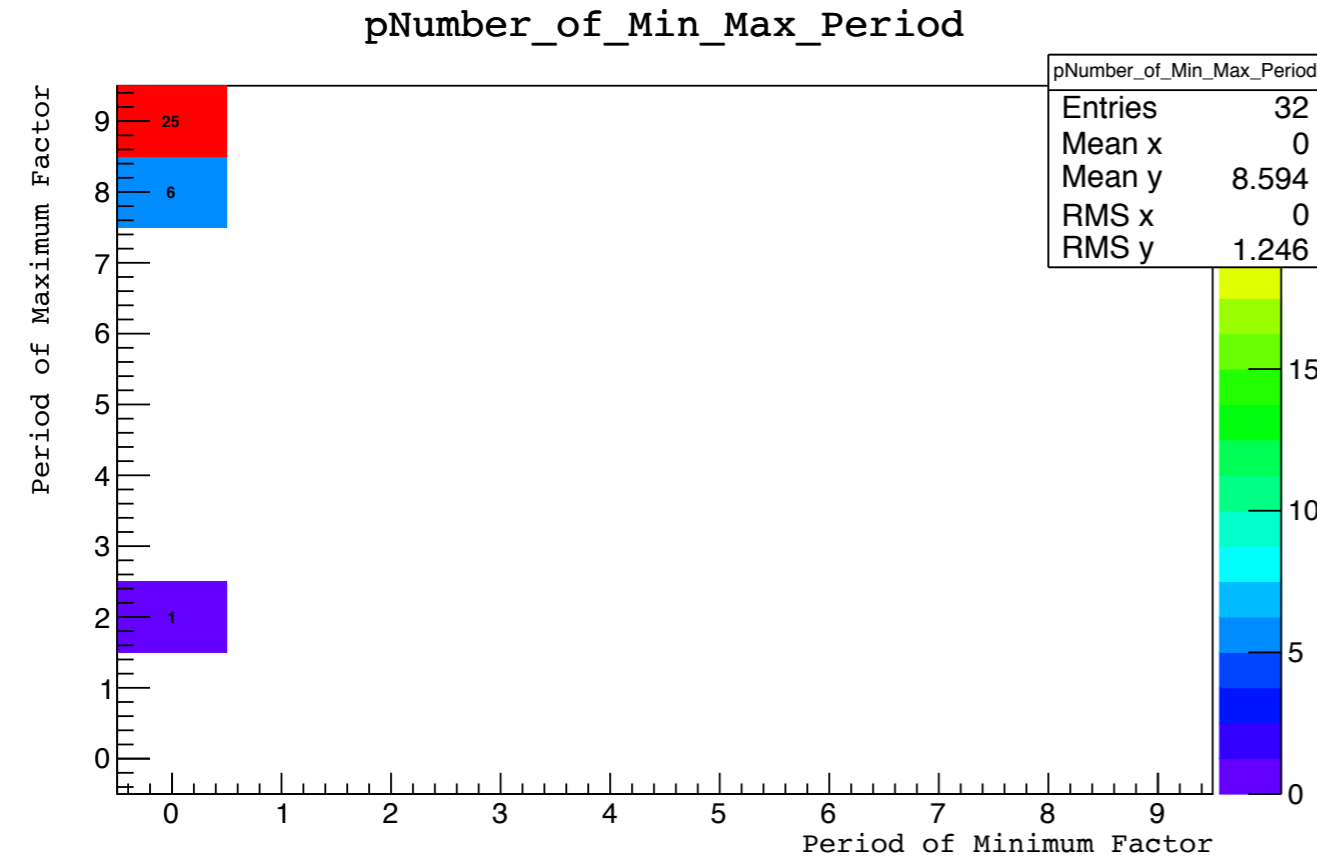
Calibration Factors tend to increase over time.

Calibration Factor by run period

$$\text{Variation} = (\text{Maximum Factor} - \text{Minimum Factor}) / \text{Minimum Factor}$$



Variation of Calib_Factor



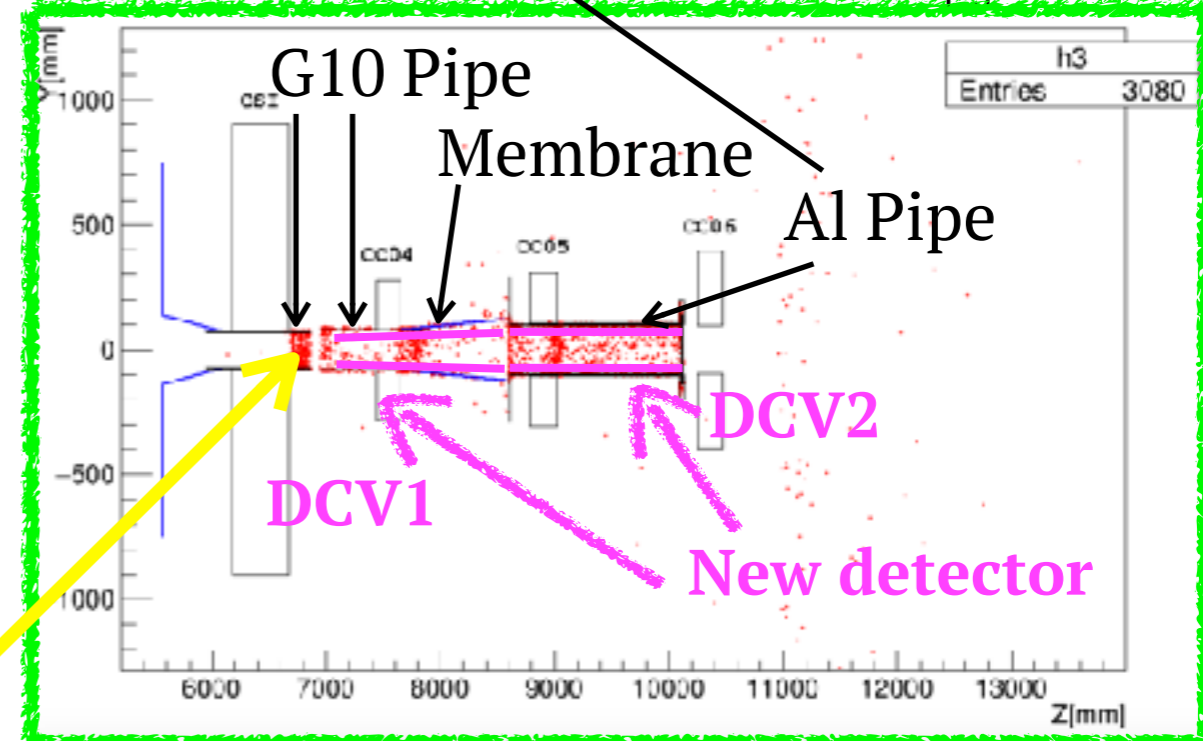
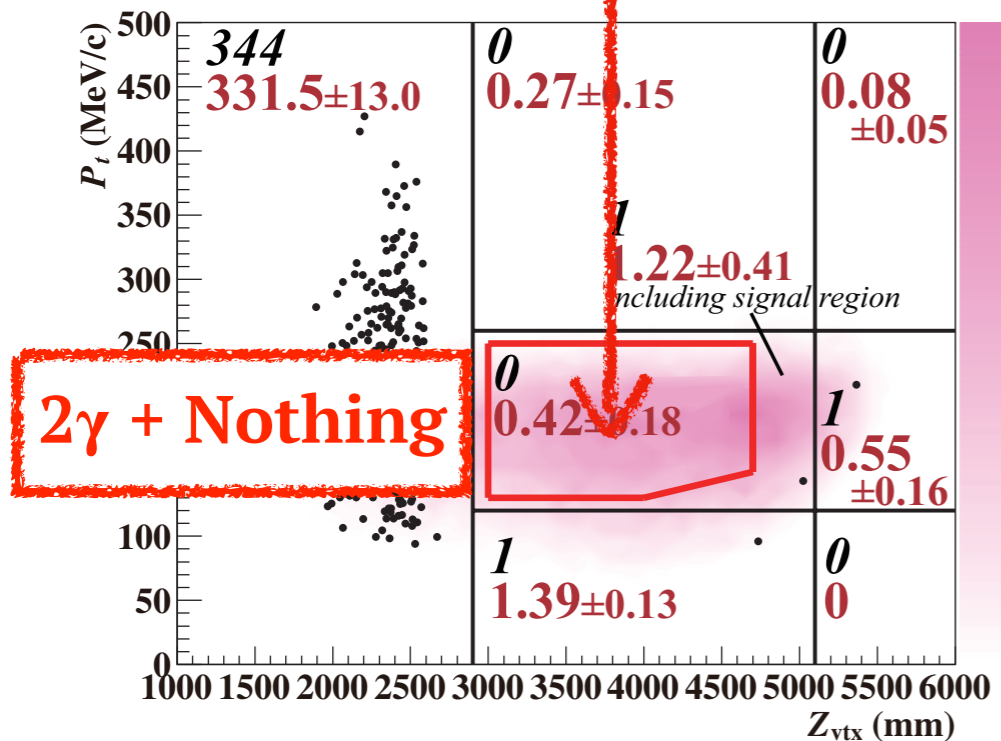
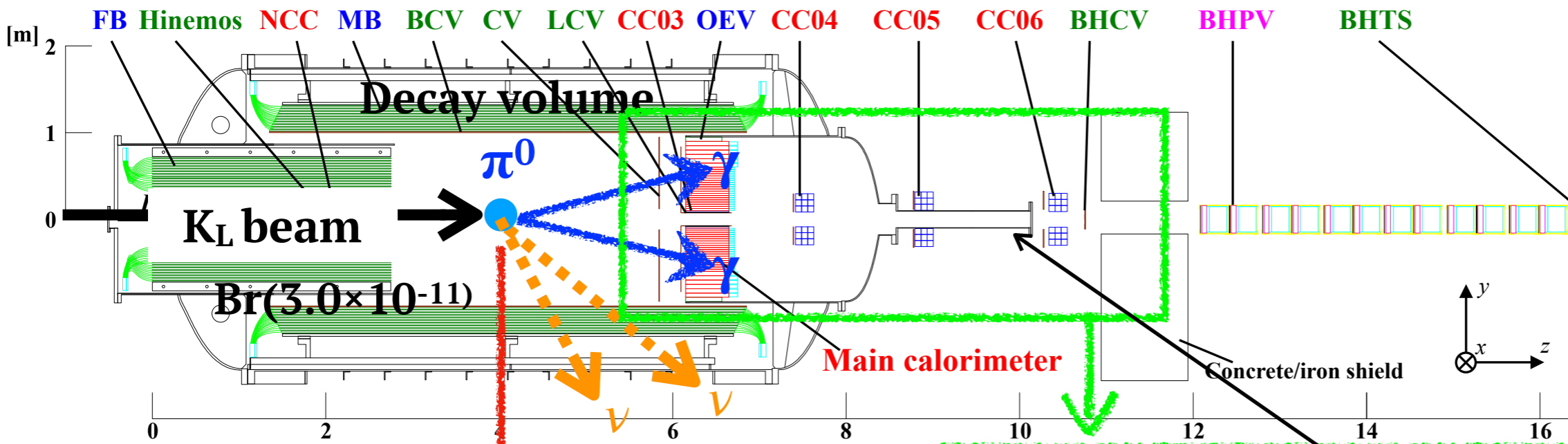
- Period 9 almost have maximum calibration factor.
- Period 0 have minimum calibration factor for all MPPC channel.
- Calibration factors were increased about 10 ~ 37 %

Summary

1. The result of cosmic ray data, DCV got 40 ~ 80 p.e.
2. DCV was well installed at KOTO beam line.
3. The calibration of DCV was almost completed by using the cosmic ray data.
 1. There is a pedestal fluctuation.
 2. DCVPeak(Pulse height) was used.
 3. DCV calibration factors were increased about 10 ~ 37%
4. We have to check the physics run data.

BACK UP

The motivation of new detector(DCV)



Background(2015 data, S.E.S = 1.3×10^{-9})

source		Number of events
K_L decay	$K_L \rightarrow \pi^+ \pi^- \pi^0$	0.05 ± 0.02
	$K_L \rightarrow 2\pi^0$	0.02 ± 0.02
	other K_L decays	0.03 ± 0.01
neutron-induced	hadron-cluster	0.24 ± 0.17
	upstream- π^0	0.04 ± 0.03
	CV- η	0.04 ± 0.02
total		0.42 ± 0.18

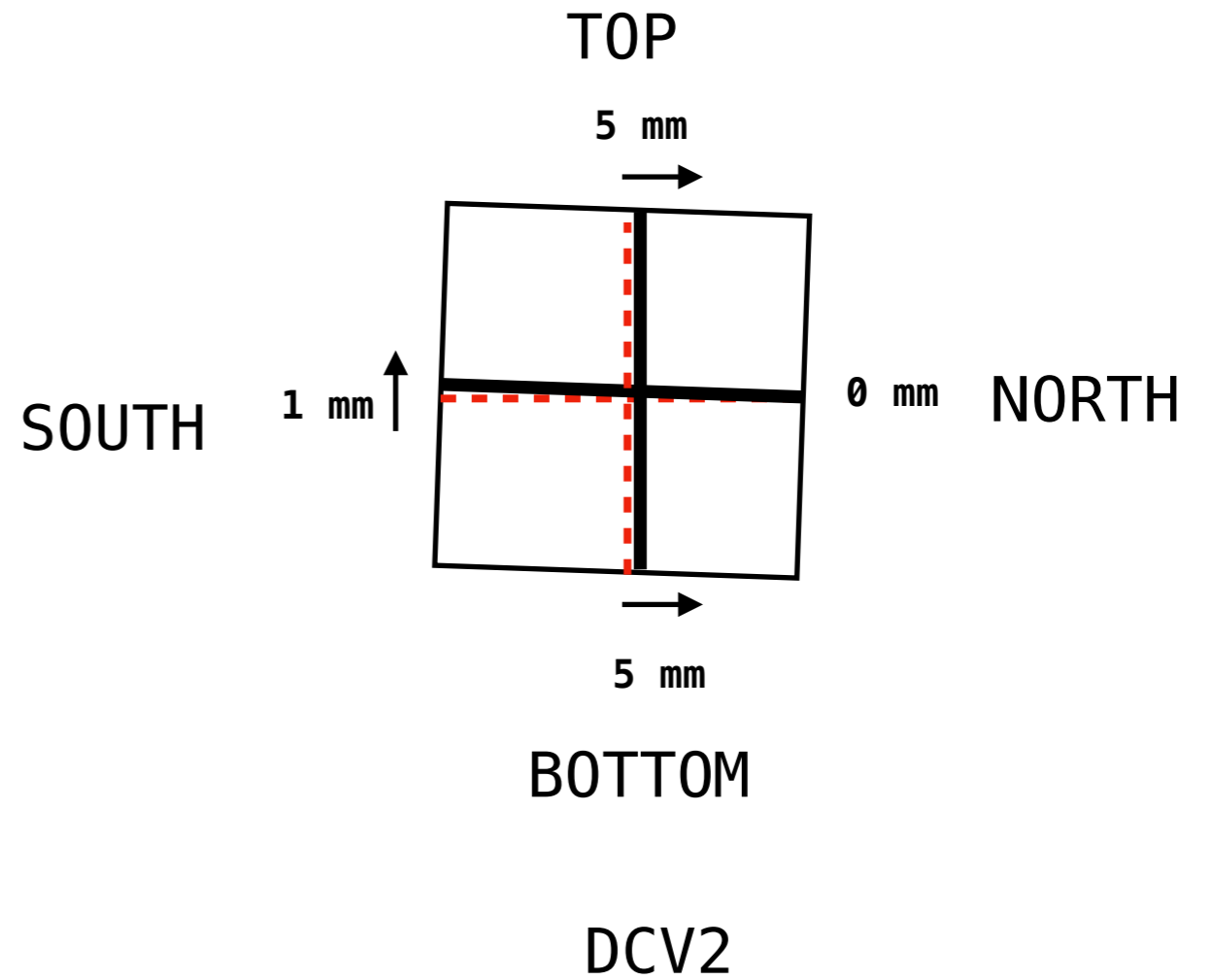
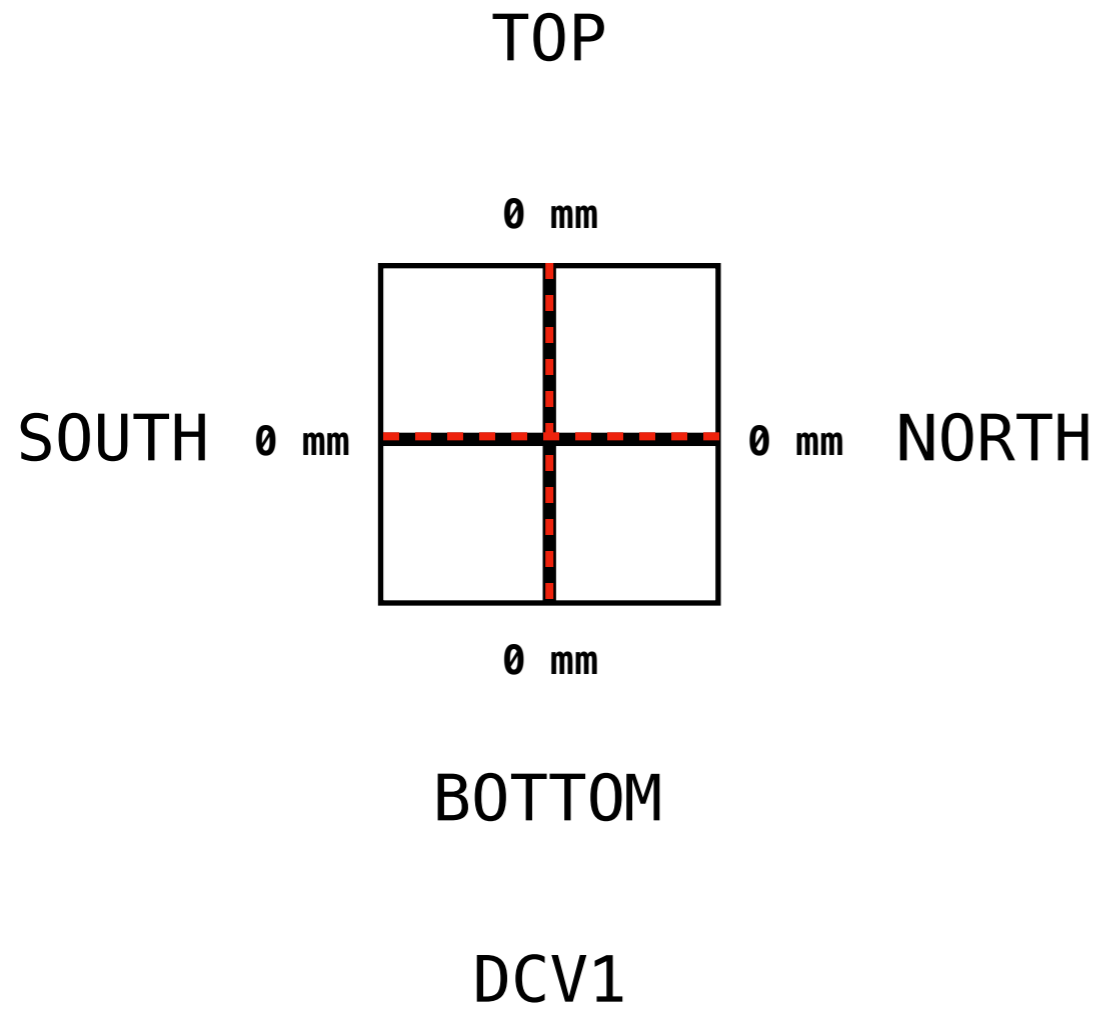
- We needed new detector before interacting with dead materials
- Due to very limited space, we are trying a new scheme of light collection.

S.N.	Voltage[V]	Group	Before the installation	During the installation
12704	54.541			
12700	54.5835	Replaced		
12686	54.7099	DCV1 (module 0) 54.7 V		
12705	54.7202			
12685	54.7262			
12697	54.7742			
12693	54.7843	DCV1 (module 1) 54.8 V		
12679	54.8381			
12692	54.8428			
12708	54.8495			
12668	54.8647	DCV1 (module 2) 54.9 V		
12672	54.8656		Broken(Replaced by 12695)	
12682	54.8682			
12688	54.8728			
12678	54.881	DCV1 (module 3) 54.9 V		
12698	54.9162			Broken(Replaced by 12700)
12689	54.9402			
12701	54.9565			
12683	54.9778	DCV2 (module 0) 55.0 V		
12703	54.9792			
12676	54.9903			
12706	55.0296		Broken(Replaced by 12675)	
12695	55.0302	Replaced		
12675	55.039	Replaced		
12670	55.0817	Broken		
12702	55.0876	Replaced		
12687	55.0914	Replaced		
12674	55.129	DCV2 (module 1) 55.1 V		
12690	55.1352		Broken(Replaced by 12702)	
12696	55.1408			
12680	55.1954			
12669	55.2	DCV2 (module 2) 55.2 V		
12707	55.203			
12684	55.2414			
12677	55.2566			Broken(Replaced by 12687)
12691	55.2601	DCV2 (module 3) 55.3 V		
12681	55.2684			
12673	55.2827	Broken		
12699	55.2867	DCV2 (module 3) 55.3 V		
12694	55.3299			

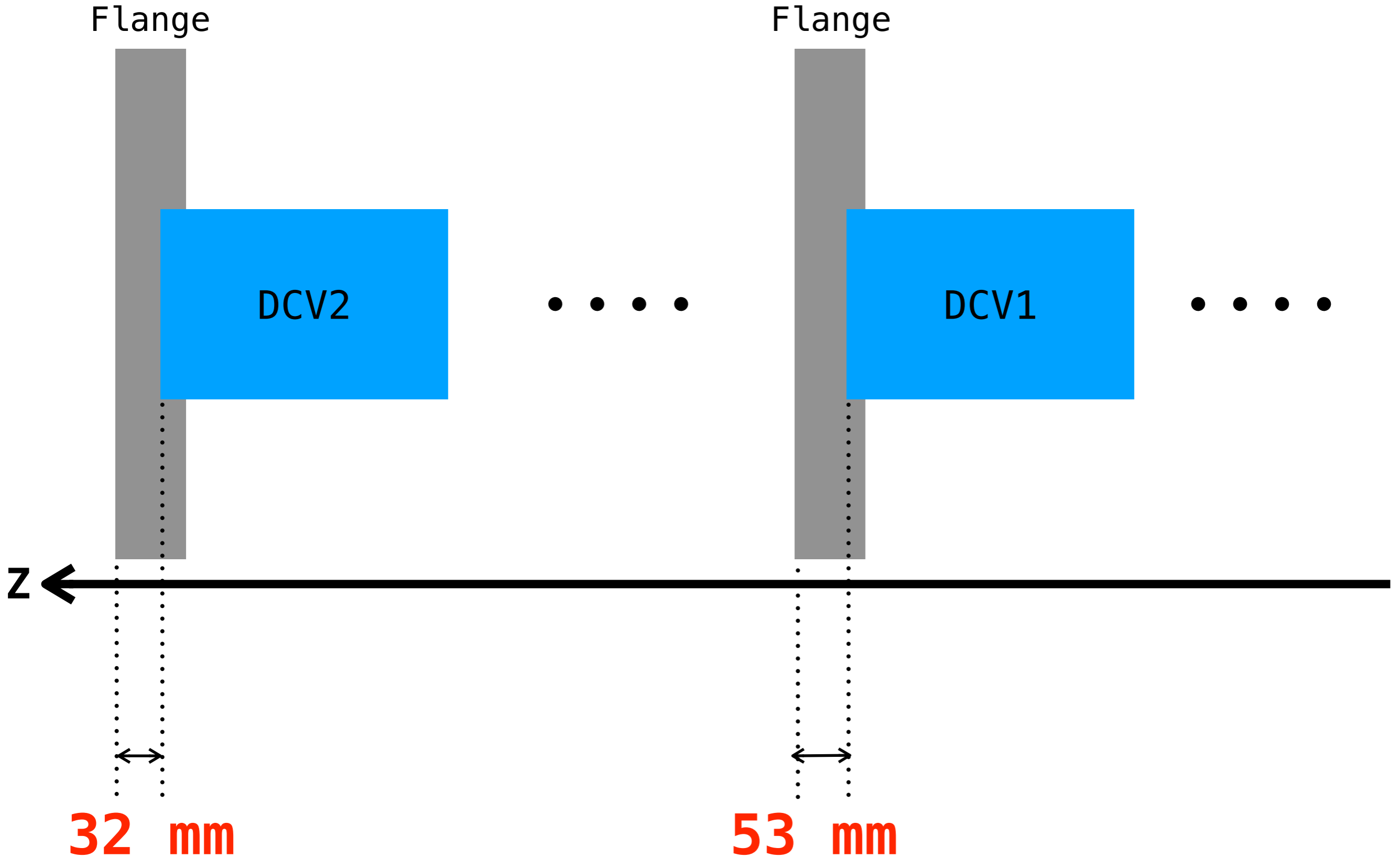
DCV Map

DCV Number	Module	MPPC	Serial Number	U.FL cable	Board(COM)	LAN cable	ADC Channel	
1	0	1	12705	1	No.5(COM9)	0	0	
		2	12686	8			1	
		3	12697	9		1	2	
		4	12685	16			3	
	1	1	1	12679	3	No.6(COM10)	2	4
			2	12693	2			5
			3	12708	11		3	6
			4	12692	10			7
	2	2	1	12695	5	No.7(COM11)	4	8
			2	12668	4			9
			3	12688	13		5	10
			4	12682	12			11
	3	3	1	12700	7	No.8(COM4)	6	12
			2	12678	6			13
			3	12701	15		7	14
			4	12689	14			15
2	0	1	12703	1	No.1(COM5)	8	16	
		2	12683	8			17	
		3	12675	9		9	18	
		4	12676	16			19	
	1	1	1	12702	3	No.2(COM6)	10	20
			2	12674	2			21
			3	12680	11		11	22
			4	12696	10			23
	2	2	1	12707	5	No.3(COM7)	12	24
			2	12669	4			25
			3	12677	13		13	26
			4	12684	12			27
	3	3	1	12681	7	No.4(COM8)	14	28
			2	12691	6			29
			3	12694	15		15	30
			4	12699	14			31

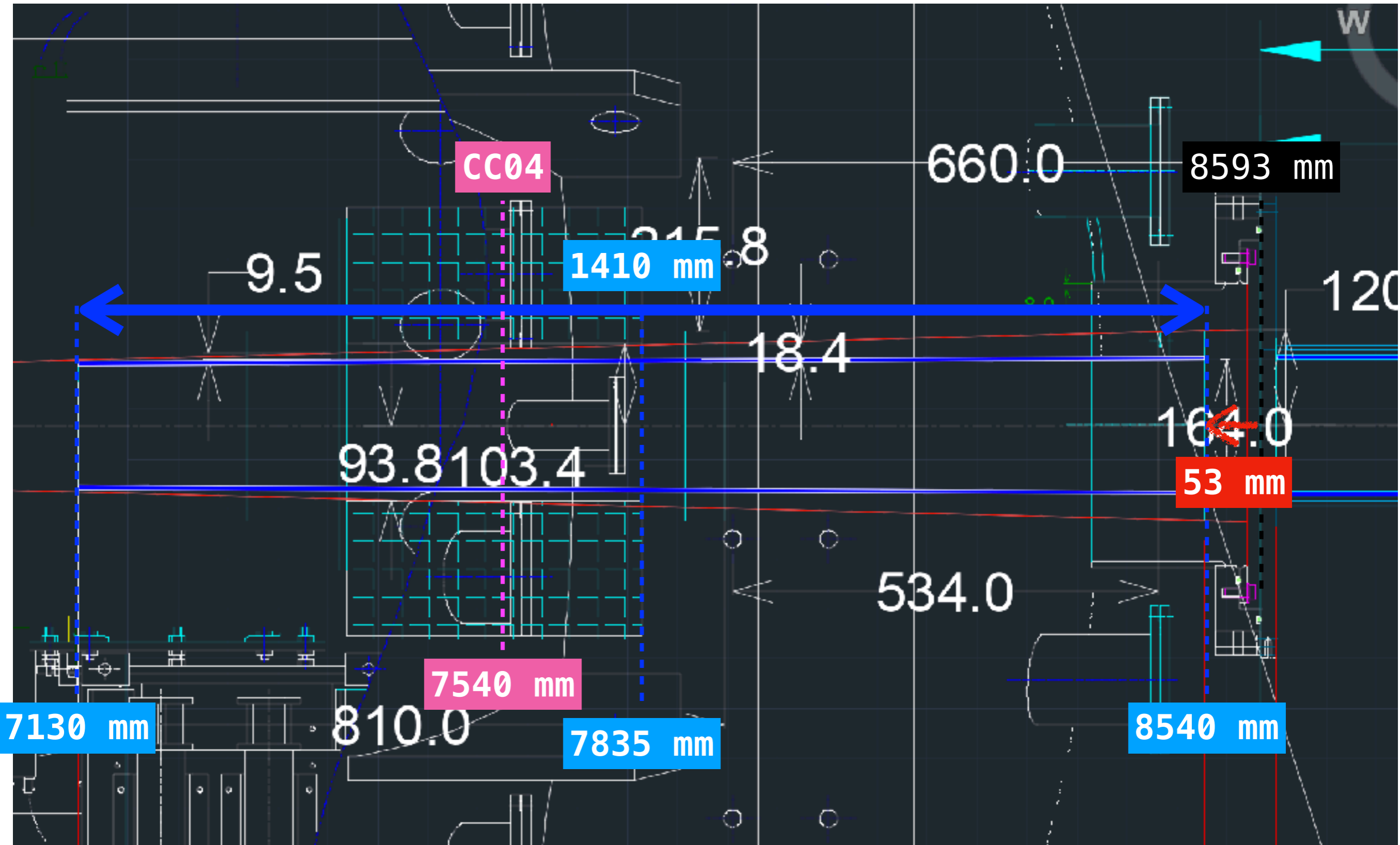
Alignment of DCV



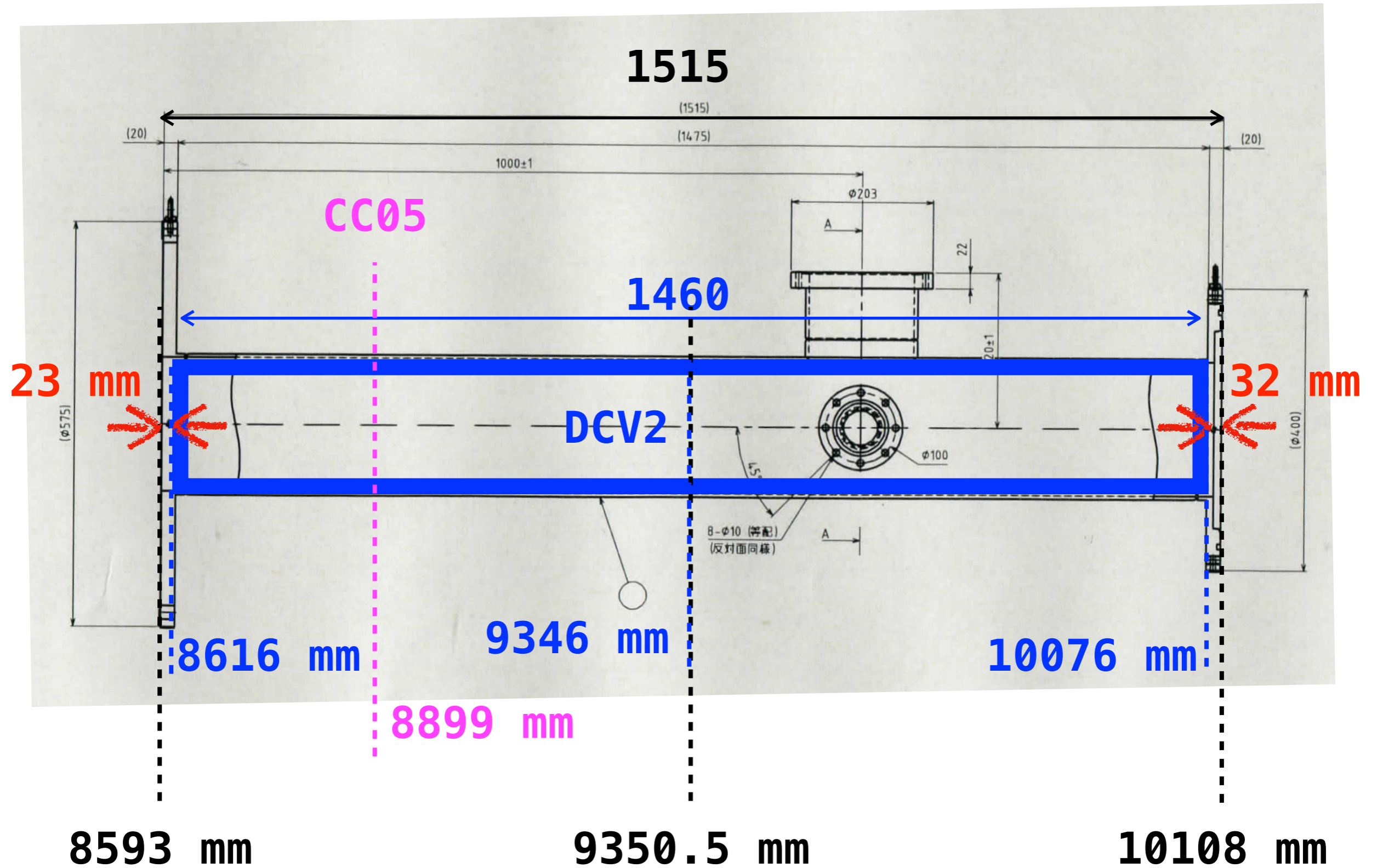
Z position of DCV



DCV1 Position



DCV2 Position



Cable arrangement



There is both-end label.

DCV0 ~ DCV7



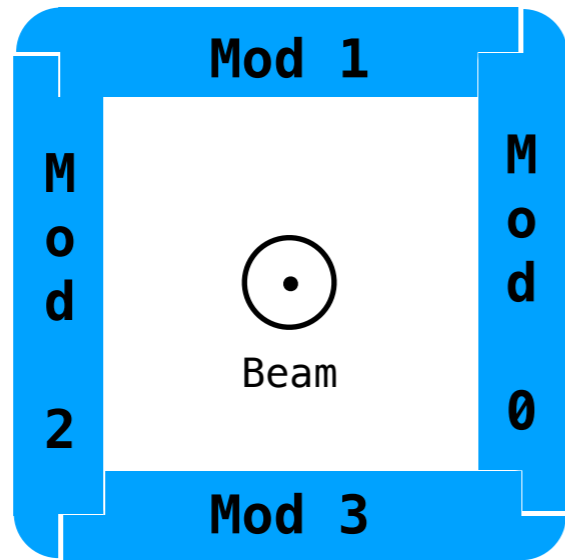
DCV8 ~ DCV15

DCV

MPPC 1 = Ch 20 MPPC 2 = Ch 21

MPPC 3 = Ch 22 MPPC 4 = Ch 23

Top



MPPC 1 = Ch 16

MPPC 3 = Ch 18

MPPC 2 = Ch 17

MPPC 4 = Ch 19

South

North

Bottom

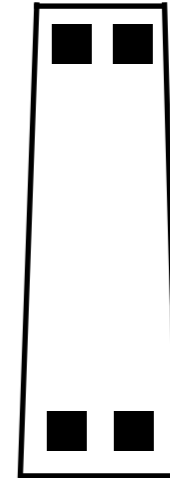
MPPC 2 = Ch 29 MPPC 1 = Ch 28

MPPC 4 = Ch 31 MPPC 3 = Ch 30

DCV1
Channel ID = Shown ID -16

MPPC 1

MPPC 2



MPPC 3

MPPC 4



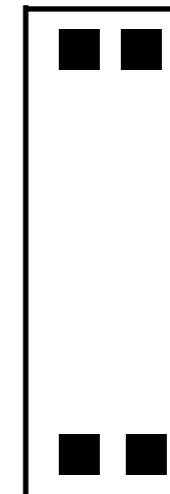
Beam

DCV2

Channel ID = Shown ID

MPPC 1

MPPC 2



MPPC 3

MPPC 4

(MPPC attachment surface)

Power supply for DCV



20:27 2019/2/8
Turn on the power supply

DCV1 : 0.93 A 7.01 V

DCV2 : 0.93 A 7.00 V
(+18V)

10:45 2019/2/10
DCV1 : 0.94 A 7.01 V
DCV2 : 0.95 A 7.00 V
(+18V)

14:41 2019/2/10
DCV1 : 0.94 A 7.01 V
DCV2 : 0.95 A 7.00 V
(+18V)

Outside of the fence



USB connector for voltage control



LEMO cable for Test pulse

Run Information

Period0(12)

run number	Start time	Stop time	Run Type	Note	L1 Raw	L1 Live	L1 Accepted	L1 Accept rate	L2 Accepted	SemiOnline Plots
30776	2019-03-01 01:30:52	2019-03-01 02:22:09	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4046983	link
30777	2019-03-01 02:23:45	2019-03-01 03:15:06	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4464411	link
30778	2019-03-01 03:16:01	2019-03-01 04:06:19	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4627232	link
30779	2019-03-01 04:07:14	2019-03-01 04:58:45	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4614097	link
30780	2019-03-01 04:59:39	2019-03-01 05:49:59	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4619830	link
30781	2019-03-01 05:50:55	2019-03-01 06:41:13	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4619750	link
30782	2019-03-01 06:42:06	2019-03-01 07:32:45	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	334772	link
30783	2019-03-01 07:33:39	2019-03-01 07:44:16	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	64274	link
30784	2019-03-01 07:45:34	2019-03-01 07:56:45	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	0	link
30785	2019-03-01 07:57:49	2019-03-01 08:08:58	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	990560	link
30786	2019-03-01 08:10:00	2019-03-01 09:00:48	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4828488	link
30787	2019-03-01 09:01:42	2019-03-01 09:10:48	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	859356	link
Total				0	0	0		34069753		

Run Information

Period1(26)

run number	Start time	Stop time	Run Type	Note	L1 Raw	L1 Live	L1 Accepted	L1 Accept rate	L2 Accepted	SemiOnline Plots
30910	2019-03-04 11:01:48	2019-03-04 11:52:34	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4703206	link
30911	2019-03-04 11:59:52	2019-03-04 12:50:36	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4700538	link
Total				0	0	0		9403744		

run number	Start time	Stop time	Run Type	Note	L1 Raw	L1 Live	L1 Accepted	L1 Accept rate	L2 Accepted	SemiOnline Plots
31011	2019-03-07 11:33:10	2019-03-07 12:23:33	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4728798	link
31012	2019-03-07 12:24:49	2019-03-07 13:15:11	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4737862	link
31013	2019-03-07 13:16:27	2019-03-07 14:06:49	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4738174	link
31014	2019-03-07 14:04:26	2019-03-07 14:54:44	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4695360	link
31015	2019-03-07 14:56:51	2019-03-07 15:47:46	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4672924	link
31016	2019-03-07 15:48:50	2019-03-07 16:19:17	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	2835840	link
31017	2019-03-07 16:26:43	2019-03-07 17:17:25	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4671532	link
31018	2019-03-07 17:23:24	2019-03-07 18:14:09	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4676142	link
31019	2019-03-07 18:40:48	2019-03-07 19:12:06	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	2818877	link
31020	2019-03-07 19:15:40	2019-03-07 20:06:07	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4675221	link
31021	2019-03-07 20:08:42	2019-03-07 20:59:09	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4666865	link
31022	2019-03-07 21:01:44	2019-03-07 21:52:05	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4667064	link
31023	2019-03-07 21:53:35	2019-03-07 22:44:07	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4665792	link
31024	2019-03-07 22:46:08	2019-03-07 23:36:26	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4666493	link
31025	2019-03-07 23:37:56	2019-03-08 00:28:28	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4667930	link
31026	2019-03-08 00:29:30	2019-03-08 01:19:48	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4659091	link
31027	2019-03-08 01:21:04	2019-03-08 02:11:44	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4655151	link
31028	2019-03-08 02:17:55	2019-03-08 03:08:46	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4659948	link
31029	2019-03-08 03:12:30	2019-03-08 04:02:53	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4652984	link
31030	2019-03-08 04:04:07	2019-03-08 04:54:25	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4605698	link
31031	2019-03-08 05:03:02	2019-03-08 05:21:45	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	1686659	link
31032	2019-03-08 07:34:32	2019-03-08 08:25:08	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4622365	link
31033	2019-03-08 08:26:48	2019-03-08 09:17:16	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4642419	link
31034	2019-03-08 09:18:26	2019-03-08 10:01:48	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	4153266	link
31035	2019-03-08 10:05:34	2019-03-08 10:21:00	COSMIC	Cosmic_PS_CSI_PartOfVetos	0	0	0	0.00	1603214	link
Total				0	0	0		102624109		

Run Information

Period2(10)

run number	Start time	Stop time	Run Type	Note	L1 Raw	L1 Live	L1 Accepted	L1 Accept rate	L2 Accepted	SemiOnline Plots
31240	2019-03-14 15:04:25	2019-03-14 15:55:03	COSMIC	Cosmic_TightPS	0	0	0	0.00	4641968	link
31241	2019-03-14 15:56:02	2019-03-14 16:46:41	COSMIC	Cosmic_TightPS	0	0	0	0.00	4638555	link
31242	2019-03-14 16:47:40	2019-03-14 17:38:07	COSMIC	Cosmic_TightPS	0	0	0	0.00	4638195	link
31243	2019-03-14 17:39:07	2019-03-14 18:29:27	COSMIC	Cosmic_TightPS	0	0	0	0.00	4634113	link
31244	2019-03-14 18:30:26	2019-03-14 19:20:47	COSMIC	Cosmic_TightPS	0	0	0	0.00	4624343	link
31245	2019-03-14 19:21:41	2019-03-14 20:12:01	COSMIC	Cosmic_TightPS	0	0	0	0.00	4618625	link
31246	2019-03-14 20:13:56	2019-03-14 21:04:51	COSMIC	Cosmic_TightPS	0	0	0	0.00	4608489	link
31247	2019-03-14 21:05:46	2019-03-14 21:56:05	COSMIC	Cosmic_TightPS	0	0	0	0.00	4759901	link
31364	2019-03-18 09:32:34	2019-03-18 10:23:26	COSMIC	Cosmic_TightPS	0	0	0	0.00	4524221	link
31373	2019-03-18 22:33:46	2019-03-18 22:36:06	COSMIC	Cosmic_TightPS	0	0	0	0.00	93238	link

Run Information

Period3(16)

31374	2019-03-18 23:56:46	2019-03-19 00:47:41	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2209935	link
31375	2019-03-19 04:31:42	2019-03-19 05:22:22	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2212987	link
31376	2019-03-19 05:39:13	2019-03-19 06:29:48	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2219267	link
31377	2019-03-19 06:30:58	2019-03-19 07:21:20	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2220429	link
31378	2019-03-19 07:22:23	2019-03-19 08:12:46	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2216970	link
31379	2019-03-19 08:13:59	2019-03-19 09:04:24	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2214971	link
31380	2019-03-19 09:05:28	2019-03-19 09:55:50	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2207571	link
31381	2019-03-19 09:57:15	2019-03-19 10:48:16	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2203015	link
31382	2019-03-19 10:49:10	2019-03-19 11:39:48	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2204040	link
31383	2019-03-19 11:40:58	2019-03-19 12:31:20	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2210134	link
31384	2019-03-19 12:32:23	2019-03-19 13:22:58	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2211222	link
31385	2019-03-19 13:23:57	2019-03-19 14:14:18	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2221504	link
31386	2019-03-19 14:15:30	2019-03-19 15:06:08	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2215601	link
31387	2019-03-19 15:07:17	2019-03-19 15:57:46	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2216479	link
31388	2019-03-19 15:58:48	2019-03-19 16:49:12	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2216541	link
31389	2019-03-19 16:53:35	2019-03-19 17:44:15	COSMIC	Cosmic_TightPS_MBTrig	0	0	0	0.00	4569929	link

Run Information

Period4(25)

run number	Start time	Stop time	Run Type	Note	L1 Raw	L1 Live	L1 Accepted	L1 Accept rate	L2 Accepted	SemiOnline Plots
31422	2019-03-20 20:56:08	2019-03-20 21:46:29	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	239514	link
31423	2019-03-20 21:47:36	2019-03-20 22:37:55	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	239169	link
31424	2019-03-20 22:38:58	2019-03-20 23:29:20	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	239524	link
31425	2019-03-20 23:32:03	2019-03-21 00:22:23	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	240016	link
31426	2019-03-21 00:23:26	2019-03-21 01:13:55	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	240567	link
31427	2019-03-21 01:14:55	2019-03-21 02:05:27	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	193529	link
31428	2019-03-21 02:07:11	2019-03-21 02:57:44	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	194758	link
31429	2019-03-21 02:59:04	2019-03-21 03:49:55	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	238844	link
31430	2019-03-21 03:50:49	2019-03-21 04:41:09	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	241075	link
31431	2019-03-21 04:42:02	2019-03-21 05:32:22	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	241065	link
31432	2019-03-21 05:33:21	2019-03-21 06:23:48	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	241243	link
31433	2019-03-21 06:24:50	2019-03-21 07:15:08	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	240831	link
31434	2019-03-21 07:16:44	2019-03-21 08:07:04	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	240917	link
31435	2019-03-21 08:08:12	2019-03-21 08:58:30	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	241130	link
31436	2019-03-21 08:59:27	2019-03-21 09:49:50	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	241939	link
31437	2019-03-21 09:51:02	2019-03-21 10:41:22	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	241089	link
31438	2019-03-21 10:42:19	2019-03-21 11:32:42	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	241052	link
31439	2019-03-21 11:33:45	2019-03-21 12:24:08	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	242079	link
31440	2019-03-21 12:25:08	2019-03-21 13:15:46	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	242453	link
31441	2019-03-21 13:16:54	2019-03-21 14:07:12	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	242868	link
31442	2019-03-21 14:08:12	2019-03-21 14:58:32	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	241785	link
31443	2019-03-21 14:59:34	2019-03-21 15:49:52	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	242474	link
31444	2019-03-21 15:50:50	2019-03-21 16:41:12	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	242843	link
31445	2019-03-21 16:42:26	2019-03-21 17:32:44	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	242206	link
31446	2019-03-21 17:33:44	2019-03-21 18:24:10	COSMIC	Cosmic_TightPS_MPPCconfig5	0	0	0	0.00	243191	link

Run Information

Period5(26/60)

run number	Start time	Stop time	Run Type	Note	L1 Raw	L1 Live	L1 Accepted	L1 Accept rate	L2 Accepted	SemiOnline Plots
31447	2019-03-21 18:30:47	2019-03-21 18:32:59	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	9283	link
31448	2019-03-21 18:33:52	2019-03-21 19:24:19	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	241713	link
31449	2019-03-21 19:26:15	2019-03-21 20:16:57	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	241269	link
31450	2019-03-21 20:17:49	2019-03-21 21:08:17	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	241854	link
31451	2019-03-21 21:09:13	2019-03-21 21:59:37	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242272	link
31452	2019-03-21 22:00:29	2019-03-21 22:50:51	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242363	link
31453	2019-03-21 22:51:47	2019-03-21 23:42:05	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242743	link
31454	2019-03-21 23:42:57	2019-03-22 00:33:25	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242300	link
31455	2019-03-22 00:34:17	2019-03-22 01:24:39	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242648	link
31456	2019-03-22 01:25:33	2019-03-22 02:15:53	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242817	link
31457	2019-03-22 02:16:45	2019-03-22 03:07:13	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	243593	link
31458	2019-03-22 03:08:15	2019-03-22 03:58:39	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	243621	link
31459	2019-03-22 03:59:36	2019-03-22 04:49:59	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	243341	link
31460	2019-03-22 04:51:01	2019-03-22 05:41:25	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242596	link
31461	2019-03-22 05:42:25	2019-03-22 06:32:44	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242781	link
31462	2019-03-22 06:33:36	2019-03-22 07:23:58	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242841	link
31463	2019-03-22 07:24:55	2019-03-22 08:15:18	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	243175	link
31464	2019-03-22 08:16:12	2019-03-22 09:06:32	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242050	link
31465	2019-03-22 09:10:02	2019-03-22 10:00:41	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242077	link
31466	2019-03-22 10:01:43	2019-03-22 10:52:07	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	241821	link
31467	2019-03-22 10:52:59	2019-03-22 11:43:27	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242590	link
31468	2019-03-22 11:44:19	2019-03-22 12:34:47	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242590	link
31469	2019-03-22 12:35:39	2019-03-22 13:26:07	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	243445	link
31470	2019-03-22 13:27:09	2019-03-22 14:17:33	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242218	link
31471	2019-03-22 14:18:46	2019-03-22 15:09:29	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	241914	link
31472	2019-03-22 15:10:20	2019-03-22 16:01:07	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	241536	link

Run Information

Period5(34/60)

31473	2019-03-22 16:02:03	2019-03-22 16:52:27	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242012	link
31474	2019-03-22 16:53:18	2019-03-22 17:43:41	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	243423	link
31475	2019-03-22 17:44:32	2019-03-22 18:34:55	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242289	link
31476	2019-03-22 18:35:45	2019-03-22 19:26:08	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	243319	link
31477	2019-03-22 19:29:52	2019-03-22 20:20:29	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242273	link
31478	2019-03-22 20:21:21	2019-03-22 21:11:43	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	243332	link
31479	2019-03-22 21:12:35	2019-03-22 22:03:03	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242035	link
31480	2019-03-22 22:03:59	2019-03-22 22:54:23	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	243263	link
31481	2019-03-22 22:55:23	2019-03-22 23:45:43	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	243568	link
31482	2019-03-22 23:46:40	2019-03-23 00:37:08	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242698	link
31483	2019-03-23 00:38:07	2019-03-23 01:28:40	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	240937	link
31484	2019-03-23 01:29:58	2019-03-23 02:34:07	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	189362	link
31485	2019-03-23 02:35:11	2019-03-23 03:29:39	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	219309	link
31486	2019-03-23 03:30:31	2019-03-23 04:20:59	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242028	link
31487	2019-03-23 04:21:51	2019-03-23 05:12:19	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242574	link
31488	2019-03-23 05:13:11	2019-03-23 06:03:33	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242650	link
31489	2019-03-23 06:04:25	2019-03-23 06:54:47	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	243083	link
31490	2019-03-23 06:55:39	2019-03-23 07:46:07	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242355	link
31491	2019-03-23 07:47:00	2019-03-23 08:37:27	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242672	link
31492	2019-03-23 08:38:19	2019-03-23 09:28:47	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242776	link
31493	2019-03-23 09:29:38	2019-03-23 10:20:01	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	243185	link
31494	2019-03-23 10:20:54	2019-03-23 11:11:21	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	242618	link
31495	2019-03-23 11:12:14	2019-03-23 12:02:41	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	243354	link
31496	2019-03-23 12:03:34	2019-03-23 12:53:55	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	243026	link
31497	2019-03-23 12:54:48	2019-03-23 13:45:33	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	241789	link
31498	2019-03-23 13:46:26	2019-03-23 14:36:47	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	243913	link
31499	2019-03-23 14:37:50	2019-03-23 15:28:13	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	243603	link
31500	2019-03-23 15:29:11	2019-03-23 16:19:33	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	244239	link
31501	2019-03-23 16:20:30	2019-03-23 17:10:59	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	244041	link
31502	2019-03-23 17:11:56	2019-03-23 18:02:37	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	243106	link
31503	2019-03-23 18:03:34	2019-03-23 18:54:15	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	243777	link
31504	2019-03-23 18:55:07	2019-03-23 19:45:35	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	243438	link
31505	2019-03-23 19:46:27	2019-03-23 20:36:55	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	243700	link
31506	2019-03-23 20:37:58	2019-03-23 20:38:25	COSMIC	Cosmic_TightPS_MPPCconfig10_CC04CC05	0	0	0	0.00	943	link

Run Information(New)

Period6(20)

run number	Start time	Stop time	Run Type	Note	L1 Raw	L1 Live	L1 Accepted	L1 Accept rate	L2 Accepted	SemiOnline Plots
31532	2019-04-03 16:00:18	2019-04-03 16:50:28	COSMIC	Cosmic_TightPS_MBTrig	0	0	0	0.00	4531542	link
31533	2019-04-03 23:39:44	2019-04-04 00:30:02	COSMIC	Cosmic_TightPS_MBTrig	0	0	0	0.00	4532203	link
31534	2019-04-04 00:32:46	2019-04-04 01:23:46	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2160176	link
31535	2019-04-04 01:25:22	2019-04-04 02:17:01	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	1729314	link
31536	2019-04-04 02:18:17	2019-04-04 03:11:14	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	1833695	link
31537	2019-04-04 03:12:11	2019-04-04 04:02:34	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2198910	link
31538	2019-04-04 04:03:33	2019-04-04 04:54:00	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2201205	link
31539	2019-04-04 04:54:54	2019-04-04 05:45:14	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2199224	link
31540	2019-04-04 05:46:17	2019-04-04 06:36:40	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2201753	link
31541	2019-04-04 06:37:56	2019-04-04 07:28:18	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2202205	link
31542	2019-04-04 07:29:33	2019-04-04 08:20:14	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2196392	link
31543	2019-04-04 08:21:10	2019-04-04 09:11:28	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2197126	link
31544	2019-04-04 09:12:28	2019-04-04 10:02:48	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2199883	link
31545	2019-04-04 10:07:09	2019-04-04 10:12:31	ERROR CLOCK	LED_11Hz	0	0	0	0.00	412065	link
31546	2019-04-04 10:14:18	2019-04-04 11:04:39	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2198511	link
31547	2019-04-04 11:06:27	2019-04-04 11:56:47	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2198504	link
31548	2019-04-04 11:58:31	2019-04-04 12:49:07	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2194226	link
31549	2019-04-04 12:56:12	2019-04-04 13:46:33	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2199219	link
31550	2019-04-04 13:48:53	2019-04-04 14:39:17	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2195031	link
31551	2019-04-04 14:40:42	2019-04-04 15:31:07	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2198939	link
31552	2019-04-04 15:33:01	2019-04-04 16:23:21	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2194783	link
31553	2019-04-04 16:26:27	2019-04-04 16:28:03	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	52821	link
Total				0	0	0		48228727		

Run Information(New)

Period7(21)

run number	Start time	Stop time	Run Type	Note	L1 Raw	L1 Live	L1 Accepted	L1 Accept rate	L2 Accepted	SemiOnline Plots
31747	2019-04-10 09:05:19	2019-04-10 09:55:46	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2327362	link
31748	2019-04-10 09:57:27	2019-04-10 10:48:24	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2257681	link
31749	2019-04-10 11:26:44	2019-04-10 12:17:21	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2238874	link
31750	2019-04-10 12:28:52	2019-04-10 13:19:59	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2229824	link
31751	2019-04-10 13:21:09	2019-04-10 14:11:31	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2229508	link
31752	2019-04-10 14:13:00	2019-04-10 15:03:27	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2216744	link
31753	2019-04-10 15:04:27	2019-04-10 15:54:47	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2226009	link
31754	2019-04-10 16:03:42	2019-04-10 16:54:08	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2224969	link
31755	2019-04-10 16:55:05	2019-04-10 17:00:32	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	8949	link
31756	2019-04-10 17:01:43	2019-04-10 17:48:23	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	0	link
31757	2019-04-10 17:49:42	2019-04-10 17:51:28	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	0	link
31758	2019-04-10 17:57:23	2019-04-10 18:07:05	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	0	link
31759	2019-04-10 18:13:24	2019-04-10 18:15:11	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	0	link
31760	2019-04-10 18:29:07	2019-04-10 19:19:25	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2228770	link
31761	2019-04-10 19:20:34	2019-04-10 20:10:57	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2226450	link
31762	2019-04-10 20:12:19	2019-04-10 21:02:59	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2224576	link
31763	2019-04-10 21:03:57	2019-04-10 21:54:37	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2222586	link
31764	2019-04-10 21:55:33	2019-04-10 22:45:51	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2228322	link
31765	2019-04-10 22:46:45	2019-04-10 23:37:11	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2230445	link
31766	2019-04-10 23:38:05	2019-04-11 00:28:43	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2234559	link
31767	2019-04-11 00:29:40	2019-04-11 01:20:21	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2227274	link
31768	2019-04-11 01:21:18	2019-04-11 02:12:05	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2229544	link
31769	2019-04-11 02:13:03	2019-04-11 03:04:55	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2250398	link
31770	2019-04-11 03:17:50	2019-04-11 03:24:32	Empty/CLOCK	LED_HL	0	0	0	0.00	404646	link
31771	2019-04-11 03:29:12	2019-04-11 04:19:40	COSMIC	Cosmic_TightPS_MBTrig	0	0	0	0.00	4618985	link
31772	2019-04-11 04:21:15	2019-04-11 05:11:42	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2269011	link
Total				0	0	0	47555486			

Run Information(New)

Period8(13)

run number	Start time	Stop time	Run Type	Note	L1 Raw	L1 Live	L1 Accepted	L1 Accept rate	L2 Accepted	SemiOnline Plots
31984	2019-04-17 05:35:27	2019-04-17 06:25:49	COSMIC	Cosmic_DAQTest	0	0	0	0.00	2365835	link
31985	2019-04-17 06:27:21	2019-04-17 07:17:57	COSMIC	Cosmic_DAQTest	0	0	0	0.00	2296112	link
31986	2019-04-17 07:20:18	2019-04-17 08:10:41	COSMIC	Cosmic_DAQTest	0	0	0	0.00	2279704	link
31987	2019-04-17 08:11:58	2019-04-17 09:02:19	COSMIC	Cosmic_DAQTest	0	0	0	0.00	2271308	link
31988	2019-04-17 09:03:36	2019-04-17 09:54:03	COSMIC	Cosmic_DAQTest	0	0	0	0.00	2260239	link
31989	2019-04-17 09:55:16	2019-04-17 10:46:11	COSMIC	Cosmic_DAQTest	0	0	0	0.00	2245714	link
31990	2019-04-17 10:47:28	2019-04-17 11:39:01	COSMIC	Cosmic_DAQTest	0	0	0	0.00	2229886	link
31991	2019-04-17 11:40:28	2019-04-17 12:30:51	COSMIC	Cosmic_DAQTest	0	0	0	0.00	2243591	link
Total				0	0	0		18192389		

run number	Start time	Stop time	Run Type	Note	L1 Raw	L1 Live	L1 Accepted	L1 Accept rate	L2 Accepted	SemiOnline Plots
31992	2019-04-17 12:48:32	2019-04-17 13:38:53	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2248422	link
31993	2019-04-17 13:40:14	2019-04-17 14:30:43	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2252094	link
31994	2019-04-17 14:31:59	2019-04-17 15:22:21	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2255764	link
31995	2019-04-17 15:31:31	2019-04-17 16:23:06	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2249797	link
31996	2019-04-17 16:24:26	2019-04-17 17:14:44	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2458614	link
Total				0	0	0		11464691		



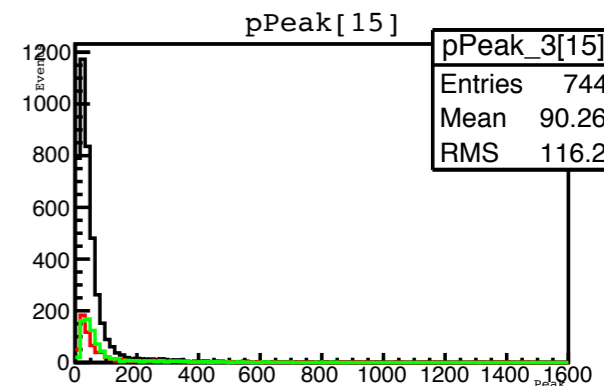
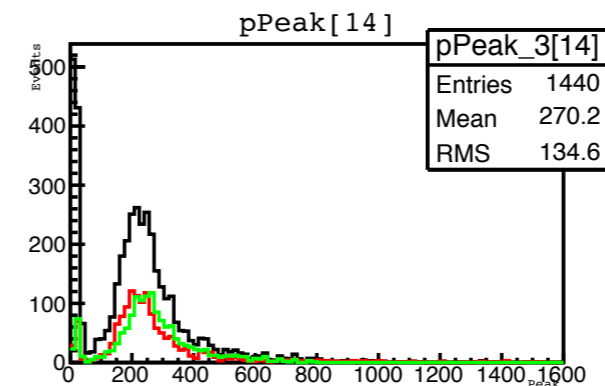
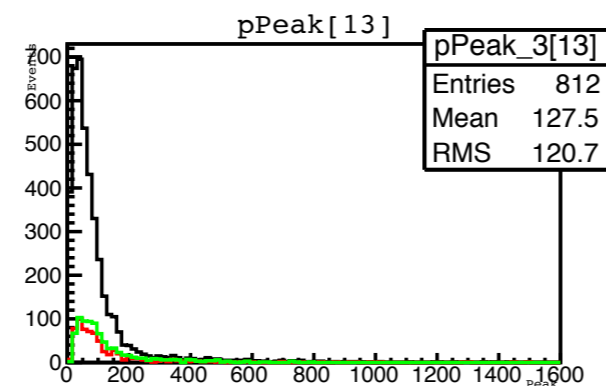
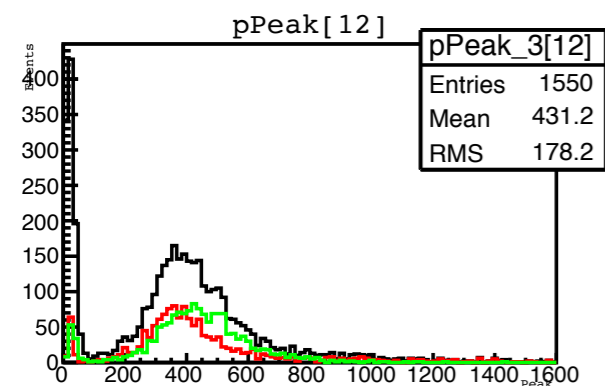
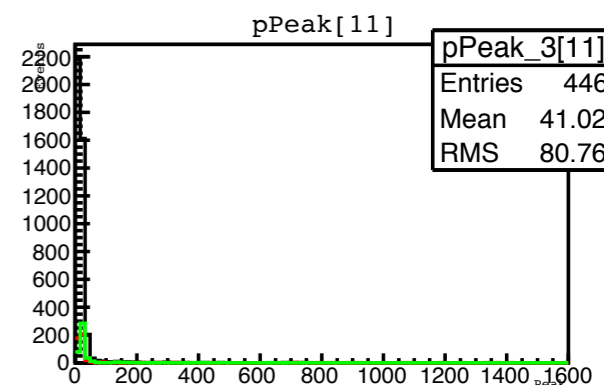
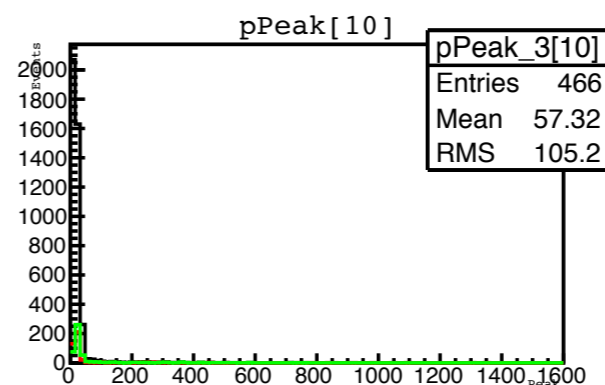
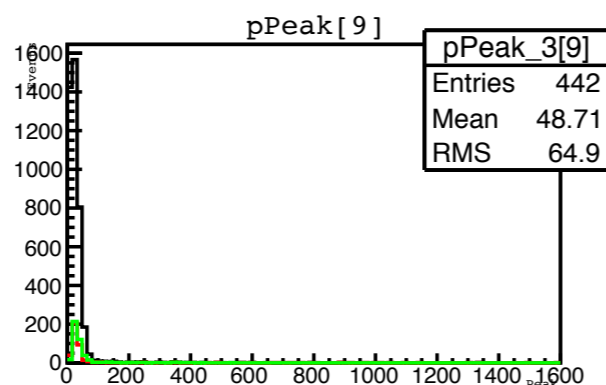
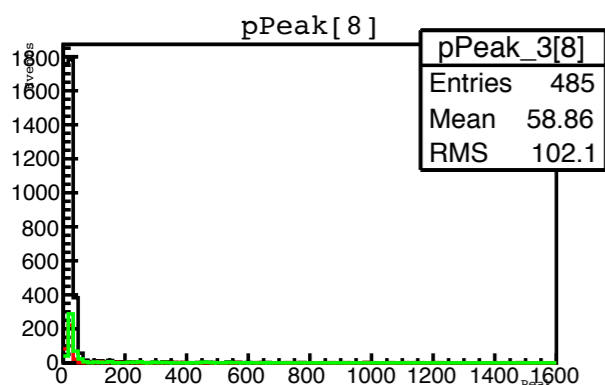
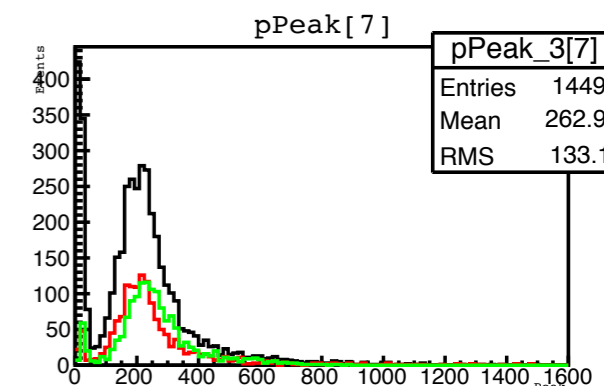
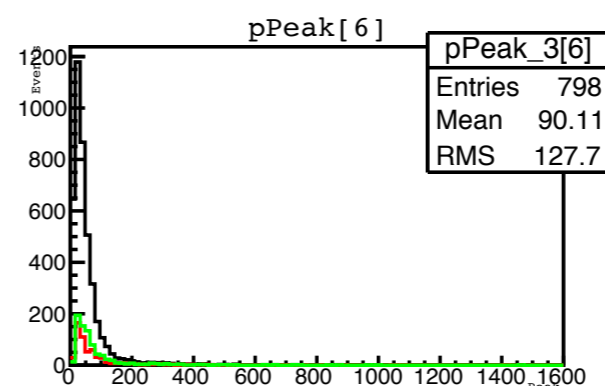
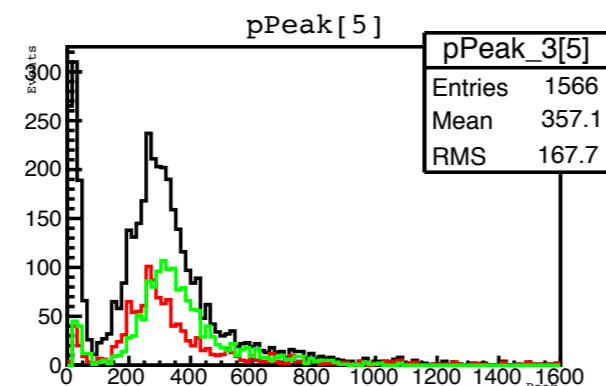
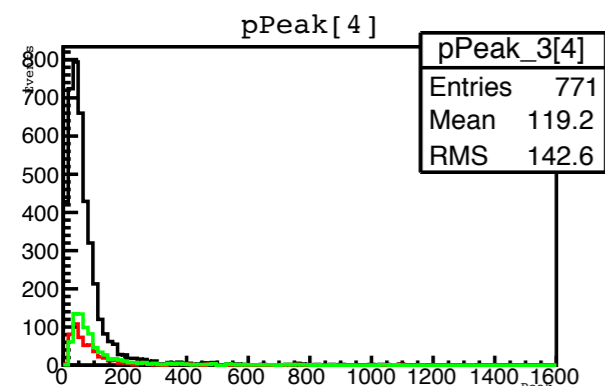
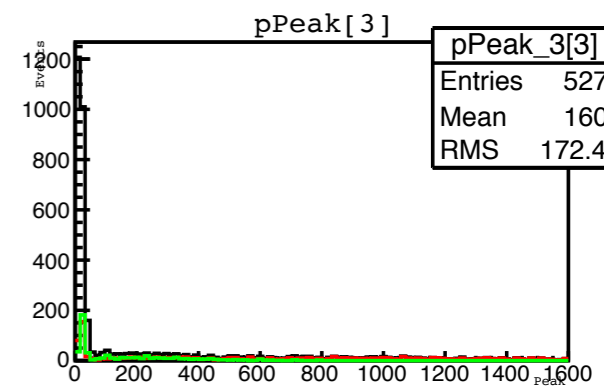
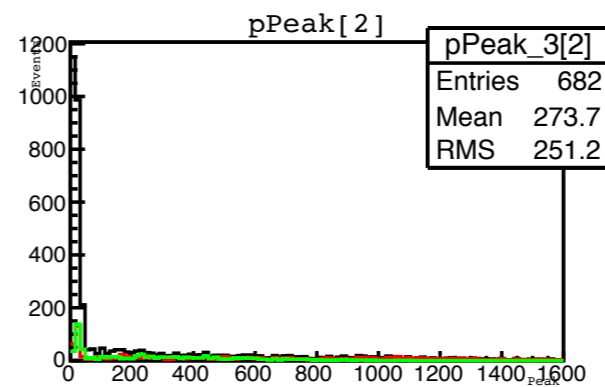
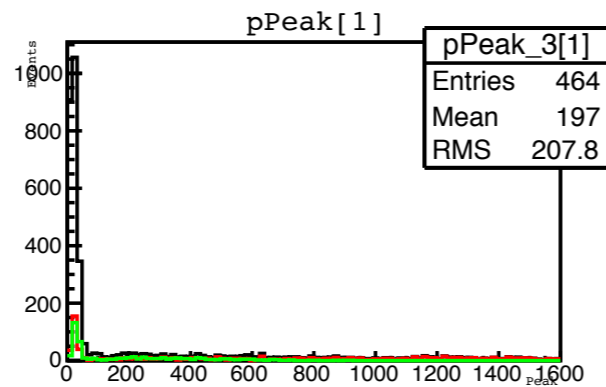
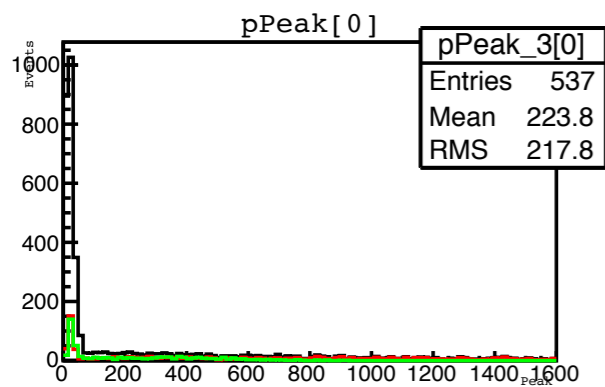
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32016	2019-04-18 05:45:07	2019-04-18 06:35:51	COSMIC	Cosmic_TightPS_MBTrig	0	0	0	0.00	4617749	link
32017	2019-04-18 06:58:13	2019-04-18 07:04:22	TRON/CLOCK	LED_1Hz	0	0	0	0.00	414079	link
32018	2019-04-18 13:20:41	2019-04-18 13:22:25	TRON/CLOCK	LED_1Hz	0	0	0	0.00	2072	link
32019	2019-04-18 13:33:23	2019-04-18 14:23:51	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2238674	link
32020	2019-04-18 16:43:22	2019-04-18 17:34:16	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2246913	link
Total				0	0	0		9519487		

Run Information(New)

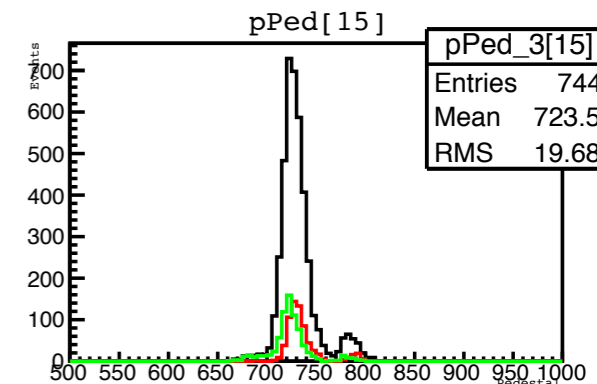
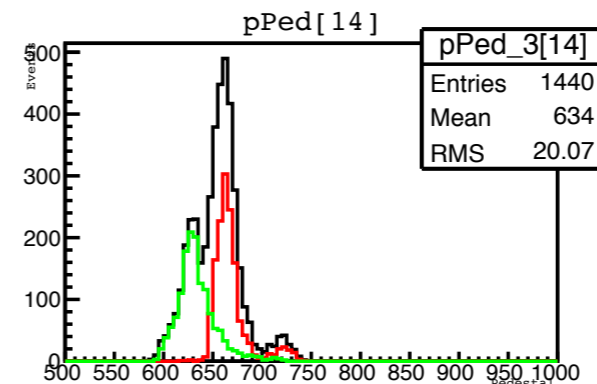
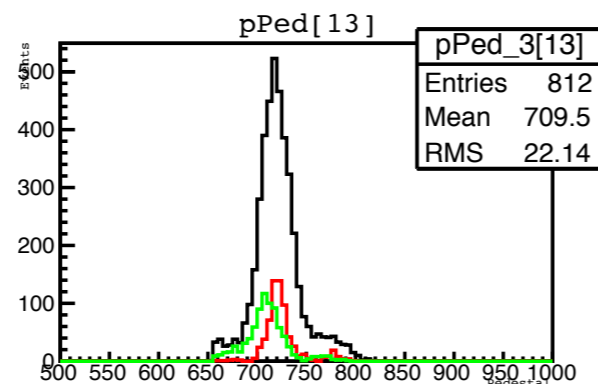
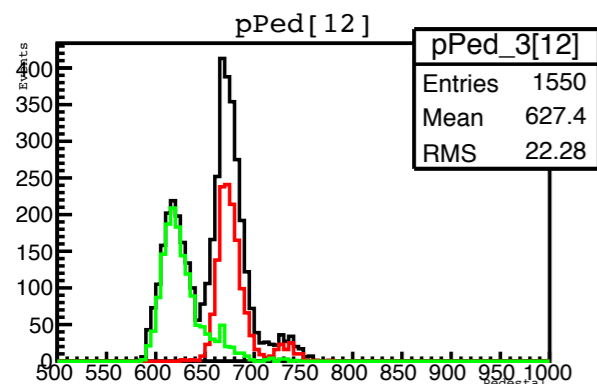
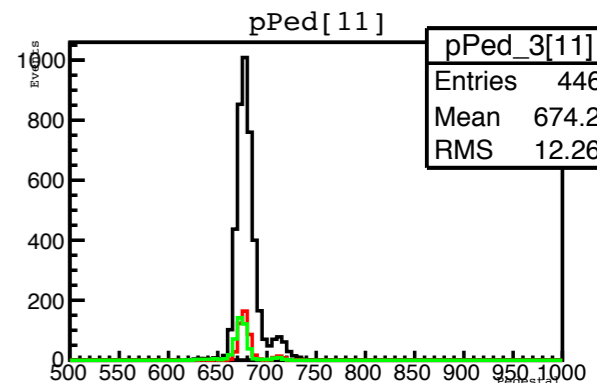
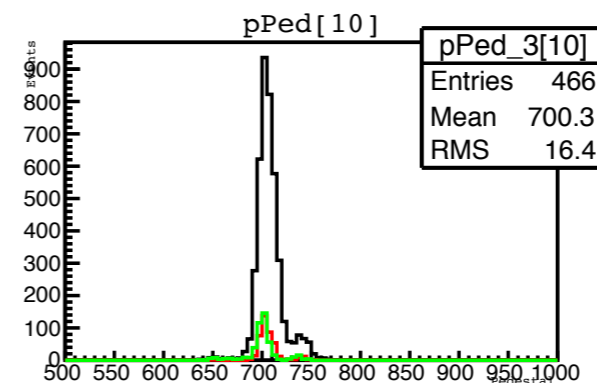
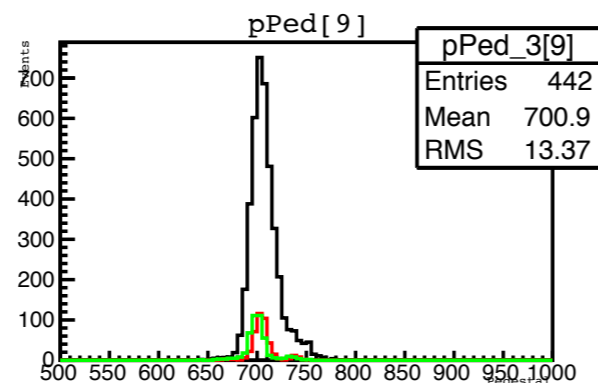
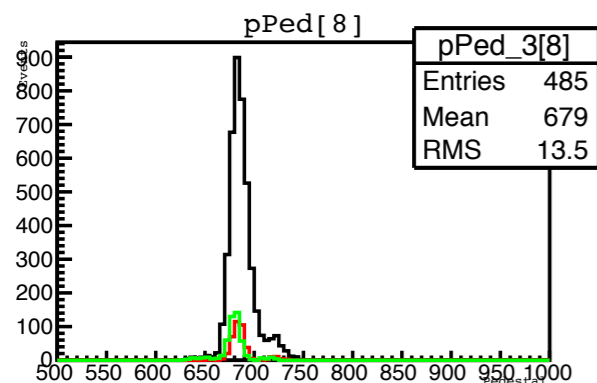
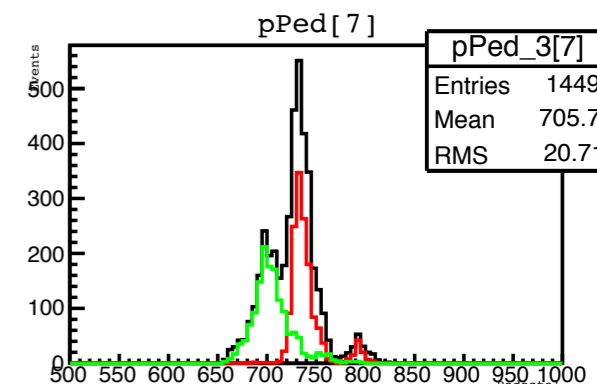
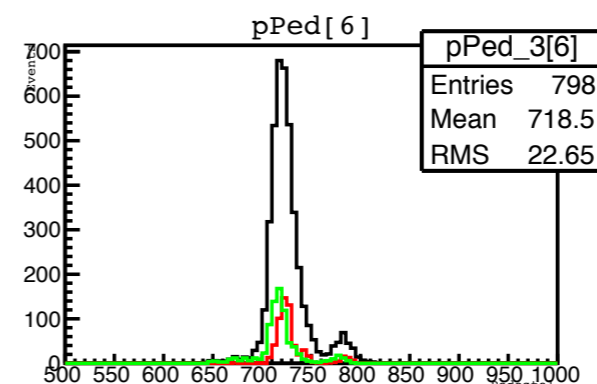
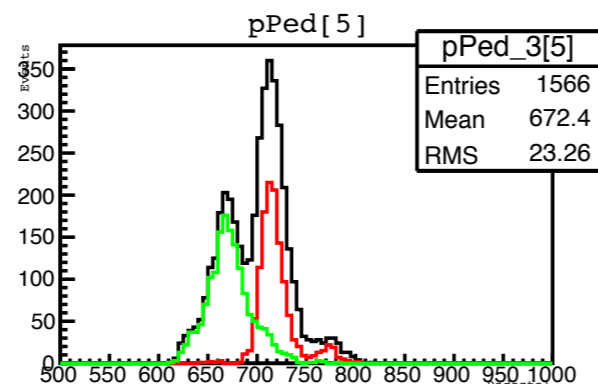
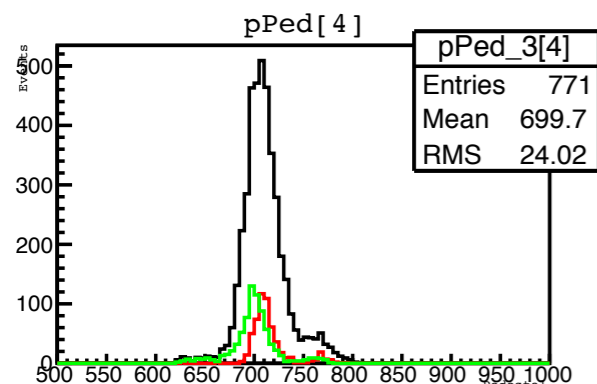
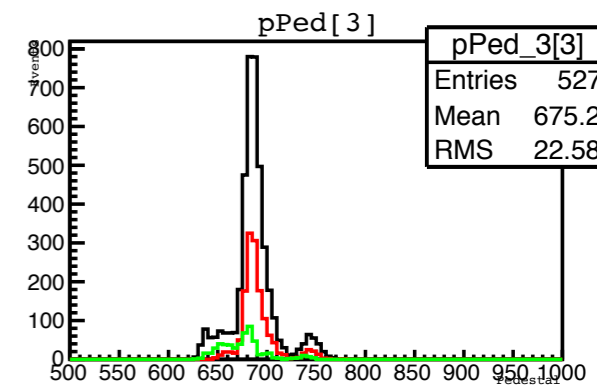
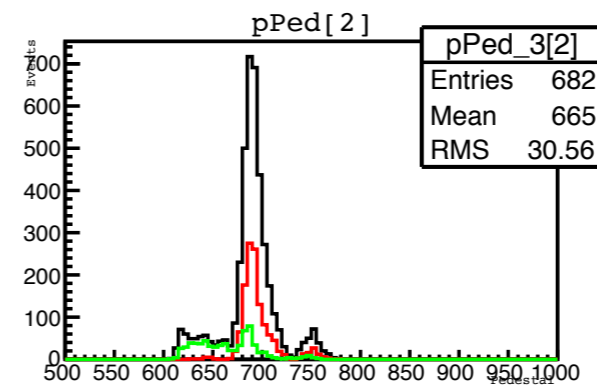
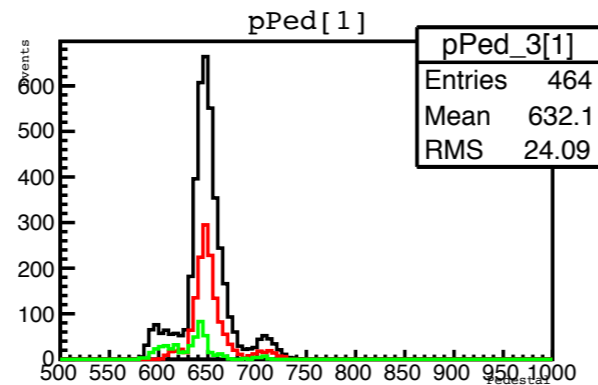
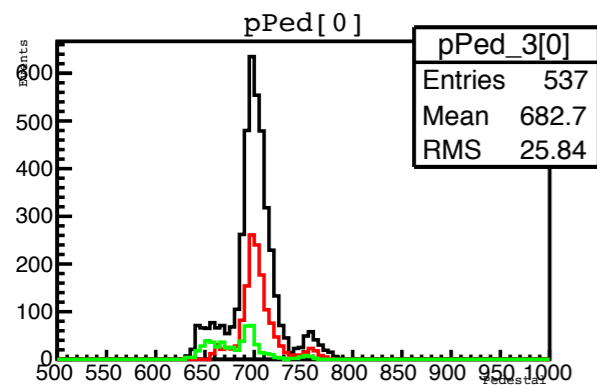
Period9(18)

run number	Start time	Stop time	Run Type	Note	L1 Raw	L1 Live	L1 Accepted	L1 Accept rate	L2 Accepted	SemiOnline Plots
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32203	2019-04-24 10:20:11	2019-04-24 11:10:36	COSMIC	Cosmic_TightPS_MBTrig	0	0	0	0.00	4552032	link
32204	2019-04-24 11:12:36	2019-04-24 12:03:08	COSMIC	Cosmic_TightPS_MBTrig	0	0	0	0.00	4547834	link
32205	2019-04-24 12:04:21	2019-04-24 12:36:39	COSMIC	Cosmic_TightPS_MBTrig	0	0	0	0.00	2852875	link
32206	2019-04-24 13:02:08	2019-04-24 13:52:36	COSMIC	Cosmic_TightPS_MBTrig	0	0	0	0.00	4545452	link
32207	2019-04-24 13:53:54	2019-04-24 14:44:14	COSMIC	Cosmic_TightPS_MBTrig	0	0	0	0.00	4544937	link
32208	2019-04-24 14:45:29	2019-04-24 15:35:58	COSMIC	Cosmic_TightPS_MBTrig	0	0	0	0.00	4550070	link
32209	2019-04-24 15:37:22	2019-04-24 16:28:00	COSMIC	Cosmic_TightPS_MBTrig	0	0	0	0.00	4538625	link
32210	2019-04-24 16:29:24	2019-04-24 17:20:02	COSMIC	Cosmic_TightPS_MBTrig	0	0	0	0.00	4542483	link
32211	2019-04-24 17:21:19	2019-04-24 18:11:46	COSMIC	Cosmic_TightPS_MBTrig	0	0	0	0.00	4548284	link
32212	2019-04-24 18:26:31	2019-04-24 19:15:48	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2164290	link
32213	2019-04-24 19:17:20	2019-04-24 19:22:43	Timed_Clock	LED_1kHz	0	0	0	0.00	414082	link
32214	2019-04-24 19:24:18	2019-04-24 20:14:45	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2229413	link
32215	2019-04-24 20:16:07	2019-04-24 21:06:35	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2232035	link
32216	2019-04-24 21:12:50	2019-04-24 22:04:37	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2228550	link
32217	2019-04-24 22:05:59	2019-04-24 22:56:21	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2233044	link
32218	2019-04-24 22:57:41	2019-04-24 23:48:17	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2230020	link
32219	2019-04-24 23:49:29	2019-04-25 00:39:49	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2237469	link
32220	2019-04-25 00:41:06	2019-04-25 01:31:45	COSMIC	Cosmic_TightPS_IBTrig	0	0	0	0.00	2231912	link
Total				0	0	0		61972199		

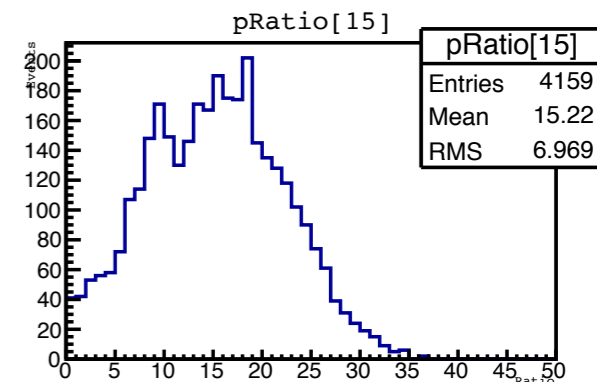
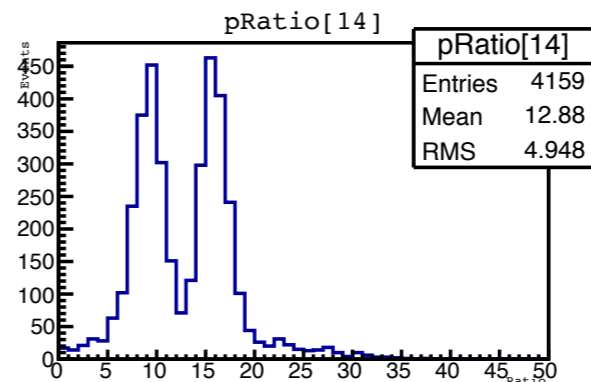
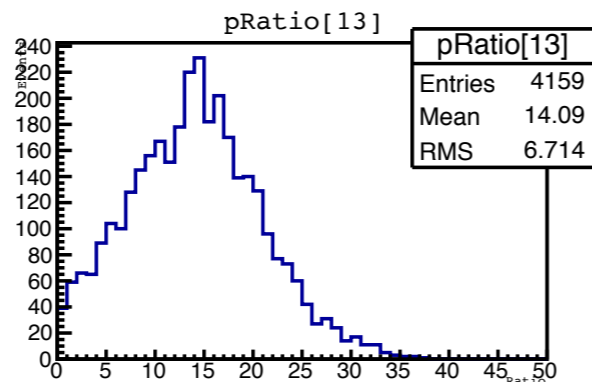
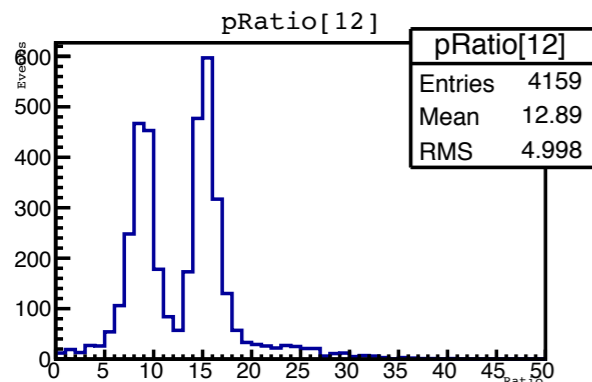
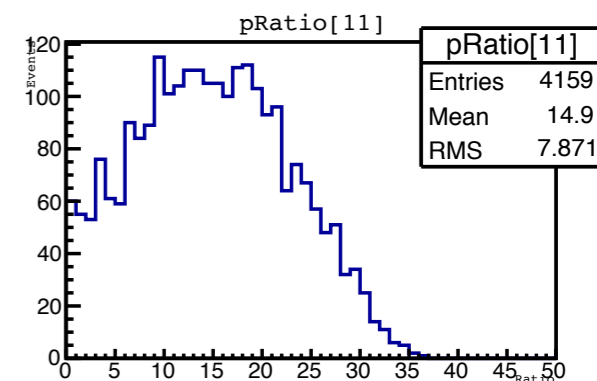
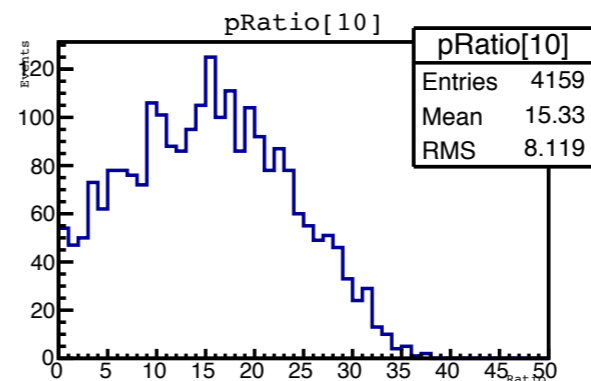
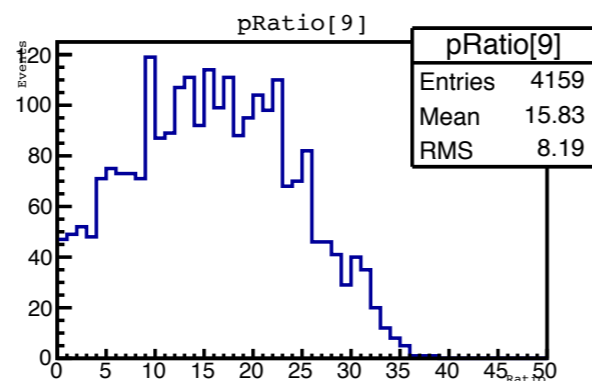
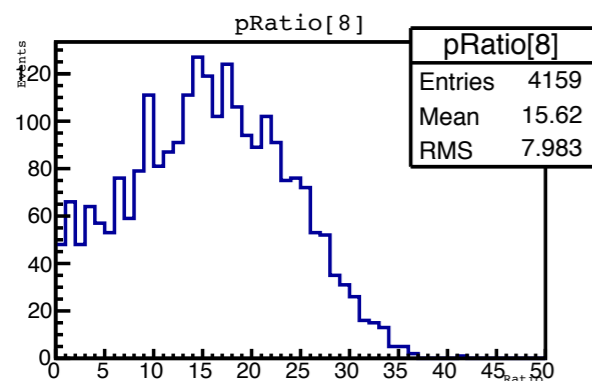
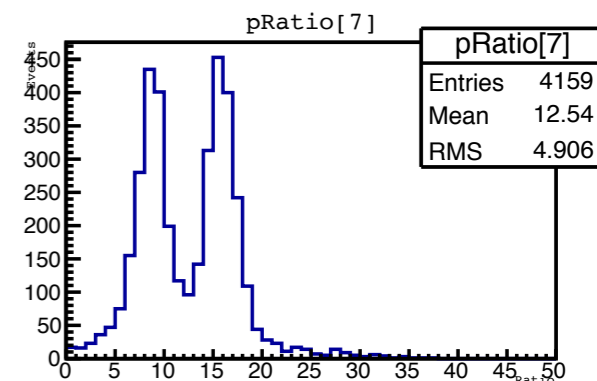
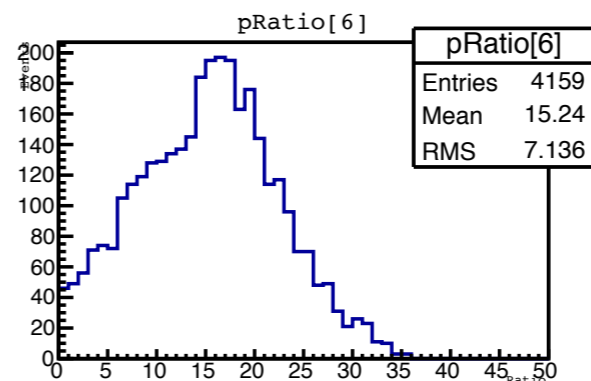
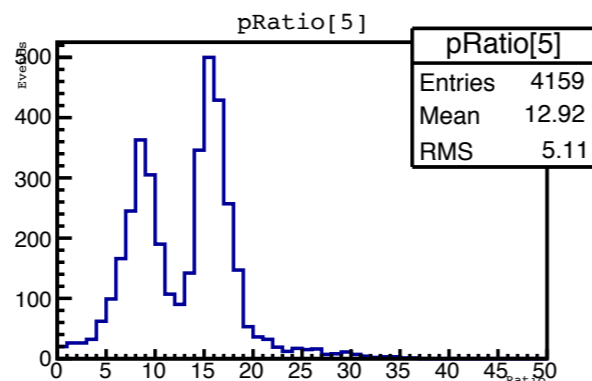
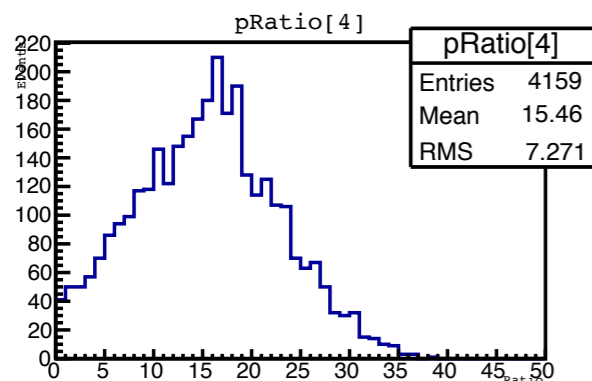
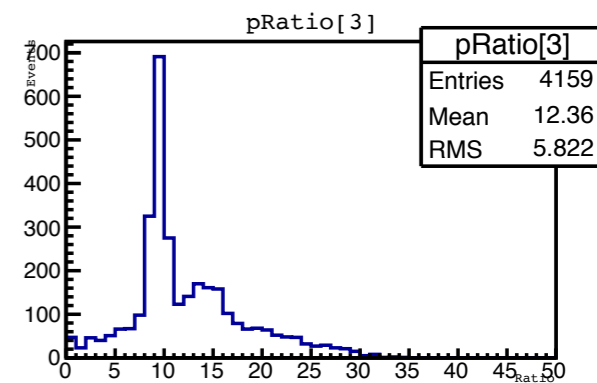
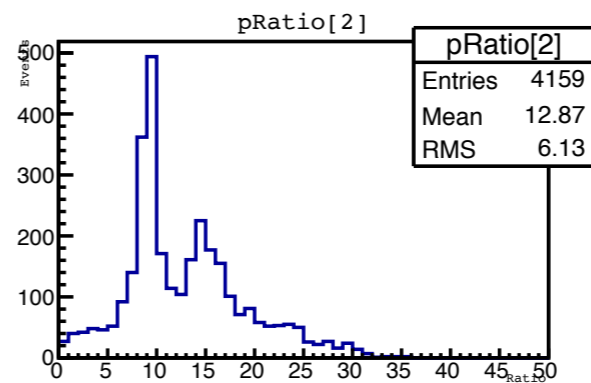
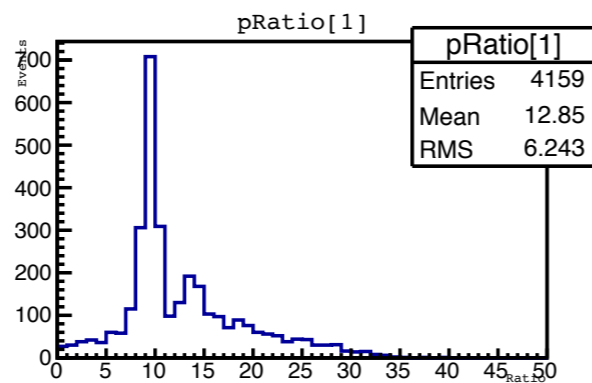
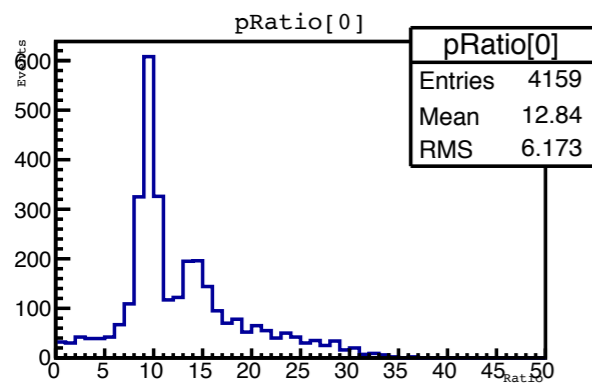
For North Trigger



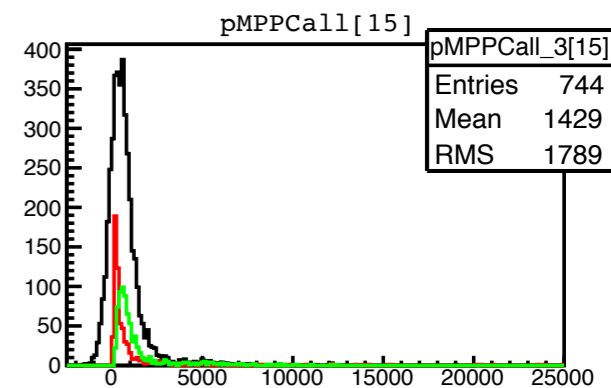
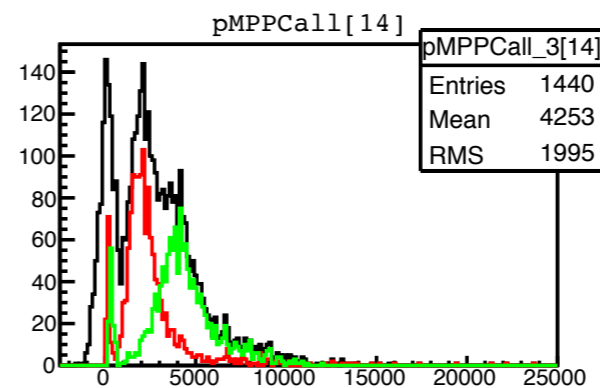
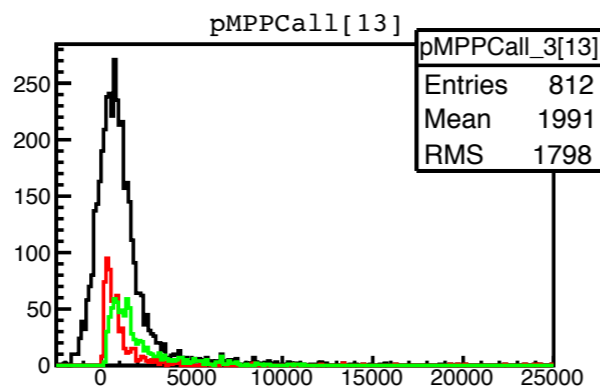
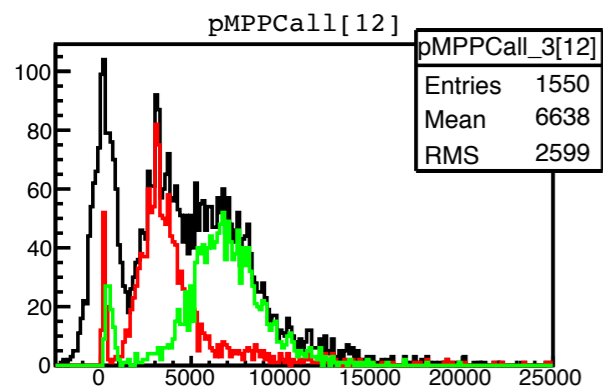
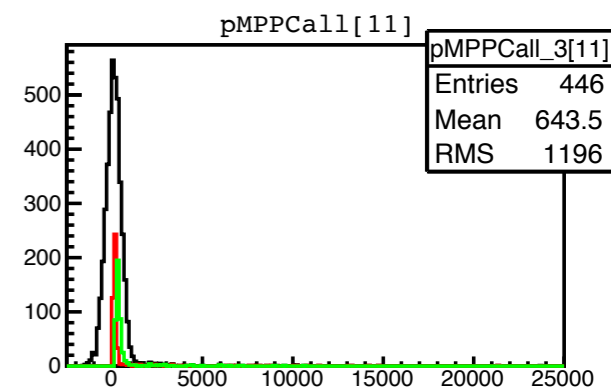
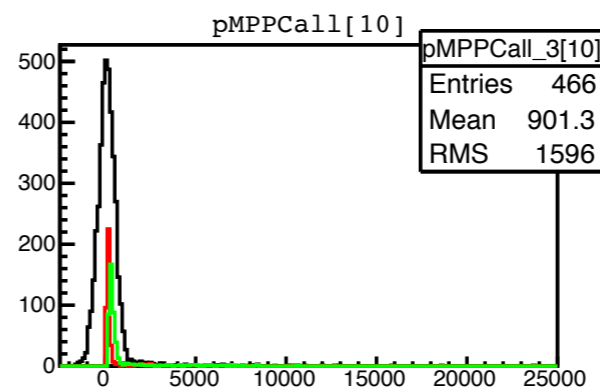
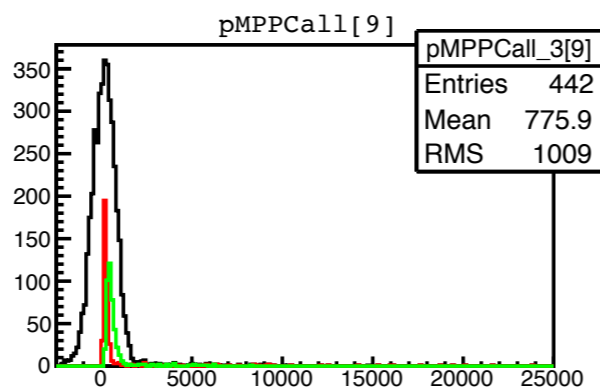
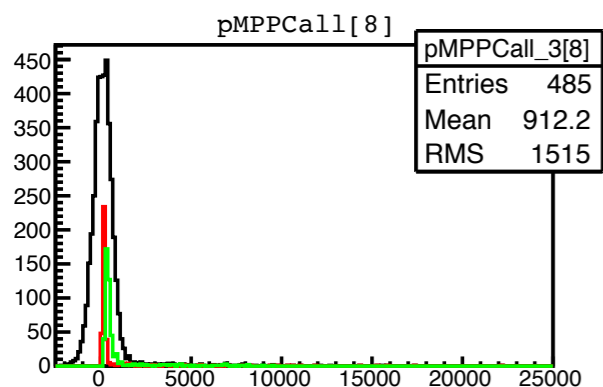
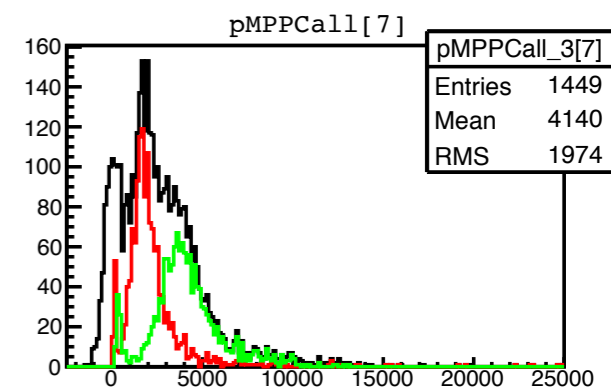
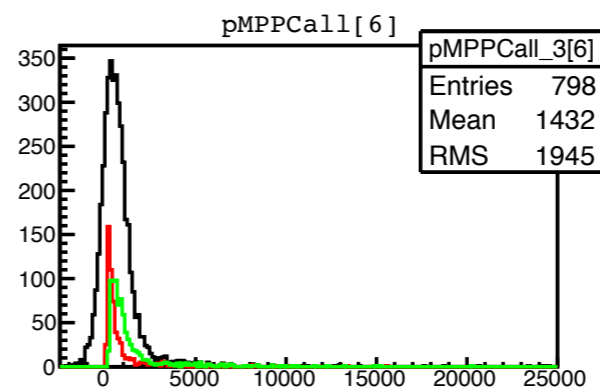
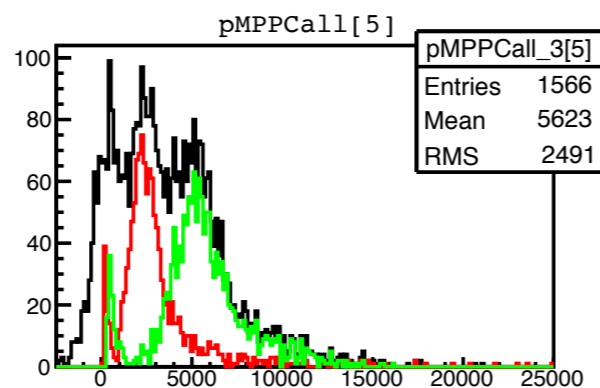
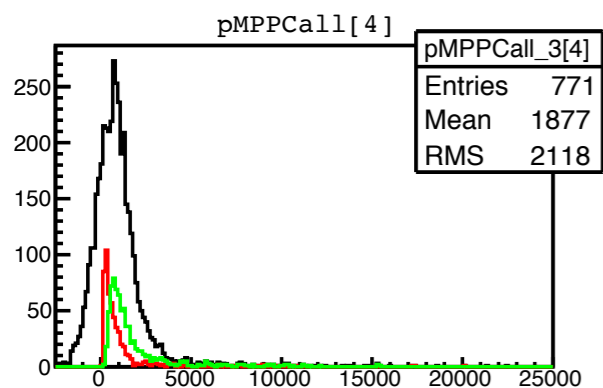
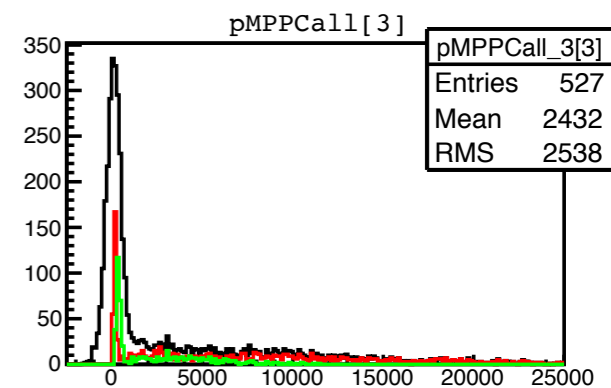
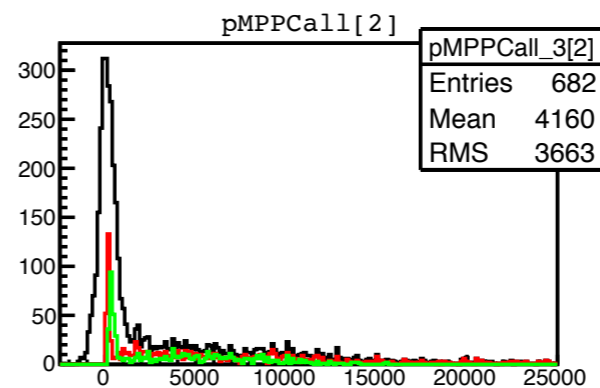
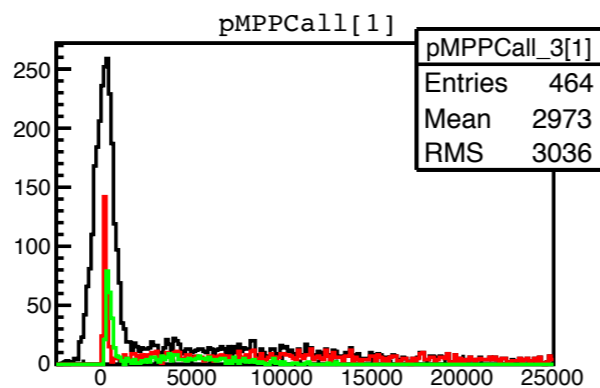
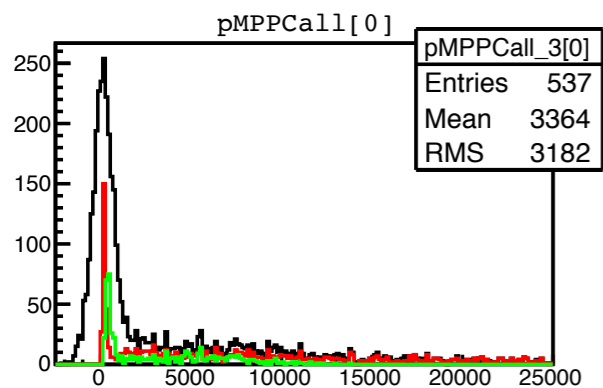
For North Trigger



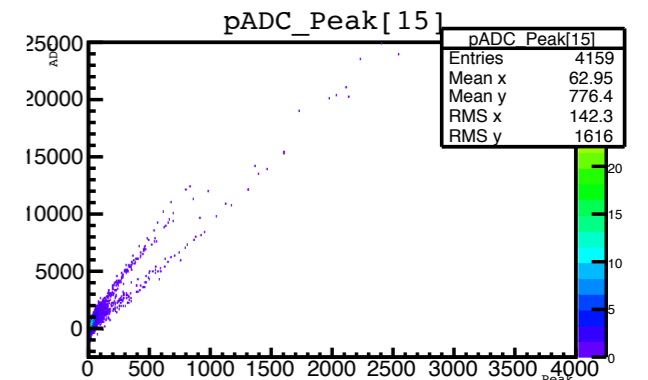
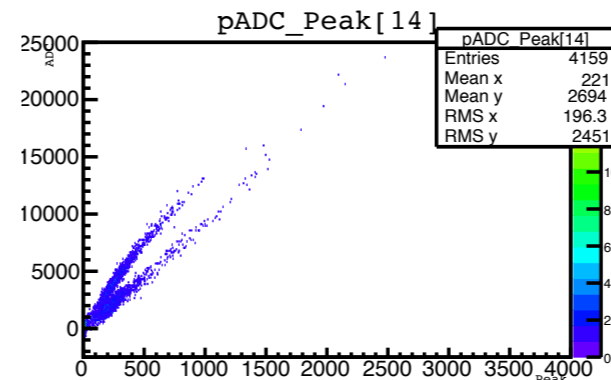
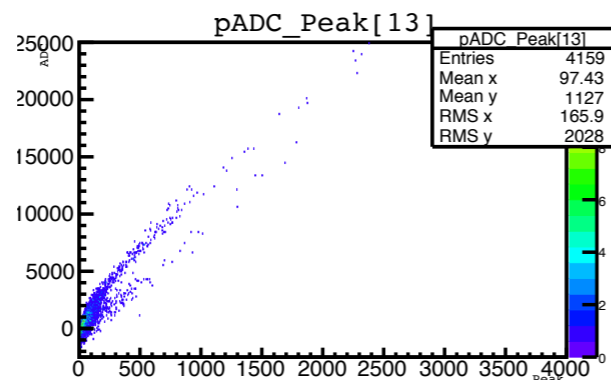
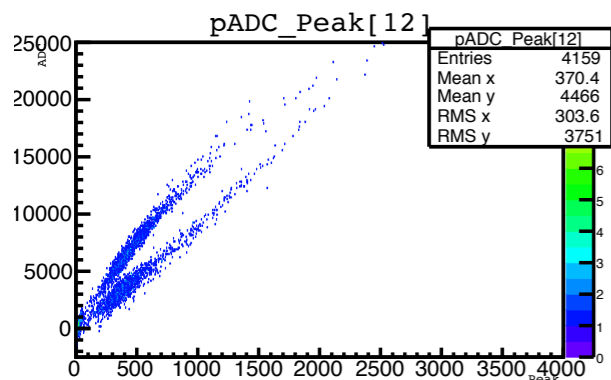
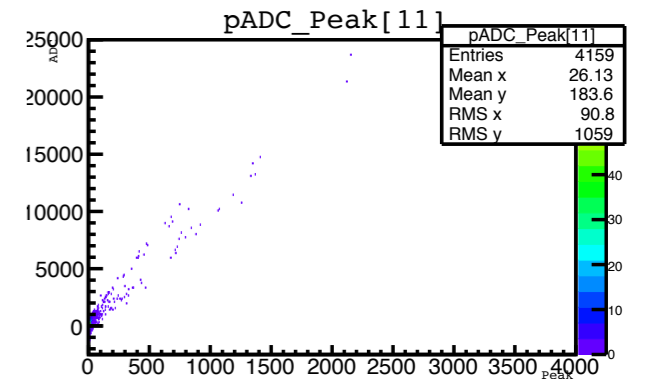
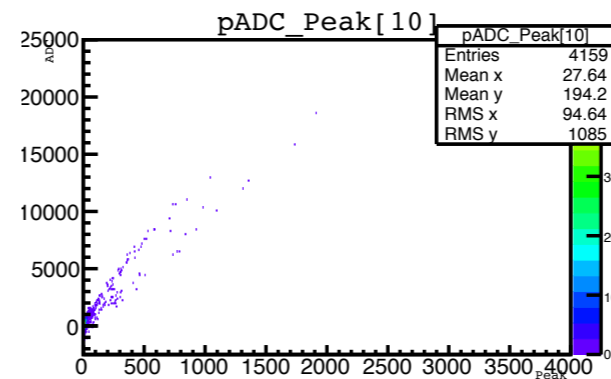
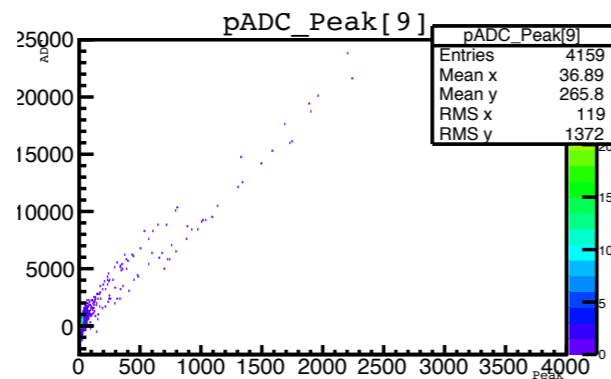
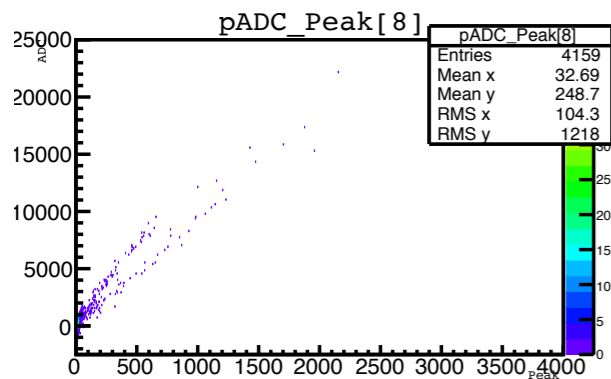
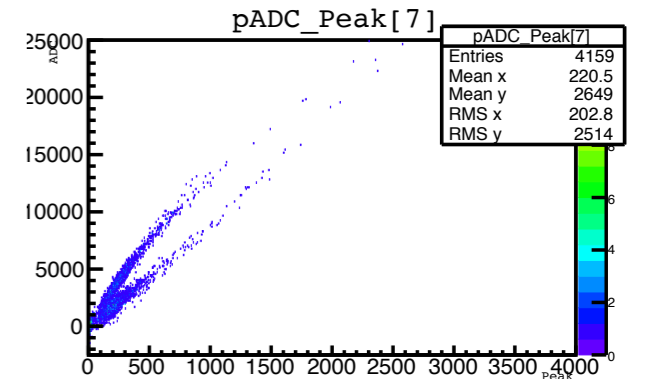
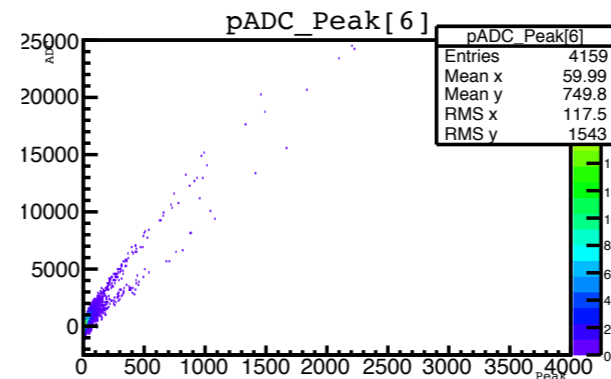
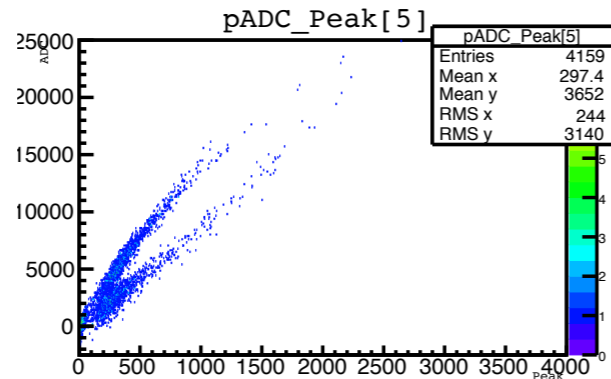
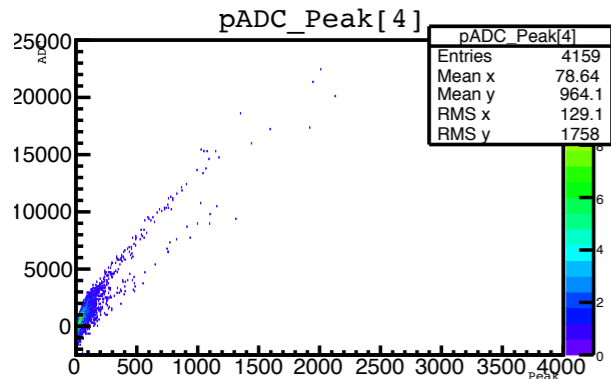
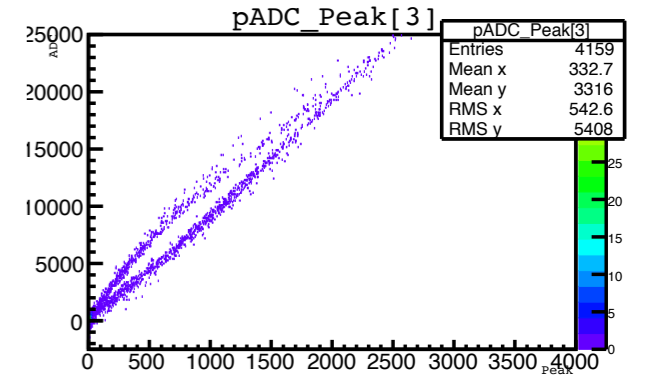
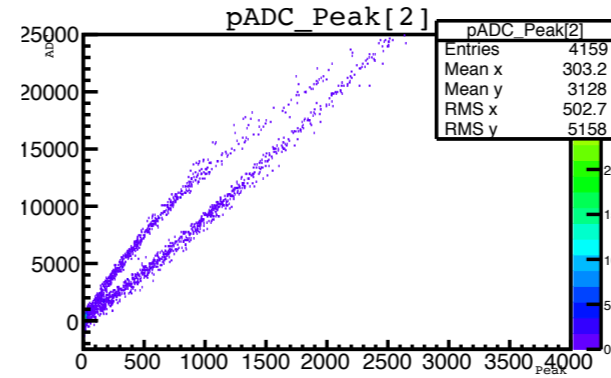
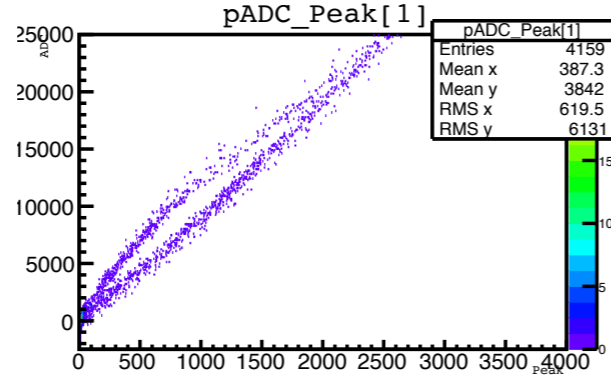
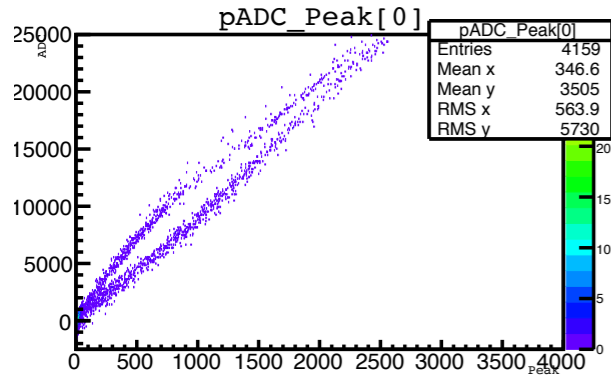
For North Trigger



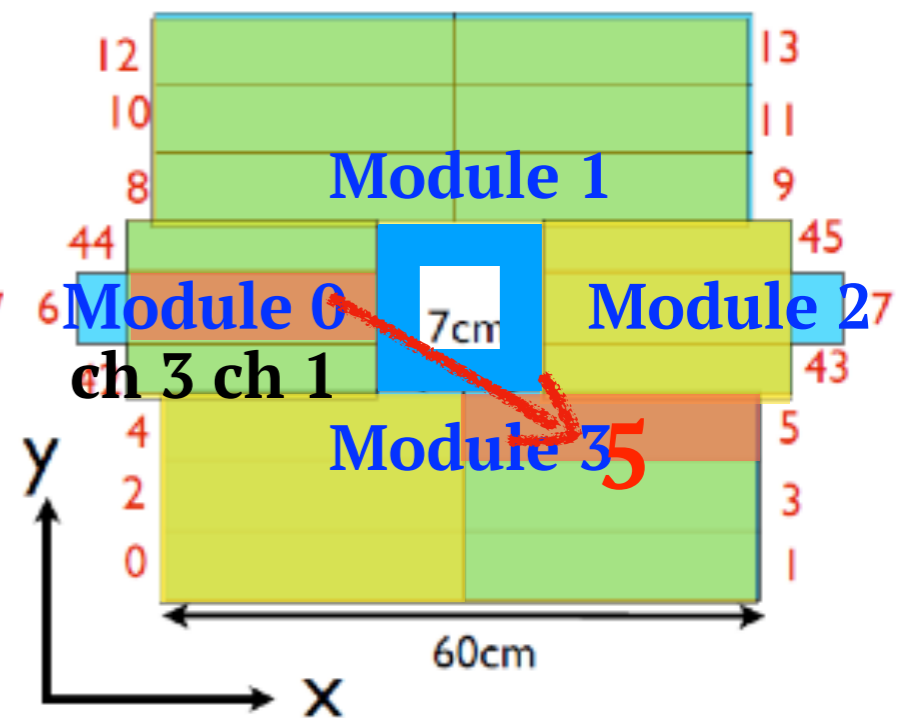
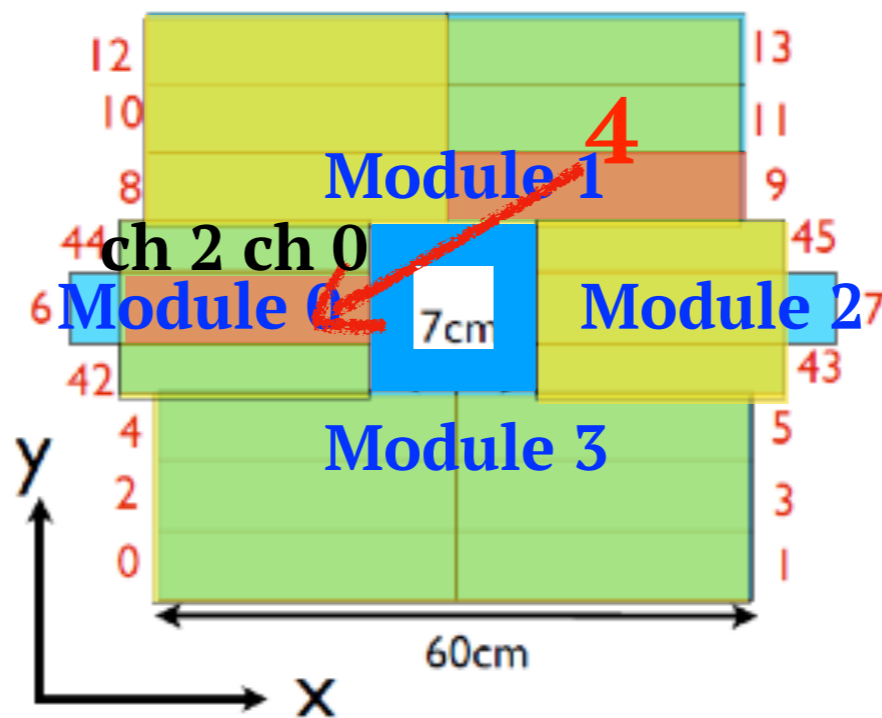
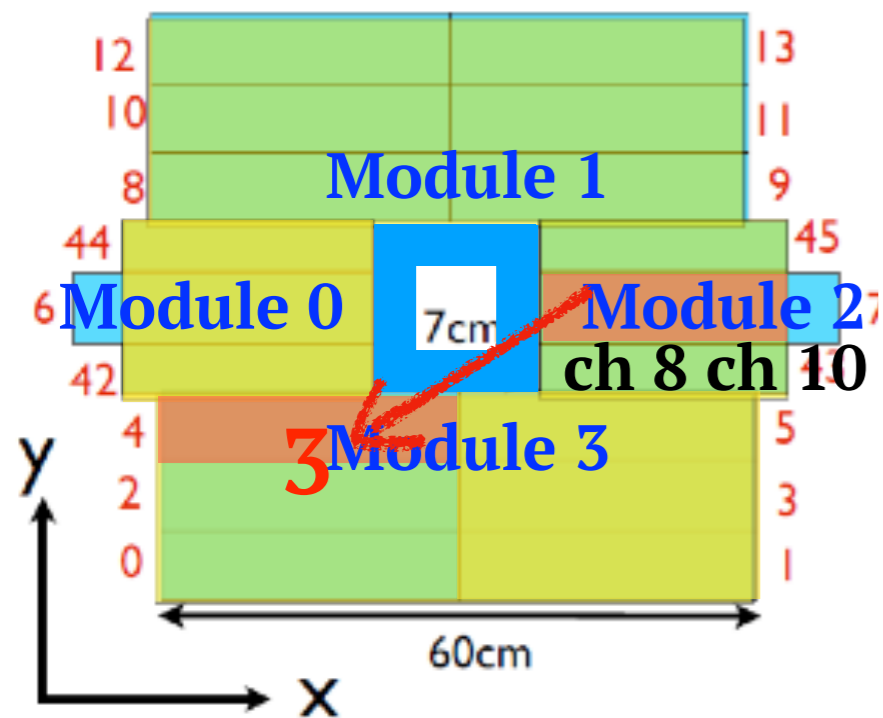
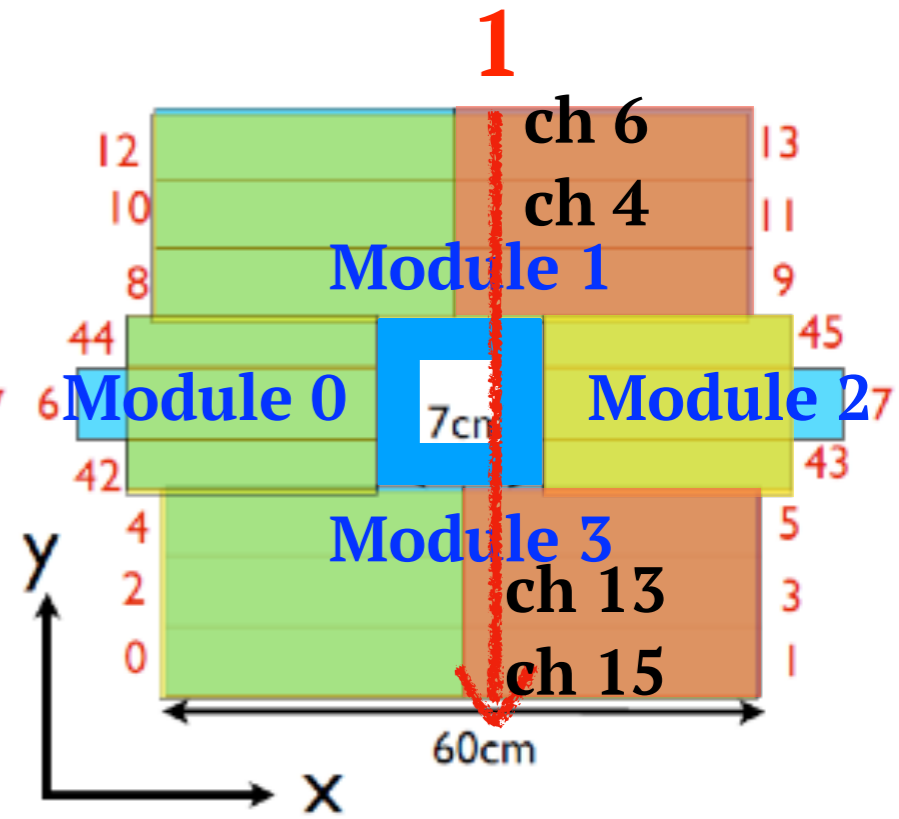
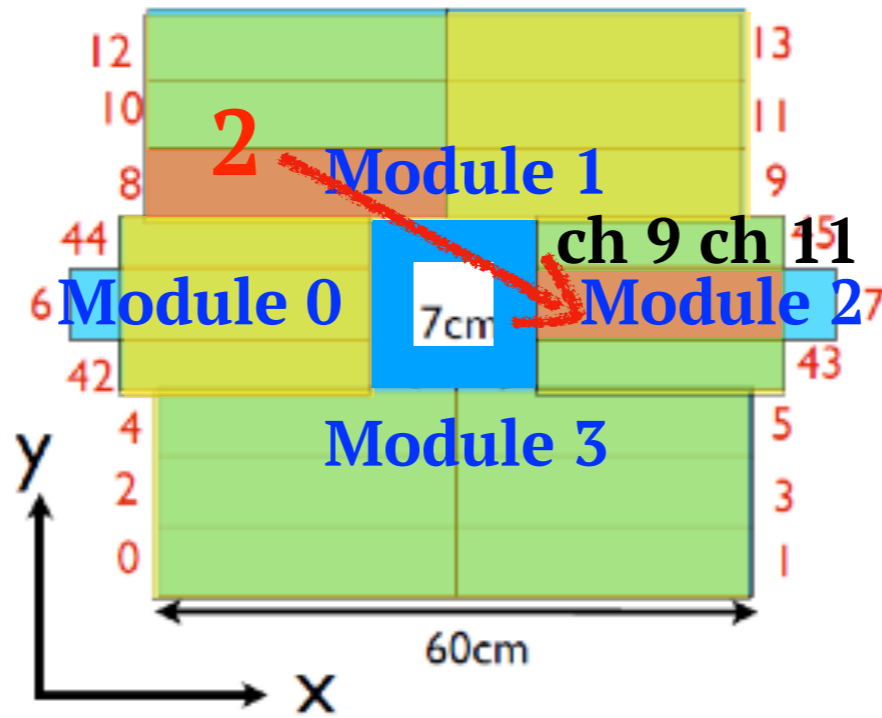
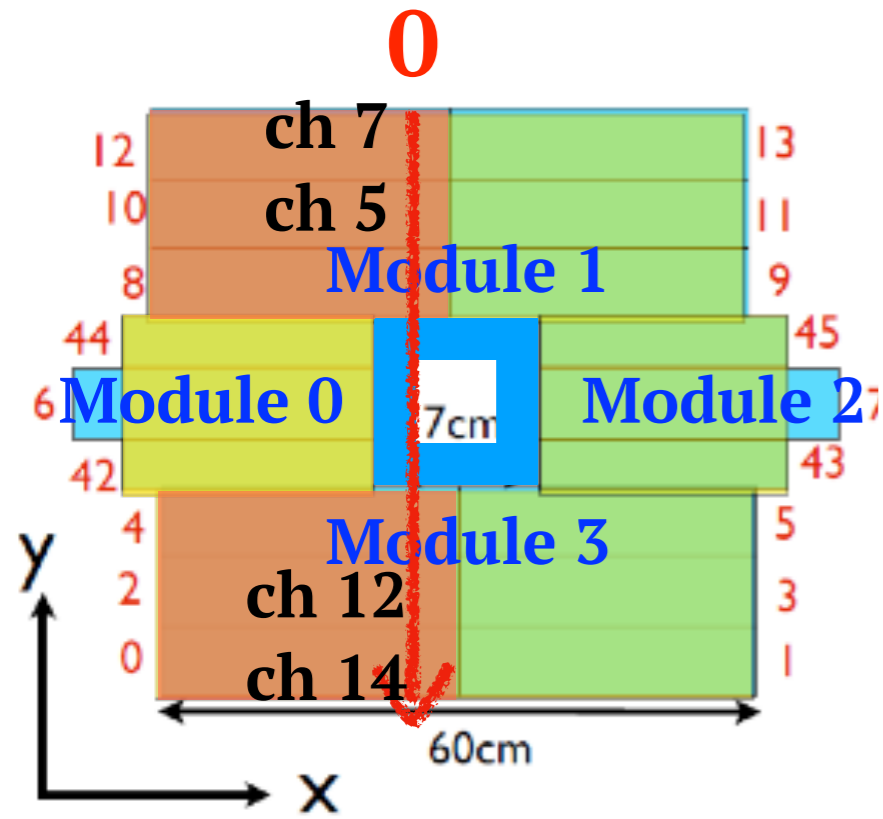
For North Trigger



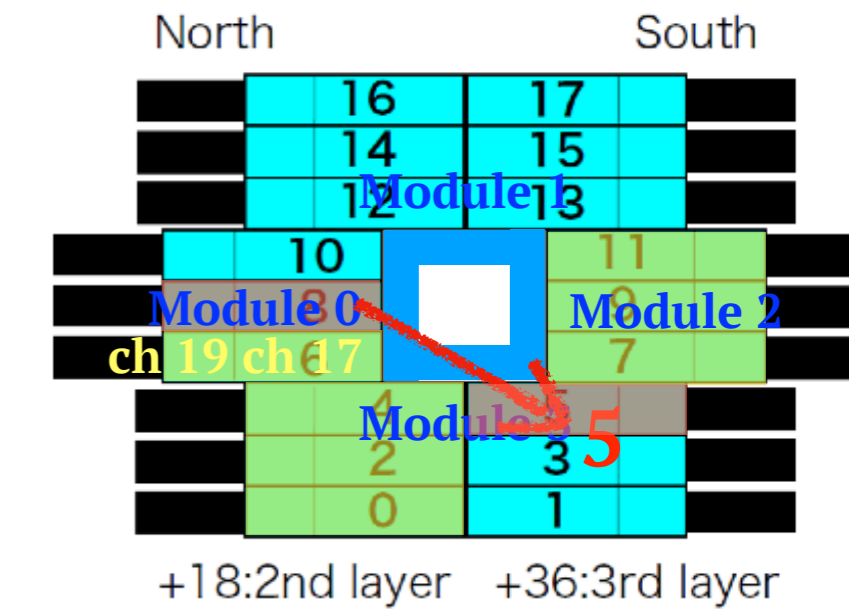
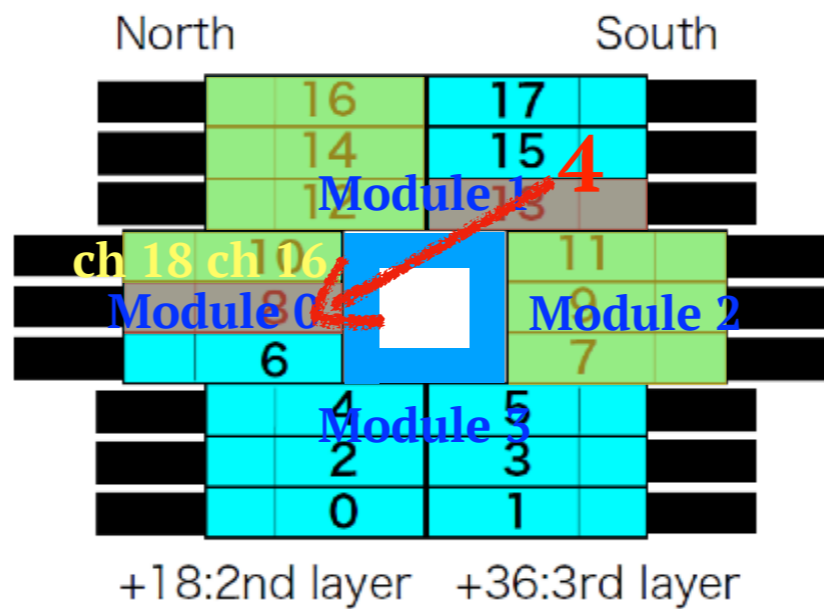
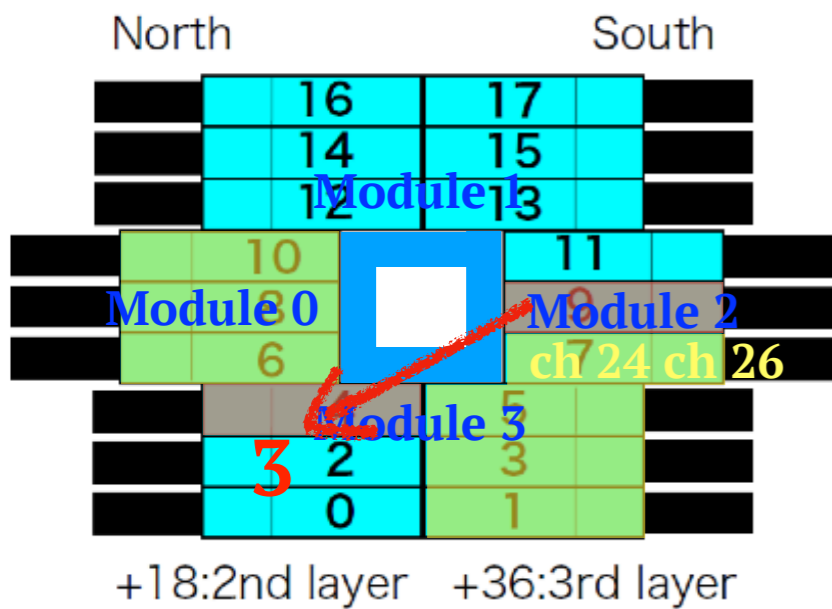
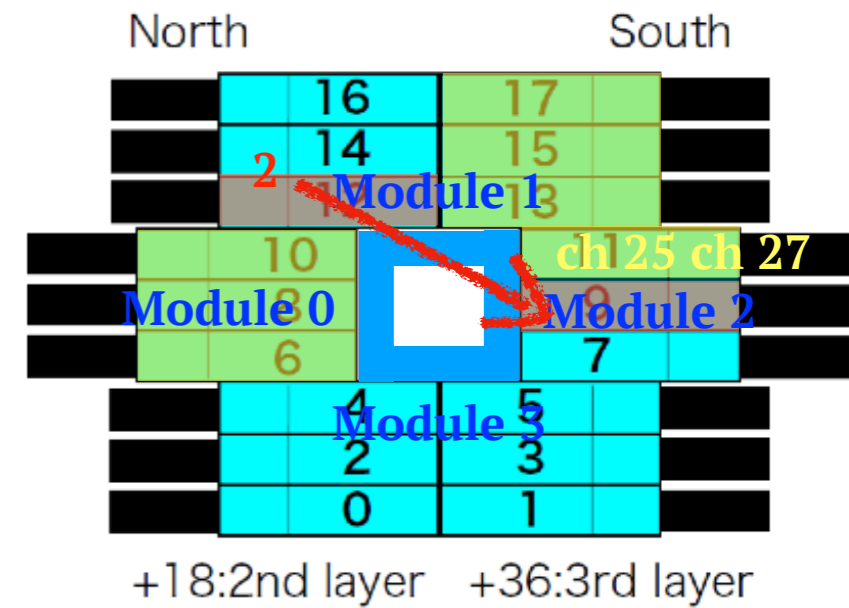
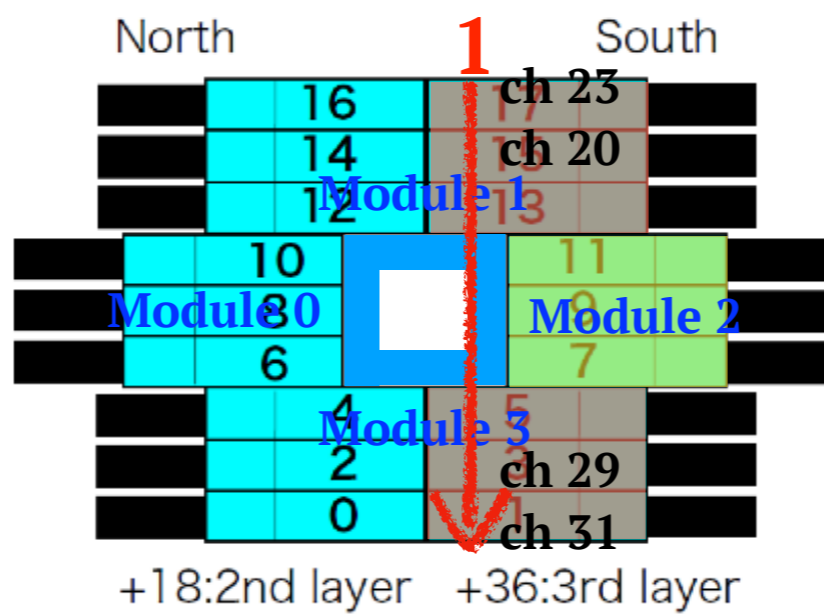
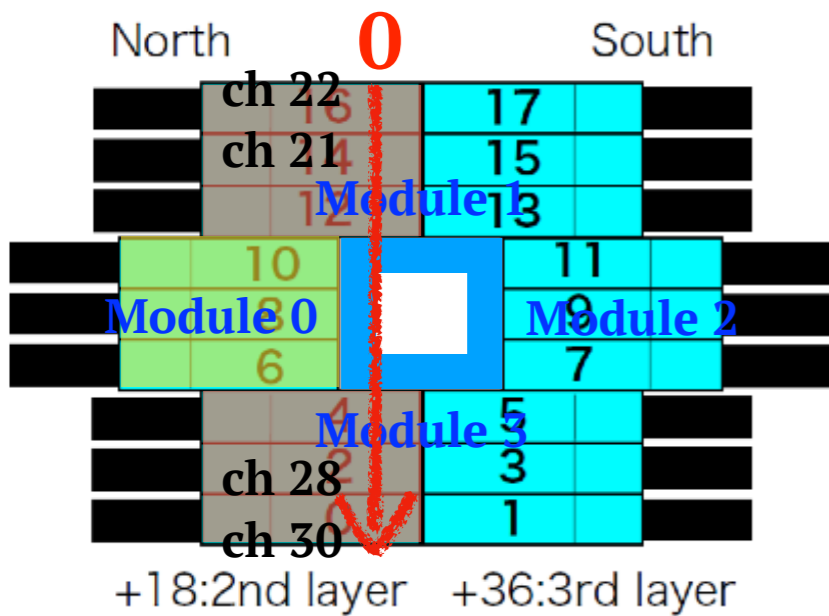
For North Trigger



Cosmicray tracking by using CC04



Cosmicray tracking by using CC05

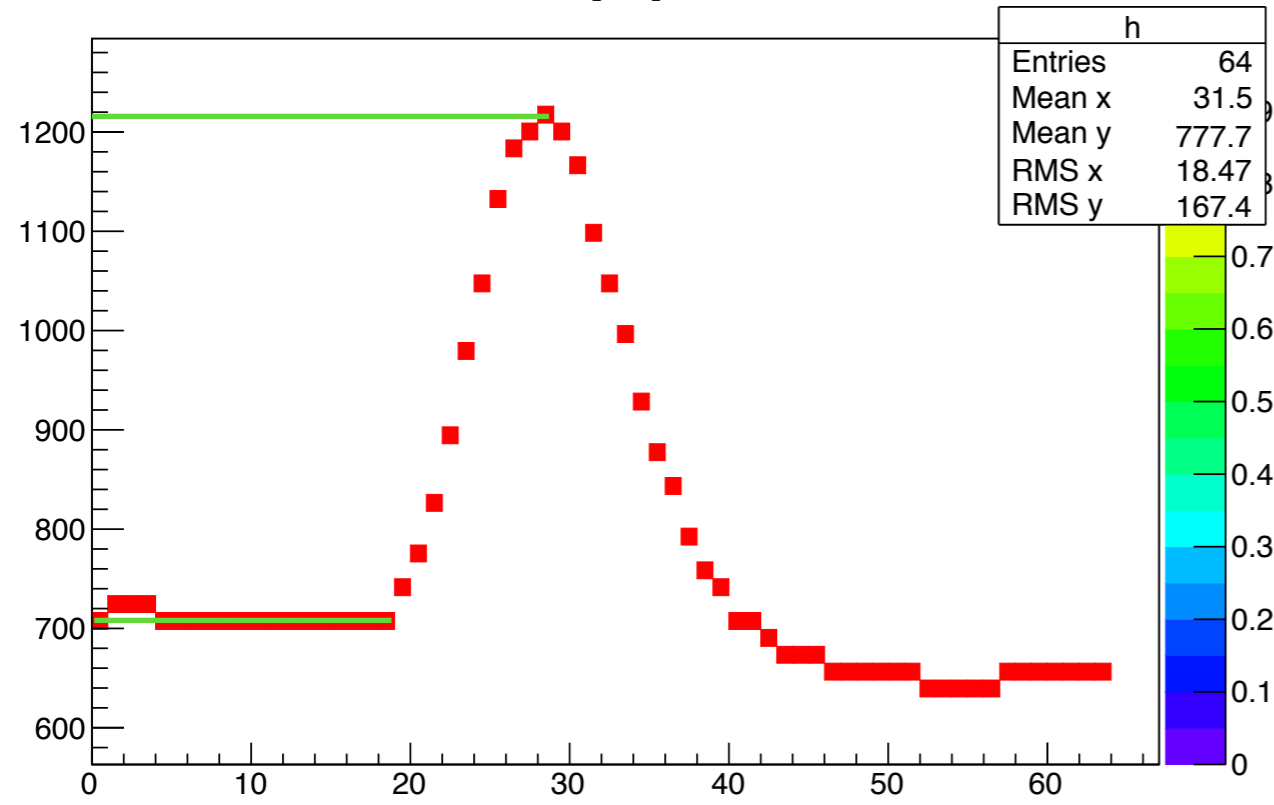


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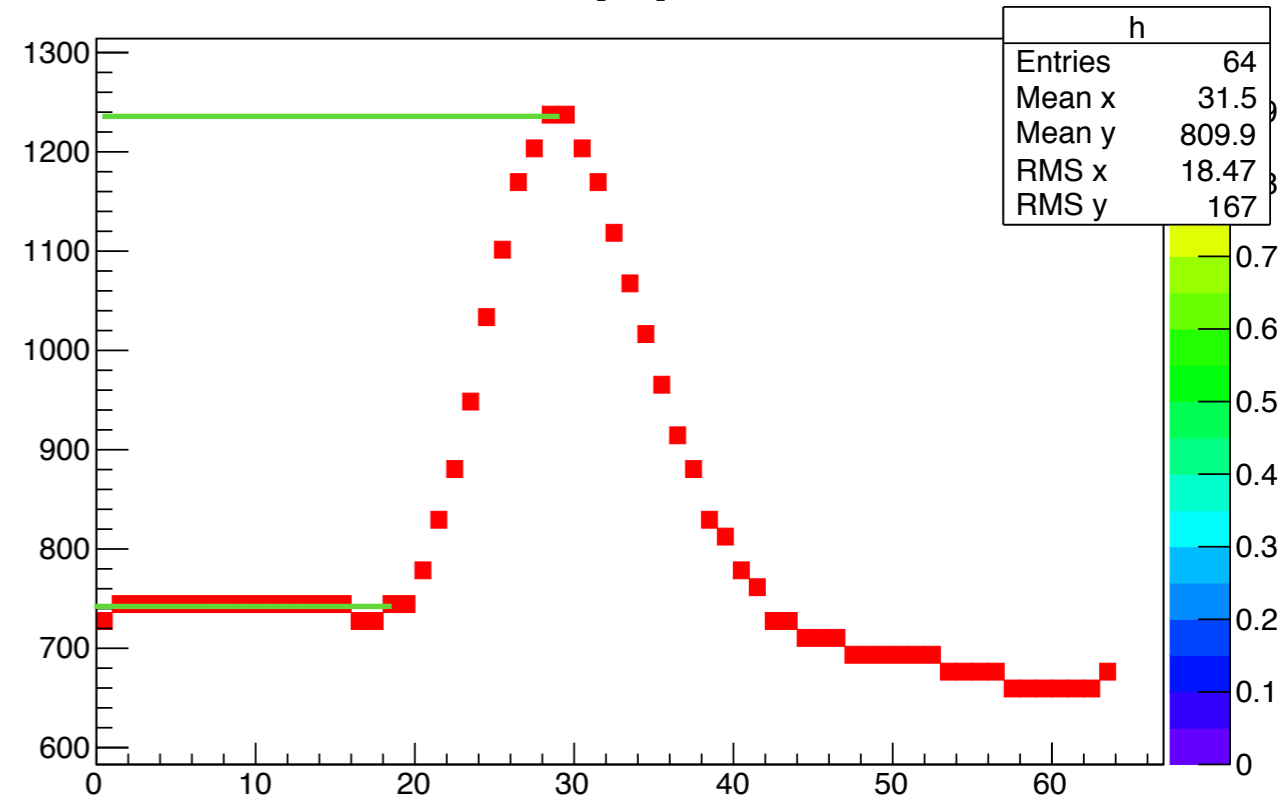
Enrty(i) : 105, EventID : 640, ID : 11, Ped : 714.222, Time : 27.8241, Peak : 503, ADC : 4061.78, Ratio: 8
Enrty(i) : 286, EventID : 544, ID : 10, Ped : 743.889, Time : 28.5842, Peak : 488, ADC : 4227.12, Ratio: 8
Enrty(i) : 286, EventID : 544, ID : 15, Ped : 802.445, Time : 28.4231, Peak : 1221, ADC : 10132.6, Ratio: 8
Enrty(i) : 413, EventID : 56, ID : 23, Ped : 565.556, Time : 29.8051, Peak : 366, ADC : 3220.44, Ratio: 8

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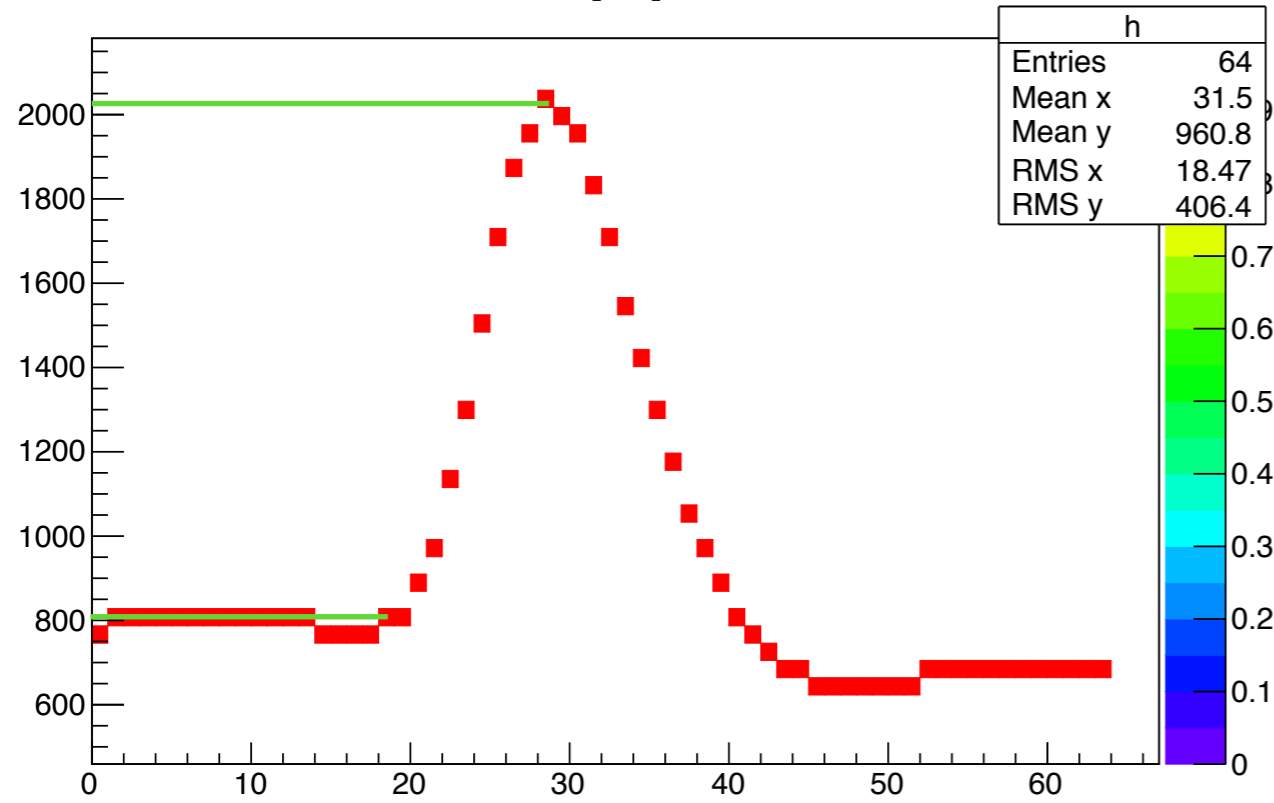
DCV.Data[11]:Iteration\$



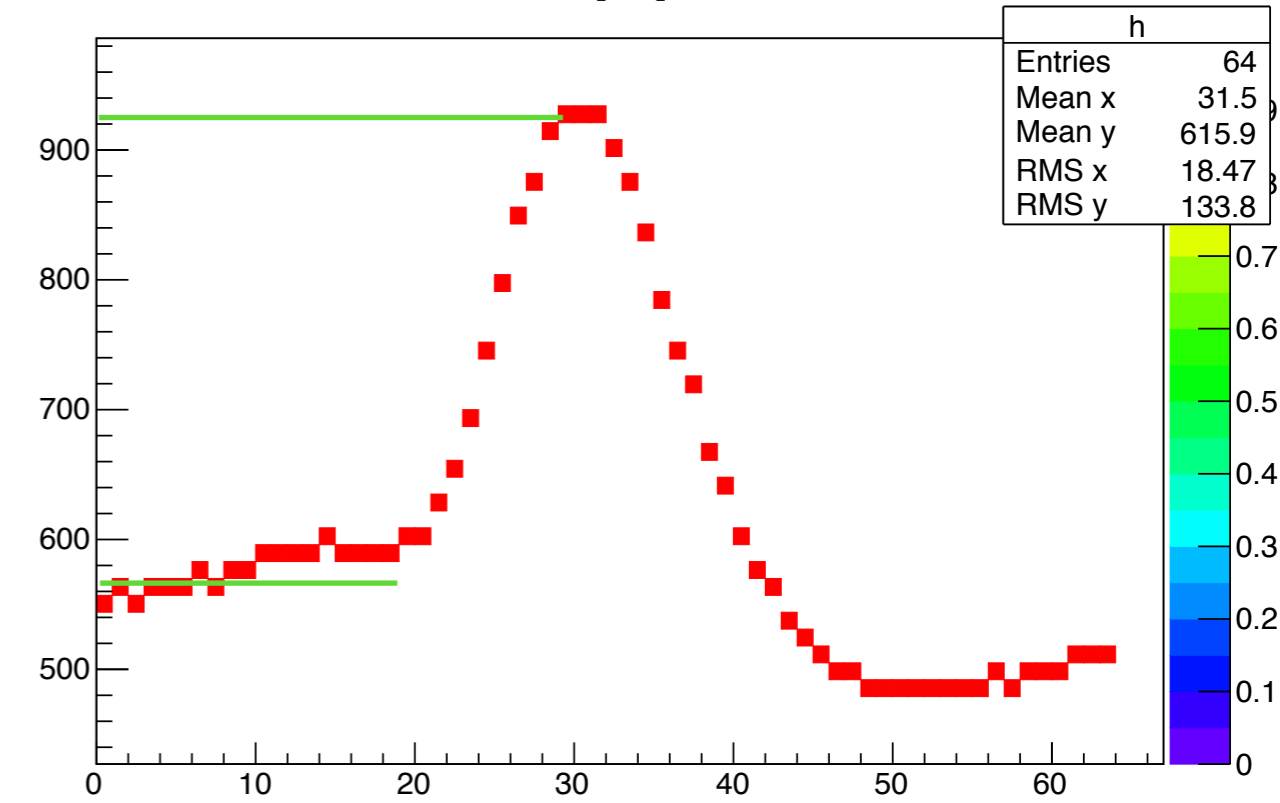
DCV.Data[10]:Iteration\$



DCV.Data[15]:Iteration\$



DCV.Data[23]:Iteration\$

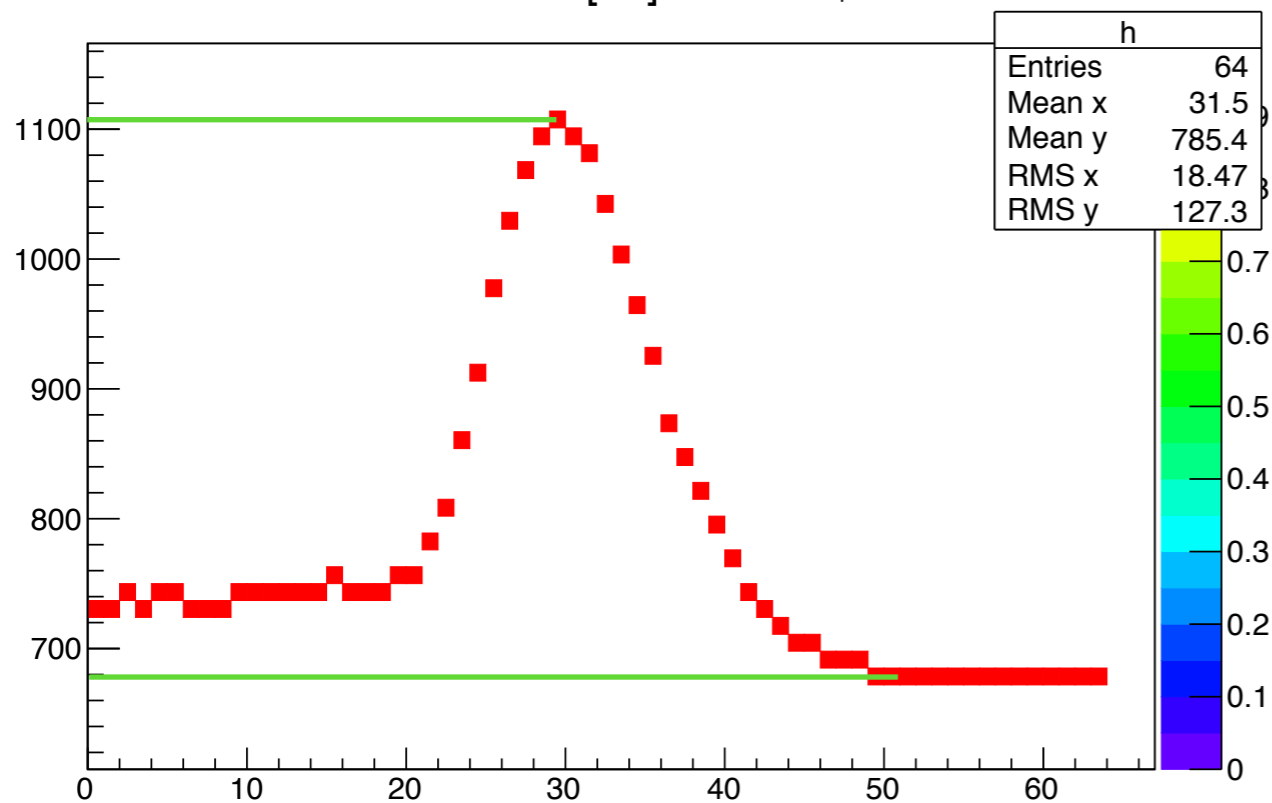


```

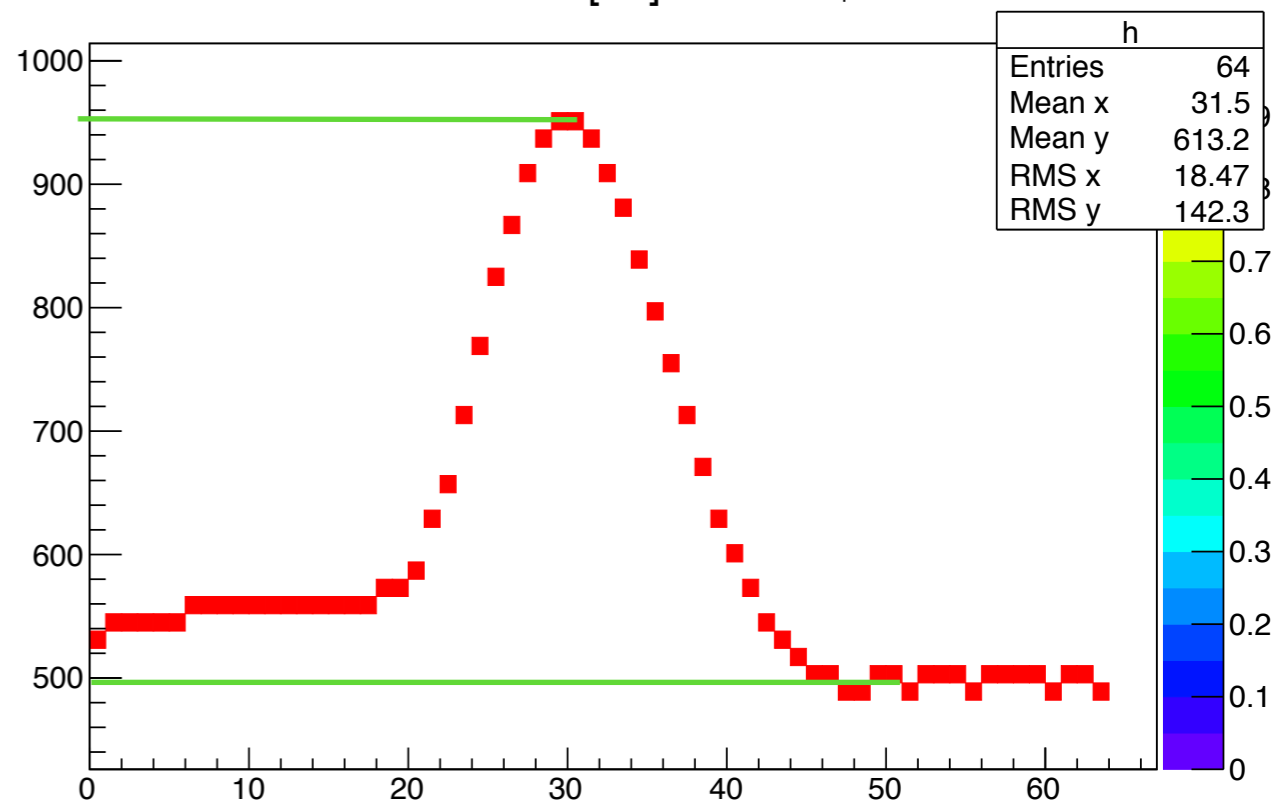
Enrty(i) : 98, EventID : 472, ID : 12, Ped : 675.778, Time : 29.1579, Peak : 437, ADC : 7017.22, Ratio: 16
Enrty(i) : 104, EventID : 616, ID : 29, Ped : 497.889, Time : 29.5794, Peak : 454, ADC : 7378.12, Ratio: 16
Enrty(i) : 105, EventID : 640, ID : 13, Ped : 751.333, Time : 28.4048, Peak : 149, ADC : 2481.67, Ratio: 16
Enrty(i) : 286, EventID : 544, ID : 14, Ped : 676.889, Time : 28.5667, Peak : 265, ADC : 4481.12, Ratio: 16

```

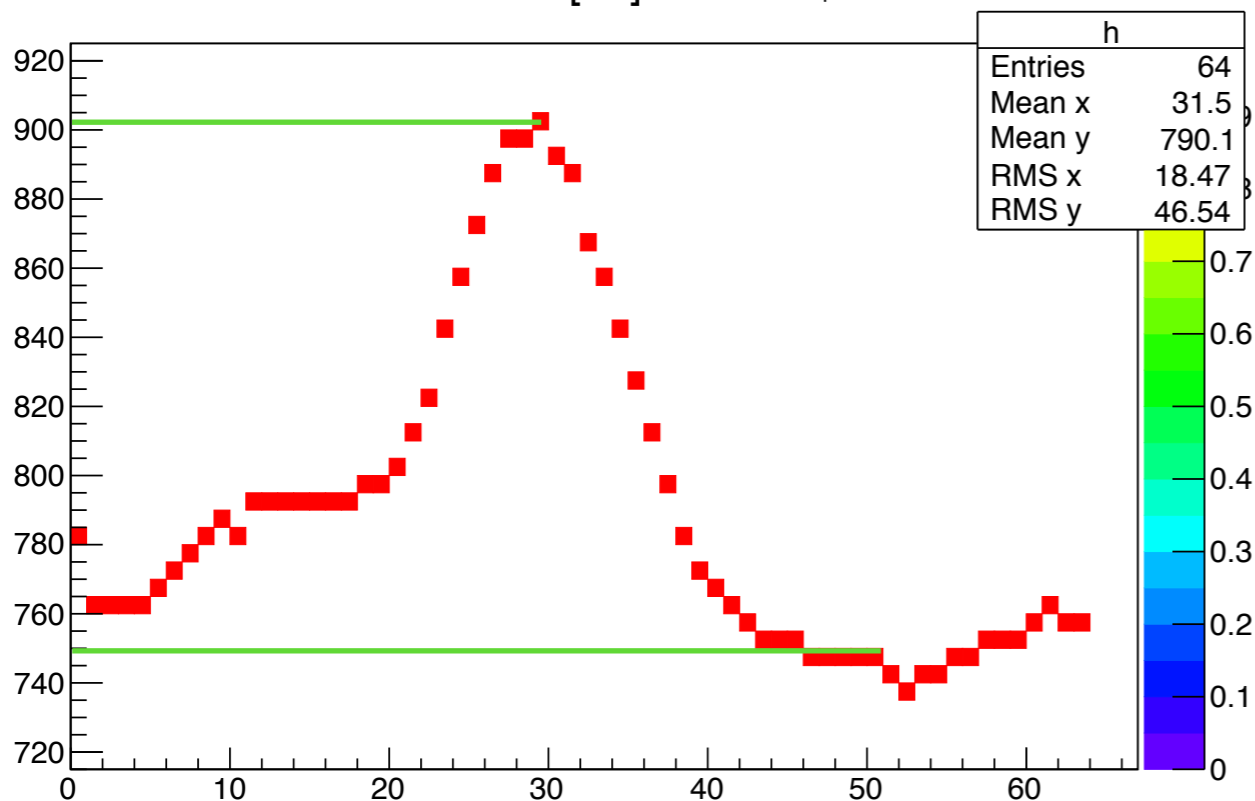
DCV.Data[12]:Iteration\$



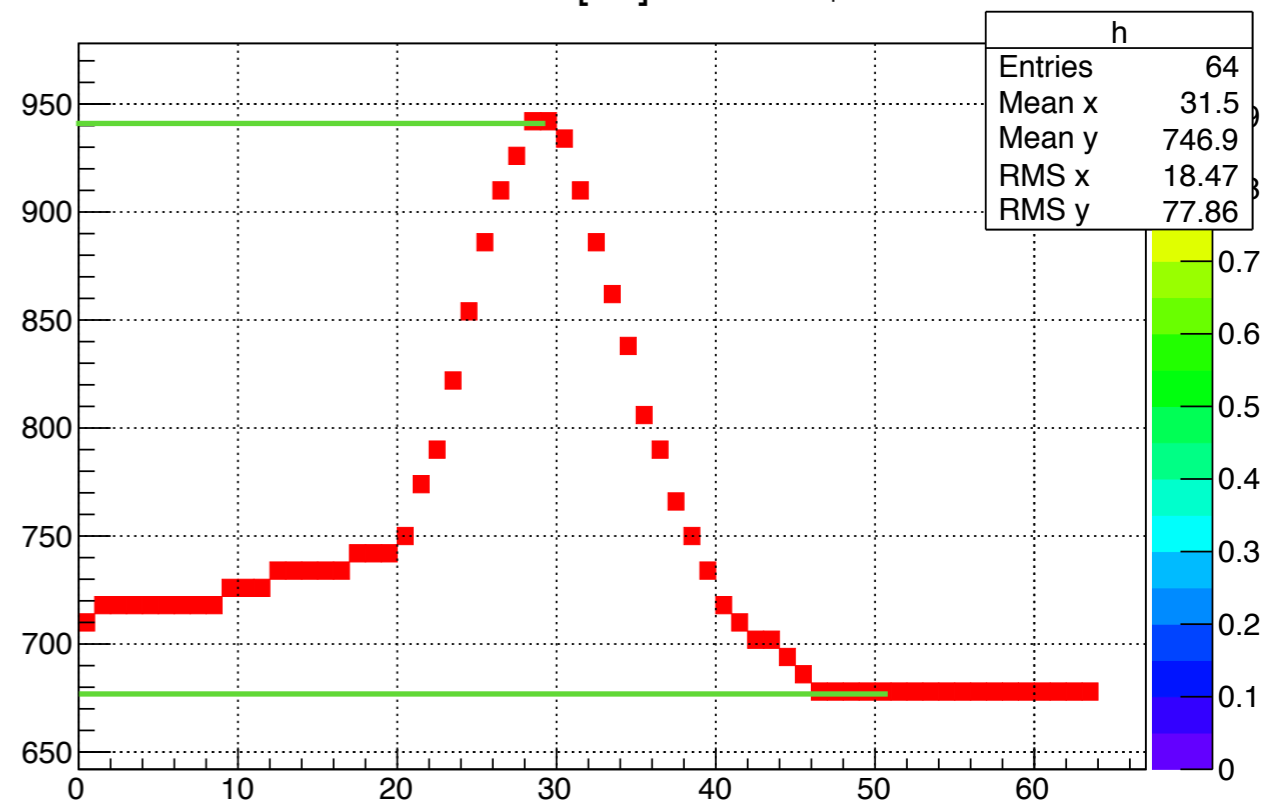
DCV.Data[29]:Iteration\$



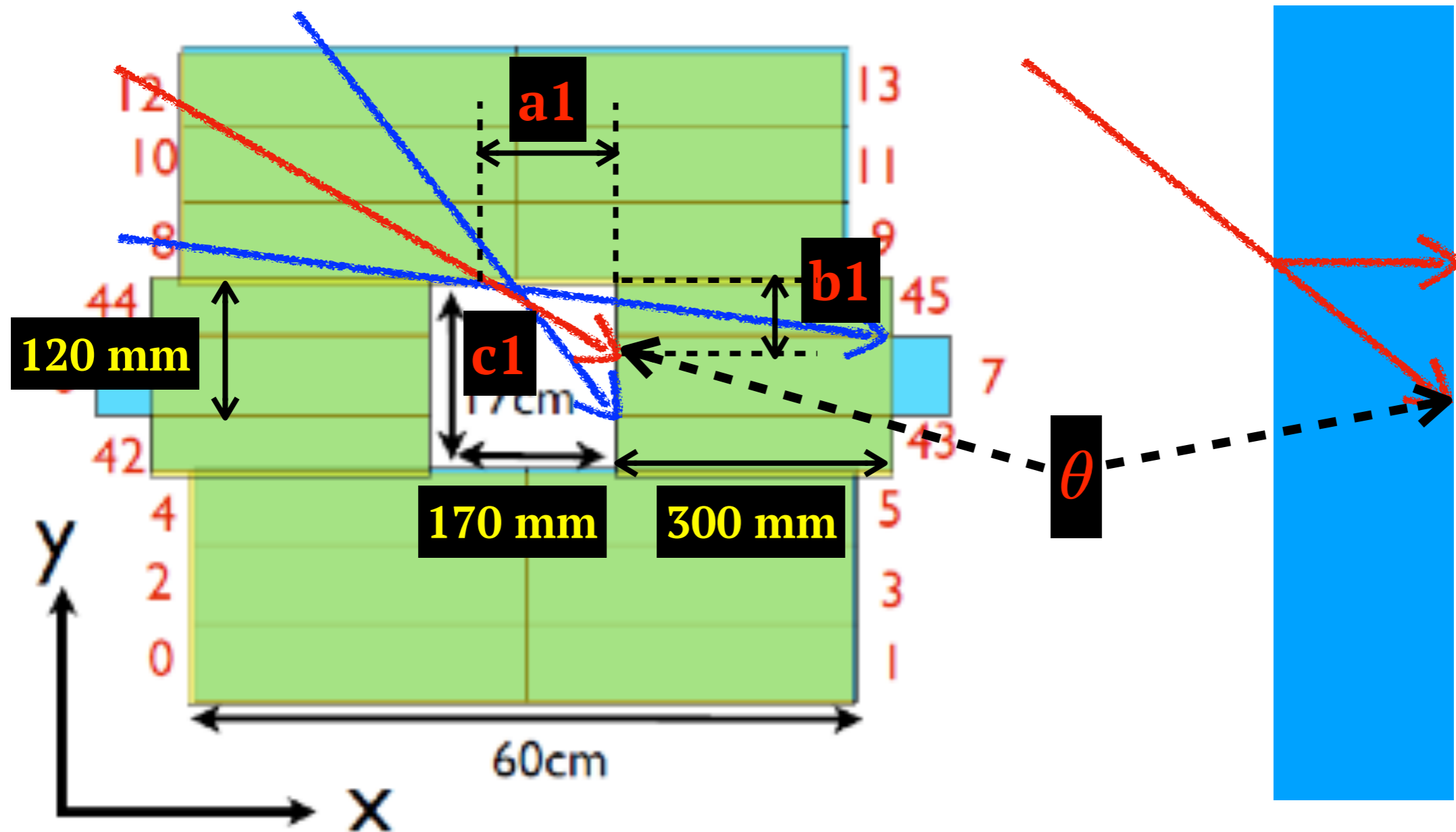
DCV.Data[13]:Iteration\$



DCV.Data[14]:Iteration\$



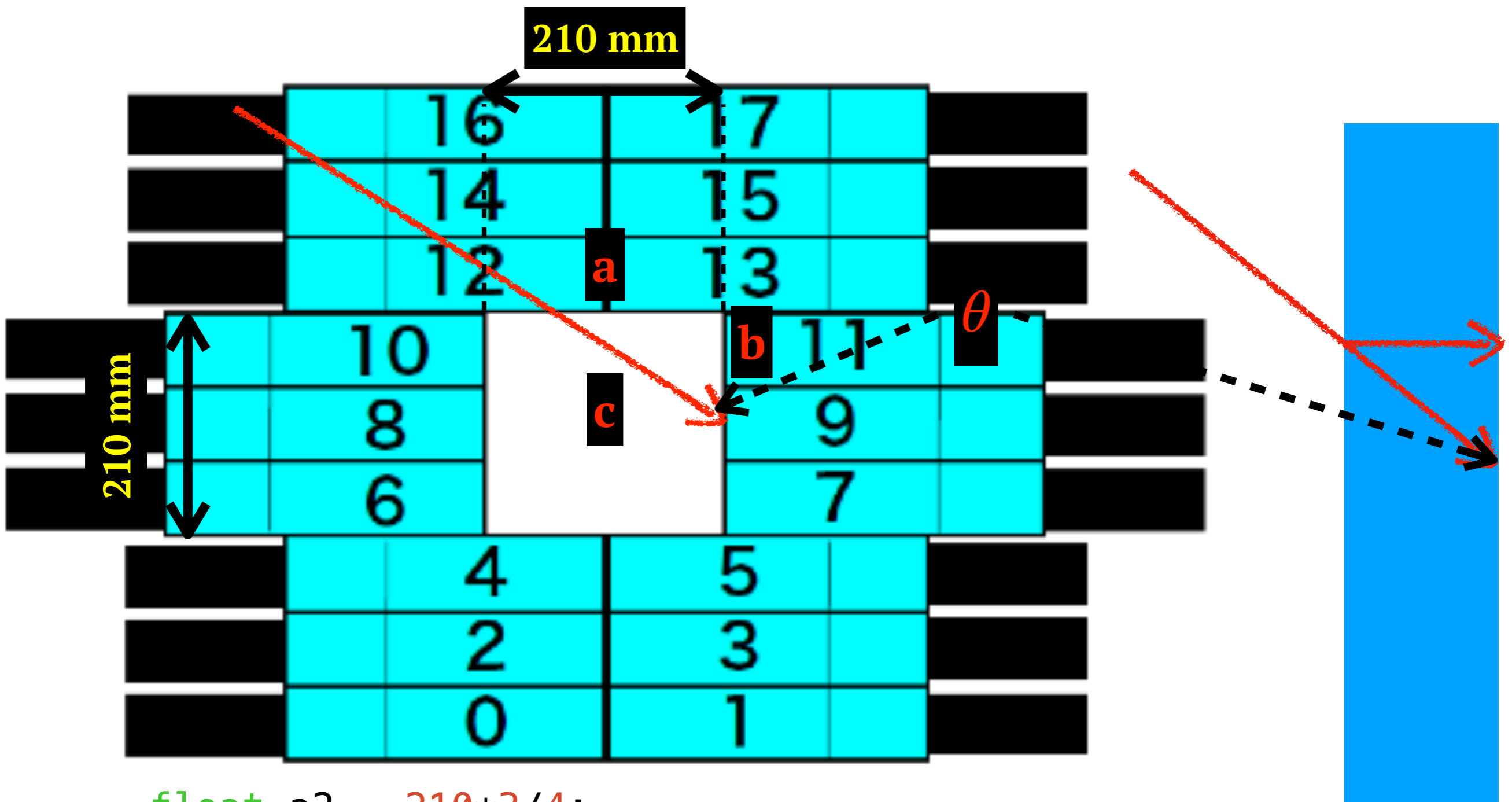
Path length(DCV1)



```
float a1 = 170*3/4;  
float x = 5*17/317;  
float b1 = (x+120)/2;  
float c1 = sqrt((a1*a1)+(b1*b1));  
float sin1 = a1/c1;
```

sin1 : 0.904172

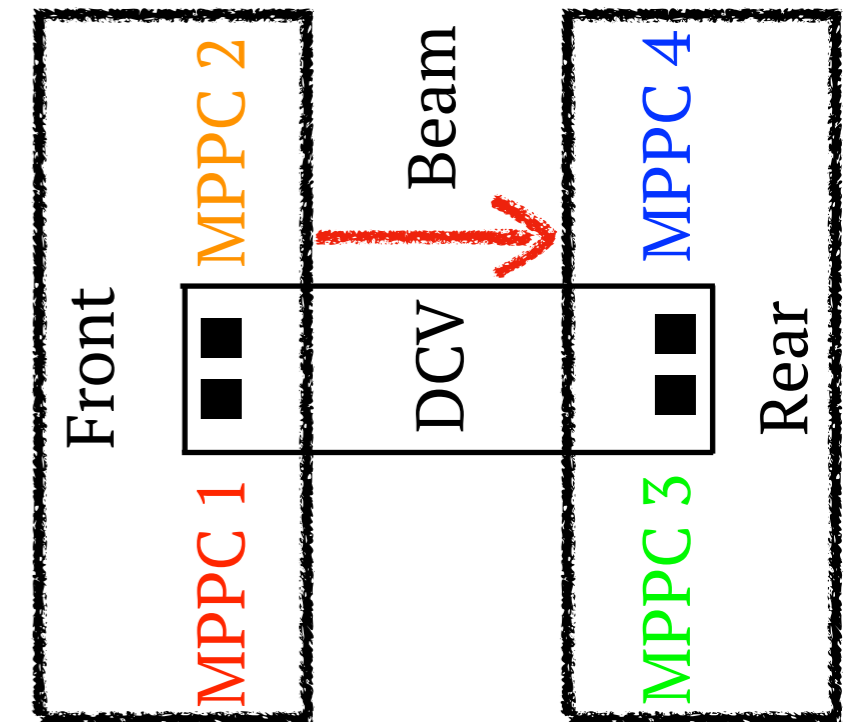
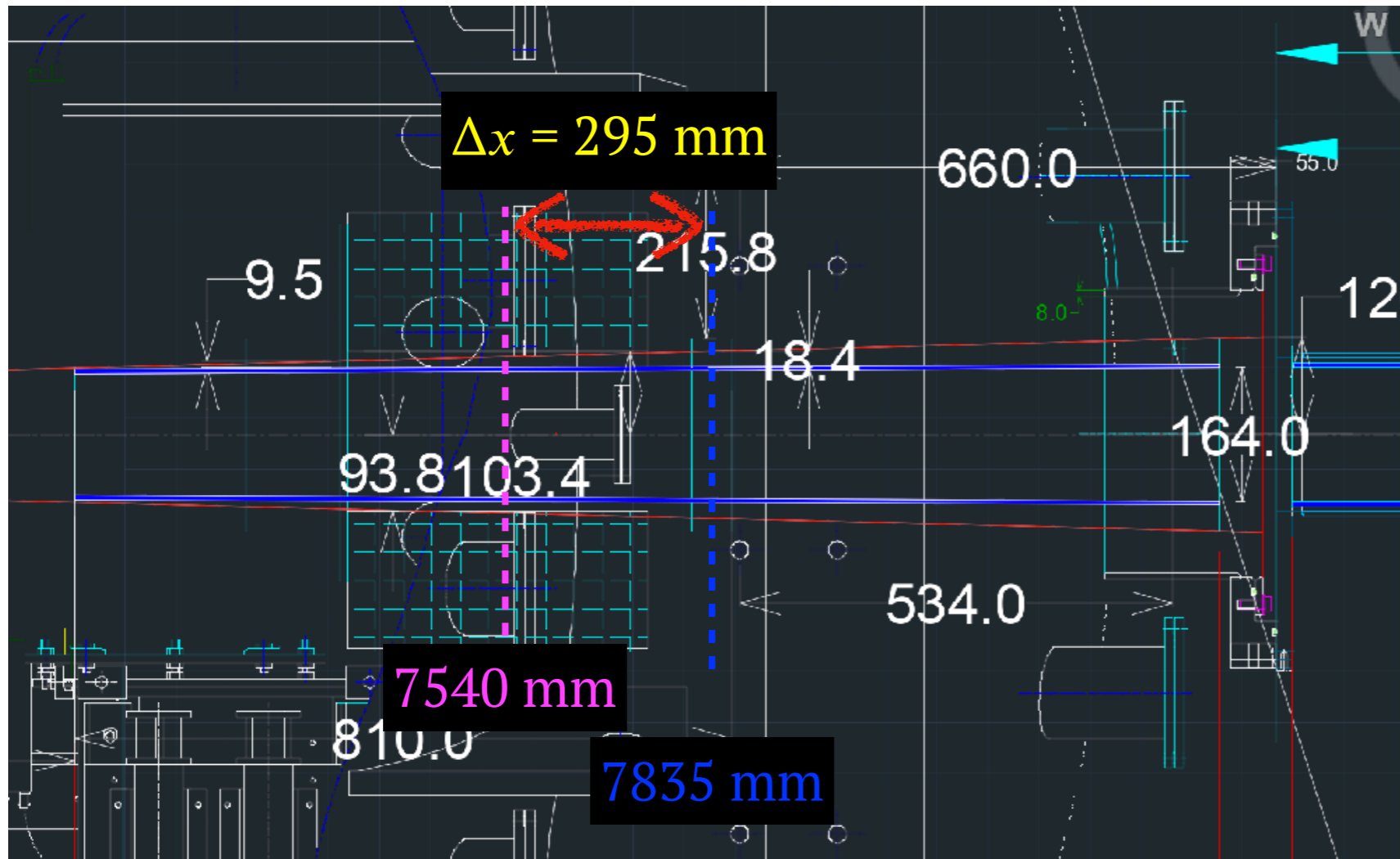
Path length (DCV2)



```
float a2 = 210*3/4;  
float b2 = 210/2;  
float c2 = sqrt((a2*a2)+(b2*b2));  
  
float sin2 = a2/c2;
```

sin2 : 0.831235

Calculation of attenuation factor



att1_f
=1.12691

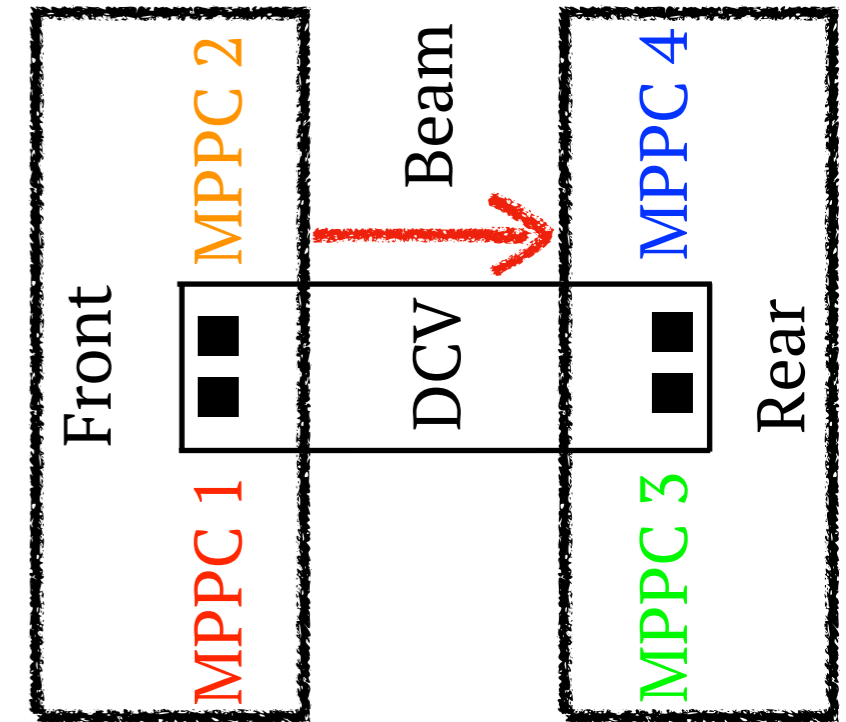
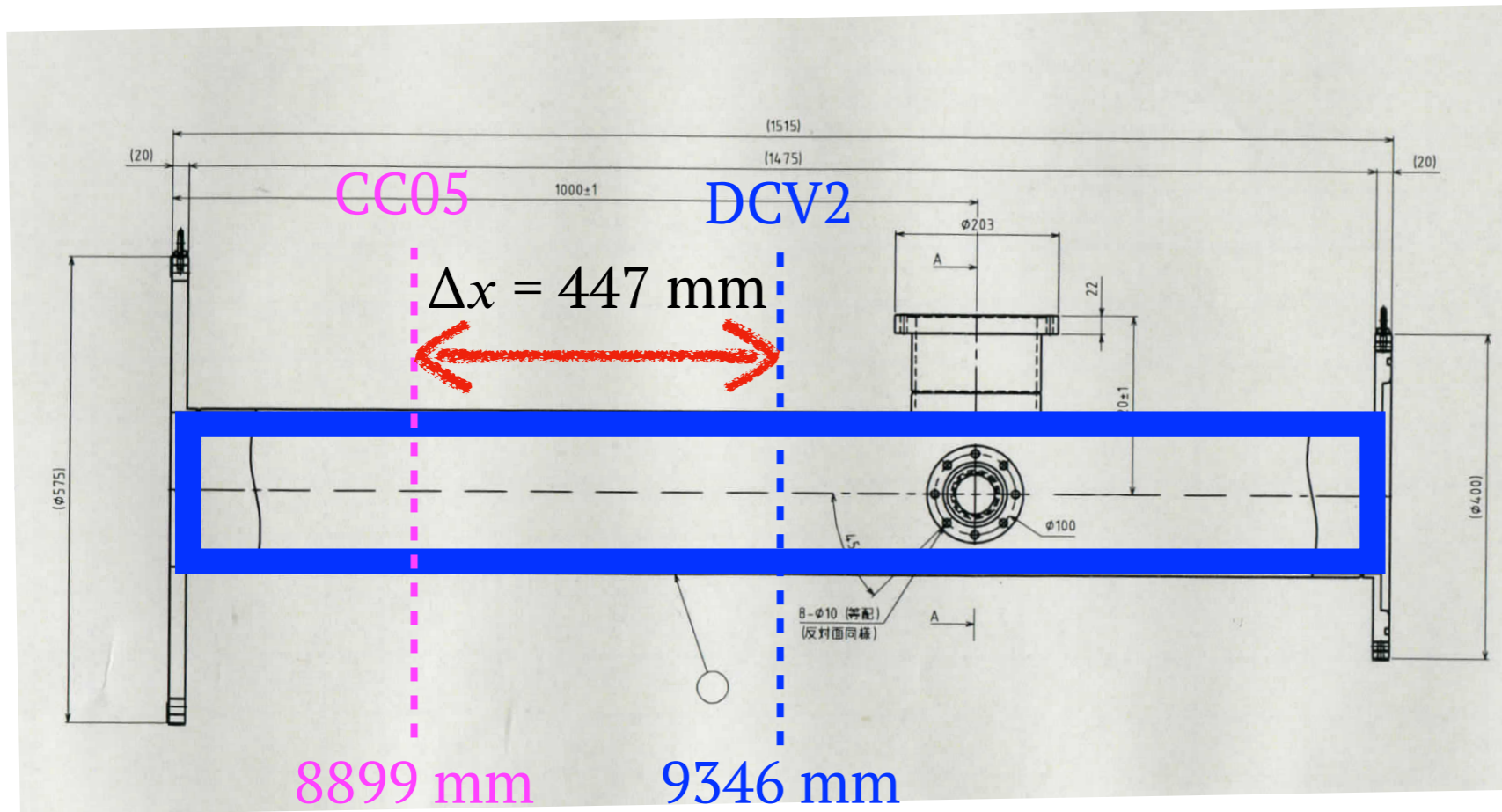


att1_r
=0.88738

```
lambda_dcv1 = 2469; // Attenuation Length of DCV1
pos_DCV1 = 7835; // Center position of DCV1
pos_CC04 = 7540; // Center position of CC04

att1_f = exp((pos_DCV1 - pos_CC04)/lambda_dcv1);
att1_r = exp(-(pos_DCV1 - pos_CC04)/lambda_dcv1);
```

Calculation of attenuation factor



```
lambda_dcv2 = 2567; // Attenuation Length of DCV2
```

```
pos_DCV2 = 9346; // Center position of DCV2
```

```
pos_CC05 = 8899; // Center position of CC05
```

```
att2_f = exp((pos_DCV2 - pos_CC05)/lambda_dcv2);
```

```
att2_r = exp(-(pos_DCV2 - pos_CC05)/lambda_dcv2);
```

↑
att2_f
=1.19021

↑
att2_r
=0.840185