Topics

- ILC situation
- Pedestal
- MIP

- Preparation of next TB

ILC situation now

- Energy fixed to 250 GeV (previously 500 GeV)
  - ~5000 Oku-yen, with 50-60% from Japan
  - Approved by ICFA last year
- "Green light" or start international negotiations necessary in this year to survive
  - European strategy input deadline, 18 Dec. 2018
- MEXT advisory committee finished
  - Scientific merits are recognized
  - Costing issue and understanding from general public
- Re-evaluation by SCJ (日本学術会議) started

SCJ evaluation

- Previous SCJ evaluation at 2013
  - Too early for decision
    → MEXT review panel activated
- Members: non-HEP researchers
  - Astrophysics, nuclear physics
  - Material science
  - Engineering, biology, philosophy
- Intensive evaluation from August
  - Two committees meet ~ every week

ＩＬＣ見直し案検討委のメンバー

【検討委】

小林　伝司（大阪大副学長、哲学）
西條　辰義（高知工科大教授、経済学・環境学）
梶田　隆章（東京大教授、物理学）
田村　裕和（東北大院教授、物理学）
米田　雅子（慶応大特任教授、土木工学・建築学）
家　泰弘（日本学術振興会理事、物理学）
上坂　充（東京大院教授、総合工学・物理学）
杉山　直（名古屋大院教授、物理学）
永江　知文（京都大院教授、物理学）
平野　俊夫（量子科学技術研究機構理事長、基礎医学

【分科会】

嘉門　雅史（京都大名誉教授、土木工学・建築学・環
中静　透（総合地球環境学研究所特任教授、基礎生物
望月　常好（経済調査会理事長、土木工学・建築学）
田中　均（理化学研究所放射光科学総研副センター長
※検討委の西條辰義、米田雅子、家泰弘の３氏も分科

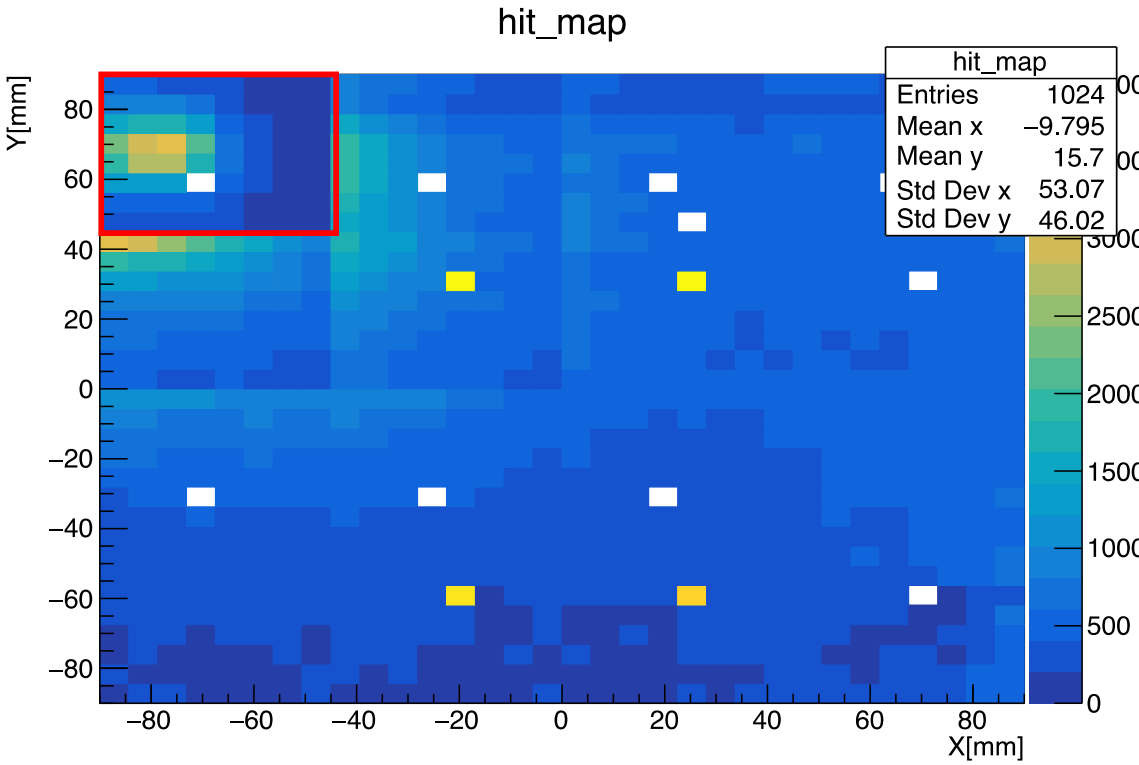
- Will conclude in Sep-Oct
  → if positive, statement of government at Nov-Dec?

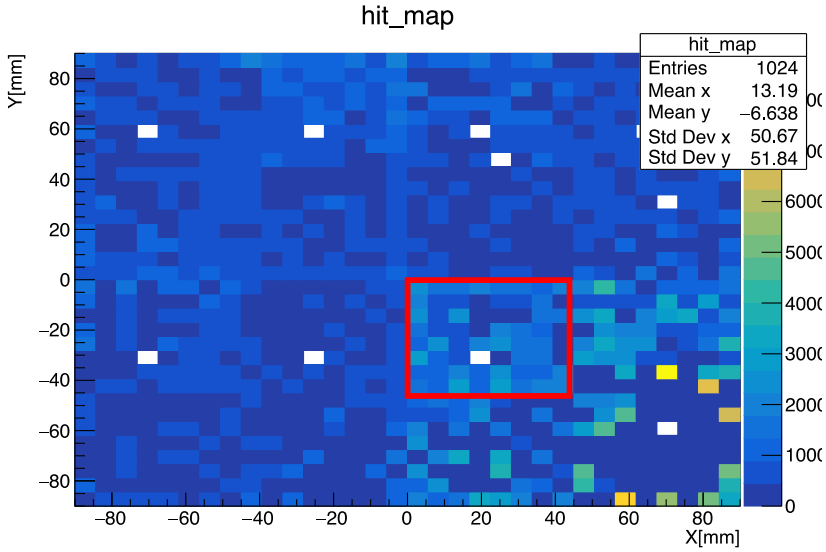
解析結果

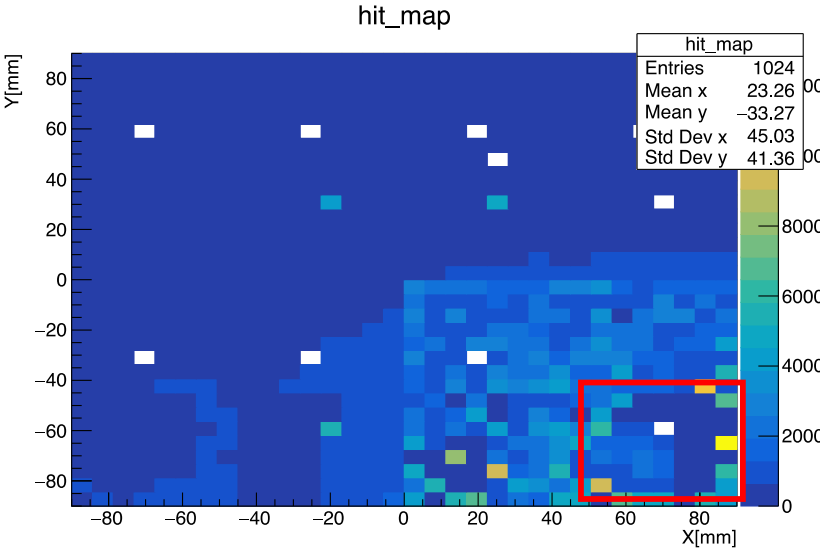
・Hit Map

Hit map at the left-top chip clearly shows the beam

Hit map on the right-bottom sensor is not clear

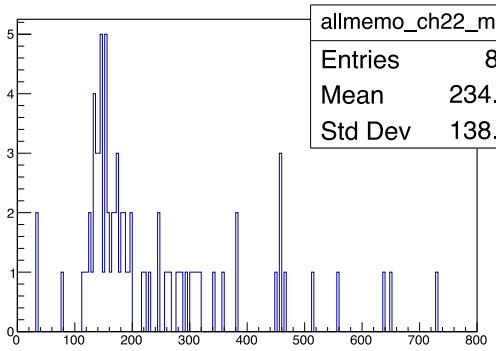


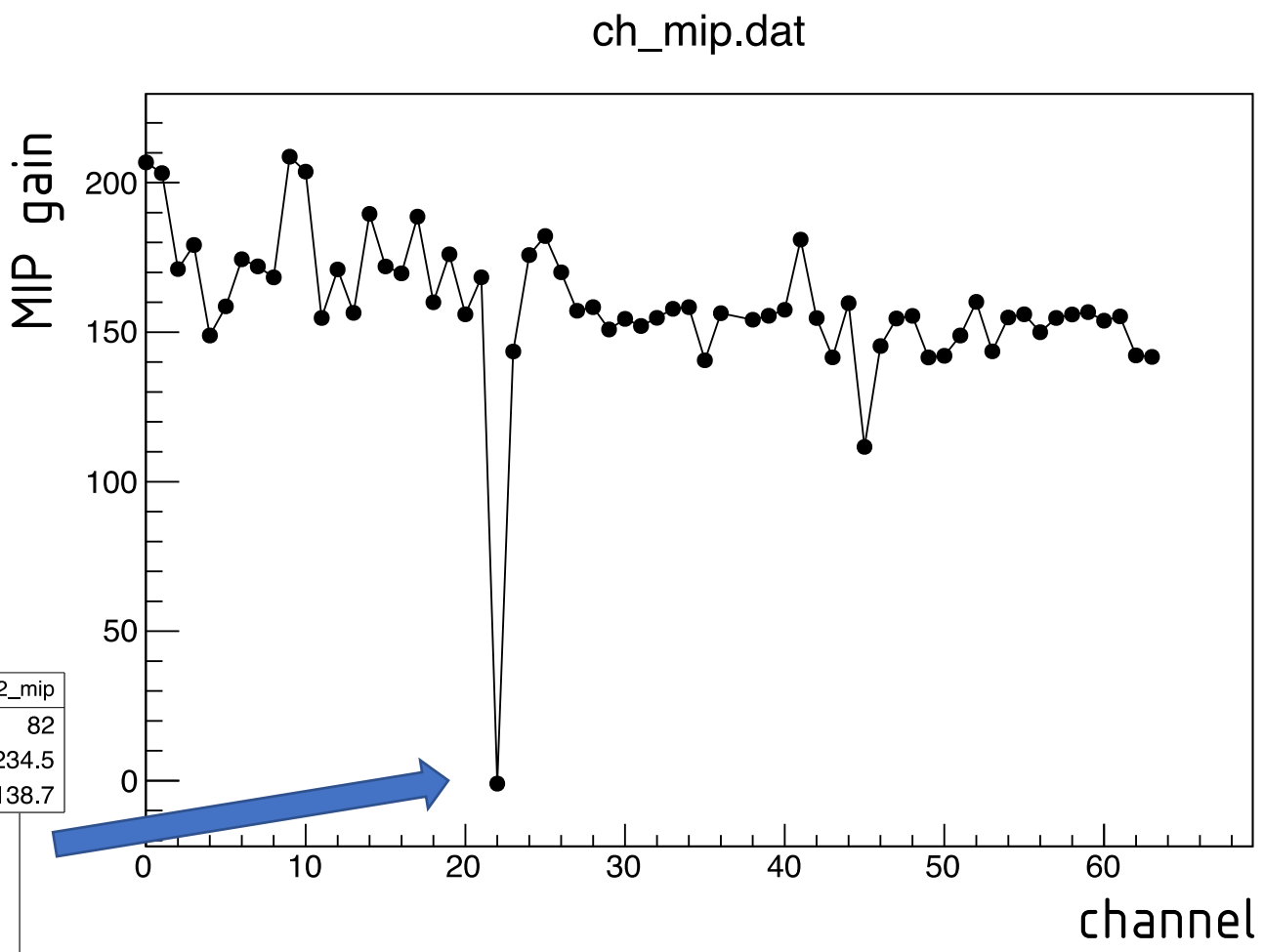




解析結果

- gain mean



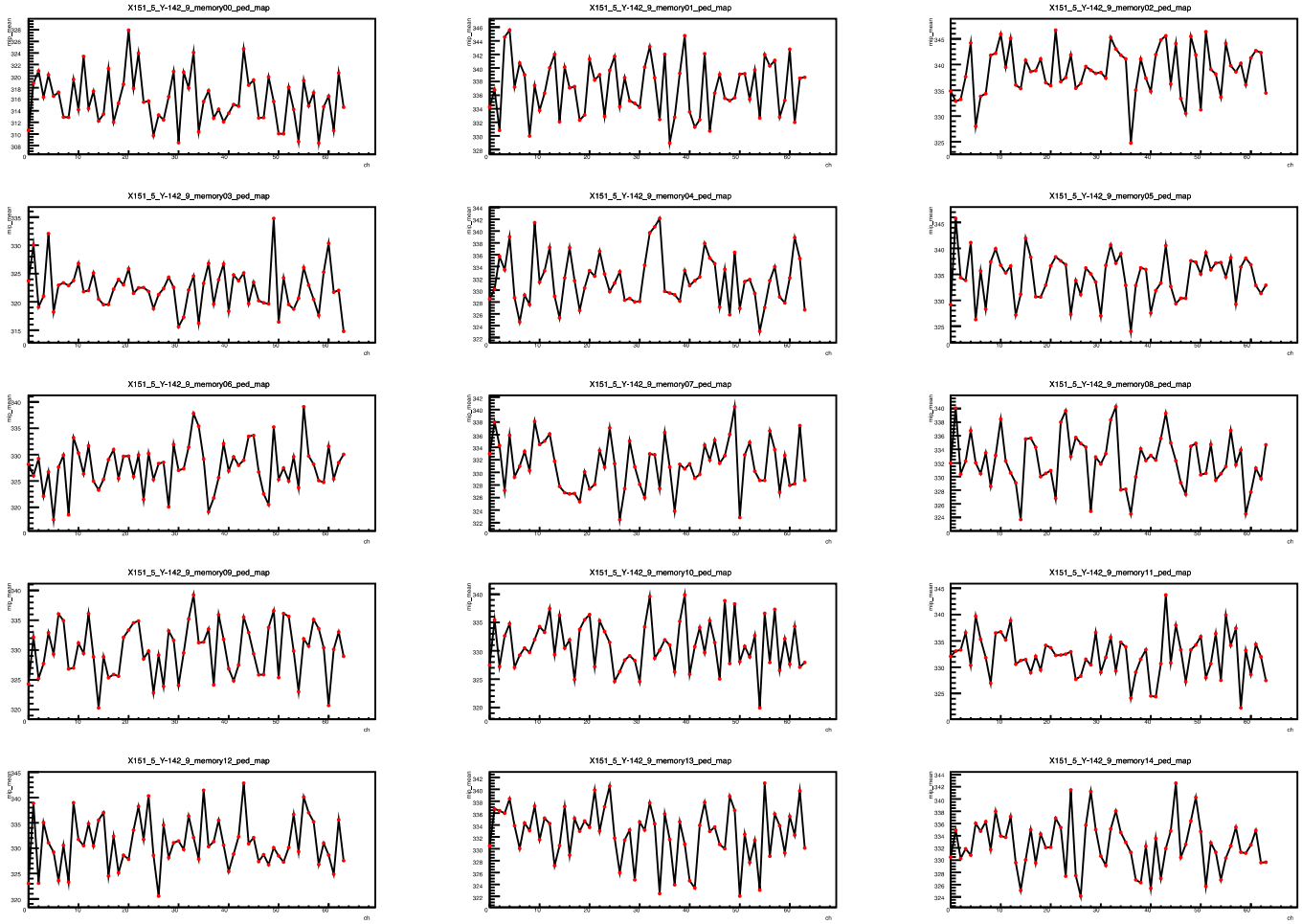


- Average: around 170
- Lower mean for higher channel
- Fit failure on ch 22, with different fitting range
  it gives 174.3

解析結果

- pedestal mean

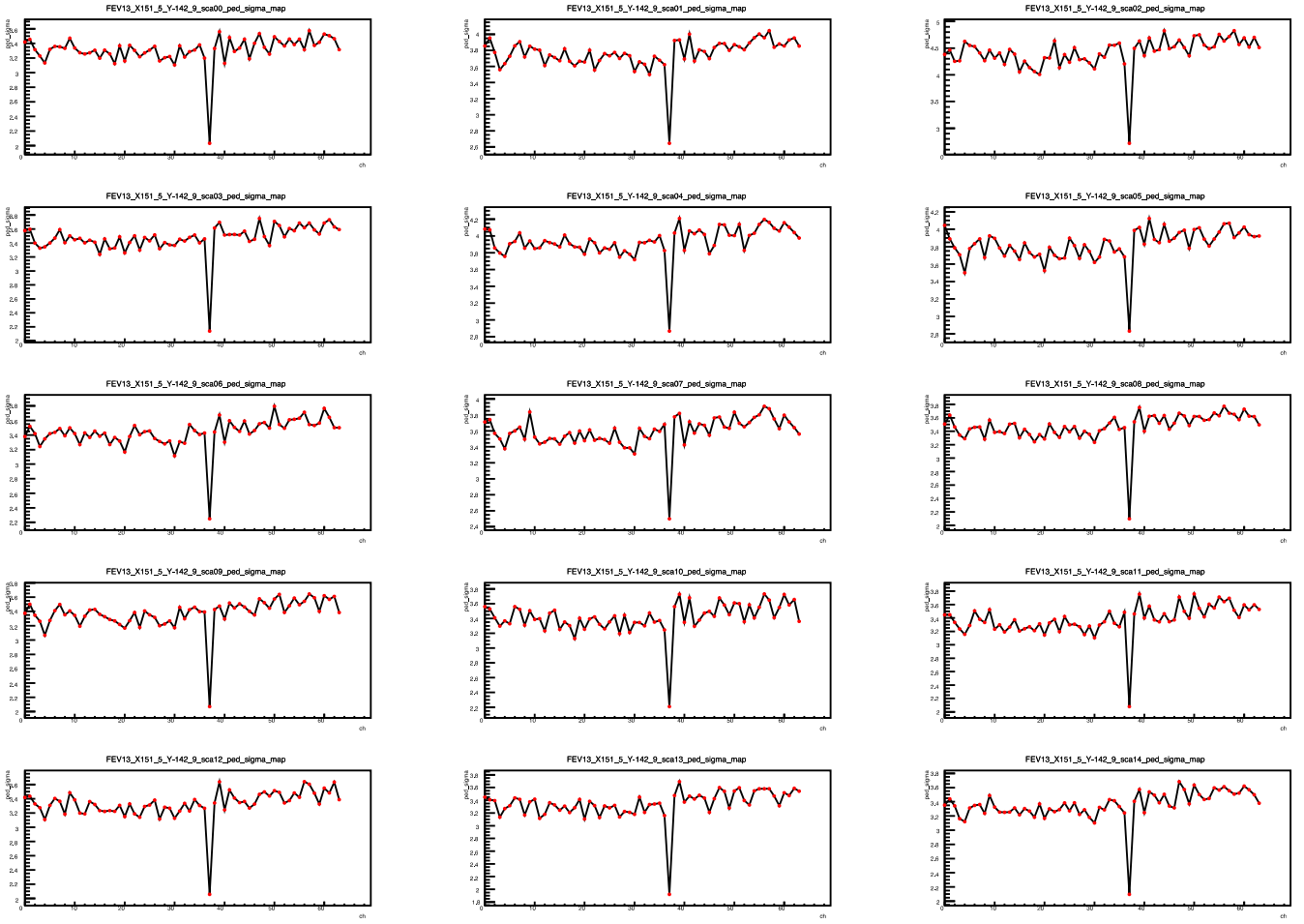
各ch,memoryにおける、meanをプロットしたもの



- average: 320-340
- mean on memory 0 is smaller
- We see both inter-memory and inter-channel correlation
  (inter-channel correlation is larger)

解析結果

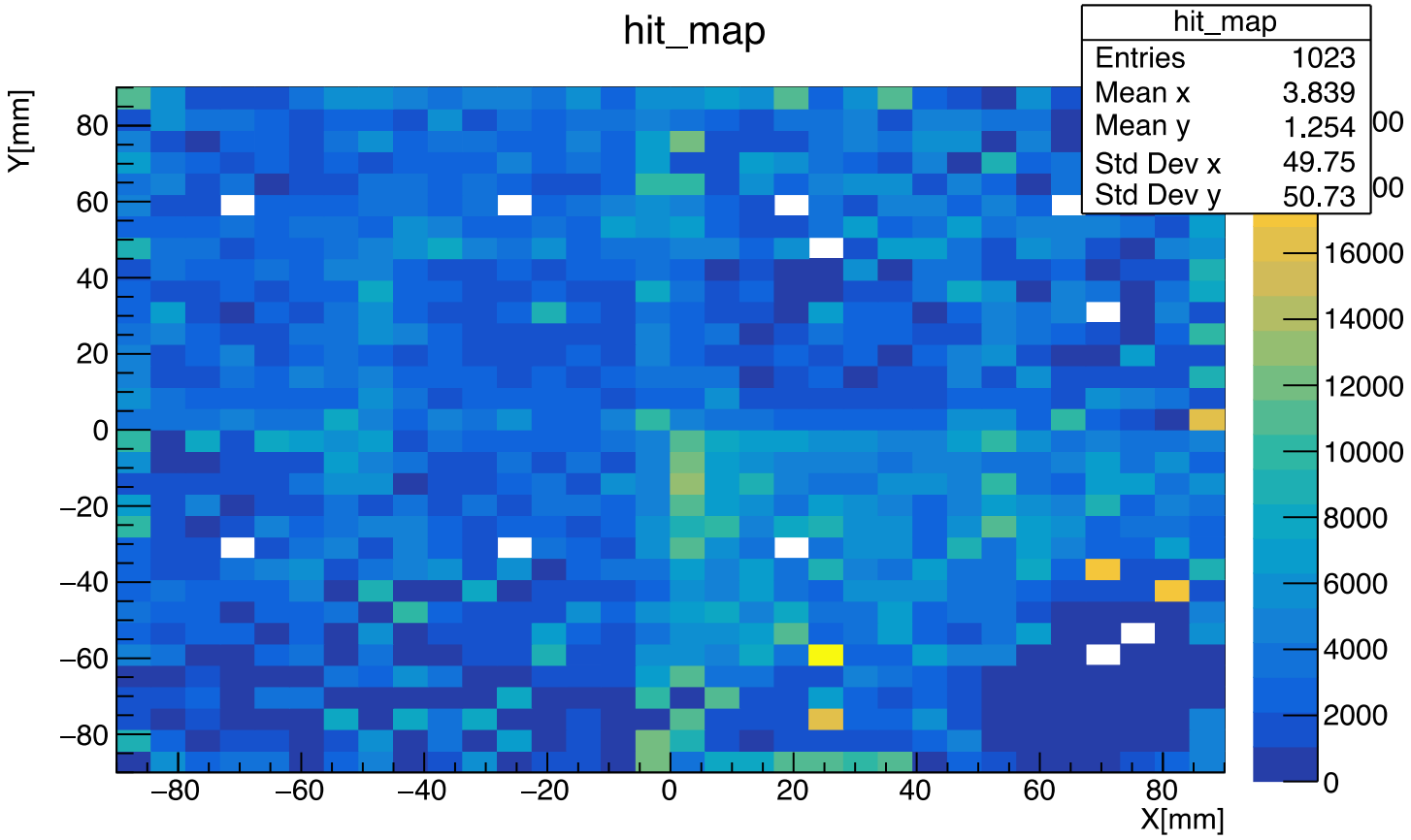
- pedestal sigma



- sigma is 3.0-4.0
- Inter-channel correlation is larger
- Inter-memory correlation is smaller

解析結果

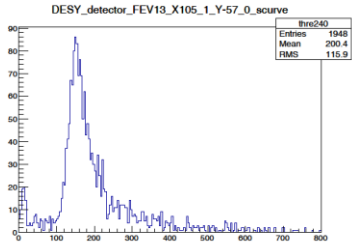
- Hit Map (W shower)

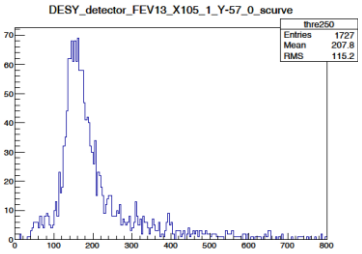


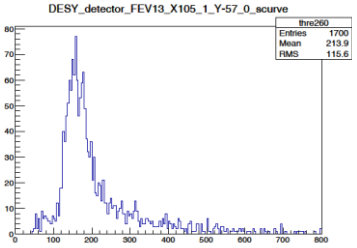
- Hit position is not clear
- Should check the effect of noise

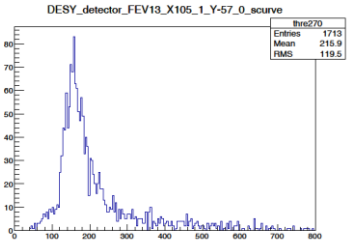
scurves

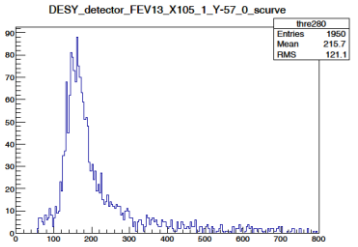
- I analyzed a position of chip10.
- A pedestal was subtracted every memory and then the histograms generated were added over all memories and channels.
- The thresholds was 240, 250, … , 430.
- Data directory home/data/DESY2018_TB21_v2/DESY_detector_FEV13_X105_1_Y-57_0/20180707_210651/scurves_1.0Hz_3.0ms/0/

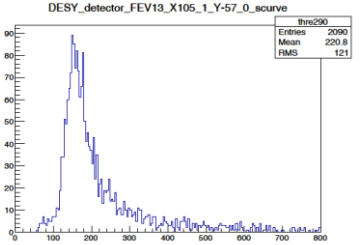

DESY_detector_FEV13_X105_1_Y-57_0_scurve
thre240
Entries 1948
Mean 200.4
RMS 115.9

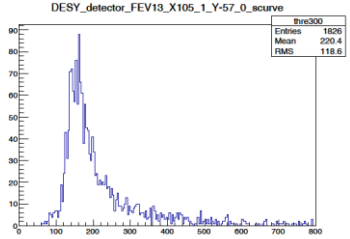

DESY_detector_FEV13_X105_1_Y-57_0_scurve
thre250
Entries 1727
Mean 207.8
RMS 115.2

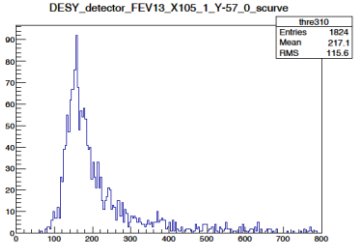

DESY_detector_FEV13_X105_1_Y-57_0_scurve
thre260
Entries 1700
Mean 213.9
RMS 115.6

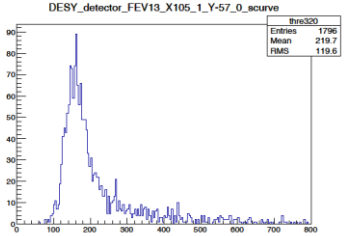

DESY_detector_FEV13_X105_1_Y-57_0_scurve
thre270
Entries 1713
Mean 215.9
RMS 119.5

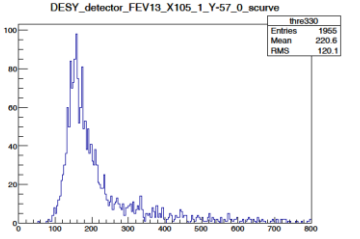

DESY_detector_FEV13_X105_1_Y-57_0_scurve
thre280
Entries 1950
Mean 215.7
RMS 121.1

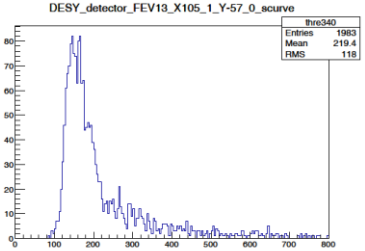

DESY_detector_FEV13_X105_1_Y-57_0_scurve
thre290
Entries 2090
Mean 220.8
RMS 121

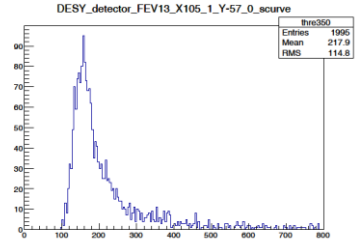

DESY_detector_FEV13_X105_1_Y-57_0_scurve
thre300
Entries 1826
Mean 220.4
RMS 118.6

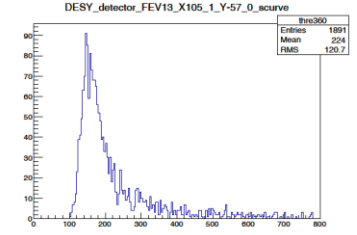

DESY_detector_FEV13_X105_1_Y-57_0_scurve
thre310
Entries 1824
Mean 217.1
RMS 115.6

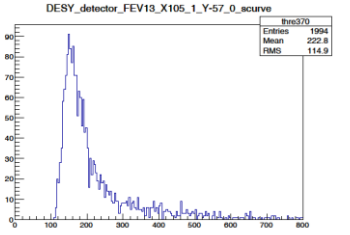

DESY_detector_FEV13_X105_1_Y-57_0_scurve
thre320
Entries 1796
Mean 219.7
RMS 119.6

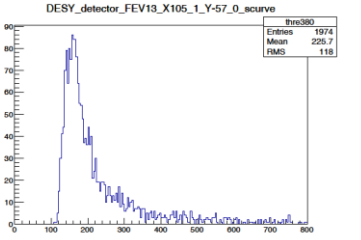

DESY_detector_FEV13_X105_1_Y-57_0_scurve
thre330
Entries 1955
Mean 220.6
RMS 120.1

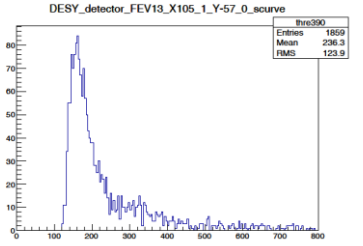

DESY_detector_FEV13_X105_1_Y-57_0_scurve
thre340
Entries 1983
Mean 219.4
RMS 118

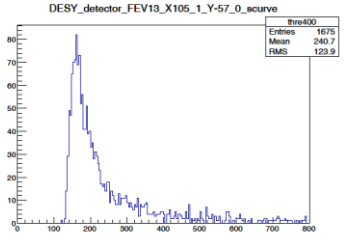

DESY_detector_FEV13_X105_1_Y-57_0_scurve
thre350
Entries 1995
Mean 217.9
RMS 114.8

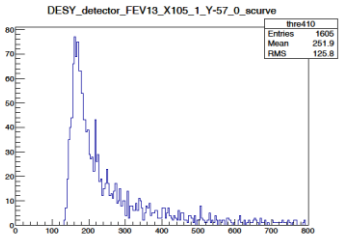

DESY_detector_FEV13_X105_1_Y-57_0_scurve
thre360
Entries 1891
Mean 224
RMS 120.7

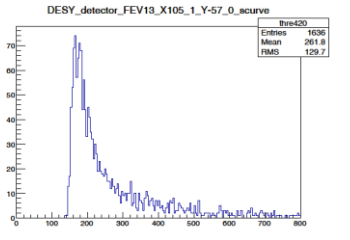

DESY_detector_FEV13_X105_1_Y-57_0_scurve
thre370
Entries 1994
Mean 222.8
RMS 114.9

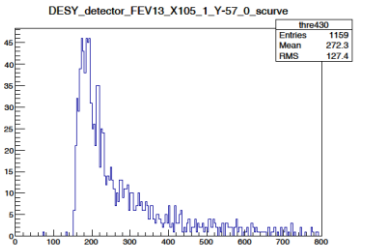

DESY_detector_FEV13_X105_1_Y-57_0_scurve
thre380
Entries 1974
Mean 225.7
RMS 118


DESY_detector_FEV13_X105_1_Y-57_0_scurve
thre390
Entries 1859
Mean 236.3
RMS 123.9


DESY_detector_FEV13_X105_1_Y-57_0_scurve
thre400
Entries 1675
Mean 240.7
RMS 123.9


DESY_detector_FEV13_X105_1_Y-57_0_scurve
thre410
Entries 1605
Mean 251.9
RMS 125.8


DESY_detector_FEV13_X105_1_Y-57_0_scurve
thre420
Entries 1636
Mean 261.8
RMS 129.7


DESY_detector_FEV13_X105_1_Y-57_0_scurve
thre430
Entries 1159
Mean 272.3
RMS 127.4

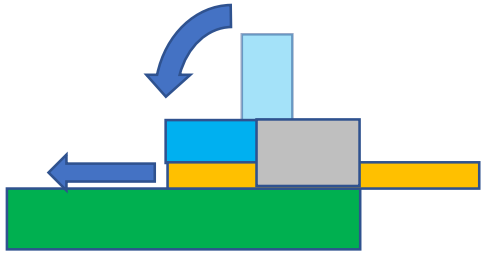
short slab

A slab

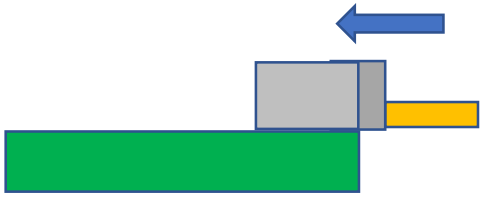
- We will prepare 5 short slabs

FEV number		# A	#B	#C	#D	#0
Connector between FEV & SMB		P	P	P	K	K
Voltage application		Flexible board				
Sensor type (thickness: mm)		650	650	320	650	650
Date of gluing	FEV & sensor	31 Aug.	3 Sep.	6 Sep.	5 Sep.	15 Jun. → 5 Sep.
	flexible & SMB & FEV	4 Sep.	5 Sep.	7 Sep.	6 Sep.	6 Sep.

P type connector

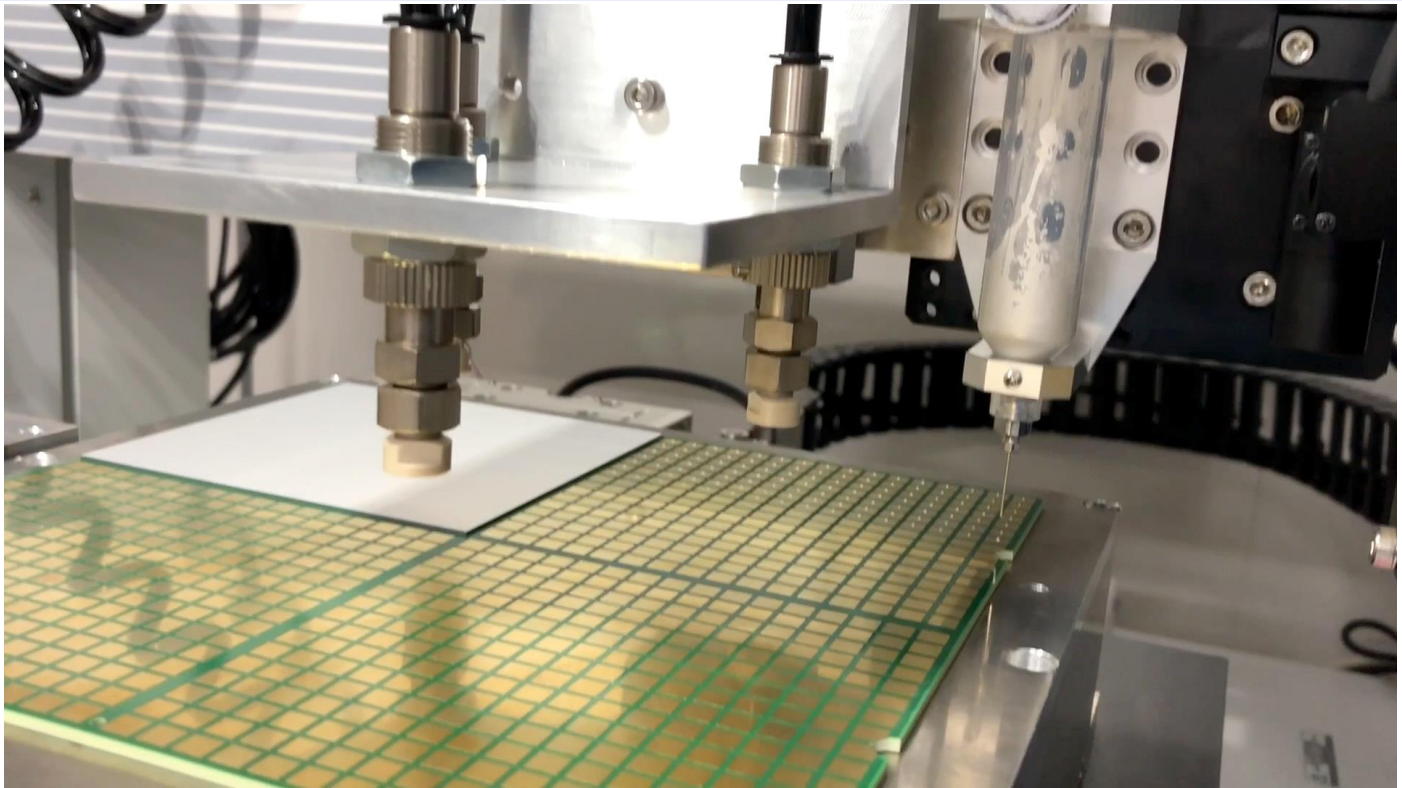


K type connector



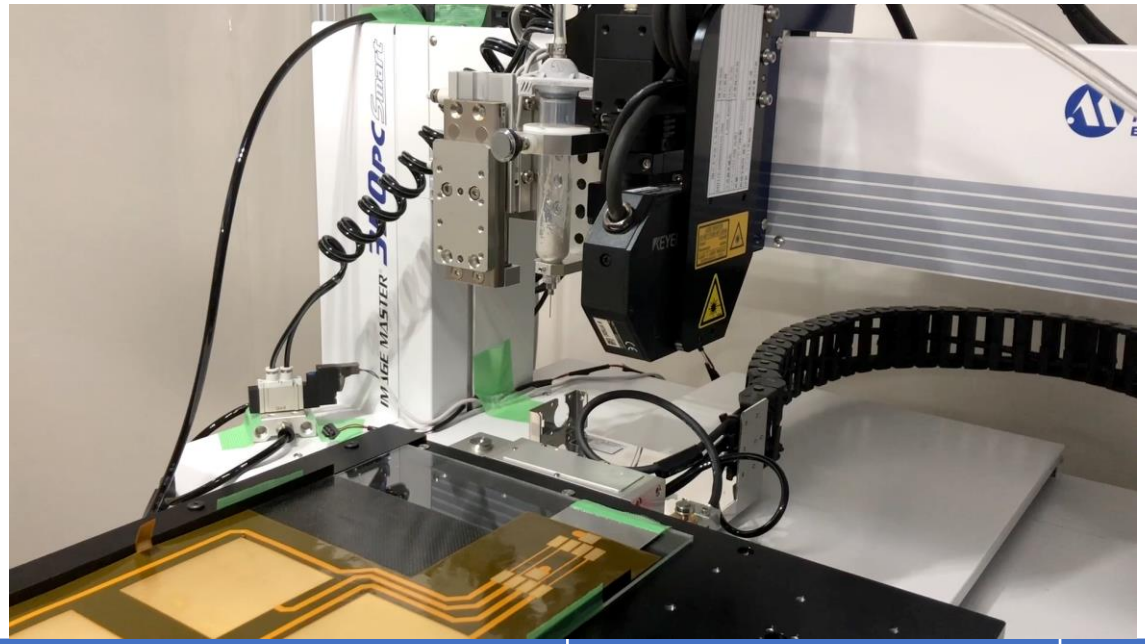
Automation of gluing for #A, B

Auto	Object	Parameters
Stage	Jigs for sensor & FEV	Y-axis
Robot arm	Pads for sensor	X-axis, Z-axis
Vacuum generator	Fixing sensor Transporting sensor	ON/OFF
Dispenser	Gluing	Shooting time

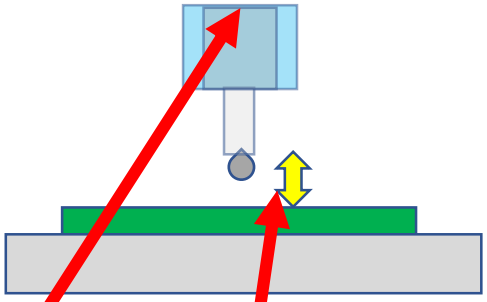


2 min
30 sec

Automation of gluing for flexible board



Movie : about 30 sec.



Auto	Object	Parameters
Stage	Jigs for sensor & FEV	Y-axis
Robot arm	Pads for sensor	X-axis Z-axis
Vacuum generator	Fixing sensor Transporting sensor	ON/OFF
Dispenser	Gluing	Shooting time
Image recognition device	Glue syringe	Height from FEV

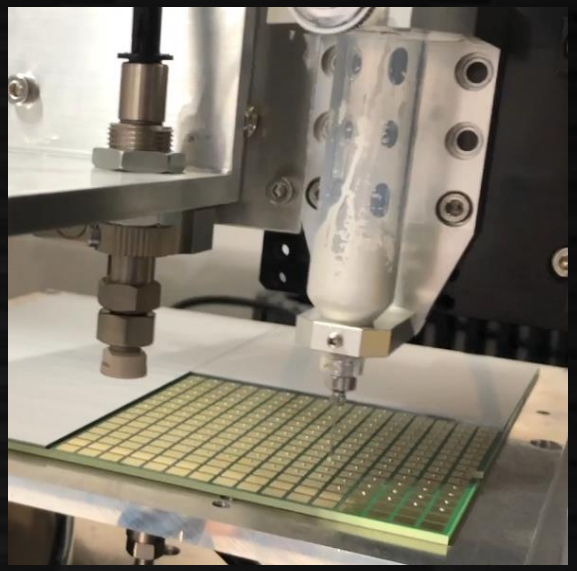
Summary

- We will prepare 5 short slabs

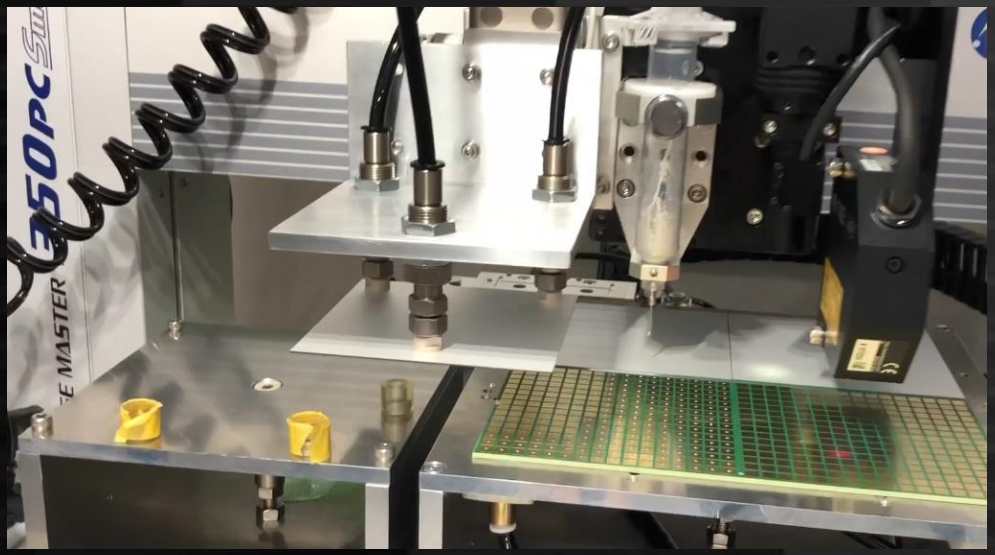
FEV number		# A	#B	#C	#D	#0
Connector between FEV & SMB		P	P	P	K	K
Voltage application		Flexible board				
Sensor type (thickness: mm)		650	650	320	650	650
Date of gluing	FEV & sensor	31 Aug.	3 Sep.	6 Sep.	5 Sep.	15 Jun. → 5 Sep.
	flexible & SMB & FEV	4 Sep.	5 Sep.	7 Sep.	6 Sep.	6 Sep.

- Miura-kun will bring them to CERN and test them with beam

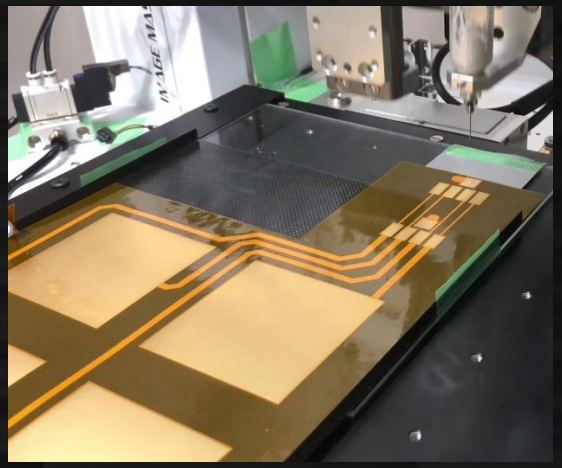
Assembly procedure



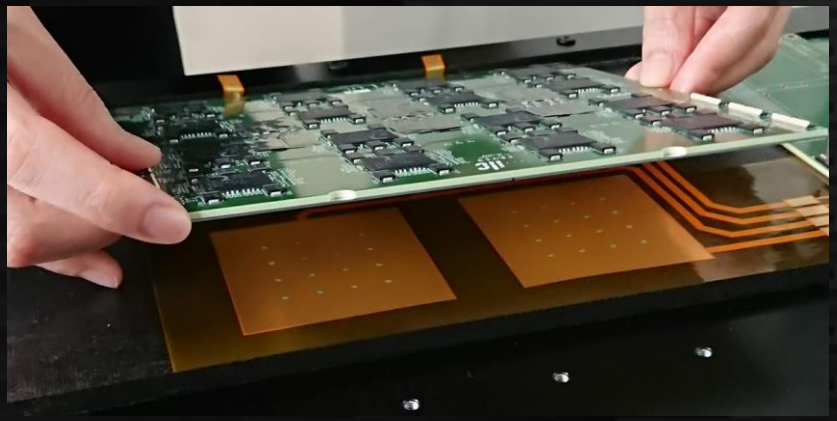
Dispense conductive glue



Place sensors → 1 day cure

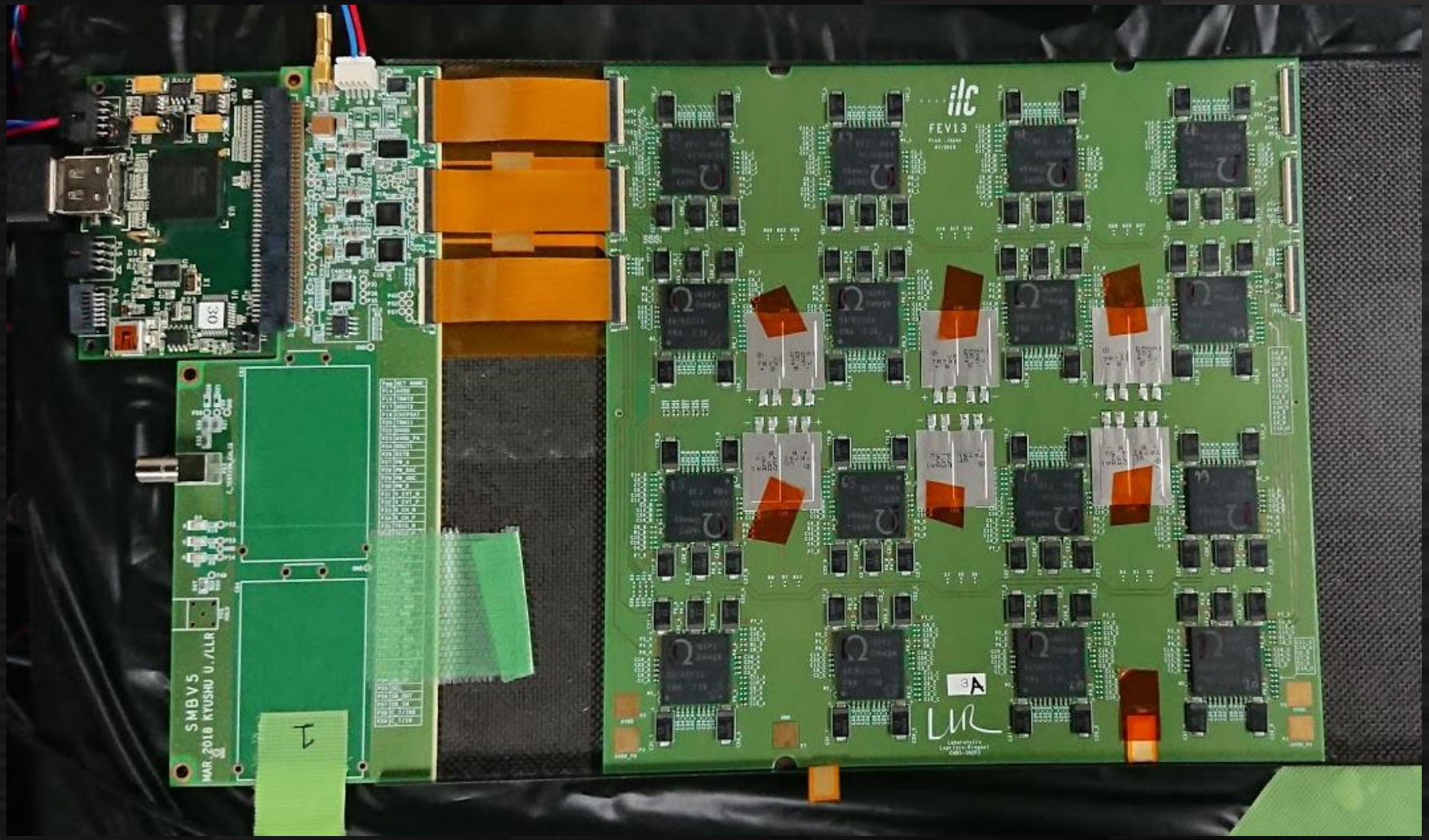


Dispense glue to flex



Mount sensor+PCB → 1 day cure

First assembled FEV13JP



Topics

ECAL-related activities

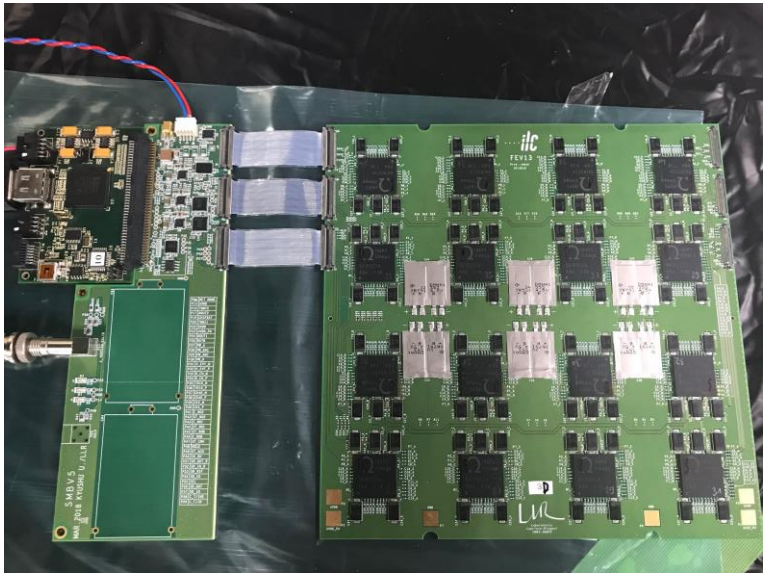
- Production of ECAL assembly
  - ASIC quality assurance (Deguchi)
  - Production of PCB and flexible boards (Suehara)
  - Gluing PCB-sensor-flex (Sekiya)
  - Test with ^{57}Co (Miura)
  - Modification of FPGA (Miura)
- Test beam analysis (Uesugi)
- Test of new sensors (Mori)

Physics

- Two-fermion study (Deguchi)

Test two types of FEV

Type P

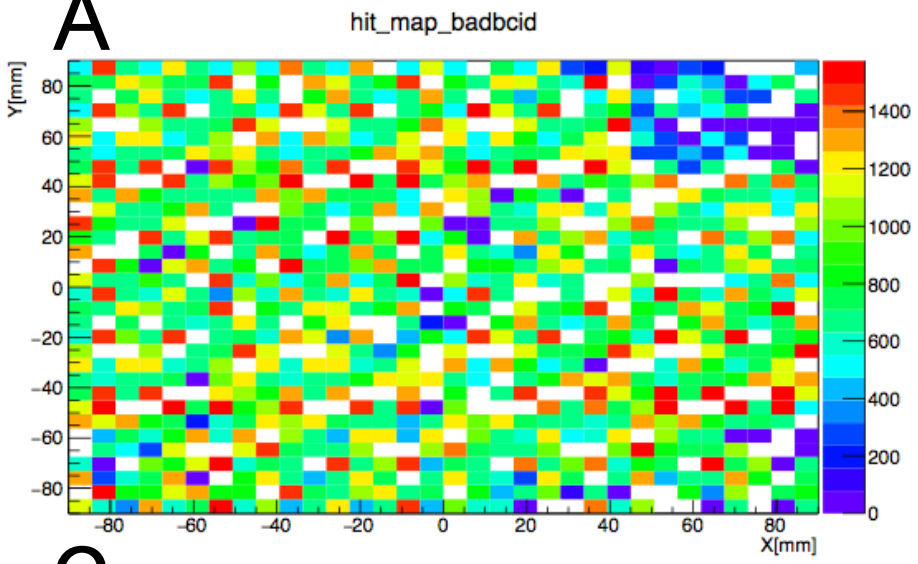


Type K

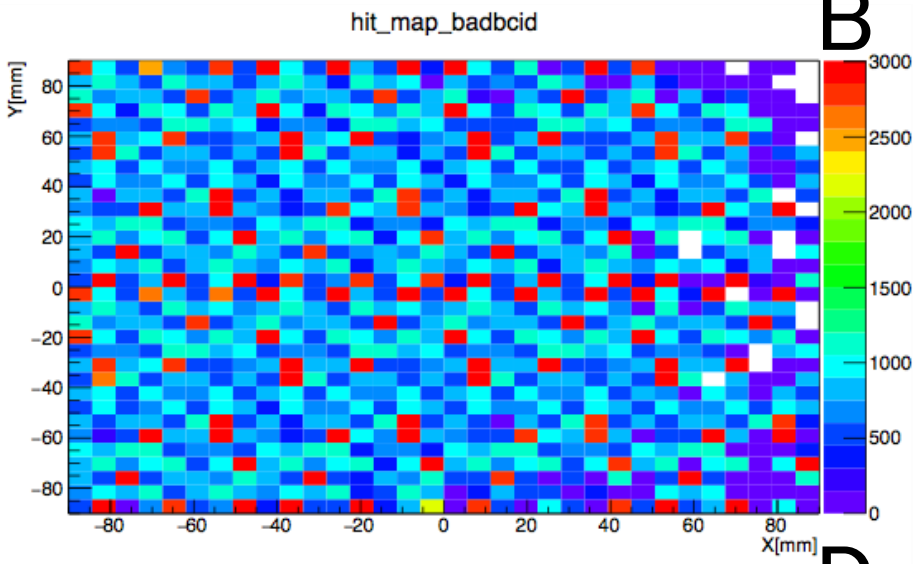
- We have two types of FEV.Connecters are different.
- Injected 10 MIPs at 50 kHz in 8 channels on 16 chips in 8 times (the chip have 64 channels)
- Use ^{57}Co to confirm S/N ratio.

Result (Inject 10 MIPs)

A



B



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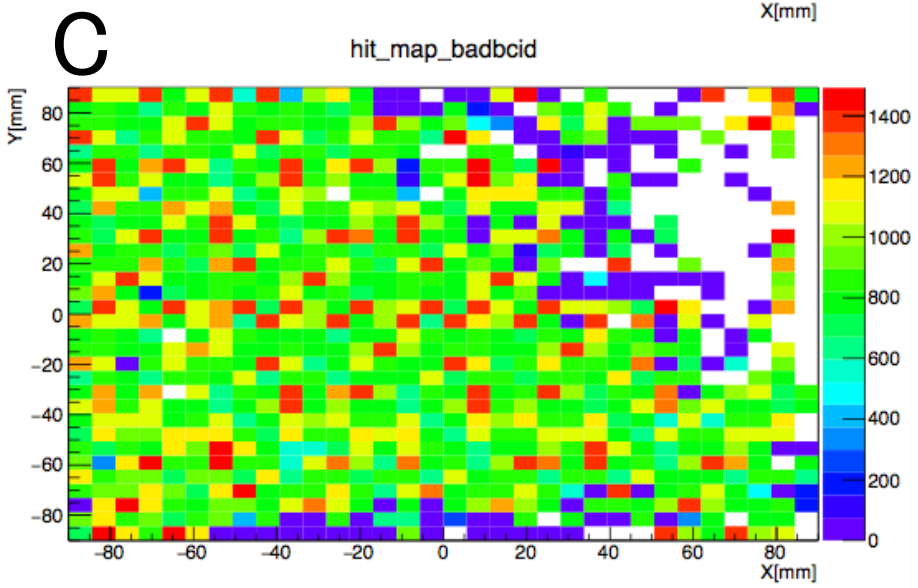
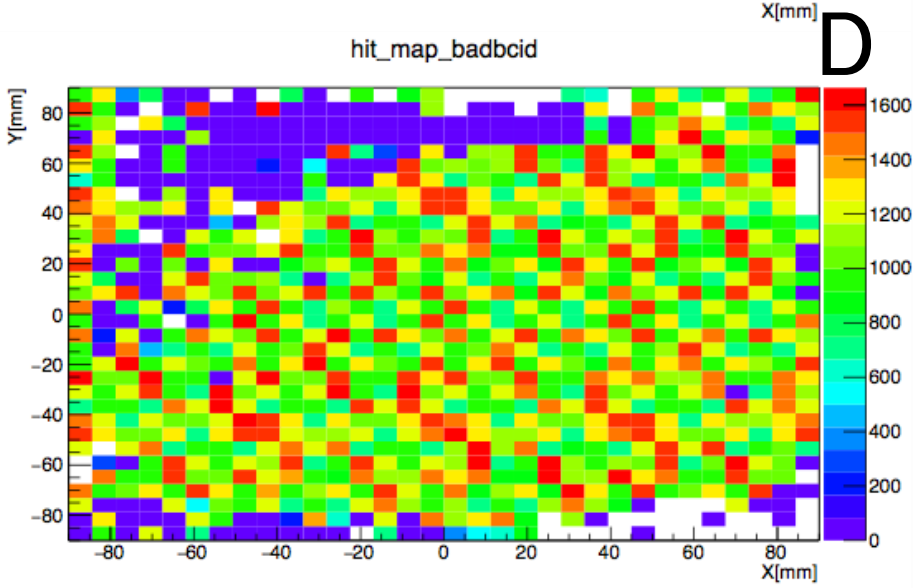
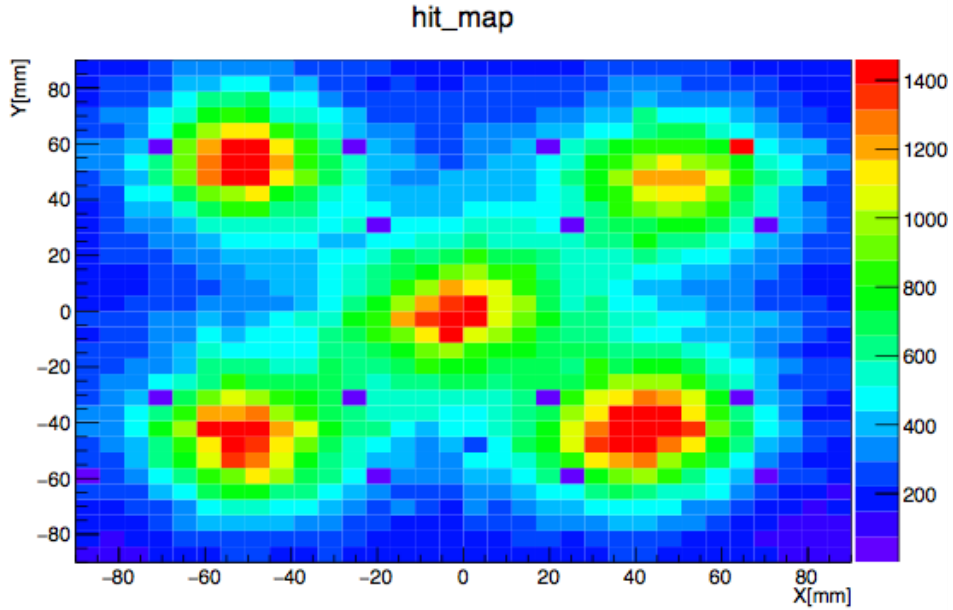
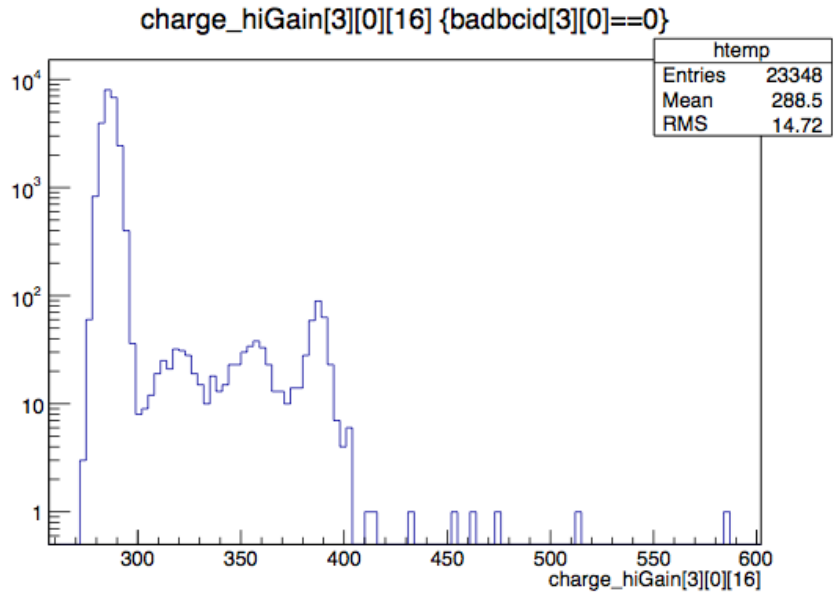


D



Result (^{57}Co)





- We can get data now !
  But we have to finish to acquire datas in 4 times, because we have to test 5 SLABs. We already finished only the SLAB.

- S/N ratio is about 30.