

Wrap-up meeting

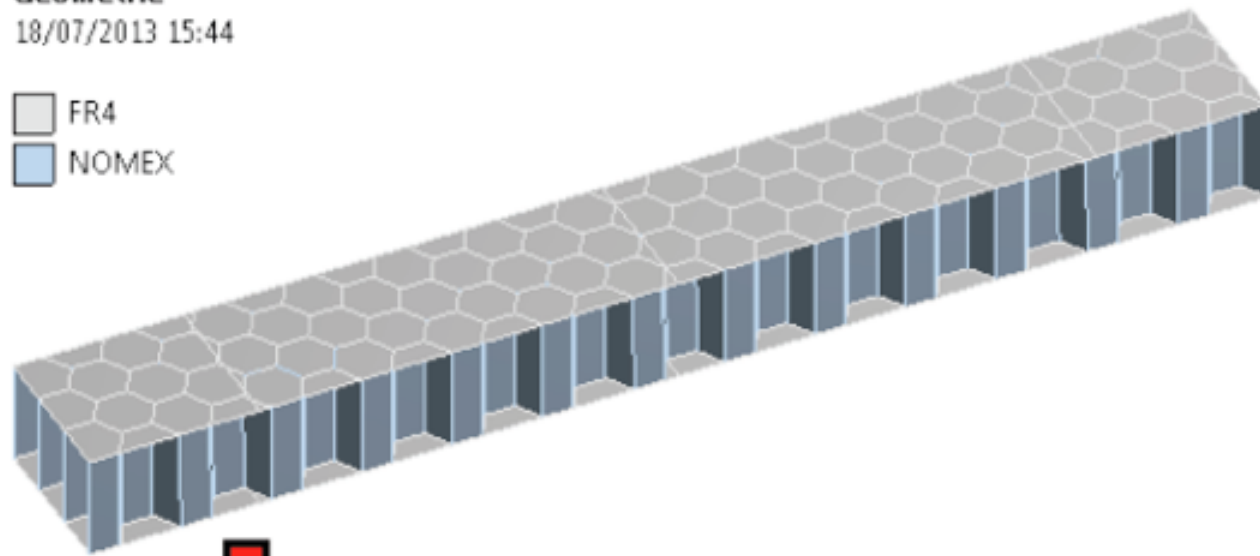
- ◆ Incollaggio
- ◆ Temperatura
- ◆ Misure pannelli
- ◆ Programma fino al prossimo workshop (fine gennaio)
- ◆ Ordini

Assess of Young modulus (reference: 17 Gpa)

Géométrie

18/07/2013 15:44

FR4
NOMEX



- Dimensions:

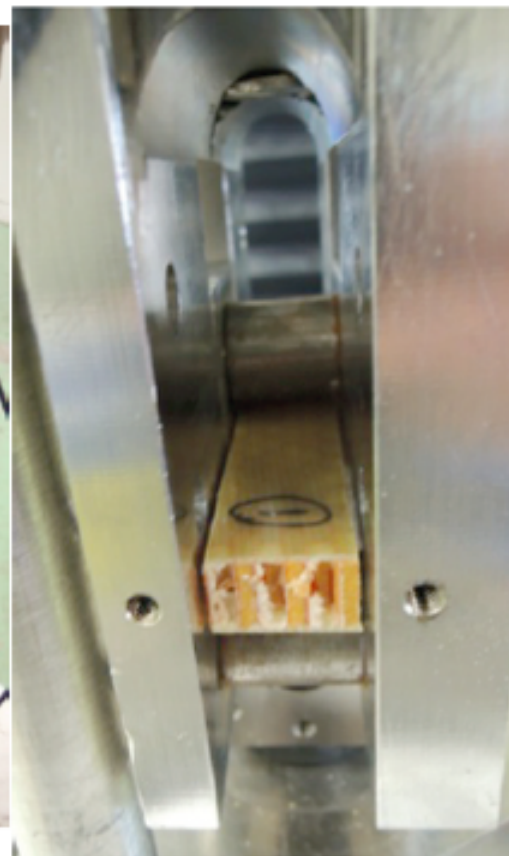
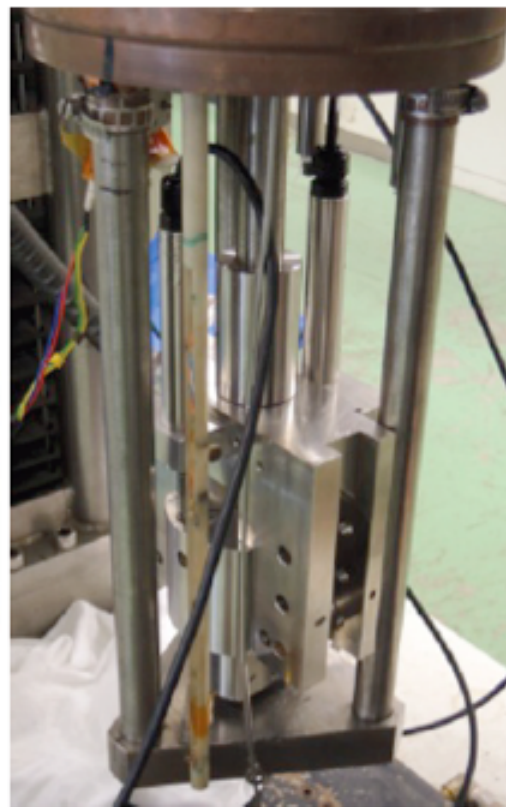
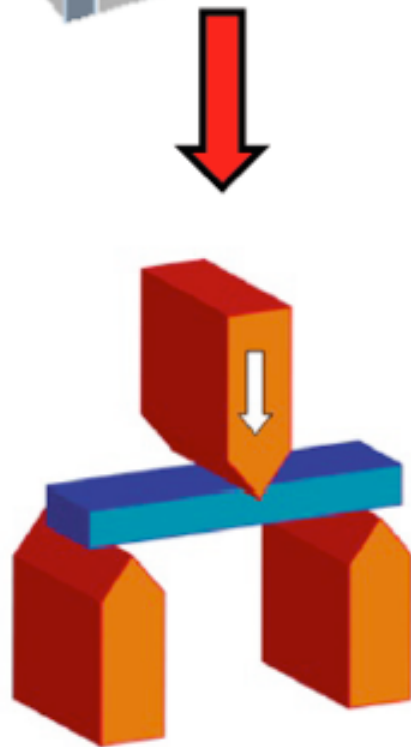
$L = 110\text{ mm}$; $W = 17\text{ mm}$; $h = 11\text{ mm}$

- Honeycomb: NOMEX and Al

Thick. = 0.05 mm ; $h = 10\text{ mm}$; $d = 4.8\text{ mm}$

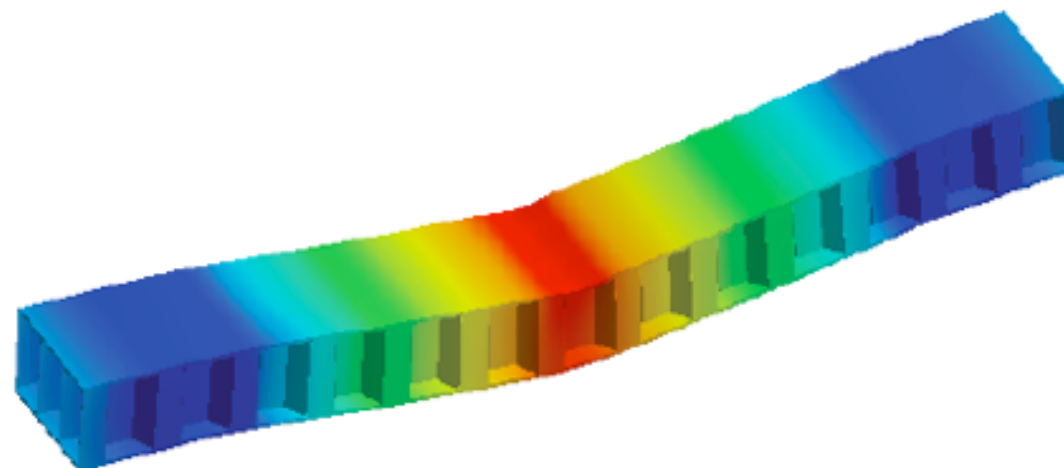
- Skins: FR4 thickness 0.5 mm

- Glue: Araldite 2011



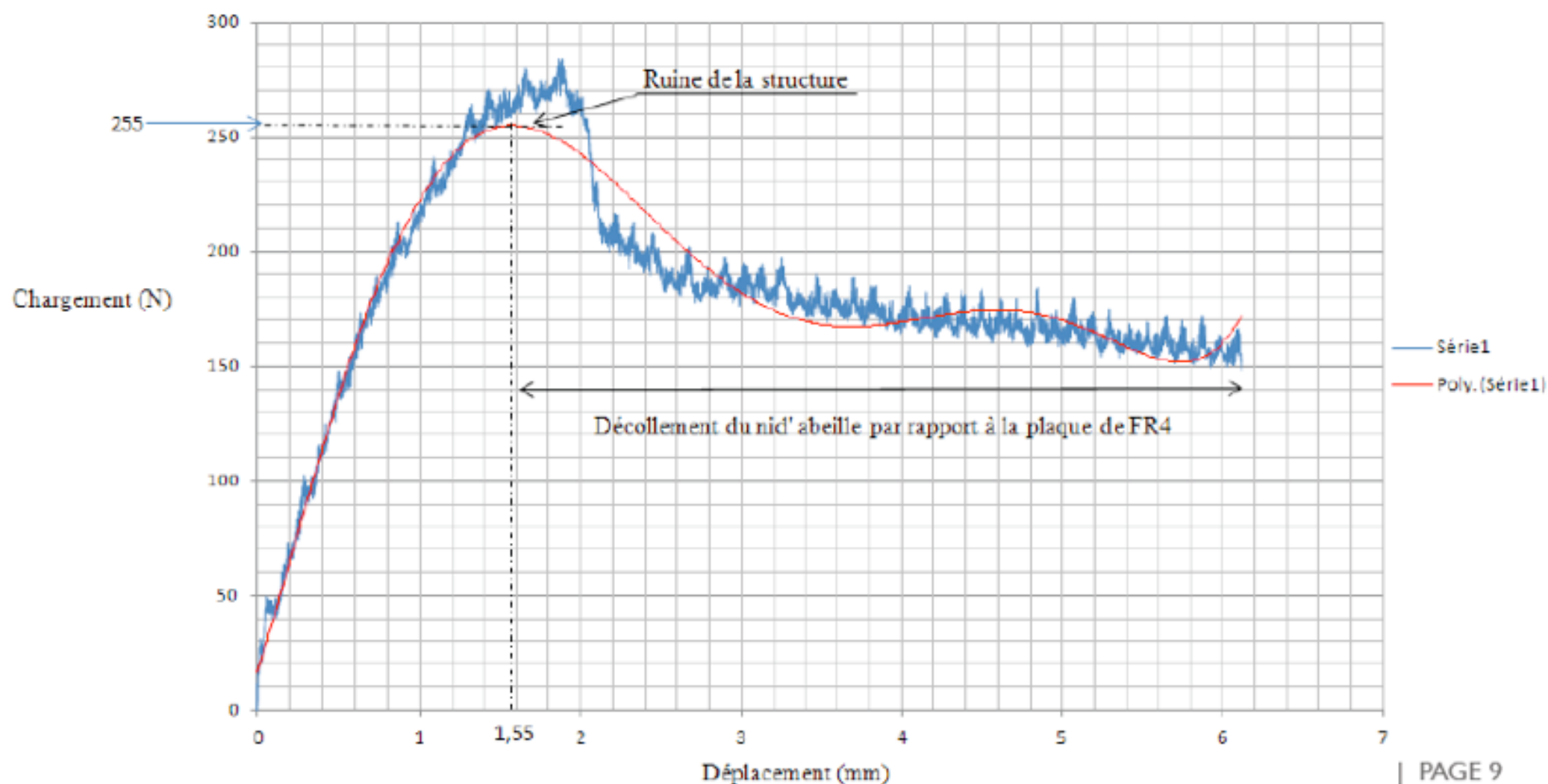
A: Structure statique
 Déplacement total
 Type: Déplacement total
 Unité: mm
 Temps: 1
 18/07/2013 15:45

1,5295 Max
 1,3601
 1,1907
 1,0213
 0,8519
 0,68251
 0,51311
 0,34371
 0,17432
 0,0049206 Min



Young modulus: 8 GPa

Eprouvette n°1: NOMEX (110 x 17 x 11) + FR4 (0,5 mm)



B: Copie de Structure statique

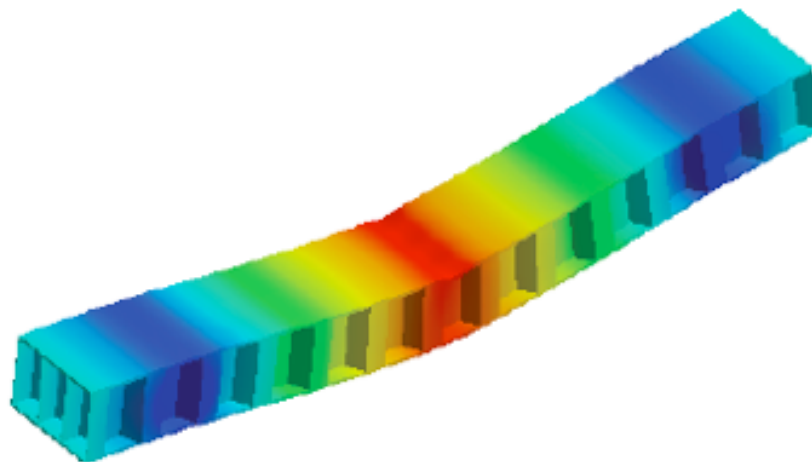
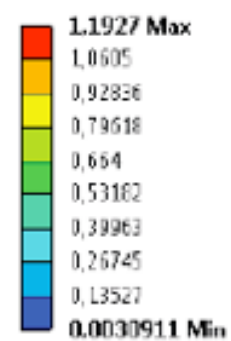
Déplacement total

Type: Déplacement total

Unité: mm

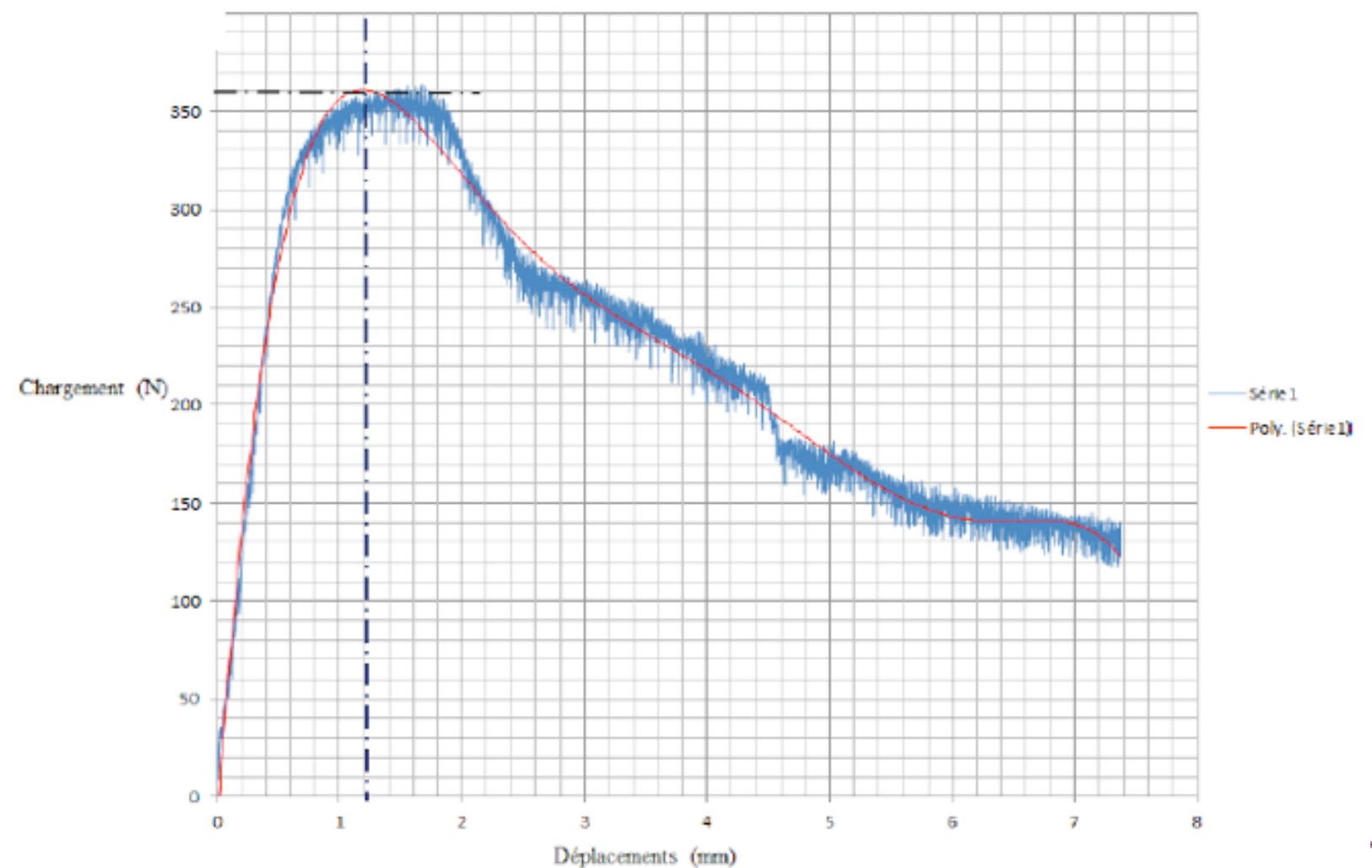
Temps: 1

LL/10/2013 15:13



Young modulus: 24 GPa

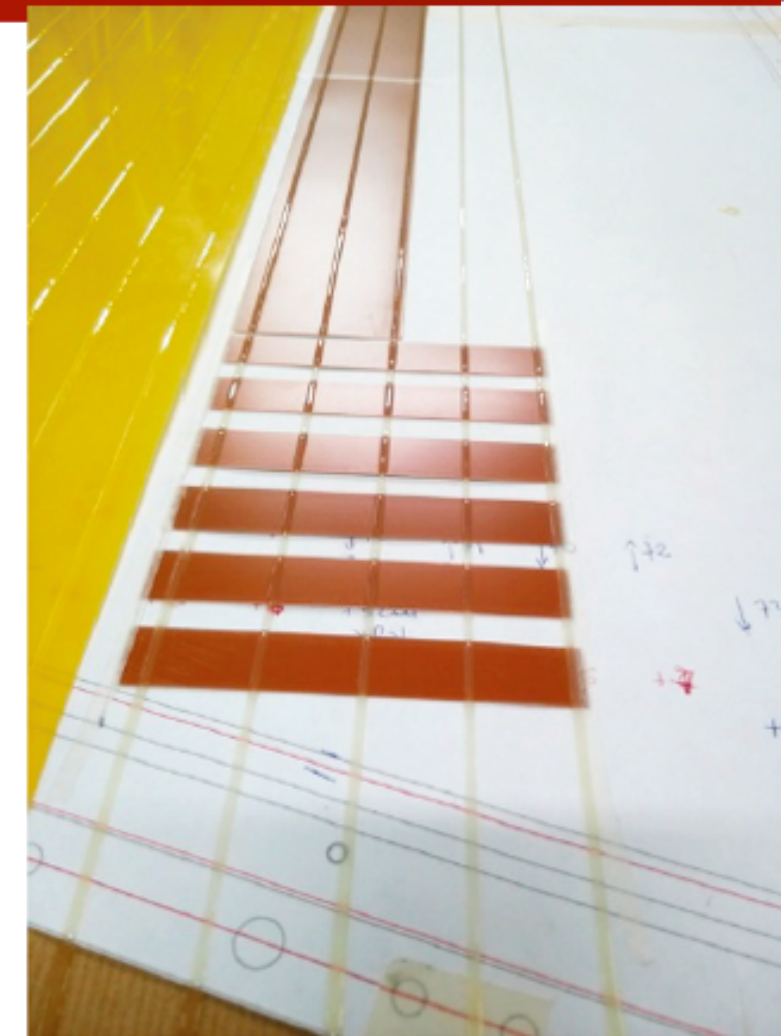
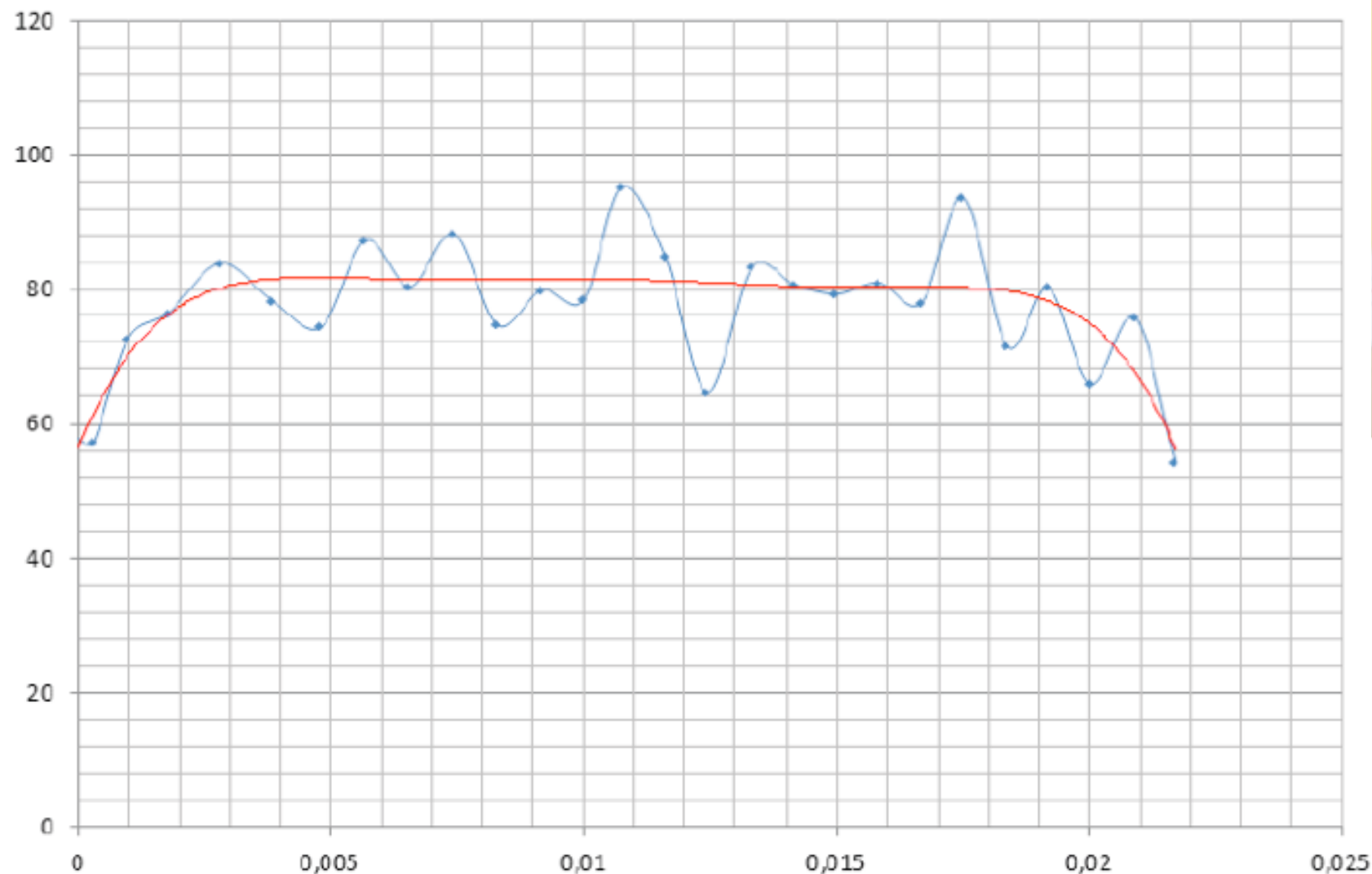
Eprouvette (110 x 17 x 11): Aluminium + FR4 (0.5 mm)



Glue strips perpendicular to length of the sample (every 25 mm)

Impossible to determine the Young modulus (too small)

Ungluing for only a displacement of 30 micron under 60-80 N

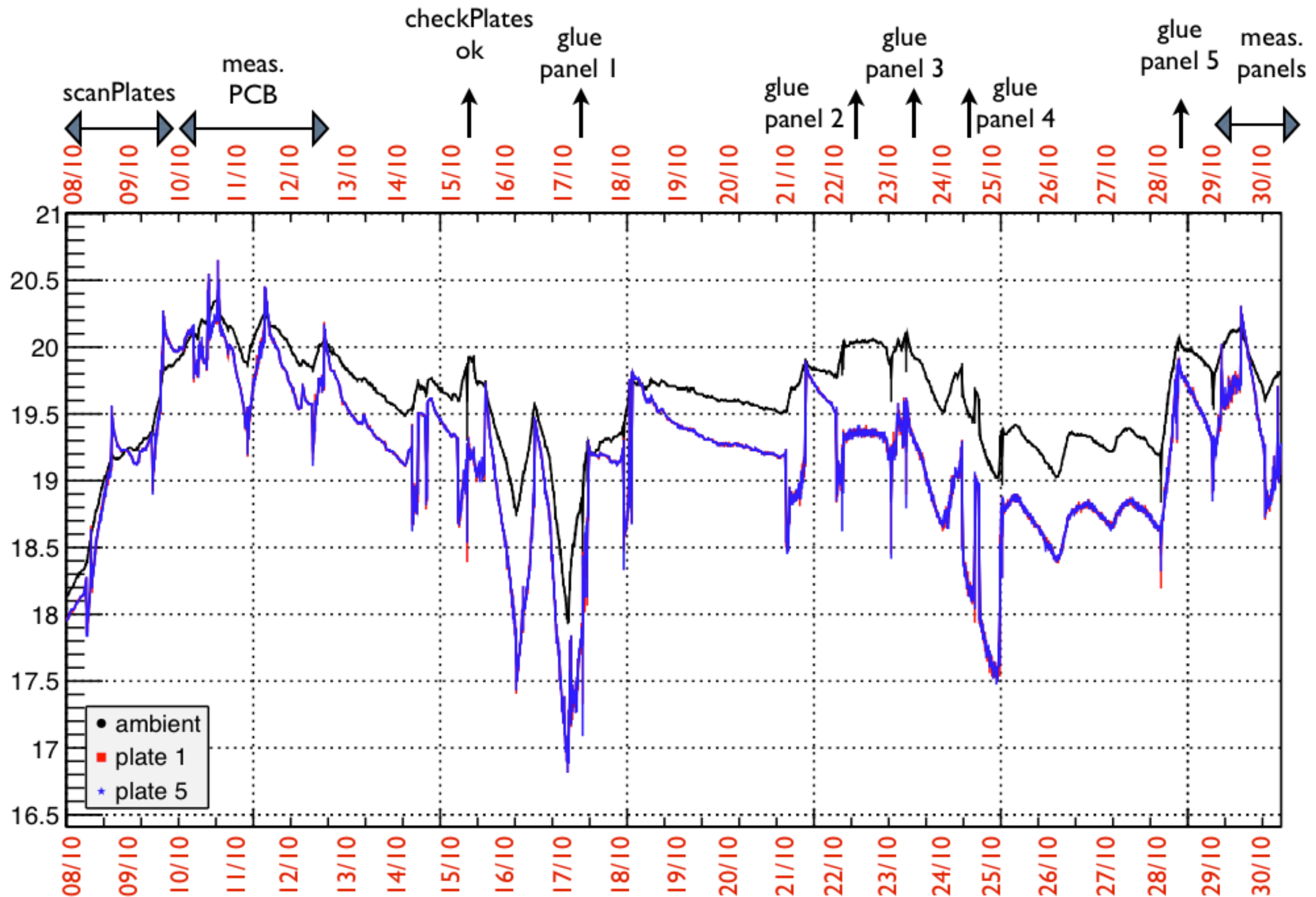


—●— Série1
— Poly. (Série1)

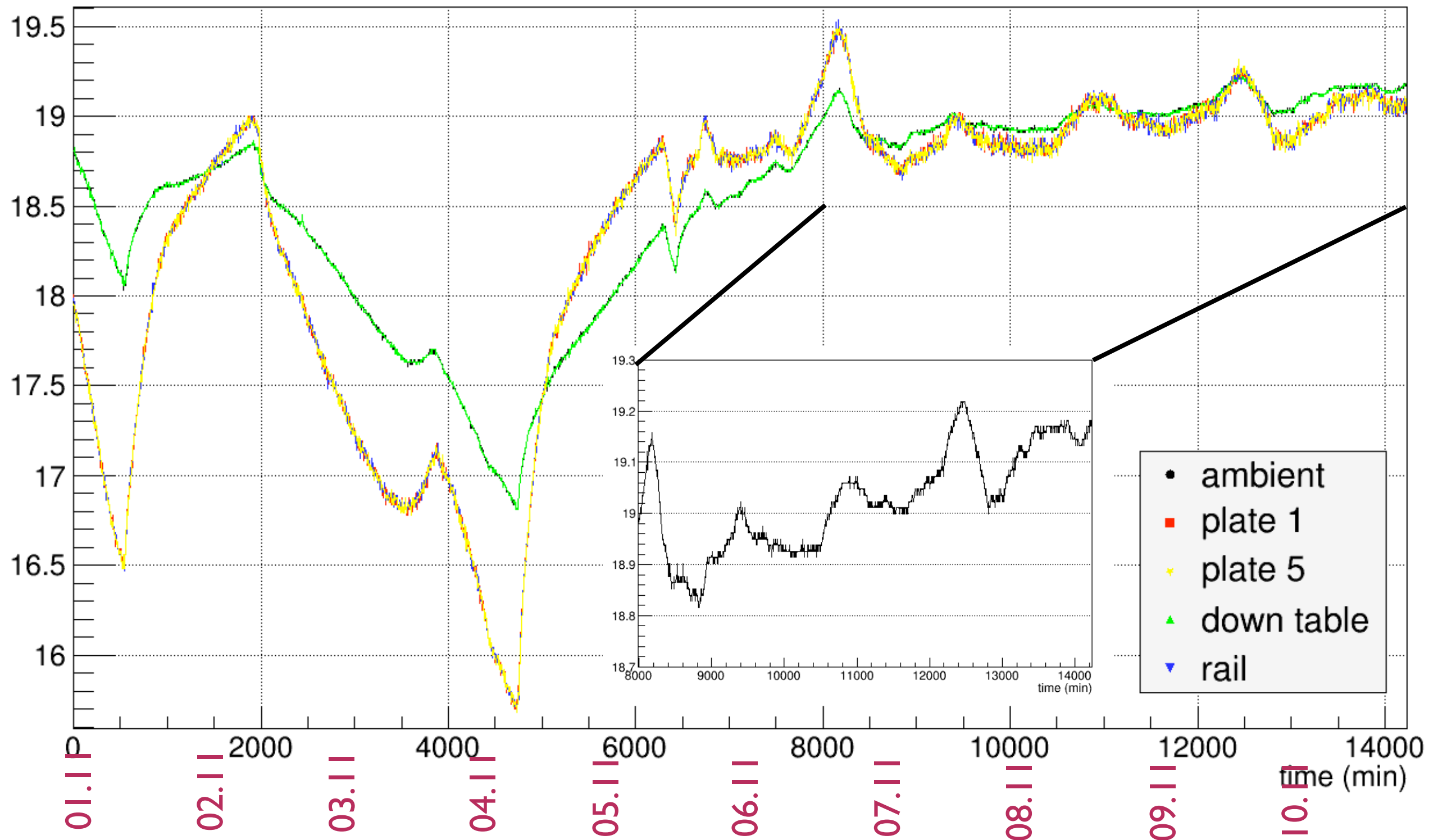
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- ◆ Ordini

temperature in the clean room



Temperature in November



Verbale della riunione del 5 nov ore 10,30 sul posto per i problemi di temperatura nella camera bianca.

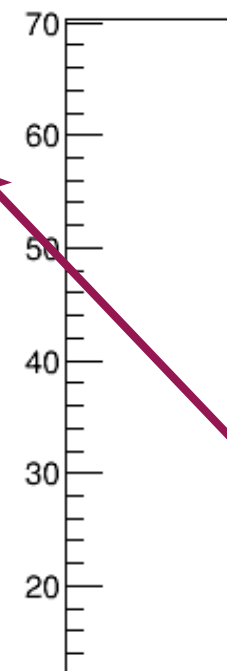
Si è deciso di far intervenire direttamente la ditta Rockwell che a suo tempo ha installato l'apparecchiatura di controllo degli impianti di riscaldamento per verificare ed eventualmente riparare l'hardware ed il software del sistema di gestione.

L'intervento sarà coordinato dalla ditta Carbotermo, gestore dei ns impianti di trattamento aria, al fine di abbreviare i tempi di intervento della Rockwell che altrimenti, visti i precedenti casi, sarebbero molto più lunghi (i contatti e gli interventi con gli Enti, per Rockwell, hanno procedure e modi diversi che ne allungano i tempi).

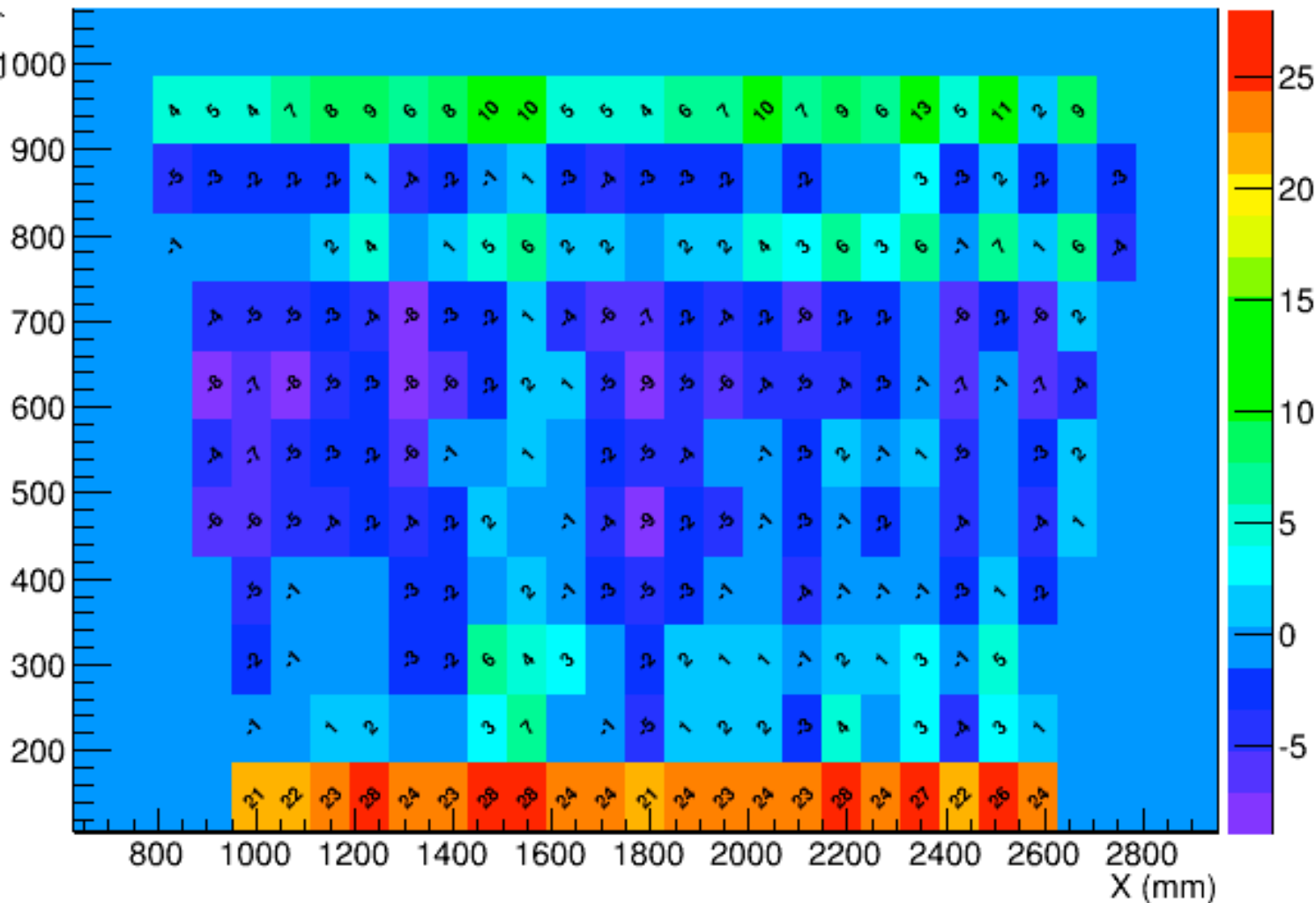
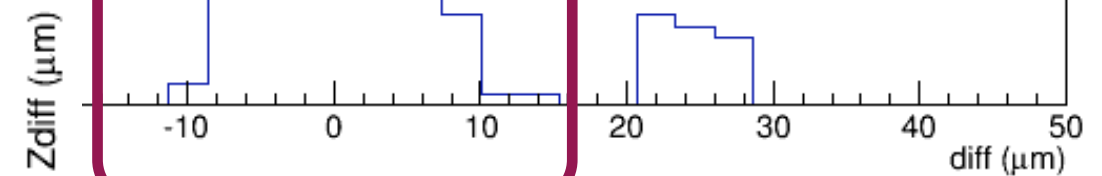
Scan on granite table

scan1 : 02.07
scan2 : 30.10

meas. difference	
Entries	250
Mean	-0.4163
RMS	4.248
Underflow	0
Overflow	0



meas. difference	
Entries	250
Mean	1.612
RMS	7.943
Underflow	0
Overflow	0



Wrap-up meeting

- ◆ Incollaggio
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- ◆ Ordini

Panel measurements

* one side is FR4 only (thicker)

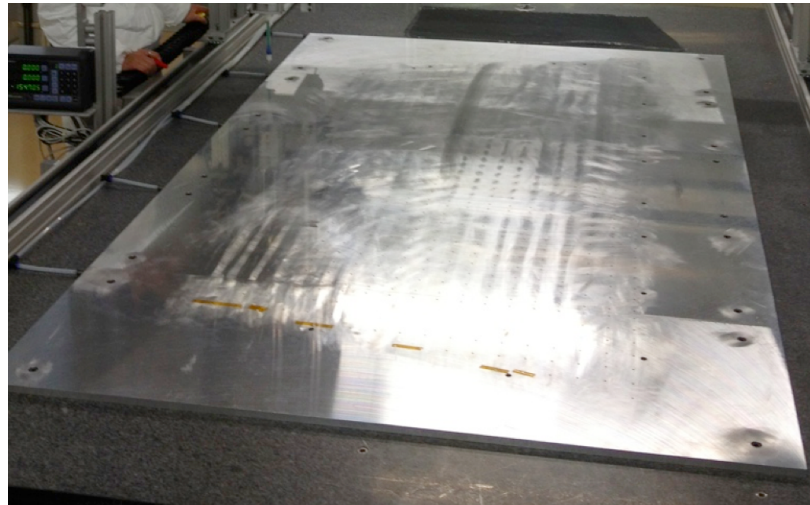
	panel	thickness (mm)	rms raw (μm)	rms fit (μm)	α_{zx} (μrad)	β_{zy} (μrad)	PILLAR
*	pcb1up-free	11.427	48	46	22	25	yes
	pcb2up-free	11.431	45	44	-6.8	38	
	pcb3up-free	11.365	42	39	9.5	53	no
	pcb4up-free	11.323	48	46	2.2	44	
*	pcb5up-free	11.355	57	53	5.5	67	no
	pcb6up-free	11.335	56	49	13	94	
	pcb7up-free	11.232	39	38	4.6	-13	yes
	pcb8up-free	11.211	36	35	8.2	-22	
	pcb9up-free	11.395	69	55	-72	62	no
	pcb10up-free	11.383	53	44	52	28	

panel	plates meas.	granite meas.	pisa meas.
pcb1up-free	48	48	52
pcb2up-free	45	51	51
pcb3up-free	42	36	22
pcb4up-free	48	54	28

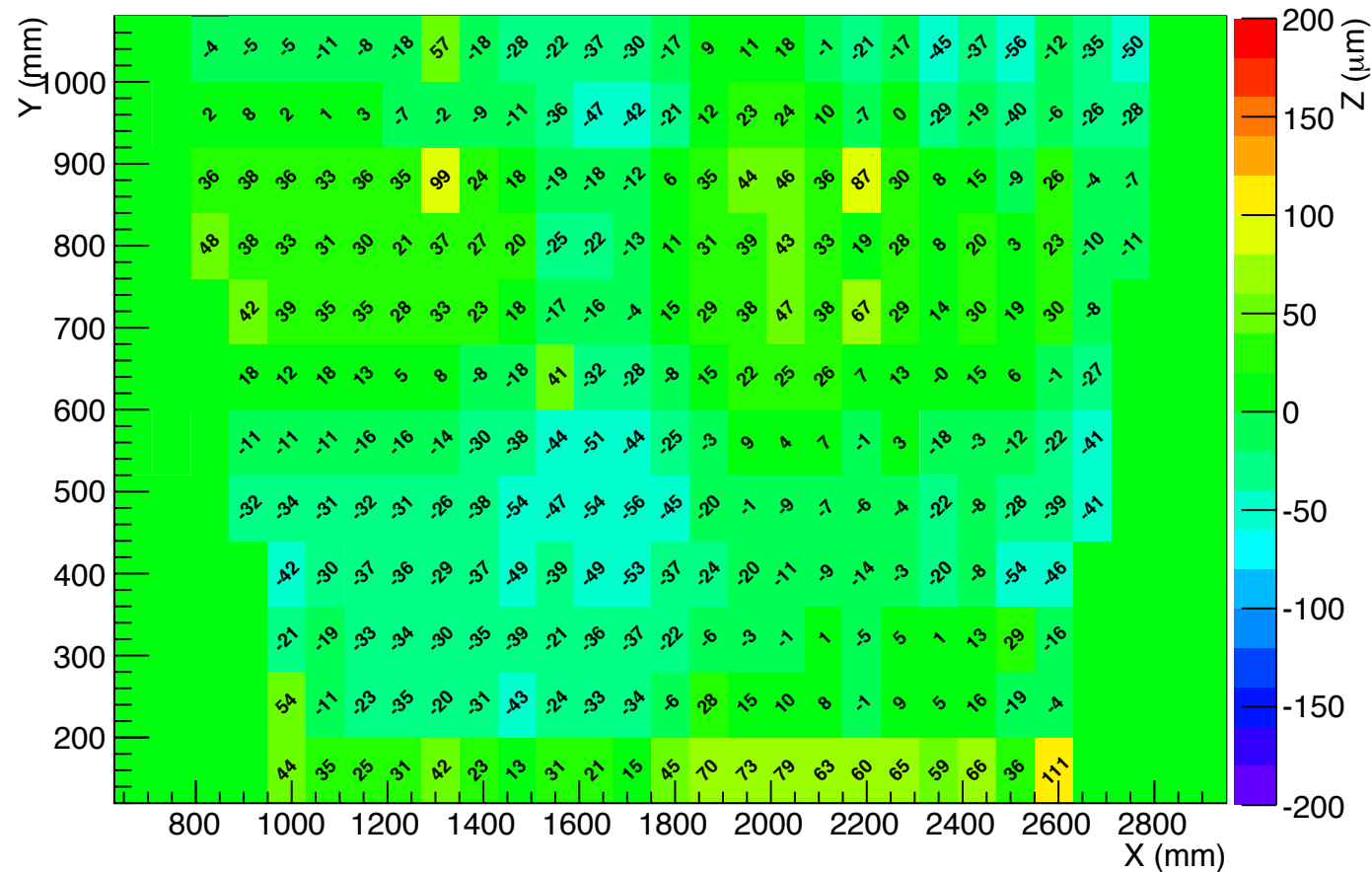
panel measurement – vacuum on

panel	thickness (mm)	rms raw (μm)	rms fit (μm)	α_{zx} (μrad)	β_{zy} (μrad)	PILLAR
pcb1up-vacuum	11.398	28	28	6	15	yes
pcb2up-vacuum	11.390	30	29	-4.7	17	
pcb2up-vacuum-bis	11.268	46	42	-31	24	
pcb3up-vacuum	11.476	48	40	44	36	no
pcb4up-vacuum	11.303	43	42	-0.28	35	
pcb5up-vacuum	11.320	38	35	-4.8	54	no
pcb6up-vacuum	11.312	40	35	10	71	
pcb7up-vacuum	11.214	26	25	-4.8	-15	yes
pcb8up-vacuum	11.205	32	32	7.1	-17	
pcb9up-vacuum	11.334	41	33	-41	41	no
pcb10up-vacuum	11.357	40	31	46	27	

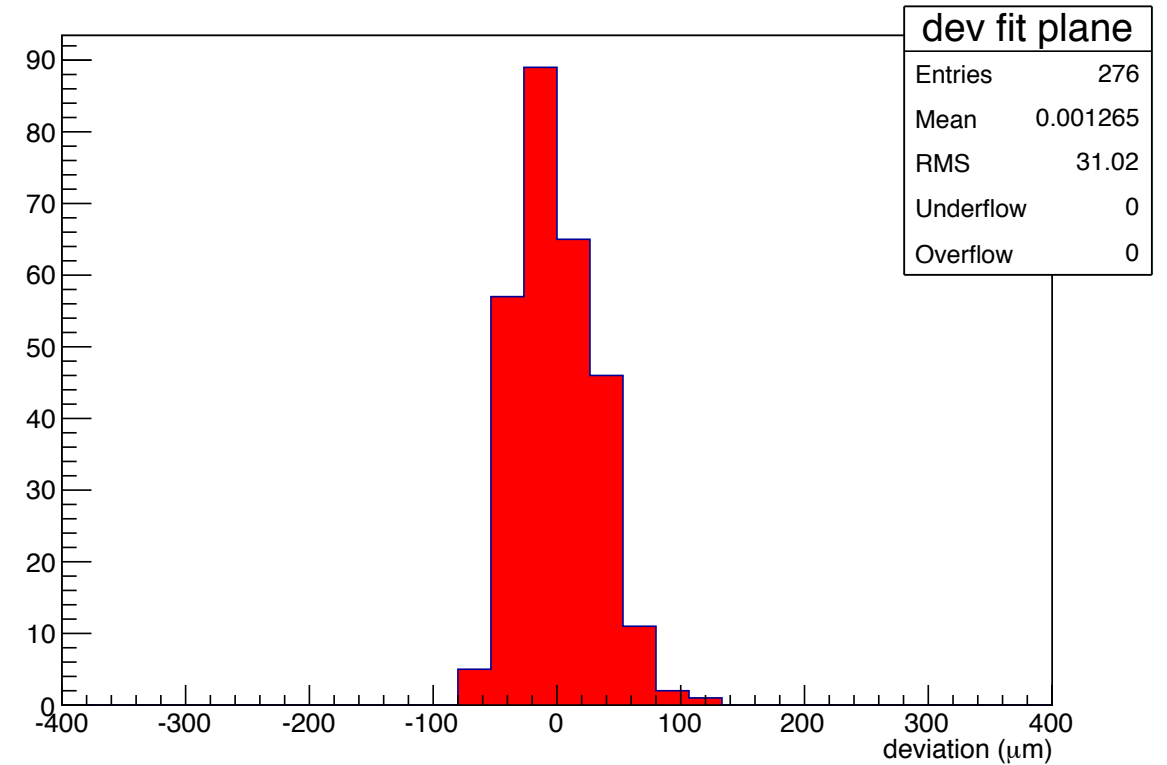
Plates measurements



diff fit plane

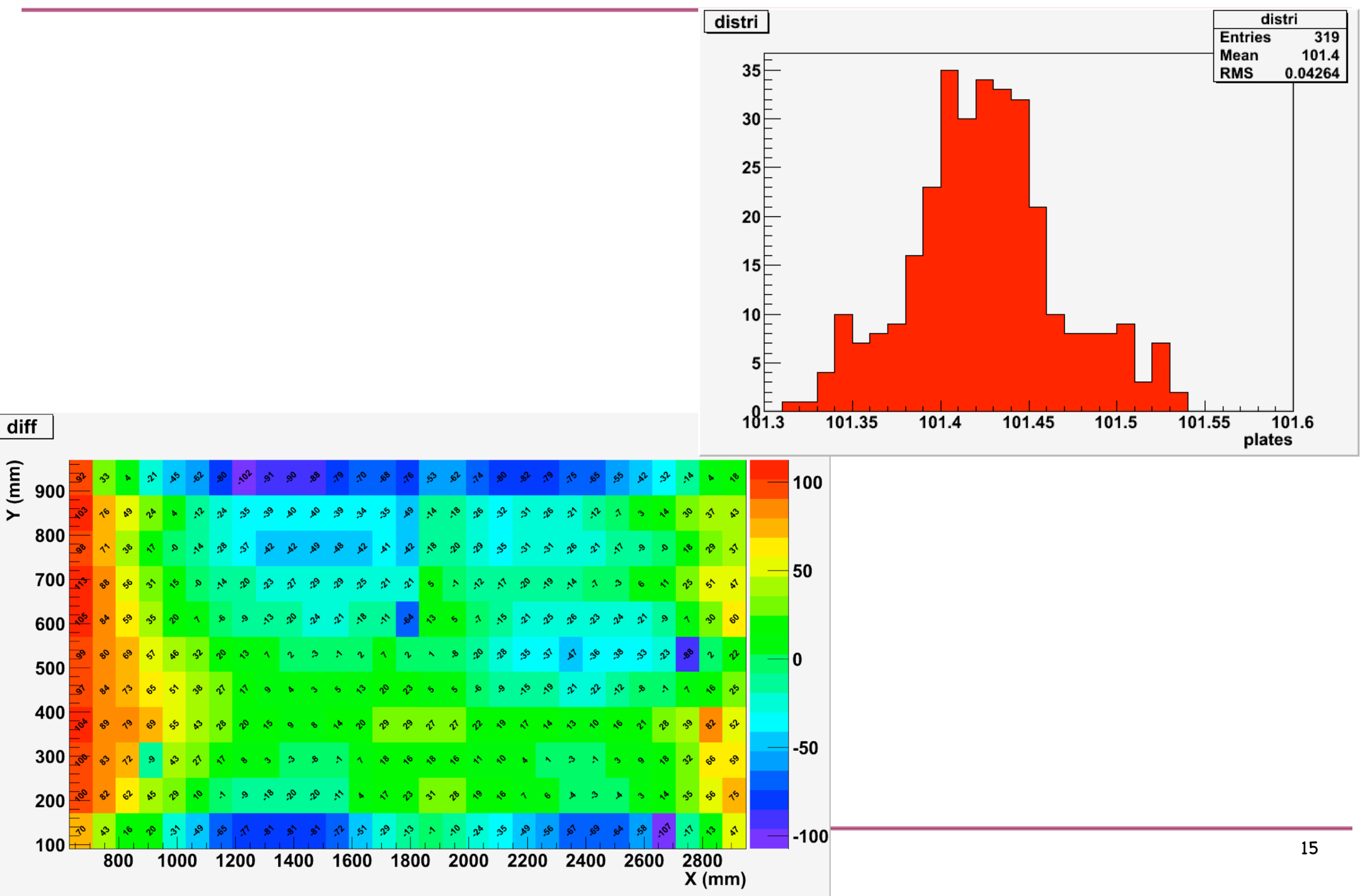


dev fit plane

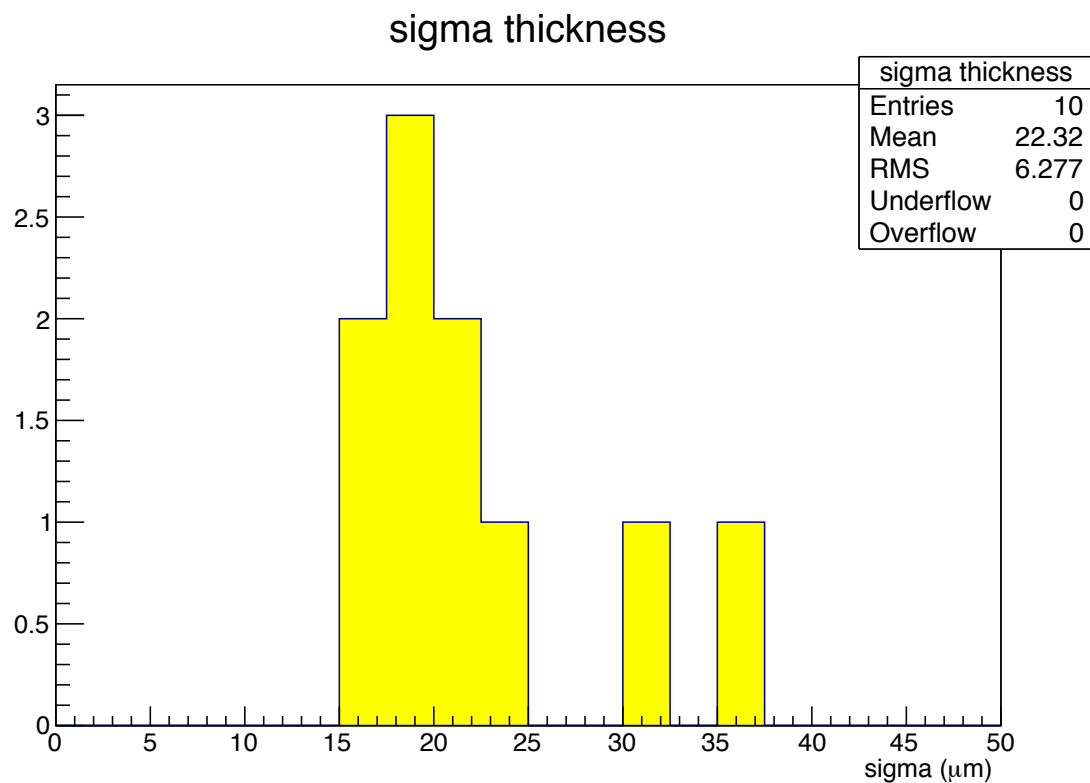
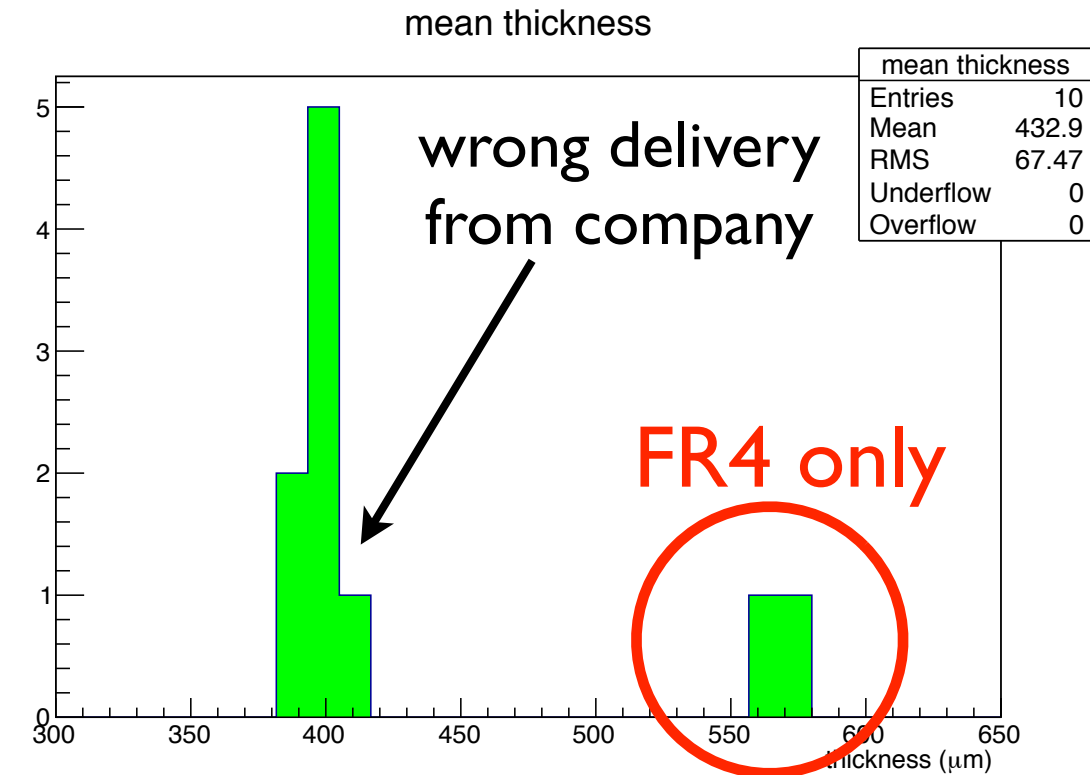


$\text{coeff_a (zx)} = -11 \mu\text{rad}$
 $\text{coeff_b (zy)} = -4 \mu\text{rad}$
 $\text{d zx} = -0.025 \text{ mm}$
 $\text{d zy} = -0.004 \text{ mm}$
 $\text{RMS} = 31 \mu\text{m}$

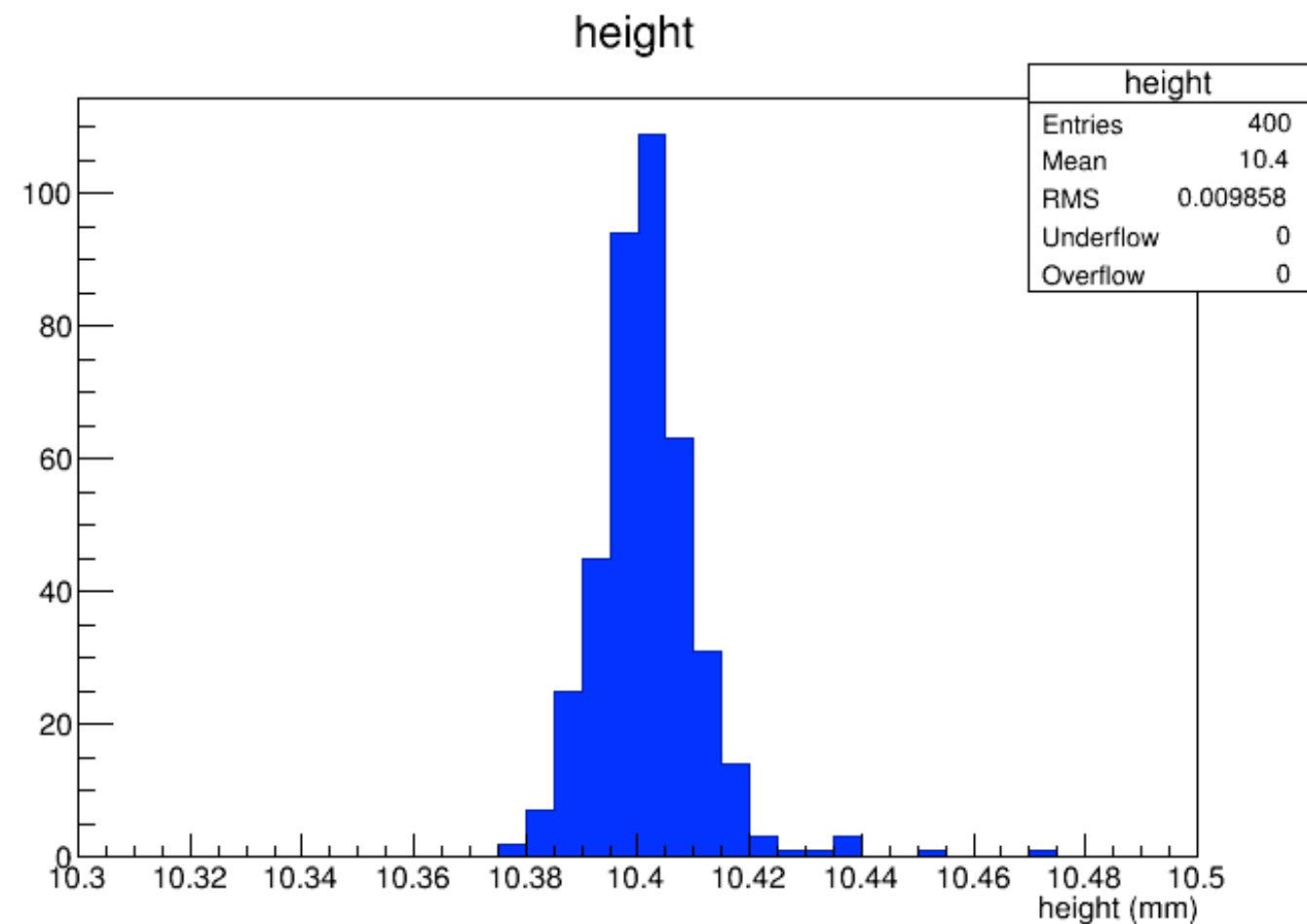
Piastre stiffback



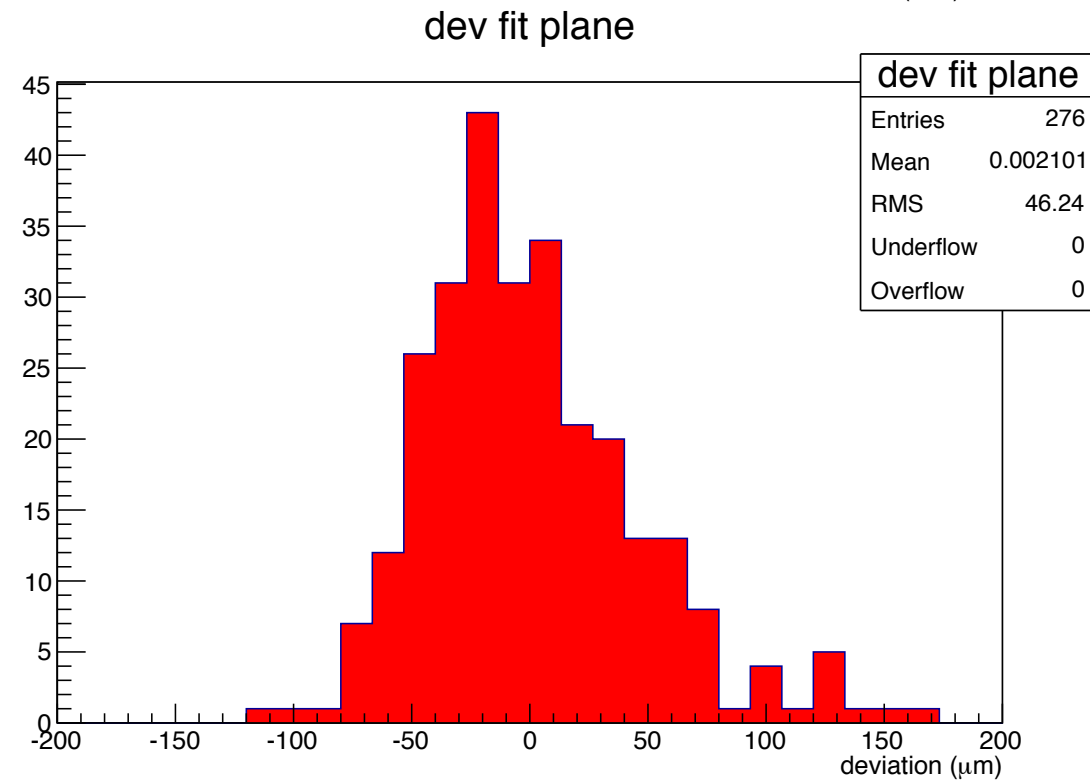
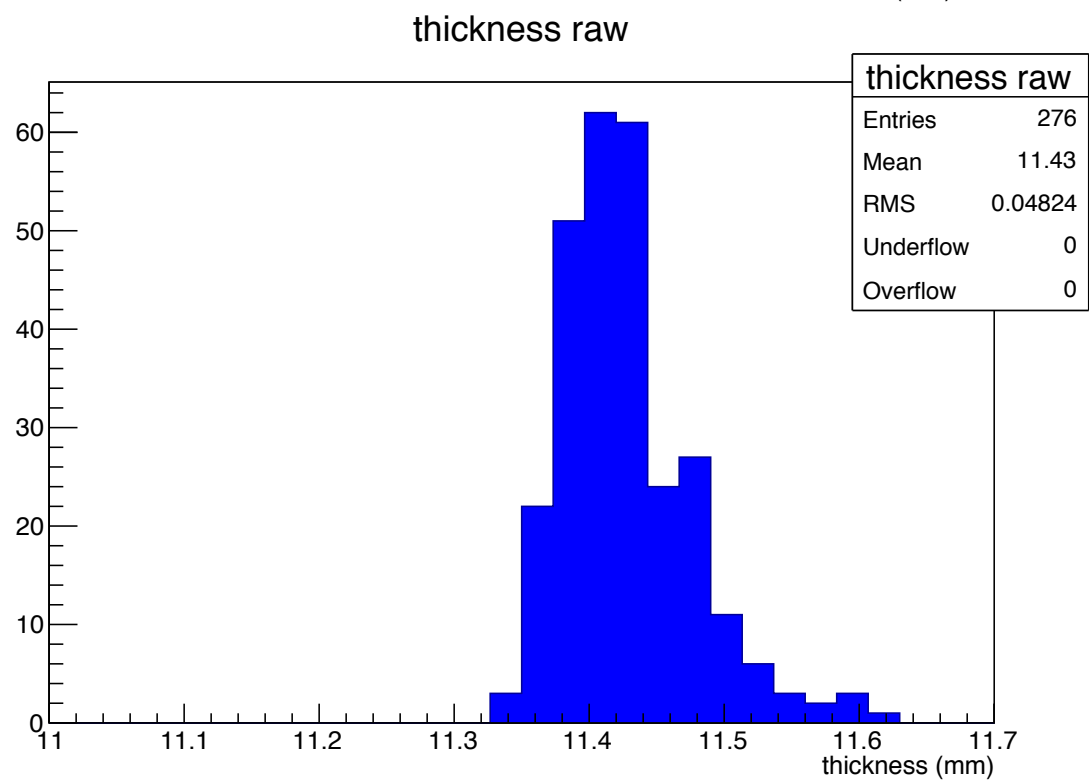
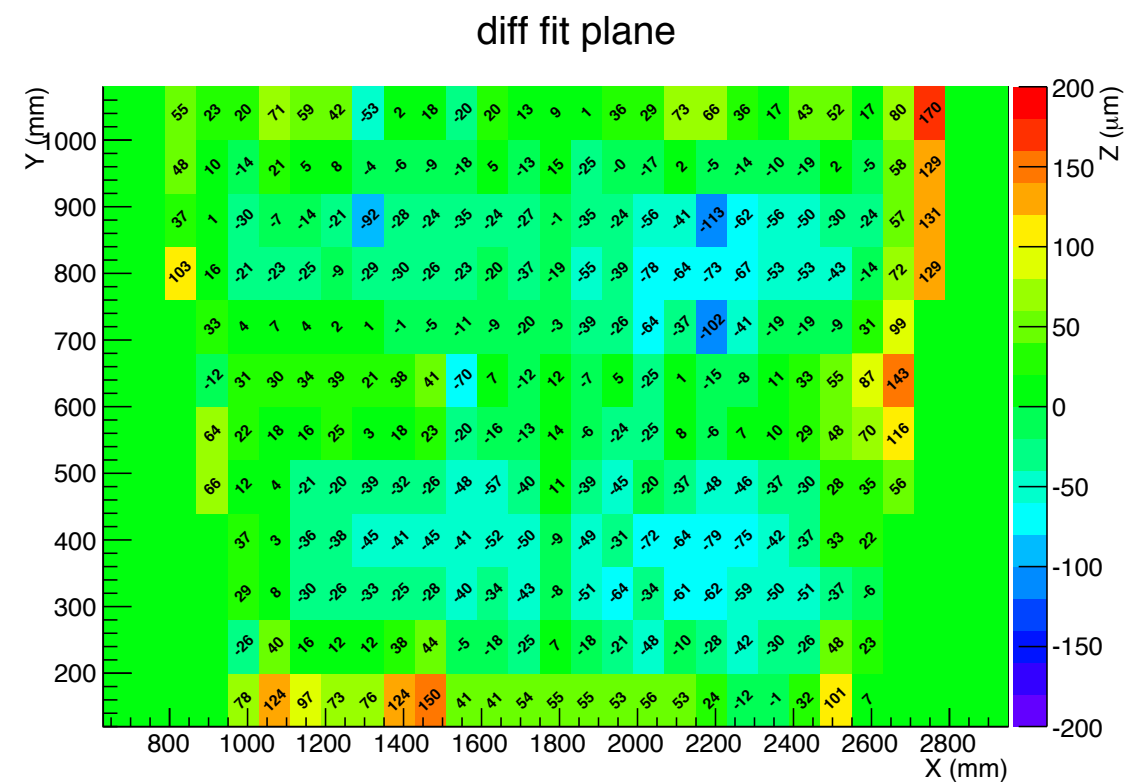
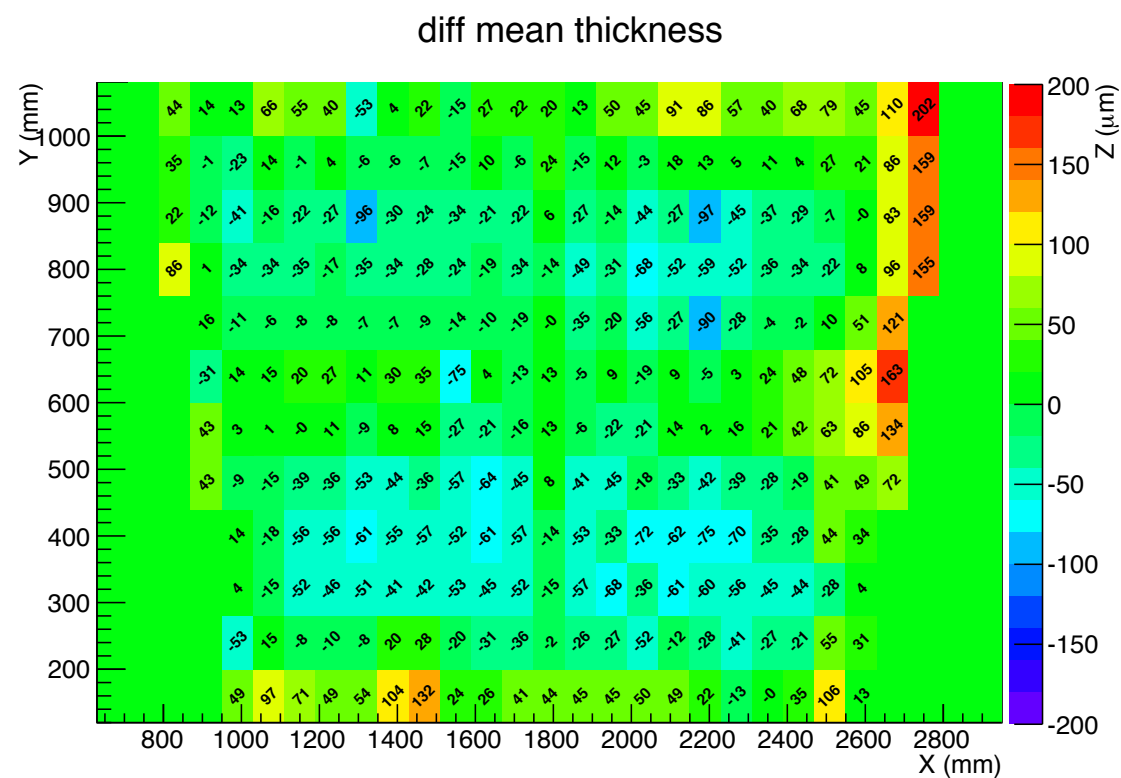
PCB and arnite pillars



- ◆ Requirement to the company: 10.40 ± 0.01 mm
- ◆ As RMS ok
- ◆ As tolerance, good range 10.390-10.410 mm
- ◆ Good 342/400 = 85.5%
- ◆ we have selected pillars from the bulk of the distribution

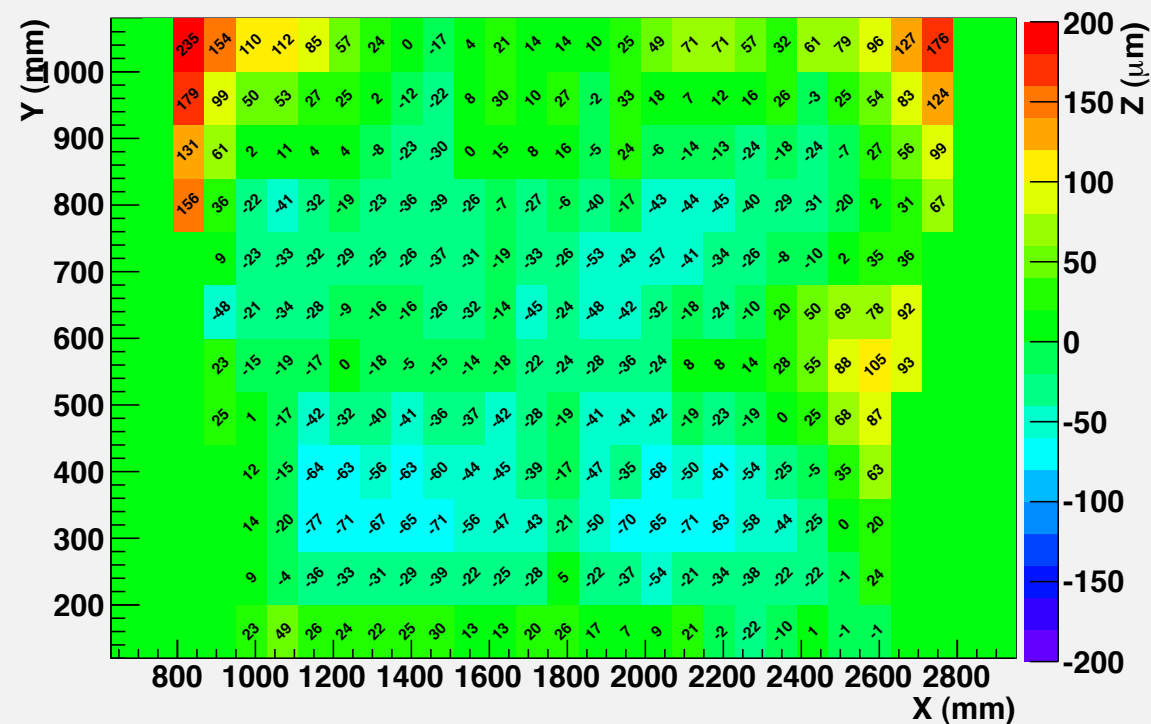


panel1 - pcb 1

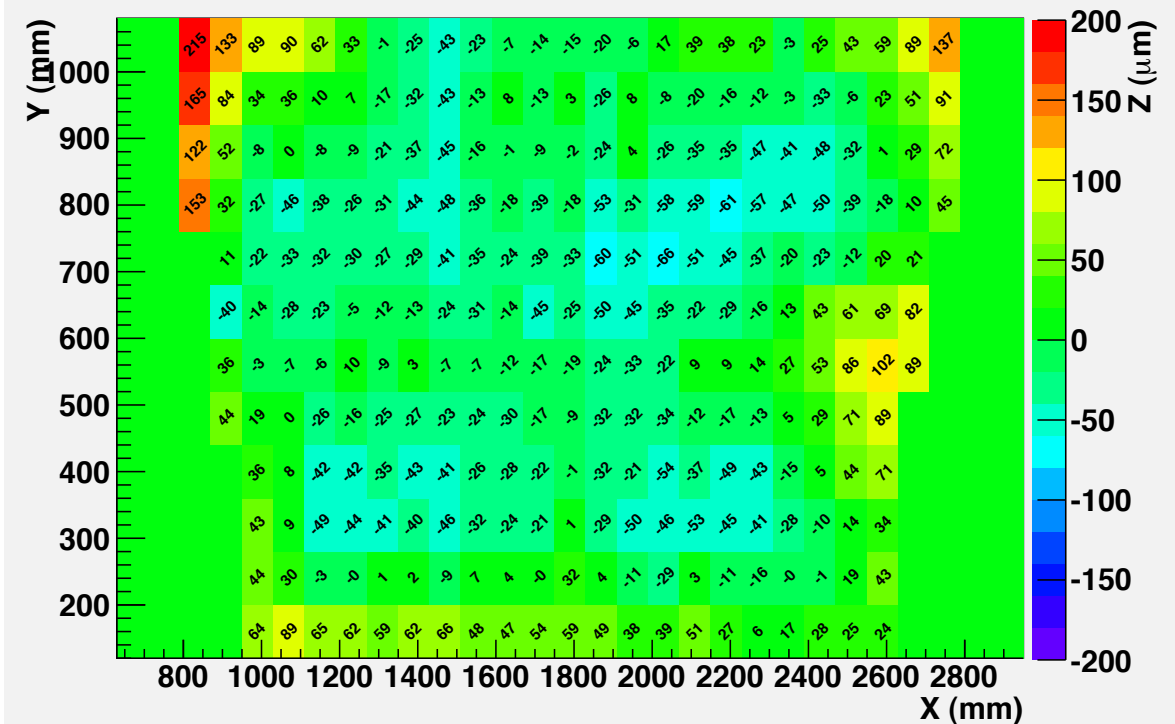


panel1- pcb 1 (marmo)

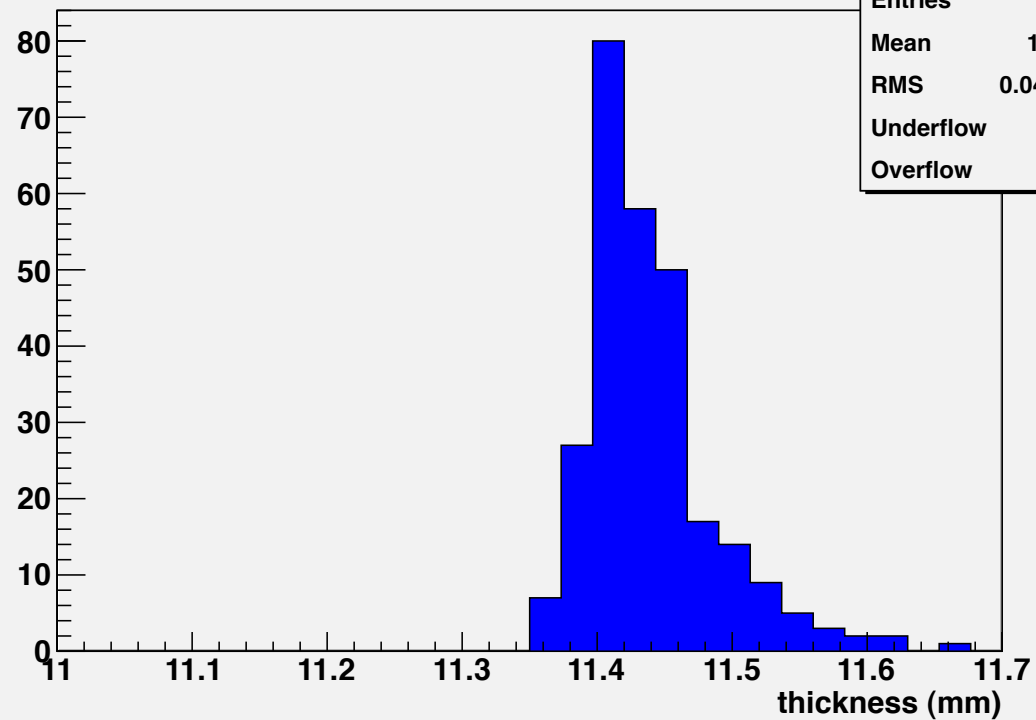
diff mean thickness



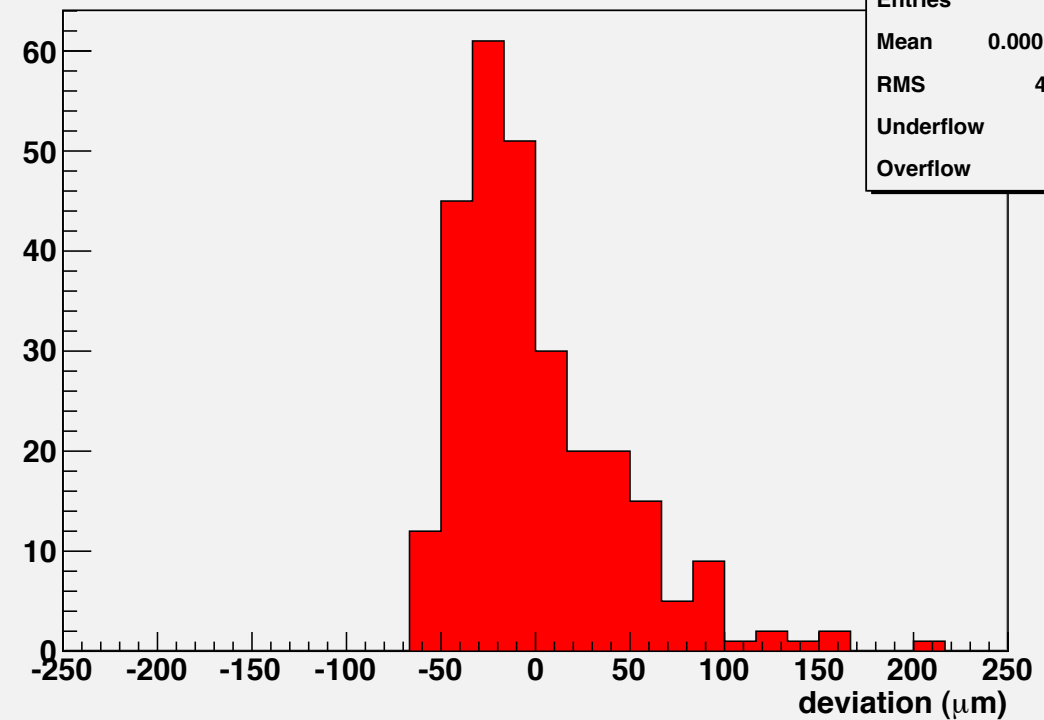
diff fit plane



thickness raw

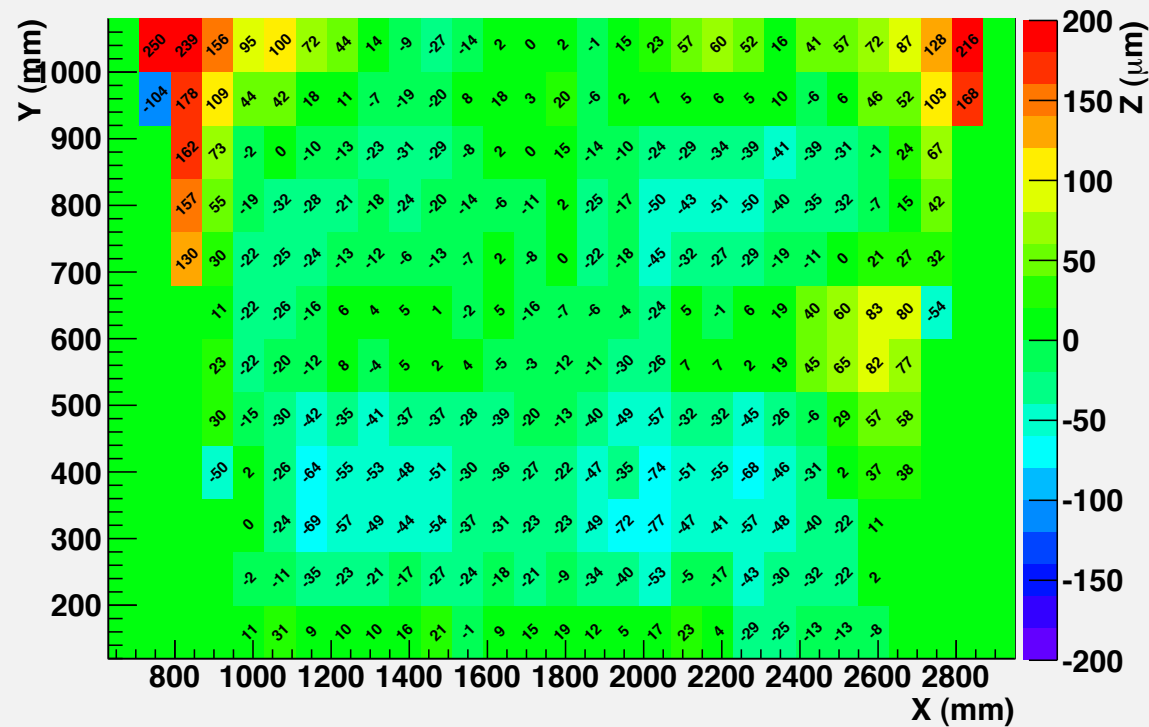


dev fit plane

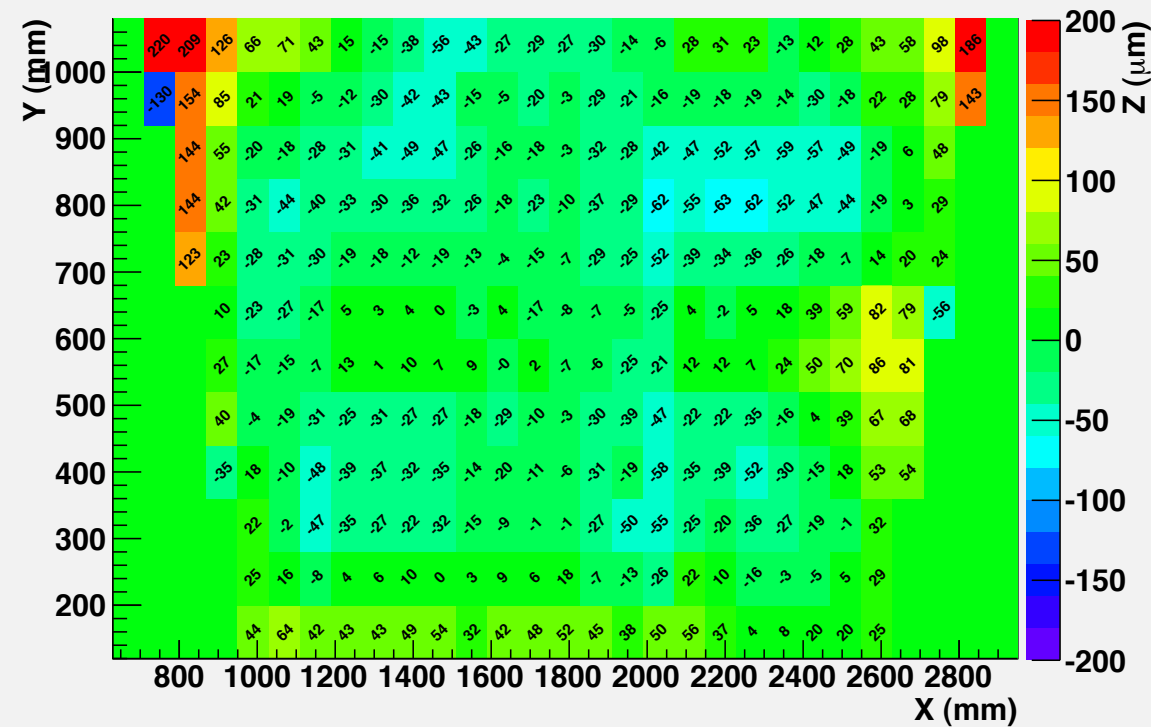


Panel 1 - pcb 1 (Pisa)

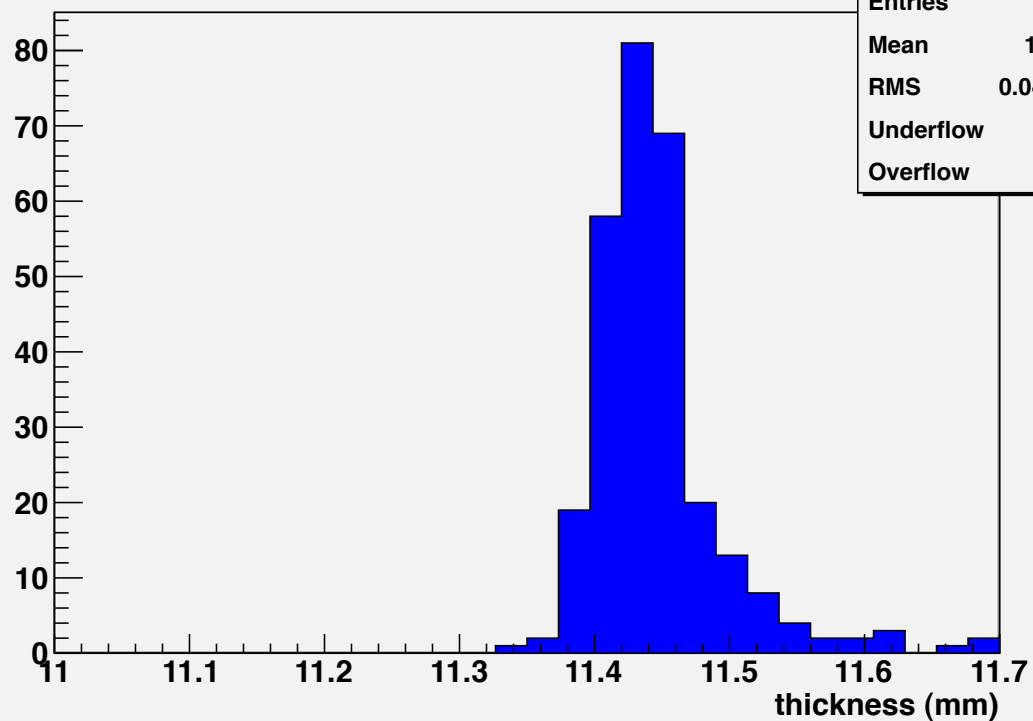
diff mean thickness



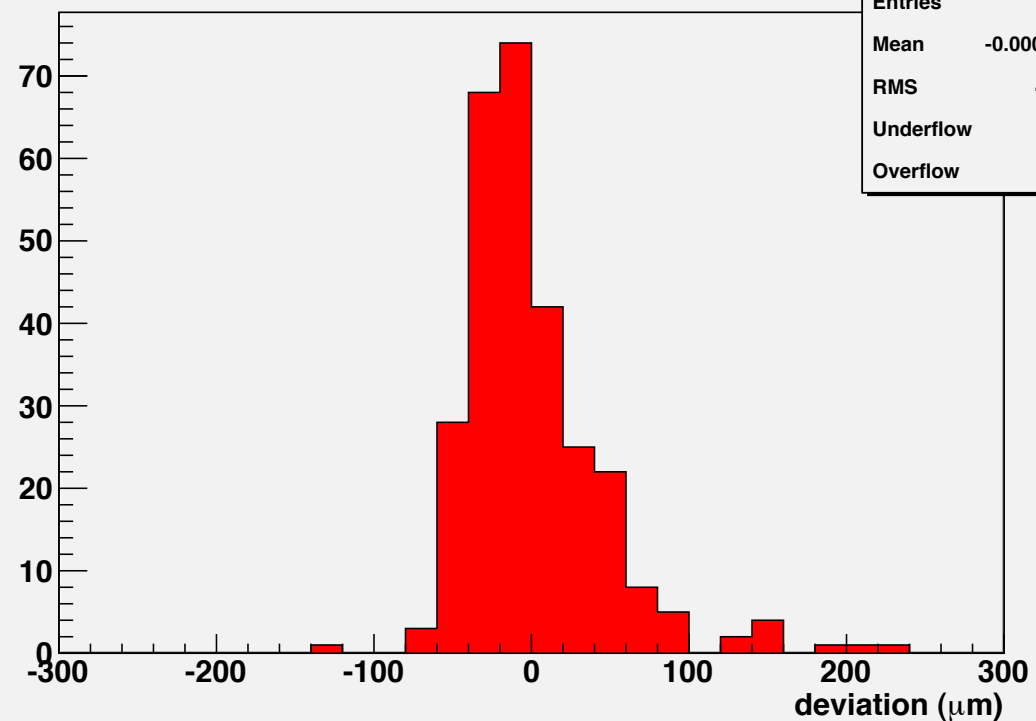
diff fit plane



thickness raw

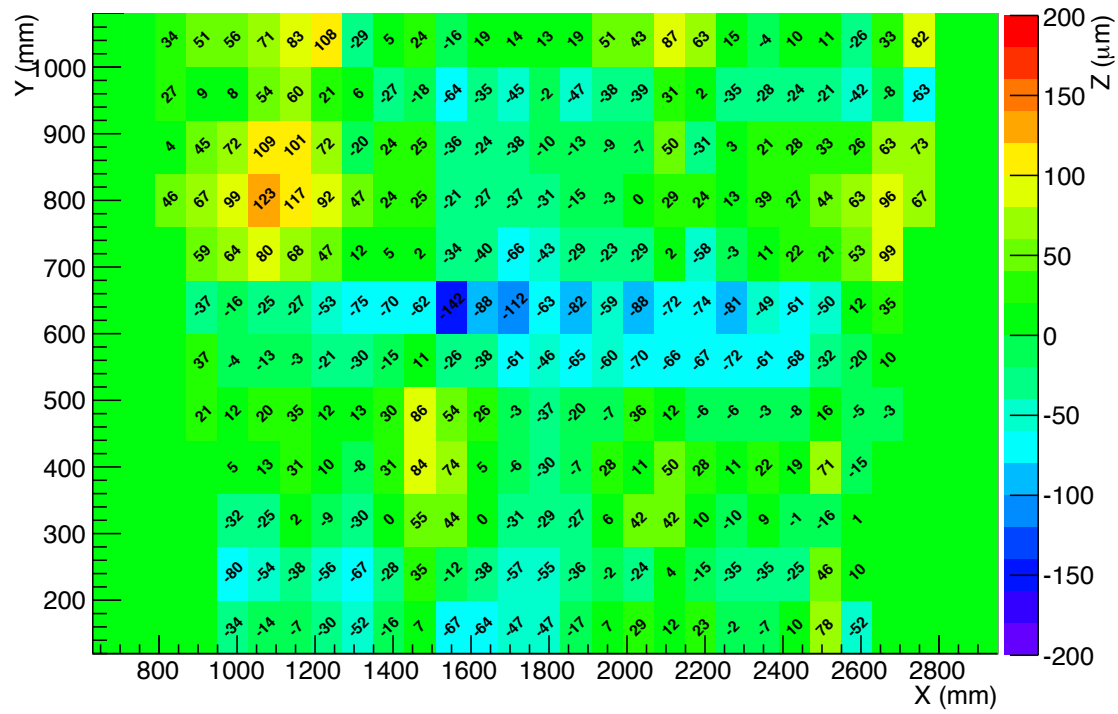


dev fit plane

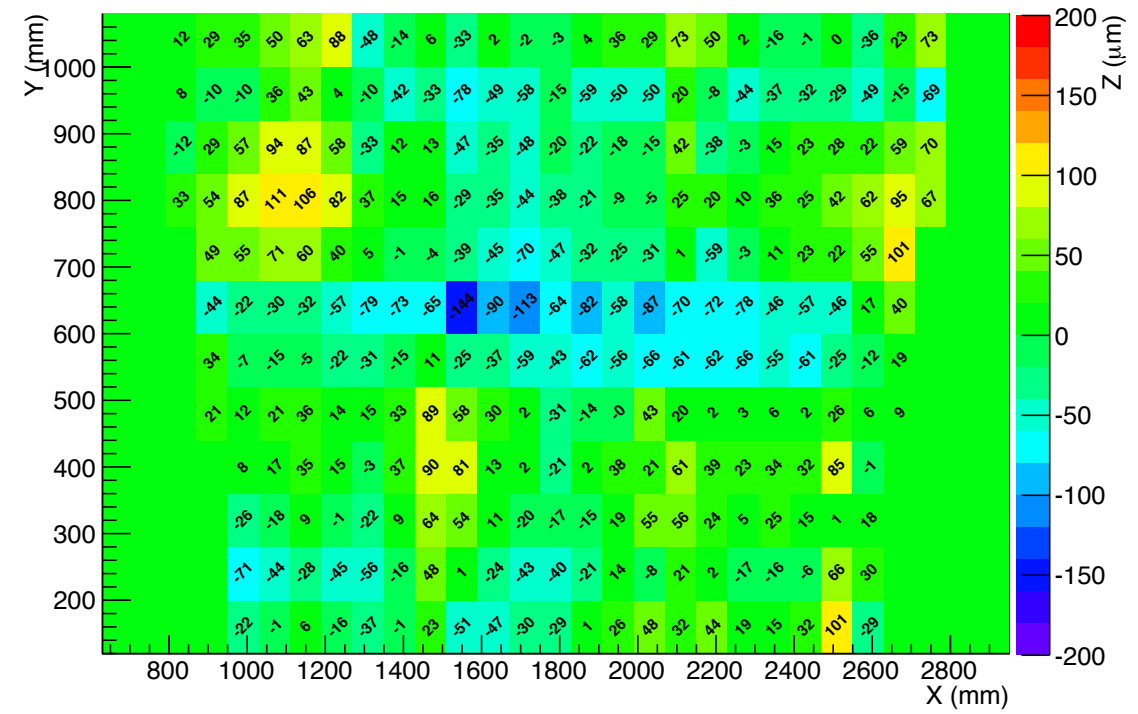


panel 1 - pcb 2

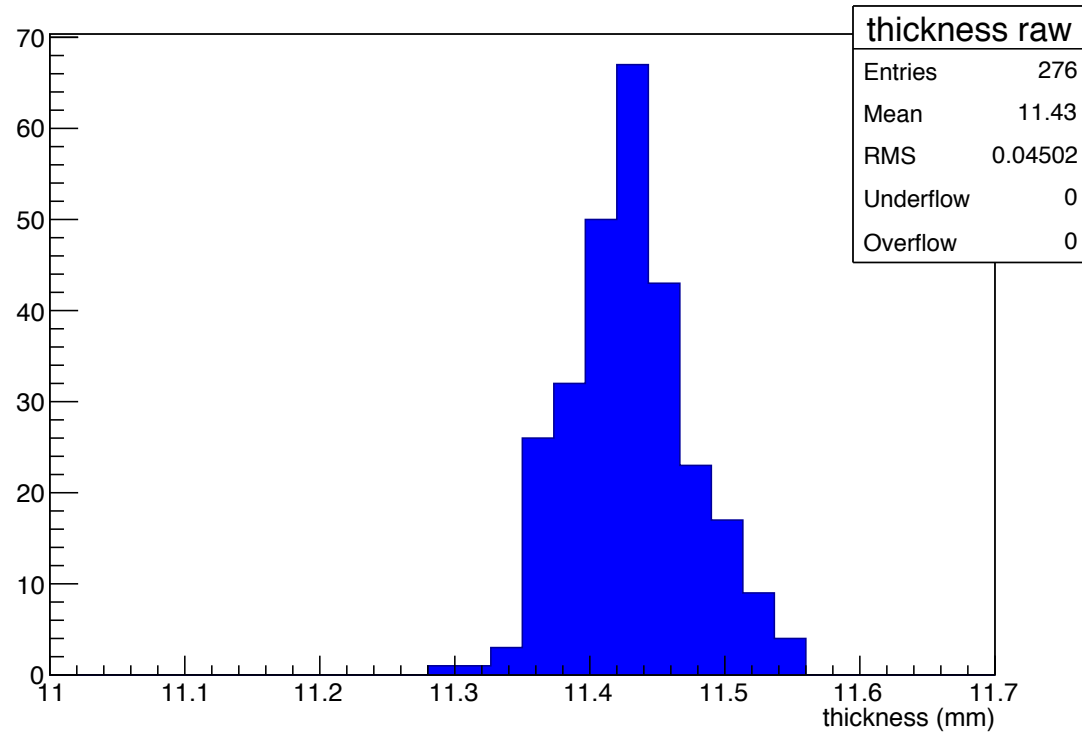
diff mean thickness



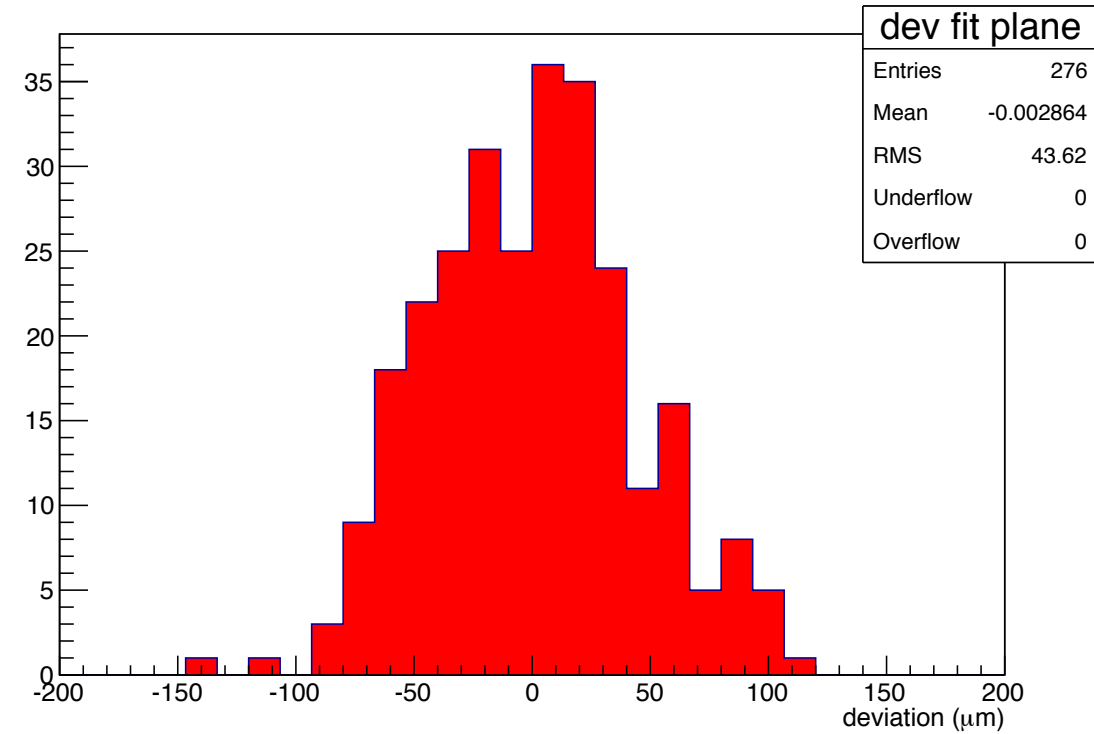
diff fit plane



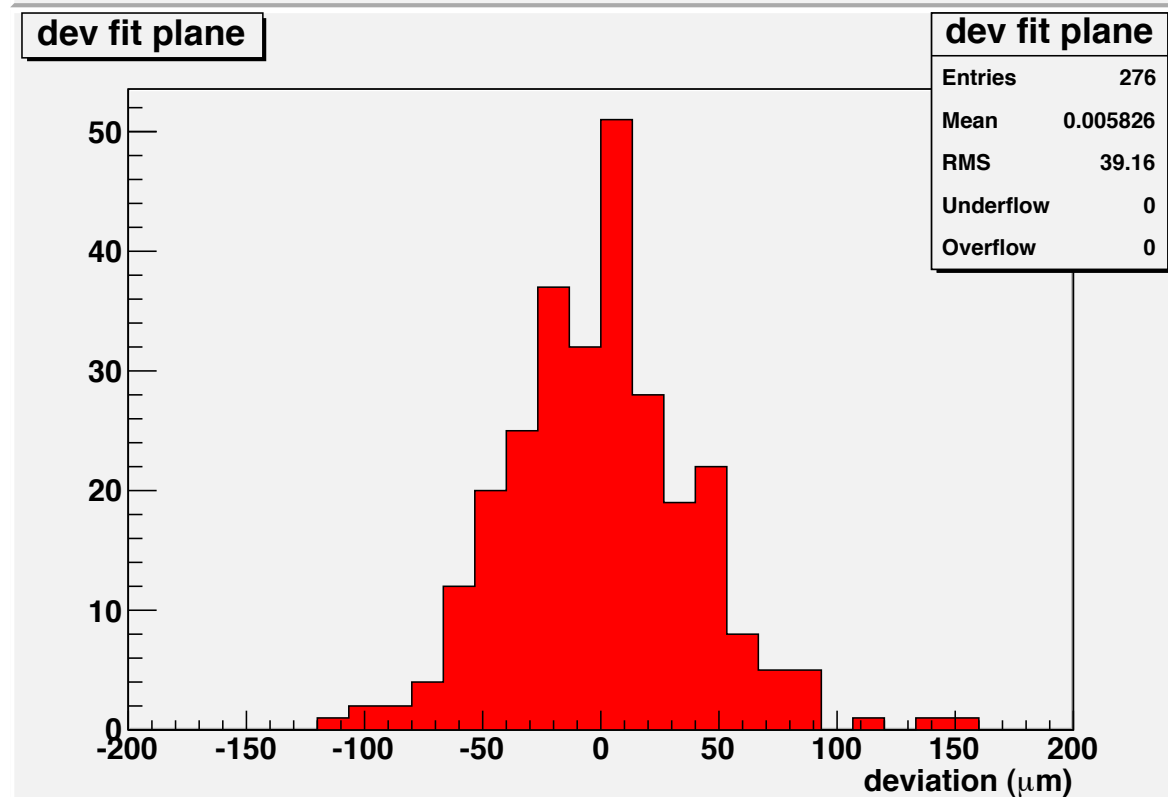
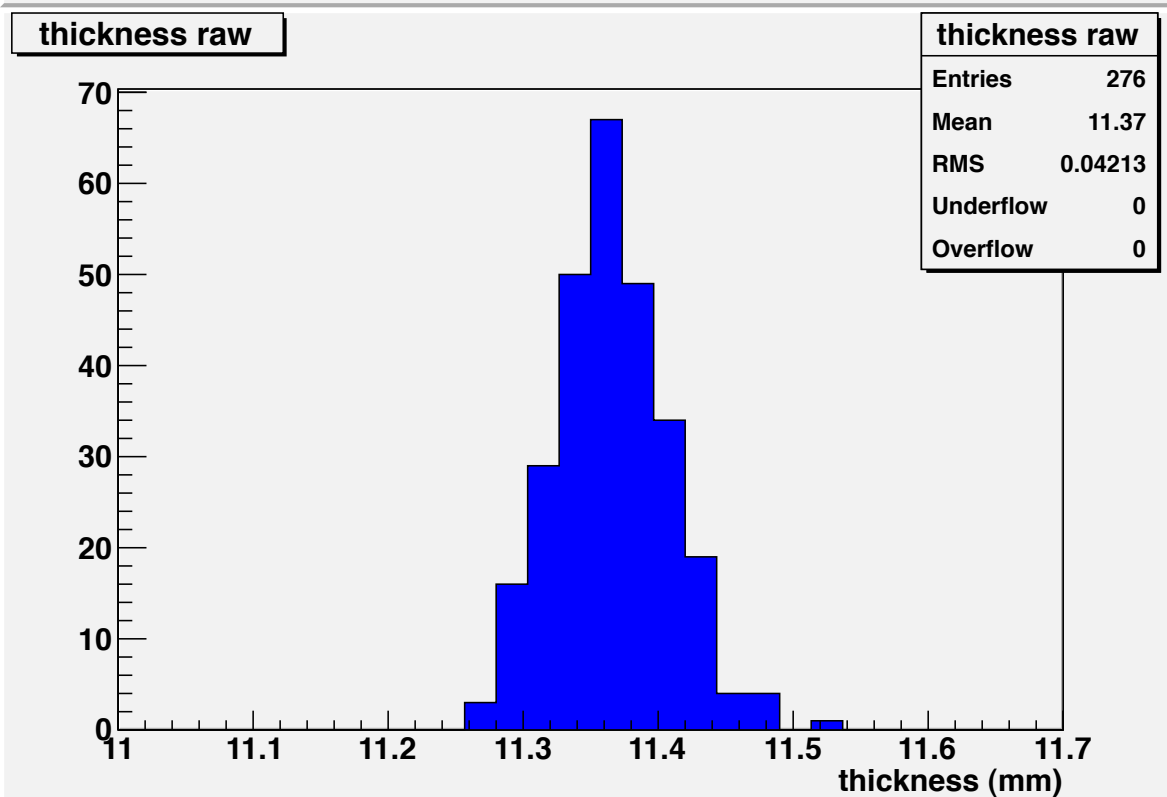
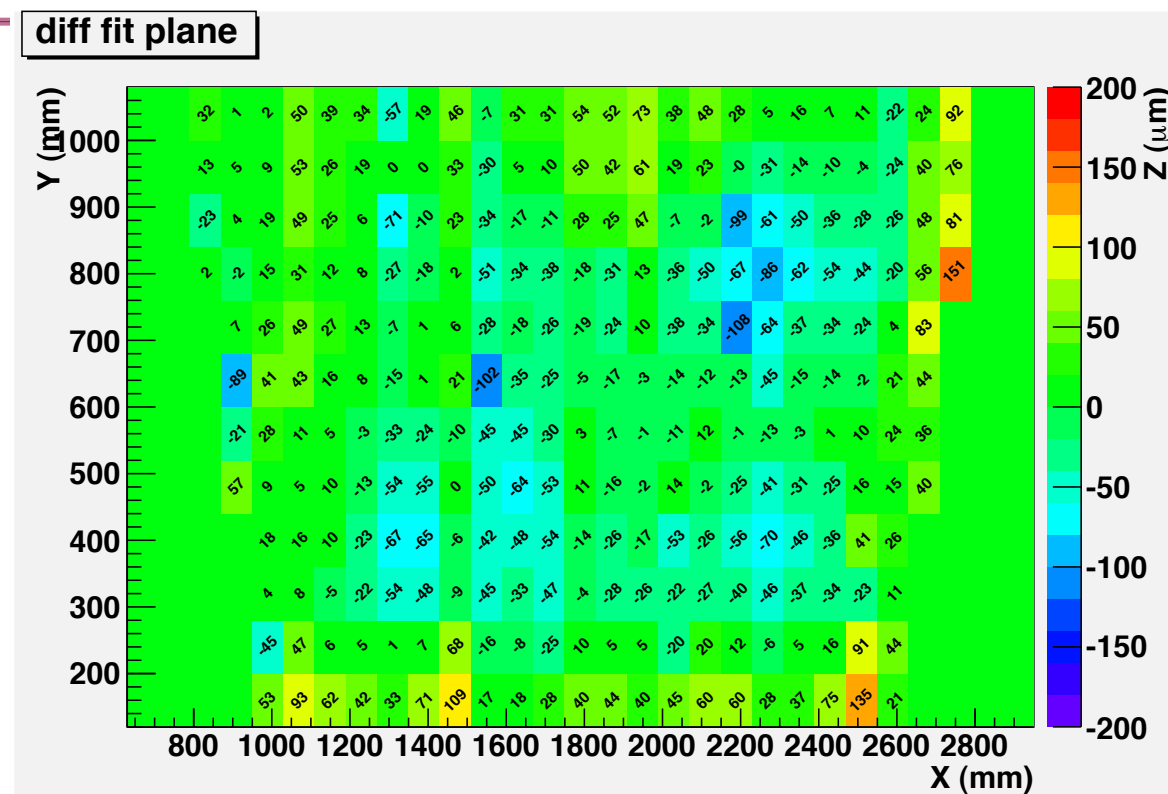
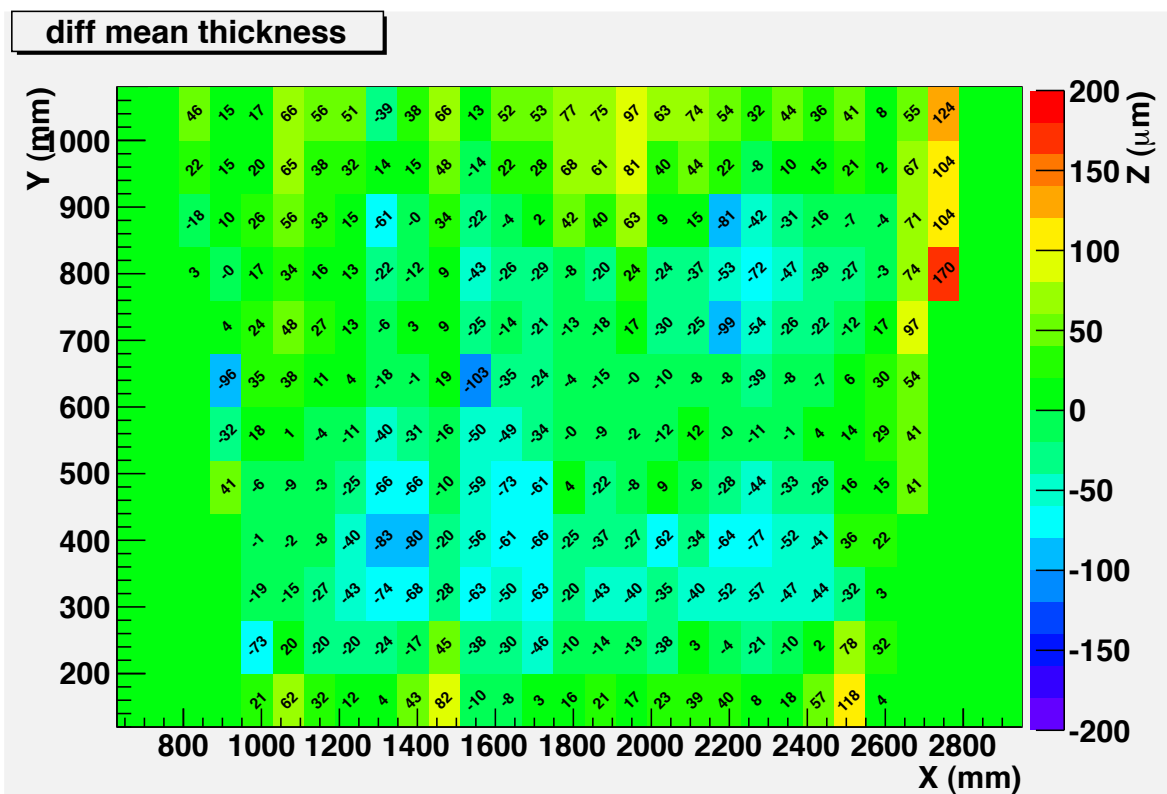
thickness raw



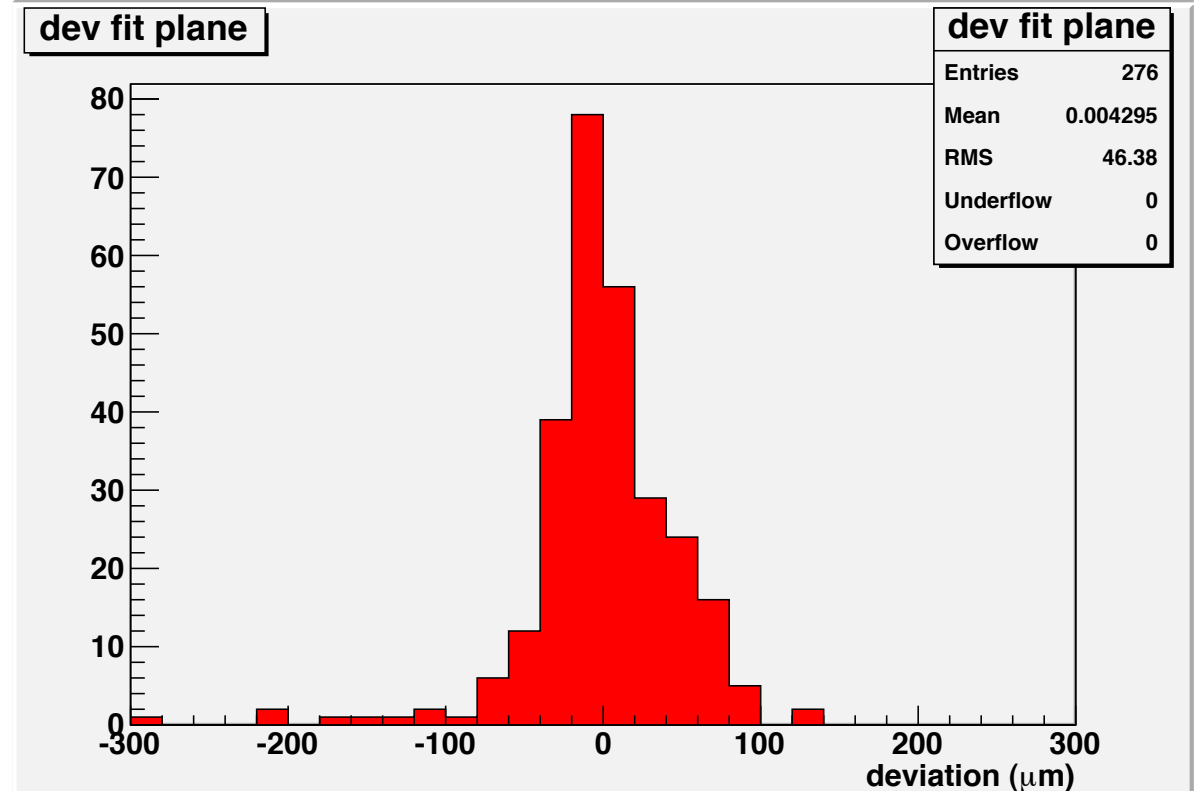
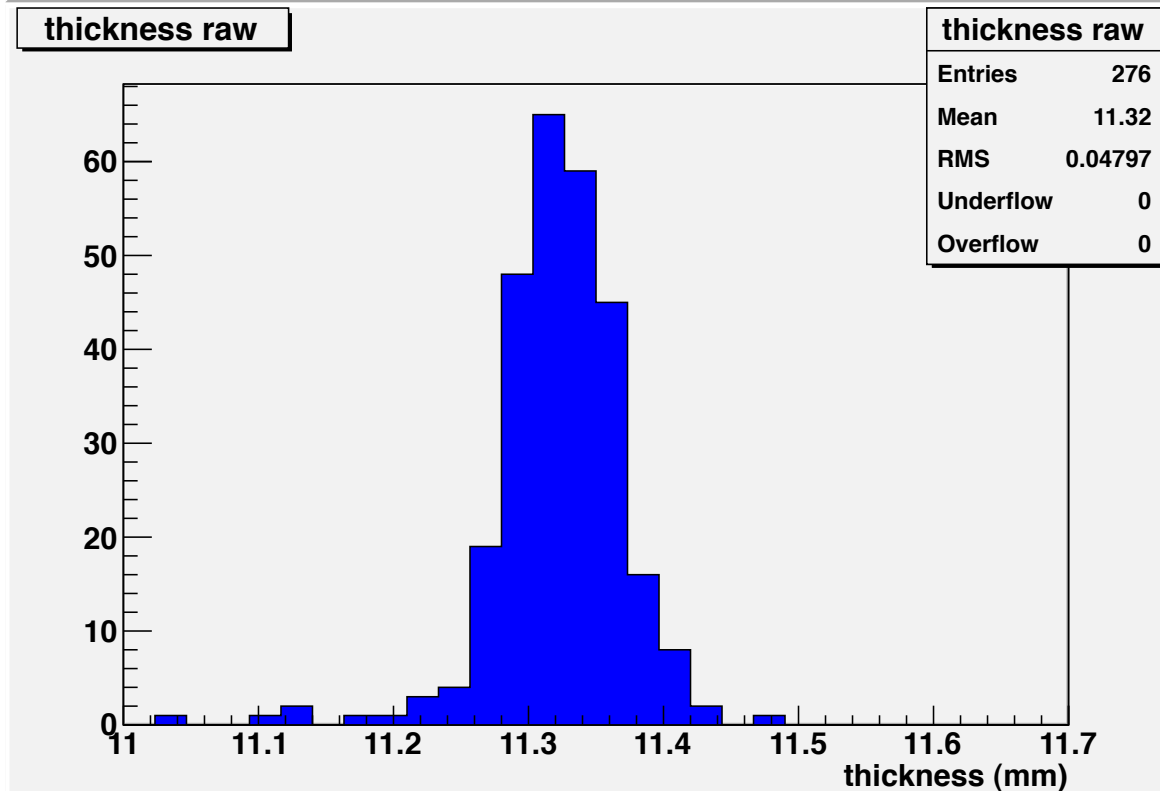
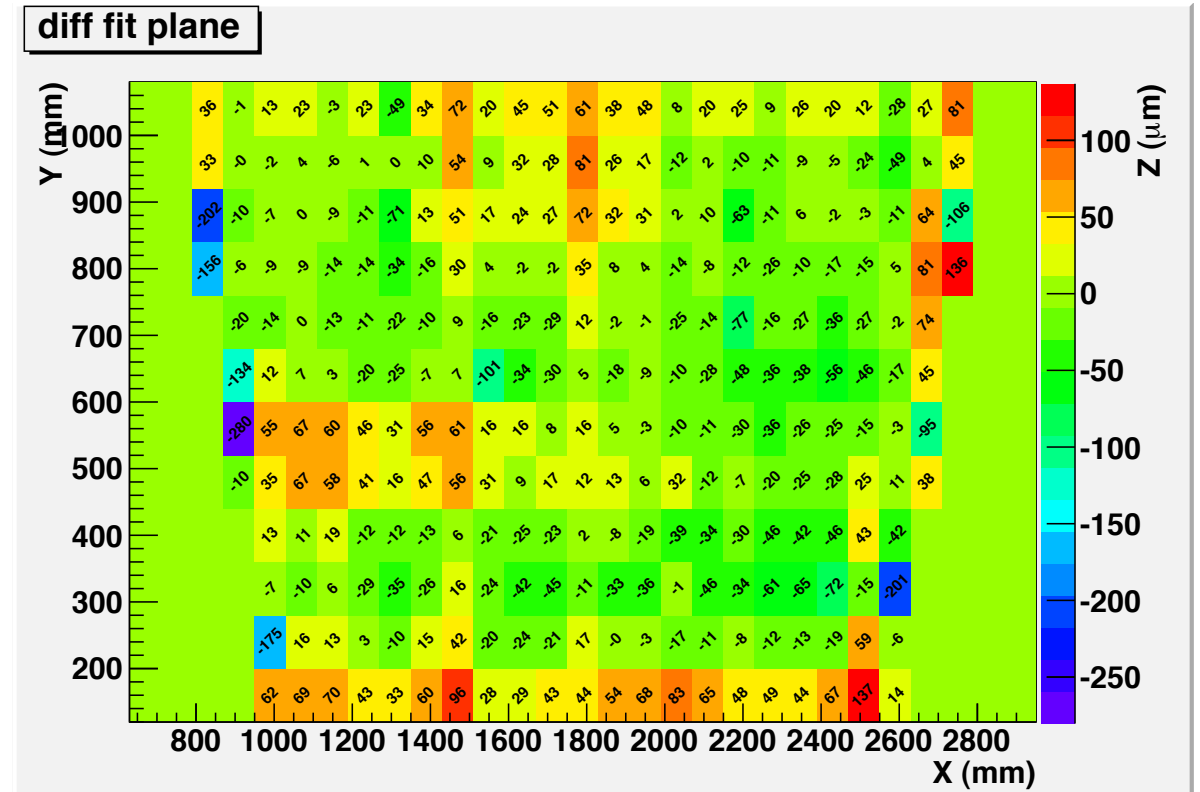
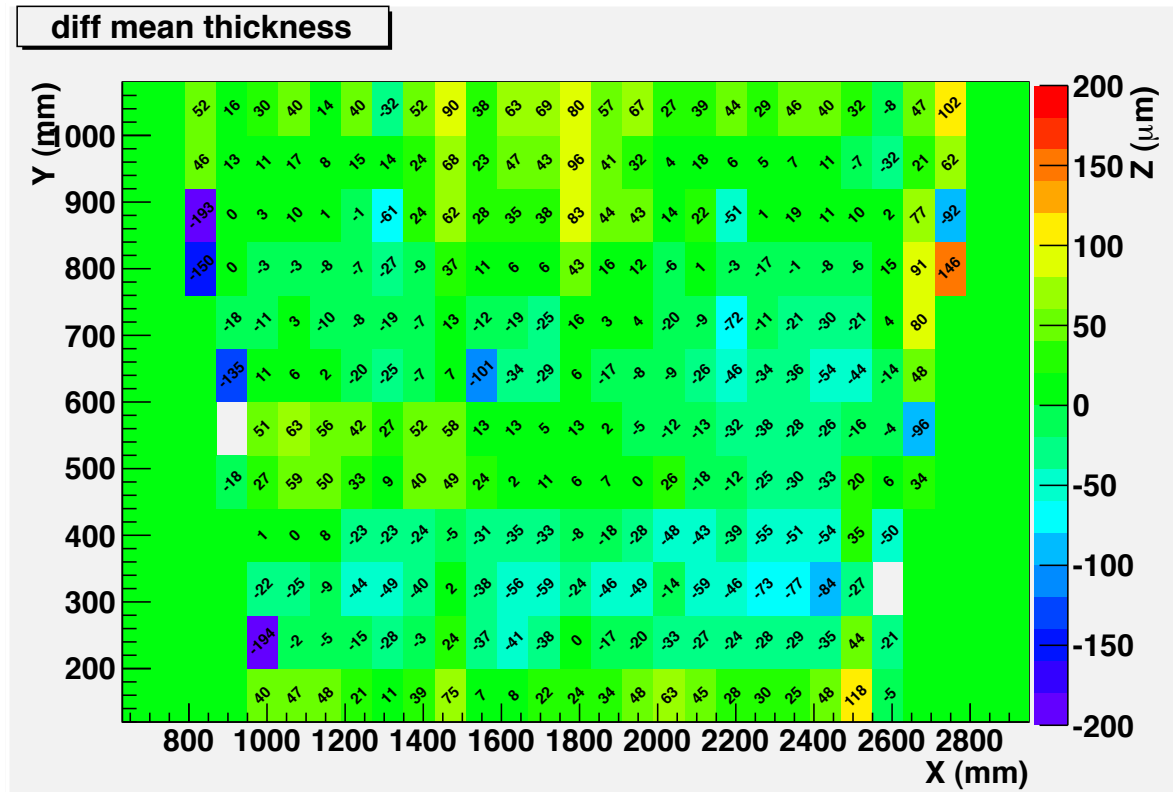
dev fit plane



panel 2 - pcb 3

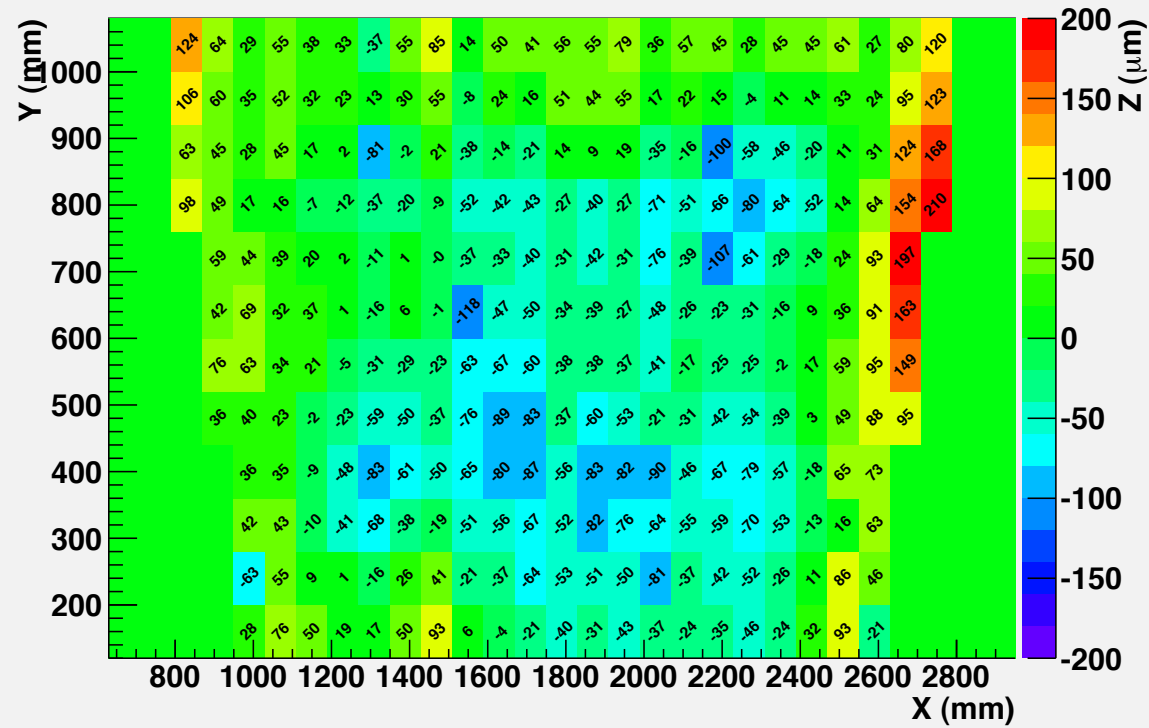


panel 2 - pcb4

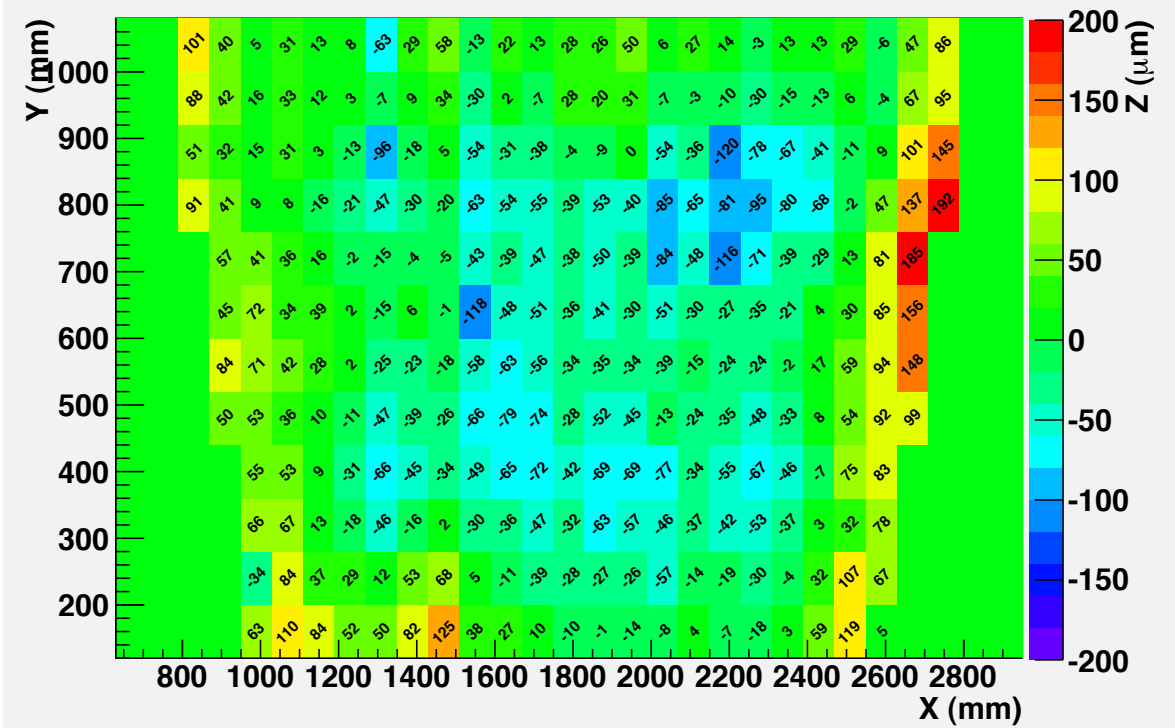


panel 3 - pcb5

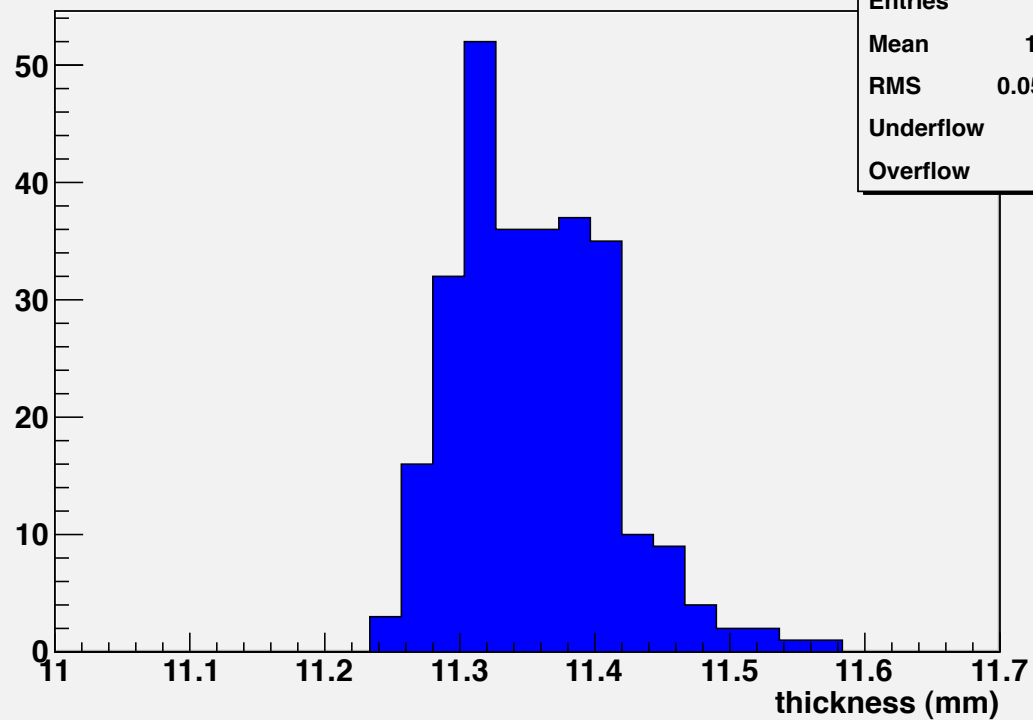
diff mean thickness



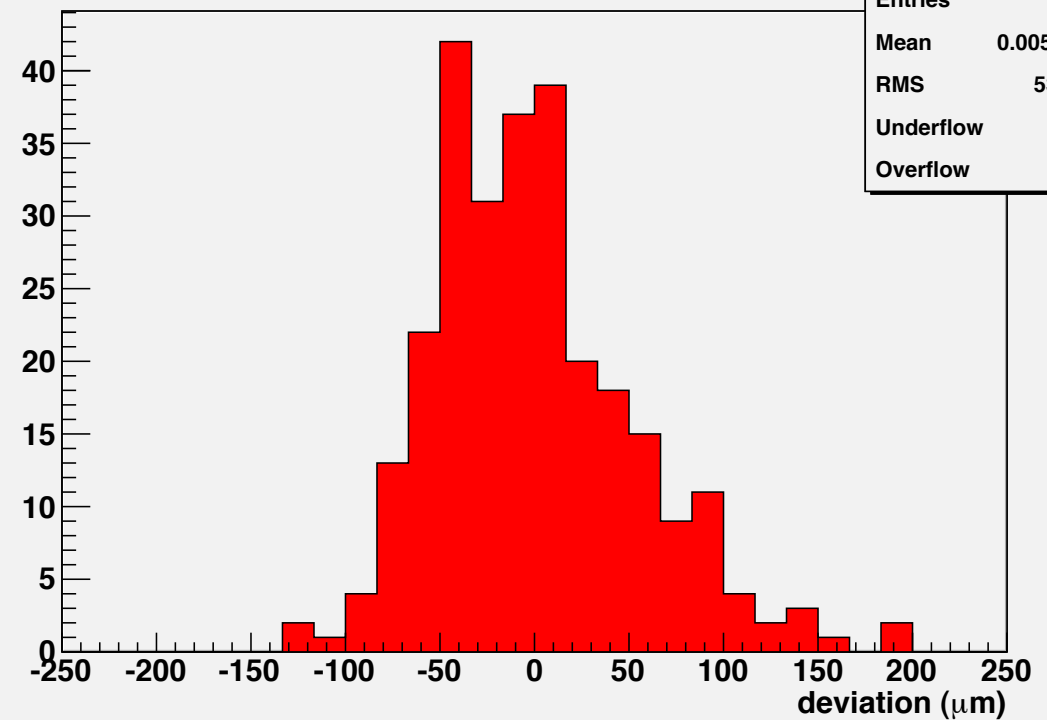
diff fit plane



thickness raw

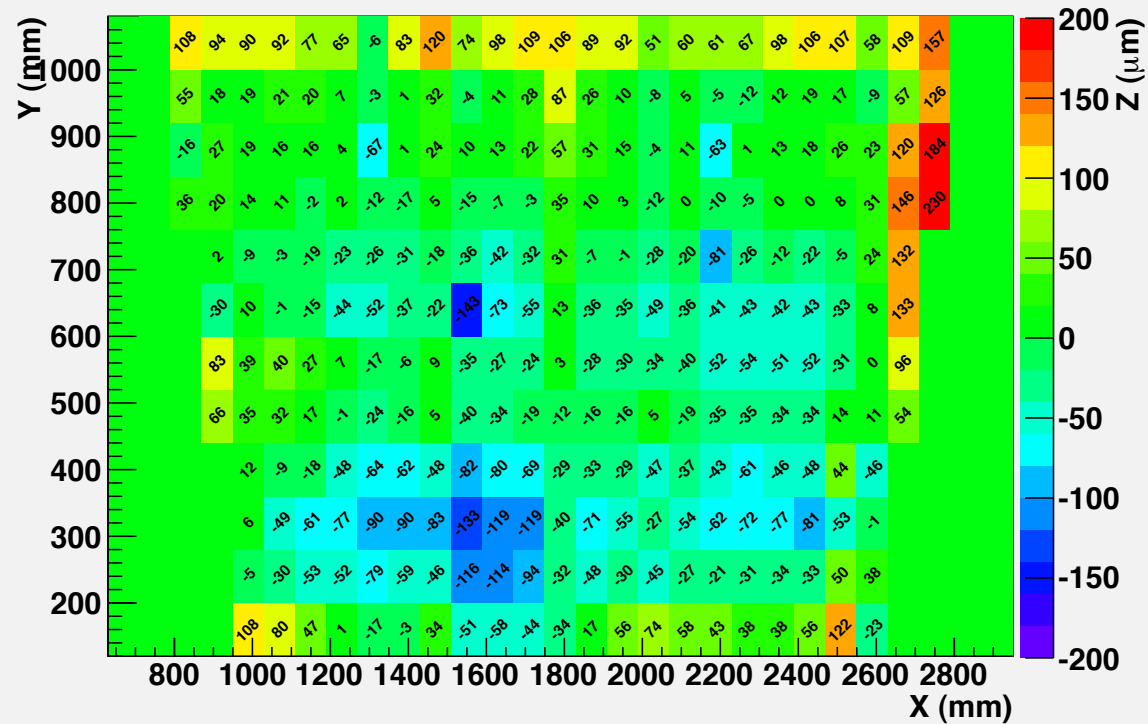


dev fit plane

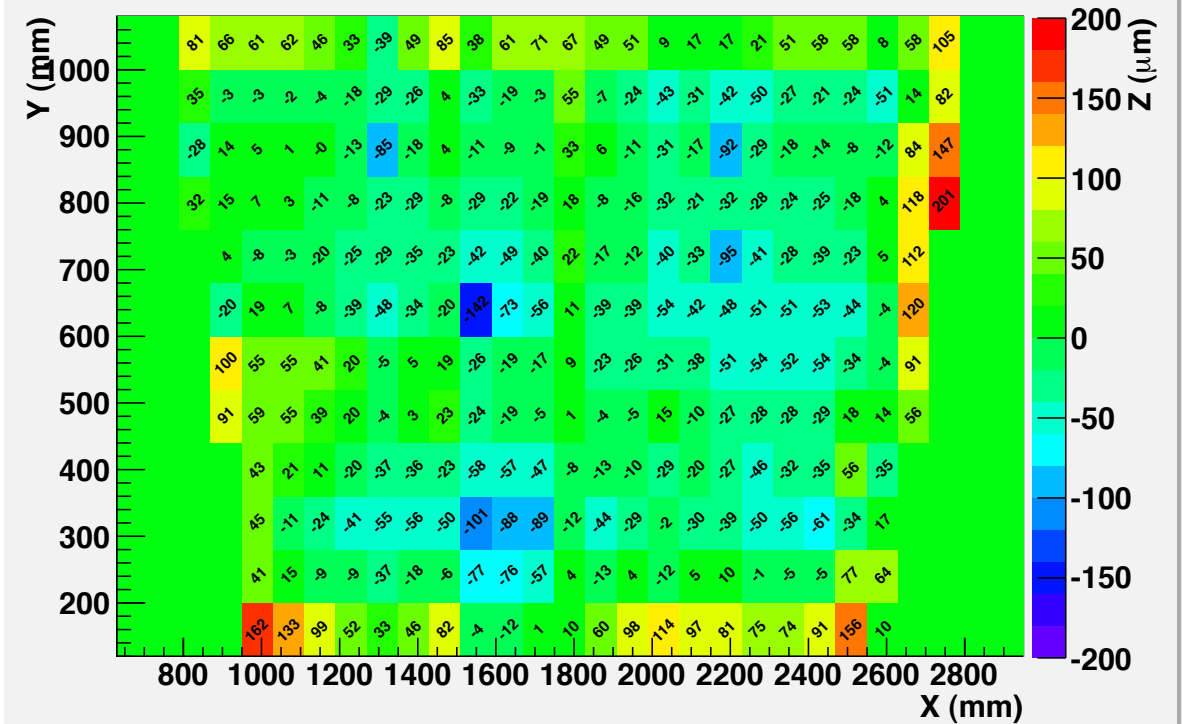


panel 3 - pcb 6

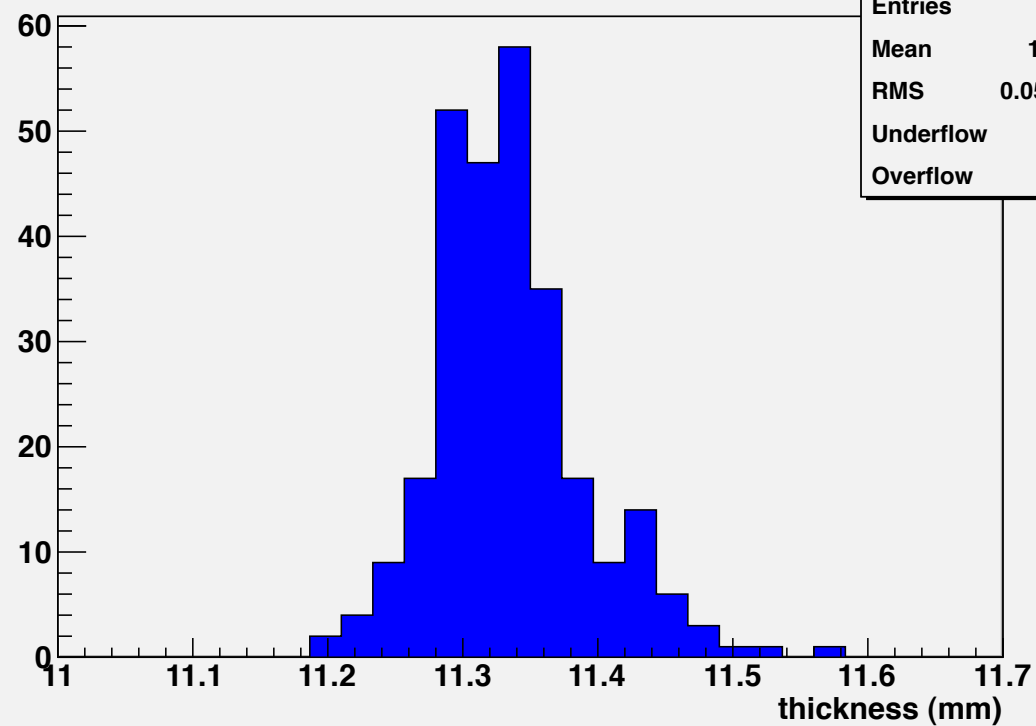
diff mean thickness



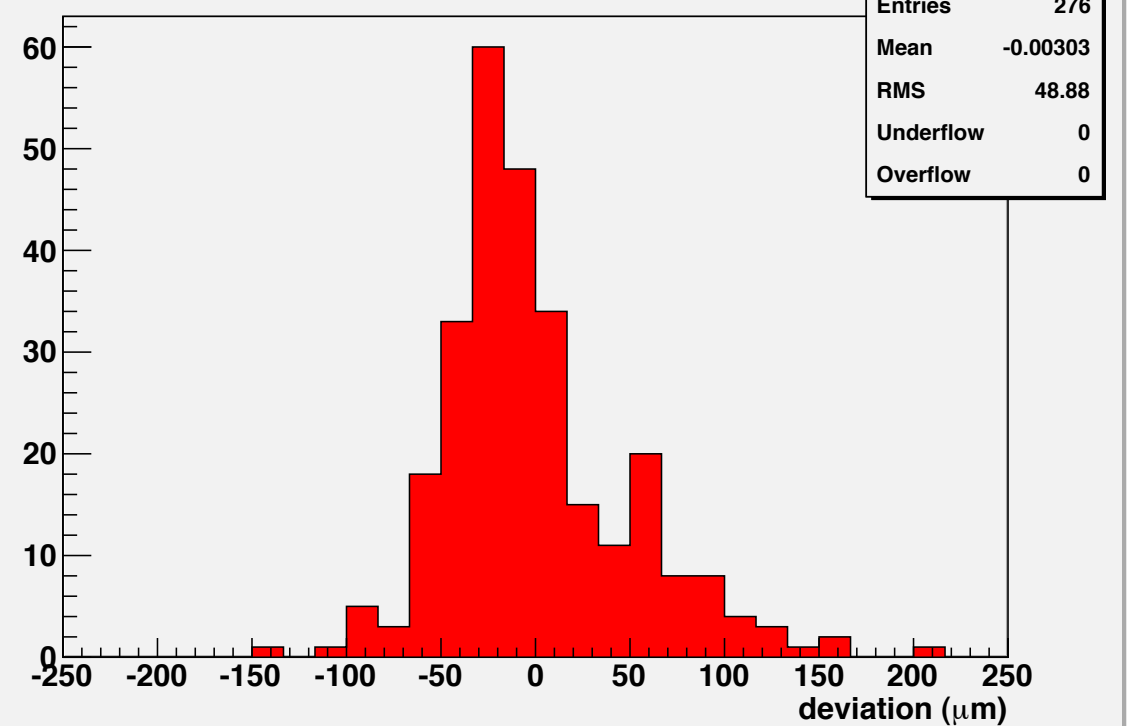
diff fit plane



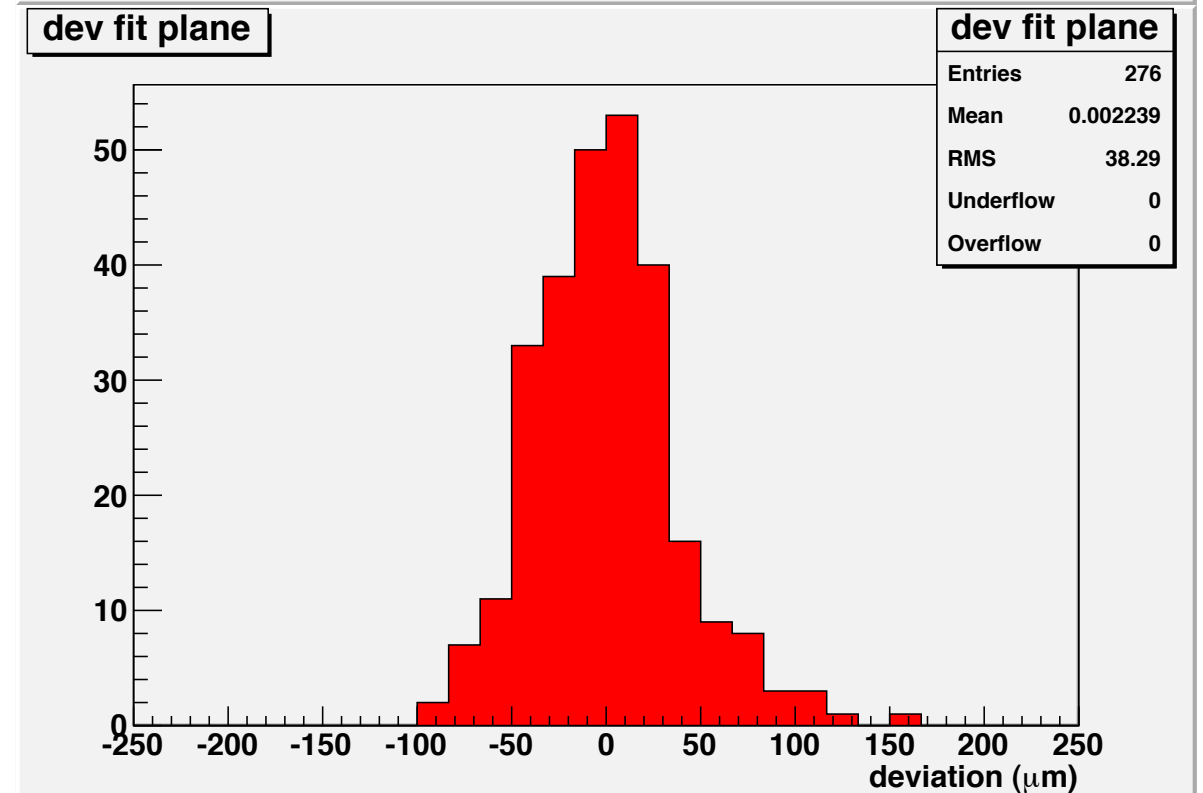
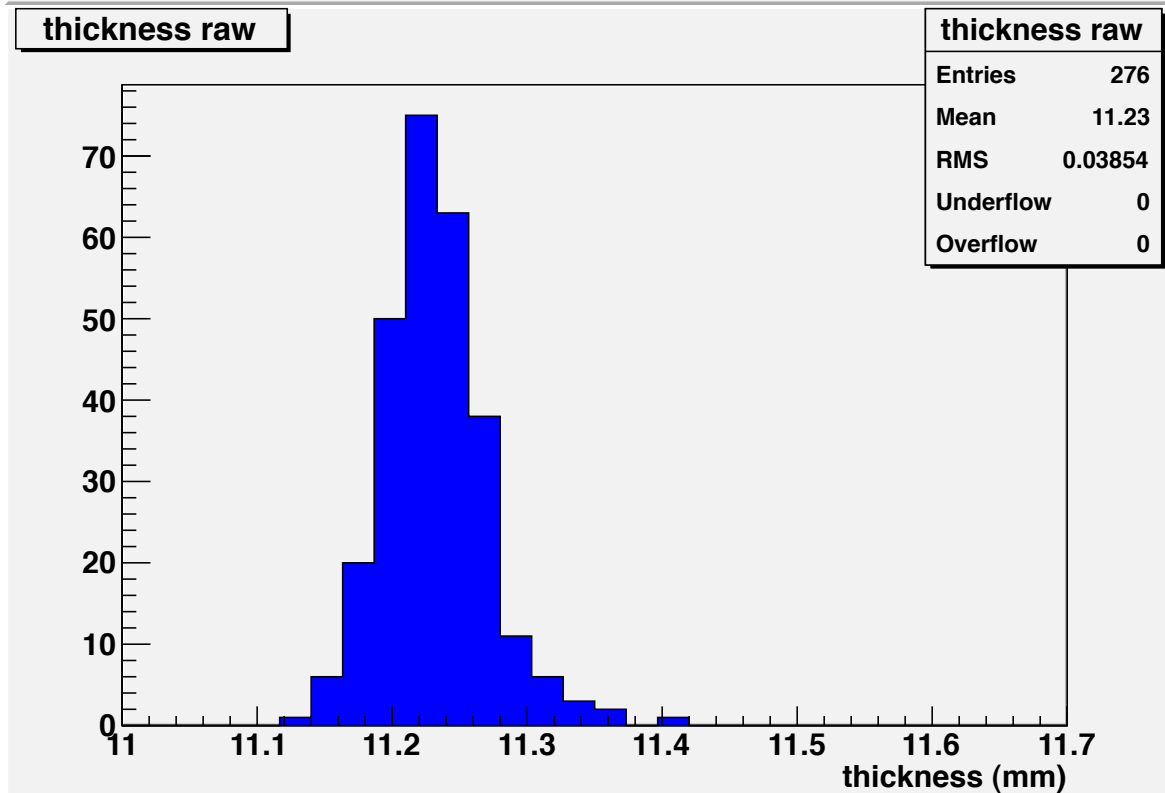
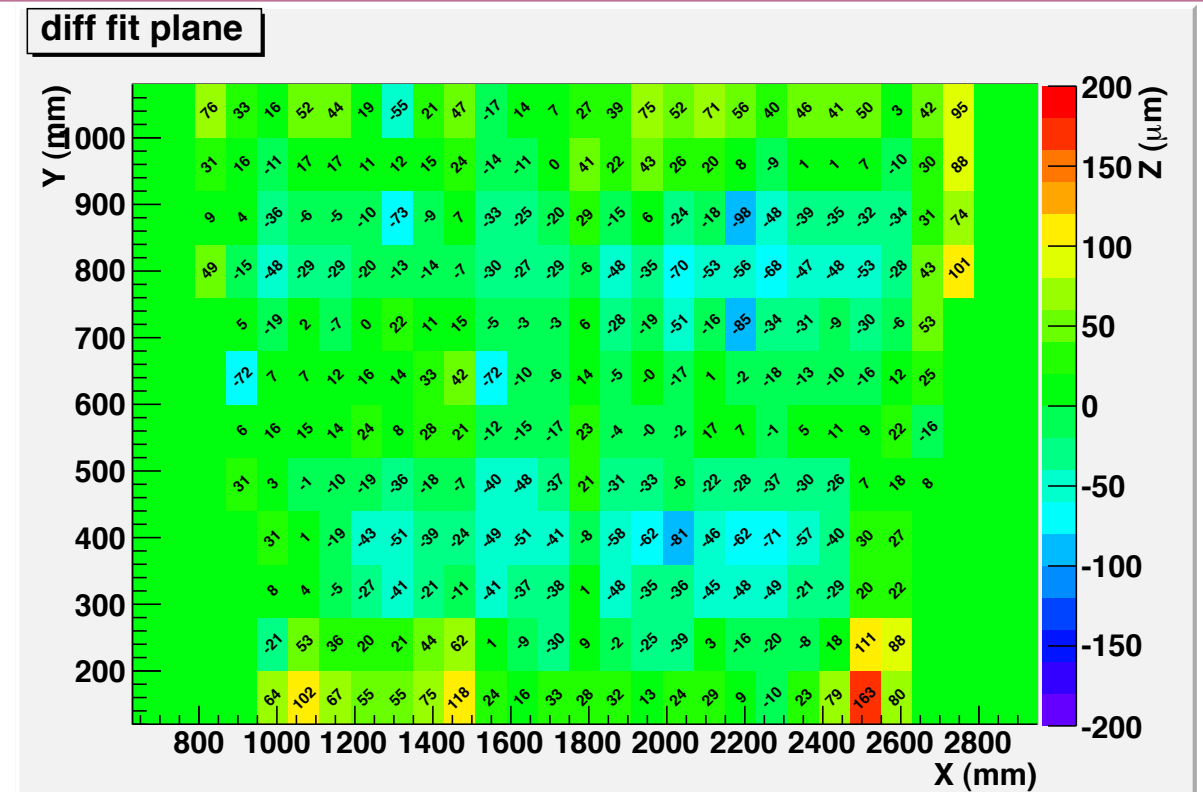
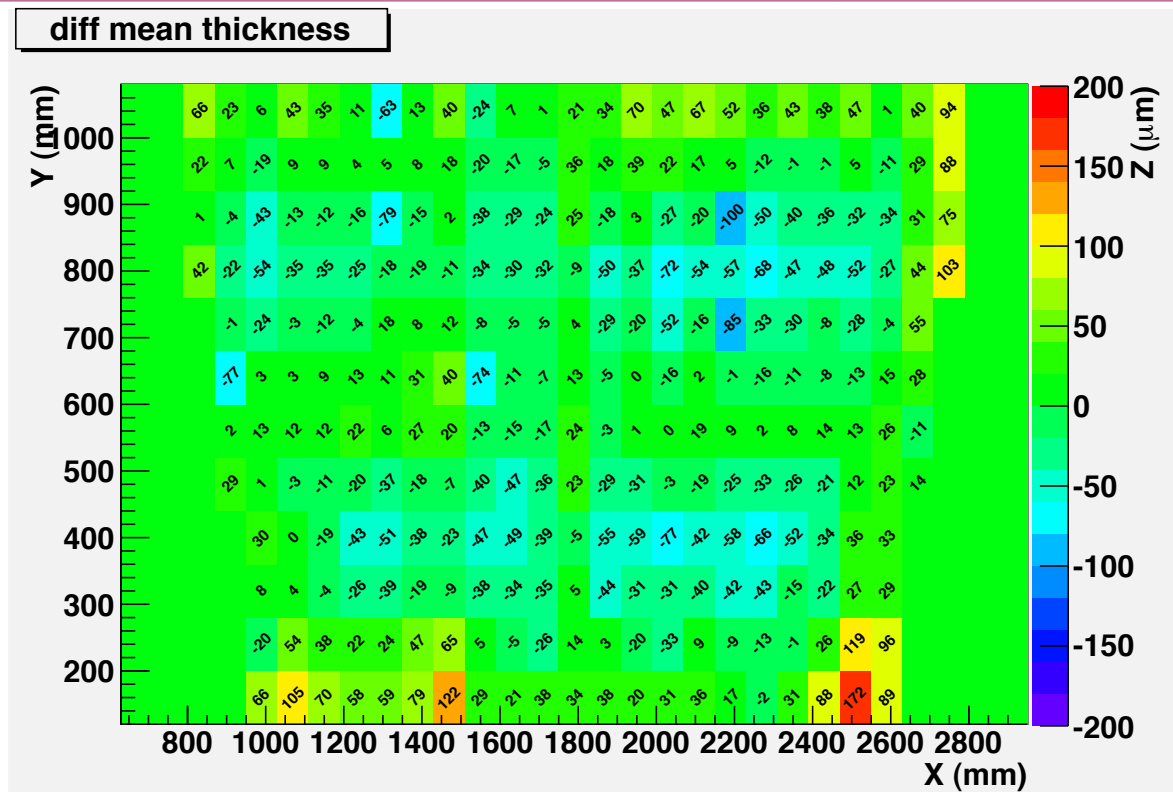
thickness raw



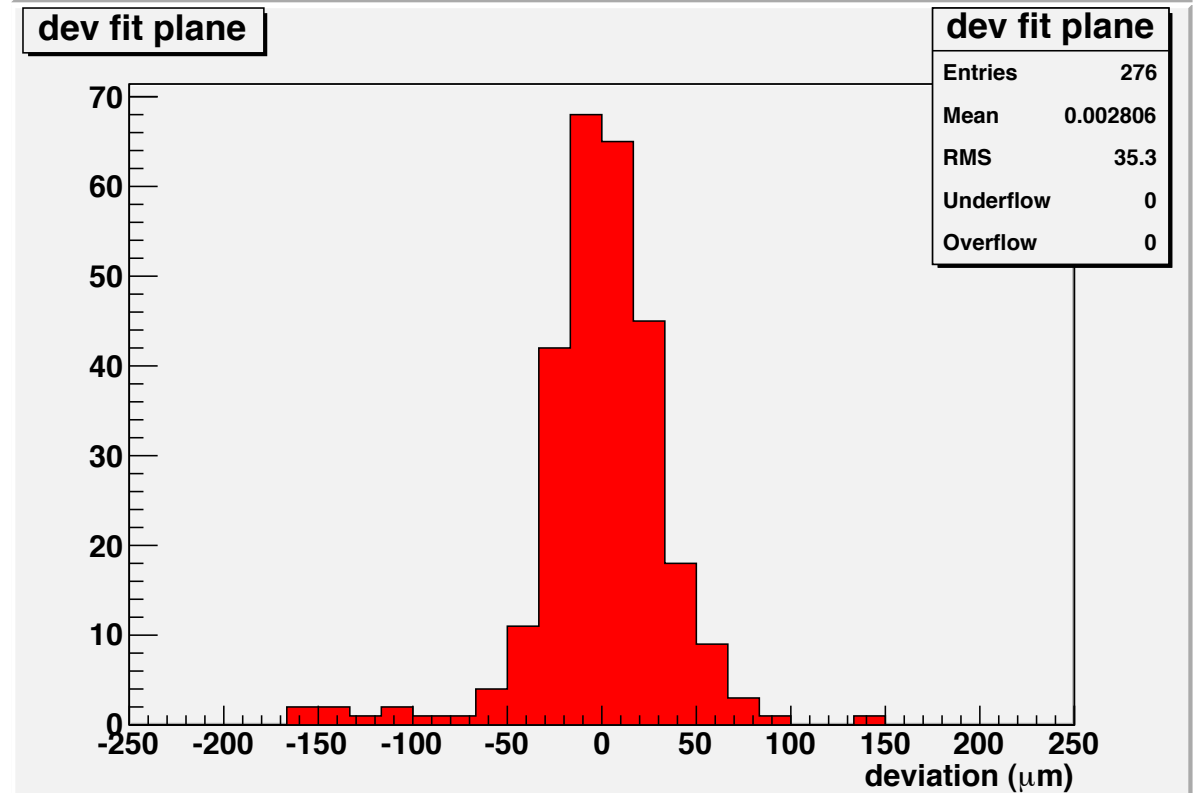
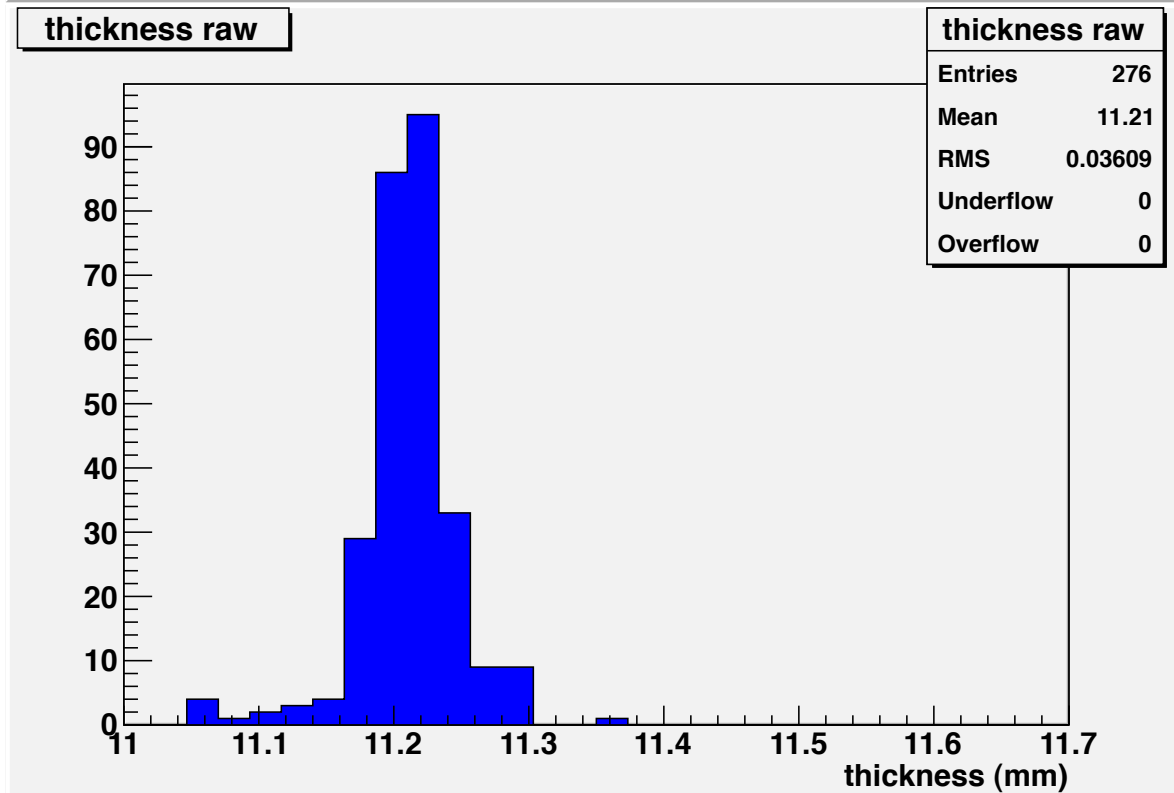
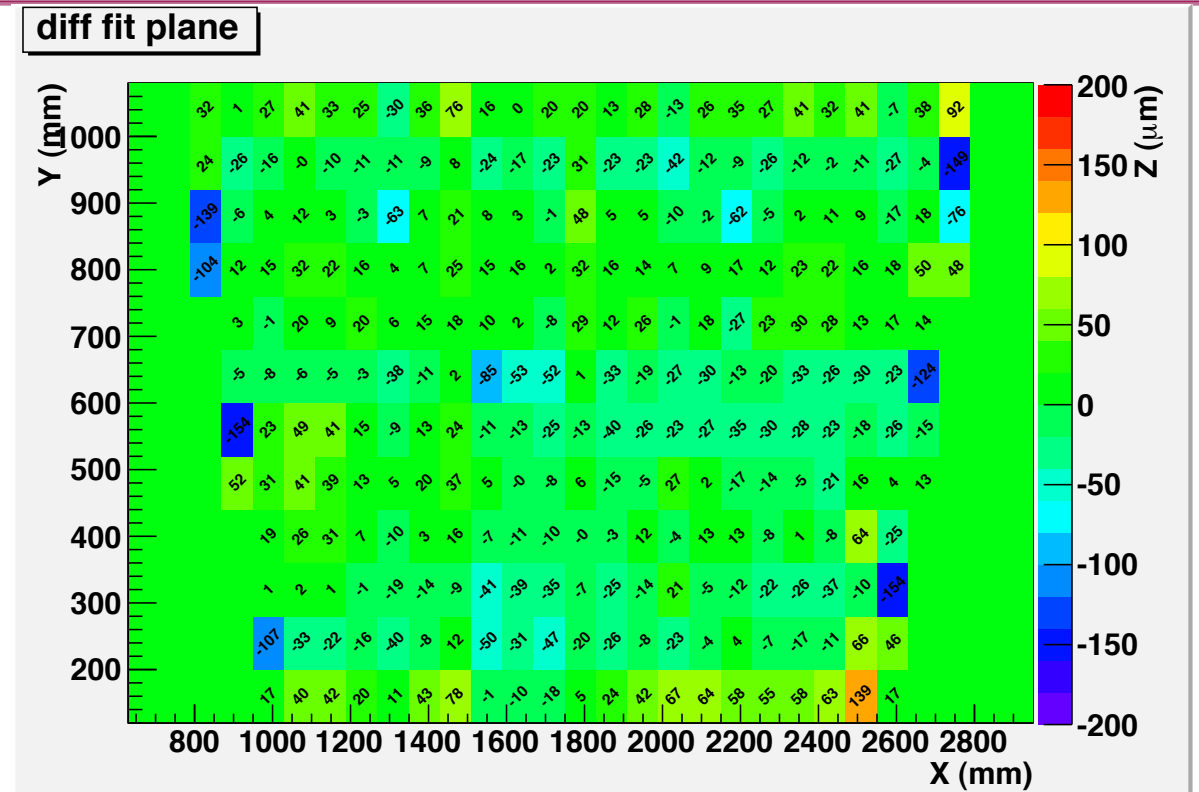
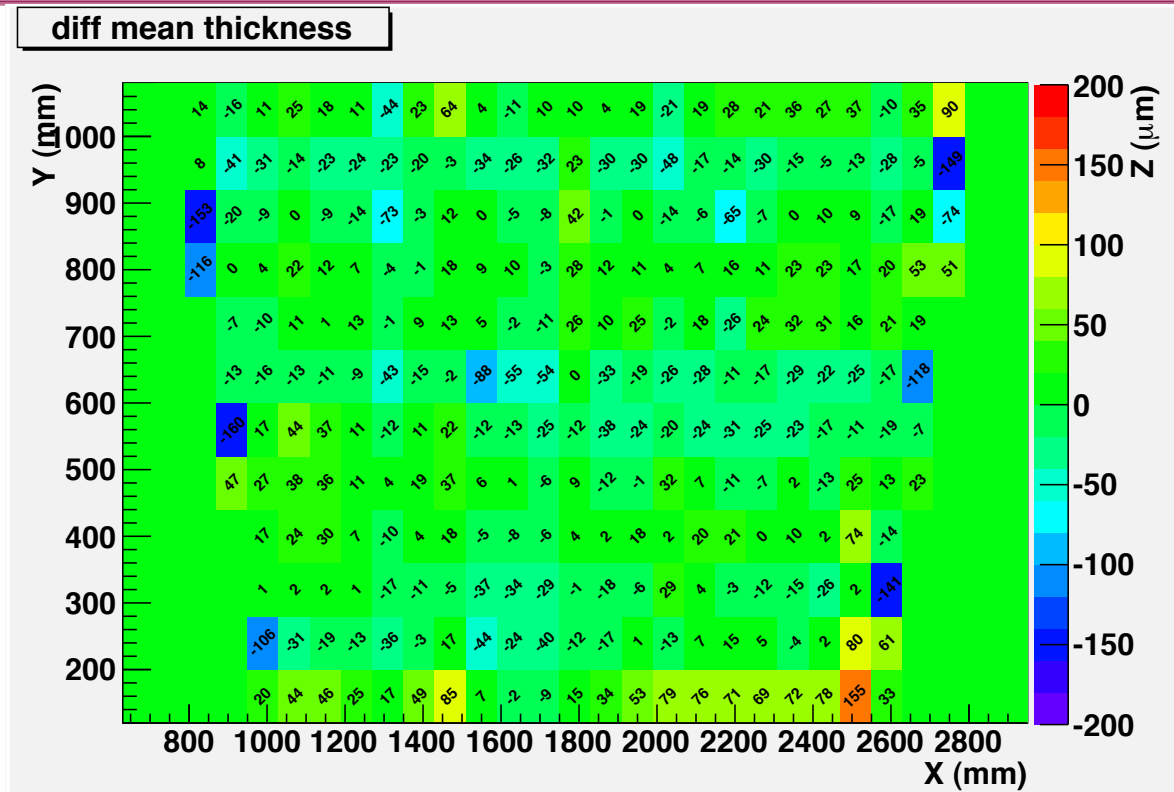
dev fit plane



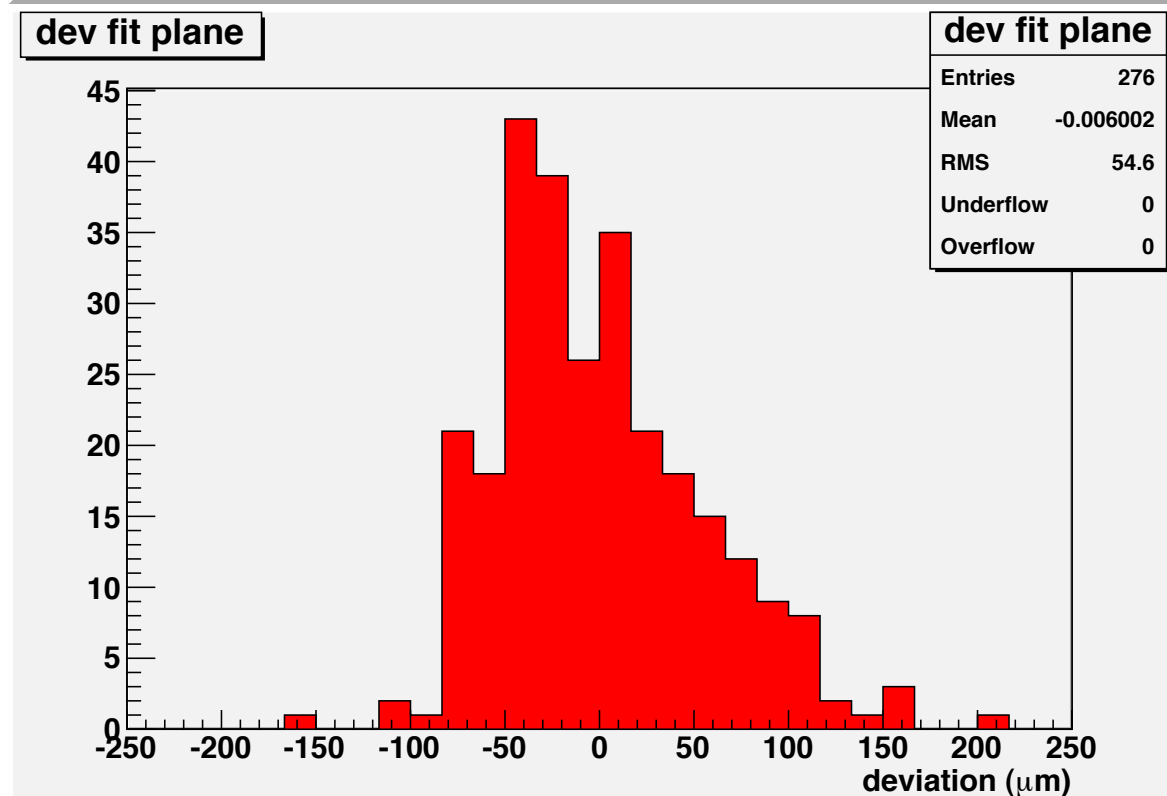
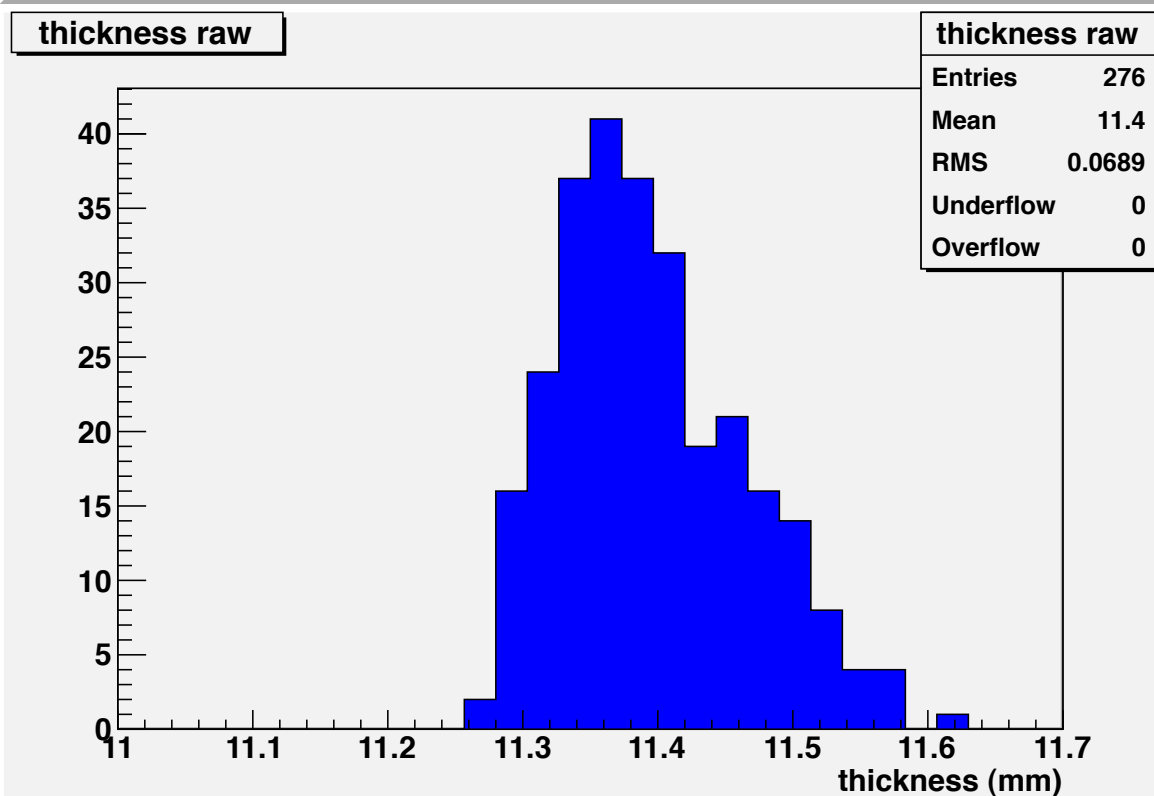
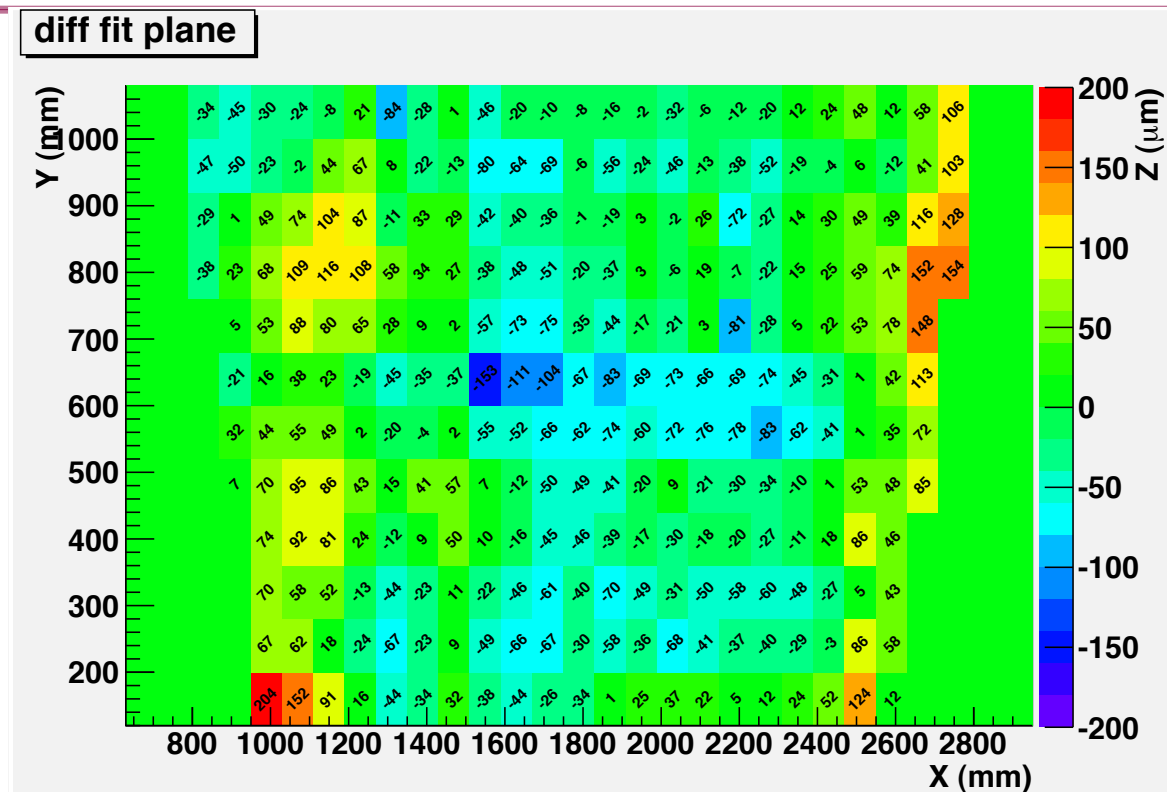
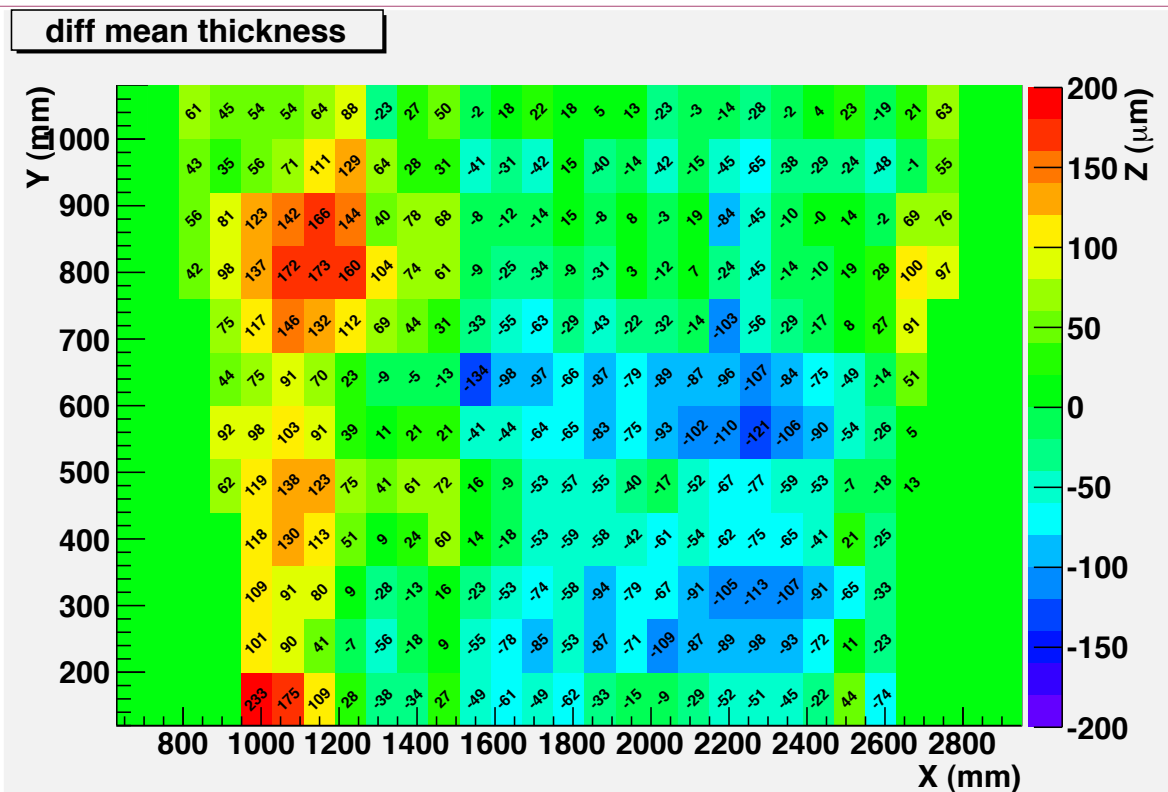
panel 4 - pcb 7



panel 4 - pcb 8

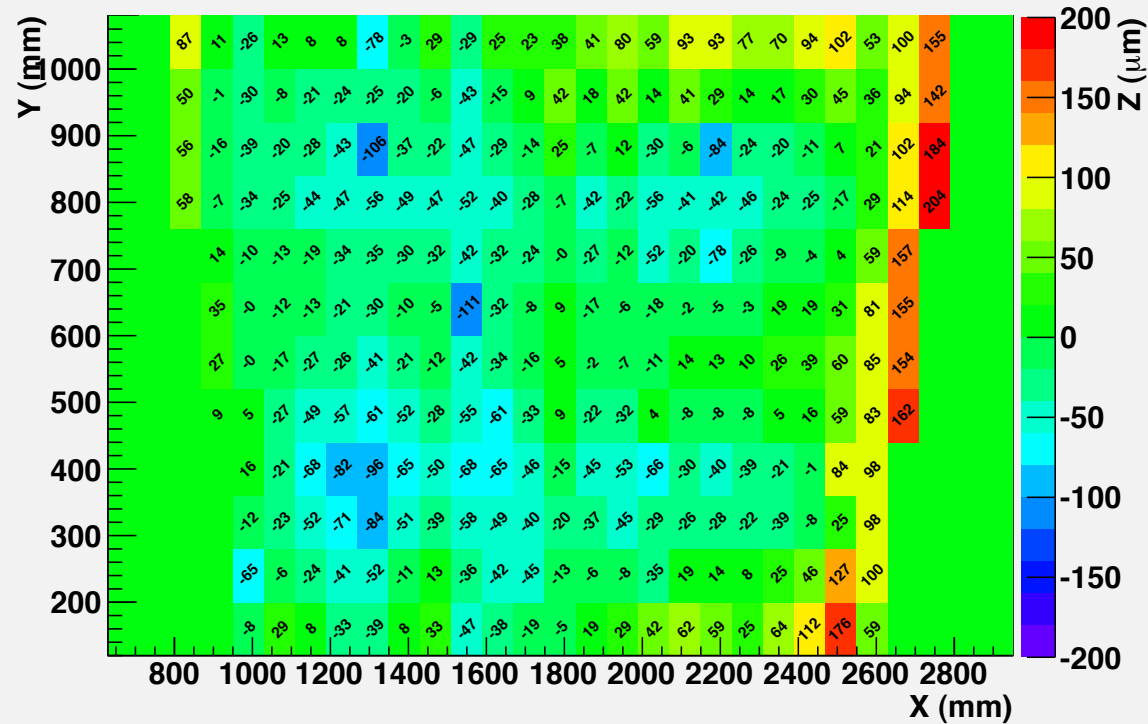


panel 5 - pcb 9

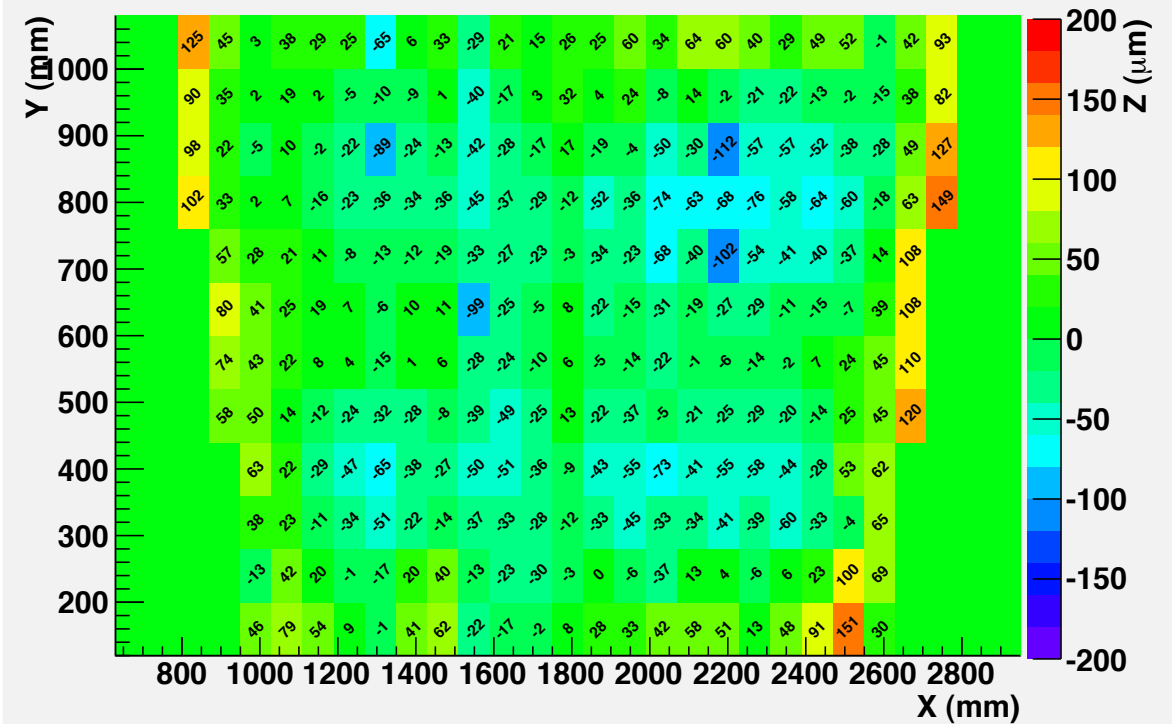


panel 5 - pcb 10

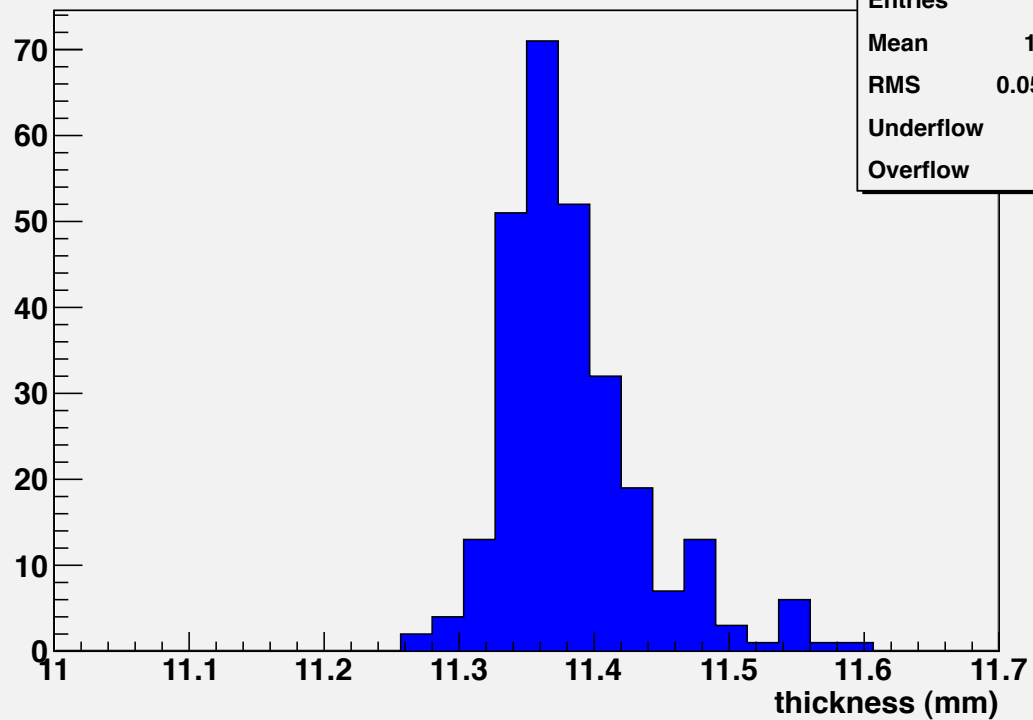
diff mean thickness



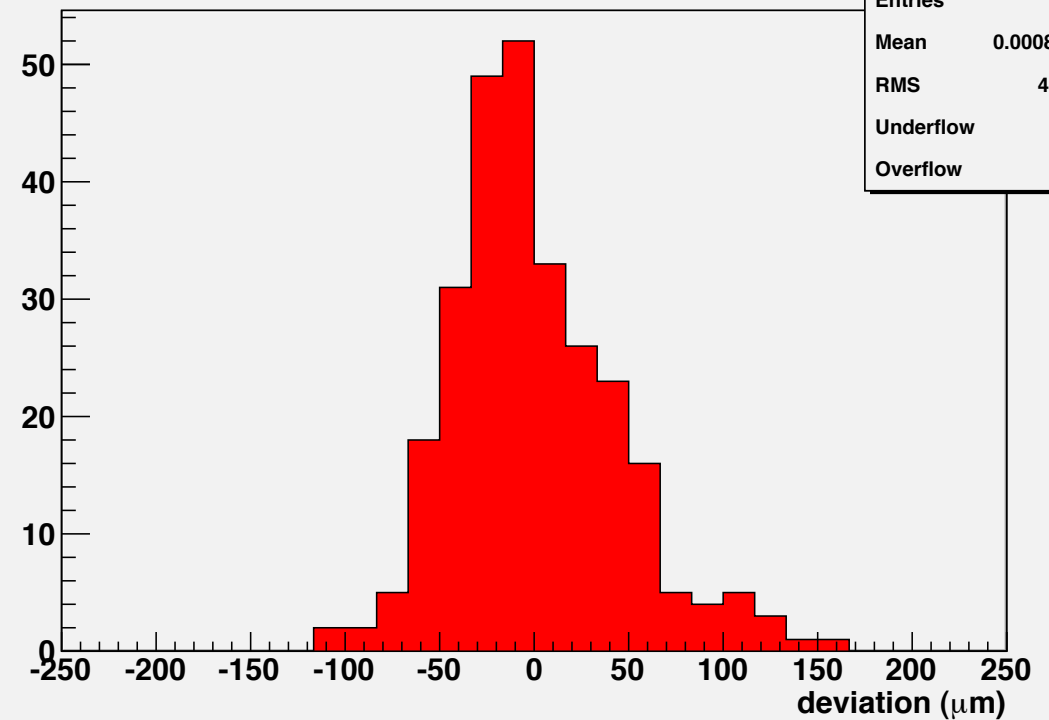
diff fit plane



thickness raw



dev fit plane



Thickness

* one side is FR4 only (thicker)

	panel	thickness (mm)	PILLAR	panel	thickness (mm)
				pcb1up-vacuum	11.398
*	pcb1up-free	11.427	yes	pcb2up-vacuum	11.390
	pcb2up-free	11.431		pcb2up-vacuum-bis	11.268
	pcb3up-free	11.365	no	pcb3up-vacuum	11.476
	pcb4up-free	11.323		pcb4up-vacuum	11.303
*	pcb5up-free	11.355	no	pcb5up-vacuum	11.320
	pcb6up-free	11.335		pcb6up-vacuum	11.312
	pcb7up-free	11.232	yes	pcb7up-vacuum	11.214
	pcb8up-free	11.211		pcb8up-vacuum	11.205
	pcb9up-free	11.395	no	pcb9up-vacuum	11.334
	pcb10up-free	11.383		pcb10up-vacuum	11.357

spessori
rif. esterno
11.353
11.355
11.357
11.357
11.358
11.358

pillar + FR4+PCB = 10.4 + 0.57 + 0.4 = 11.37

pillar + 2 PCB = 10.4 + 0.4 + 0.4 = 11.2

	thickness (mm)
pcb1up-pisa	11.446
pcb1up-rip-pisa	11.446
pcb2up-pisa	11.461
pcb2up-rip-pisa	11.472
pcb3up-pisa	11.371
pcb4up-pisa	11.363

Open questions

- ♦ are measurements done in Pavia reliable?
 - ♦ disagreement with Pisa on 50% of the measurements....
 - ♦ disagreement of measurement done in different moments
 - ♦ is that due to temperature effect?
- ♦ Take another set of scan
 - ♦ granite
 - ♦ measurements on all panel (free)
 - ♦ measurement only on frame?
- ♦ Measurement of external references
 - ♦ can we do a test with a better positioning of the external references?
- ♦ Other measurements
 - ♦ gas tightness
 - ♦ gas flux + deformation
 - ♦ mesh

Wrap-up meeting

- ◆ Incollaggio
- ◆ Temperatura
- ◆ Misure pannelli
- ◆ Programma fino al prossimo workshop (fine gennaio)
- ◆ Ordini

Schedule

Novembre 2013						
Lunedì	Martedì	Mercoledì	Giovedì	Venerdì	Sabato	Domenica
				1	2	3
				TUTTI I Santi	COMMEMORAZ. DEFUNTI	S. MARTINO, S. SILVIA
4	5	6	7	8	9	10
S. CARLO BORROMEO	S. ZACCARIA PROF.	S. LEONARDO ABATE	S. ERNESTO ABATE	S. GÖFFREDO VESCOVO	S. ORESTE, S. ORNELLA	S. LEONE MAGNO
11	12	13	14	15	16	17
S. MARTINO DI TOURS	S. RENATO M., S. ELSA	S. DIEGO, S. OMOBONO	S. GIOCONDO VESCOVO	S. ALBERTO M., S. ARTURO	S. MARGHERITA DI S.	S. ELISABETTA
18	19	20	21	22	23	24
S. ODOONE AB.	S. FAUSTO MARTIRE	S. BENIGNO	PRESENTAZ. B.V. MARIA	S. CECILIA V.	S. CLEMENTE PAPA	CRISTO RE E S. FLORA
25	26	27	28	29	30	
S. CATERINA DALESS.	S. CORRADO VESCOVO	S. MASSIMO, S. VIRGILIO	S. GIACOMO FRANC.	S. SATURNINO MARTIRE	S. ANDREA AP., S. DUCIO	

Dicembre 2013						
Lunedì	Martedì	Mercoledì	Giovedì	Venerdì	Sabato	Domenica
						1
						I DAVVENTO - S. ANSANO
2	3	4	5	6	7	8
S. BIBIANA, S. SAVINO	S. FRANCESCO SAVERIO	S. BARBARA, S. GIOVANNI DAM.	S. GIULIO M.	S. NICOLA VESCOVO	S. AMEROGIO VESCOVO	II DAVVENTO - IMMACOLATA CONCESSIONE
9	10	11	12	13	14	15
S. SIRO	N. S. DI LORETO	S. DAMASO PAPA	S. GIOVANNA F.	S. LUCIA V.	S. GIOVANNI D. CR., S. POMPEO	III DAVVENTO - S. VALERIANO
16	17	18	19	20	21	22
S. ALBINA	S. LAZZARO	S. GRAZIANO VESCOVO	S. FAUSTA, S. DARIO	S. LIBERATO MARTIRE	S. PIETRO CANISIO	IV DAVVENTO - S. FRANCESCA CARRINI
23	24	25	26	27	28	29
S. GIOVANNI DAK., S. VITTORIA	S. DELFINO	NATALE DEL SIGNORE	S. STEFANO PROTOM.	S. GIOVANNI AP.	SS. INNOCENTI MARTIRI	S. TOMMASO BECKET
30	31					
S. EUGENIO V., S. RUGGERO	S. SILVESTRO PAPA					

Gennaio 2014						
Lunedì	Martedì	Mercoledì	Giovedì	Venerdì	Sabato	Domenica
		1	2	3	4	5
		MARIA MADRE DI DIO	S. BASILIO VESCOVO	S. GENOVEFFA	S. ERME	S. AMELIA
6	7	8	9	10	11	12
EPIFANIA DI N. S.	S. LUCIANO, S. RAIMONDO	S. MASSIMO, S. SEVERINO	S. GIULIANO MARTIRE	S. ALDO EREMITA	S. IGINO PAPA	S. MOCESTO M.
13	14	15	16	17	18	19
S. ILARIO	S. FELICE M., S. BIANCA	S. MAURO ABATE	S. MARCELLO PAPA	S. ANTONIO ABATE	S. LIBERATA	S. MARIO MARTIRE
20	21	22	23	24	25	26
S. SEBASTIANO	S. AGNESE	S. VINCENZO MARTIRE	S. EMERENZIANA	S. FRANCESCO DI SALES	CONVERSIONE DI S. PAOLO	SS. TITO E TIMOTEO, S. PAOLA
27	28	29	30	31		
S. ANGELA MERICI	S. TOMMASO D'AG., S. VALERIO	S. COSTANZO, S. CESARIO	S. MARTINA, S. SAVINA	S. GIOVANNI BOSCO		

Wrap-up meeting

- ◆ Incollaggio
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- ◆ Misure pannelli
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Ordini

- ◆ Piastre tavolo
- ◆ Stiffback
 - ◆ honeycomb
 - ◆ piastre
 - ◆ riferimenti esterni
- ◆ mesh
- ◆ rail
- ◆ regolatore pressione

HONEYCOMB PER STIFFBACK

1 pannello ALU-ALU 2300x1000x47 mm

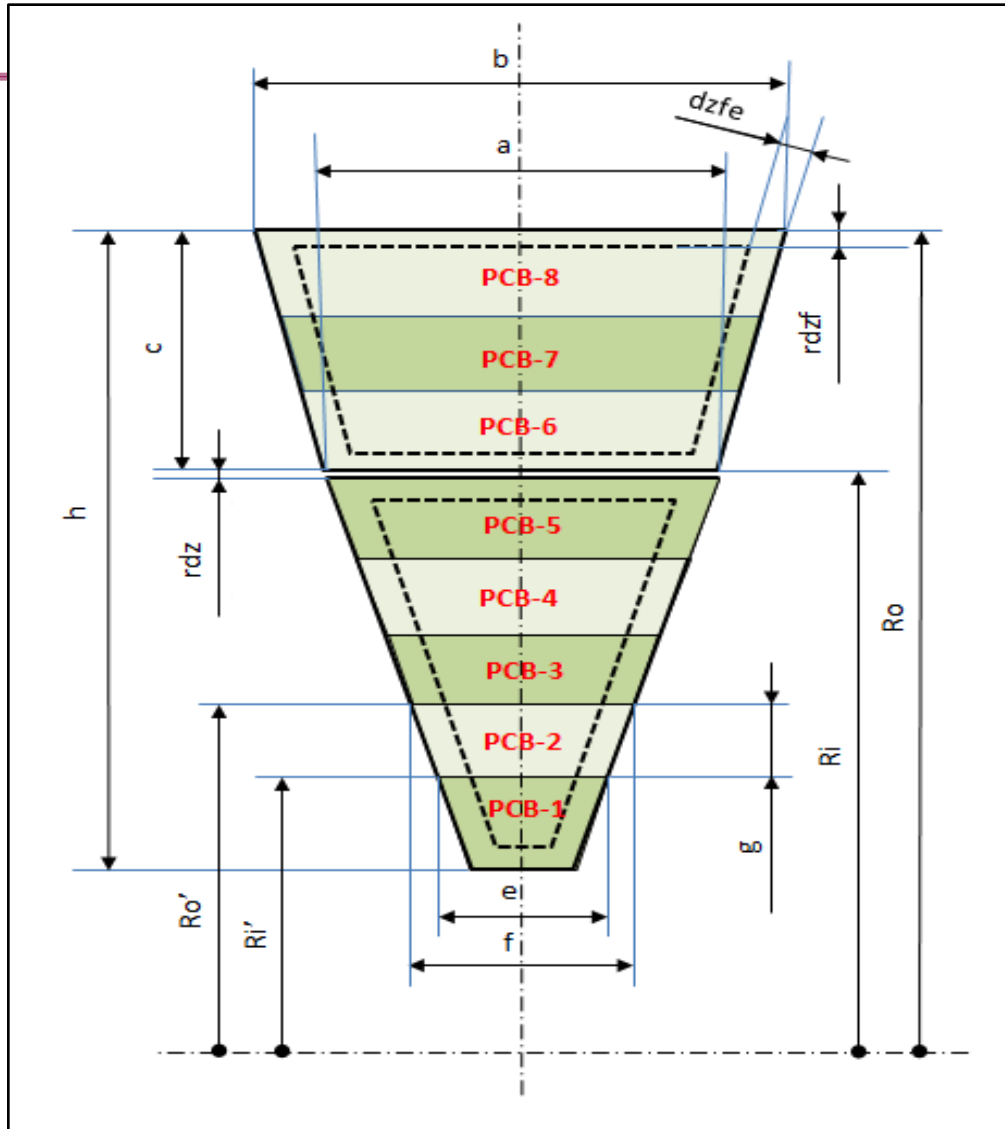
Anima alveolare di alluminio cella Ø19 densità 20 Kg/
m³ spessore 45 mm

Pelli entrambe 1 mm alluminio grezzo

Operazioni di fresatura per inserimento profilo estruso di
vs fornitura sui lati corti

Prezzo € 500,00 + IVA

SM1



a (inner length)	460
b (outer length)	1300
c (radial size)	2210
Ri (inner radius)	895
Ro (outer radius)	3105
h (radial size of the sector)	3565
rdz (radial clearance between module)	5
rdzf (radial size of the frames)	30
dzfe (size of the frames and electronics)	100
Quantity of RO PCBs / layer	5

PCB-1	
e (inner length)	460.000
f (outer length)	634.842
g (radial size)	460.000
Ri' (inner radius)	895.000
Ro' (outer radius)	1355.000
PCB-2	
e (inner length)	634.842
f (outer length)	798.281
g (radial size)	430.000
Ri' (inner radius)	1355.000
Ro' (outer radius)	1785.000
PCB-3	
e (inner length)	798.281
f (outer length)	961.719
g (radial size)	430.000
Ri' (inner radius)	1785.000
Ro' (outer radius)	2215.000
PCB-4	
e (inner length)	961.719
f (outer length)	1125.158
g (radial size)	430.000
Ri' (inner radius)	2215.000
Ro' (outer radius)	2645.000
PCB-5	
e (inner length)	1125.158
f (outer length)	1300.000
g (radial size)	460.000
Ri' (inner radius)	2645.000
Ro' (outer radius)	3105.000

Piastre

Max Tavolo
1500 x 3000 mm

TAVOLO

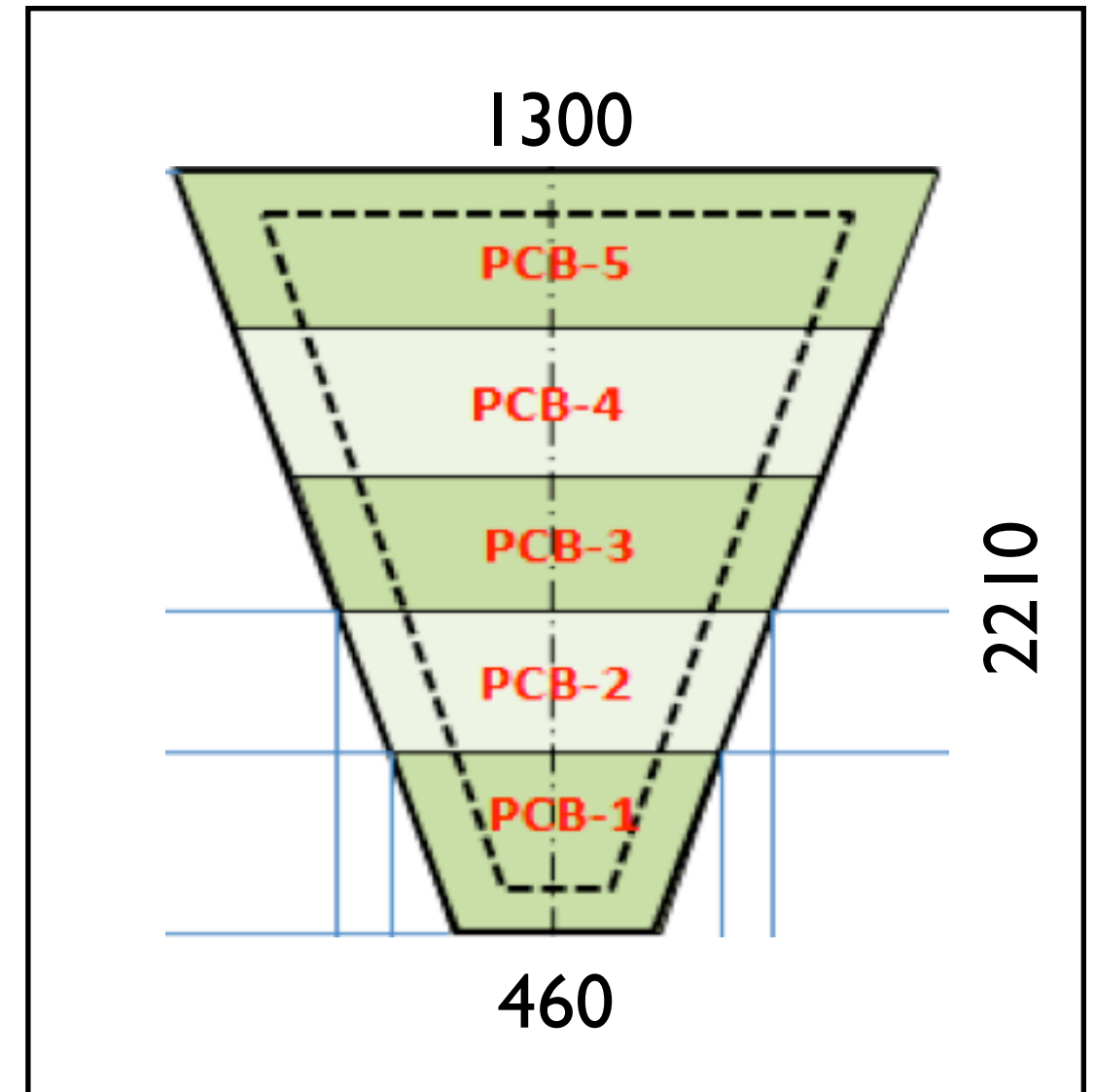
6 lastre
450 x 1500 mm

$2700 - 2210 = 490\text{mm} / 2 = 245\text{ mm}$
 $1500 - 1300 = 200\text{mm} / 2 = 100\text{ mm}$

STIFFBACK

5 lastre
500 x 1400 mm

$2500 - 2210 = 290\text{mm} / 2 = 145\text{ mm}$
 $1400 - 1300 = 100\text{mm} / 2 = 50\text{ mm}$



$0.151\text{ m}^3 =$
408 Kg =
3700 euro
4500 euro (22%iva)

LAPS015,000

PIASTRA ENAW5083 MM. 15X1500X3000 RETT.
N. 1 PIASTRA TAGLIATA IN N. 6 PZ DA MM. 495X1500

KG	190	8,900	1.691,00	19/02/2013
NR	1	25,000	25,00	19/02/2013

IMBALLO

SPESE DI IMBALLO

Descrizione:

TAGLI A MISURA
ENAW5083H111 MM.
20X520X1250, n. 4 piastre

Udm:	Qta:	Prezzo:	Iva:	Sconto Unitario:	Totale:
KG	152,00	6,65	21	0,00	1.223,07