My work in CERN (in pictures)

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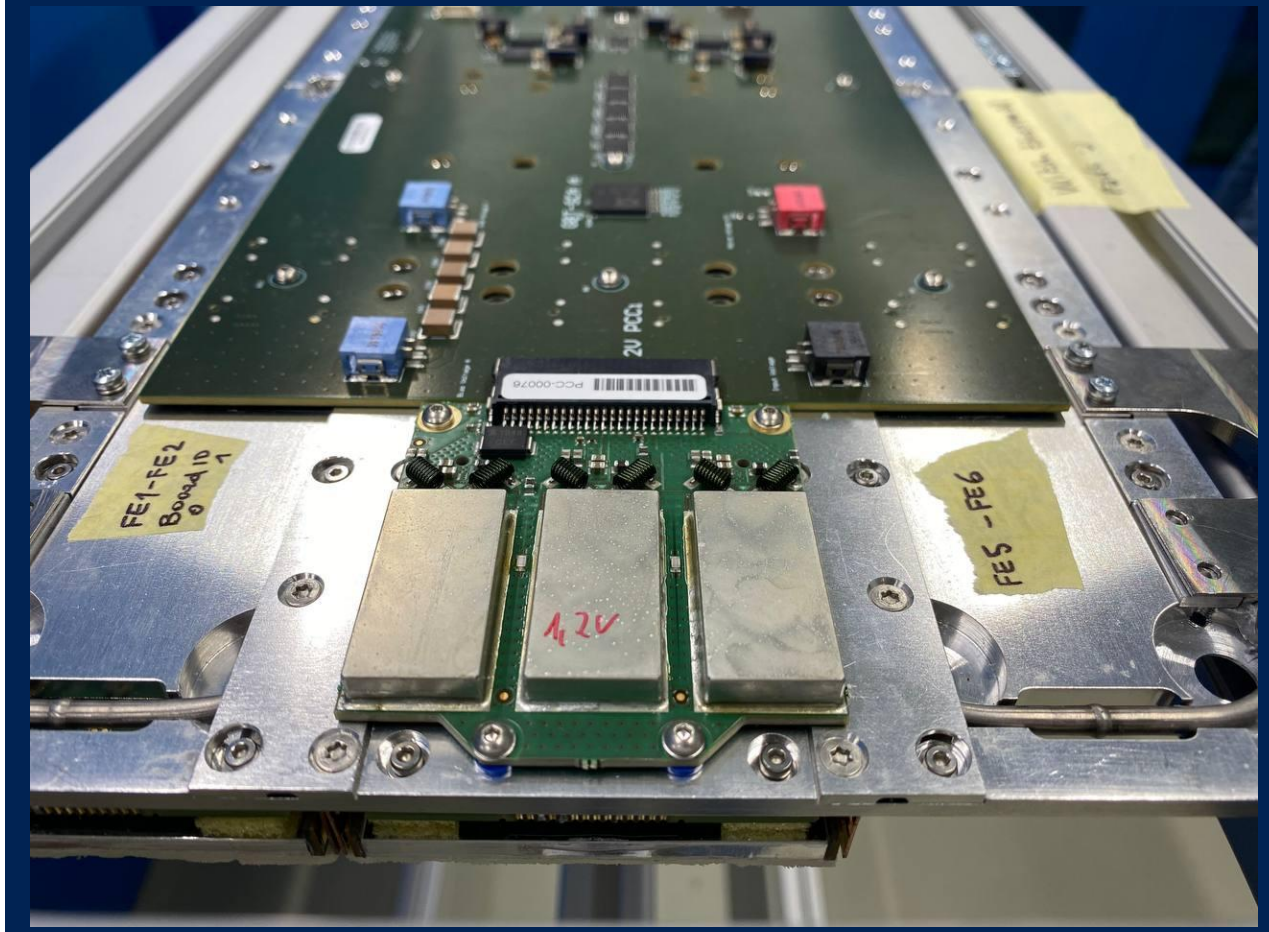
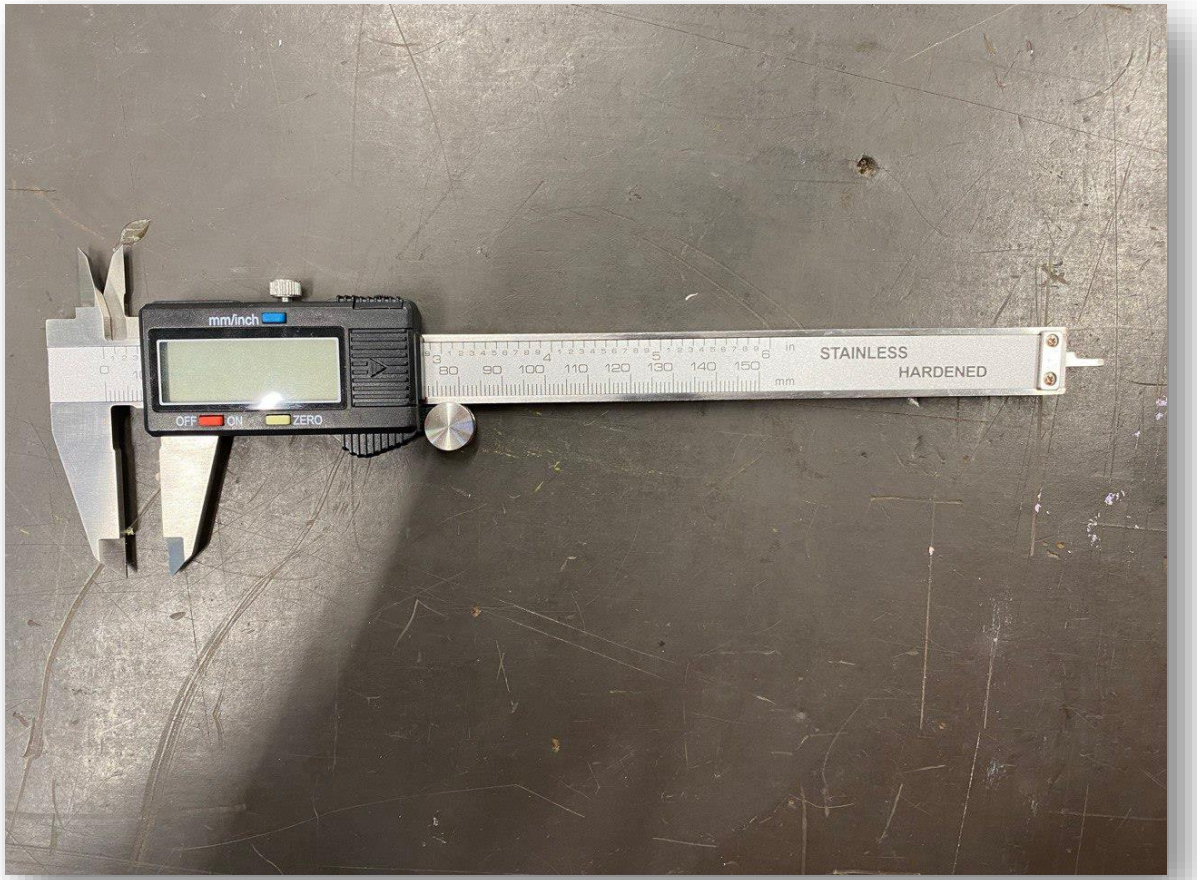
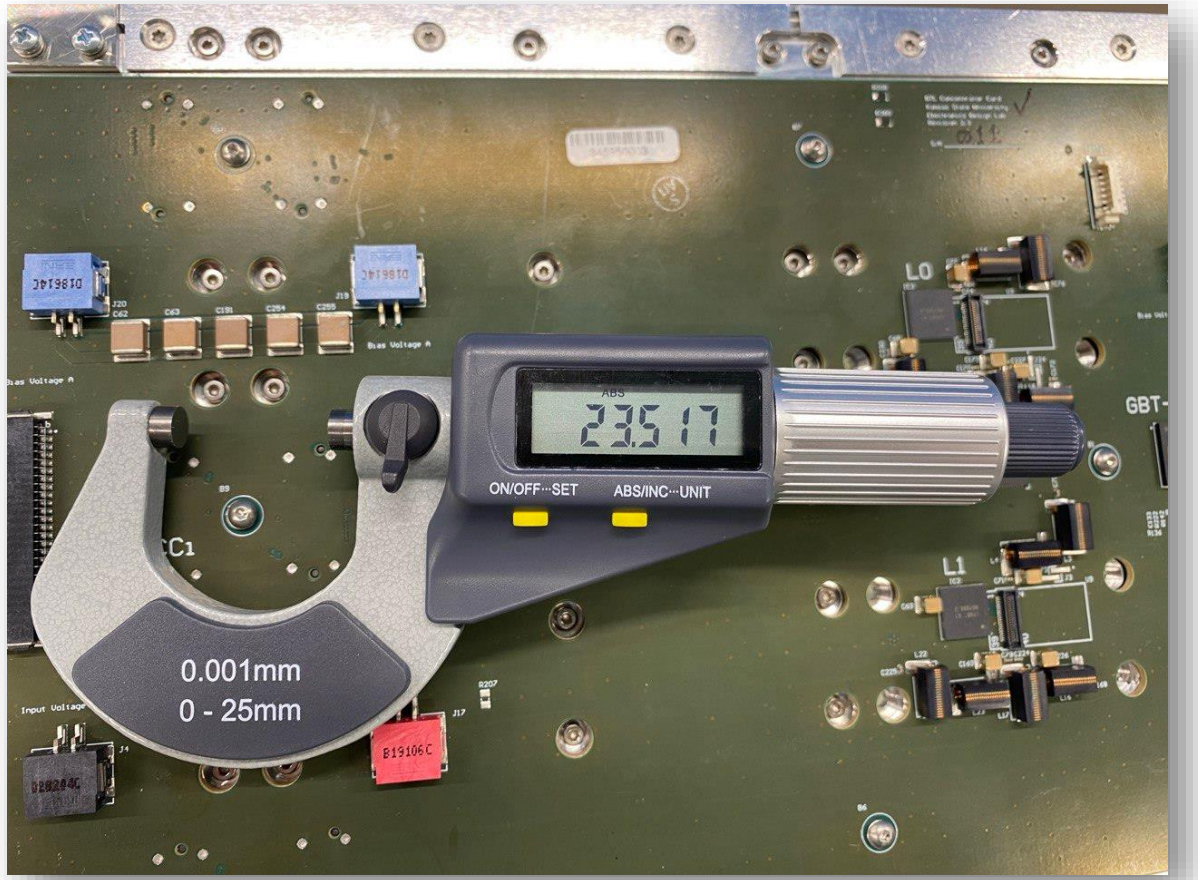


BTL

Measuring instruments



Caliper



Micrometer

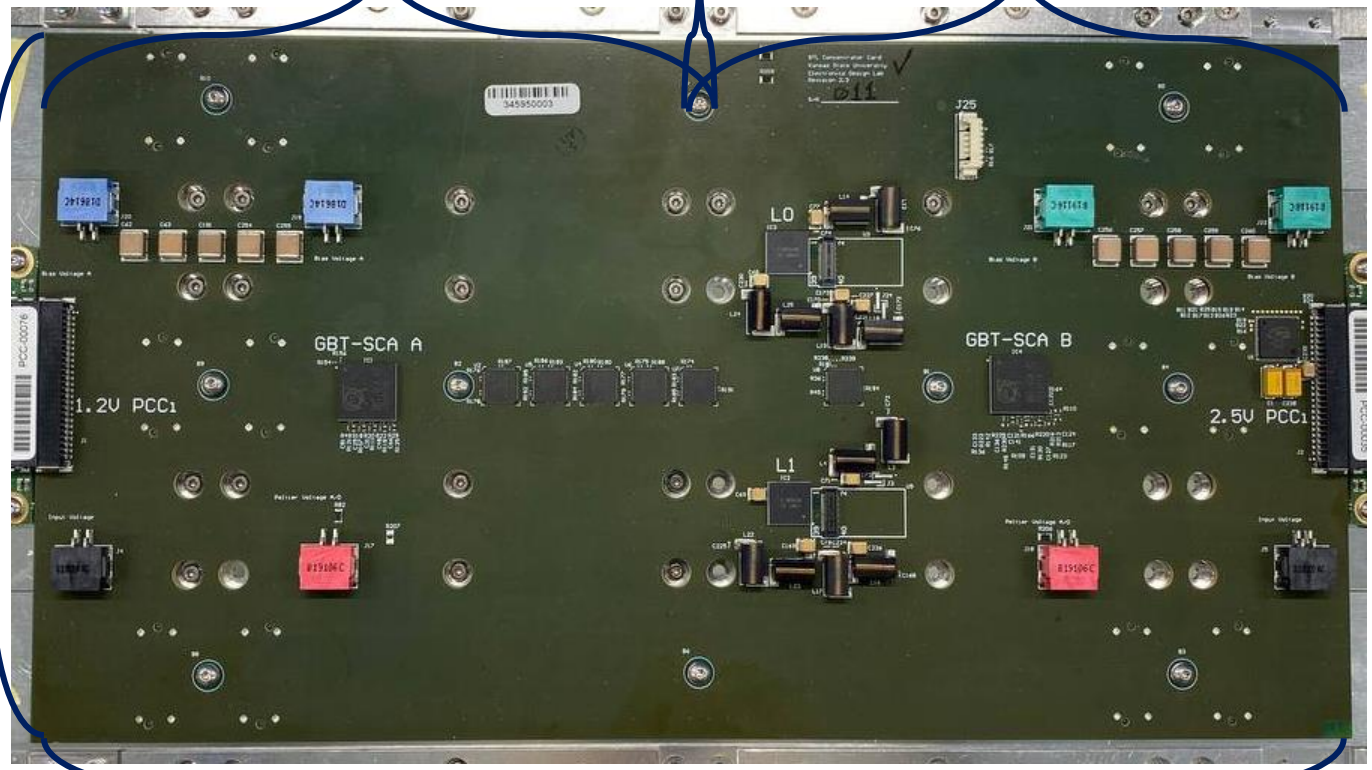
CC Measurements

CC Length Left

CC central screw

CC Length Right

CC Width

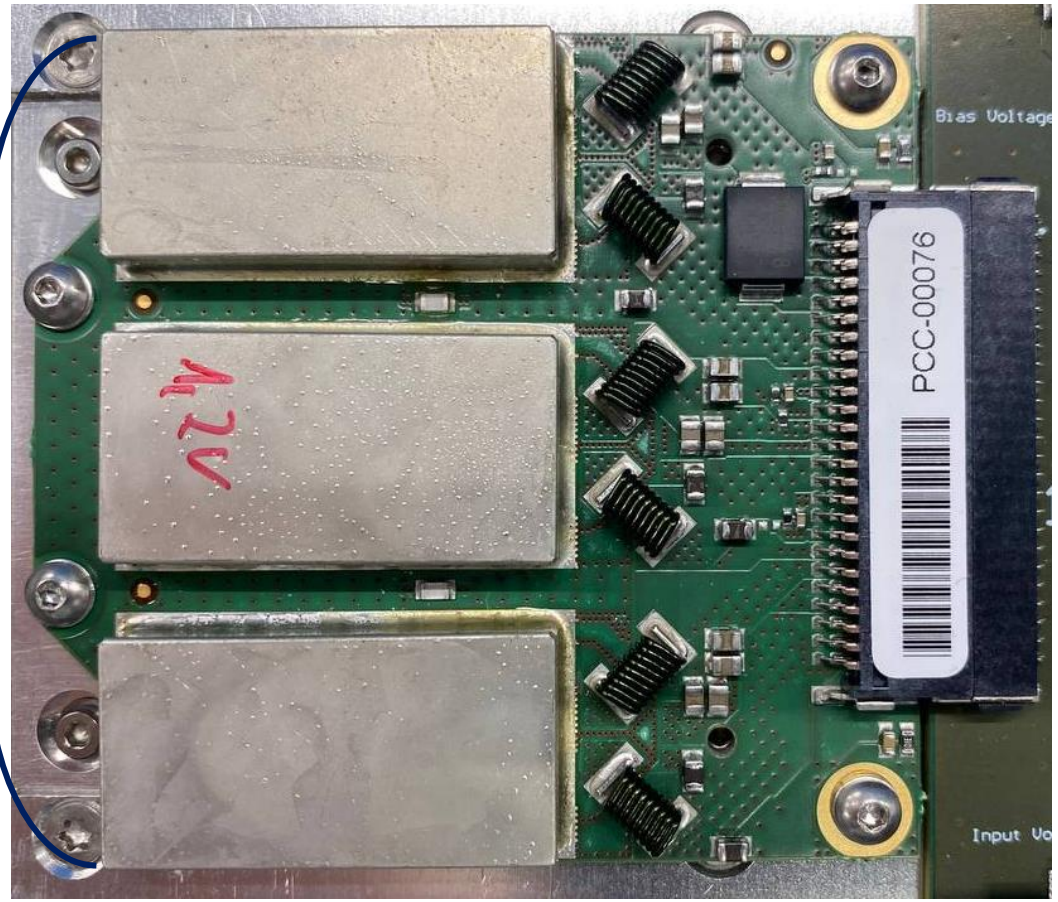


CC Total Length

CC Width = (149,99 ± 0,01) mm
CC Total Length = (279,90 ± 0,06) mm

PCC Measurement

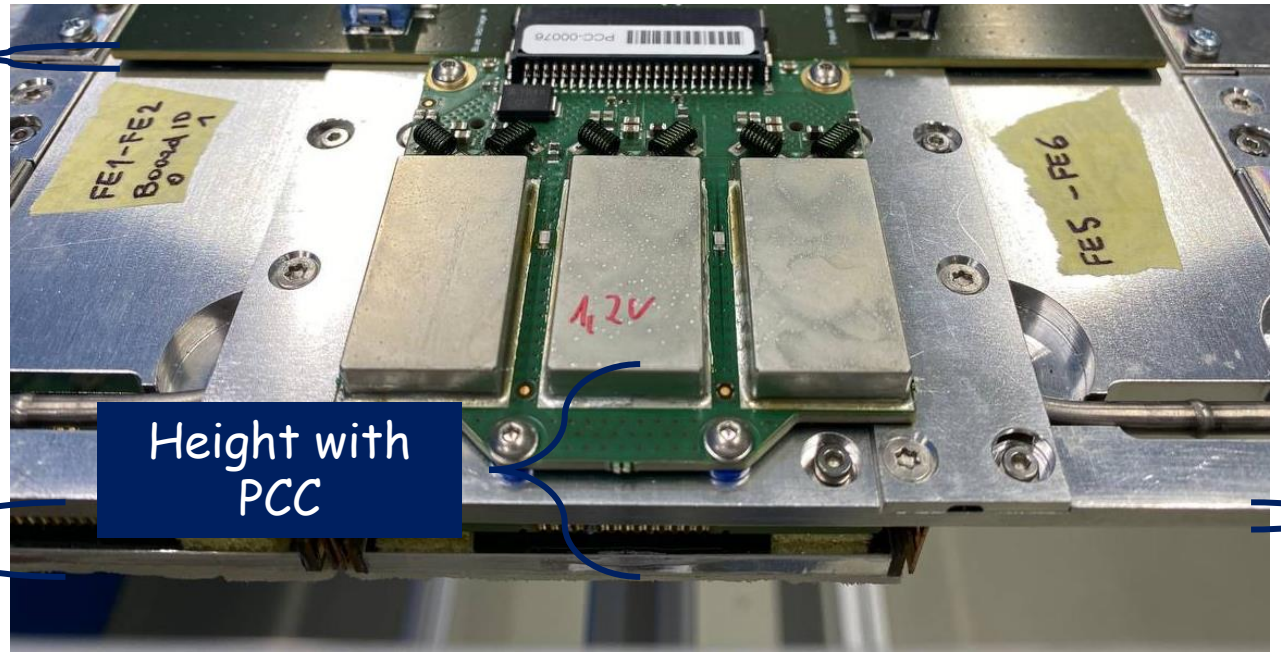
PCC width



PCC width = (58,96 ± 0,01) mm

PCC-CC-PCC Measurements

CC height + space



Height without PCC

Height of metal plate

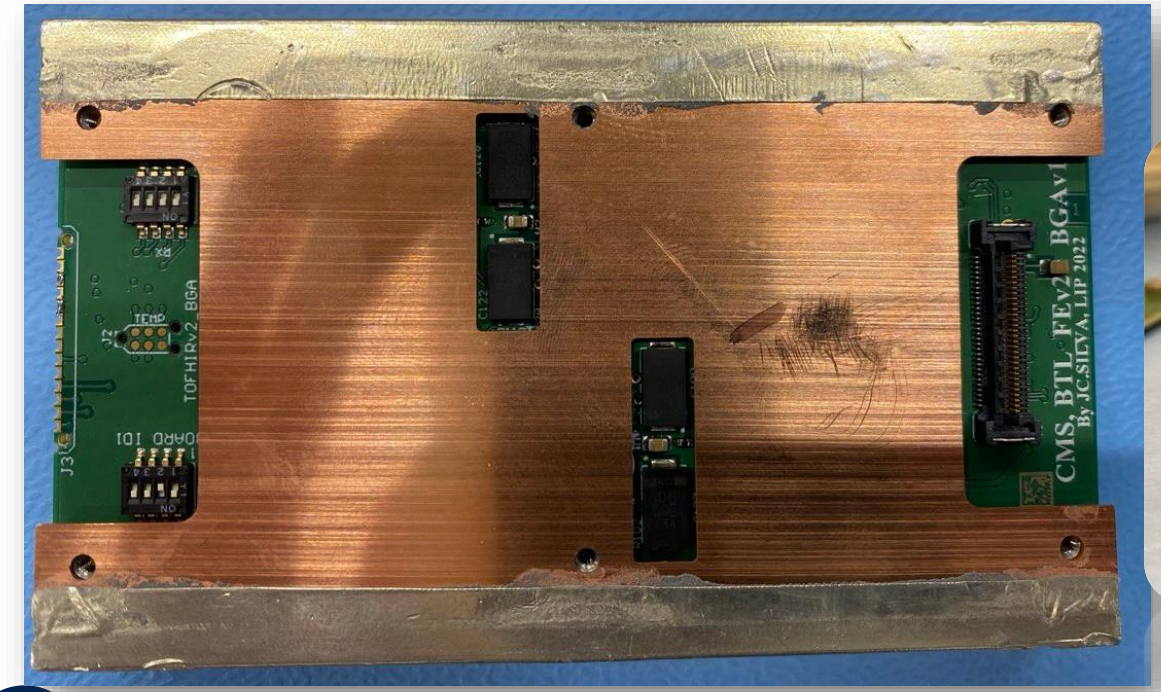
Caliper:
CC height + space = (2,77 ± 0,04) mm
Height without PCC = (17,37 ± 0,05) mm
Height with PCC = (26,17 ± 0,03) mm
Height of metal plate = (4,32 ± 0,02) mm

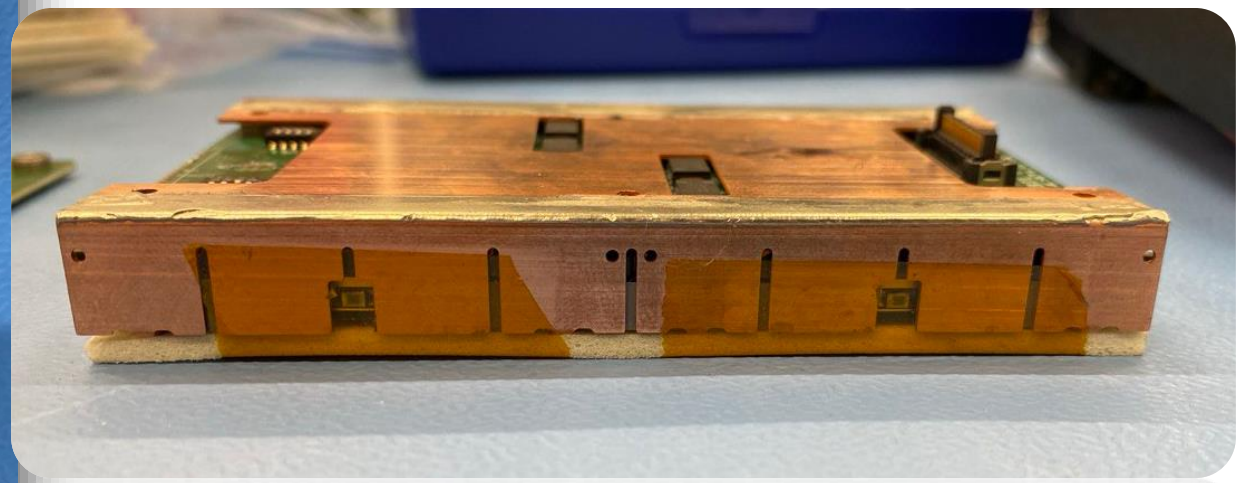
Micrometer:
CC height = (1,771 ± 0,009) mm
Height without PCC = (17,229 ± 0,075) mm
Height with PCC = (24,587 ± 0,188) mm
Height of metal plate = (4,026 ± 0,001) mm

PCC-CC-PCC Measurements

Caliper:
Copper Housing center = (0,51 ± 0,04) mm
All in one = (13,86 ± 0,11) mm

Micrometer:
Copper Housing center = (0,551 ± 0,018) mm
All in one = (13,134 ± 0,079) mm





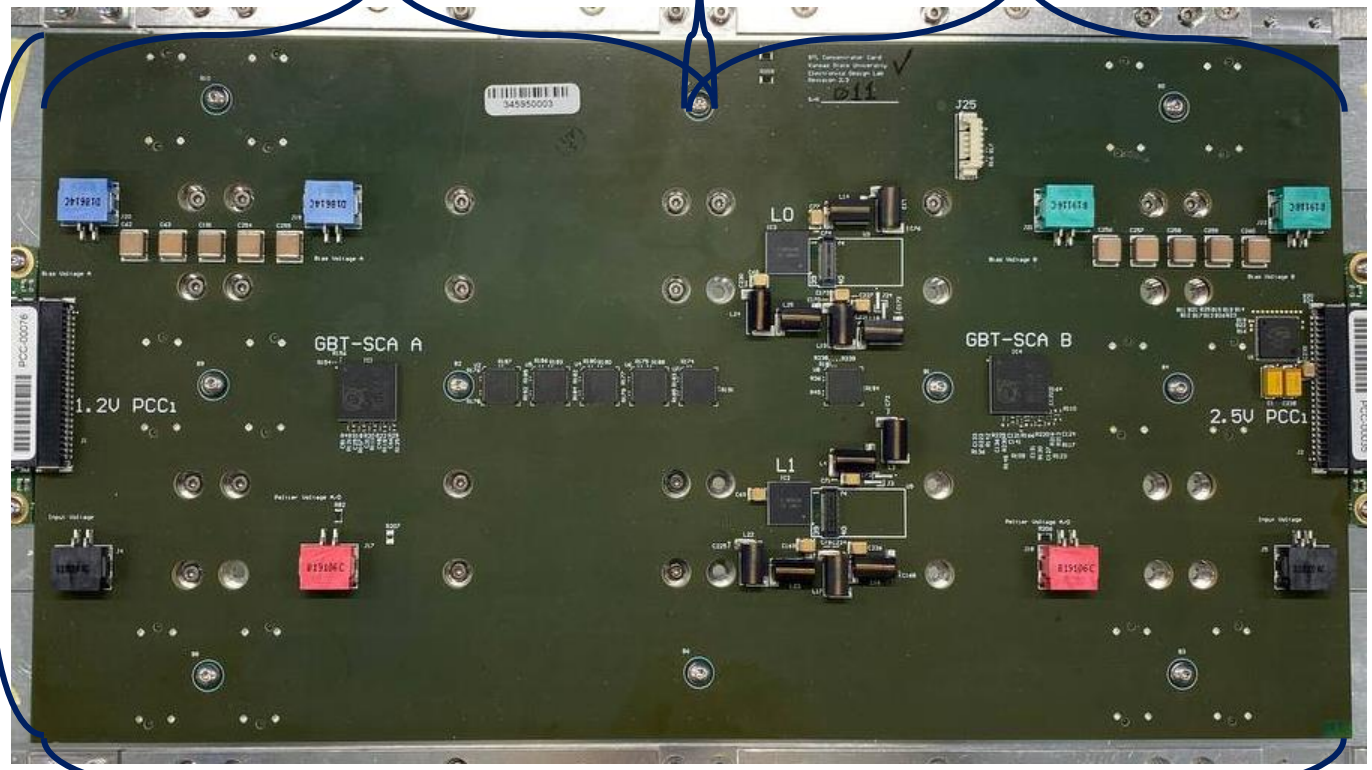
CC repeated measurements

CC Length Left

CC central screw

CC Length Right

CC Width

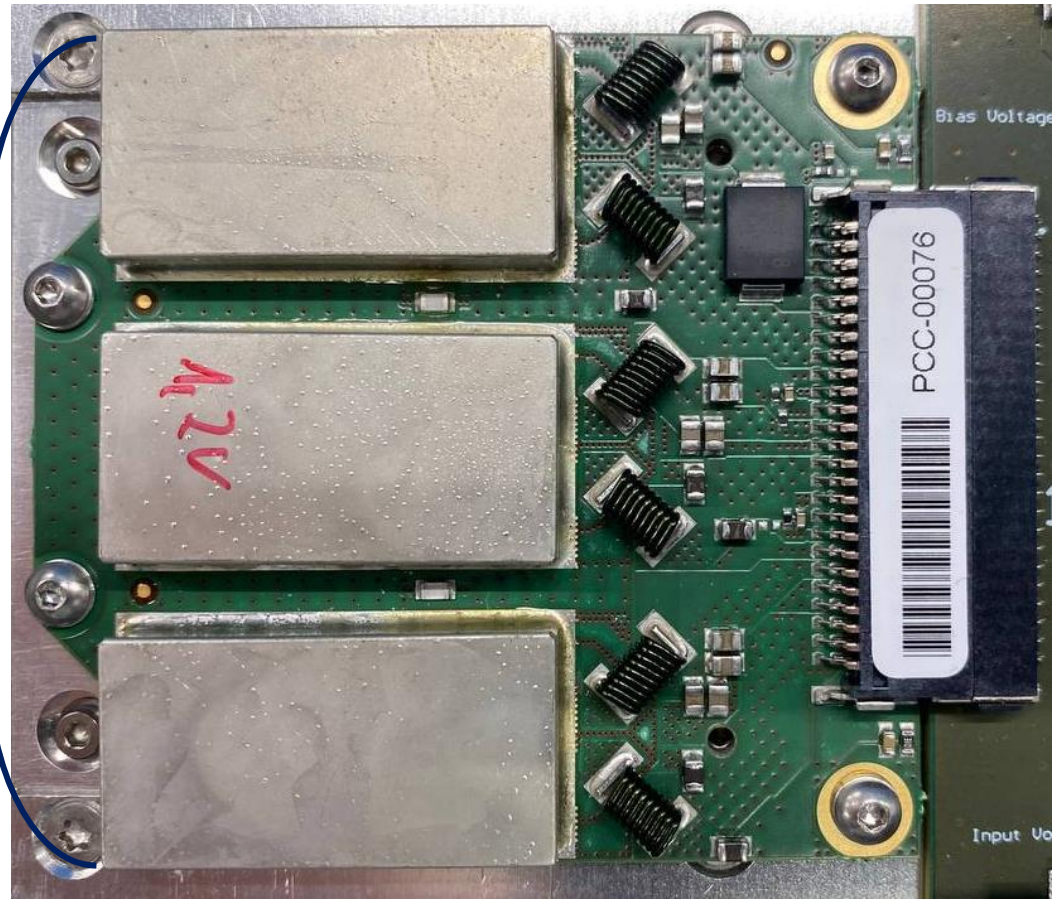


CC Total Length

CC Width = (149,95 ± 0,05) mm
CC Total Length = (279,92 ± 0,01) mm

PCC repeated measurements

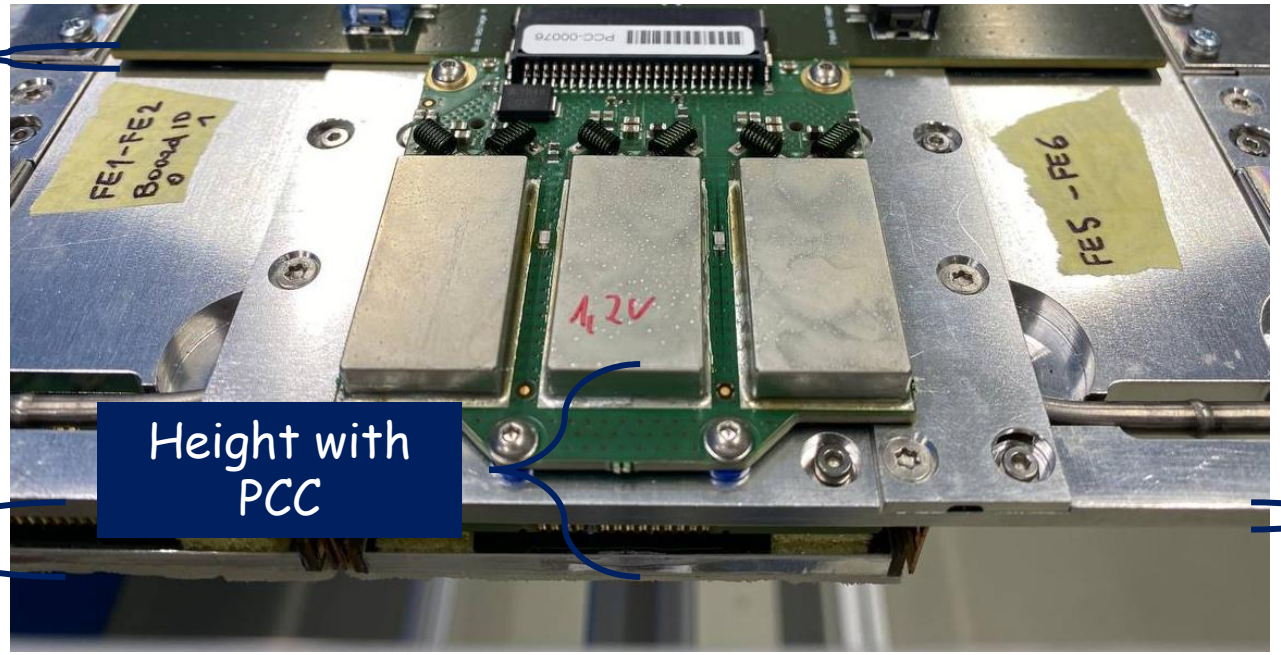
PCC width



PCC width = (58,97 ± 0,01) mm

PCC-CC-PCC repeated measurements

CC height + space



Height without PCC

Height of metal plate

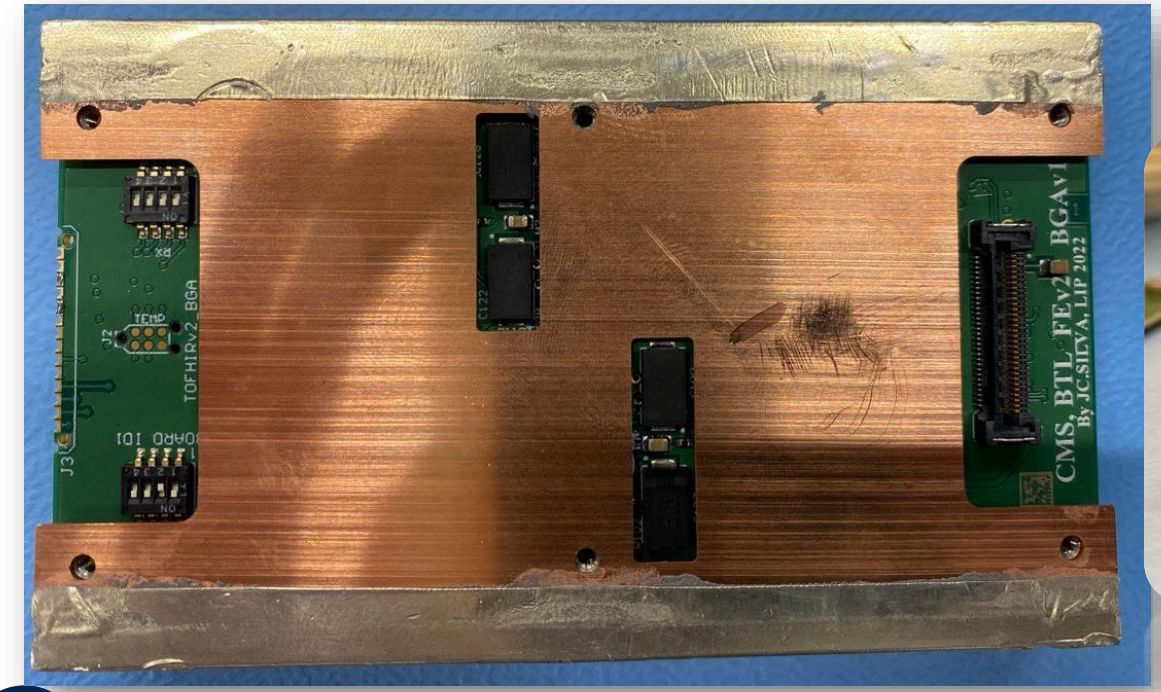
Caliper:
CC height + space = (2,80 ± 0,01) mm
Height without PCC = (17,27 ± 0,01) mm
Height with PCC = (26,02 ± 0,02) mm
Height of metal plate = (4,31 ± 0,01) mm

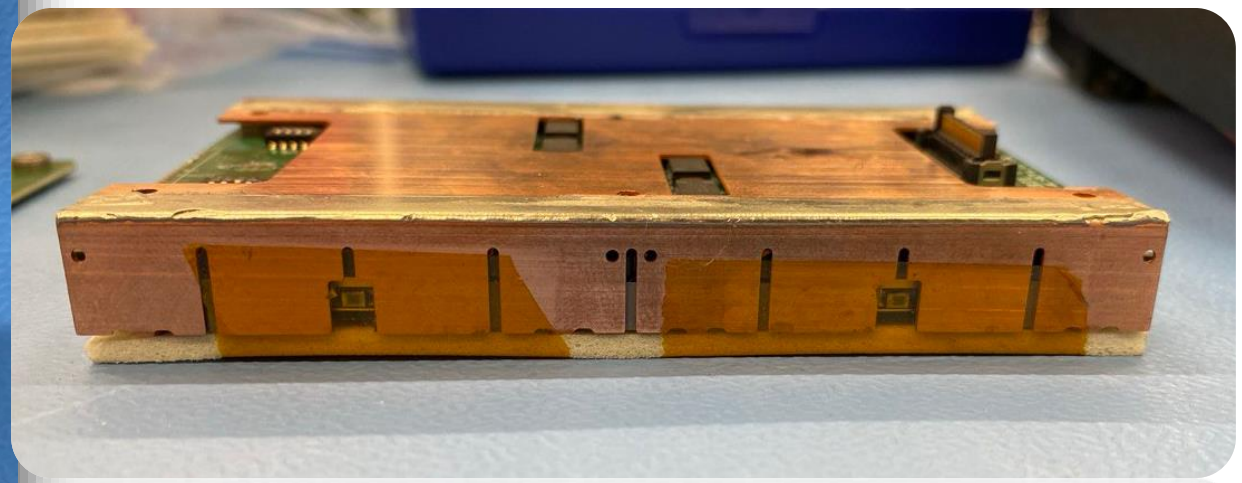
Micrometer:
CC height = (1,765 ± 0,002) mm
Height without PCC = (17,278 ± 0,011) mm
Height with PCC = (24,724 ± 0,076) mm
Height of metal plate = (4,080 ± 0,018) mm

PCC-CC-PCC repeated measurements

Caliper:
Copper Housing center = (0,51 ± 0,01) mm
All in one = (13,11 ± 0,06) mm

Micrometer:
Copper Housing center = (0,547 ± 0,008) mm
All in one = (13,230 ± 0,050) mm





PCC-CC-PCC Measurements

Mass [g]
Front End Card = (28 ± 2) g
Front End Card w Thermal Pads = (29 ± 2) g
Copper Housing = (32 ± 2) g
Airex Pad with Size of Front End Card = (1,15 ± 0,15) g

All in one = (221 ± 2) g
LYSO c25-2-T1 = (77 ± 2) g
LYSO c30-3-T2 = (62 ± 2) g
LYSO c25-2-T3 = (51 ± 2) g
LYSO Hpk-2-30 = (64 ± 2) g
CC = (215 ± 2) g

PCC-CC-PCC Measurements

		CC Length Left	CC Length Right	CC central screw	CC Total Length	CC Width
		142,08	142,36	4,76	279,68	149,97
		142,43	142,25	4,85	279,83	149,98
		142,43	142,26	4,85	279,84	149,98
		142,44	142,36	4,85	279,95	150,02
other side		142,41	142,36	4,87	279,90	150,05
		142,44	142,38	4,59	280,23	149,98
		142,36	142,39	4,88	279,87	149,98
Final		142,37	142,34	4,81	279,90	149,99
Standard Error		0,05	0,02	0,04	0,06	0,01
w Caliper						
		CC height+space	PCC width	Height without PCC	Height with PCC	Height of metal plate
		2,75	58,88	17,53	26,28	4,38
		2,70	58,96	17,23	26,07	4,31
		2,86	58,94	17,32	26,14	4,32
		2,86	58,95	17,36	26,15	4,26
		2,70	59,04	17,43	26,20	4,34
			59,01			
			58,96			
			58,96			
			58,91			
			58,96			
Final	#DIV/0!	2,77	58,96	17,37	26,17	4,32
Standard Error	#DIV/0!	0,04	0,01	0,05	0,03	0,02
w Micrometer		CC height				
		1,800		17,367	24,927	4,024
		1,778		17,336	24,732	4,027
		1,773		17,332	24,573	4,028
		1,747		17,125	24,829	4,022
		1,746		16,983	23,872	4,027
		1,781				
Final		1,771		17,229	24,587	4,026
Standard Error		0,009		0,075	0,188	0,001

All in one	Copper Housing center
13,95	0,52
13,92	0,52
14,11	0,52
14,25	0,50
13,67	0,51
14,10	0,51
13,52	0,004
13,17	
14,01	
13,86	
0,11	

Mass [g]	
28	Front End Card
29,00	Front End Card w Thermal Pads
32,00	Copper Housing
1,15	Airex Pad with Size of Front End Card
221,00	All in one
77,00	LYSO c25-2-T1
62,00	LYSO c30-3-T2
51,00	LYSO c25-2-T3
64,00	LYSO Hpk-2-30
215,00	CC

All in one	Copper Housing center
12,796	0,517
13,123	0,643
13,623	0,581
12,973	0,562
13,017	0,520
13,359	0,516
13,105	0,515
13,136	0,551
13,078	0,018
13,134	
0,079	

PCC-CC-PCC repeated measurements

w Caliper	CC Length Left	CC Length Right	CC central screw	CC Total Length	CC Width	CC height+space	PCC width	Height without P	Height with PCC	Height of metal plate	All in one	Copper Housing center
	142,23	142,35	4,84	279,74	150,03	2,83	58,97	17,31	26,15	4,38	13,42	0,52
	142,43	142,33	4,86	279,90	148,98	2,82	58,96	17,34	26,13	4,31	12,95	0,54
	142,39	142,37	4,78	279,98	150,01	2,85	59,01	17,28	26,06	4,35	12,99	0,57
	142,46	142,34	4,85	279,95	149,98	2,83	58,99	17,25	26,11	4,29	13,25	0,30
	142,44	142,30	4,87	279,87	149,98	2,83	58,96	17,29	26,05	4,29	12,94	0,56
	142,41	142,33	4,87	279,87	150,01	2,84	59,03	17,24	25,86	4,28	13,26	0,53
	142,46	142,37	4,83	280,00	150,03	2,82	58,88	17,26	26,09	4,32	12,86	0,51
	142,42	142,34	4,85	279,91	149,99	2,80	58,96	17,23	26,04	4,28	13,06	0,51
	142,40	142,36	4,87	279,89	150,00	2,76	59,00	17,26	26,02	4,31	12,91	0,52
	142,44	142,38	4,85	279,97	149,97	2,74	58,99	17,22	25,86	4,31	13,21	0,53
	142,43	142,38	4,81	280,00	149,97	2,76	58,97	17,29	26,01	4,26	12,95	0,40
	142,37	142,35	4,87	279,85	150,04	2,78	58,98	17,26	26,04	4,32	14,02	0,52
	142,41	142,37	4,85	279,93	149,99	2,74	59,01	17,25	25,96	4,29	13,02	0,54
	142,41	142,31	4,84	279,88	149,98	2,72	58,99	17,31	26,02	4,35	12,98	0,53
	142,45	142,37	4,81	280,01	149,98	2,76	58,87	17,24	25,94	4,29	12,92	0,53
	142,39	142,35	4,83	279,91	149,99	2,80	59,02	17,28	26,08	4,34	13,11	0,53
	142,42	142,32	4,83	279,91	149,98	2,83	58,86	17,34	26,01	4,34	13,28	0,56
	142,43	142,36	4,80	279,99	150,05	2,82	58,86	17,23	25,97	4,28	13,16	0,51
	142,40	142,36	4,82	279,94	149,99	2,82	59,02	17,26	25,91	4,32	12,97	0,49
	142,45	142,36	4,85	279,96	150,01	2,84	59,01	17,32	26,00	4,31	13,03	0,52
Final	142,41	142,35	4,84	279,92	149,95	2,80	58,97	17,27	26,02	4,31	13,11	0,51
Standard Error	0,01	0,01	0,01	0,01	0,05	0,01	0,01	0,01	0,02	0,01	0,06	0,01

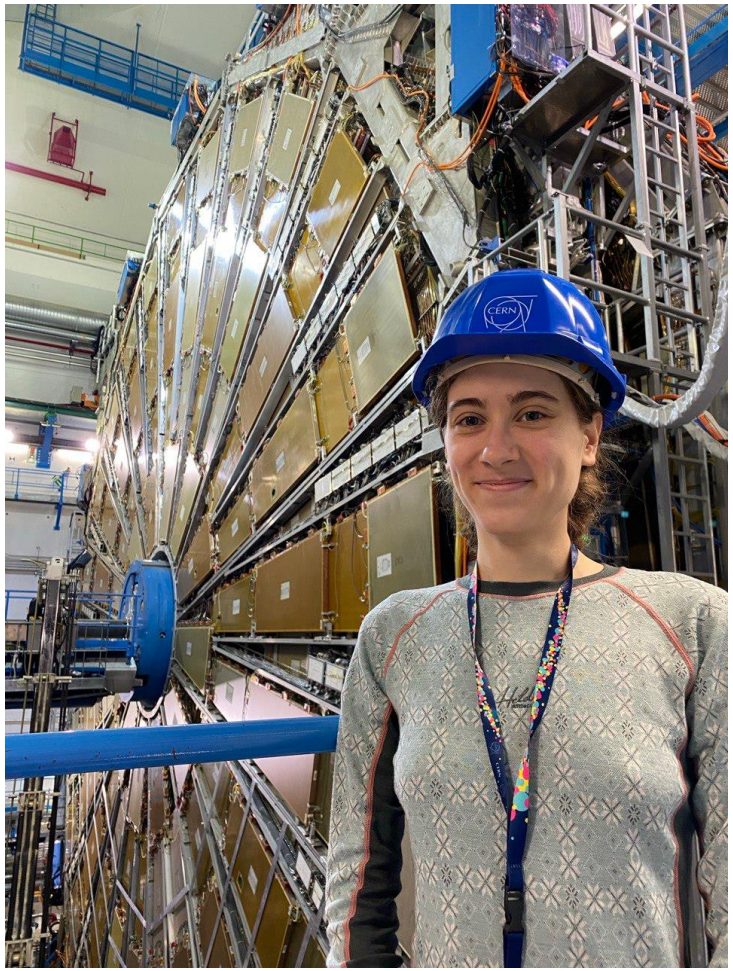
PCC-CC-PCC repeated measurements

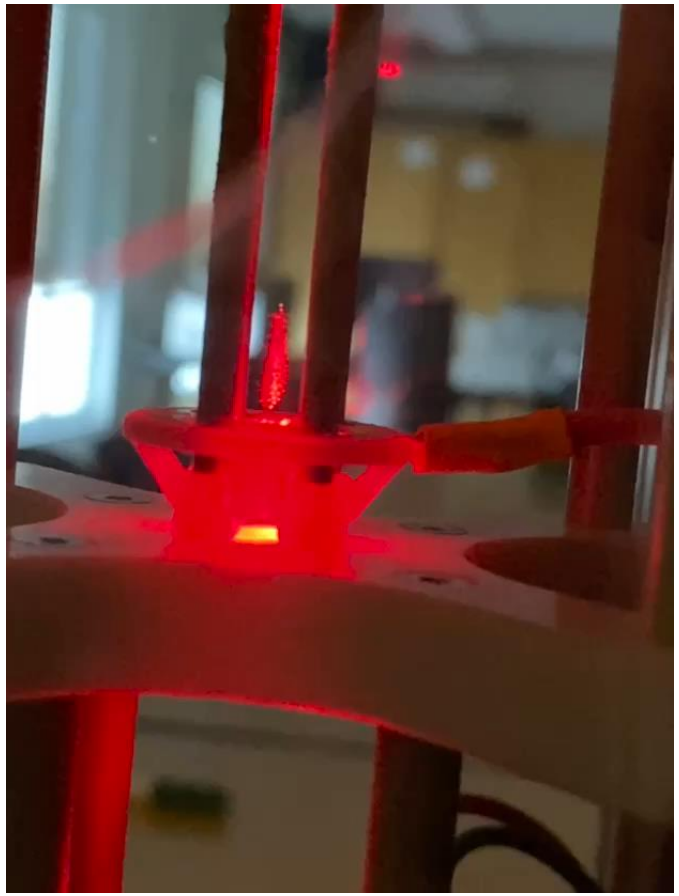
w Micrometer	CC height	Height without P	Height with PCC	Height of metal plate	All in one	Copper Housing center
	1,75	17,215	24,843	4,027	13,359	0,643
	1,77	17,286	25,103	4,028	13,123	0,548
	1,77	17,238	24,514	4,023	13,256	0,529
	1,77	17,346	24,432	4,146	13,093	0,532
	1,75	17,323	23,872	4,027	13,017	0,586
	1,76	17,268	25,158	4,028	13,027	0,516
	1,76	17,311	24,769	4,025	13,253	0,527
	1,77	17,292	24,829	4,198	13,123	0,587
	1,78	17,327	24,476	4,028	13,078	0,521
	1,76	17,324	24,698	4,149	13,367	0,581
	1,77	17,324	24,573	4,027	13,387	0,524
	1,77	17,183	24,527	4,149	12,973	0,520
	1,77	17,243	25,257	4,027	13,105	0,538
	1,75	17,302	24,361	4,267	13,648	0,557
	1,76	17,318	24,732	4,136	13,387	0,517
	1,75	17,310	25,312	4,028	13,136	0,539
	1,79	17,261	24,869	4,022	13,359	0,601
	1,76	17,213	24,927	4,207	13,623	0,515
	1,76	17,209	24,679	4,028	13,498	0,503
	1,76	17,263	24,543	4,024	12,796	0,562
Final	1,77	17,28	24,72	4,08	13,23	0,55
Standard Error	0,002	0,011	0,076	0,018	0,050	0,008

Conclusions

During the first measurements, we took an average of 6-7 data per value. The small number of experiments and the human factor influenced the fact that the results of caliber and micromeнt measurements differ in some places. Next, we took twenty data per value. As a result, the final data has less divergence. We have big differences in the Height with PCC measurement. This is due to the Airex Pad, because it is quite soft and this distorts the results. All other data is quite accurate, which is confirmed by our final calculations.

Thank you for your attention





Thank you for your attention

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