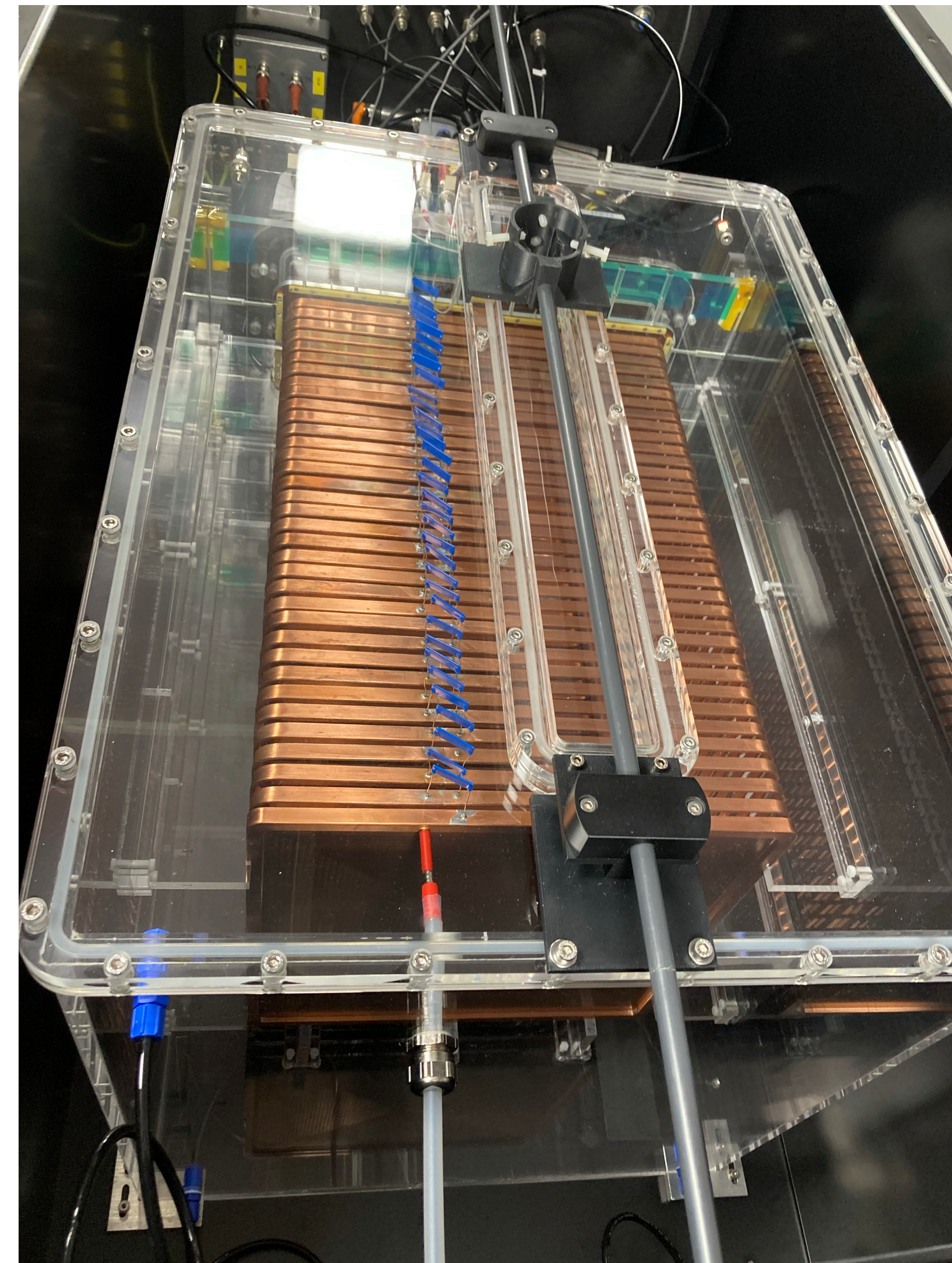


RUN 3 - summary

Stefano Piacentini

General Meeting

09/11/2023



RUN 3 - Summary [post summer]

- **Run 3** officially **began on May 5th, 2023**
- **After the summer break**, it officially **re-started on September 26th, 2023**, and it is still ongoing
- We **calibrated** the detector with different **radioactive sources**, and **we collected a big amount of data**, in **stable** conditions of the detector (humidity, pressure, and, therefore, light yield)

Radioactive Sources	
source_type	Description
0	No source
1	Fe
2	AmBe
3	AmBe + Fe
4	Ba
5	Eu
6	Eu (less active)
7	Am

RUN 3 - Timetable [Spring & Summer]

May

LUNEDÌ	MARTEDÌ	MERCOLEDÌ	GIOVEDÌ	VENERDÌ	SABATO	DOMENICA
1	2	3	4	5	6	7
				Stability		
8	9	10	11	12	13	14
Stability	Bkg					
15	16	17	18	19	20	21
Stability		Hot spots (humidity, booster)			Stability	Bkg
22	23	24	25	26	27	28
Bkg				Issue with the pump		
29	30	31	1	2	3	4
Issue with the pump						

July

LUNEDÌ	MARTEDÌ	MERCOLEDÌ	GIOVEDÌ	VENERDÌ	SABATO	DOMENICA
26	27	28	29	30	1	2
					Issue with the pump	
3	4	5	6	7	8	9
Issue with the pump			Pedestal	Bkg		
10	11	12	13	14	15	16
Bkg						
17	18	19	20	21	22	23
Bkg		Stability				
24	25	26	27	28	29	30
	Stability			Bkg		
31	1	2	3	4	5	6
Bkg						

August

LUNEDÌ	MARTEDÌ	MERCOLEDÌ	GIOVEDÌ	VENERDÌ	SABATO	DOMENICA
31	1	2	3	4	5	6
	Bkg	AmBe campaign			Pedestal with AmBe	
7	8	9	10	11	12	13
Pedestal with AmBe	Issue with the pump					
14	15	16	17	18	19	20
Issue with the pump						
21	22	23	24	25	26	27
Issue with the pump						
28	29	30	31	1	2	3
Issue with the pump						

The **different phases** in **spring** and **summer**, that were interrupted mostly by issues with the gas system (leakages at the booster level, and the defective vacuum pump)

RUN 3 - Timetable [Sept. & Oct.]

September

LUNEDÌ	MARTEDÌ	MERCOLEDÌ	GIOVEDÌ	VENERDÌ	SABATO	DOMENICA
25	26	27	28	29	30	1
Issue with the pump	Stability			Bkg		

October

LUNEDÌ	MARTEDÌ	MERCOLEDÌ	GIOVEDÌ	VENERDÌ	SABATO	DOMENICA
25	26	27	28	29	30	1
						Bkg
2	3	4	5	6	7	8
Bkg						
9	10	11	12	13	14	15
Bkg	Barium					
16	17	18	19	20	21	22
Barium	Europium					
23	24	25	26	27	28	29
Europium		Fe - No Coll.	Europium - low activity			
30	31	1	2	3	4	5
Europium - low act.						

After the restart, there were **no particular issues** delaying the data taking plans

RUN 3 - Timetable [November]

LUNEDÌ	MARTEDÌ	MERCOLEDÌ	GIOVEDÌ	VENERDÌ	SABATO	DOMENICA
30	31	1	2	3	4	5
		Bkg				
6	7	8	9	10	11	12
Bkg	Americium					
13	14	15	16	17	18	19
Americium				Water Shielding installation		
20	21	22	23	24	25	26
Water Shielding installation						
27	28	29	30	1	2	3
Water Shielding instal.						

RUN 3 - Timetable [December]

LUNEDÌ	MARTEDÌ	MERCOLEDÌ	GIOVEDÌ	VENERDÌ	SABATO	DOMENICA
27	28	29	30	1	2	3
				RUN 4 - Commissioning		
4	5	6	7	8	9	10
RUN 4 - Comm.	RUN 4 - Bkg					
11	12	13	14	15	16	17
RUN 4 - Bkg						
18	19	20	21	22	23	24
25	26	27	28	29	30	31

RUN 3 - Summary [Details - Spring]

[Link to the sheet](#) [then look for the tab “LIME Underground Run 3 Summary”]

Start	Stop	Numbers			Description	Data runs	Data runs
2023-05-05 16:27	2023-05-09 10:07	17362	-	17816	Stability	362	146148
2023-05-09 10:18	2023-05-10 14:08	17817	-	18091	Bkg	243	97825
2023-05-10 14:11	2023-05-10 14:44	18092	-	18098	Daily Calibration	-	-
2023-05-10 14:47	2023-05-11 16:07:17	18099	-	18363	Bkg	234	94252
2023-05-11 16:13:02	2023-05-11 16:41:25	18364	-	18370	Daily Calibration	-	-
2023-05-11 16:47:28	2023-05-12 12:01:49	18371	-	18594	Bkg	198	79734
2023-05-12 12:07:31	2023-05-12 13:03:43	18595	-	18605	Daily Calibration	-	-
2023-05-12 13:04	2023-05-15 16:28:23	18606	-	19542	Bkg	831	334685
2023-05-15 16:29:41	2023-05-15 17:17:51	19543	-	19551	Daily Calibration	-	-
2023-05-15 17:21:24	2023-05-16 17:32:35	19552	-	19674	Stability	97	39100
2023-05-16 17:34:57	2023-05-16 18:11:26	19675	-	19691	Daily Calibration	-	-
Issue with the booster : sudden increase of humidity and too many hotspot to continue the data taking							
2023-05-20 11:16:18	2023-05-21 0:18:49	19704	-	19891	Stability	149	60005
2023-05-21 16:30:45	2023-05-22 16:17:07	19902	-	19908	Daily Calibration	-	-
2023-05-22 16:20:26	2023-05-23 12:31:49	19909	-	20067	Bkg	133	53455
2023-05-23 12:36:17	2023-05-23 13:26:35	20068	-	20074	Daily Calibration	-	-
2023-05-23 13:29:43	2023-05-24 14:59:51	20075	-	20277	Bkg	177	71138
2023-05-24 15:05:03	2023-05-24 15:46:29	20278	-	20284	Daily Calibration	-	-
2023-05-24 15:49:09	2023-05-25 9:06:39	20285	-	20415	Bkg	115	46184
Issue with the pump : it didn't restarted after technical intervention to fix the booster leakage							

RUN 3 - Summary [Details - Summer]

[Link to the sheet](#) [then look for the tab “LIME Underground Run 3 Summary”]

Start	Stop	Numbers			Description	Data runs	Data runs
Issue with the pump : it didn't restarted after technical intervention to fix the booster leakage							
2023-07-06 15:16:24	2023-07-07 18:52:12	20426	-	20816	Pedestal Study [GEMs OFF]	340	136940
2023-07-07 18:54:41	2023-07-12 10:10:41	20817	-	21041	Stability *	112	45072
2023-07-12 14:47:29	2023-07-12 15:32:40	21049	-	21055	Daily Calibration		
2023-07-12 15:37:53	2023-07-17 11:10:11	21056	-	22074	Bkg	862	346008
2023-07-17 11:14:10	2023-07-17 12:09:49	22075	-	22083	Daily Calibration		
2023-07-17 12:29:04	2023-07-18 11:13:28	22084	-	22291	Bkg	184	74014
2023-07-18 11:16:48	2023-07-18 11:55:00	22292	-	22298	Daily Calibration		
2023-07-18 12:00:51	2023-07-19 11:46:29	22299	-	22505	Bkg	182	73048
2023-07-19 11:48:55	2023-07-19 12:46:22	22506	-	22514	Daily Calibration		
2023-07-19 12:51:52	2023-07-20 13:44:11	22515	-	22568	Stability *	26	10493
Issue with the pump : it abruptly stopped working							
2023-07-25 12:15:46	2023-07-28 10:33:13	22570	-	22717	Stability	73	29432
2023-07-28 11:13:45	2023-07-28 11:51:10	22718	-	22724	Daily Calibration		
2023-07-28 11:55:49	2023-07-31 12:11:05	22725	-	23350	Bkg	567	227938
2023-07-31 12:13:08	2023-07-31 12:50:11	23351	-	23357	Daily Calibration		
2023-07-31 12:52:29	2023-08-01 14:42:19	23358	-	23579	Bkg	200	80382
2023-08-01 14:44:07	2023-08-01 15:27:10	23580	-	23586	Daily Calibration		
2023-08-01 15:33:15	2023-08-02 11:54:39	23587	-	23760	Bkg	157	63111
2023-08-02 11:56:49	2023-08-02 12:41:09	23761	-	23767	Daily Calibration		
2023-08-02 12:43:32	2023-08-02 14:50:34	23768	-	23800	Stability	29	11690
Installation of the AmBe source							
2023-08-02 15:56:54	2023-08-03 9:57:41	23819	-	23984	AmBe Campaign	150	60339
2023-08-03 10:07:42	2023-08-03 12:28:56	23987	-	24022	AmBe + Fe	31	12511
2023-08-03 12:31:49	2023-08-04 21:35:21	24023	-	24328	AmBe Campaign	277	111389
2023-08-04 21:39:20	2023-08-07 20:00:35	24329	-	25427	Pedestal Study [AmBe - GEMs OFF]	1013	411196
Issue with the pump : it died after run 24328							

RUN 3 - Summary [Details - Restart]

[Link to the sheet](#) [then look for the tab “LIME Underground Run 3 Summary”]

Re - Start of RUN3							
2023-09-26 11:18:20		25430	25482	Stability - Line 2	52		
		25486	25772	Stability - Line 1	286		
		25723	25731	Daily Calibration	-	-	
		25734	26291	Bkg	157	63111	
		26292	26298	Daily Calibration	-	-	
		26299	26505	Bkg	158	63112	
		26506	26512	Daily Calibration	-	-	
		26513	26771	Bkg	159	63113	
		26772	26778	Daily Calibration	-	-	
		26779	26779	Bkg	160	63114	
		26780	26946	Daily Calibration	-	-	
		26947	27136	Bkg	161	63115	
		27137	27143	Daily Calibration	-	-	
		27144	27313	Bkg	162	63116	
		27314	27320	Daily Calibration	-	-	
		27321	27507	Bkg	163	63117	
		27508	27516	Daily Calibration	-	-	
		27517	27653	Bkg	164	63118	
		27654	27660	Daily Calibration	-	-	
	2023-10-10 8:44:19	27661	27845	Bkg	158	63112	

RUN 3 - Summary [Details - Ba, Eu, and uncollimated Fe]

[Link to the sheet](#) [then look for the tab “LIME Underground Run 3 Summary”]

Start	Stop	Numbers			Description
Ba Campaign, different z postions, 100 ms exposure					
2023-10-10 12:03:51		27883	-	28229	Ba step 1, z = 3.5 rings, z= 5 cm
		28230	-	28641	Ba step 2, z = 10.5 rings, z= 15 cm
		28642	-	29494	Ba step 3, z = 17.5 rings, z= 25 cm
		29495		30365	Ba step 4, z = 24.5 rings, z= 35 cm
		30366		30814	Ba step 5, z = 32.5 rings, z= 45 cm
	2023-10-17 10:49:32	30815		30831	Ba Campaign - No Collimator
Eu Campaign, different z postions, 100 ms exposure					
2023-10-17 13:01:36		30846		31443	Eu step 1, z = 3.5 rings, z= 5 cm
		31445		31850	Eu step 2, z = 10.5 rings, z= 15 cm
		31852		34871	Eu step 3, z = 17.5 rings, z= 25 cm
		32354		33915	Eu step 4, z = 24.5 rings, z= 35 cm
		33917		34408	Eu step 5, z = 31.5 rings, z= 45 cm
	2023-10-25 8:47:12	34409		34871	Eu step 3, z = 17.5 rings, z= 25 cm
55Fe without collimator, 300 ms exposure					
2023-10-25 12:26:26		34876		34881	Calibration - No Collimator - Step 1 = 5 cm
		34883		34887	Calibration - No Collimator - Step 2= 15 cm
		34889		34893	Calibration - No Collimator - Step 3 = 25 cm
		34895		34901	Calibration - No Collimator - Step 4 = 35 cm
	2023-10-26 12:36:49	34908		35169	Calibration - No Collimator - Step 3 = 25 cm Long

RUN 3 - Summary [Details - Eu, Bkg, and Am]

[Link to the sheet](#) [then look for the tab “LIME Underground Run 3 Summary”]

Start	Stop	Numbers			Description
Eu Campaign, different z postions, 300 ms exposure, source with low activity					
2023-10-26 13:47:49		35173		35423	Calibration - No Collimator - Step 1 = 5 cm
		35424		35733	Calibration - No Collimator - Step 2= 15 cm
		35734		36116	Calibration - No Collimator - Step 3 = 25 cm
		36117		36427	Calibration - No Collimator - Step 4 = 35 cm
	2023-10-31 8:09:29	36428		36655	Calibration - No Collimator - Step 3 = 25 cm Long
Bkg, No source, 300 ms exposure					
2023-10-31 14:03:11		36658		36661	Fe Calibration [parking, step1, step3]
		36664		36840	Bkg
		36841		36847	Daily Calibration
		36848		37017	Bkg
		37018		37024	Daily Calibration
		37025		37828	Bkg
		37829		37835	Daily Calibration
	2023-11-06 21:02:02	37836		37869	Bkg
Bkg, No source, 100 ms exposure					
2023-11-06 21:05:15		37870		37937	Bkg
	2023-11-07 9:00:32	37946		37952	Daily Calibration [300 ms]
Am Campaign, different z positions, 300 ms exposure					
2023-11-07 12:31:45		37952		38241	Calibration - No Collimator - Step 1 = 5 cm
	Now	38243		Now	Calibration - No Collimator - Step 2= 15 cm