PITZ Run Coordination Meeting

09.01.2014

Week 2: Plans

1. Conditioning
   - A. HV=9.7kV➔ max peak power at 100/200/400/650?us → with new Mo cathode (633.1)???
   - **B. Another approach: conditioning with 800us pulses**
   - **C. Reach the milestone : 24h=6.5/650/390**
   - D. Monitor resonance temperature (Excel file: ResTemp400usMonitoring.xlsx)
   - E. Monitor dark current: 6.5MW, 200us, LOW.FC1 (same Excel file)➔ + solenoid scan
2. Photoelectrons:
   - A. Insert new Cs2Te cathode → QE and QE-map measurements
   - B. Solenoid BBA (stable run at 200us 2-3MW, full solenoid range) → MK
3. Measurement program
   - 1.2 Long momentum measurements
   - 1.2 Kapton foil tests with e-beam
   - 1.2 Booster steering studies
   - 1.2 Booster steering
   - 1.4 BPM commissioning
   - 2.5 Phase stability measurements (+new WCS tests)

Week 2	Wed Jan-08	Thu Jan-09	Fri Jan-10	Sat Jan-11	Sun Jan-12
Morn. 7:00 to 15:30	Gross	Gross Rublack	Gross Rublack	Gross Good	Gross Good
Late 15:00 to 23:30		Krasilnikov Isaev	Krasilnikov Marchetti	Krasilnikov Marchetti	Krasilniko Marchetti
Night 23:00 to 7:30					vrel Prach B.

Laser pulse shaper

Cond 10;501 00;200 ;400 x 6.5MW .

Kapton? 650us

Solenoid BBA, 650us

QE, QE-map 650us

Long. momentum measurements 650us

Week 3	Mon Jan-13	Tue Jan-14	Wed Jan-15	Thu Jan-16	Fri Jan-17	Sat Jan-18	Sun Jan-19
Morn. 7:00 to 15:30	Isaev Good	Isaev Good	Isaev Good	Isaev Good	Isaev Good	Isaev Malyutin	Isaev Malyutin
Late 15:00 to 23:30	Khojoyan Kourkafas	Khojoyan Kourkafas	Khojoyan Kalantaryan	Khojoyan Kalantaryan	Khojoyan Kalantaryan	Khojoyan Kalantaryan	Khojoyan Kalantaryan
Night 23:00 to 7:30	Gross Melkumyan	Gross Melkumyan	Vashchenko Melkumyan	Vashchenko Melkumyan	Vashchenko Melkumyan	Vashchenko Melkumyan	Vashchenko Melkumyan

Cathode box exchange on 21.12.2013

Mo cathode #638.1 → removed

Mo cathode #633.1 → inserted

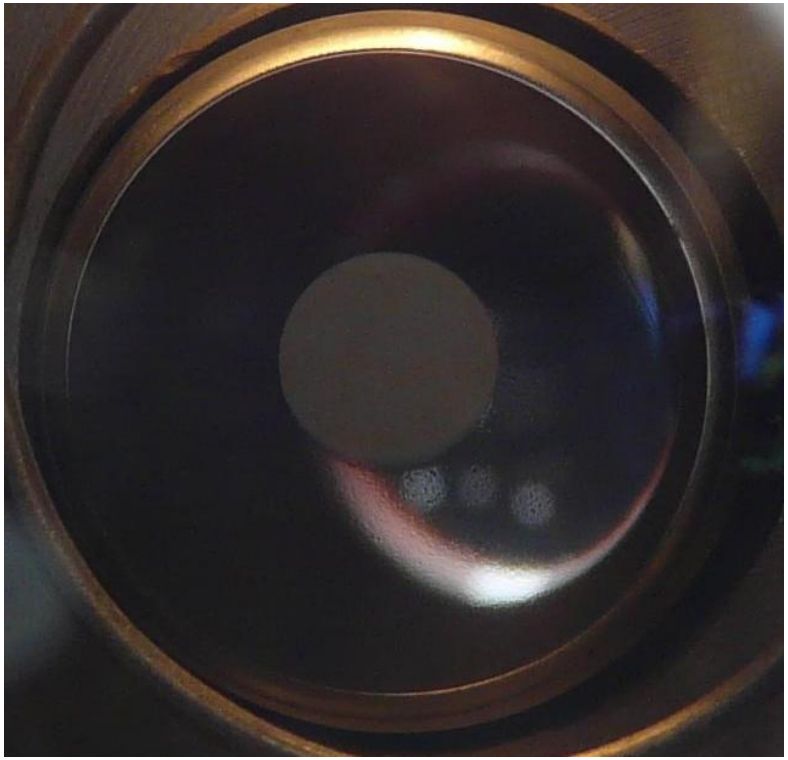
Mo cathode #633.1: before and after operation

21.12.2013 before 1st insertion

06.01.2014 after 2 weeks of run

Cs2Te cathode #640.1: before insertion

Visual inspection on 08.01.2014

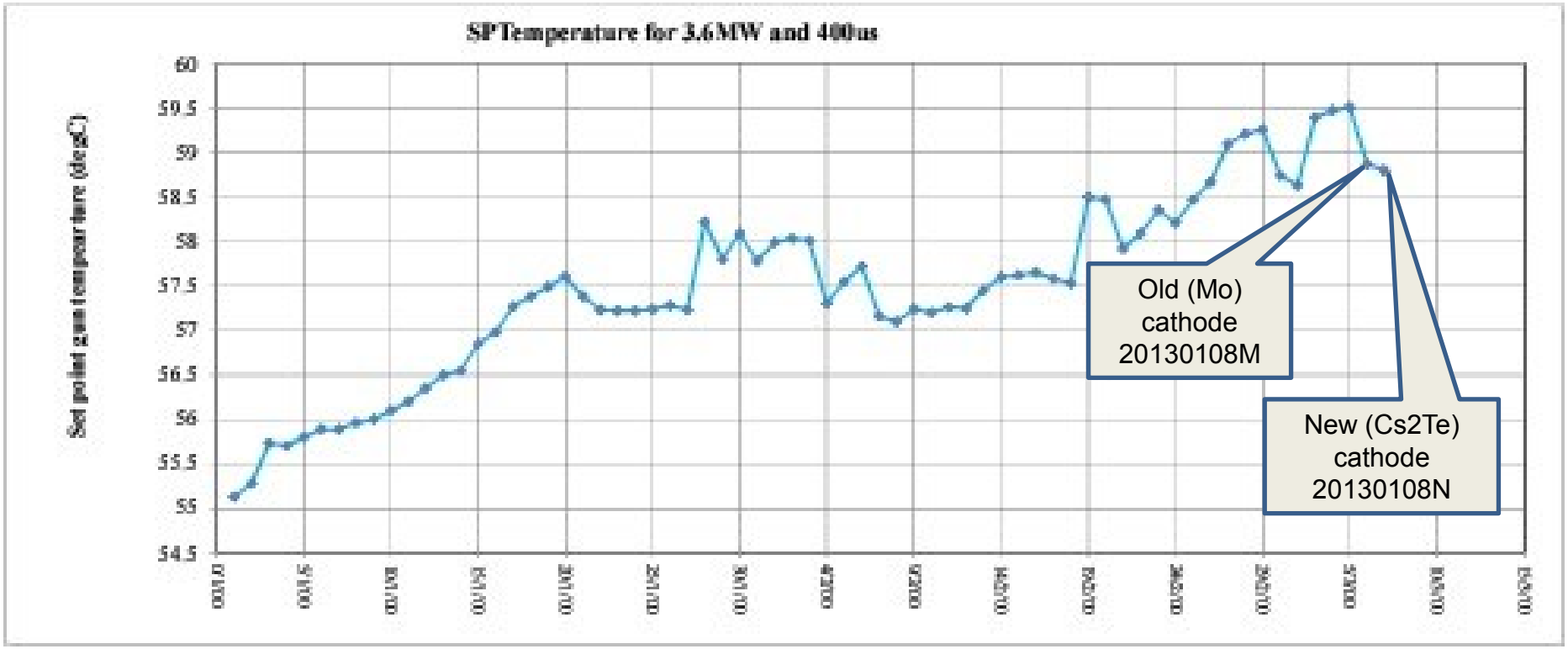


Week 2: problems

- Rather long conditioning time for the Cs2Te cathode #640.1 (2 shifts at least)

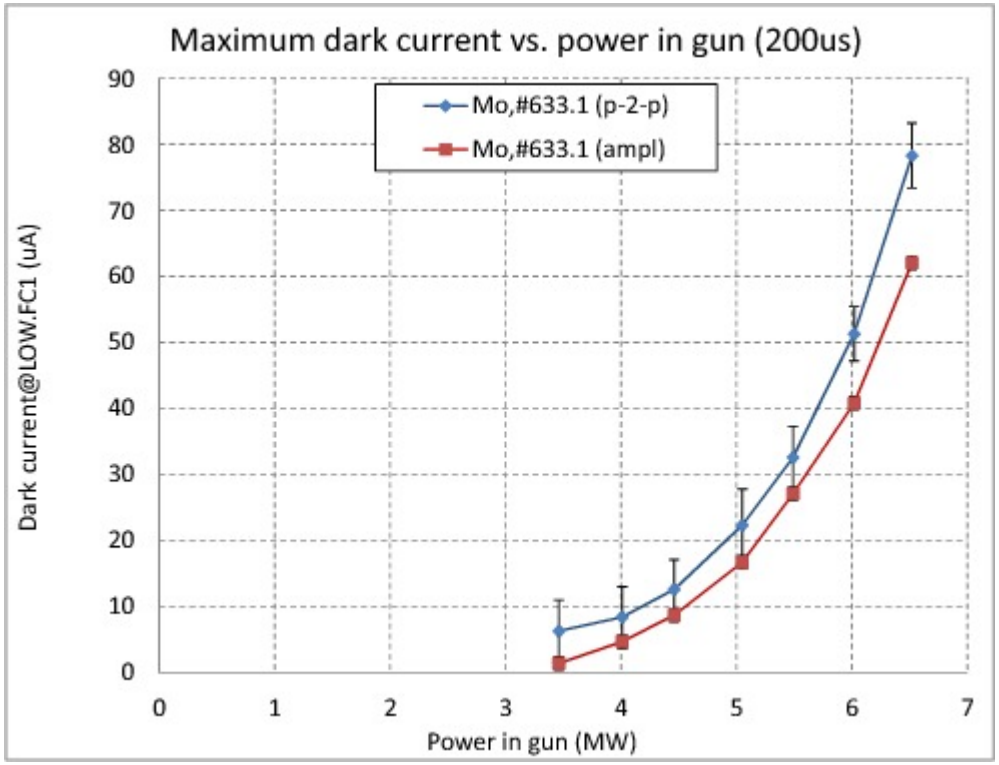
E.G. 20140108N
#1: 23:14, 200us, 6.0MW, PMT window+coupler
* #2: 23:49, 200us, 6.2MW, PMT window+coupler, Max refl. WG1&2
* #3: 00:28, 200us, 6.5MW, PMT coupler, Max refl. WG1&2
* #4: 01:10, 200us, 6.5MW, PMT window+coupler, Max refl. WG1&2
* #5: 02:08, 400us, 5.0MW, PMT coupler
* #6: 02:36, 400us, 5.8MW, PMT window+coupler
* #7: 03:06, 400us, 6.3MW, PMT window+coupler
* #8: 03:36, 400us, 6.4MW, PMT window+coupler
* #9: 04:24, 400us, 6.5MW, PMT window+coupler
* #10:05:27, 650us, 5.3MW, PMT coupler
* #11:06:07, 650us, 6.2MW, PMT window+coupler
* #12:06:37, 650us, 6.3MW, PMT window+coupler

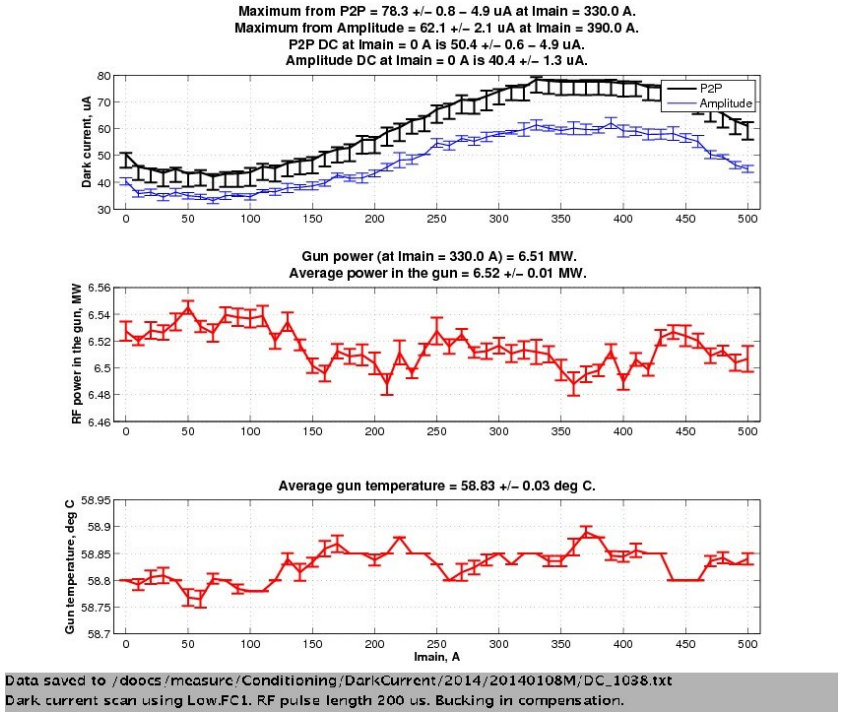
- Laser does not work – problems with regen.ampl. (no QE measurements on 08.01.2014)
- Resonance temperature



Dark current

Vs. RF peak power (200us,Mo#633.1)

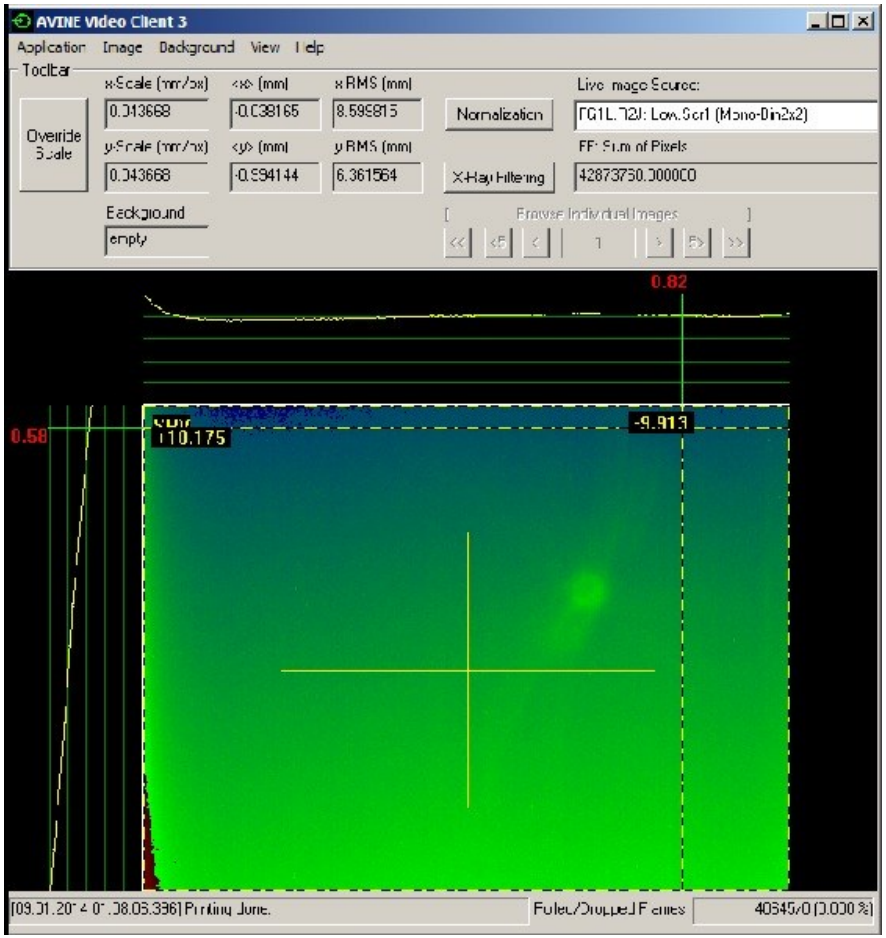


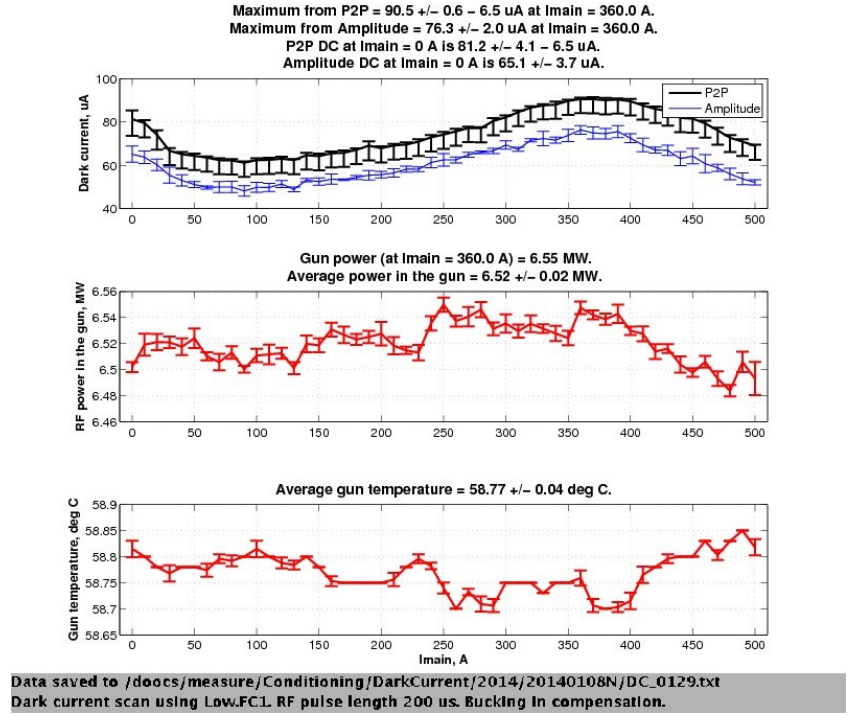


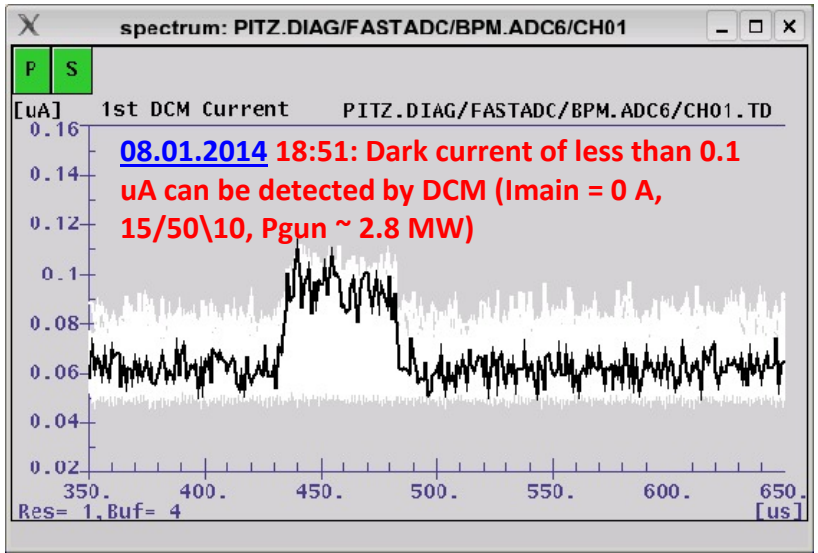
Maximum dark current

(200us, Cs2Te#640.1) ➔ **~90uA**

09.01.2014 01:08
Dark current at low.scr1
Imain=440A; full power (6.5MW)







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Night 23:00 to 7:30	Otevrel Prach B.			Prach B.	Prach B.

Laser pulse shaper

Cond 10;501 00;200 ;400 x 6.5MW .

Kapton? 650us

Solenoid BBA, 650us

Long. momentum measurements 650us

QE, QE-map 650us

Week 3	Mon Jan-13	Tue Jan-14	Wed Jan-15	Thu Jan-16	Fri Jan-17	Sat Jan-18	Sun Jan-19
Morn. :00 to 5:30	Automatic Conditioning	Automatic Conditioning	Automatic Conditioning	Automatic Conditioning	Automatic Conditioning	Automatic Conditioning	Automatic Conditioning
ate 5:00	Khojoyan Melkumyan	Khojoyan Melkumyan	Khojoyan Melkumyan	Khojoyan Melkumyan	Khojoyan Melkumyan	Automatic Conditioning	Automatic Conditioning
to :30	Automatic Conditioning	Automatic Conditioning	Automatic Conditioning	Automatic Conditioning	Automatic Conditioning	Automatic Conditioning	Automatic Conditioning

Measurement program: Gun-4.4

priority	program item	num.of shifts	coordinator	prefered dates	Remarks
0.9	Dark current measurements	1-2	M.Krasilnikov		200us, 2D scan(RF power, Imain)
1	Laser alignment (rough)	2-4	M.Gross	12.11.2013	done
1.1	Solenoid BBA	4	M.Krasilnikov	after 12.11	in progress
1.2	Long momentum measurements	2	M. Otevrel		more details?
1.2	QE and QE-map measurements	2	M. Otevrel, M. Gross		
1.2	Kapton foil tests with e-beam	1	M.Gross	weeks 48 or 50	solenoid scan+booster
1.2	Booster steering studies	7	M.Otevrel, D.Kalantaryan	after 12.11	?combined with Cathode-1?
1.4	BPMs commissioning	3	M.Krasilnikov, F.Tonisch		+booster
1.6	Emittance-1nC	17	G.Vashchenko, M.Krasilnikov		Flattop laser temporal profile
1.61	Emittance-250pC	10	G.Vashchenko, M.Krasilnikov		Flattop laser temporal profile
1.62	Emittance-100pC	20	G.Vashchenko, M.Krasilnikov		Flattop laser temporal profile
1.63	Emittance-20pC	21	G.Vashchenko, M.Krasilnikov		Flattop laser temporal profile
1.7	Tomo-1	14	G.Kourkafas		
2.41	Tomo-2 (matching studies)	14	G.Kourkafas		
2.5	Cathodes-1 (life time)	21	S.Lederer		21 shift/cathode!->63?; 6500nC/sec!
2.5	Gun phase stability	9	I.Isaev		to be combined with Cathodes-1?
2.6	Cathodes-2 (emittance,QE,QE-map)	6	S.Lederer,...		2 cathodes
2.8	Emission studies	6	M.Krasilnikov		laser temporal profile to be changed
2.85	Bunch length by 3-phase method	??	T.Vinatier		LPS (D.Malyutin?) + D.Lipka (DCM1)?
2.9	Low charge bunches characterization	9	B.Marchetti, D.Malyutin		Laser=5.4ps FWHM
2.91	Gauss-20pC	12	M.Rehders		laser temporal profile to be changed
2.95	Thermal emittance	??	M.Otevrel		
3	Bunch length with DCM1	3	D.Lipka	not KW7/2014	cross-check with LPS Tomo (DM)
3	XFEL Toroid	1	R.Neumann (N.Baboi), F.Tonisch	2013/KW50, 2014/KW3,6,8; Mo-Do	to be combined with Cathodes-1?
3.5	?Booster dark current studies?	??			1week for higher peak power