Update on Status in Erlangen

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ERLANGEN CENTRE FOR ASTROPARTICLE PHYSICS

FRIEDRICH-ALEXANDER UNIVERSITÄT ERLANGEN-NÜRNBERG
NATURWISSENSCHAFTLICHE FAKULTÄT

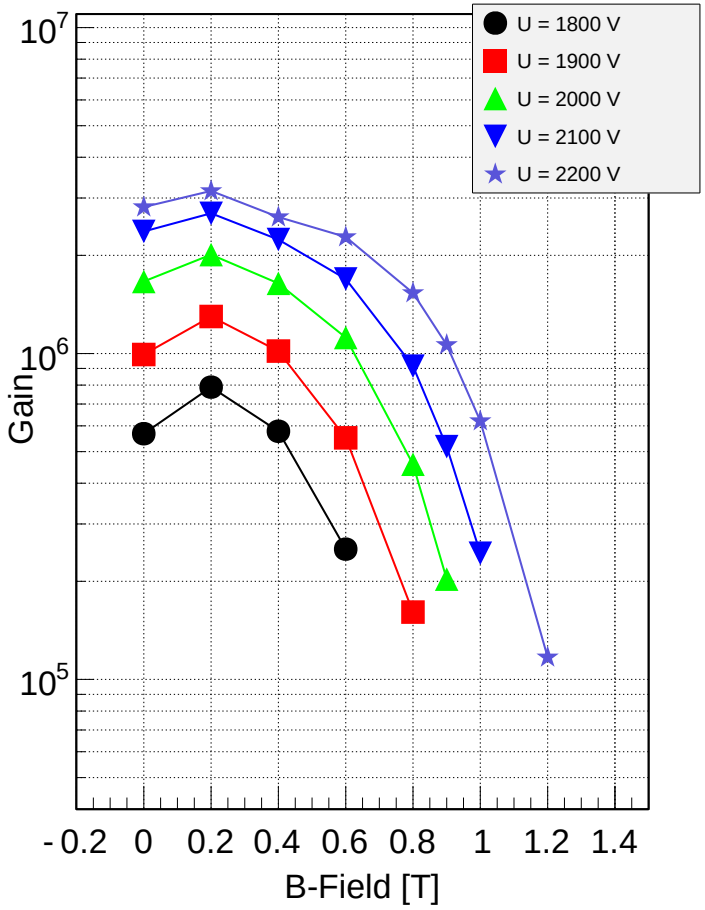
Outline

- B-Field scans
- New Laser (632 nm) and new Box
- Results of latest lifetime measurements

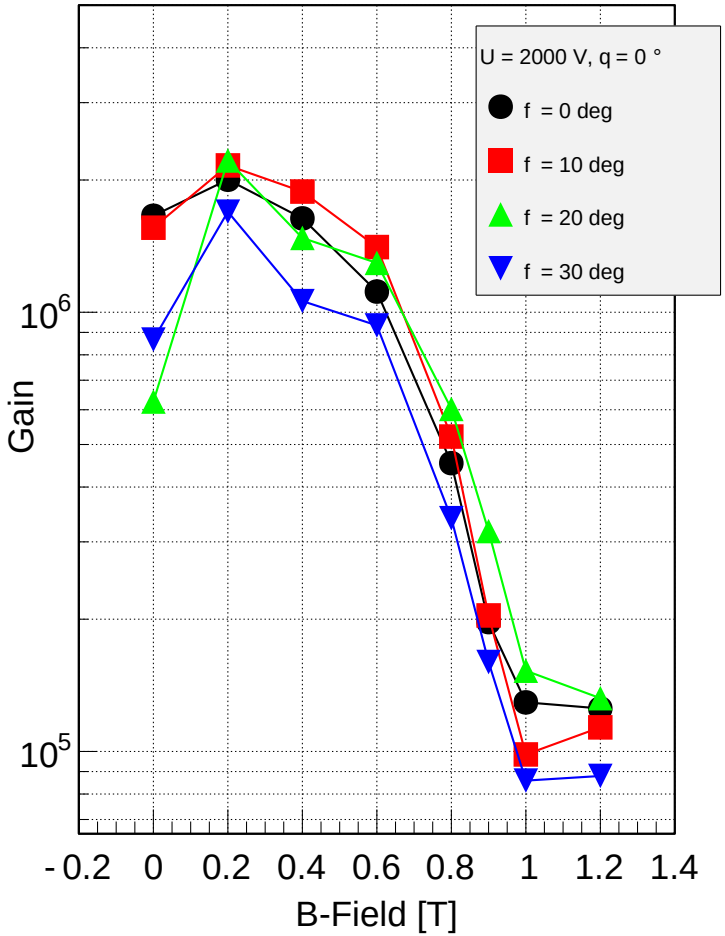
B-Field scans

ERLANGEN CENTRE FOR ASTROPARTICLE PHYSICS
FRIEDRICH-ALEXANDER UNIVERSITÄT ERLANGEN-NÜRNBERG
NATURWISSENSCHAFTLICHE FAKULTÄT

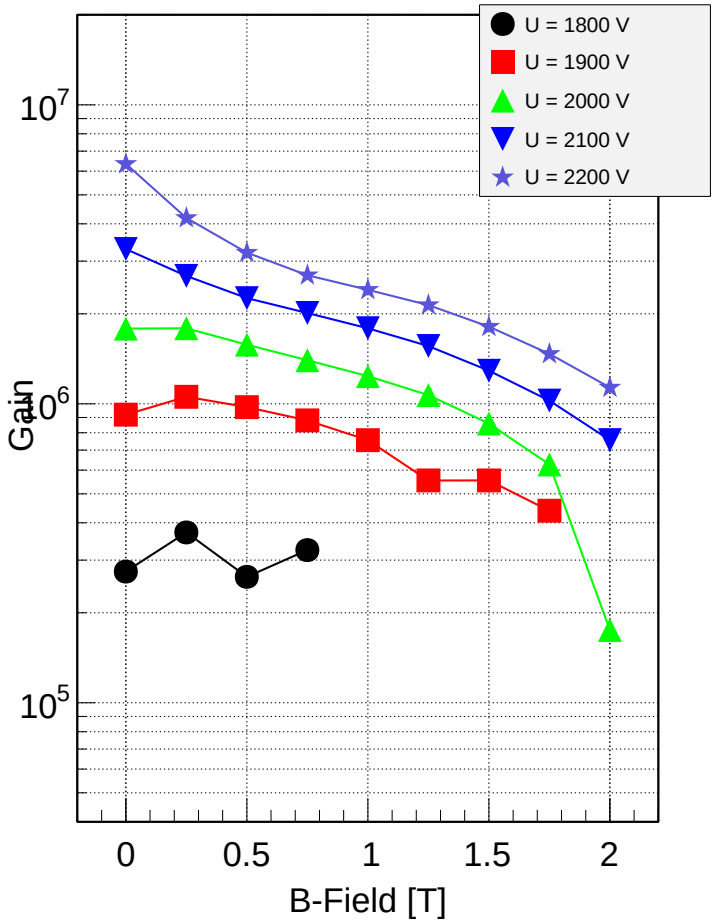
ALD Photonis XP85012 9001340 (25 µm): Pixel 44



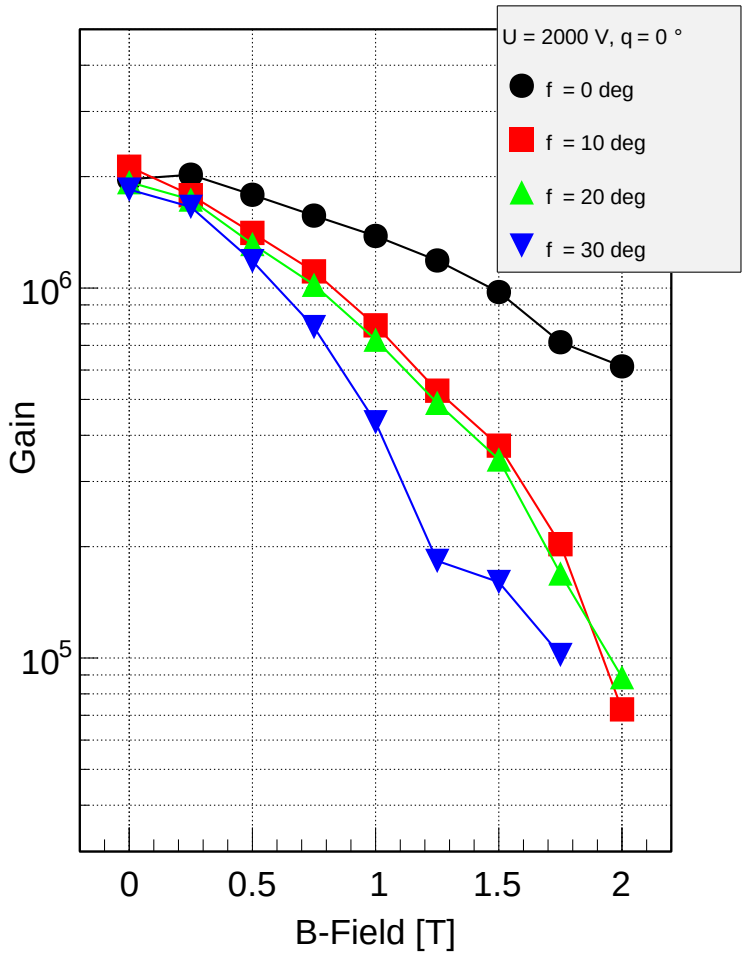
ALD Photonis XP85012 9001340 (25 µm): Pixel 44

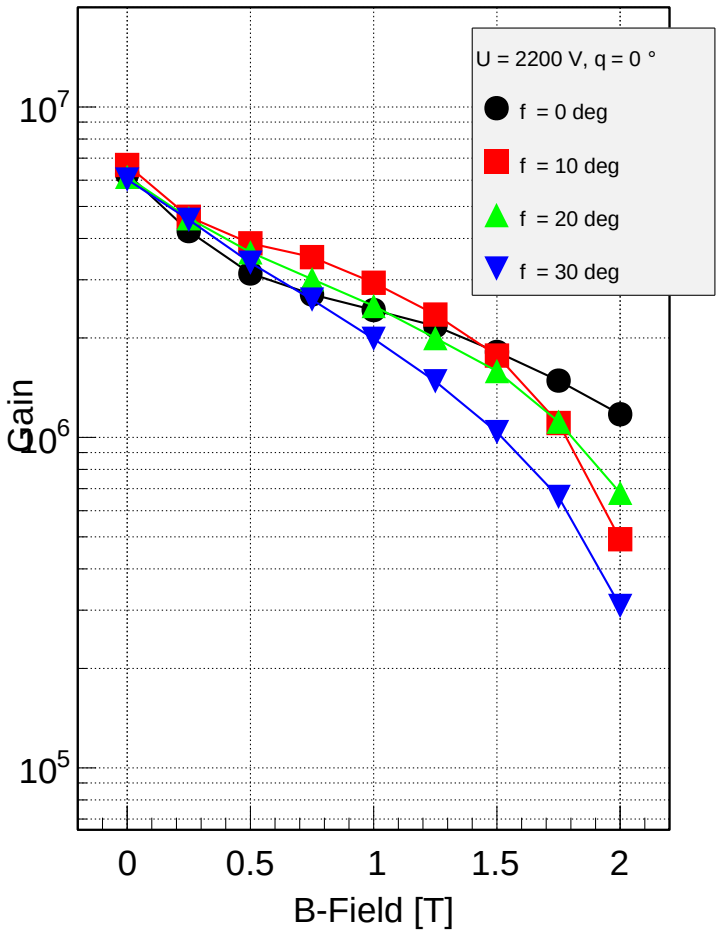


ALD Photonis XP85112 9001393 URD (10 µm): Pixel 44

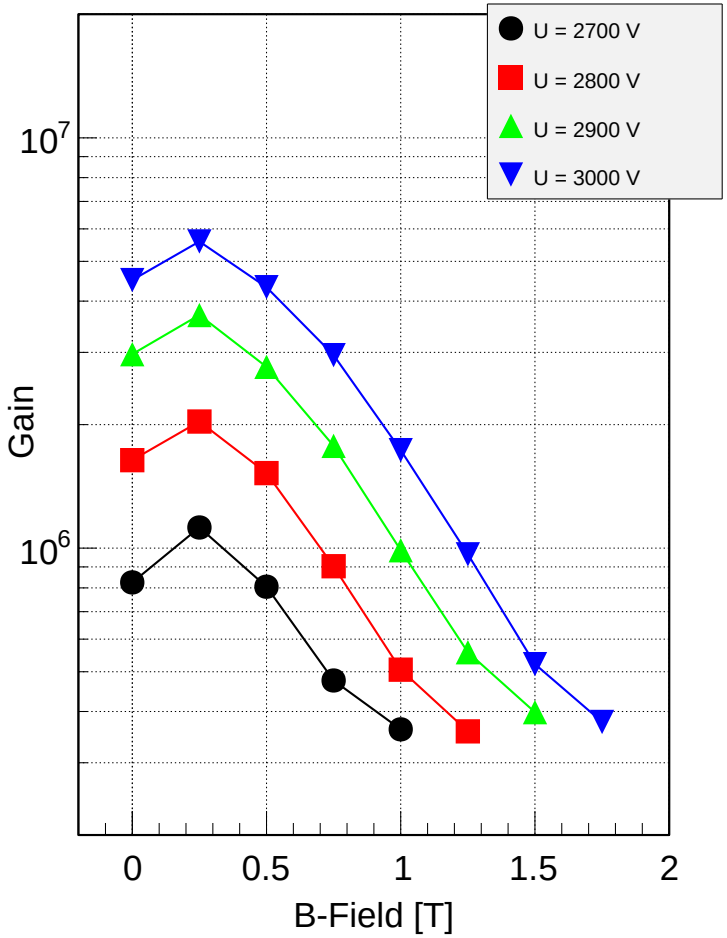


ALD Photonis XP85112 9001393 URD (10 µm): Pixel 44

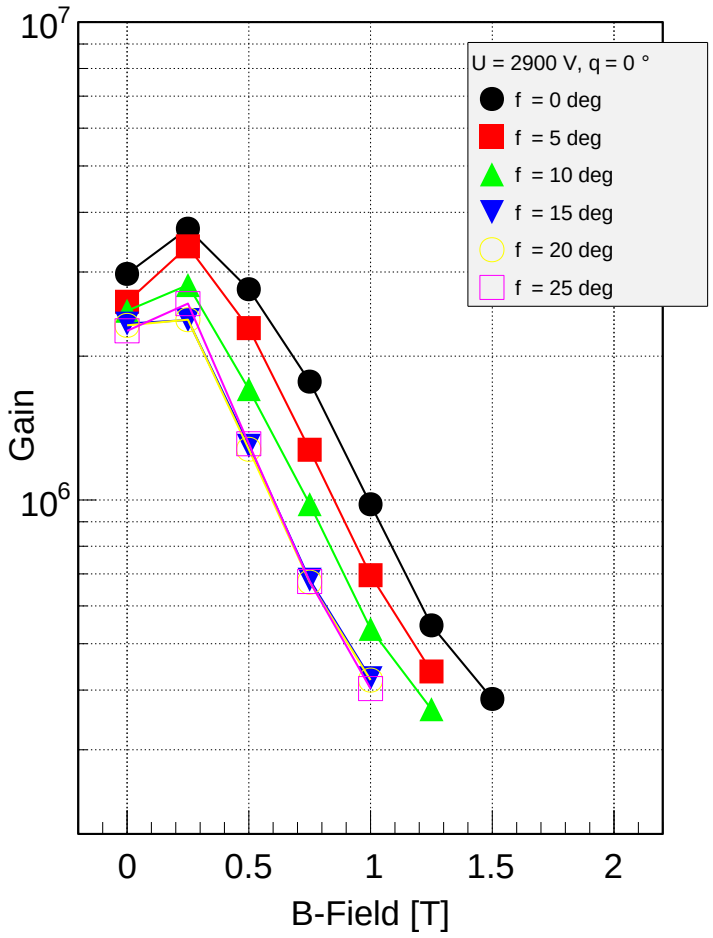


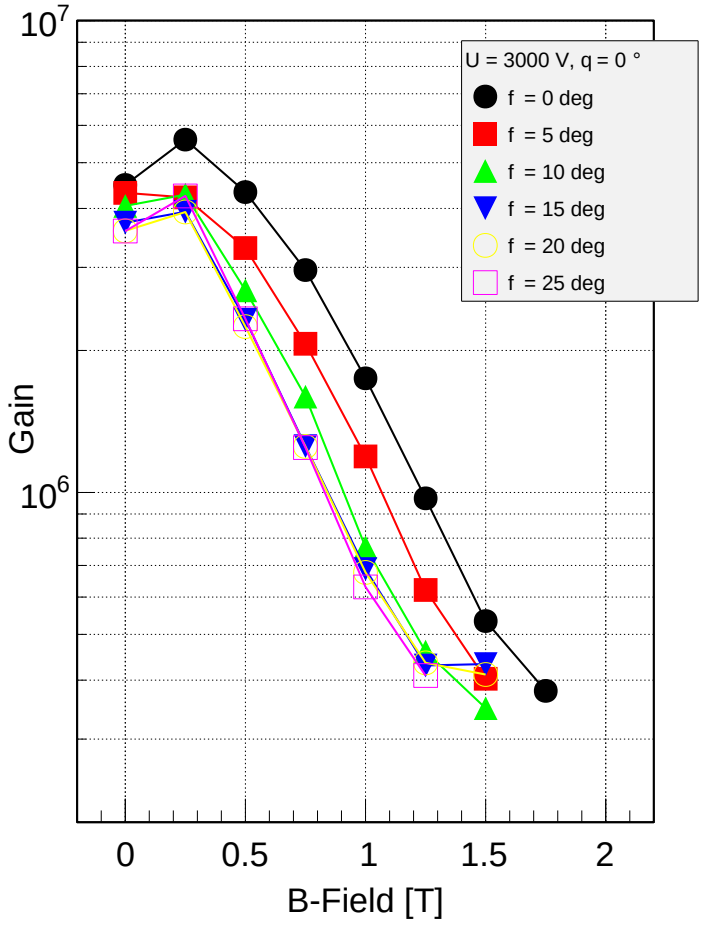


ALD Hamamatsu JS0027 (10 µm): Pixel 1-64

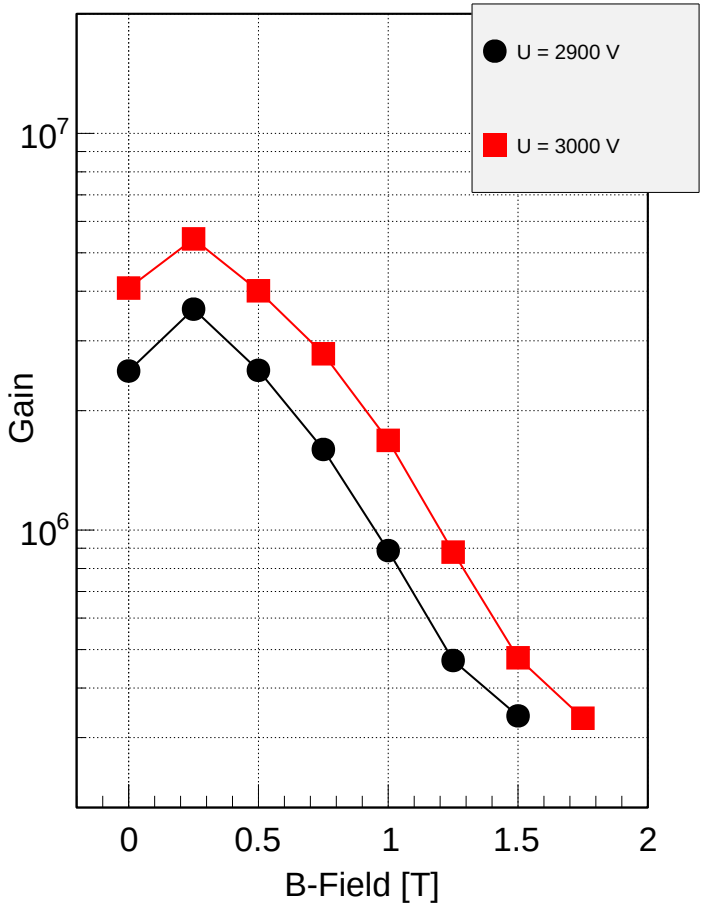


ALD Hamamatsu JS0027 (10 µm): Pixel 1-64

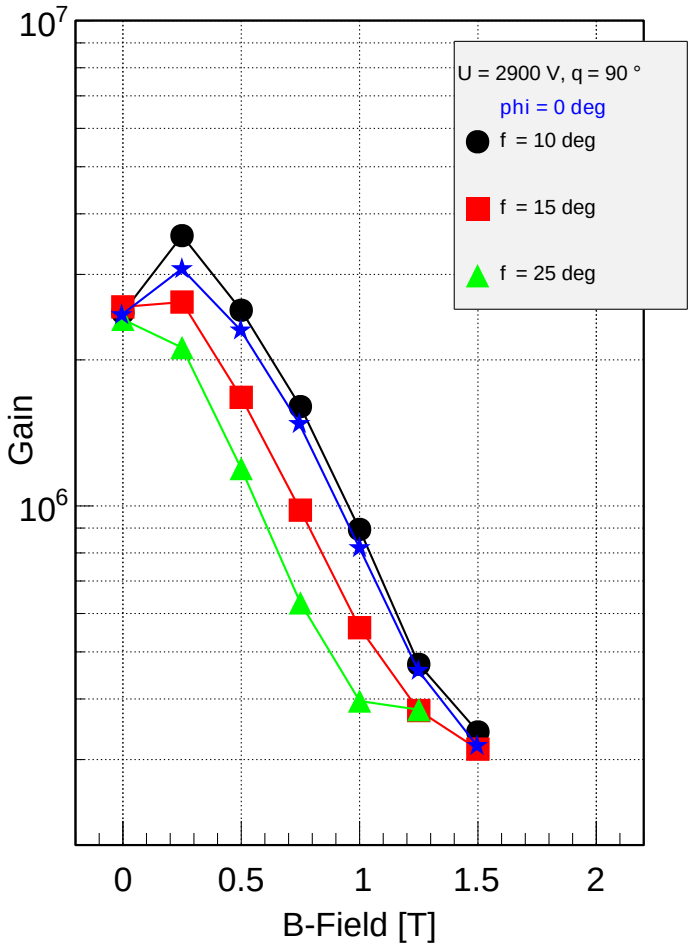


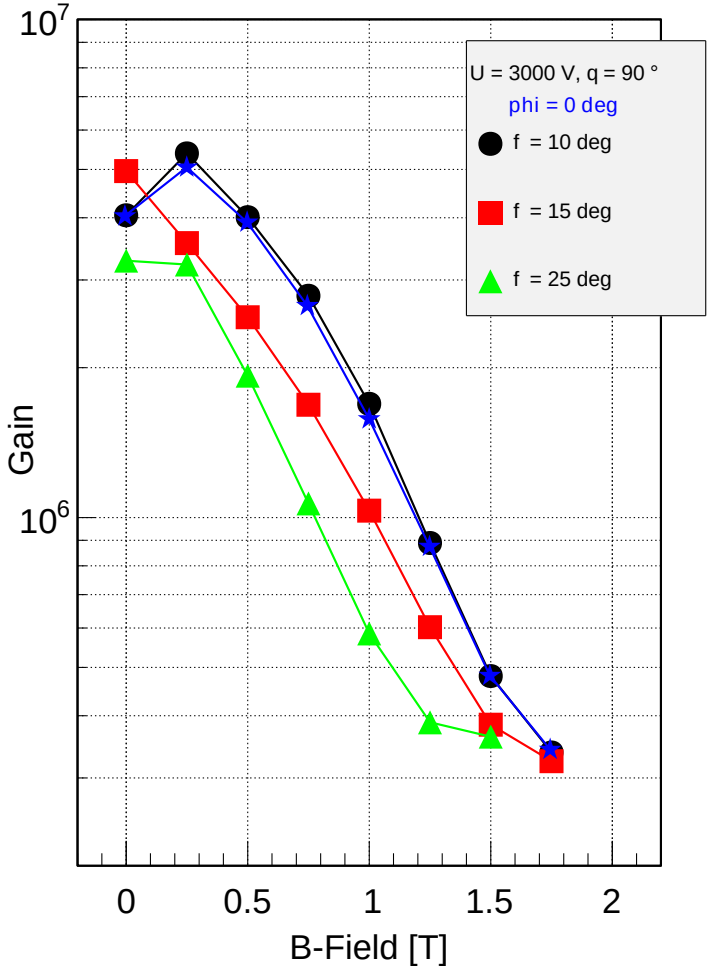


ALD Hamamatsu JS0027 (10 µm): Pixel 1-64 ; Theta = 90

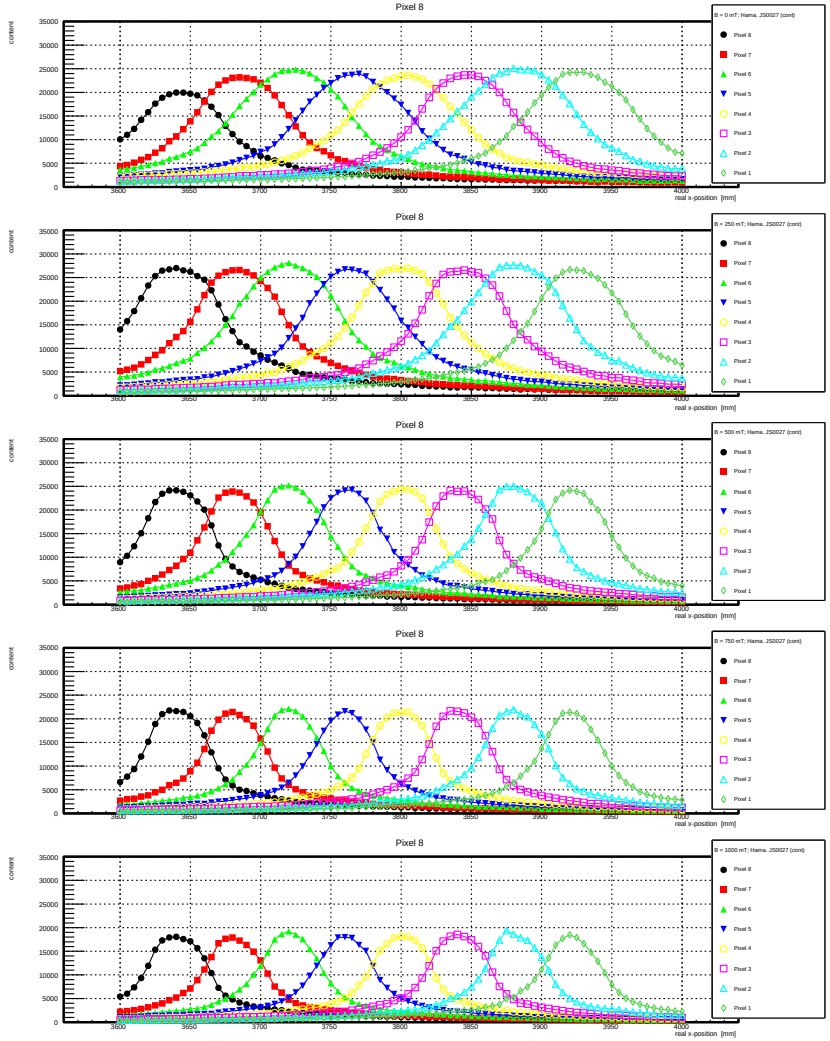


ALD Hamamatsu JS0027 (10 µm): Pixel 1-64 ; Theta = 90

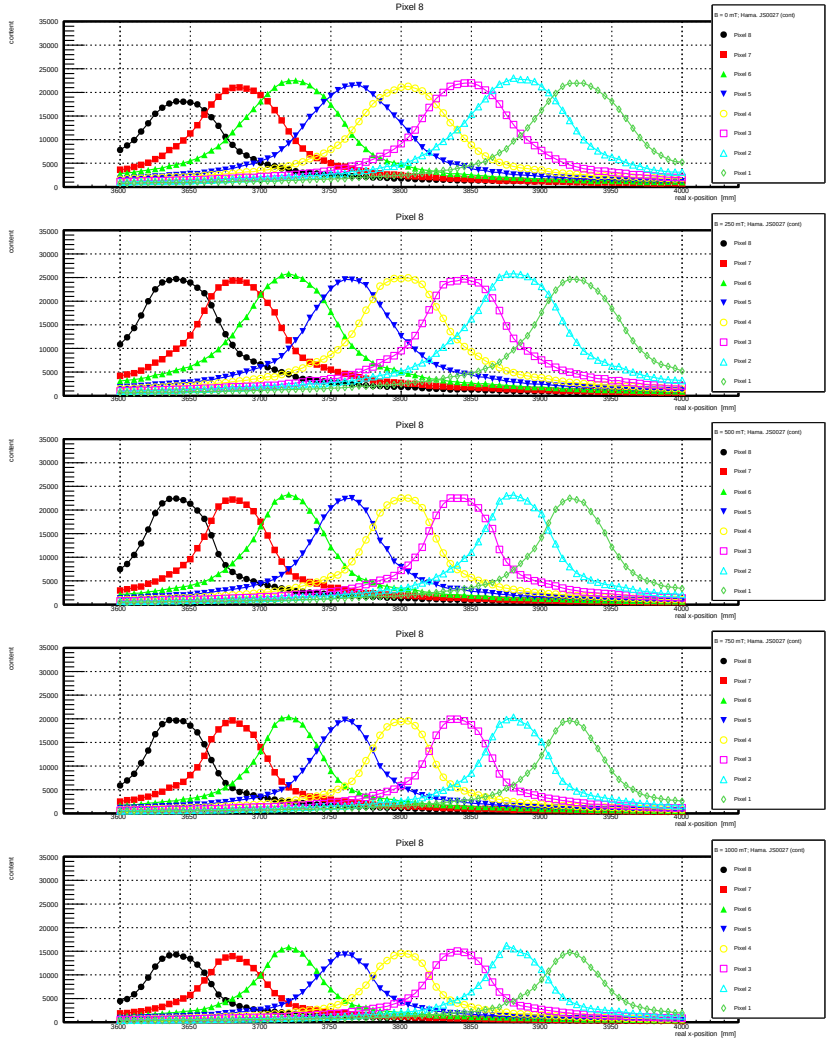




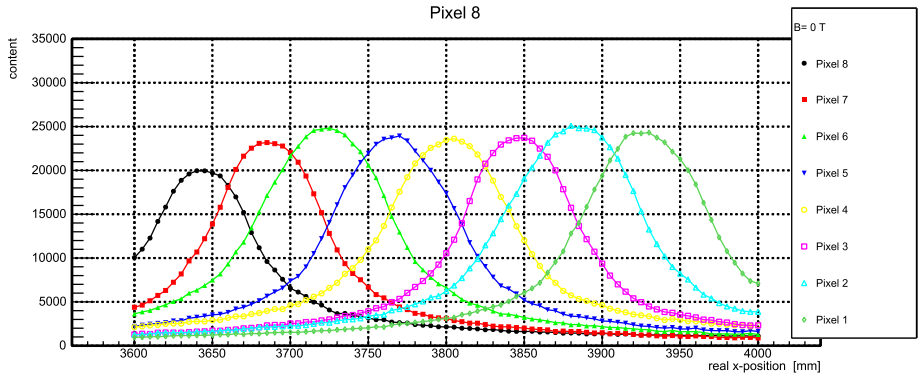
ALD Hamamatsu JS0027 (10 µm): Scan Pixel 30-37; thr30

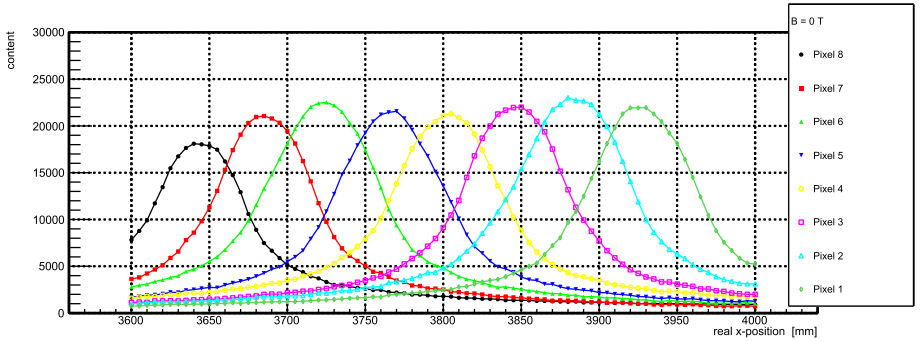


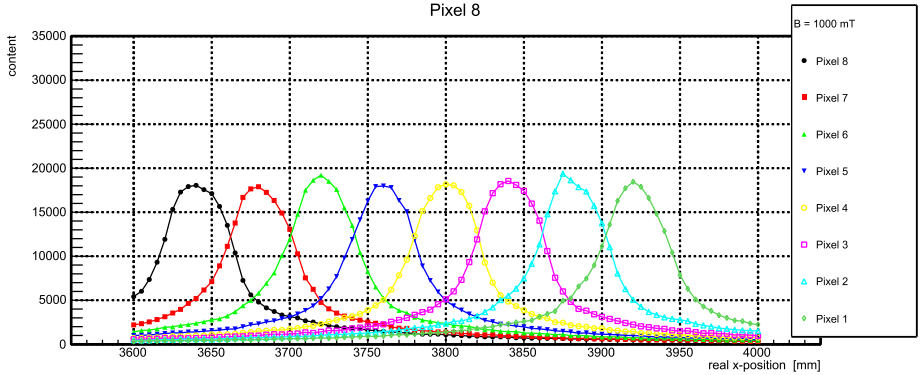
ALD Hamamatsu JS0027 (10 µm): Scan Pixel 30-37; thr50

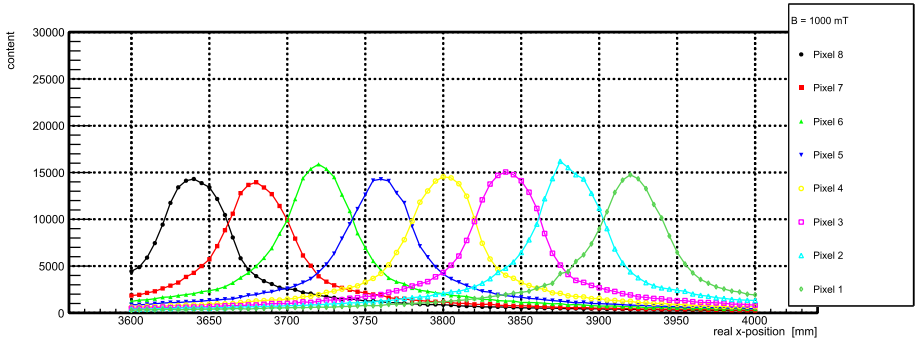


ALD Hamamatsu JS0027 (10 µm): Position Scan Pixel 30-37; thr30 thr50

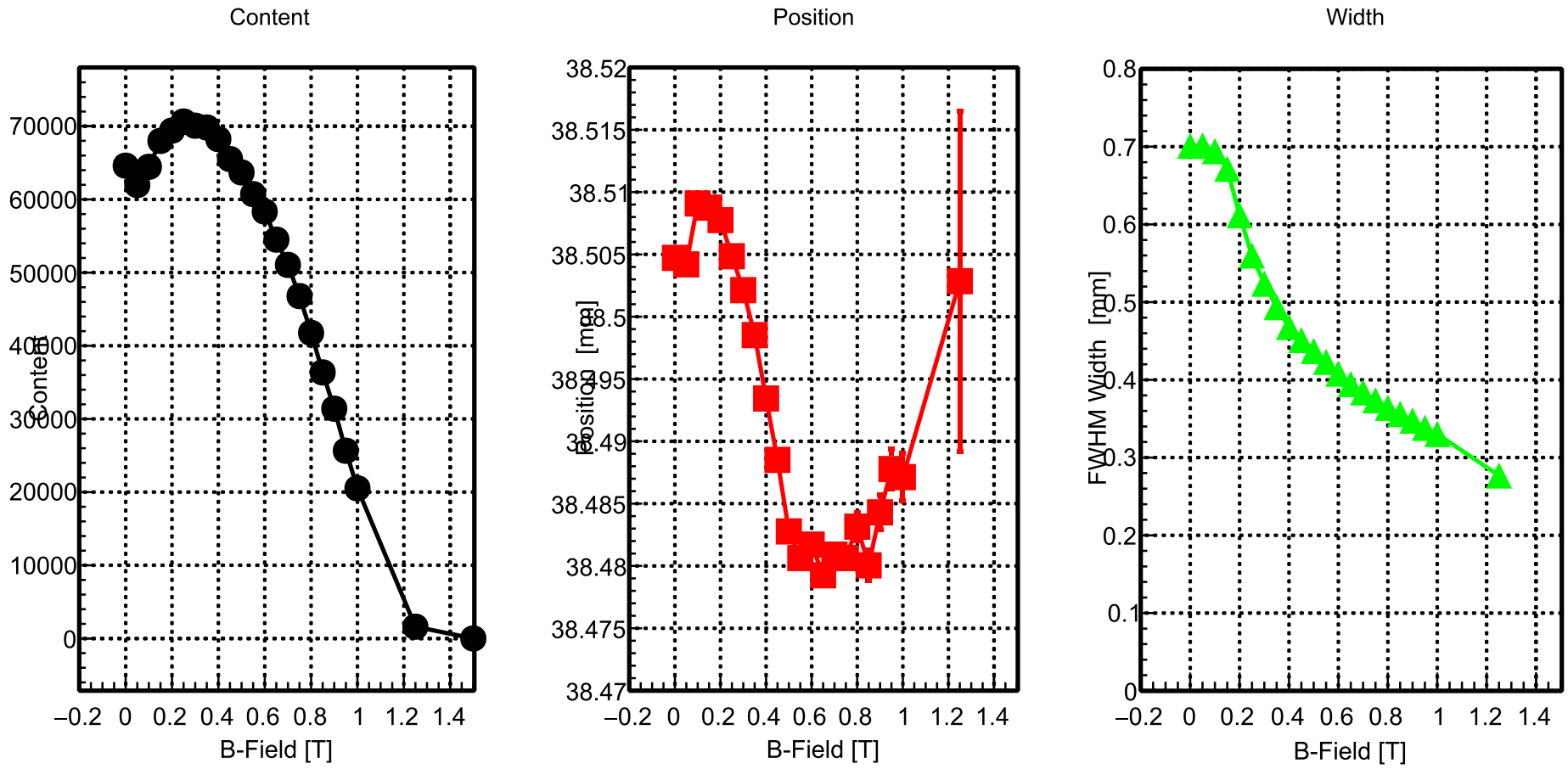




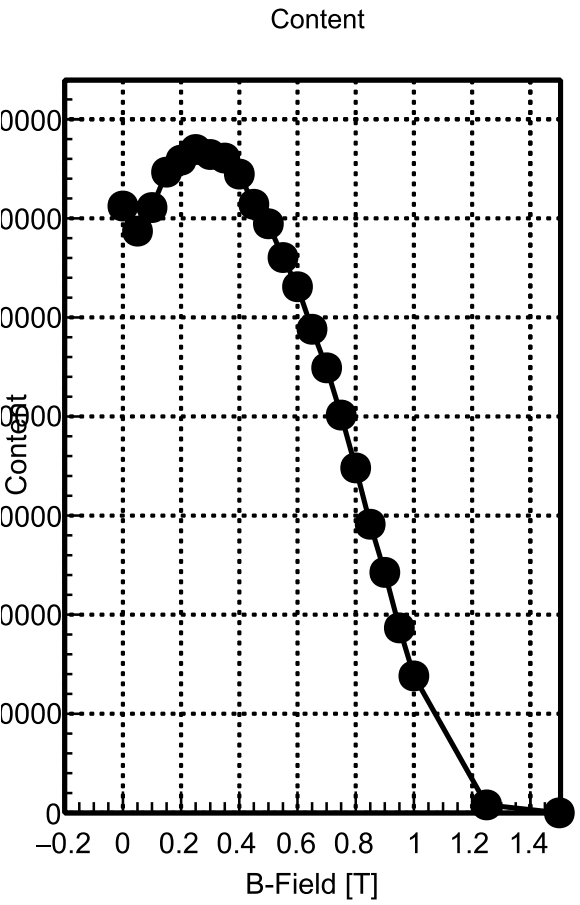


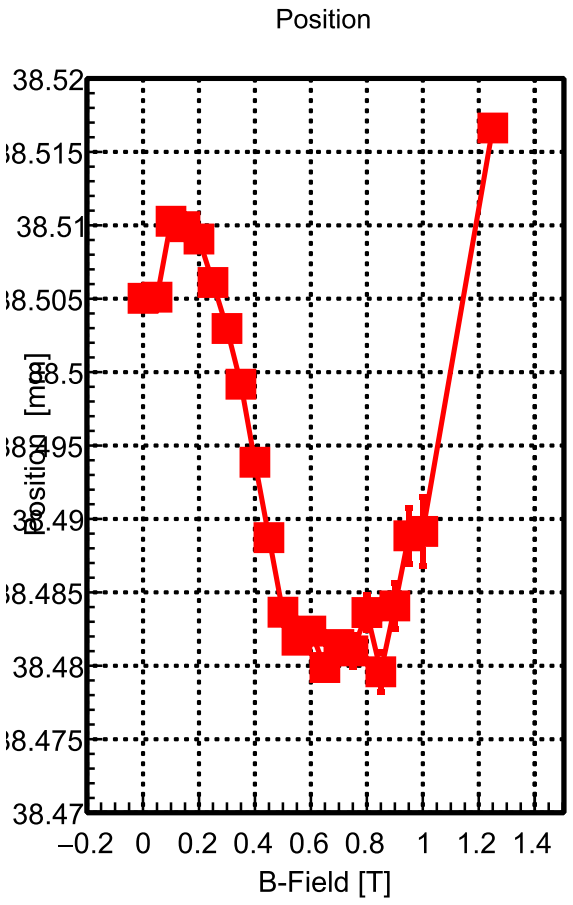


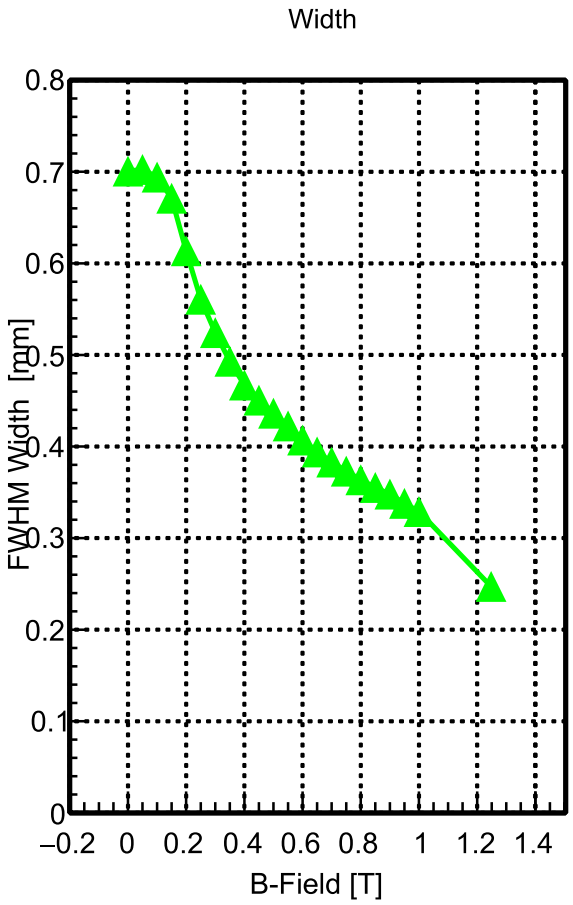
Hamamatsu Charge Cloud; Thr = 30



Hamamatsu Charge Cloud; Thr = 50



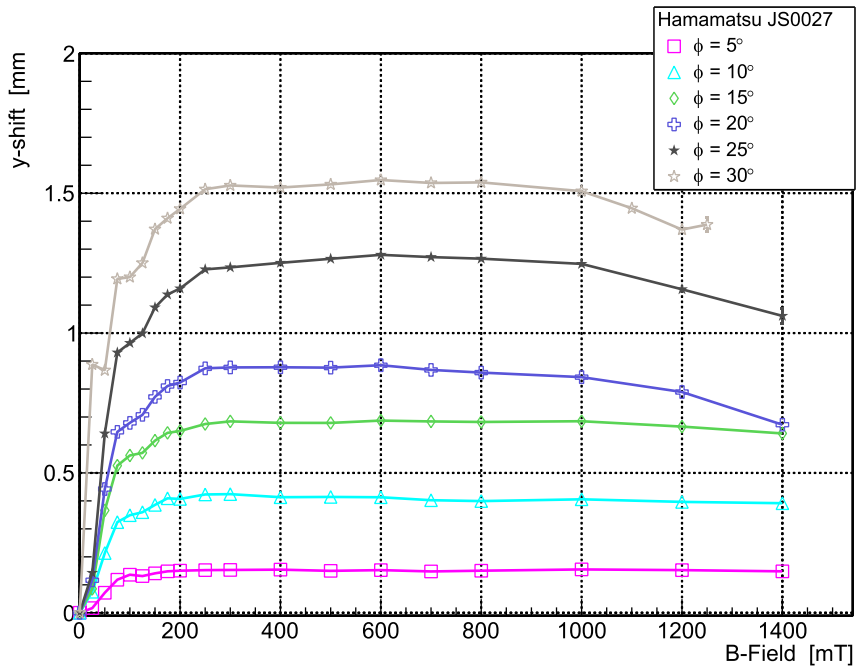


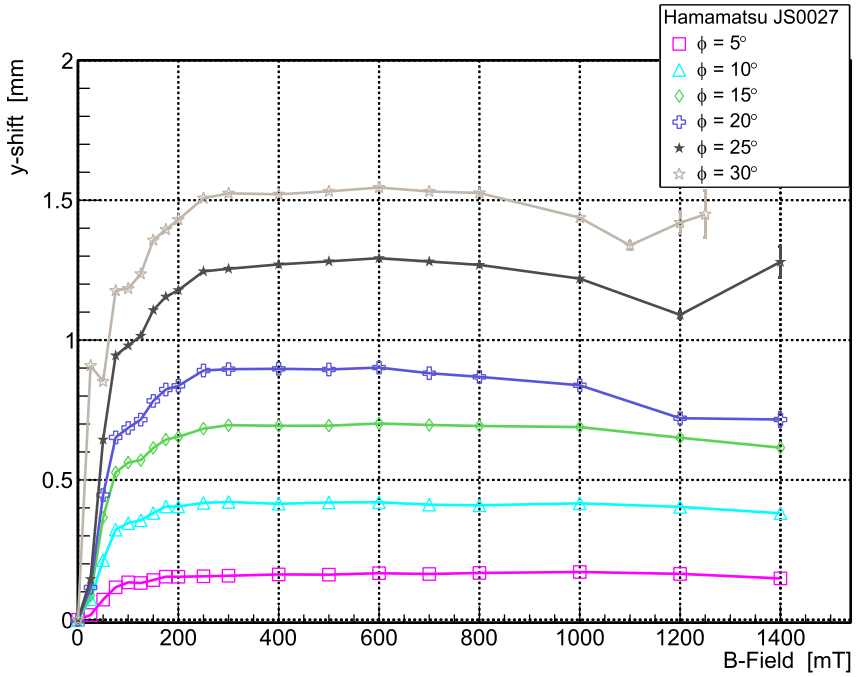


Hamamatsu y-shift vs B-Field

- Thr 30

Thr 50





New Laser 632 nm and new Box

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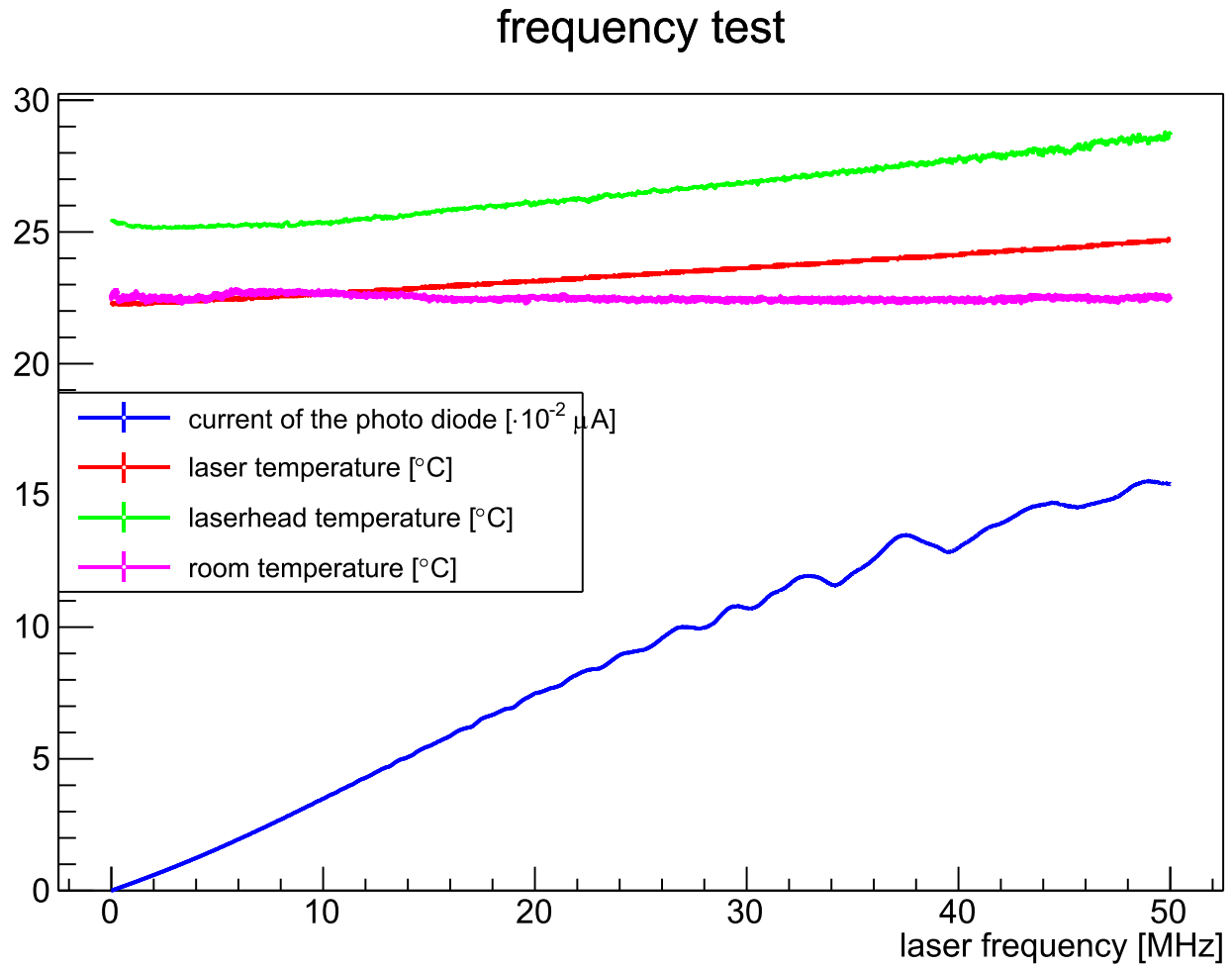
Red laser

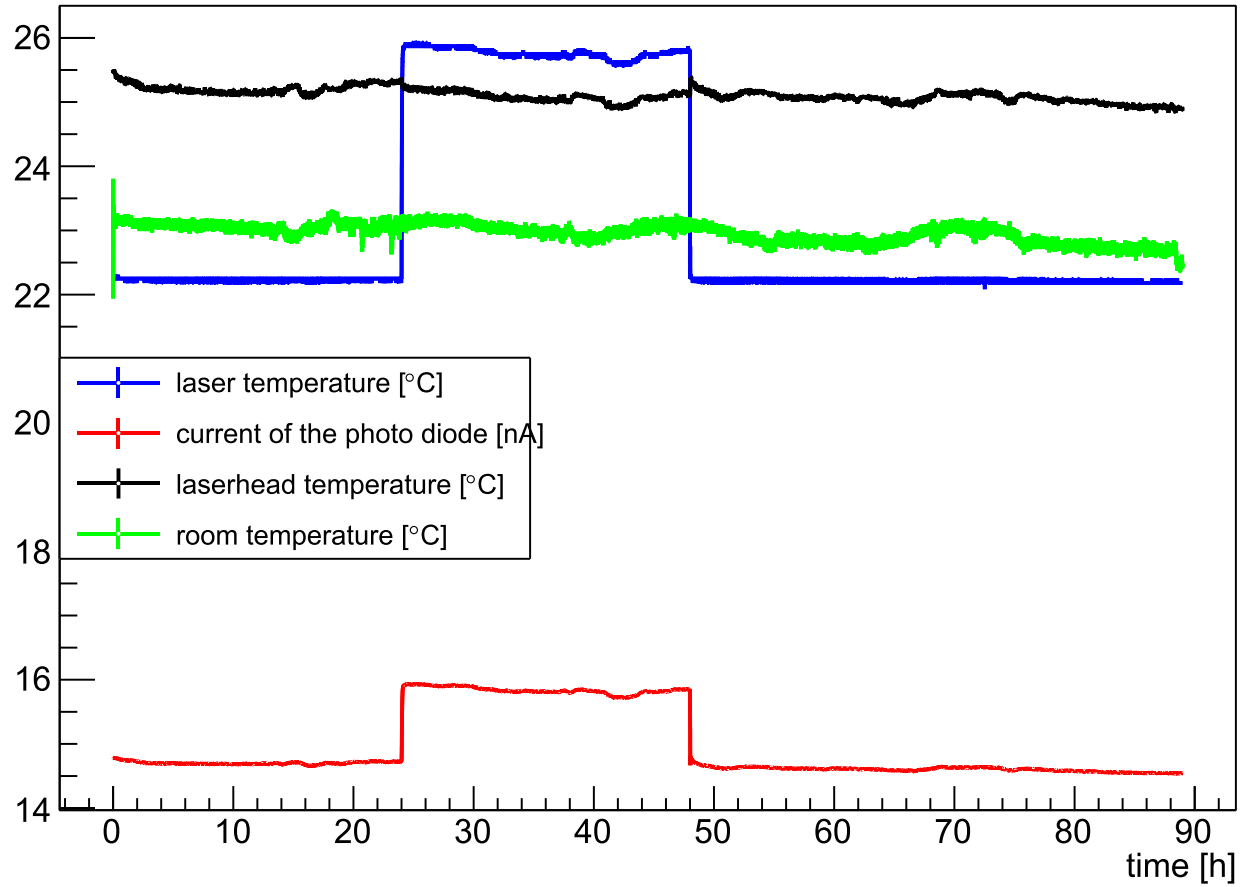
- Wavelength of 632 nm
- Suitable for time resolution measurements
- Laser head cooling unit integrated
- Up to 50 MHz rate
- Remote control possible
- QE-Scans possible
- Maybe rate stability with single Photons?

Correlation frequency vs. photo diode current

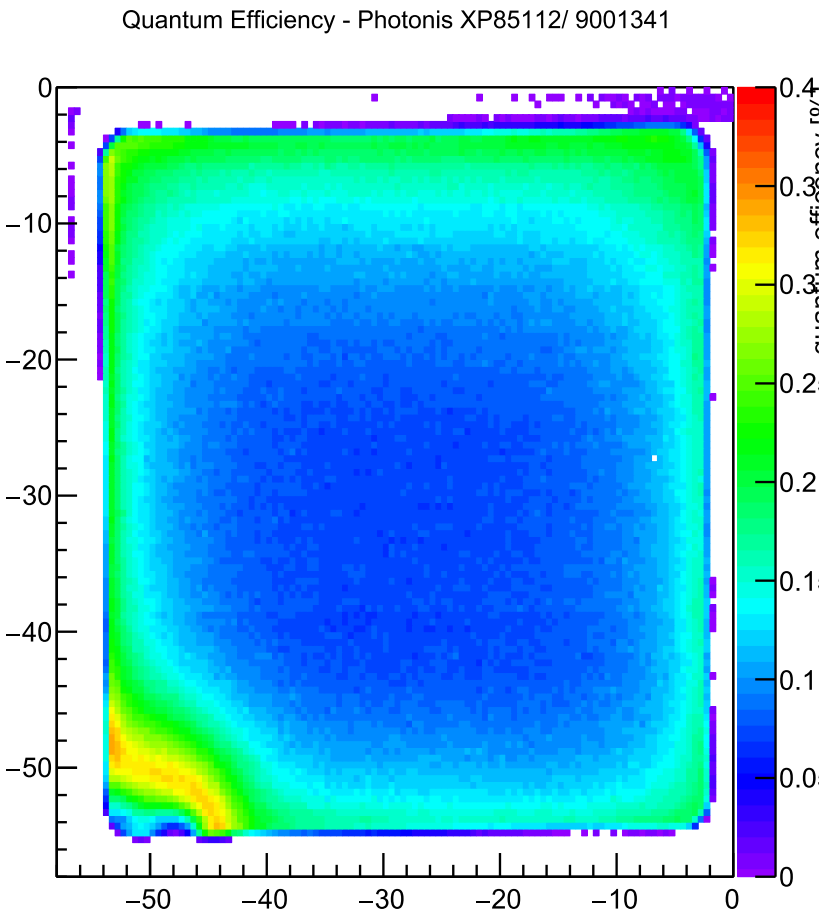


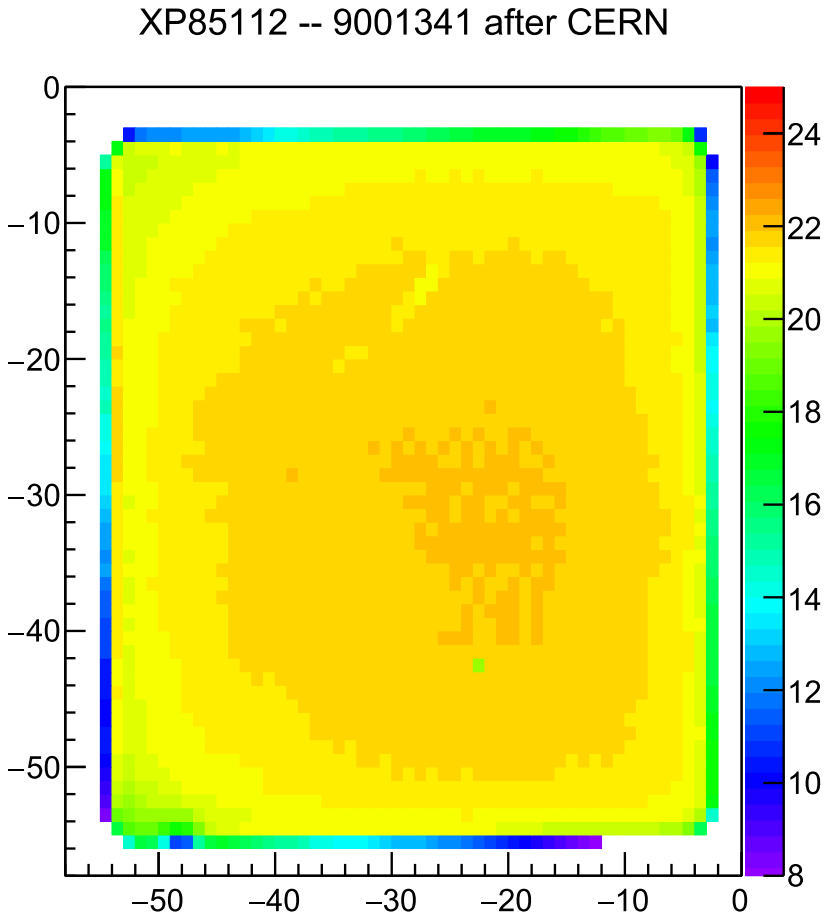
Stability of new laser

measurement of the laser stability



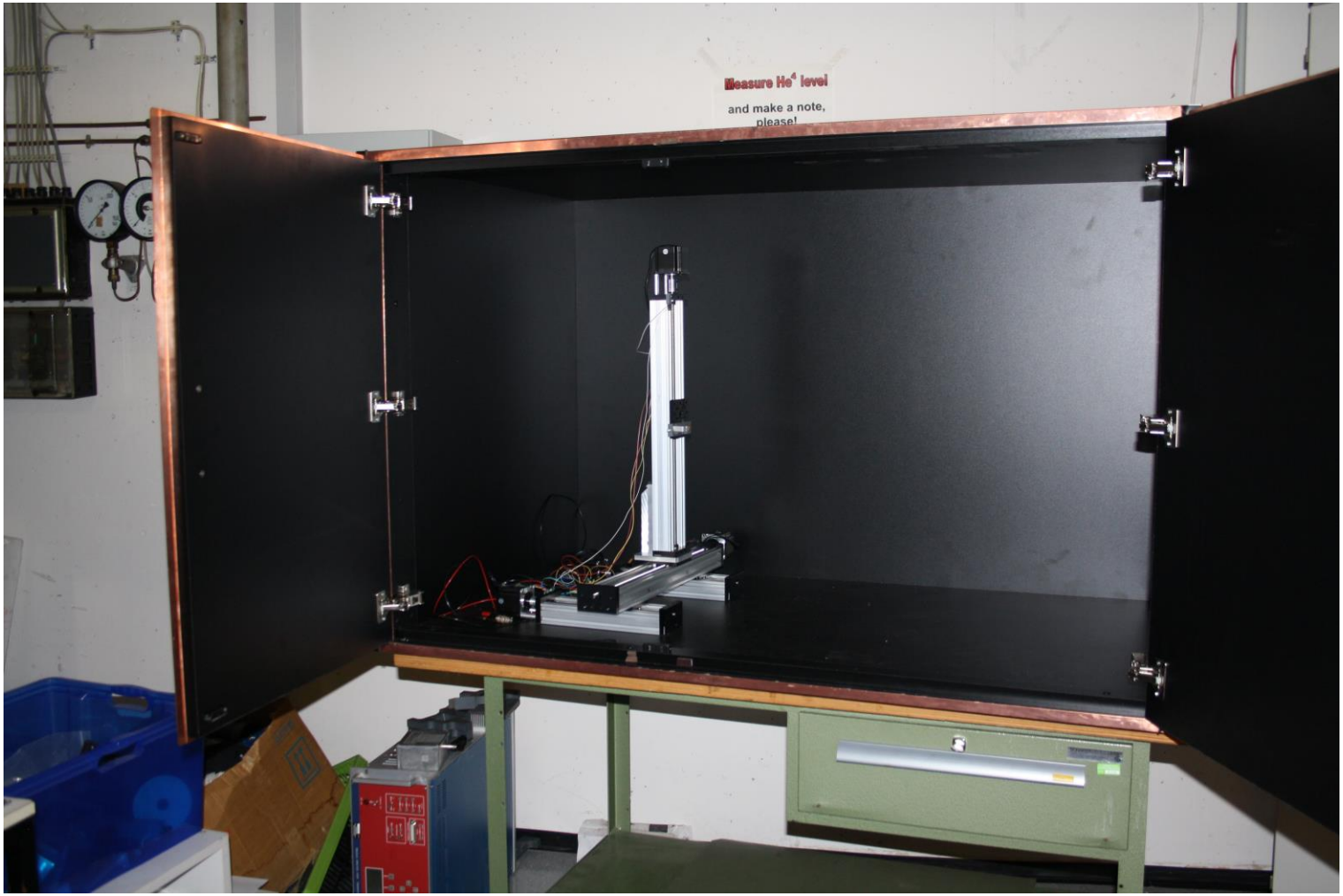
QE scan of Photonis 1341 (left red right blue Laser)





New Box

New Box



Results of latest measurements

ERLANGEN CENTRE
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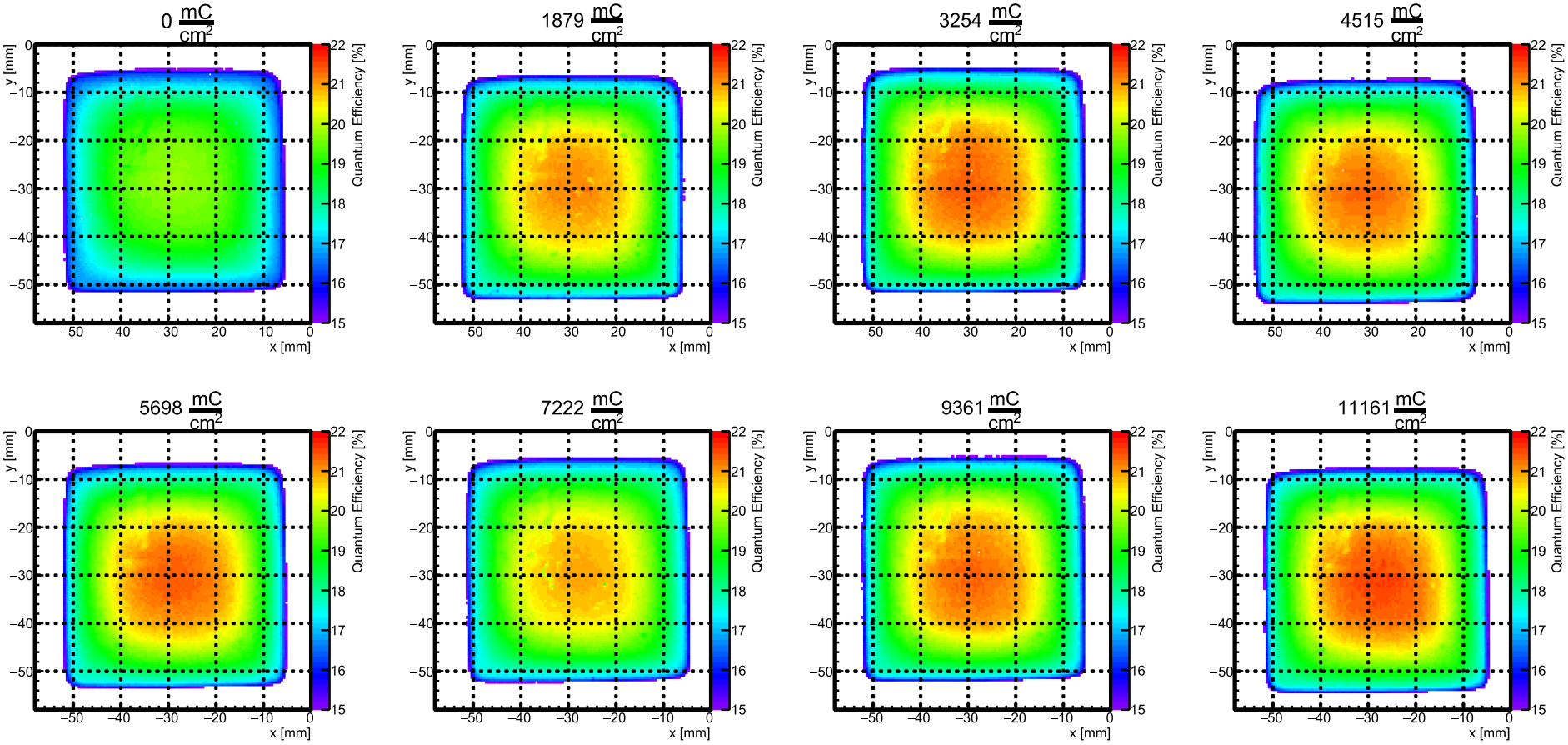
Illumination Overview QE (all sensors with ALD)

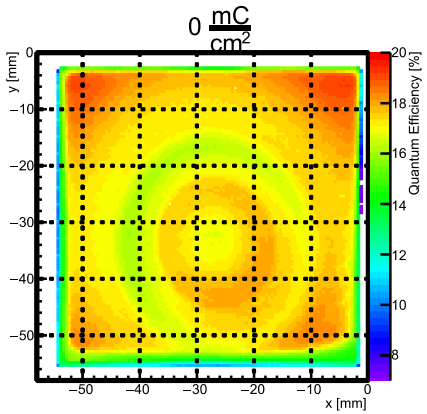
Film between MCP Two ALD layers

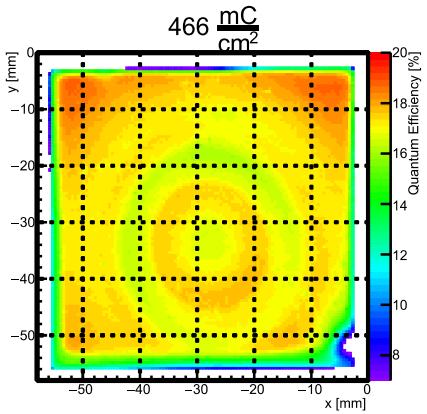
	Manufacturer	Senor ID	Integral Charge [mC/cm2]	QE start [%]	QE latest [%]	QE latest/QE start [%]
2 Inch	Photonis XP85112	9001223	9234	22.1	5.3	24
		9001332	14018	23.0	12.2	53
		9001393	11161	19.1	19.6	102
1 Inch	Hamamatsu R10754X	KT0001 (M16M)	15334	21.7	9.2	42
		KT0002 (M16M)	11847	21.1	10.1	48
2 Inch	Hamamatsu R13266-07-M64	JS0022 (64 pix.)	1985	17.4	11.6	66
		JS0035 (64 pix.)	660	25.5	24.9	98
		JS0018 (768 pix.)	702	18.0	13.8	77
		JS0027 (768 pix.)	408	24.3	21.9	90

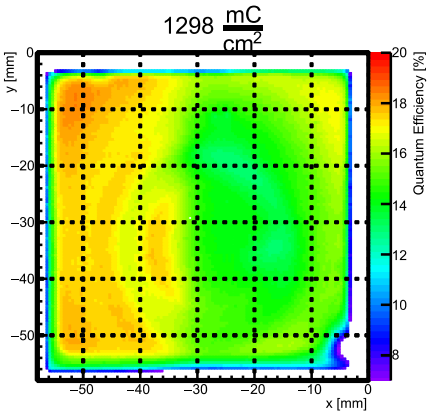
QE scan of Photonis 9001393-URD (ALD)

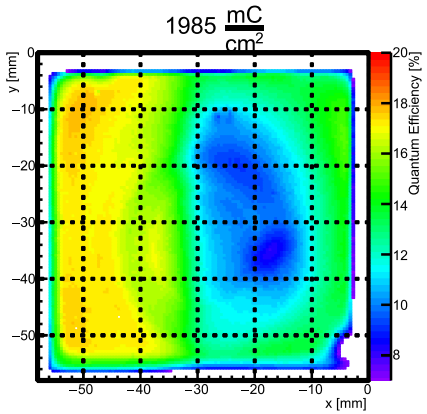


QE scan of Hamamatsu JS0022 (8x8, ALD)

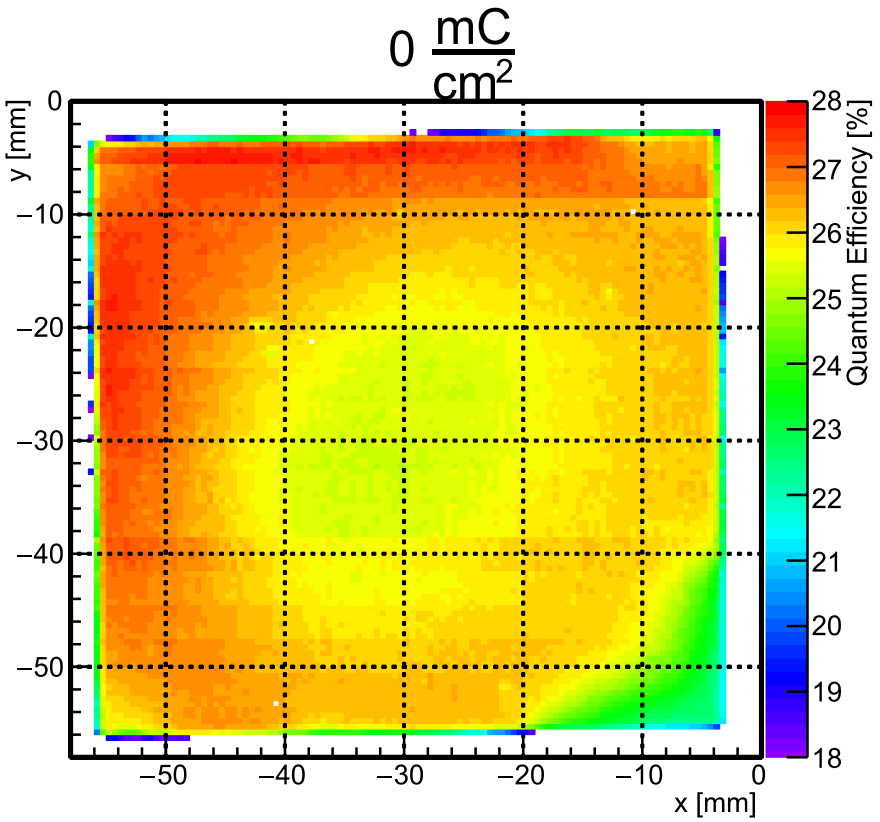


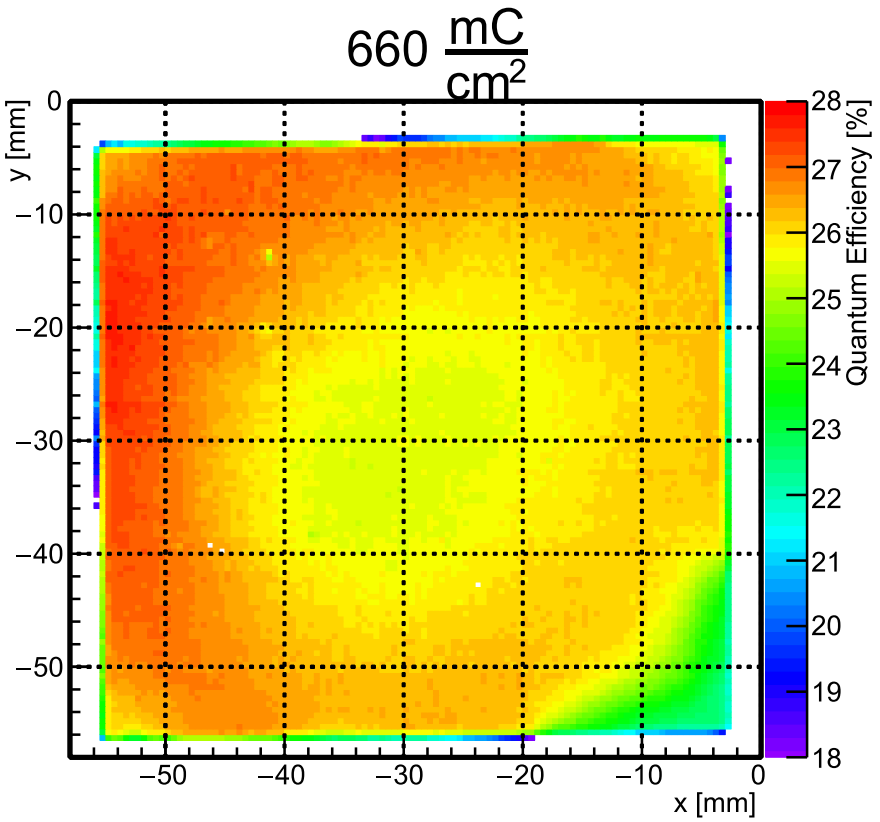




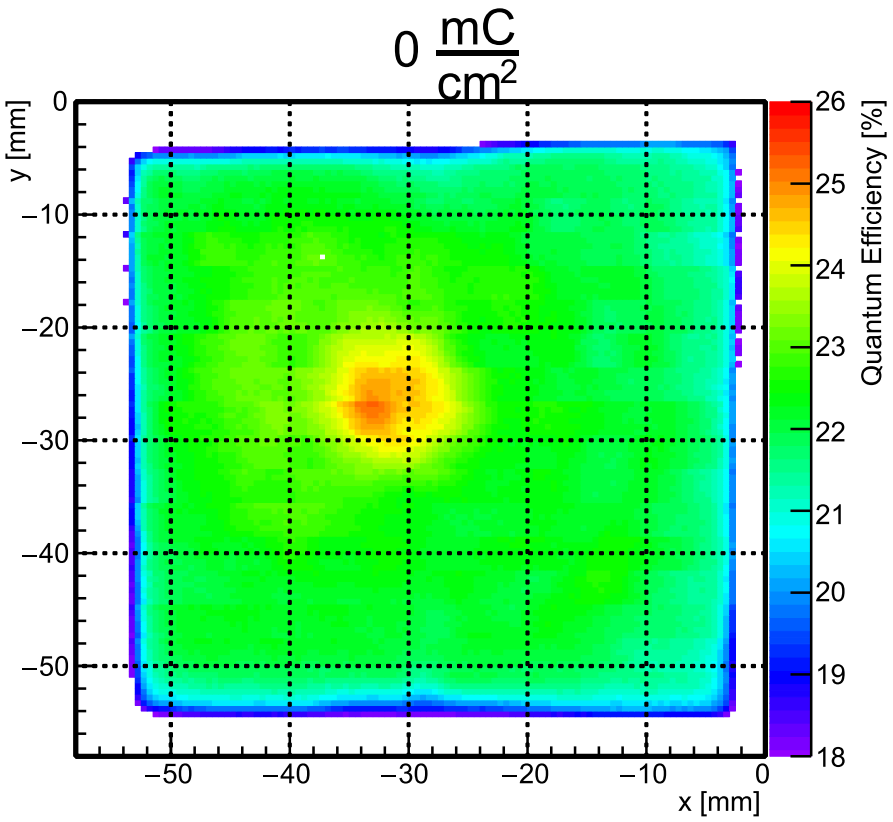


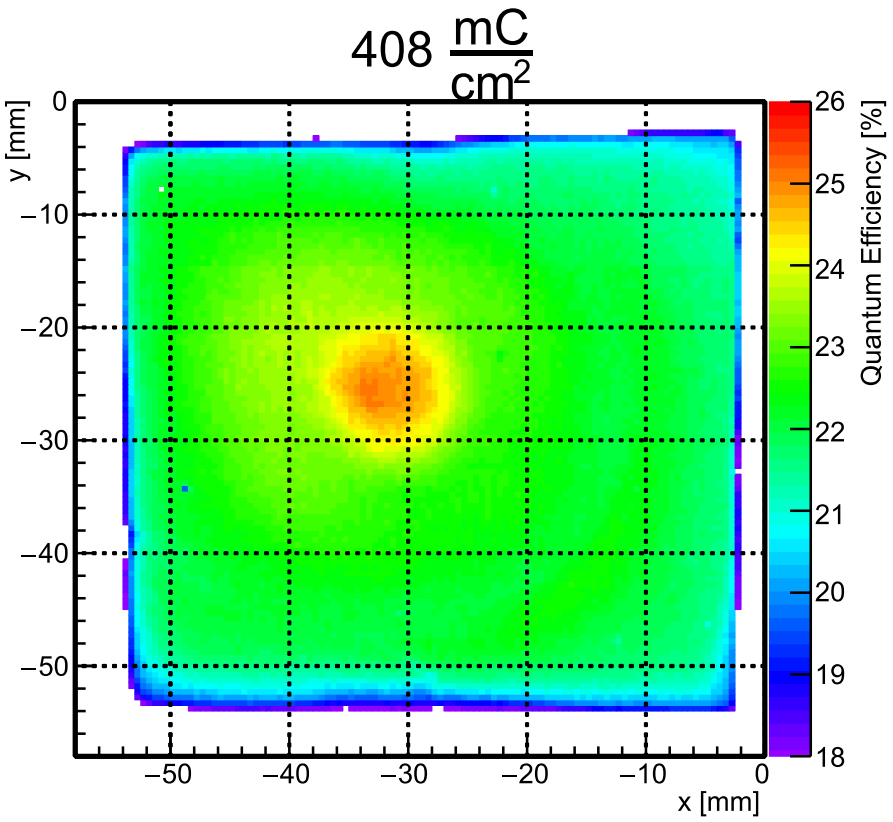
QE scan of Hamamatsu JS0035 (8x8, ALD)

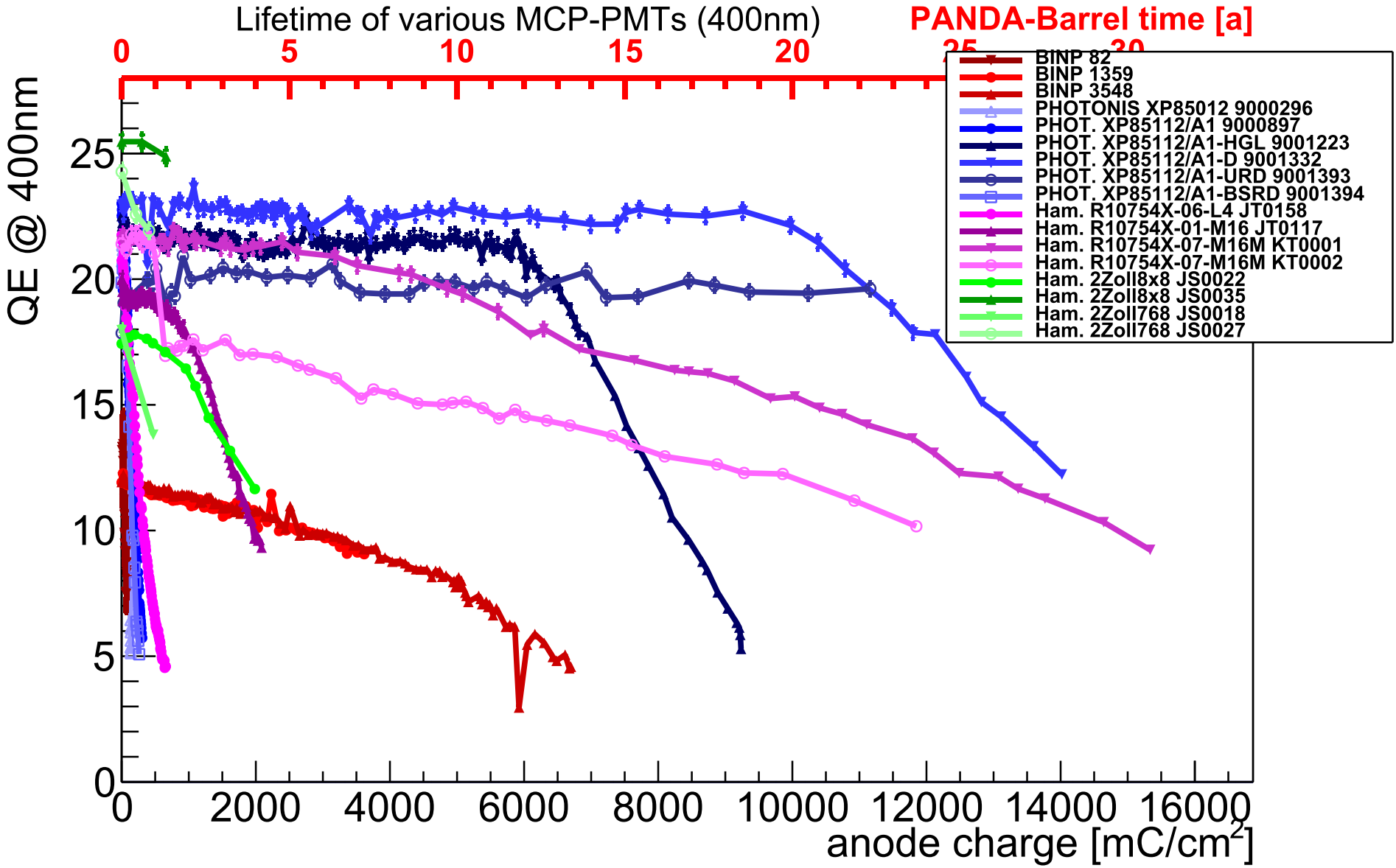




QE scan of Hamamatsu JS0027 (6x128, ALD)






Lifetime of various MCP-PMTs (400nm)
PANDA-Barrel time [a]
0
5
10
15
20
25
30
QE @ 400nm
0
5
10
15
20
25
0
2000
4000
6000
8000
10000
12000
14000
16000
anode charge [mC/cm²]
BINP 82
BINP 1359
BINP 3548
PHOTONIS XP85012 9000296
PHOT. XP85112/A1 9000897
PHOT. XP85112/A1-HGL 9001223
PHOT. XP85112/A1-D 9001332
PHOT. XP85112/A1-URD 9001393
PHOT. XP85112/A1-BSRD 9001394
Ham. R10754X-06-L4 JT0158
Ham. R10754X-01-M16 JT0117
Ham. R10754X-07-M16M KT0001
Ham. R10754X-07-M16M KT0002
Ham. 2Zoll8x8 JS0022
Ham. 2Zoll8x8 JS0035
Ham. 2Zoll768 JS0018
Ham. 2Zoll768 JS0027

Summary and outlook

- Wide tails in B–Field measurements of Hamamatsu sensor
  - Will be investigated if sensor or setup problem
- B-Field measurements seem to fit expectations
- Red laser will be tested further and used in new box
- New Hamamatsu seems better in QE stability

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Bundesministerium für Bildung und Forschung

Thank you for your attention!

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