

Update on Lifetime Measurement

ERLANGEN CENTRE
FOR ASTROPARTICLE
PHYSICS

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PANDA Meeting Bochum , February 29, 2016



Outline

- Update on MCP lifetime measurements
- New lifetime setup
- Summary and outlook

Update on MCP lifetime measurements



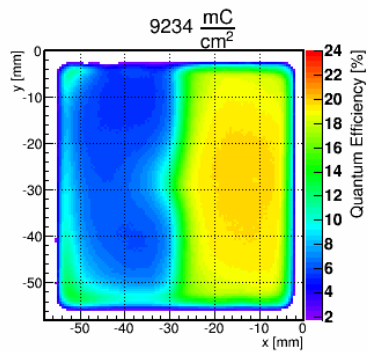
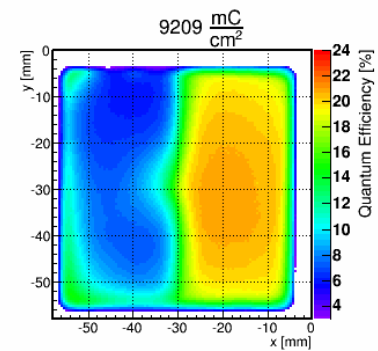
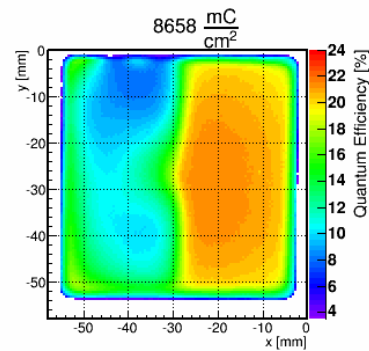
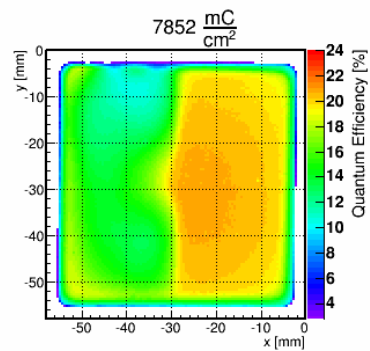
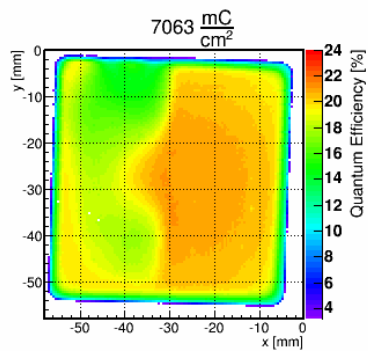
Illumination Overview Time

Manufacturer	Senor ID	Integral Charge [mC/cm ²]	# of measurement	# of QE scans	Start/End of Measurement
Photonis P85112	9001223	9234.4	160	16	23.08. 11/Sep. 16
	9001332	10783.3	69	9	12.12.12/ongoing
	9001393	6328.9	33	5	23.01.14/ongoing
Hamamatsu R10754X	KTo001 (M16M)	11110.0	45	7	20.08.13/ongoing
	KTo002 (M16M)	6683.0	40	8	21.10.13/ongoing
Hamamatsu 2 inch	JS0022 (64 pix.)	189.4	2	3	11.12.16

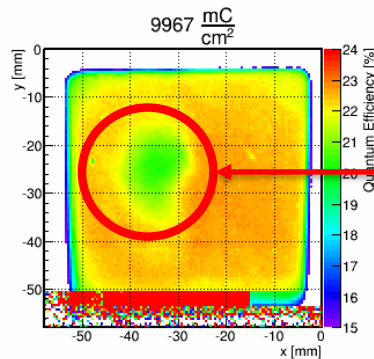
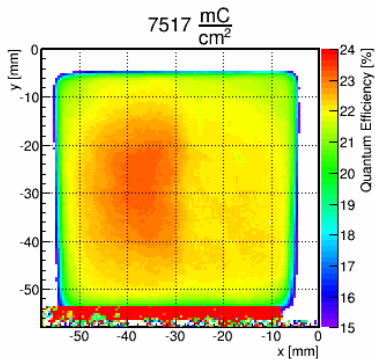
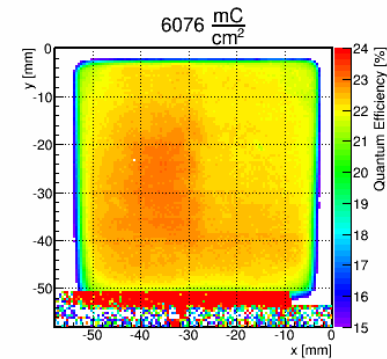
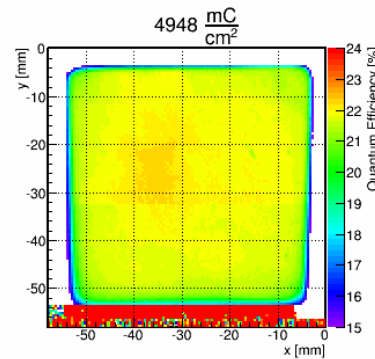
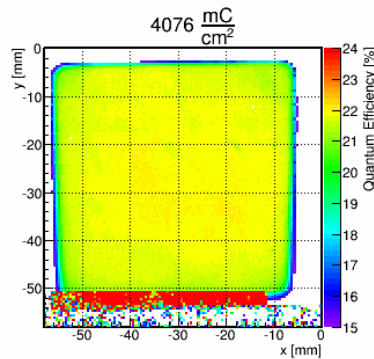
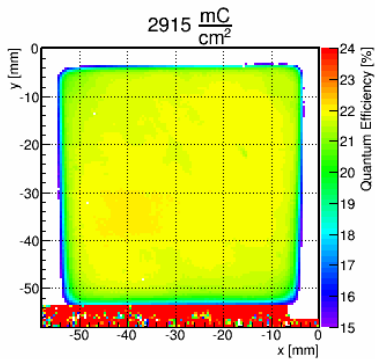
Illumination Overview QE

Manufacturer	Senor ID	Integral Charge [mC/cm ²]	QE start [%]	QE latest [%]	QE latest/QE start [%]
Photonis P85112	9001223	9234.4	22.11	5.29	23.93
	9001332	10783.3	22.62	20.42	90,27
	9001393	6328.9	19.05	19.77	103.78
Hamamatsu R10754X	KTo001 (M16M)	11110.0	21.71	14.21	65,45
	KTo002 (M16M)	6683.0	21.14	14.18	67.08
Hamamatsu 2 inch	JS0022 (64 pix.)	189.4	17,43	17,79	102,07

QE Scan Photonis 9001223

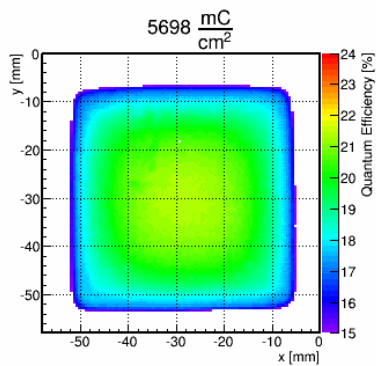
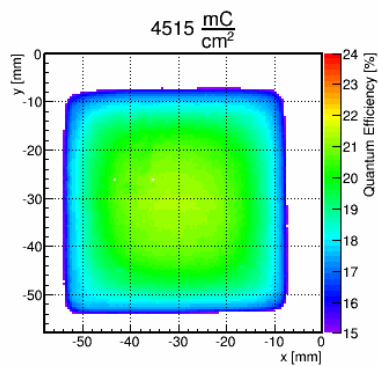
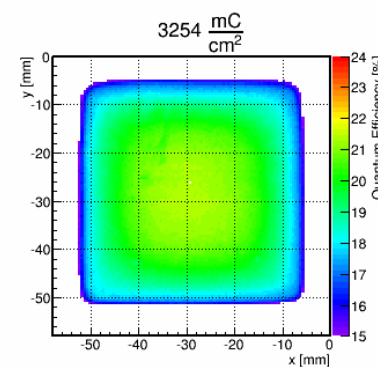
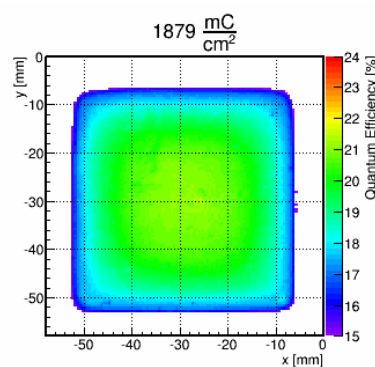
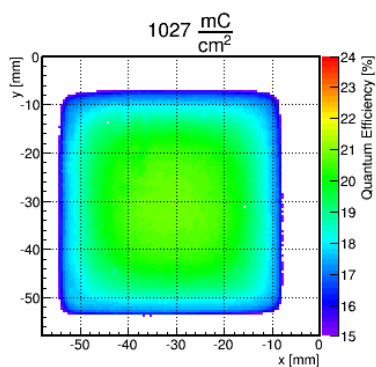
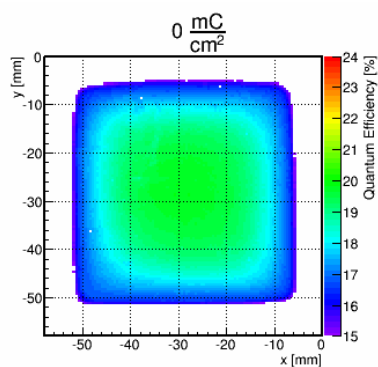


QE Scan Photonis 9001332

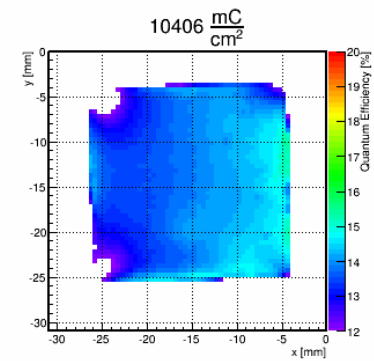
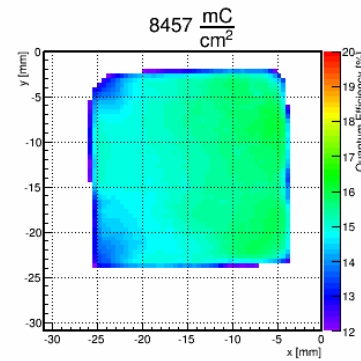
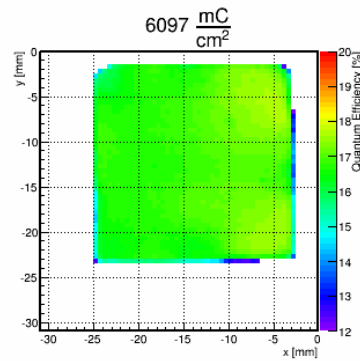
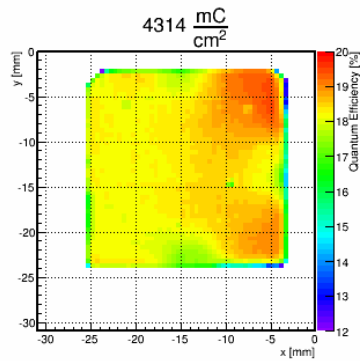
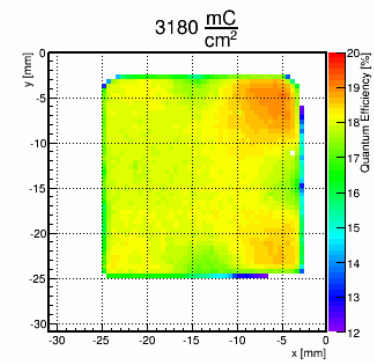
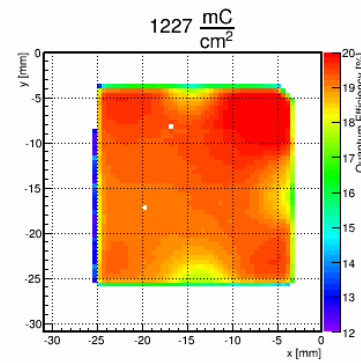
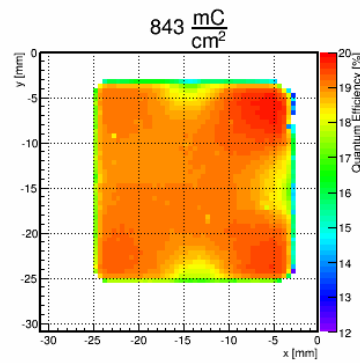
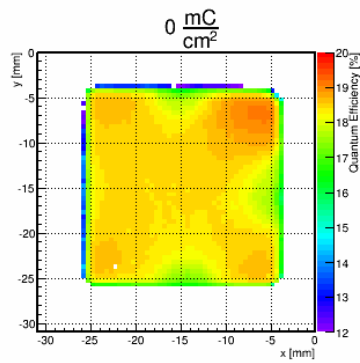


First time aging starts
not from edges

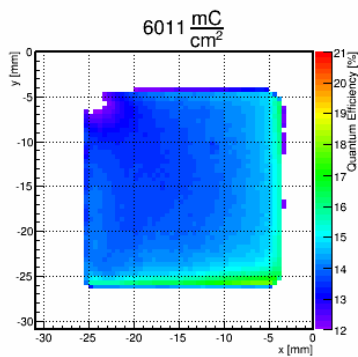
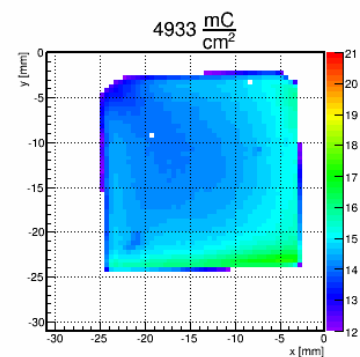
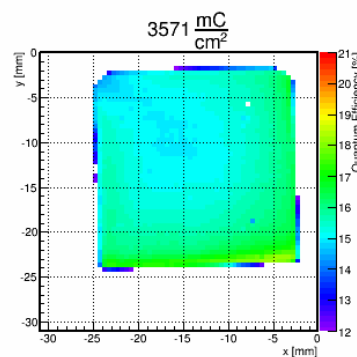
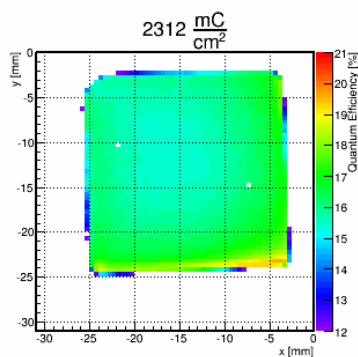
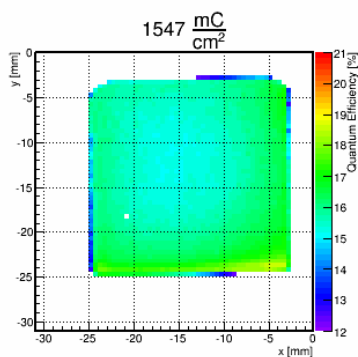
QE Scan Photonis 9001393-URD



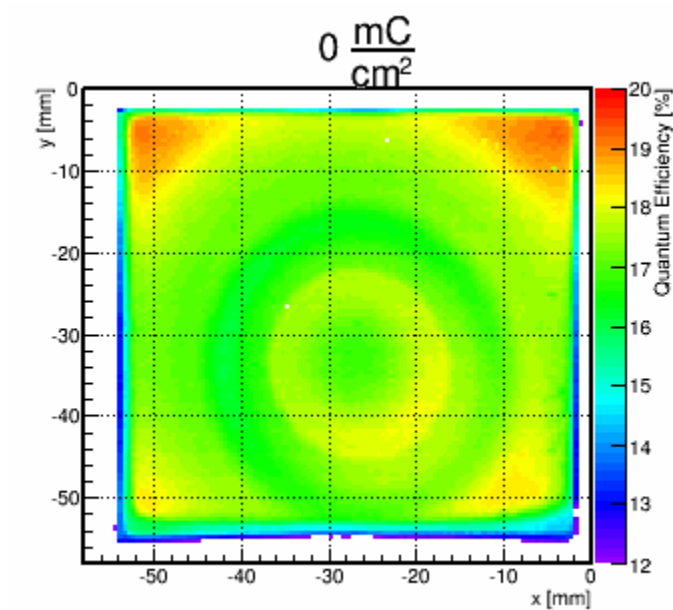
QE Scan KT0001 (M16M)



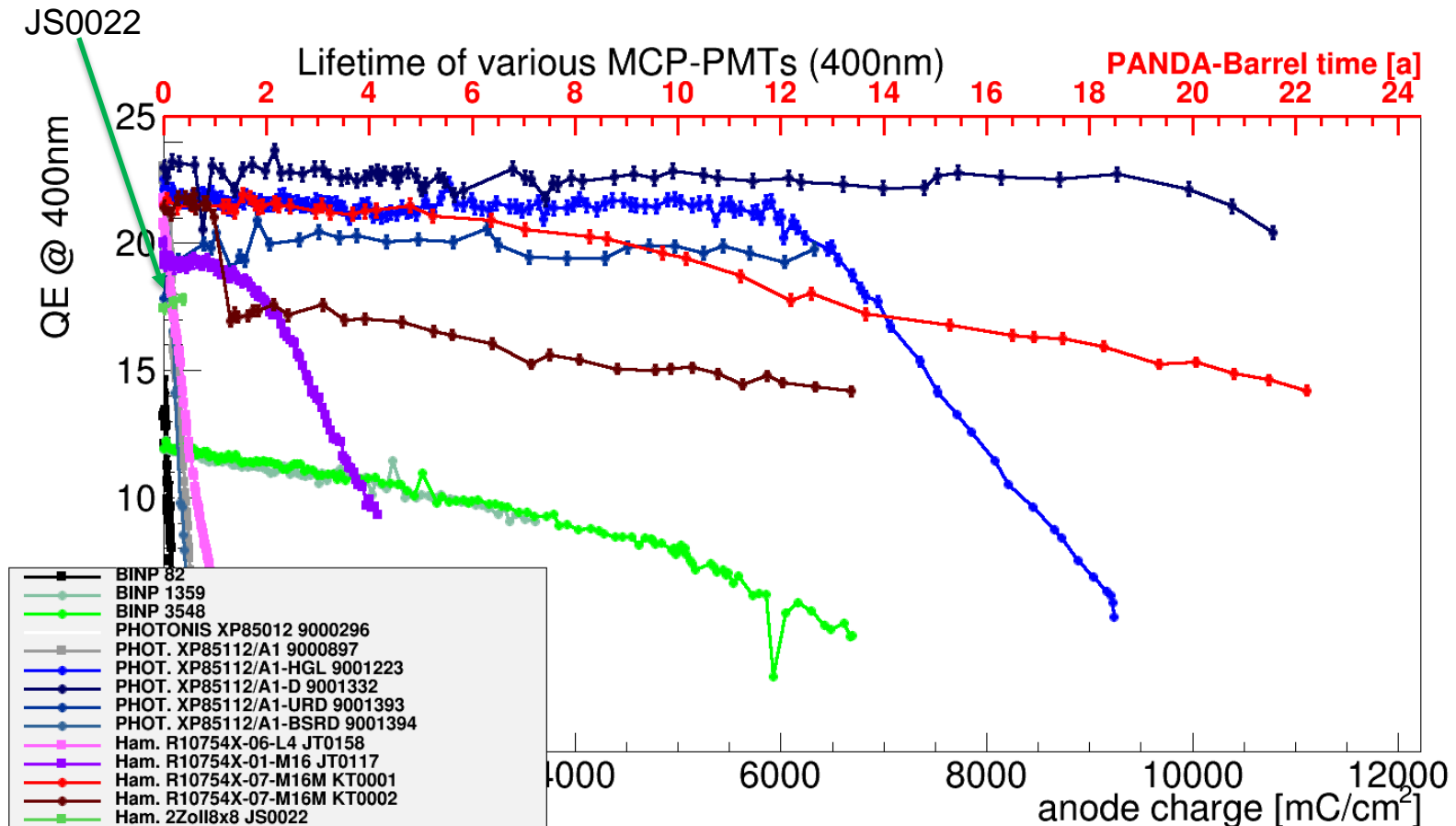
QE Scan KT0002 (M16M)



QE Scan JS0022 (2 inch)



Lifetime of MCP-PMTs (February 2016)



New lifetime setup



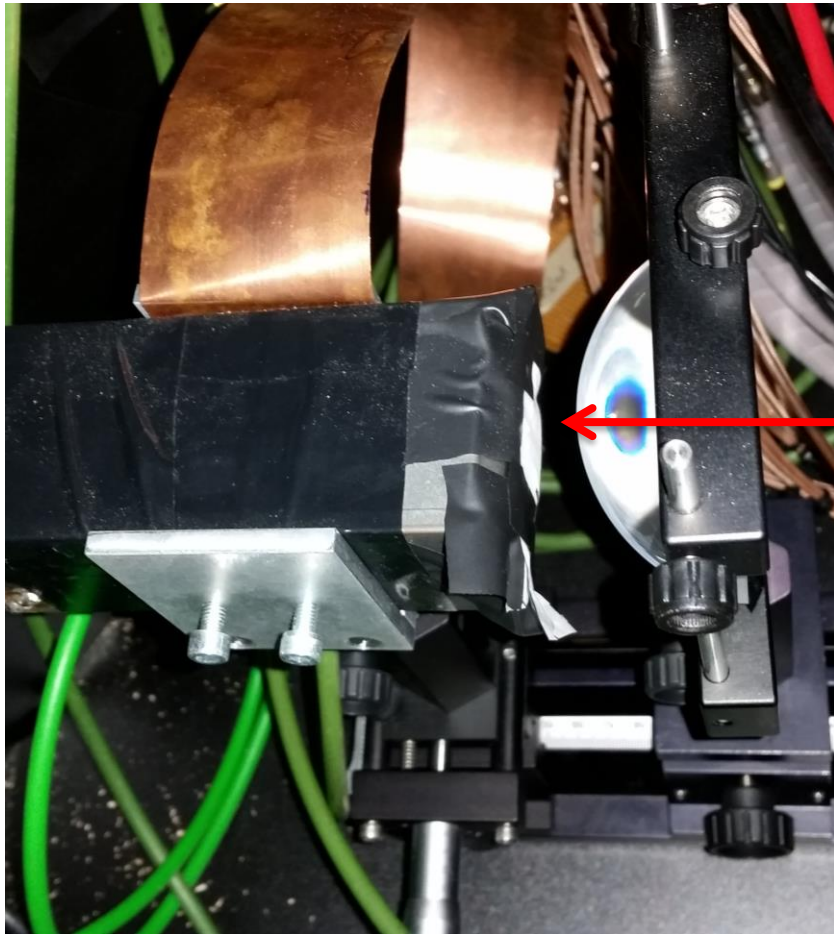
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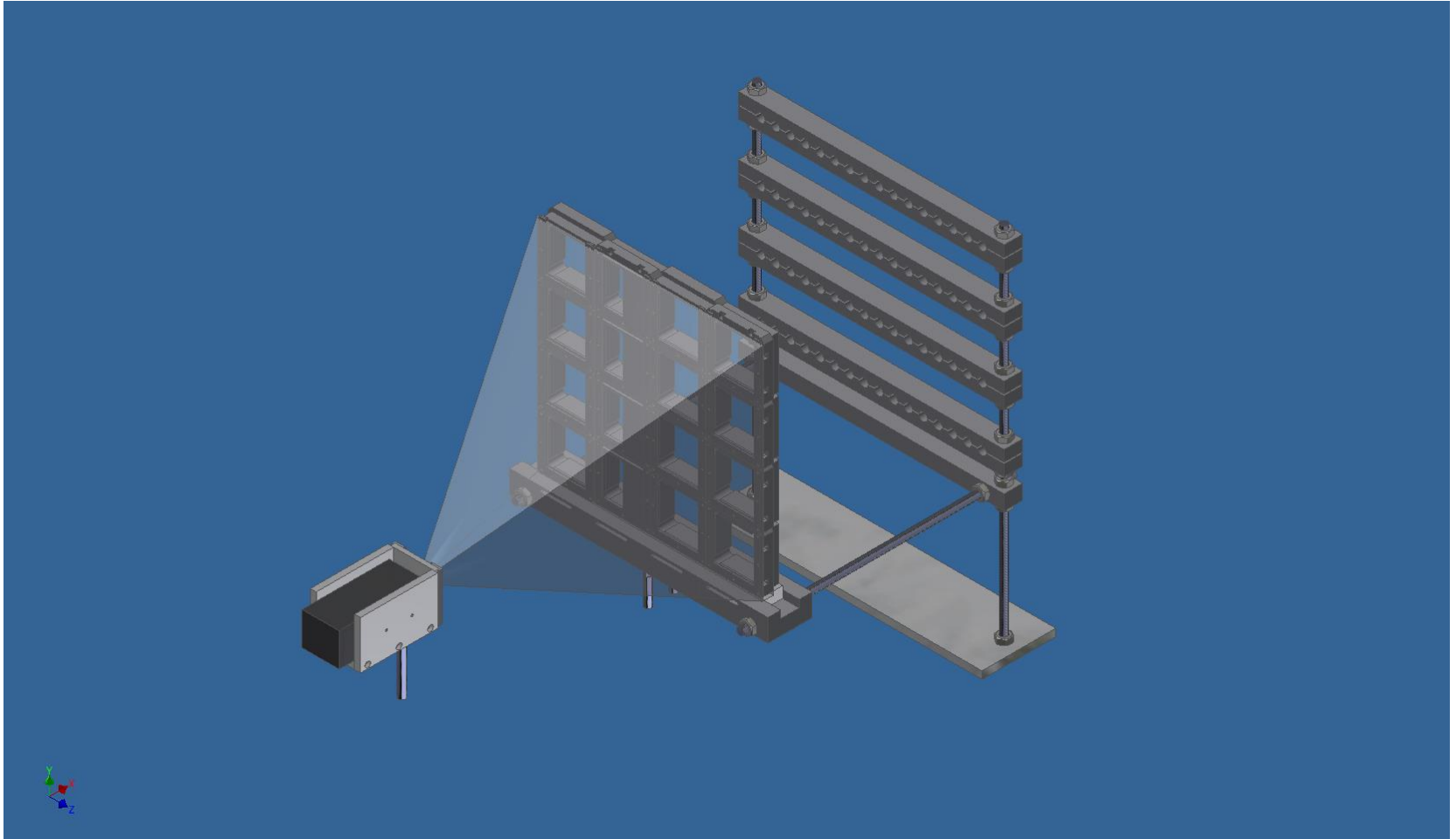
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NATURWISSENSCHAFTLICHE
FAKULTÄT

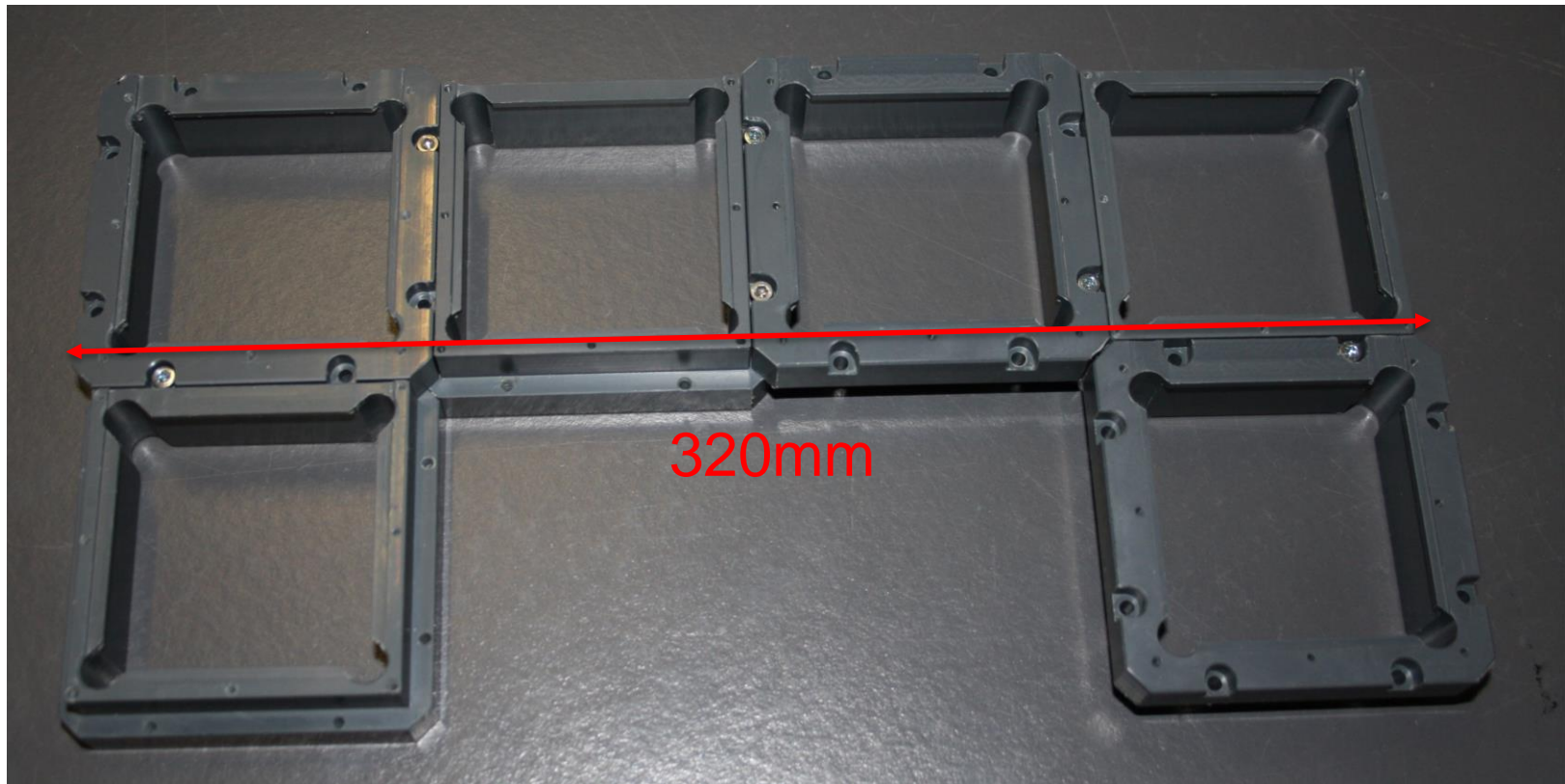
Past setup and new diffuser (Thorlabs)



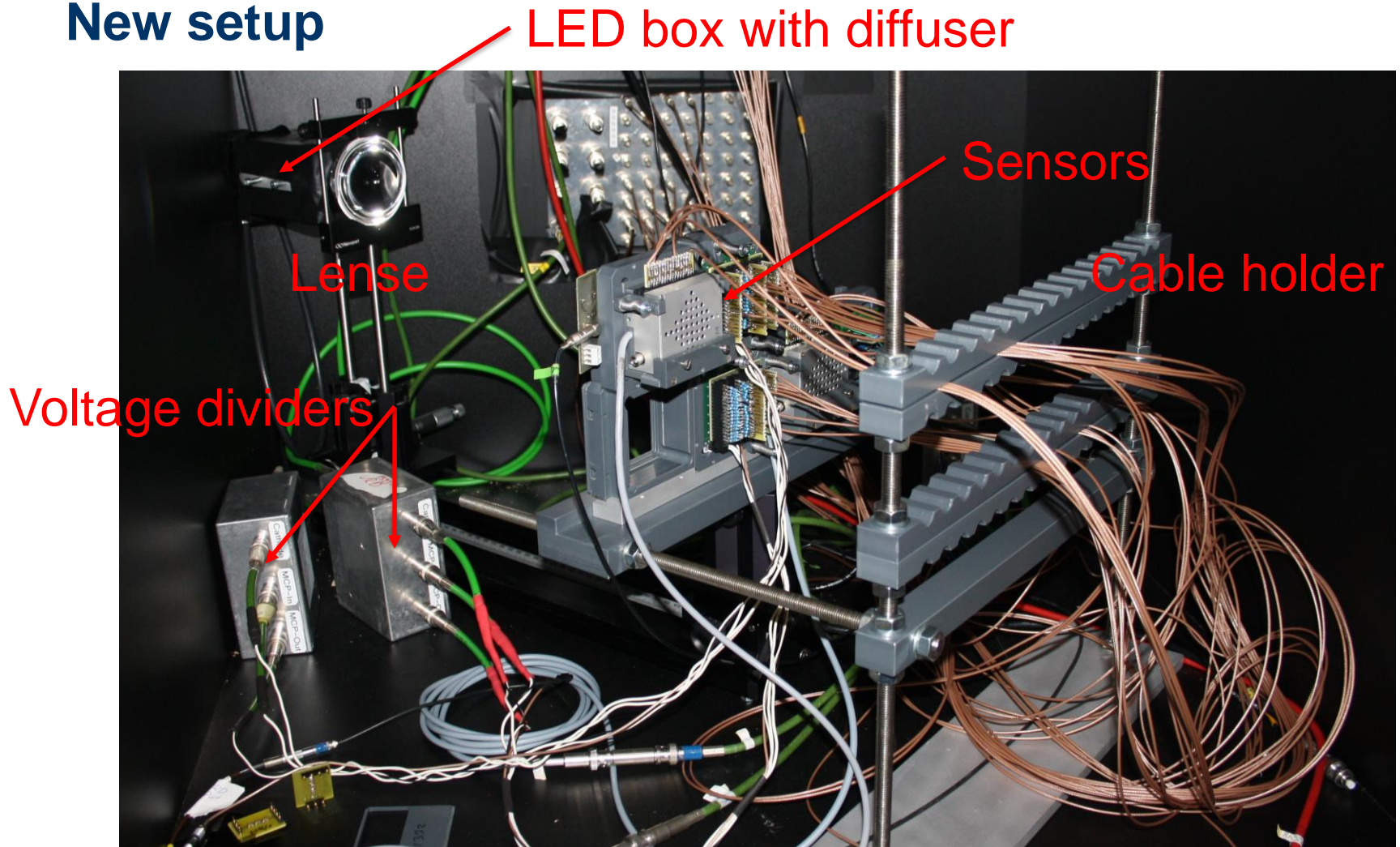
New setup



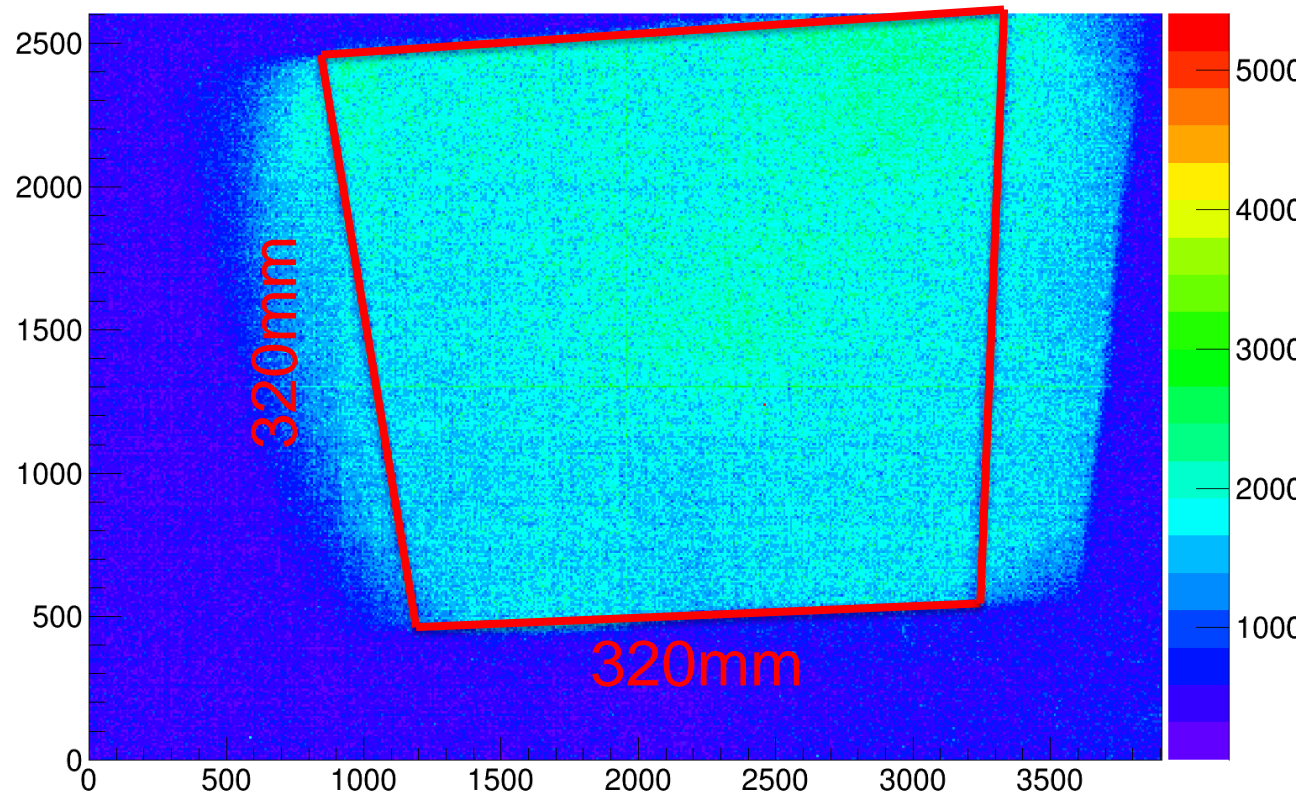
MCP housing construction



New setup

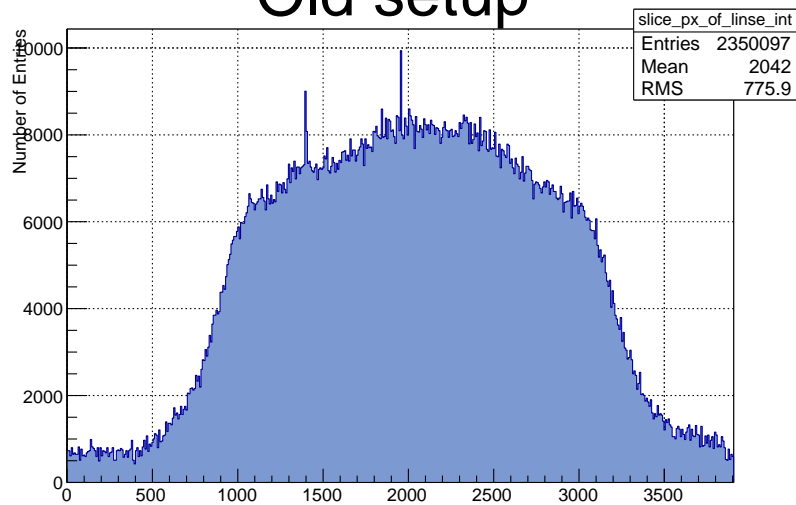


New illumination area (16 sensors)

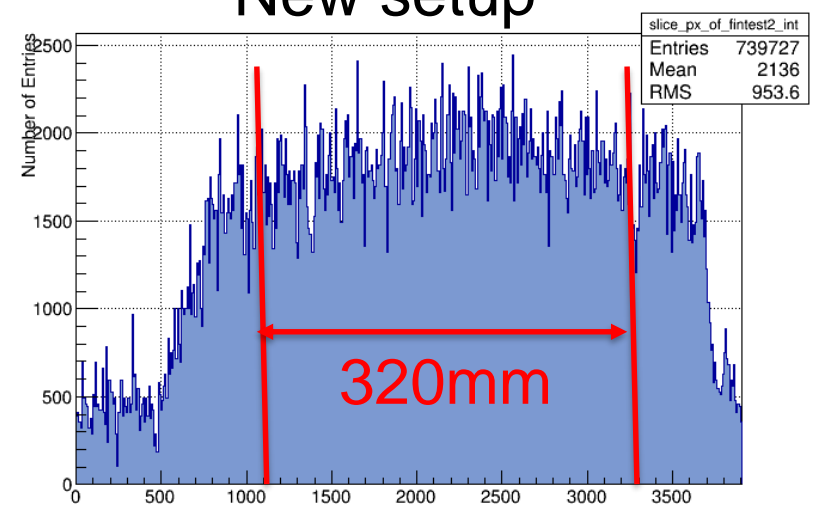


X projection of intensity

Old setup

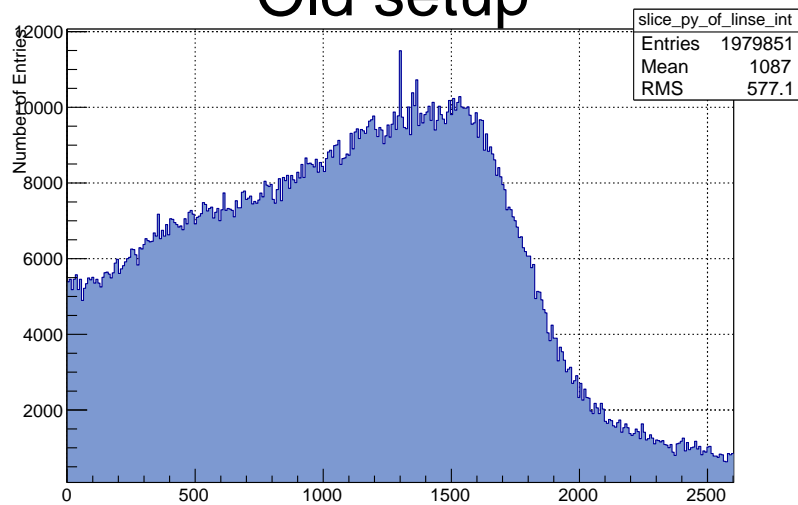


New setup

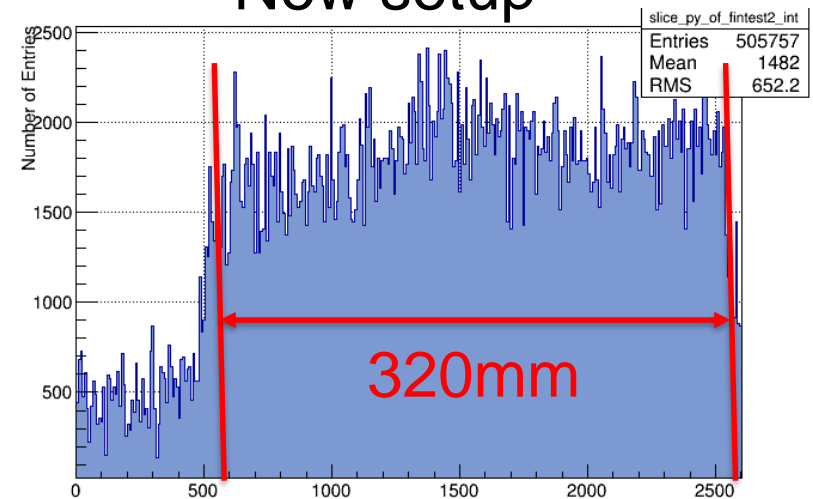


Y projection of intensity

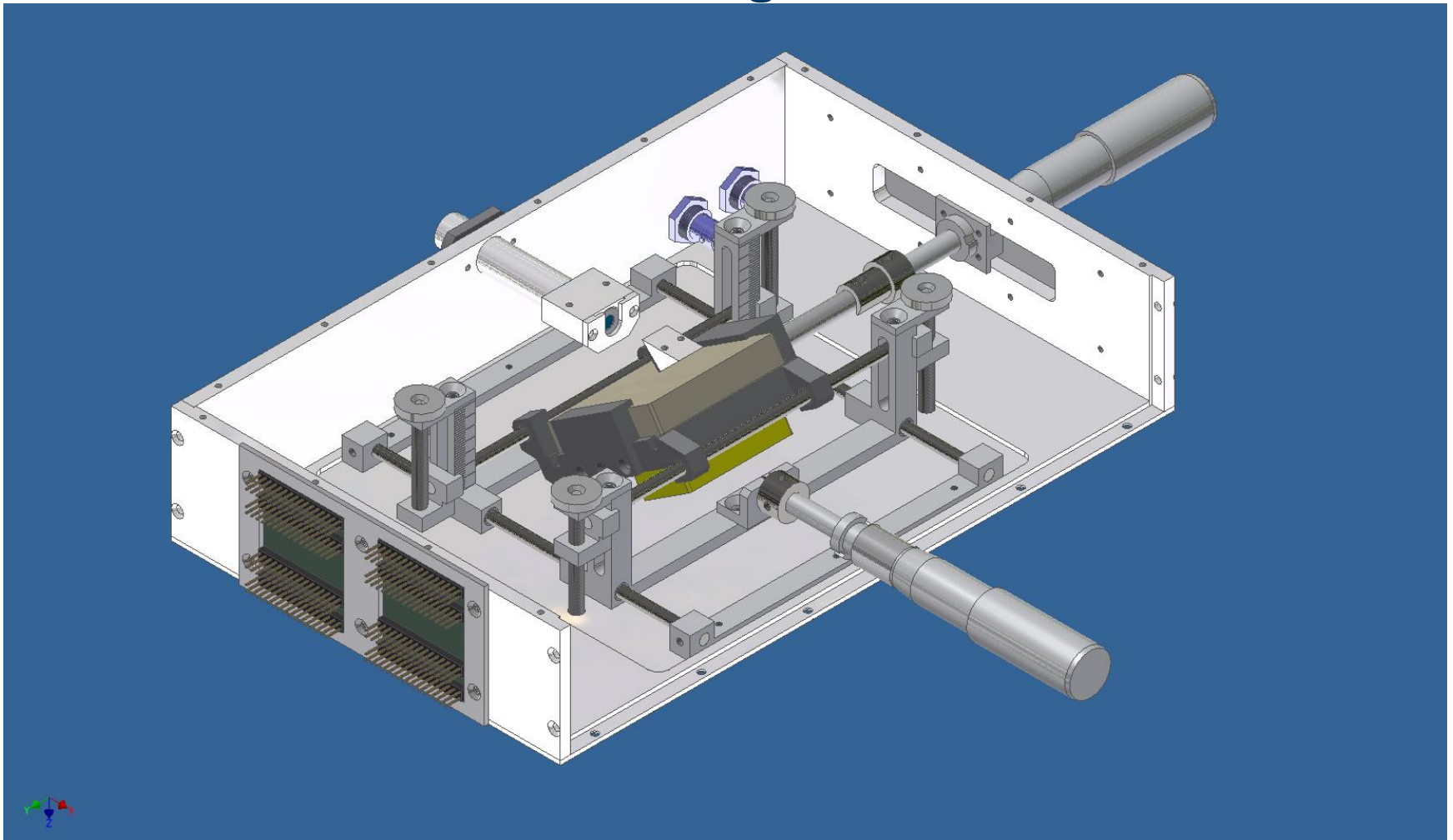
Old setup



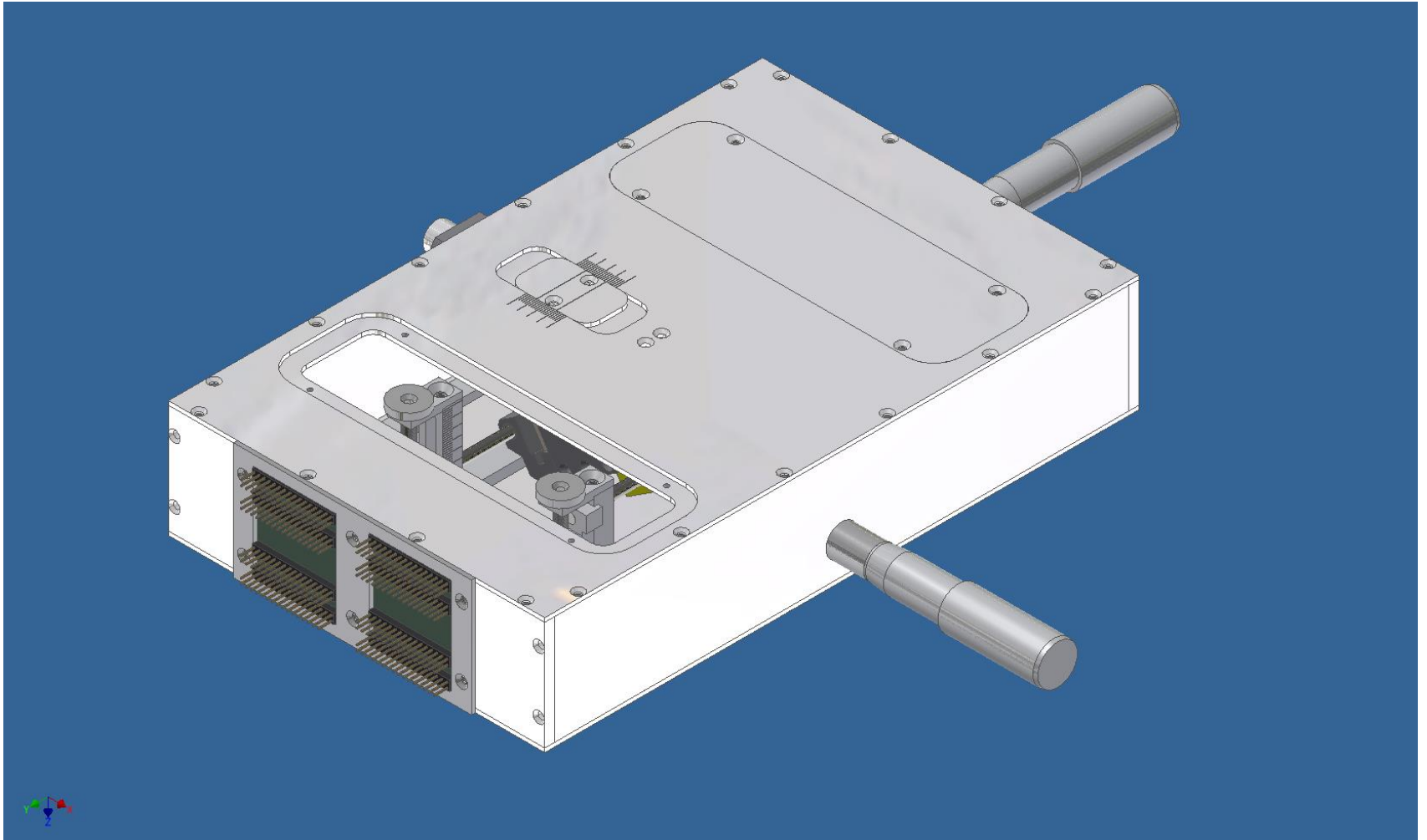
New setup



Box for measurements in magnetic field



Box for measurements in magnetic field



Summary and Outlook

- Lifetime of MCP-PMTs
 - Photonis 1223 measurement finished
 - Photonis 1332 decreasing QE
- New lifetime setup
 - More homogeneous structure
 - Up to 16 sensors
 - Better cable management
- New box for magnetic field measurements under construction

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Thank you for your attention!

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