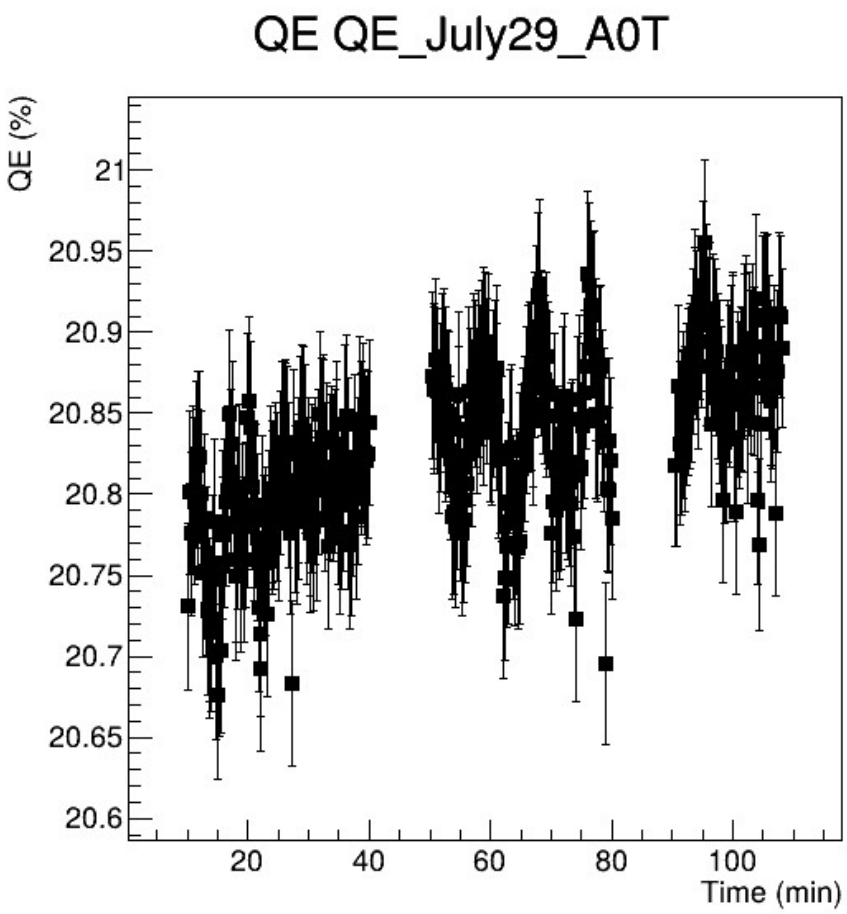
HRPPD #25
Ageing Studies Updates (INFN)

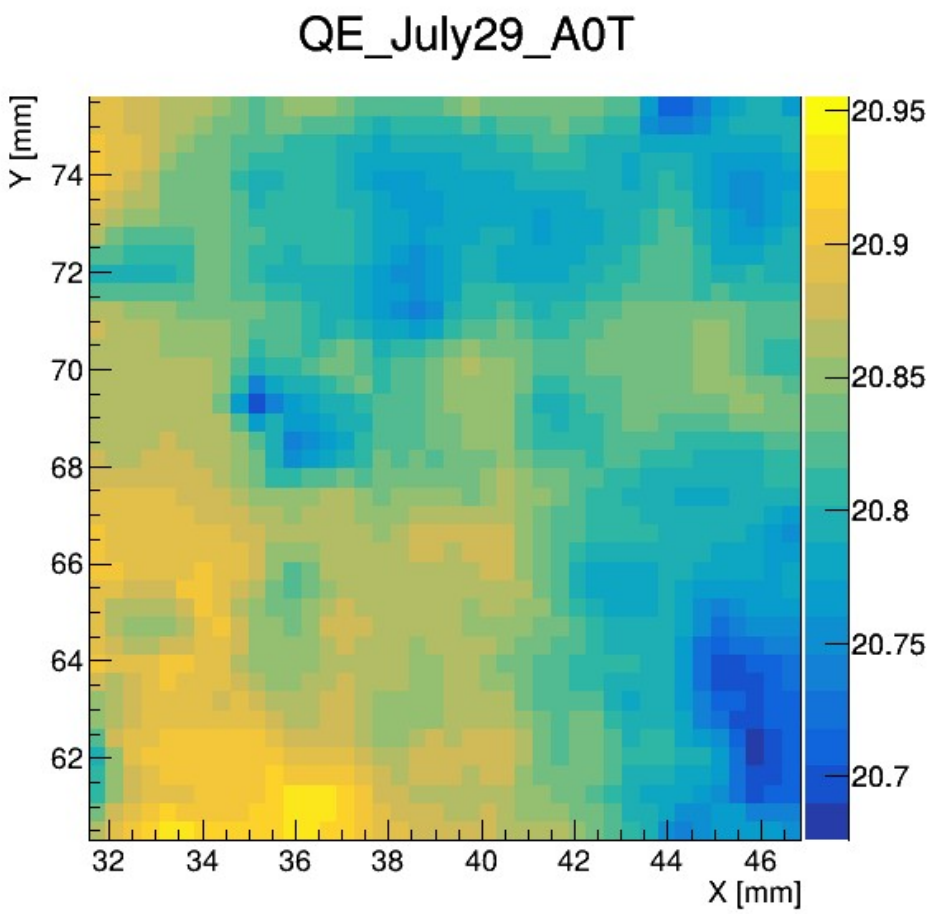
Enea Prifti

7/30/2025

QE Measurement

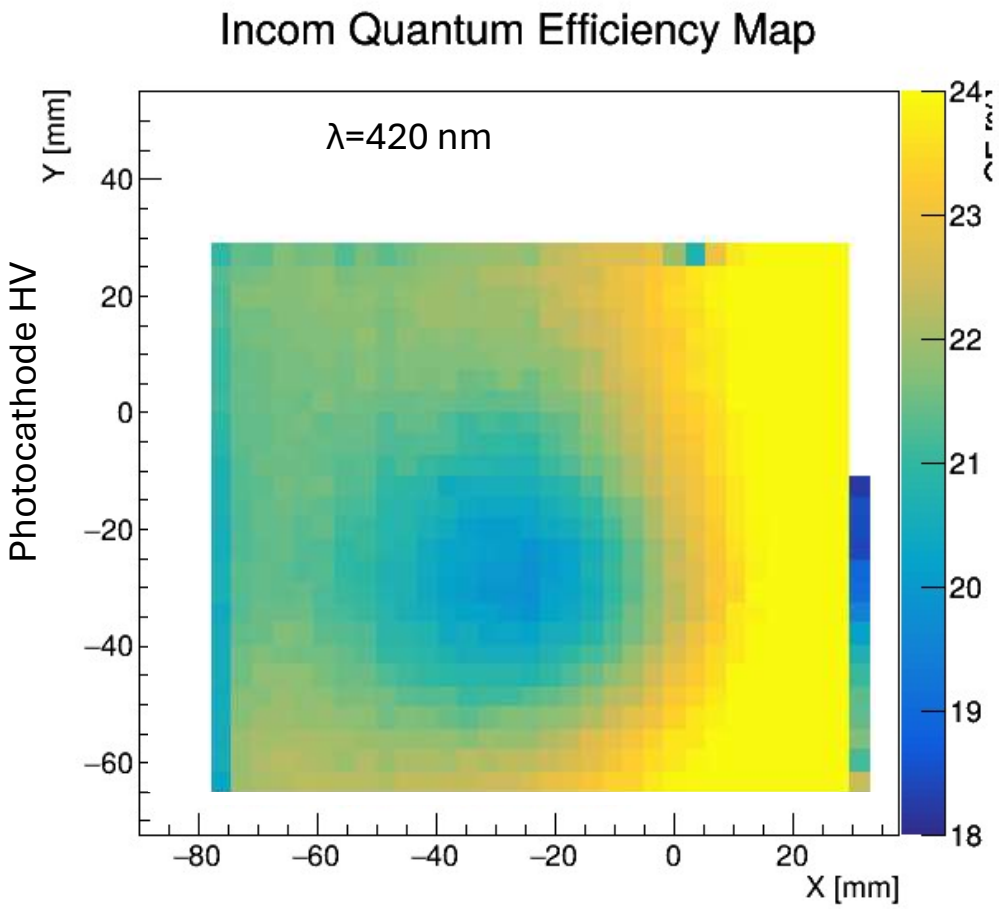
ΔV = 50 V
0.3 mm step

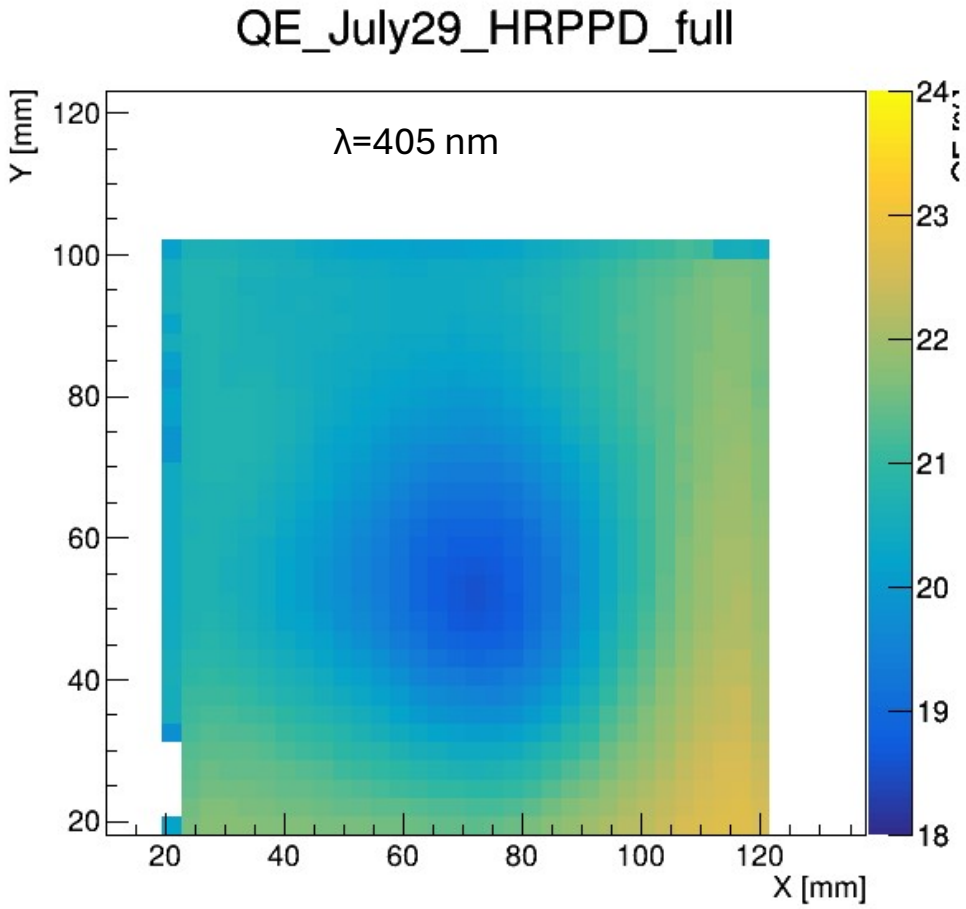




QE Measurement

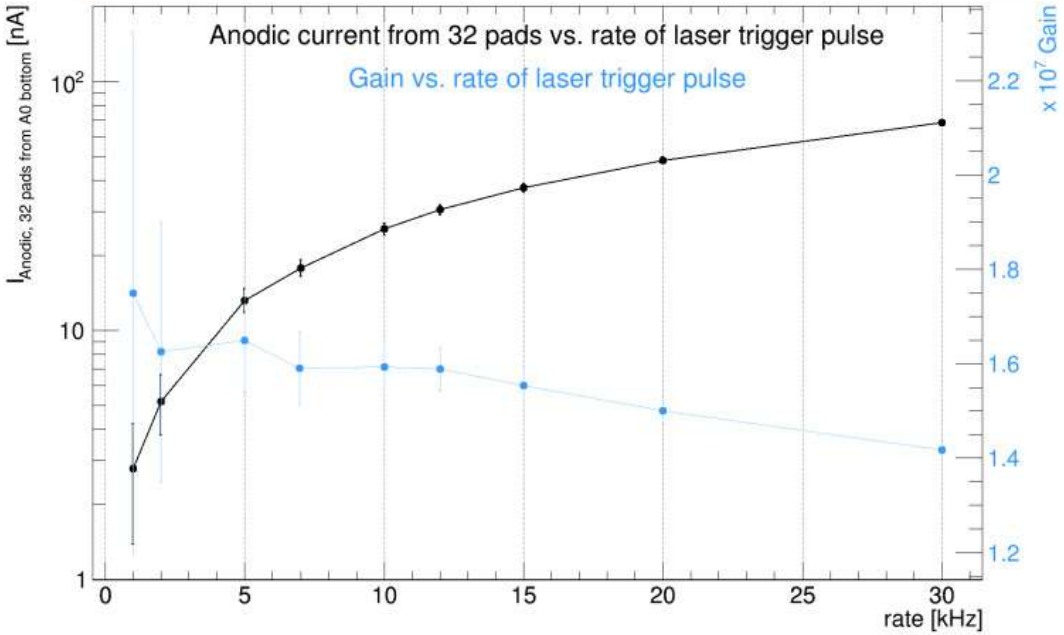
ΔV = 50 V
2.5 mm step



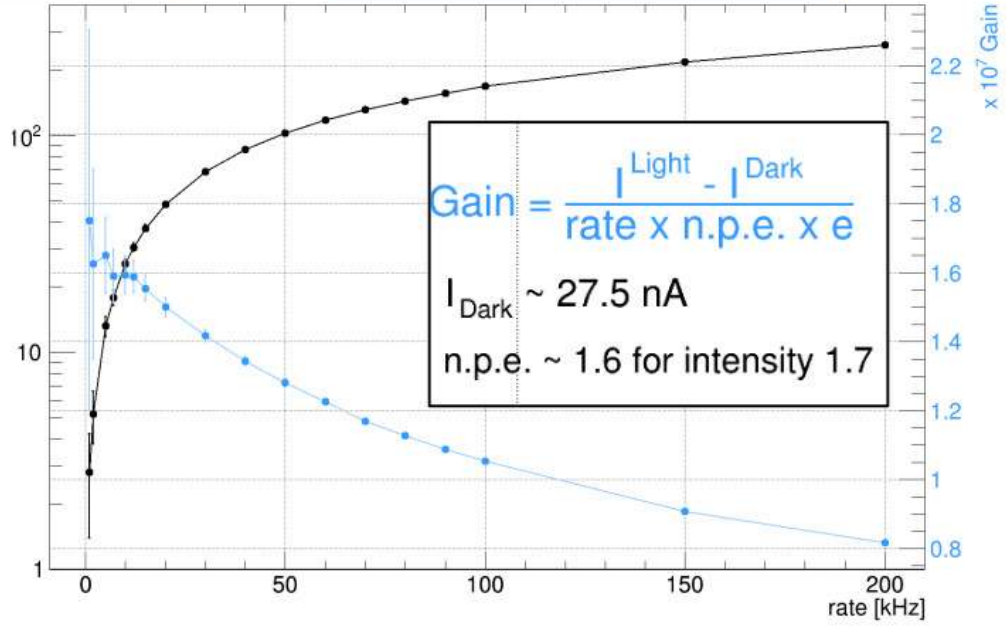


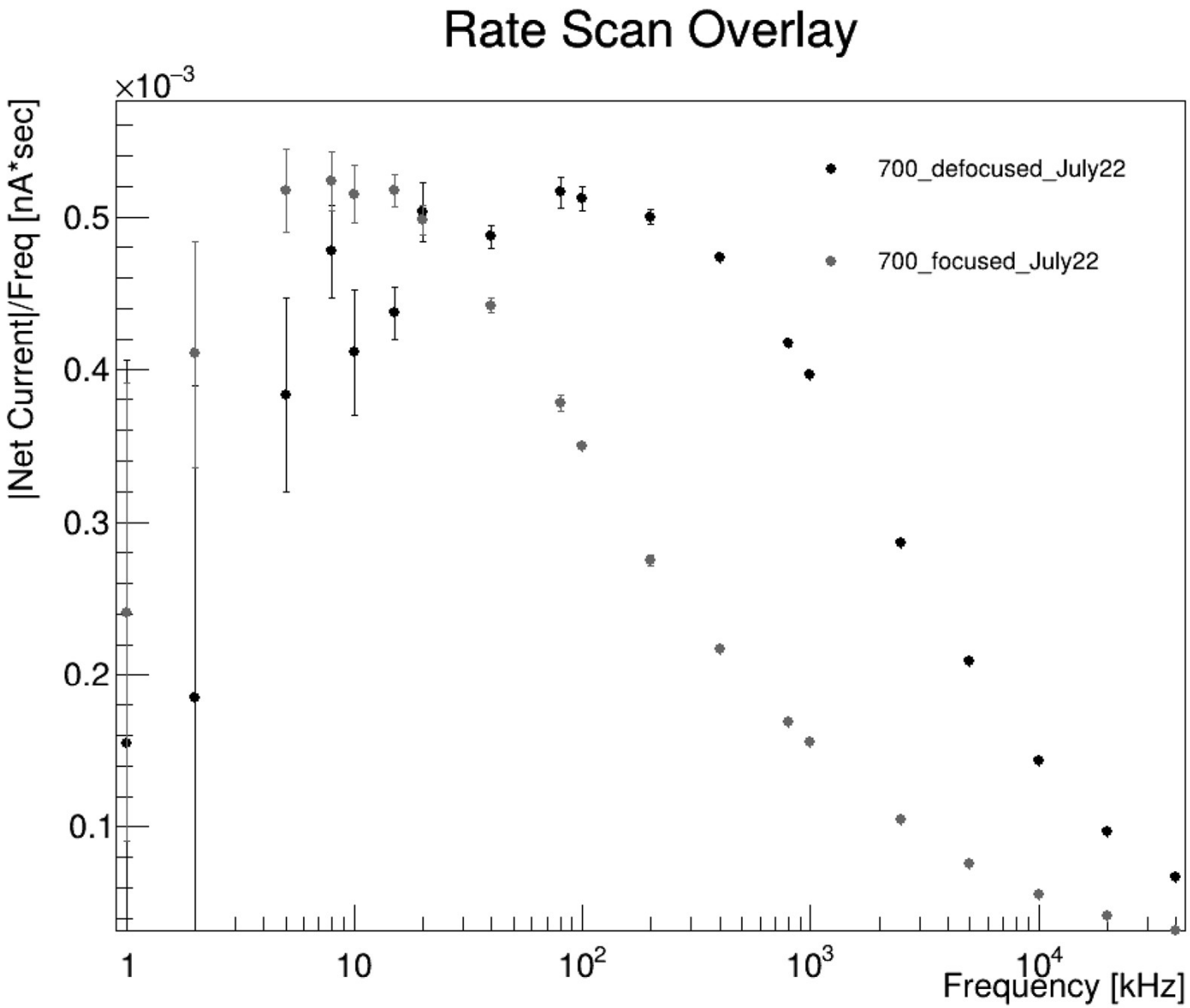
Frequency vs Rate scan (Recap)

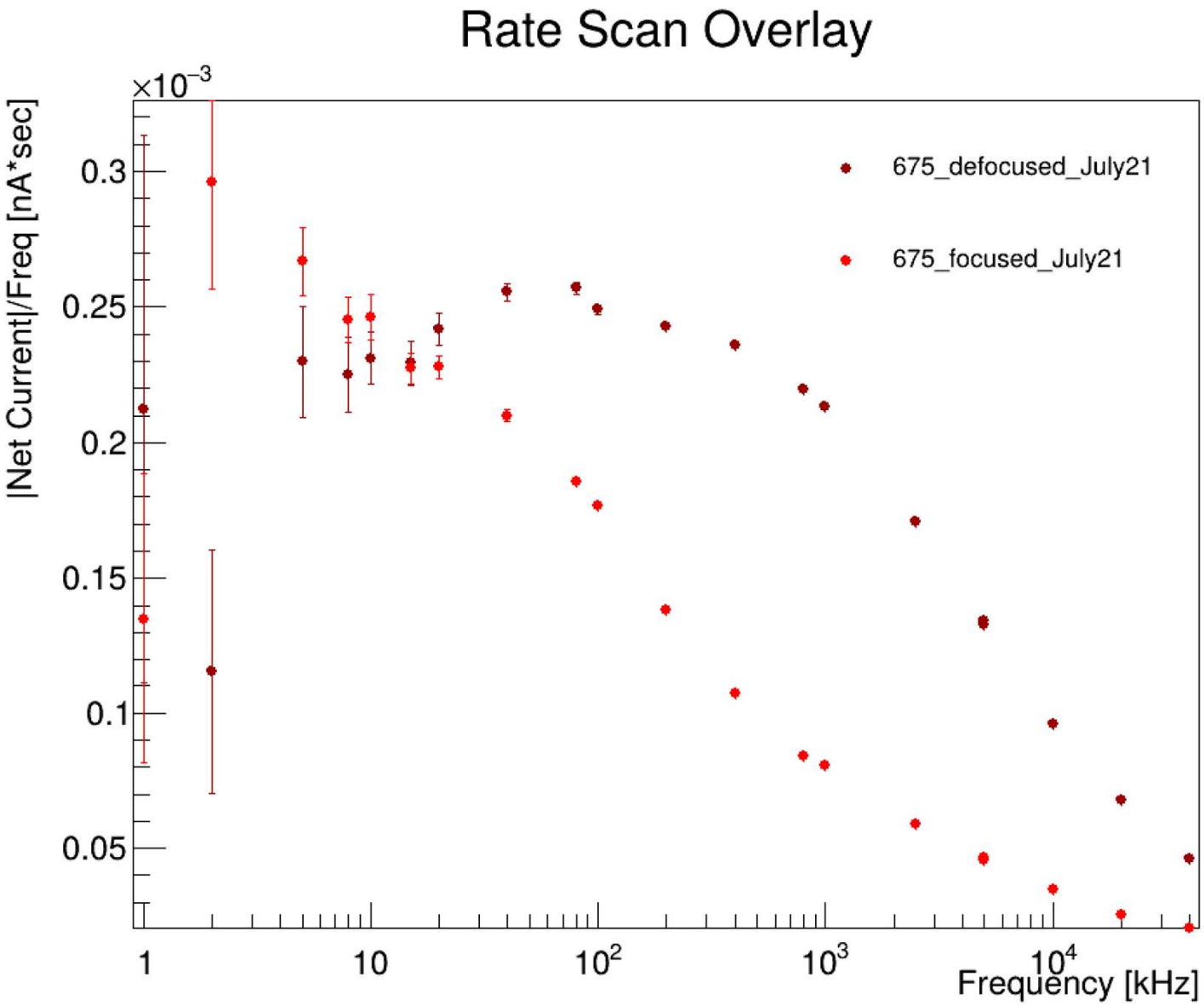
HV bias: -200_-700_-200_-700_-30 V @ XoX_NoX_XoN_NoN_PC

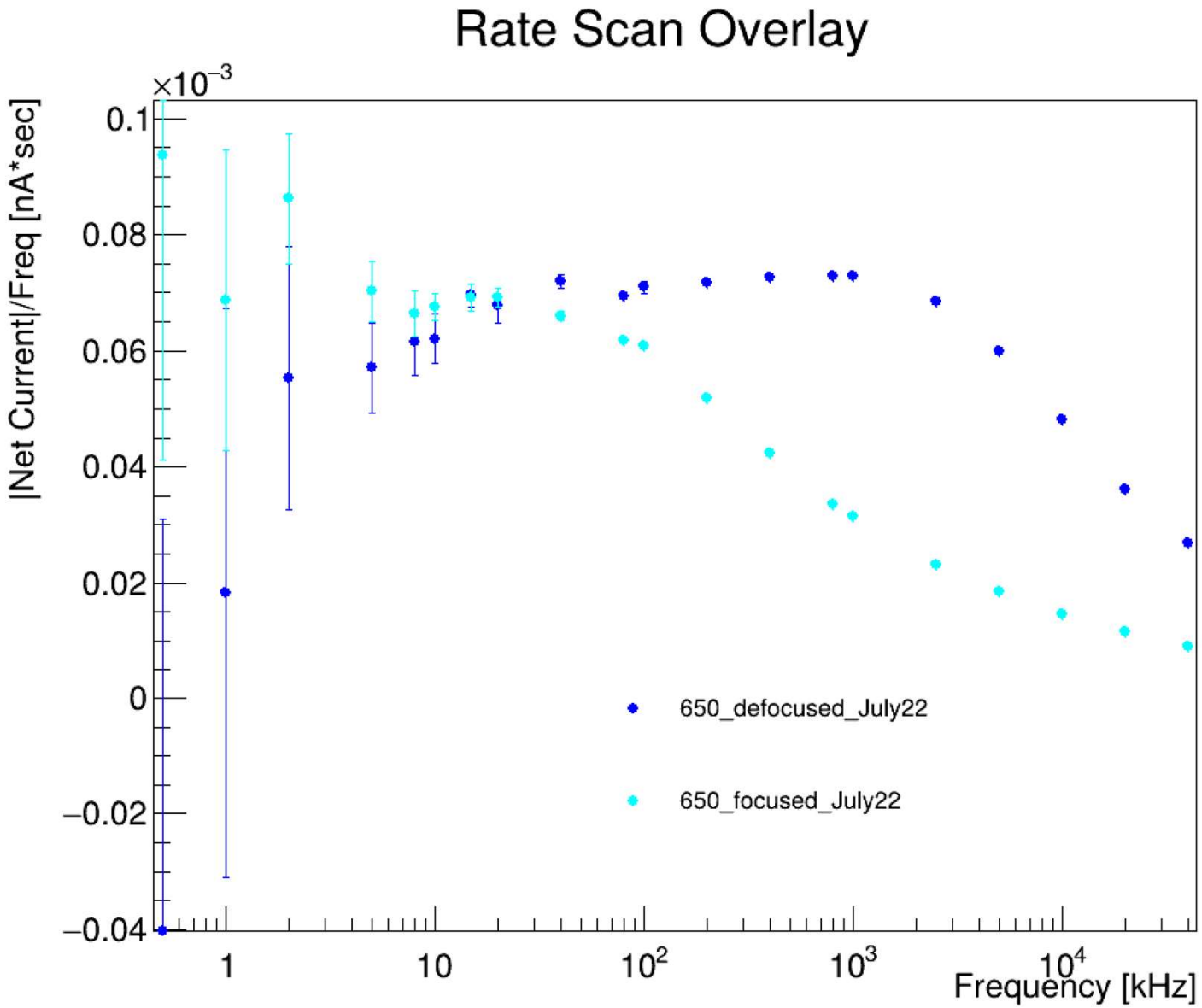


Fixed laser intensity 1.7

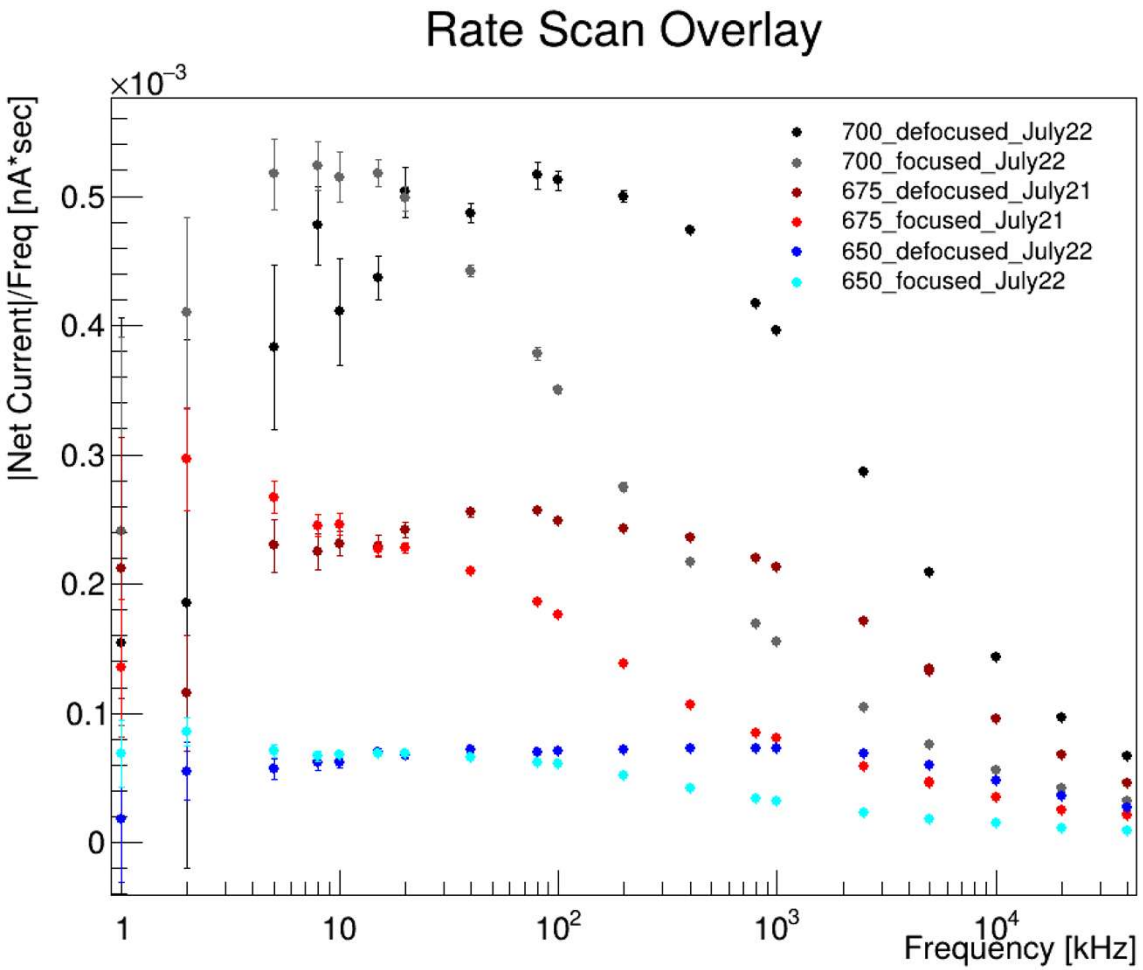



Rate Scan Overlay
×10⁻³
|Net Current|/Freq [nA*sec]
0.5
0.4
0.3
0.2
0.1
700_defocused_July22
700_focused_July22
1
10
10²
10³
10⁴
Frequency [kHz]


Rate Scan Overlay
×10^-3
|Net Current|/Freq [nA*sec]
0.3
0.25
0.2
0.15
0.1
0.05
675_defocused_July21
675_focused_July21
1
10
10^2
10^3
10^4
Frequency [kHz]


Rate Scan Overlay
×10^−3
0.1
0.08
0.06
0.04
0.02
0
−0.02
−0.04
|Net Current|/Freq [nA*sec]
1
10
10^2
10^3
10^4
Frequency [kHz]
650_defocused_July22
650_focused_July22

Frequency vs Rate scan (Updated)



Final Ageing studies starting this week

Characterization before, 3 intermediate, after

Protocol - Measurements

A) Measurements at Ageing Region and Reference Region
(Before, Intermediate, After)

Measurement	HV bias	Light source	Light spot	Details	Instrument
PDE SCAN	ROP	pulsed Laser λ=0.15 W.P.4, OD2	focused	2 horizontal+2 vertical scans 10 mm with 0.5 mm steps (20 points x 4 scans)	Digitizer
QE SCAN	-50 V at PC EntryMCP at G	Continuous LED Direct I_{SET}=300 mA	focused	4x4 pads 0.3 mm steps (100 points/ pad)	i) Keithley EntryMCP, ii) PA120 Iii) Keithley PD
Average QE	-50 V at PC EntryMCP at G	Continuous LED Direct I_{SET}=300 mA	defocused	1.5 hours (??) 5 OFF - 4 ON states(??)	i) Keithley EntryMCP, ii) PA120 Iii) Keithley PD
Gain	ROP	pulsed Laser λ=0.01 W.P.5, OD3	focused	16 charge spectra for 16 pads Central 4 + adjacents	Digitizer
DCR	ROP	X	X	16 pads; 3 Th (-6/-10/-15 mV)	elX modules
APR	ROP	pulsed Laser λ=3 W.P.3, OD1	focused	200 ns time window Logic: Enea	Digi/scope?