Updates on HRPPD #25 activities

Keithley software, Anodic currents, Gain

Chandra, Fulvio, Tiziano, Jinky

15/04/2025

Software for Keithley

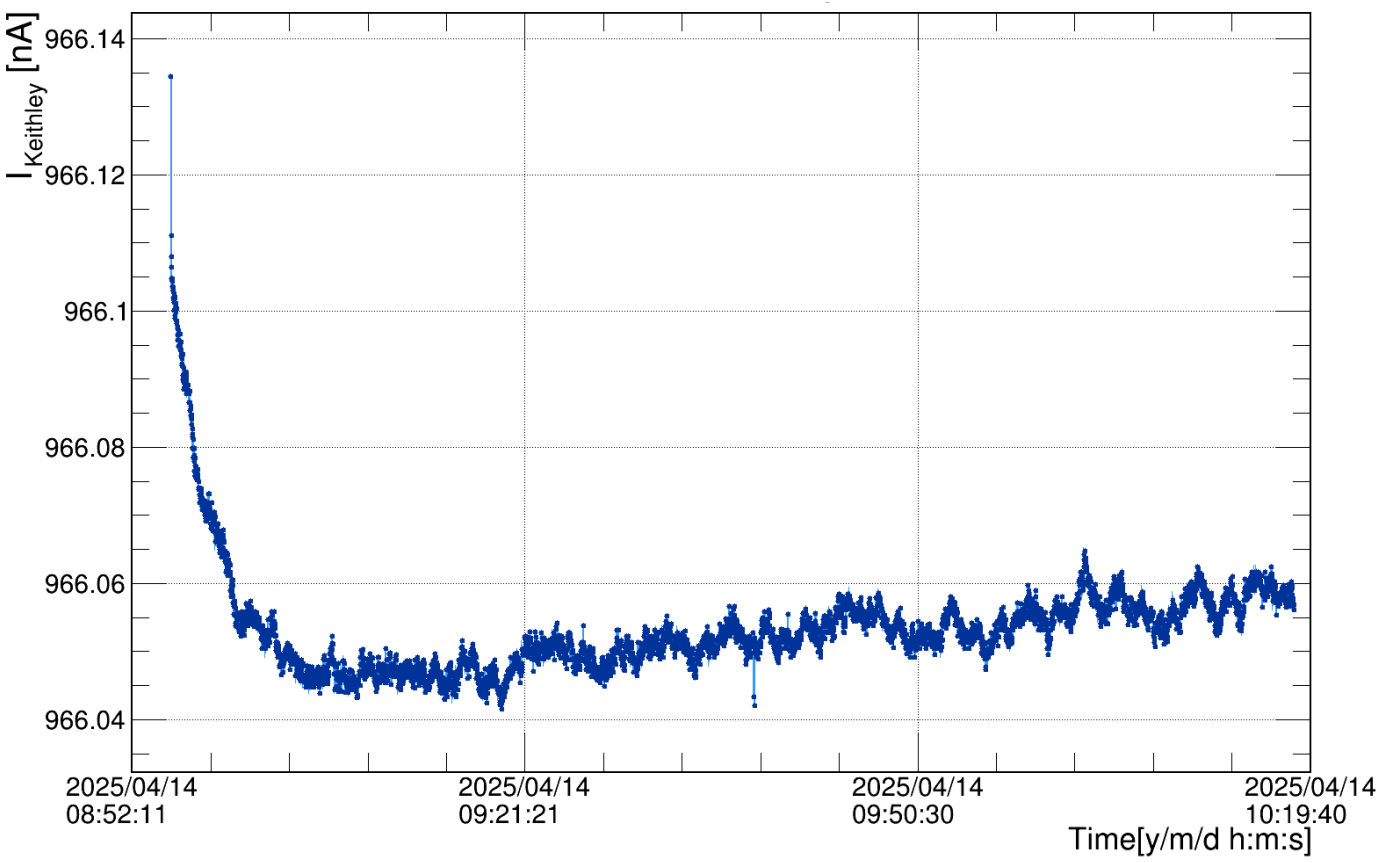
- Software to read and store Keithley readings
- Software to read the saved file with stored values and plot the values

```
jinky@g3-ja-65:~/hrppd/picoammeter/keithley$
jinky@g3-ja-65:~/hrppd/picoammeter/keithley$ head -
-2.089386E-09 2025-04-12 19:26:01.305568 CEST
-1.997546E-09 2025-04-12 19:26:02.306235 CEST
-1.918035E-09 2025-04-12 19:26:03.306719 CEST
-1.704187E-09 2025-04-12 19:26:04.307041 CEST
-2.099161E-09 2025-04-12 19:26:05.826892 CEST
-2.423783E-09 2025-04-12 19:26:06.827217 CEST
-2.376332E-09 2025-04-12 19:26:07.827836 CEST
-2.093130E-09 2025-04-12 19:26:08.828440 CEST
-2.053067E-09 2025-04-12 19:26:09.828838 CEST
-1.772196E-09 2025-04-12 19:26:11.338142 CEST
jinky@g3-ja-65:~/hrppd/picoammeter/keithley$
```

Current [A], timestamp, zone

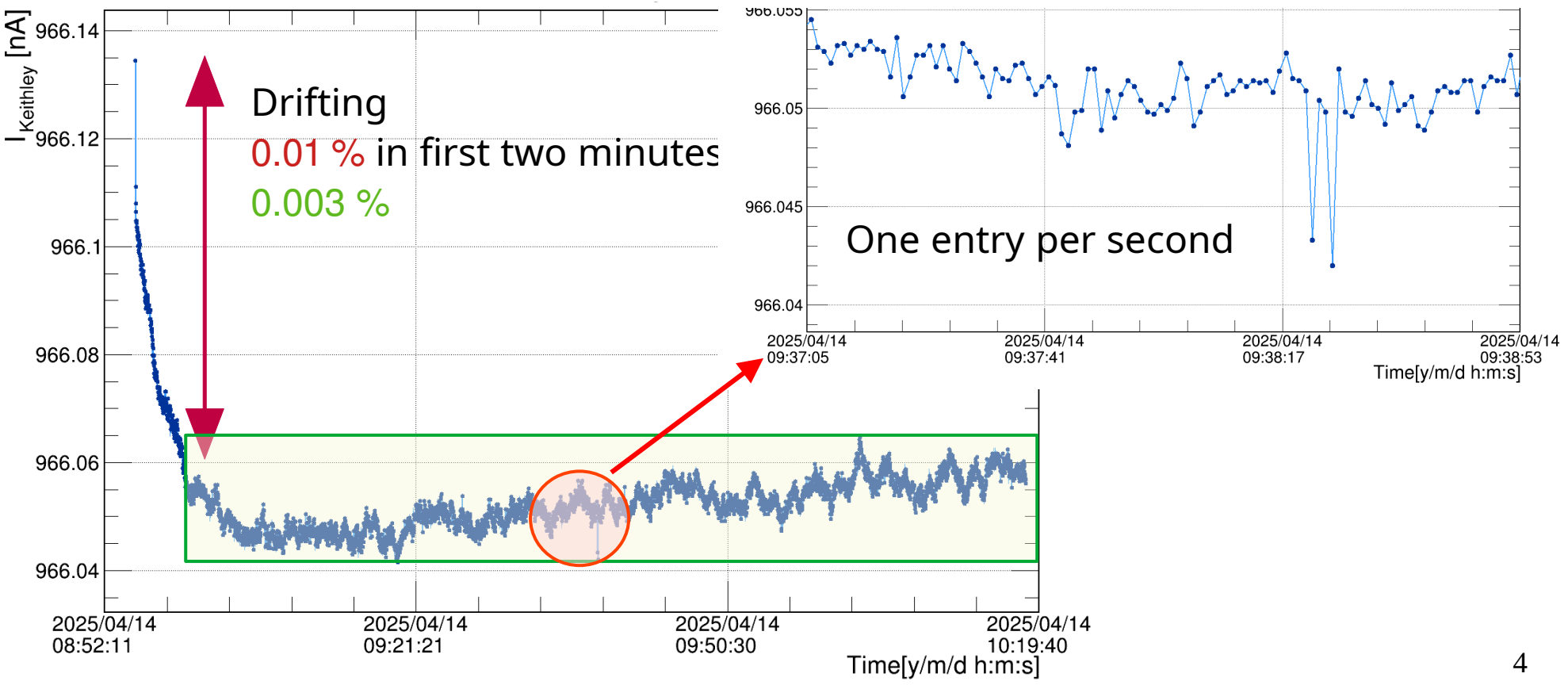
Calibration

Calibration with a battery (9.64 V) and resistor (10 MΩ +/-1%)



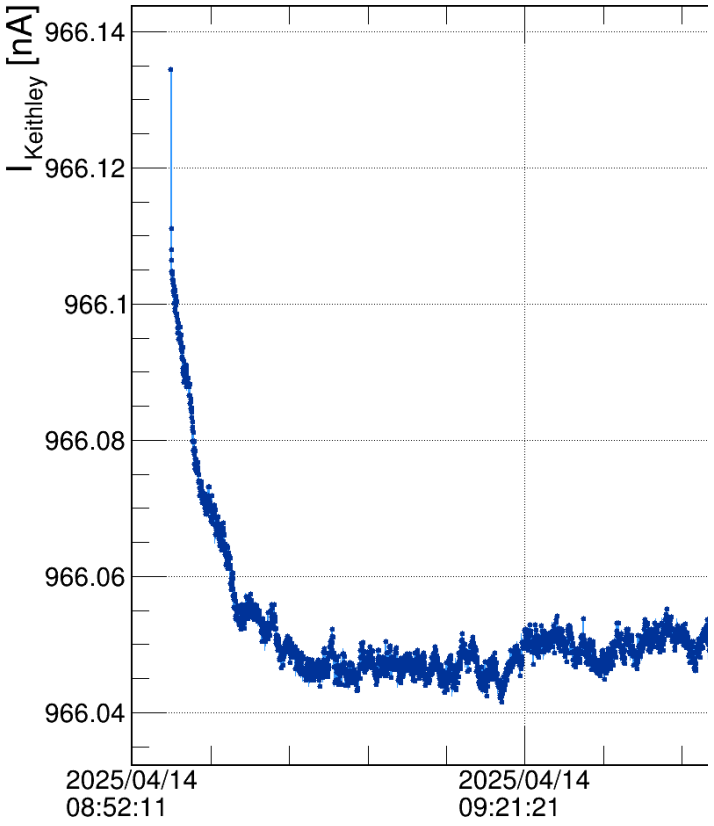
Calibration

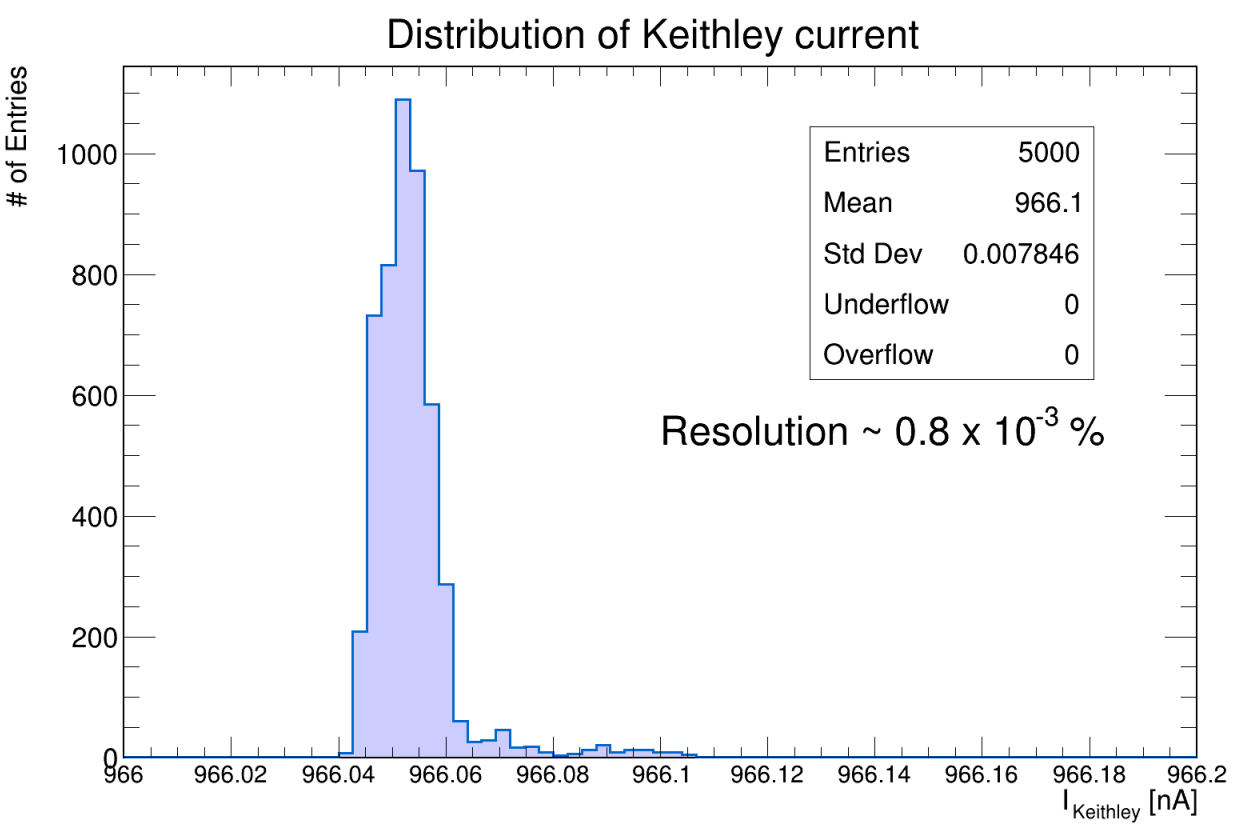
Calibration with a battery (9.64 V) and resistor (10 MΩ +/-1%)



Calibration

Calibration with a battery (9.64 V) and resistor (10 MΩ +/-1%)

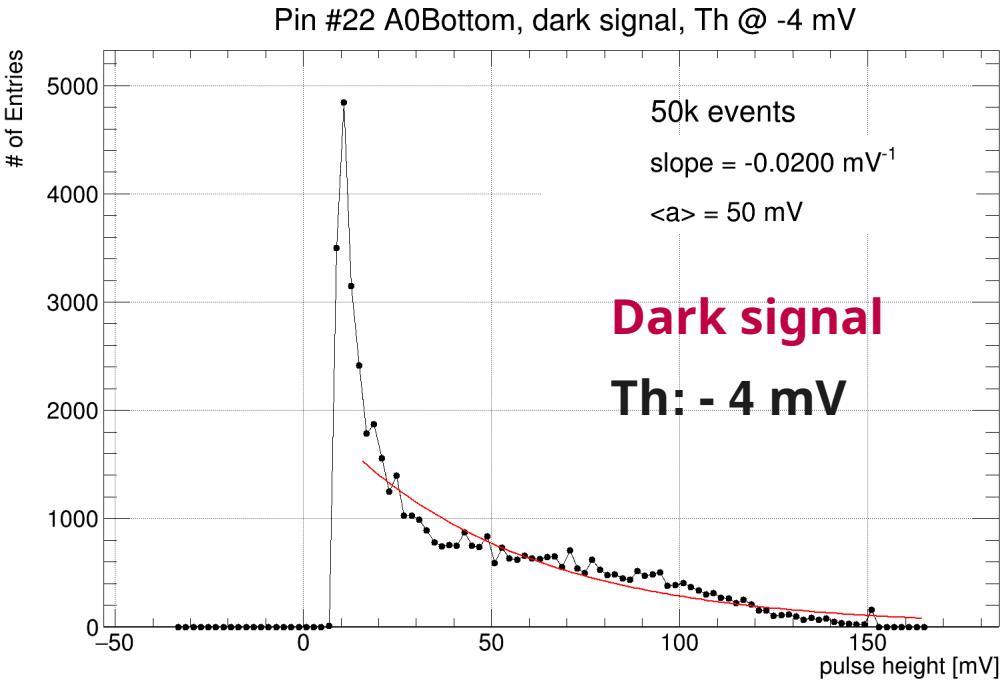


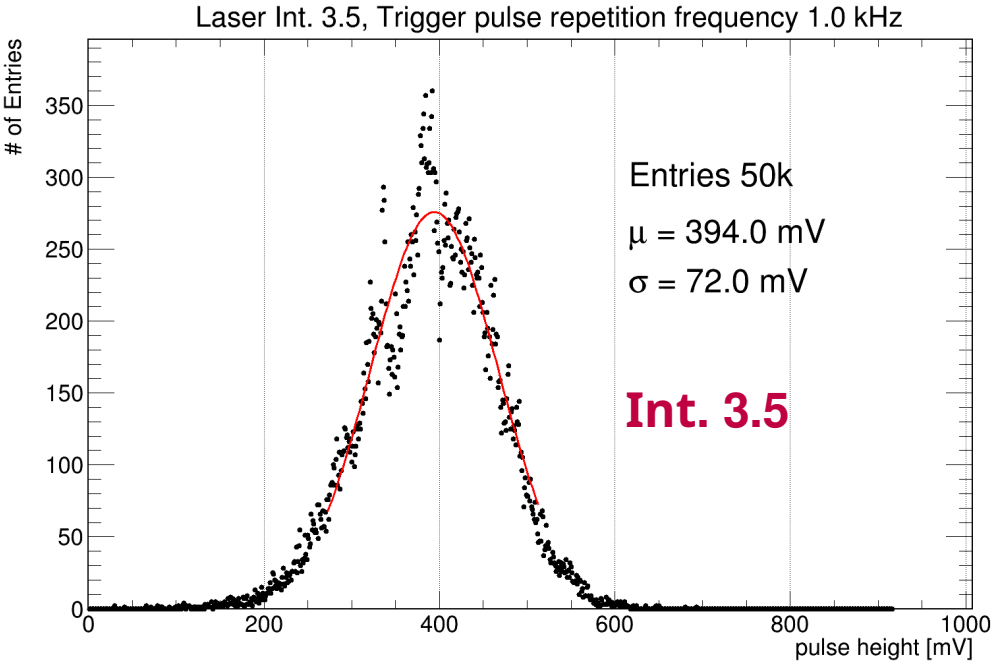


Anodic current vs. ΔV_{MCPs}

Estimation of n.p.e./pulse after mounting the lens
1 kHz rate for external trigger pulse

HV bias: -200_-700_-200_-700_**-200**V



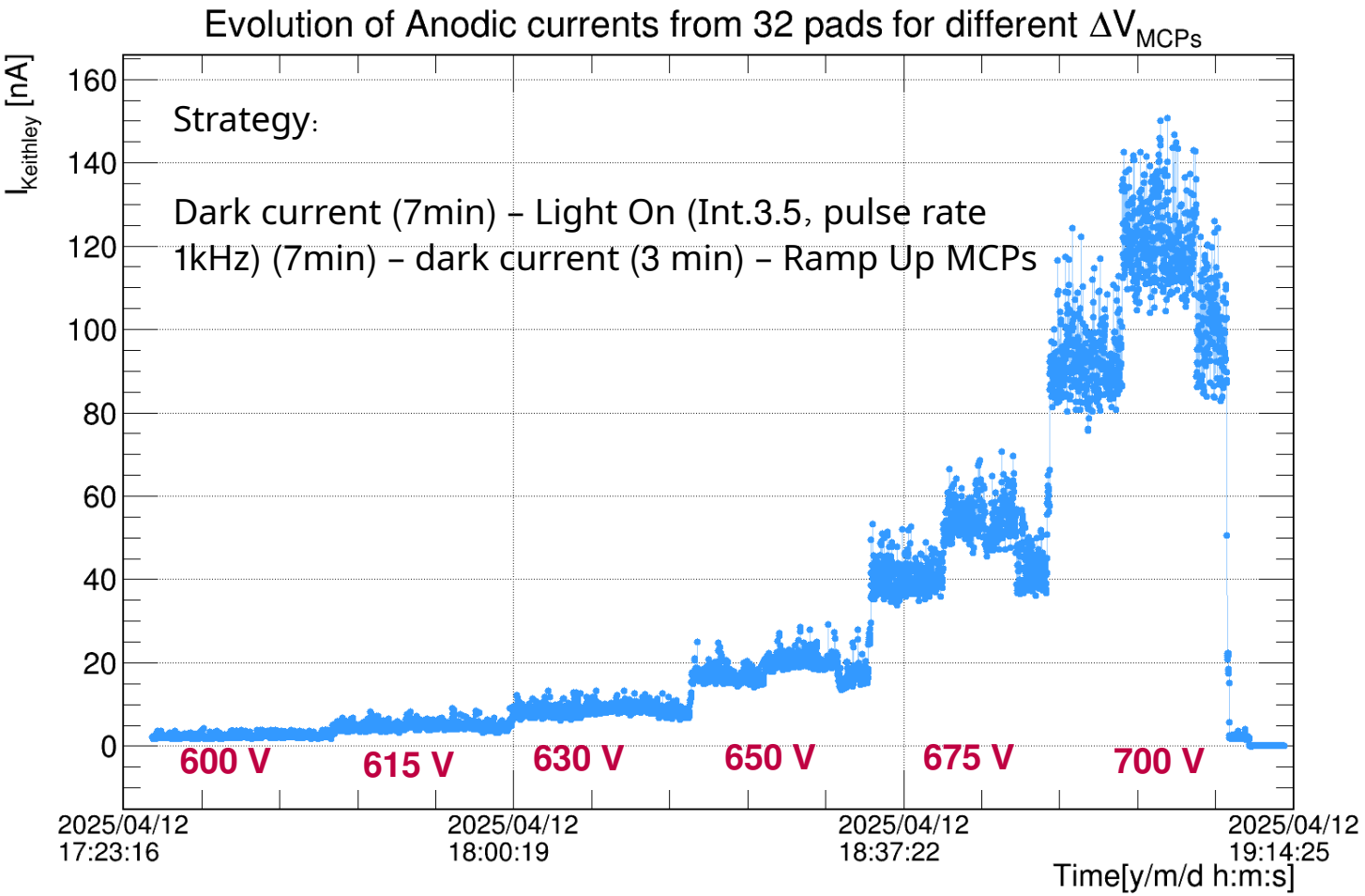


n.p.e. ~7.9

Anodic current vs. ΔV_{MCPs}

Same ΔV across two MCPs

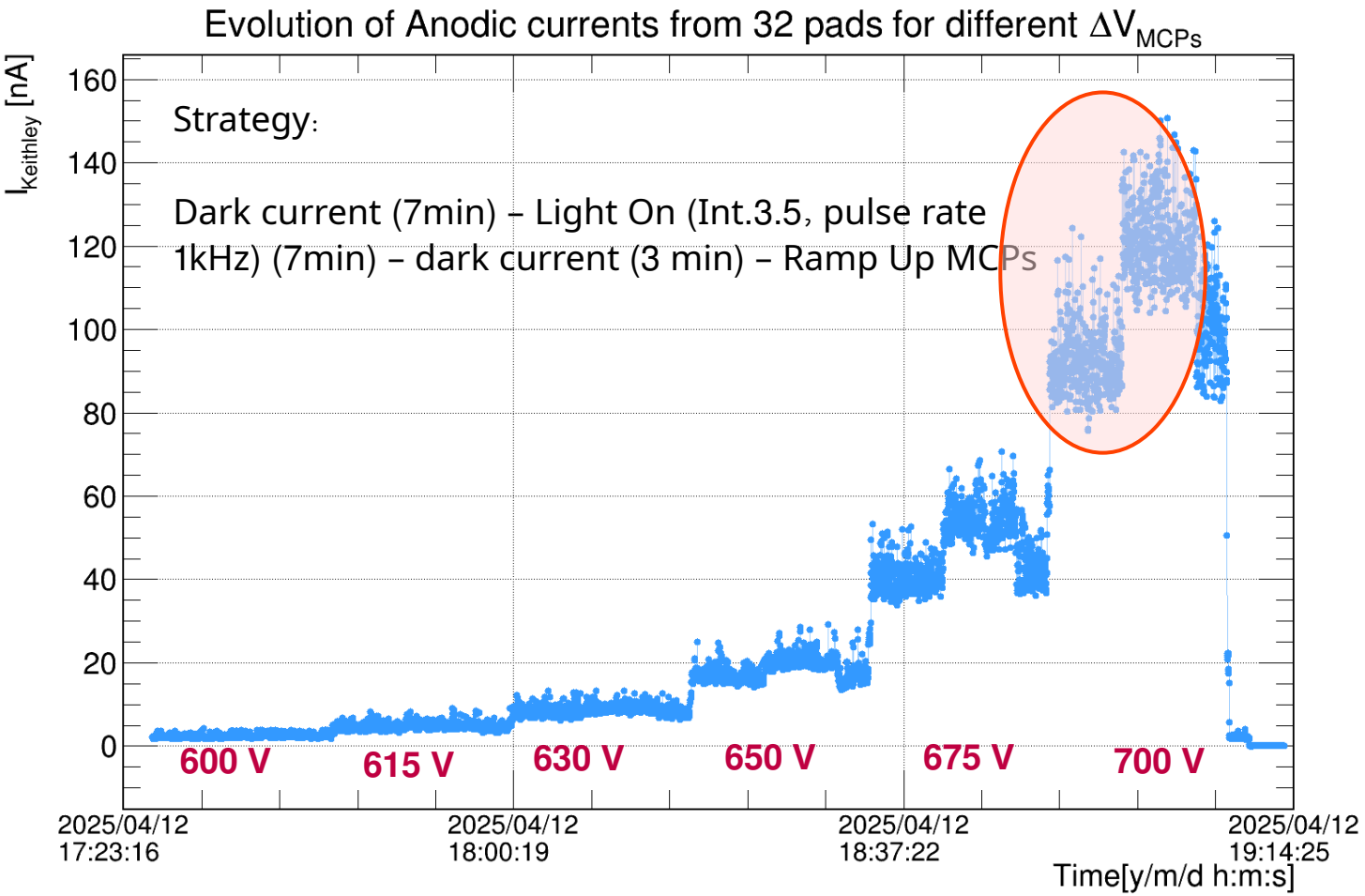
HV bias: -200_-700_-200_-700_**-200**V



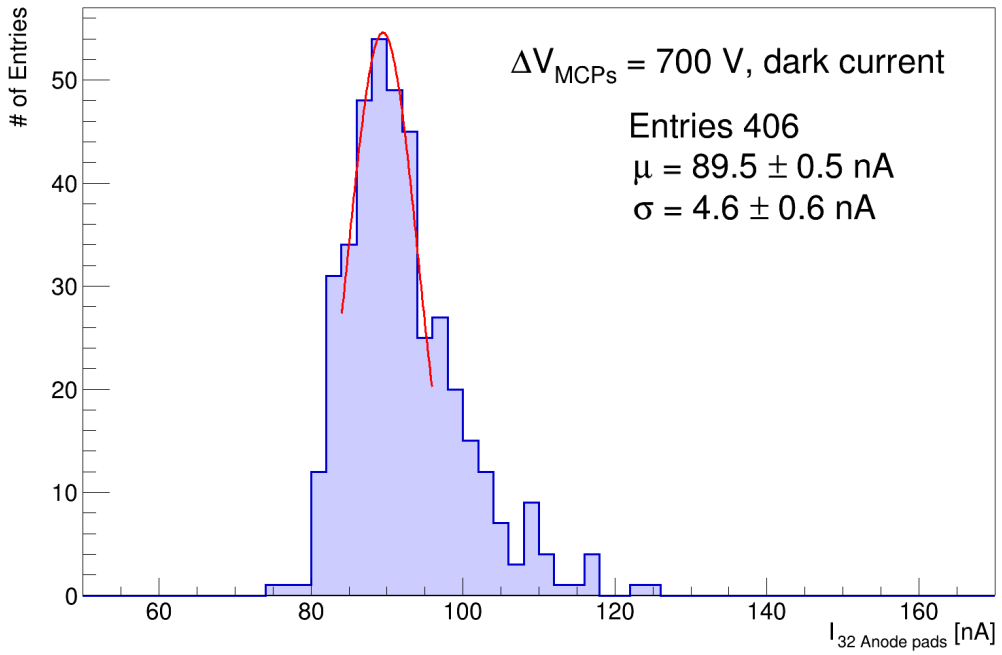
Anodic current vs. ΔV_{MCPs}

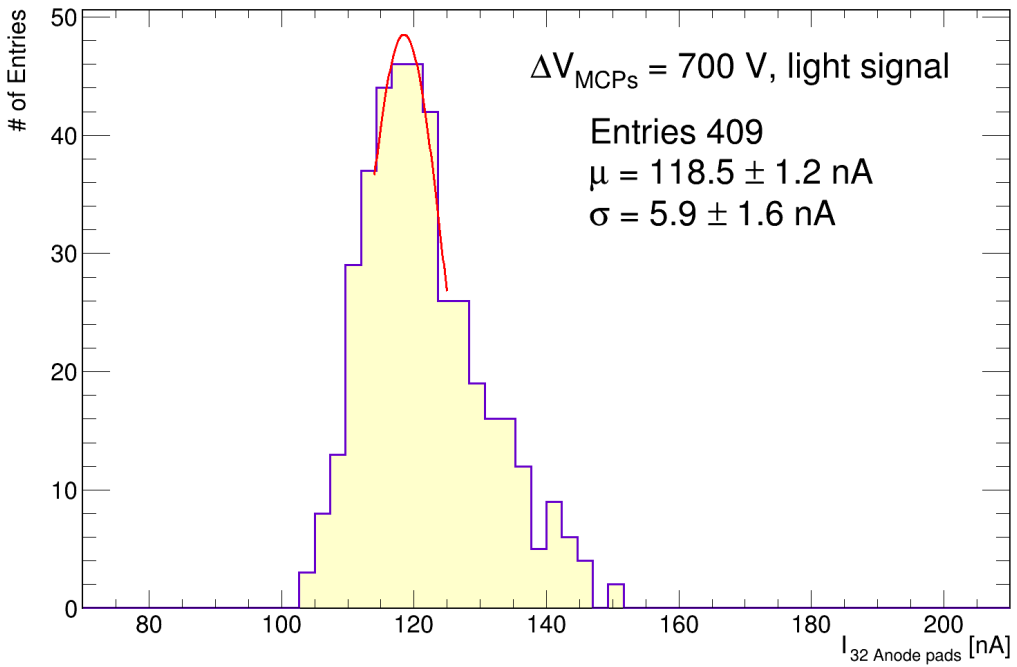
Same ΔV across two MCPs

HV bias: -200_-700_-200_-700_**-200**V



Anodic current



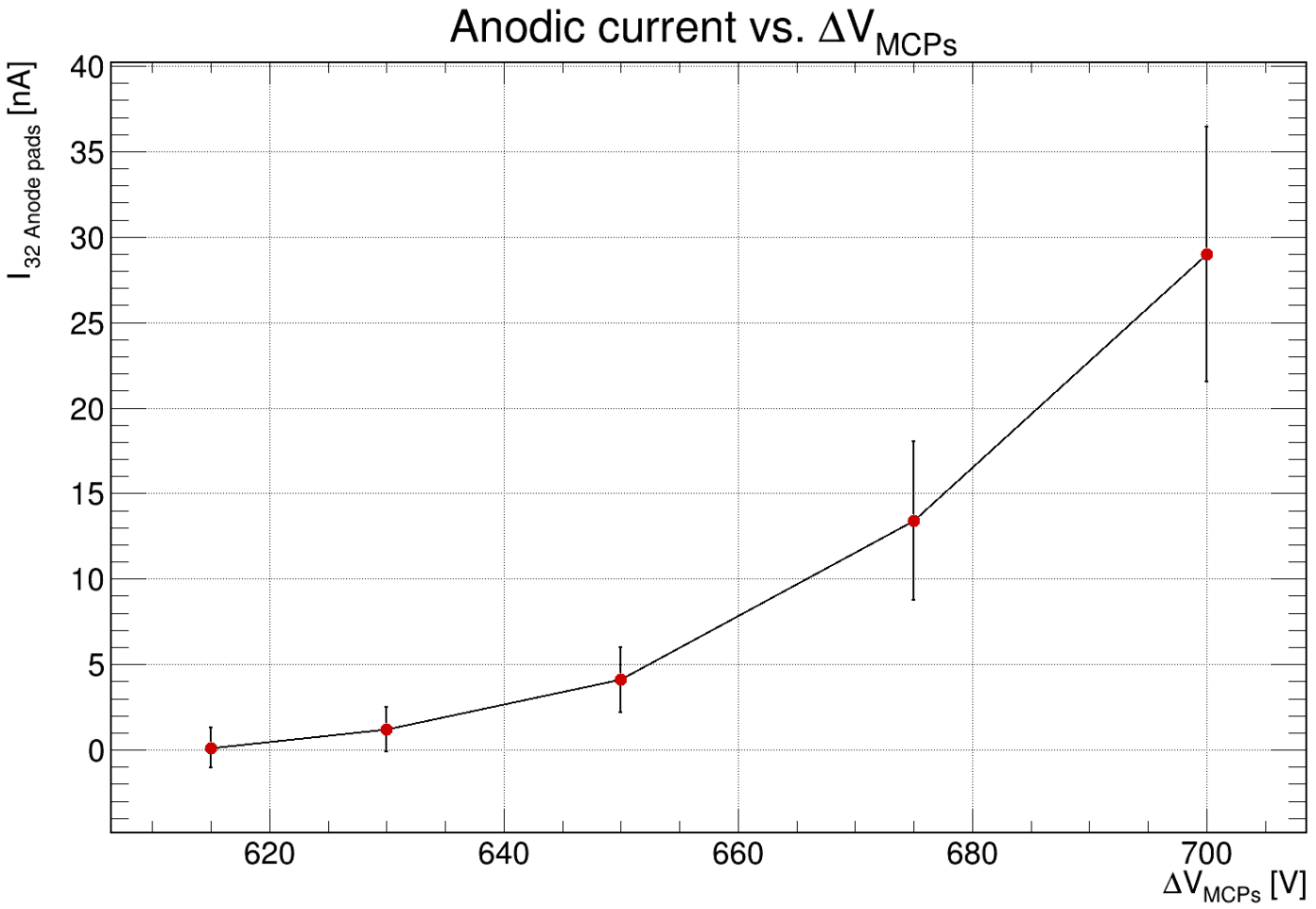


$I_{Anodic} = I_{Total} - I_{dark}$

$= 118.5 - 89.5\ nA = 29\ nA$

ΔI_{Anodic} calculated

Anodic current vs. ΔV_{MCPs}



ΔV_{MCPs} [V]	I_Anode [nA]
615	0.1
630	1.2
650	4.1
675	13.4
700	29

Calculated Gain vs. ΔV_{MCPs}

$$\text{Gain} = \frac{I_{Anodic}}{\text{Rate x n.p.e. x e}}$$

ΔV_{MCPs} [V]	Gain
615	0.00791139
630	0.0949367
650	0.324367
675	1.06013
700	2.2943