PREPARATION FOR HRPPD AGEING CAMPAIGN 3

Focus on Quantum Efficiency

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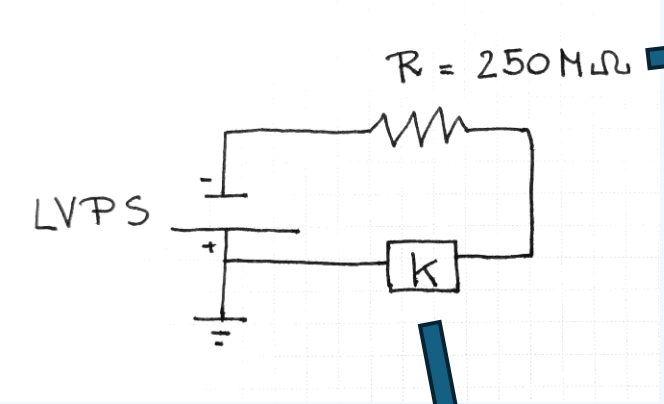
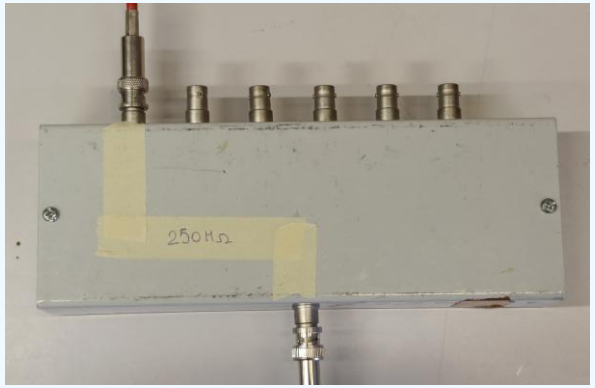
Measurements and aims

HRPPD stability

1. Voltage supply (VS) stability study;
2. HRPPD PC «Leak» analysis

1. Voltage supply choice





Resistor Box

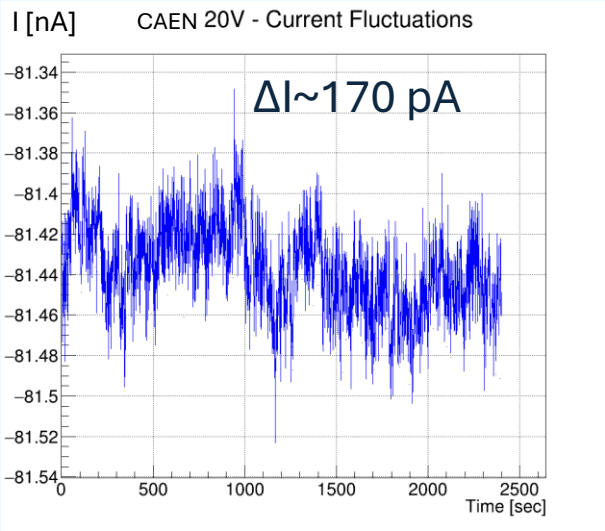
NUEL AL-3T (black VS)

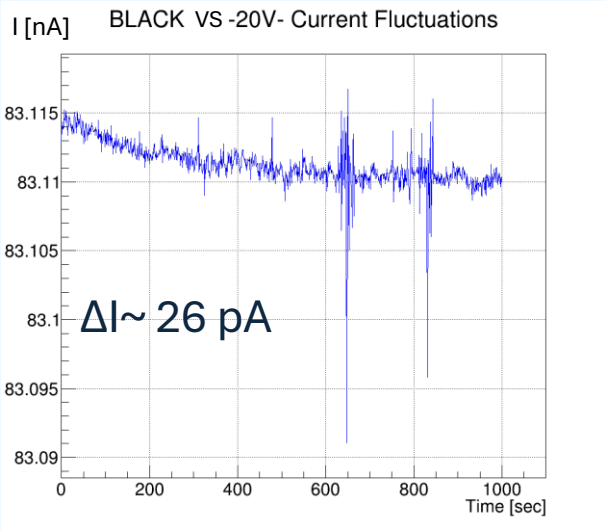
KEITLEY 6485 PA (K)

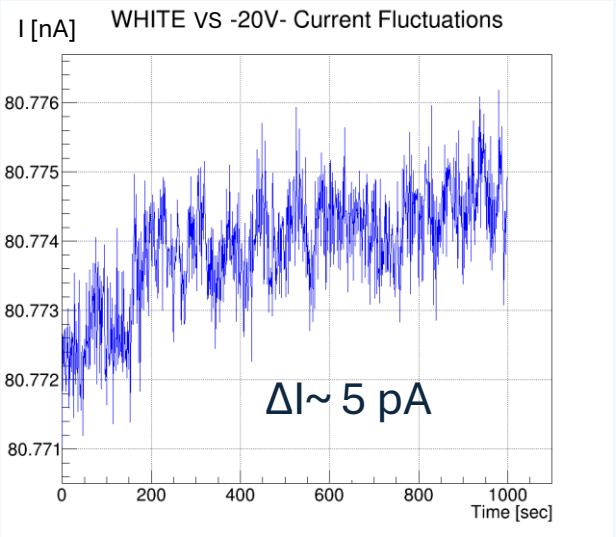
RSPRO RS-D3305P (white VS)

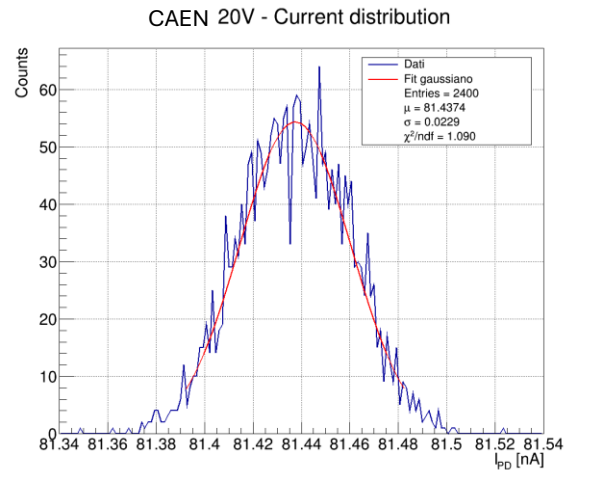
CAEN HiVolta DT1415ET

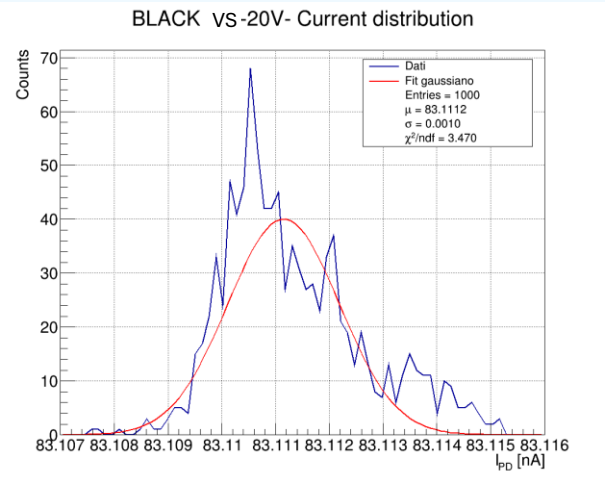
1. Stability analysis

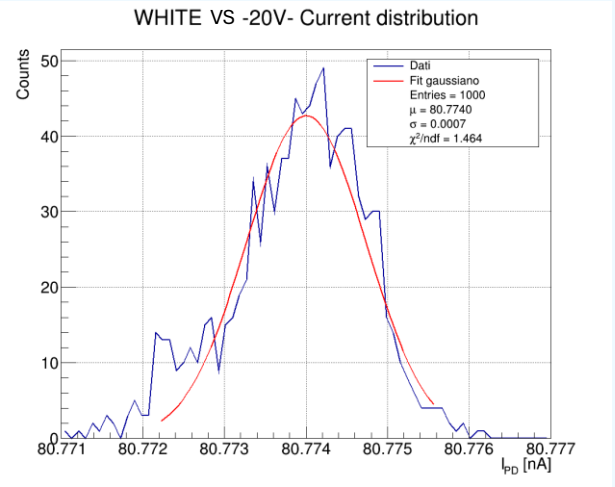








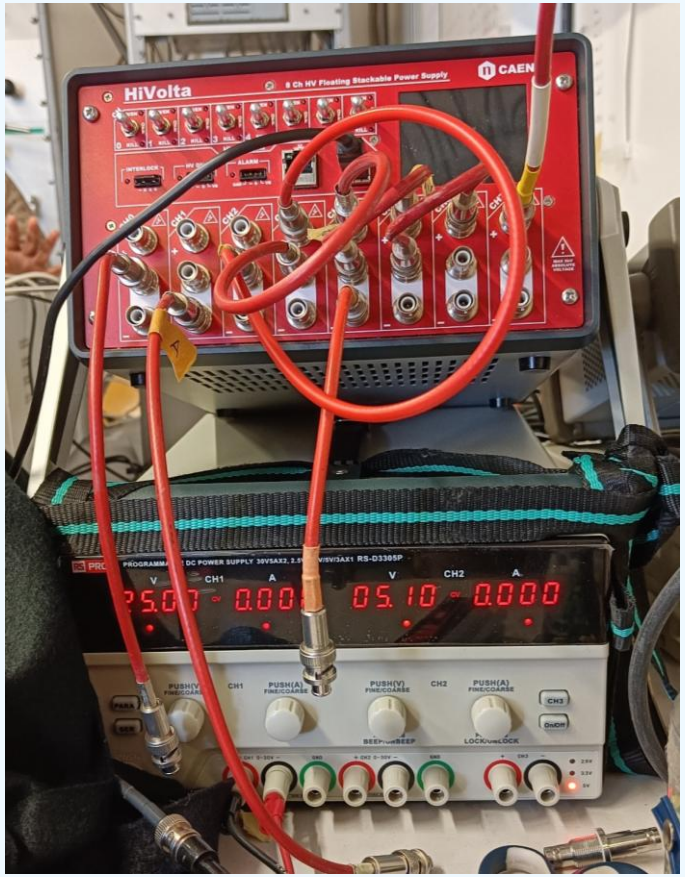




1. Stability analysis: Conclusions

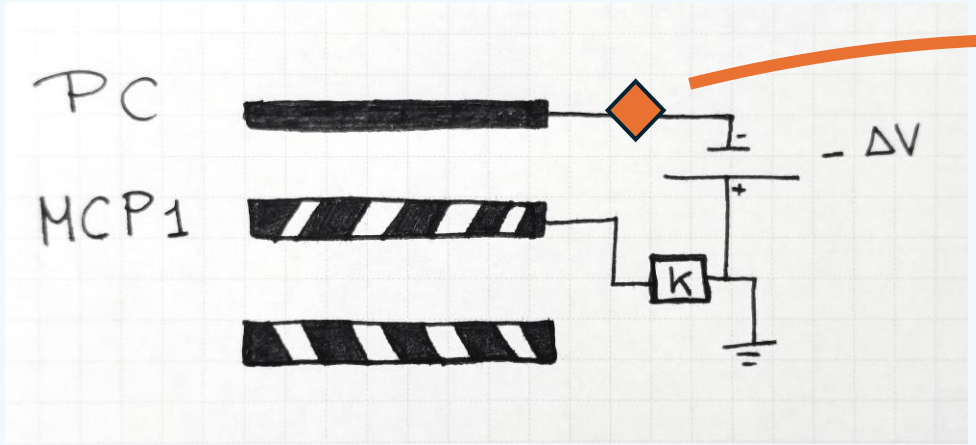
Voltage Supply	Mean (nA)	Dev (nA)
Black 20V	83.1112	0.0010
Black 30V *	120.0140	0.0062
White 20V *	80.7740	0.0007
White 30V	121.1965	0.0008
CEAN 20V *	81.4374	0.0229
CEAN 30V	121.8080	0.0267

* Fitting to the peak.



2. Experimental setup

«Leak» measurement

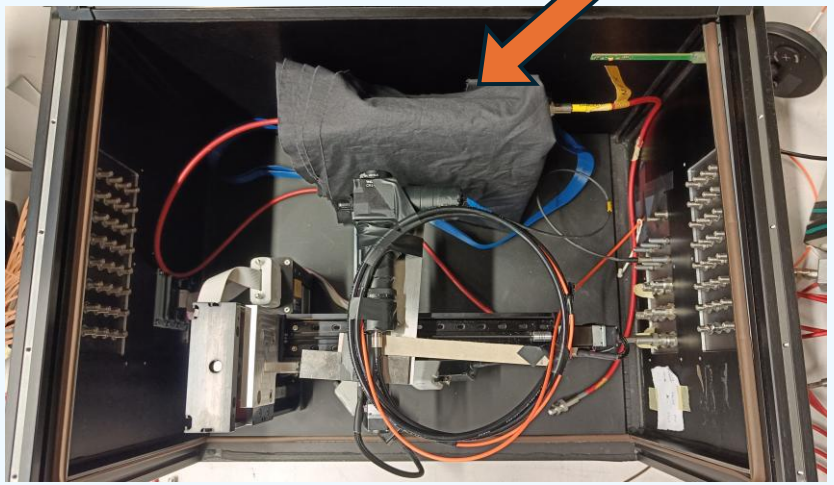


Floating PicoAmperometer (PA120)

KEITLEY 6485 PA (K)

RSPRO RS-D3305P (white VS)

HRPPD

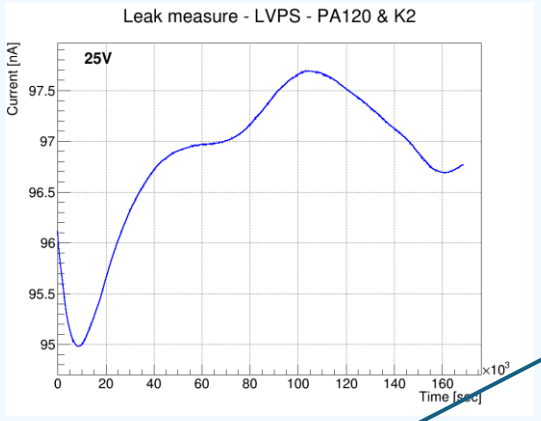


Blackbox

2. Leak subtraction protocol

Proposed workflow:
Offset | QE data | Offset | ...
15-30min 30min 15-30min

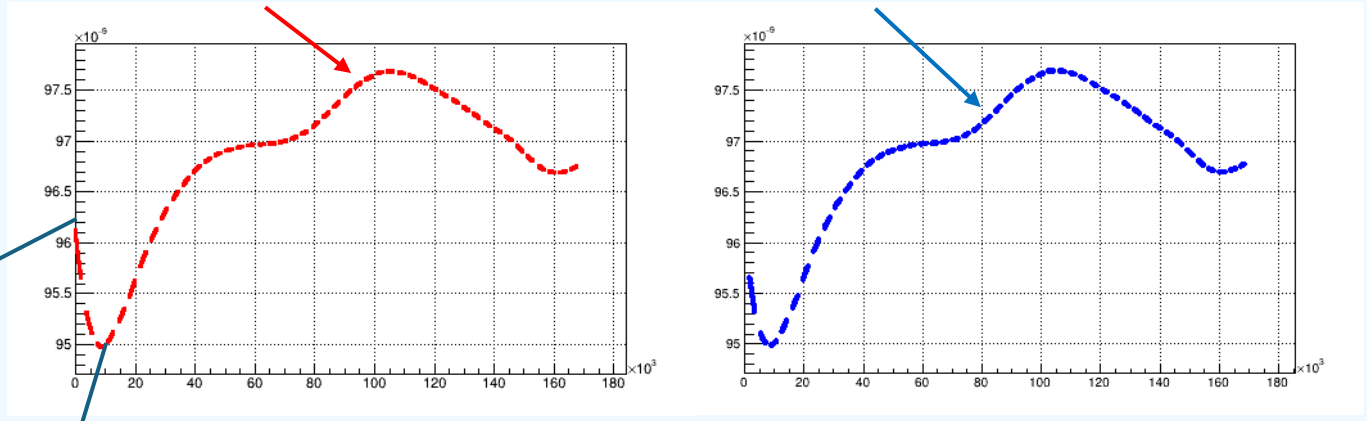
Long «leak» measurement



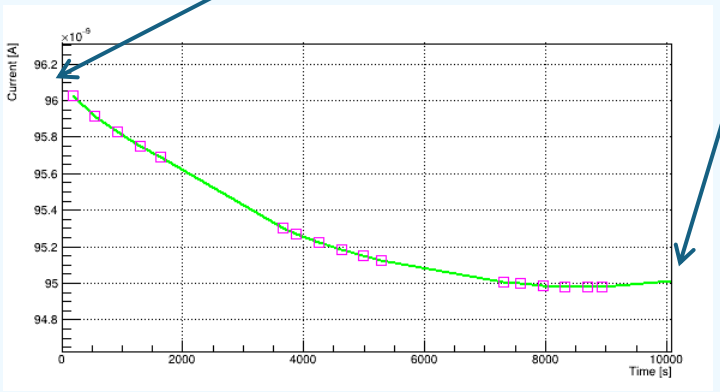
Original data

Only offset data

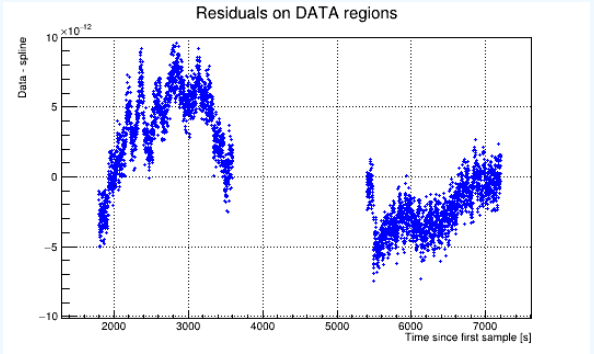
Data mimicking PC current



Segmentation of data in 30 min blocks



Spline Interpolation (zoom)

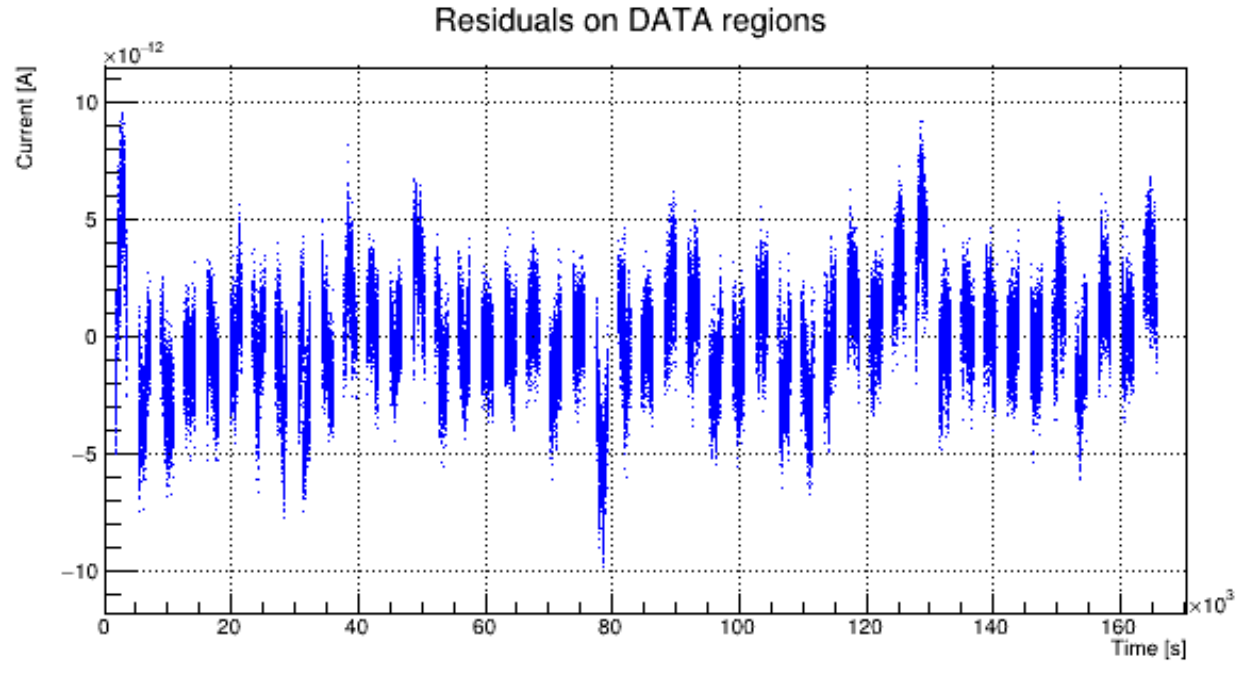


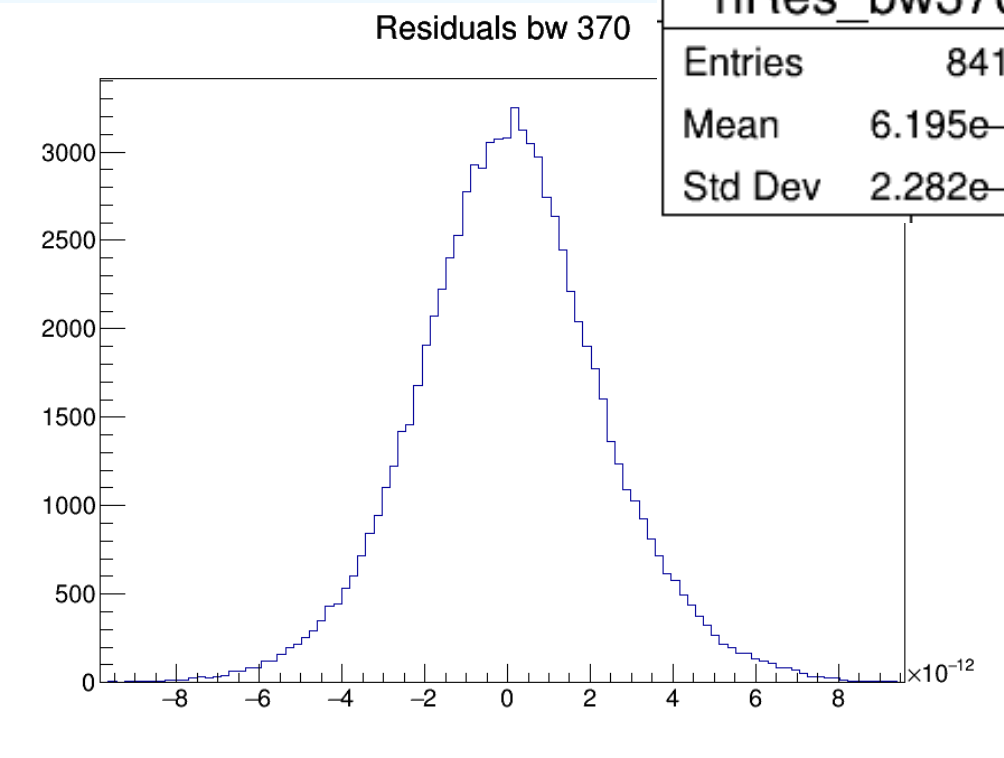
Residual plotting (zoom)

$\Delta I = 15$ pA

2. Analysis results

«Leak» measurement





Data: 25V PA120 & K – 46.86 h

2. Analysis results

«Leak» measurement

PC @ -25V
Leak evolution with LED ON/OFF