

Test Beam July 2025 - EPDT



EP-DT
Detector Technologies

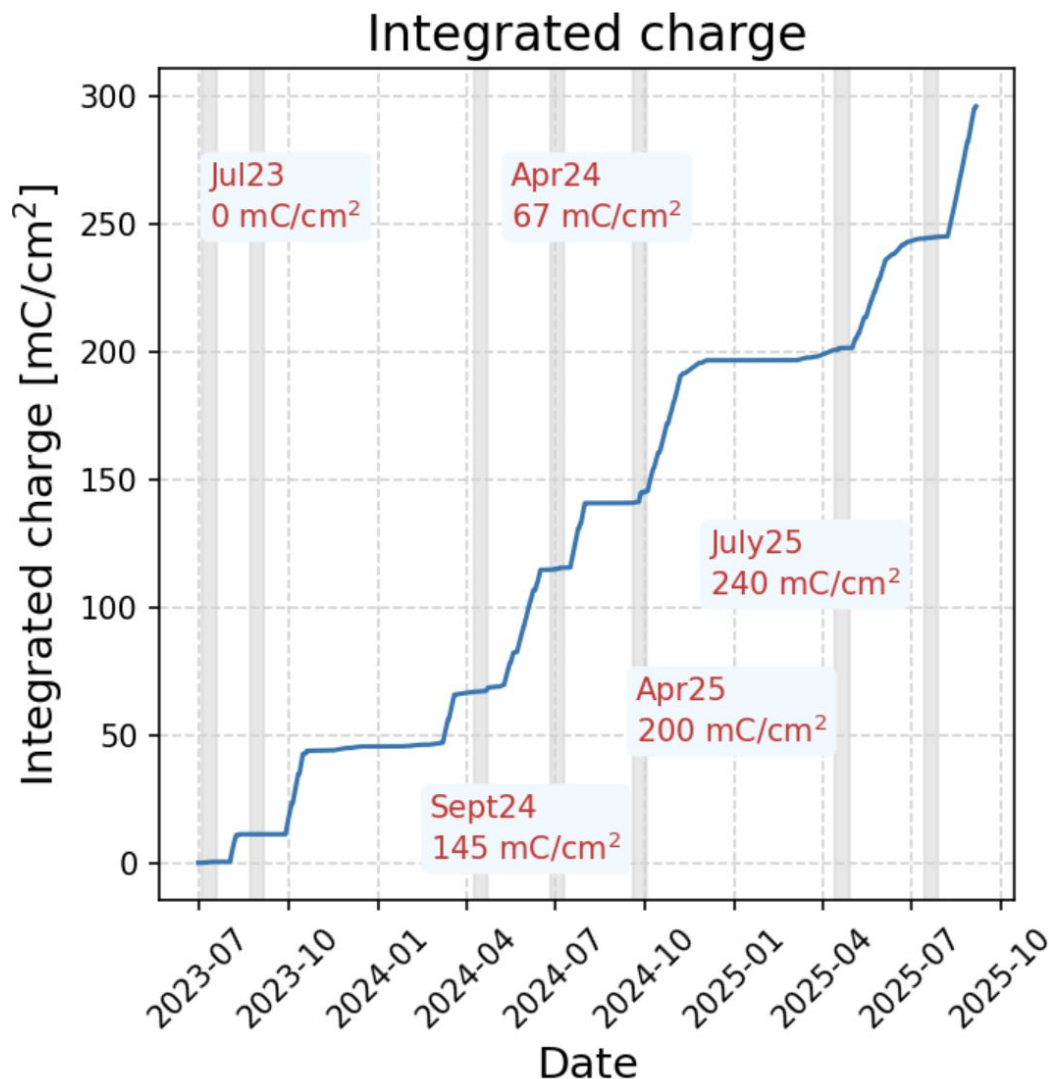
Introduction RPC 25

RPC 25 - EPDT detector

- Ageing since July 2023
- 2mm gap, 70x100 cm²
- 7x2.2 cm copper strips
- CAEN DT5730 readout

During July 2025 TB Filter used:

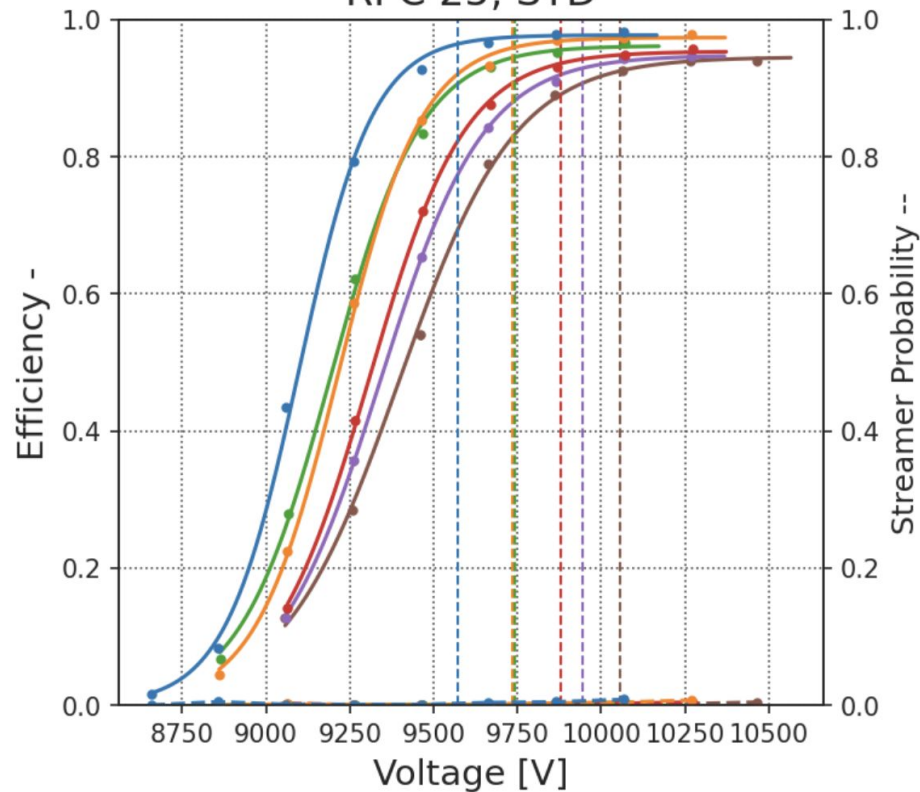
- Off
- 69
- 22
- 10
- 6.9
- 4.6



Efficiency curve

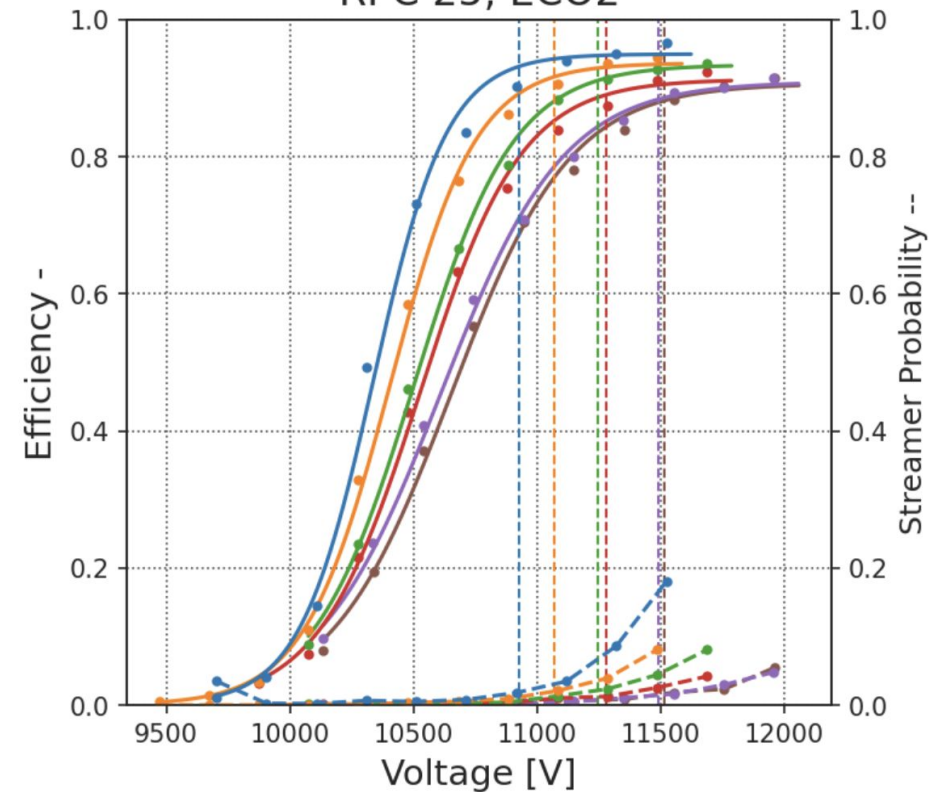
- 4.6, Eff: 94.54 %, SP: 0.06 %, WP: 10056 V, Rate: 415 Hz/cm²
- 6.9, Eff: 94.79 %, SP: 0.09 %, WP: 9946 V, Rate: 338 Hz/cm²
- 10.0, Eff: 95.36 %, SP: 0.18 %, WP: 9880 V, Rate: 241 Hz/cm²
- 22.0, Eff: 96.18 %, SP: 0.12 %, WP: 9742 V, Rate: 140 Hz/cm²
- 69.0, Eff: 97.38 %, SP: 0.16 %, WP: 9734 V, Rate: 57 Hz/cm²
- off, Eff: 97.75 %, SP: 0.24 %, WP: 9572 V

RPC 25, STD



- 4.6, Eff: 90.65 %, SP: 1.65 %, WP: 11513 V, Rate: 372 Hz/cm²
- 6.9, Eff: 90.92 %, SP: 1.45 %, WP: 11491 V, Rate: 301 Hz/cm²
- 10.0, Eff: 91.29 %, SP: 1.25 %, WP: 11280 V, Rate: 204 Hz/cm²
- 22.0, Eff: 93.42 %, SP: 2.16 %, WP: 11247 V, Rate: 141 Hz/cm²
- 69.0, Eff: 93.66 %, SP: 1.99 %, WP: 11067 V, Rate: 72 Hz/cm²
- off, Eff: 94.97 %, SP: 1.90 %, WP: 10928 V

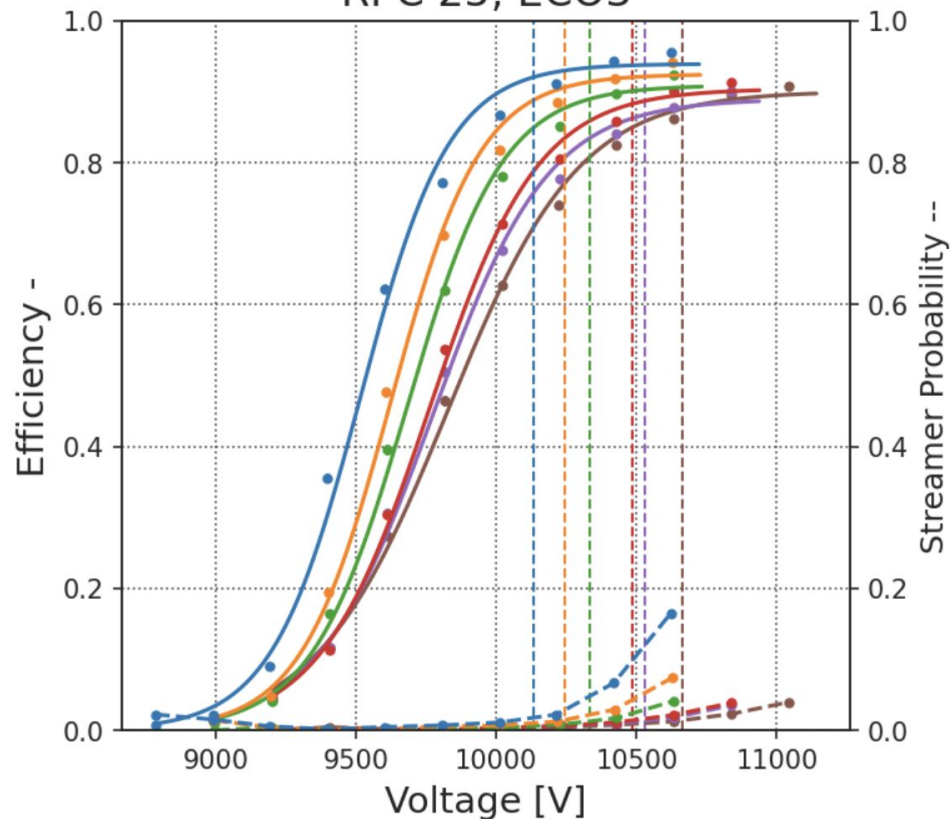
RPC 25, ECO2



Efficiency curve

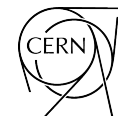
- 4.6, Eff: 90.08 %, SP: 1.41 %, WP: 10665 V, Rate: 350 Hz/cm²
- 6.9, Eff: 88.97 %, SP: 1.35 %, WP: 10529 V, Rate: 291 Hz/cm²
- 10.0, Eff: 90.41 %, SP: 1.38 %, WP: 10483 V, Rate: 227 Hz/cm²
- 22.0, Eff: 90.90 %, SP: 1.26 %, WP: 10332 V, Rate: 129 Hz/cm²
- 69.0, Eff: 92.46 %, SP: 1.43 %, WP: 10243 V, Rate: 69 Hz/cm²
- off, Eff: 93.93 %, SP: 1.76 %, WP: 10132V

RPC 25, ECO3



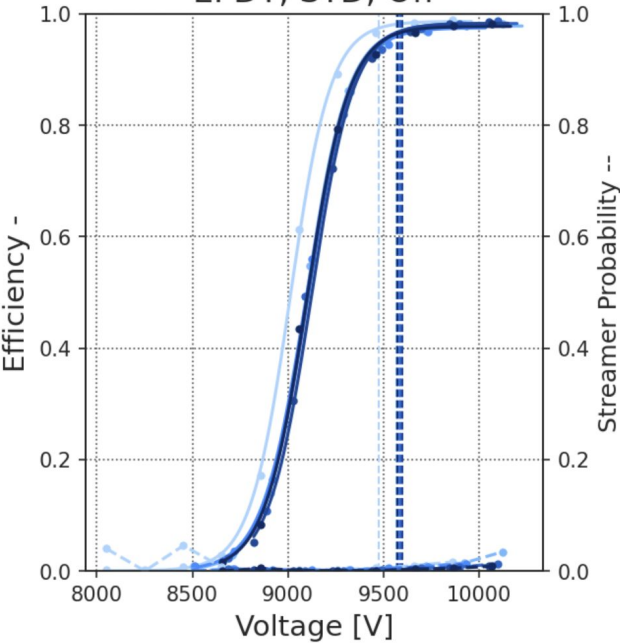
Comparison with previous Test Beam

Efficiency curve for all TB



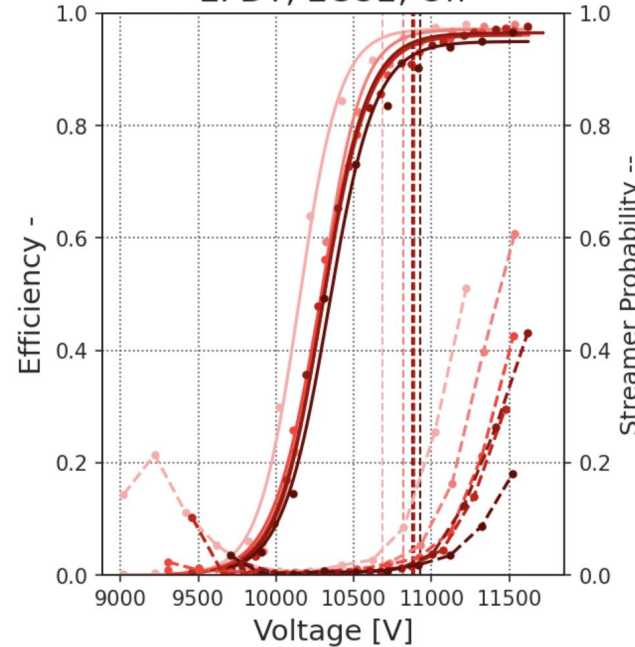
EP-DT
Detector Technologies

EPDT, STD, Off



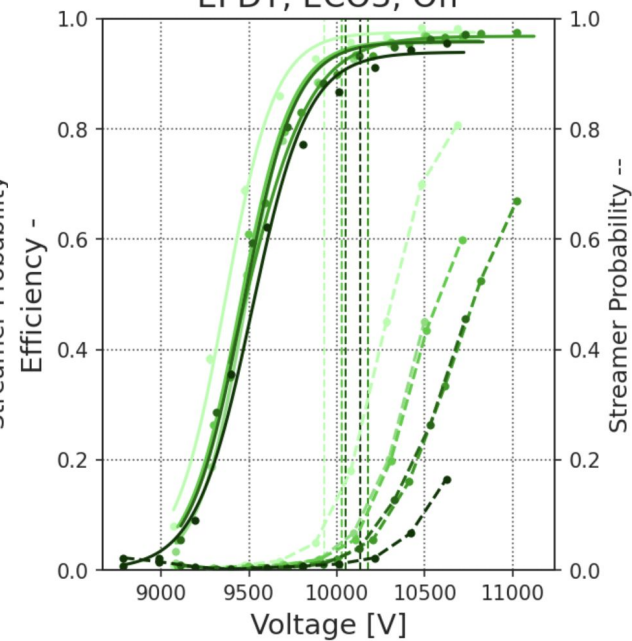
- Jul23, Eff: 98.64 %, SP: 0.50 %, WP: 9473V
- Apr24, Eff: 97.81 %, SP: 0.47 %, WP: 9568V
- Jun24, Eff: 97.50 %, SP: 0.60 %, WP: 9584V
- Sept24, Eff: 98.26 %, SP: 0.33 %, WP: 9587V
- Apr25, Eff: 98.32 %, SP: 0.14 %, WP: 9600V
- Jul25, Eff: 97.75 %, SP: 0.24 %, WP: 9572V

EPDT, ECO2, Off



- Jul23, Eff: 97.23 %, SP: 4.50 %, WP: 10684V
- Apr24, Eff: 97.13 %, SP: 3.58 %, WP: 10820V
- Jun24, Eff: 96.11 %, SP: 2.88 %, WP: 10880V
- Sept24, Eff: 96.13 %, SP: 1.91 %, WP: 10890V
- Apr25, Eff: 96.50 %, SP: 2.13 %, WP: 10875V
- Jul25, Eff: 94.97 %, SP: 1.90 %, WP: 10928V

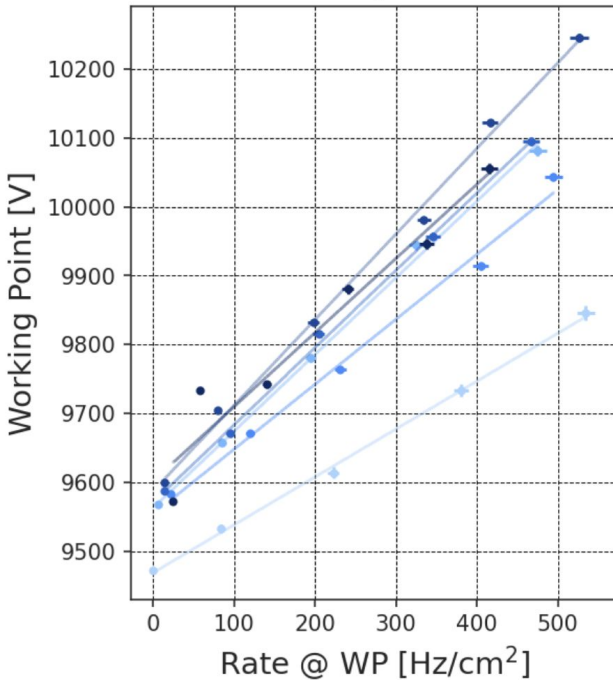
EPDT, ECO3, Off



- Jul23, Eff: 97.52 %, SP: 8.33 %, WP: 9930V
- Apr24, Eff: 95.62 %, SP: 5.03 %, WP: 10027V
- Jun24, Eff: 95.99 %, SP: 4.19 %, WP: 10030V
- Sept24, Eff: 96.81 %, SP: 5.04 %, WP: 10176V
- Apr25, Eff: 95.79 %, SP: 2.78 %, WP: 10048V
- Jul25, Eff: 93.93 %, SP: 1.76 %, WP: 10132V

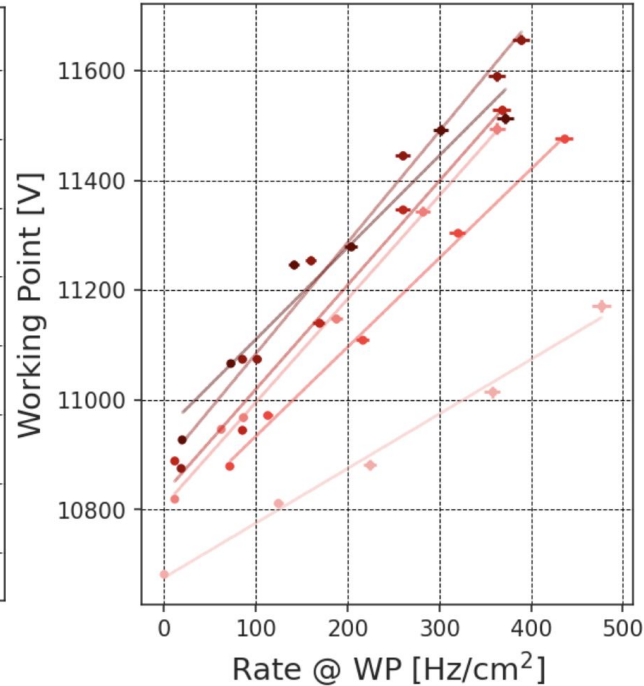
Working point vs Rate

EPDT, STD



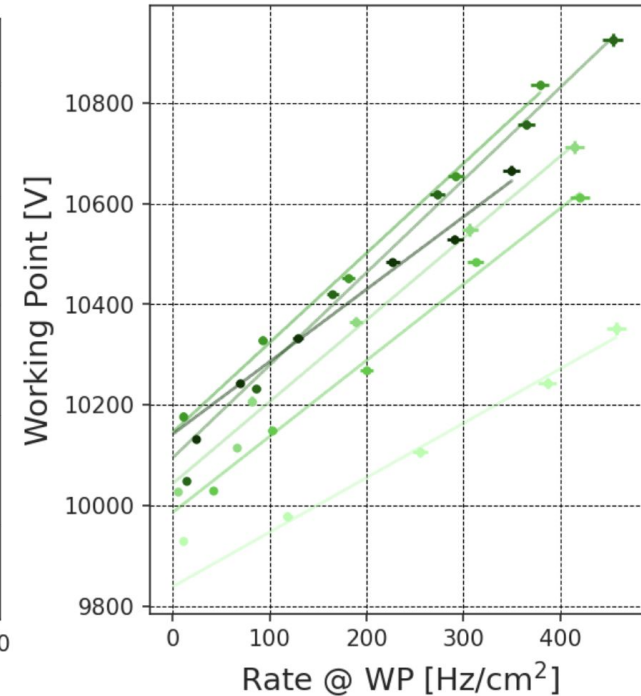
- Jul23, Eff. Max @200 Hz/cm²: 9609.0V
- Apr24, Eff. Max @200 Hz/cm²: 9787.0V
- Jun24, Eff. Max @200 Hz/cm²: 9744.0V
- Sept24, Eff. Max @200 Hz/cm²: 9797.0V
- Apr25, Eff. Max @200 Hz/cm²: 9838.0V
- Jul25, Eff. Max @200 Hz/cm²: 9819.0V

EPDT, ECO2



- Jul23, Eff. Max @200 Hz/cm²: 10877.0V
- Apr24, Eff. Max @200 Hz/cm²: 11186.0V
- Jun24, Eff. Max @200 Hz/cm²: 11098.0V
- Sept24, Eff. Max @200 Hz/cm²: 11211.0V
- Apr25, Eff. Max @200 Hz/cm²: 11289.0V
- Jul25, Eff. Max @200 Hz/cm²: 11279.0V

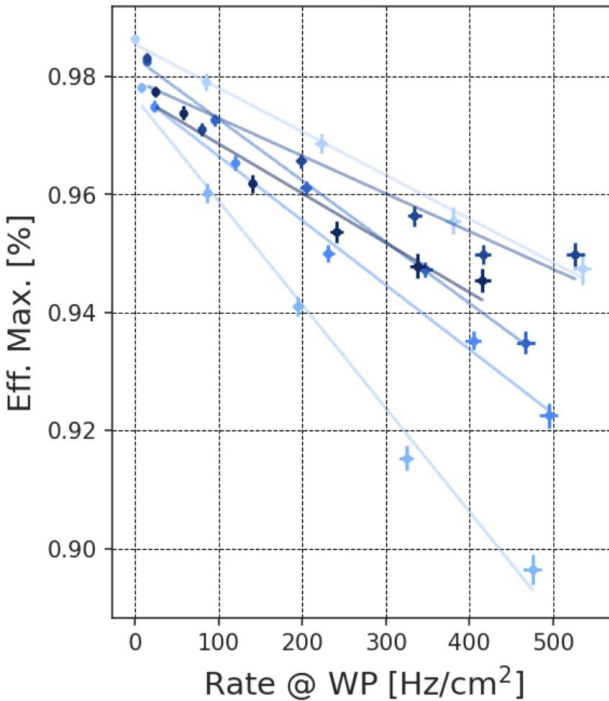
EPDT, ECO3



- Jul23, Eff. Max @200 Hz/cm²: 10057.0V
- Apr24, Eff. Max @200 Hz/cm²: 10371.0V
- Jun24, Eff. Max @200 Hz/cm²: 10290.0V
- Sept24, Eff. Max @200 Hz/cm²: 10504.0V
- Apr25, Eff. Max @200 Hz/cm²: 10465.0V
- Jul25, Eff. Max @200 Hz/cm²: 10432.0V

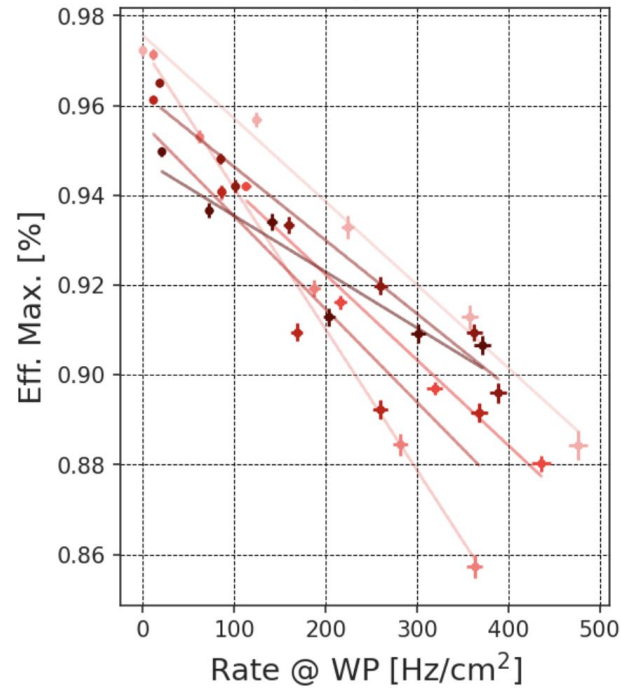
Maximum efficiency vs Rate

EPDT, STD



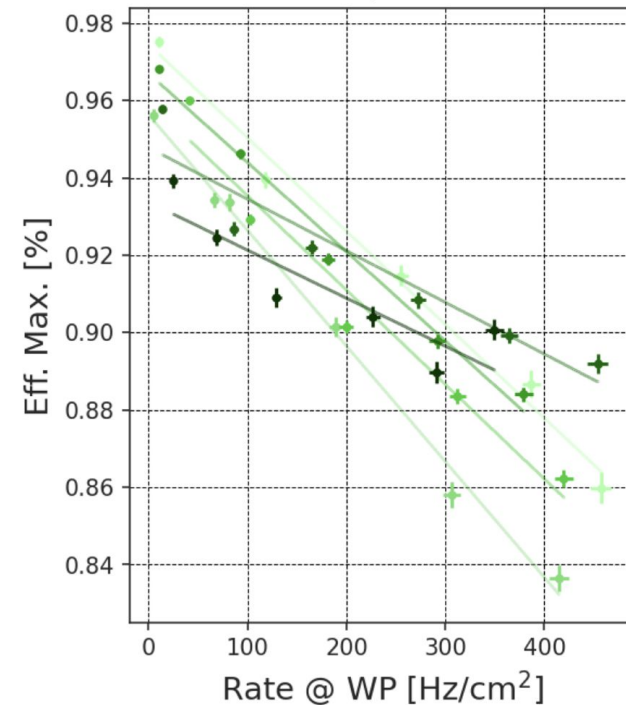
- Jul23, Eff. Max @200 Hz/cm²: 0.97%
- Apr24, Eff. Max @200 Hz/cm²: 0.94%
- Jun24, Eff. Max @200 Hz/cm²: 0.96%
- Sept24, Eff. Max @200 Hz/cm²: 0.96%
- Apr25, Eff. Max @200 Hz/cm²: 0.97%
- Jul25, Eff. Max @200 Hz/cm²: 0.96%

EPDT, ECO2



- Jul23, Eff. Max @200 Hz/cm²: 0.94%
- Apr24, Eff. Max @200 Hz/cm²: 0.91%
- Jun24, Eff. Max @200 Hz/cm²: 0.92%
- Sept24, Eff. Max @200 Hz/cm²: 0.91%
- Apr25, Eff. Max @200 Hz/cm²: 0.93%
- Jul25, Eff. Max @200 Hz/cm²: 0.92%

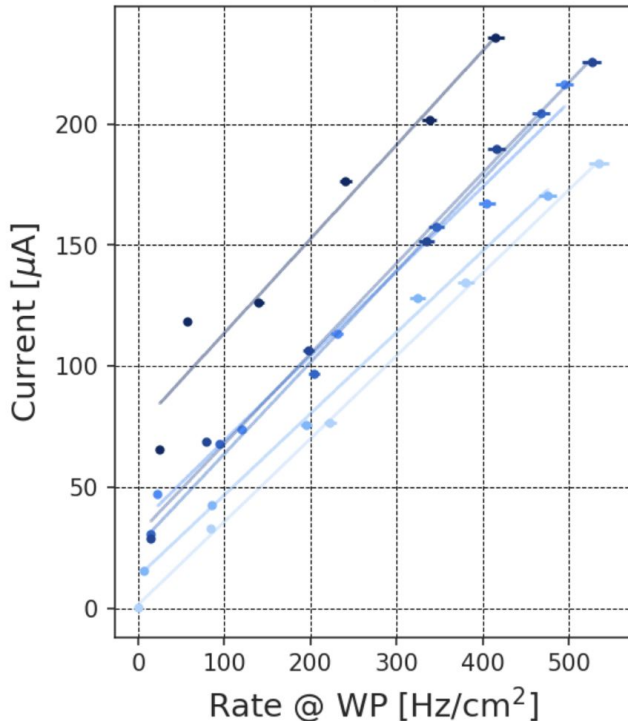
EPDT, ECO3



- Jul23, Eff. Max @200 Hz/cm²: 0.93%
- Apr24, Eff. Max @200 Hz/cm²: 0.9%
- Jun24, Eff. Max @200 Hz/cm²: 0.91%
- Sept24, Eff. Max @200 Hz/cm²: 0.92%
- Apr25, Eff. Max @200 Hz/cm²: 0.92%
- Jul25, Eff. Max @200 Hz/cm²: 0.91%

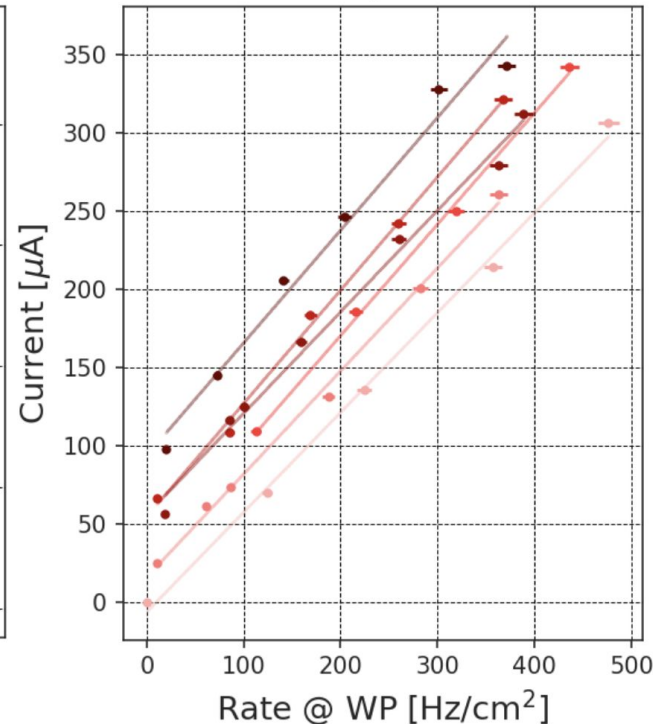
Current vs Rate

EPDT, STD



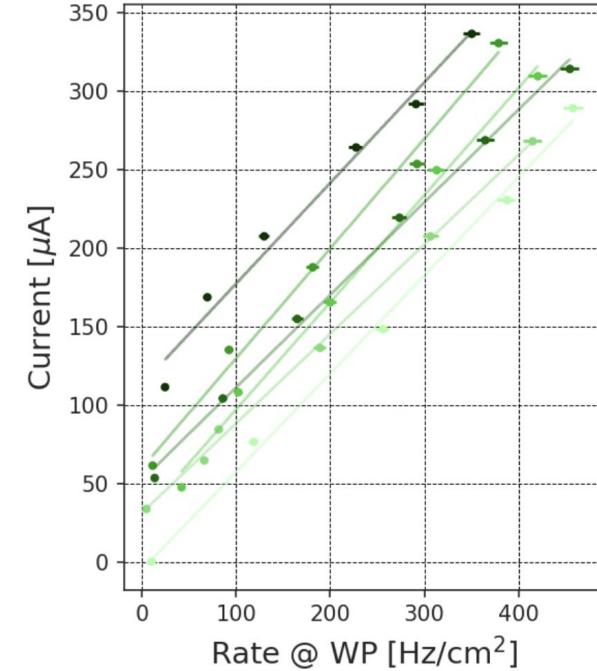
- Jul23, I @200 Hz/cm^2 : 70.44 μA
- Apr24, I @200 Hz/cm^2 : 80.8 μA
- Jun24, I @200 Hz/cm^2 : 104.63 μA
- Sept24, I @200 Hz/cm^2 : 102.02 μA
- Apr25, I @200 Hz/cm^2 : 105.6 μA
- Jul25, I @200 Hz/cm^2 : 152.96 μA

EPDT, ECO2



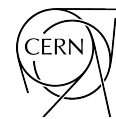
- Jul23, I @200 Hz/cm^2 : 122.12 μA
- Apr24, I @200 Hz/cm^2 : 148.6 μA
- Jun24, I @200 Hz/cm^2 : 171.23 μA
- Sept24, I @200 Hz/cm^2 : 200.27 μA
- Apr25, I @200 Hz/cm^2 : 186.37 μA
- Jul25, I @200 Hz/cm^2 : 238.59 μA

EPDT, ECO3



- Jul23, I @200 Hz/cm^2 : 120.49 μA
- Apr24, I @200 Hz/cm^2 : 145.8 μA
- Jun24, I @200 Hz/cm^2 : 165.96 μA
- Sept24, I @200 Hz/cm^2 : 200.28 μA
- Apr25, I @200 Hz/cm^2 : 170.7 μA
- Jul25, I @200 Hz/cm^2 : 242.04 μA

Charge distribution for all TB



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