

SiPM QA update

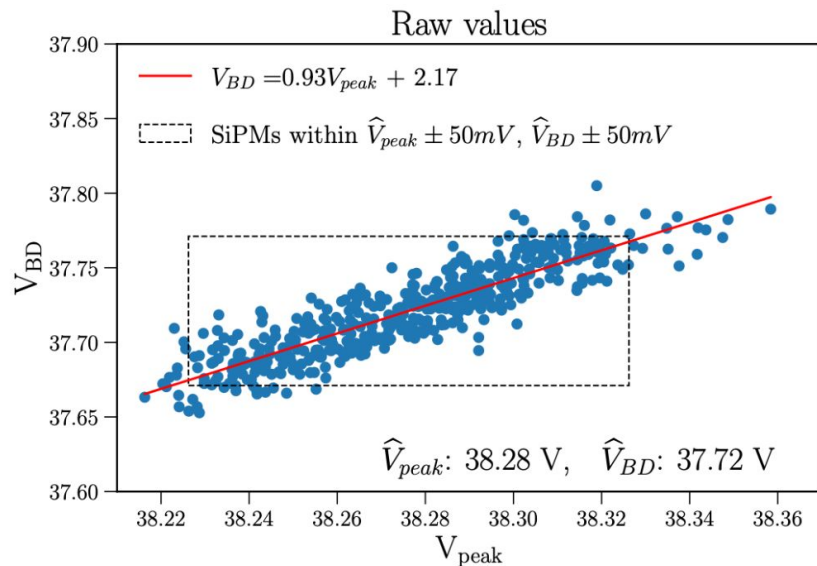
20 Oct. 2025 - Yale group

Where we're at

- Completed measurements for 4 trays
- Looking at V_{peak} and V_{BD} correlation
- Working on getting systematics from repeated measurements

Correlation between IV and SPS measurements

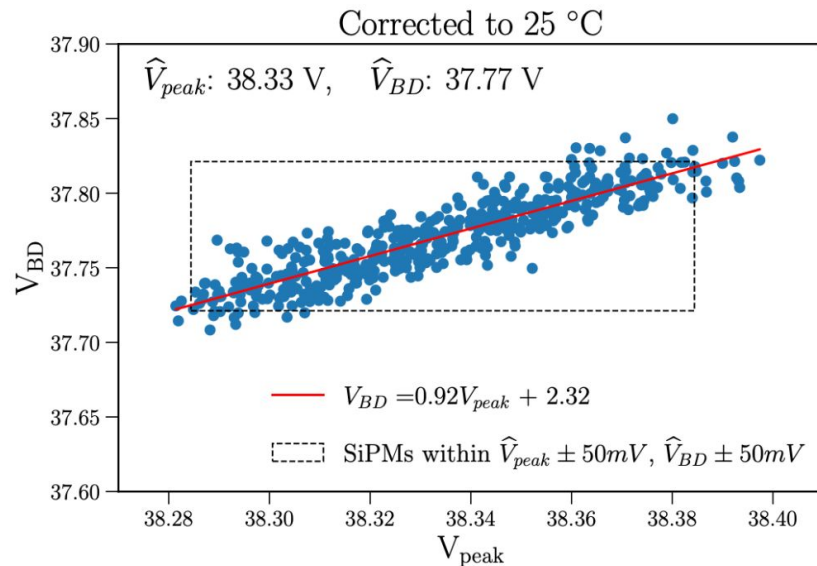
Tray 250821-1301



Outliers (# points outside box):

V_{peak} : 25 (5.4%)

V_{BD} : 36 (7.8%)

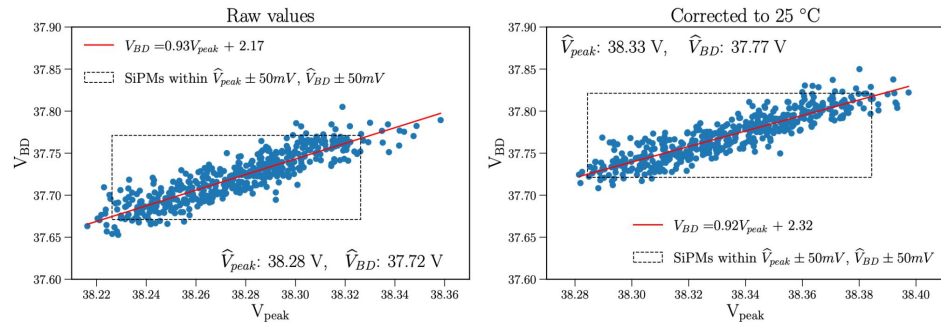


Outliers (# temp-corrected points outside box):

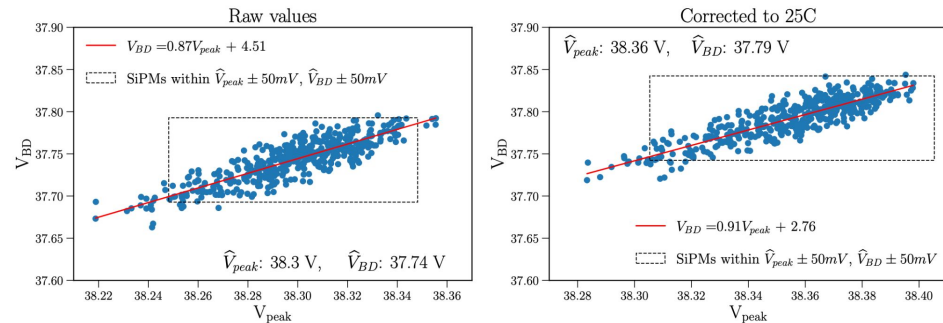
V_{peak} : 14 (3.0%)

V_{BD} : 24 (5.2%)

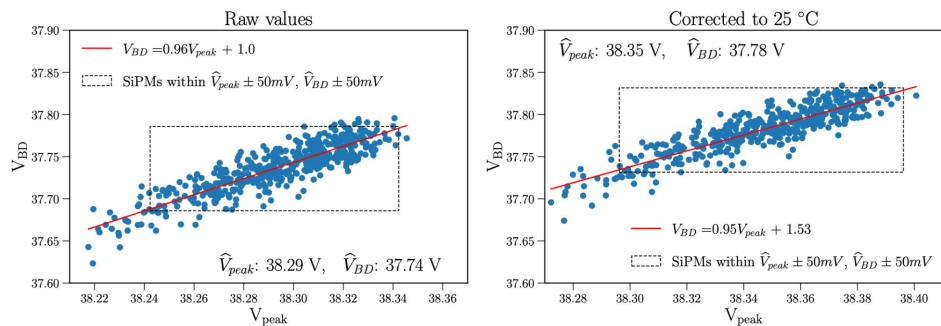
Tray 250821-1301



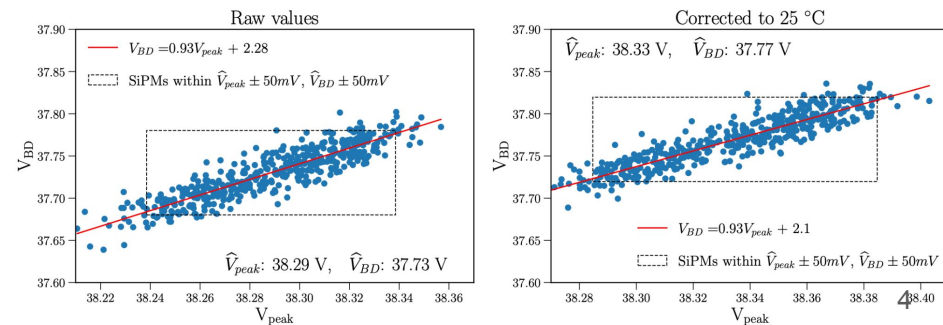
Tray 250821-1302



Tray 250821-1303



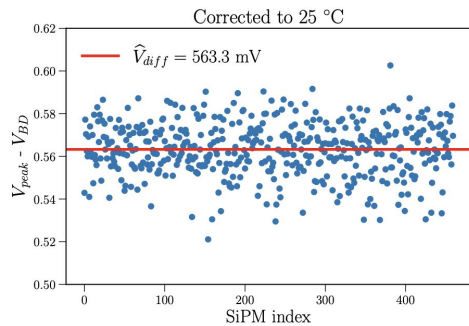
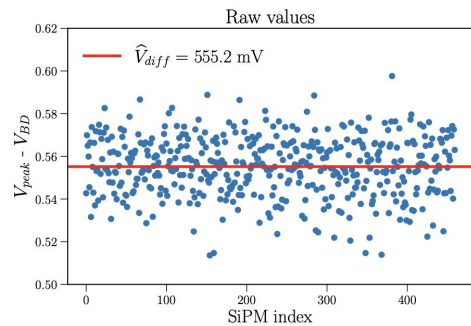
Tray 250821-1304



Outliers ($V_{\text{mean}} \pm 50 \text{ mV}$)

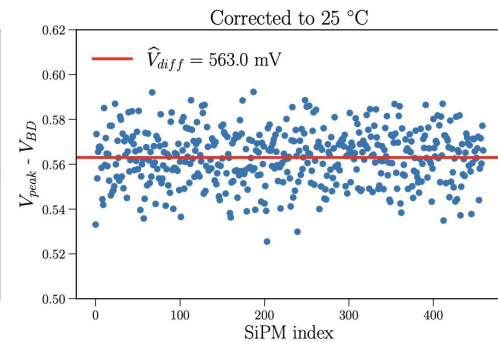
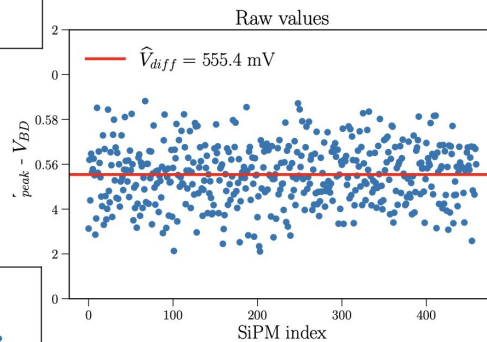
Tray	V_{peak}	V_{BD}	$V_{\text{peak}}(25^\circ\text{C})$	$V_{\text{BD}}(25^\circ\text{C})$
250821-1301	25 (5.4%)	36 (7.8%)	14 (3.0%)	24 (5.2%)
250821-1302	20 (4.4%)	14 (3.0%)	14 (3.0%)	18 (3.9%)
250821-1303	27 (5.9%)	39 (8.48%)	21 (4.6%)	30 (6.5%)
250821-1304	35 (7.61%)	43 (9.45%)	23 (5.0%)	31 (6.7%)

Tray 250821-1301

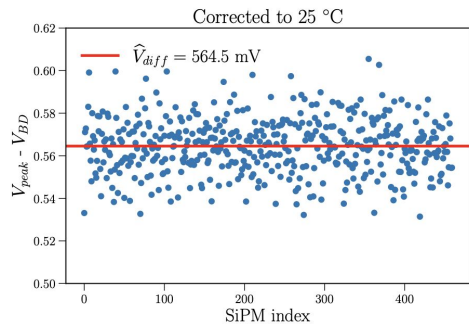
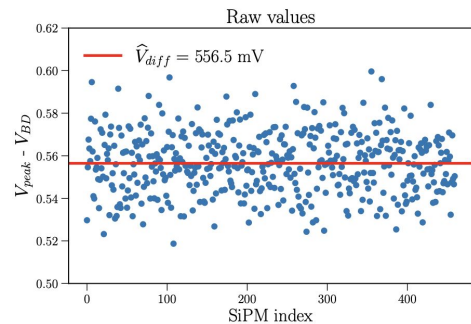


$$V_{diff} = \langle V_{peak} \rangle - \langle V_{BD} \rangle$$

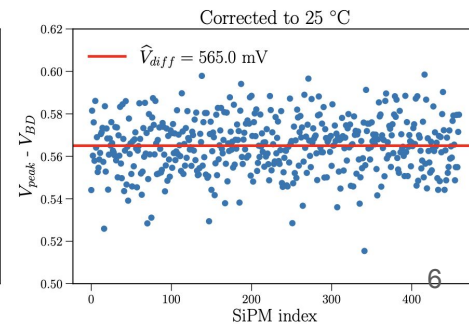
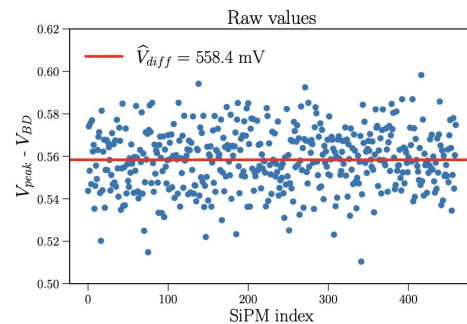
Tray 250821-1302



Tray 250821-1303



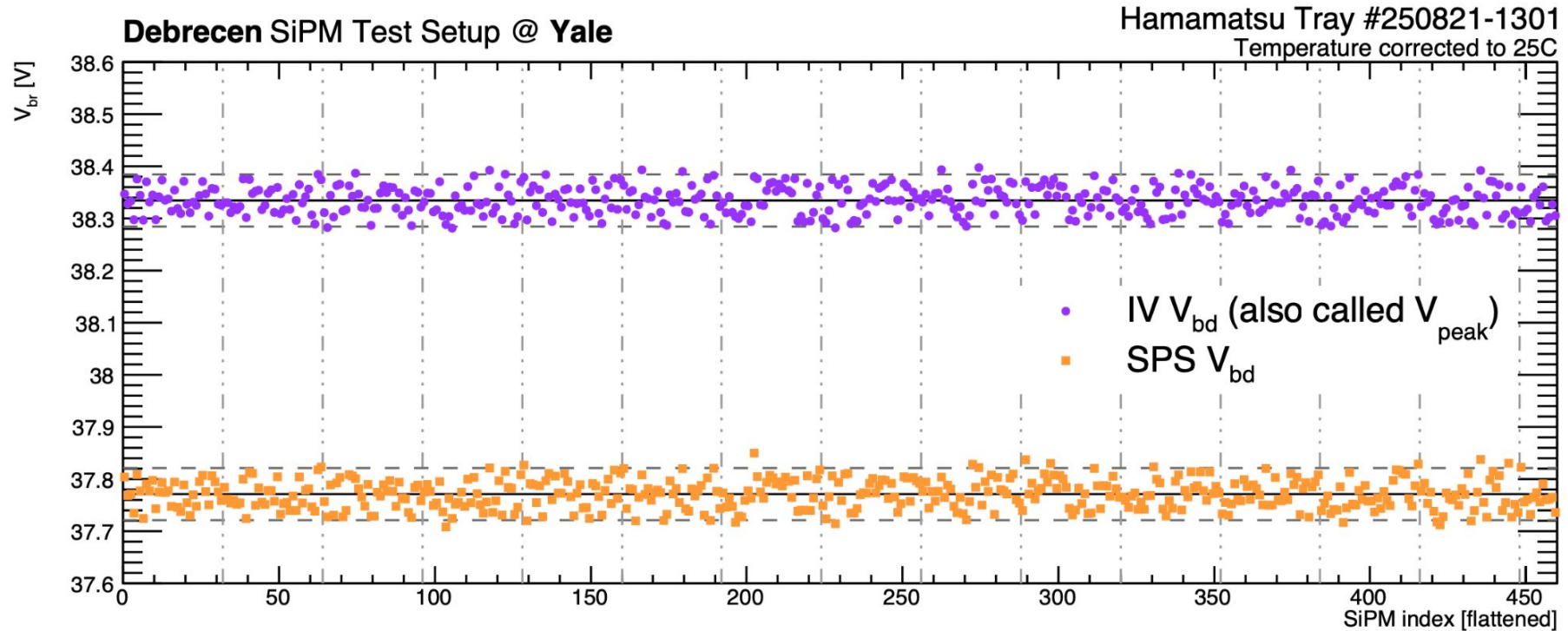
Tray 250821-1304



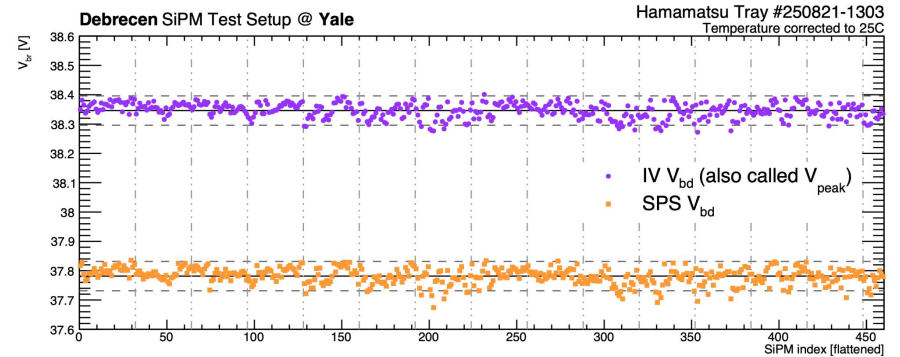
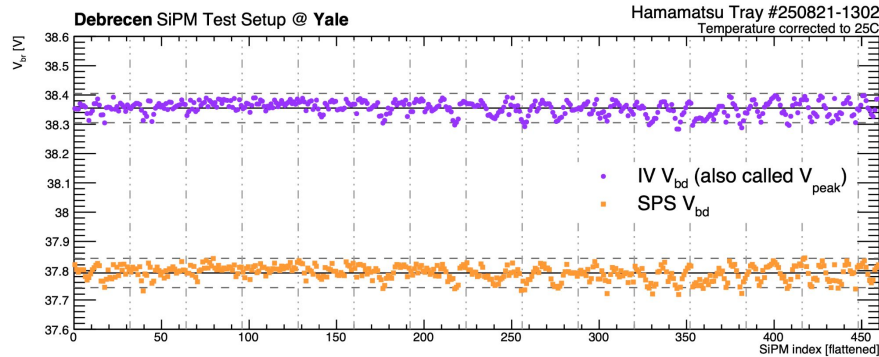
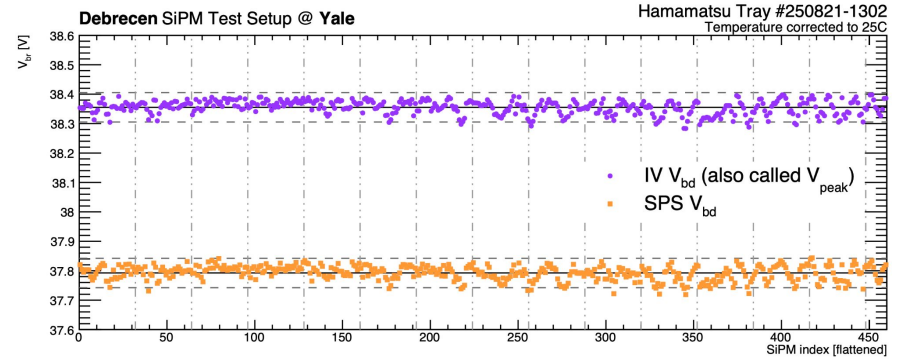
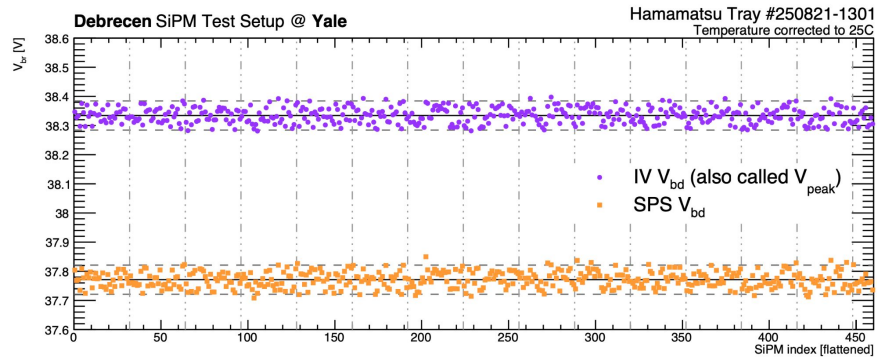
$$V_{\text{diff}} = \langle V_{\text{peak}} \rangle - \langle V_{\text{BD}} \rangle$$

Tray	V_{peak} [V]	V_{BD} [V]	V_{diff} [mV]	V_{peak} (25 °C) [V]	V_{BD} (25 °C) [V]	V_{diff} (25 °C) [mV]
250821-1301	38.28 V	37.72 V	555.2 mV	38.33 V	37.77 V	563.3 mV
250821-1302	38.30 V	37.74 V	555.4 mV	38.36 V	37.79 V	563.0 mV
250821-1303	38.29 V	37.74 V	556.5 mV	38.35 V	37.78 V	564.5 mV
250821-1304	38.29 V	37.73 V	558.4 mV	38.33 V	37.77 V	565.0 mV

Investigating Deviations: Systematic Defects?

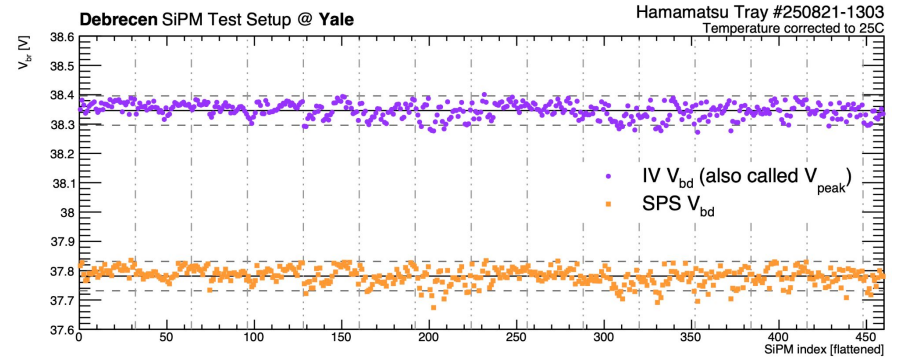
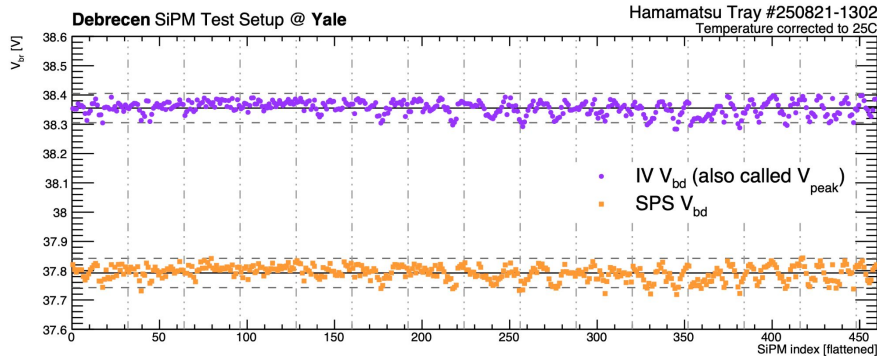
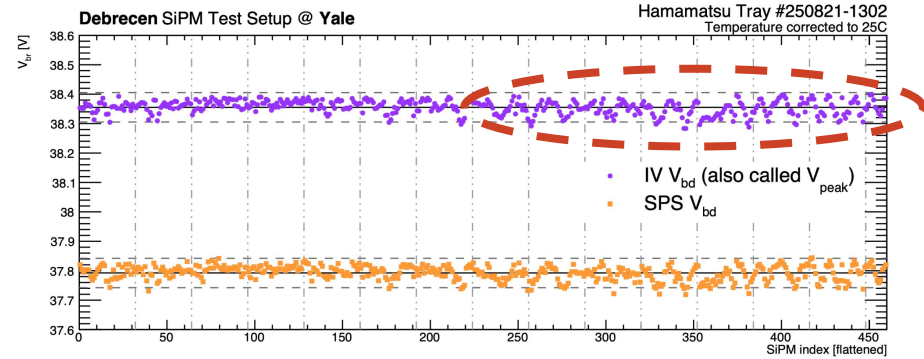
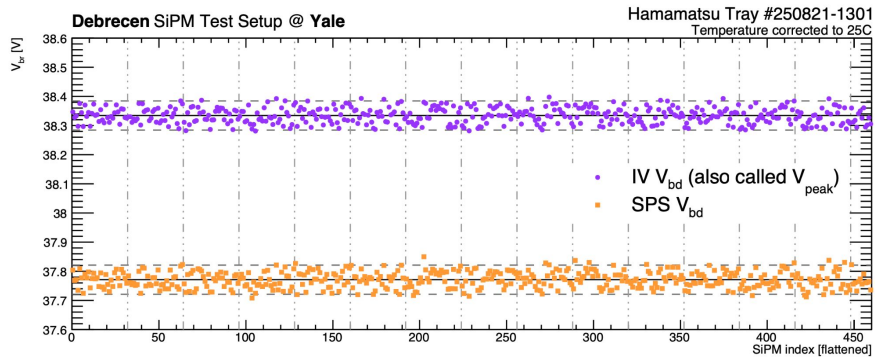


Investigating Deviations: Systematic Defects?

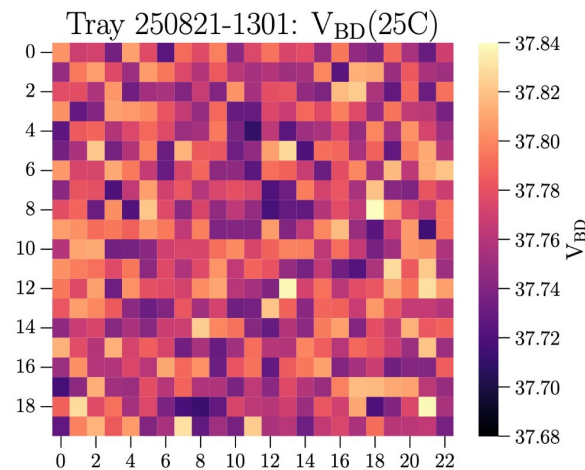
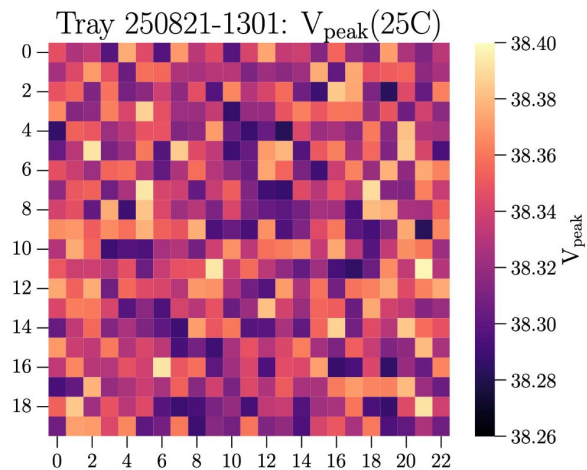
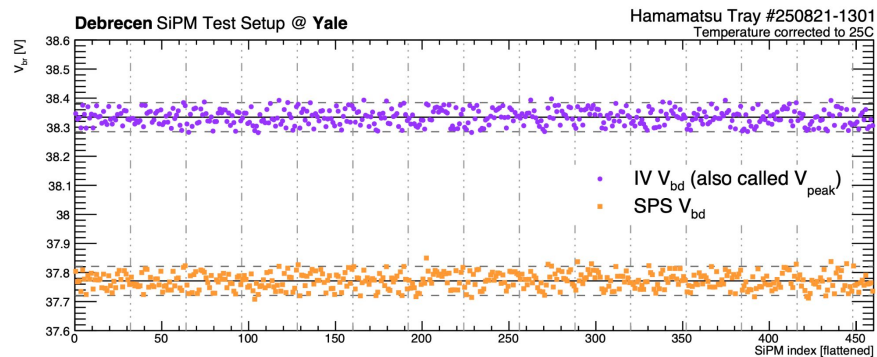


Investigating Deviations: Systematic Defects?

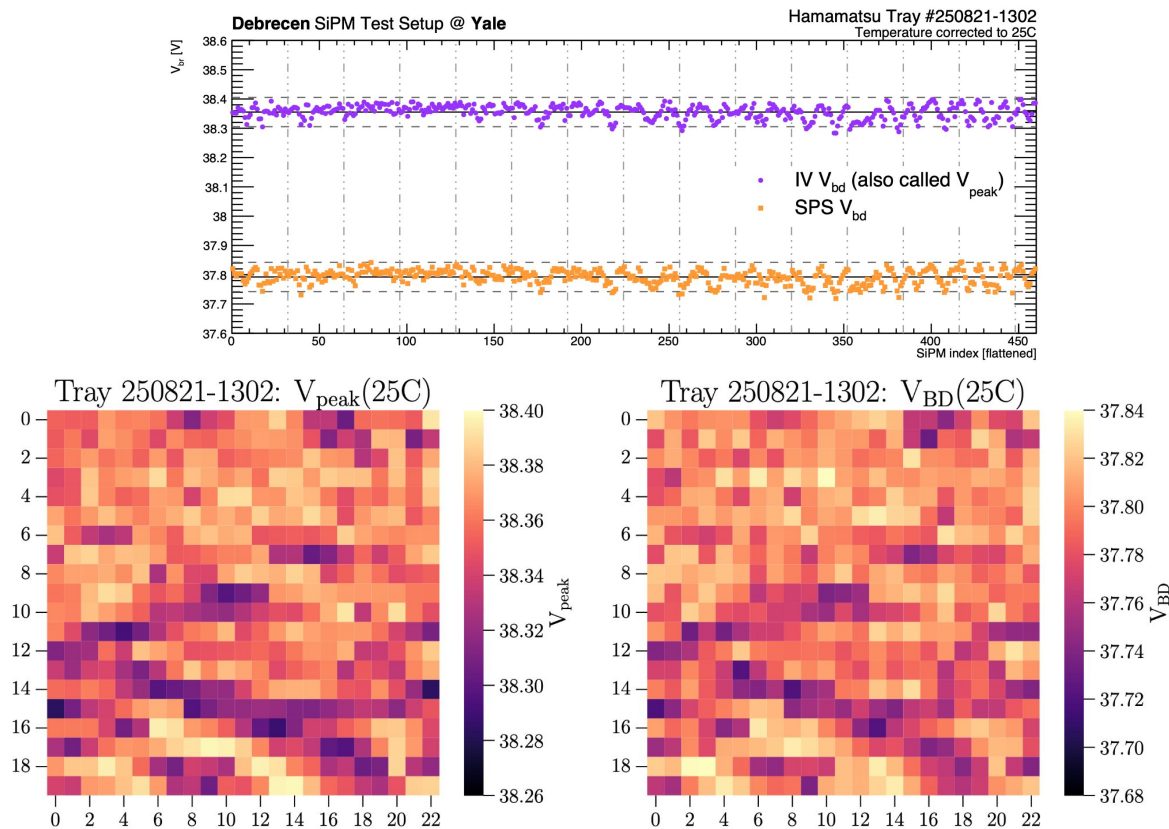
Strange behaviors! Seems to increase as tests progress



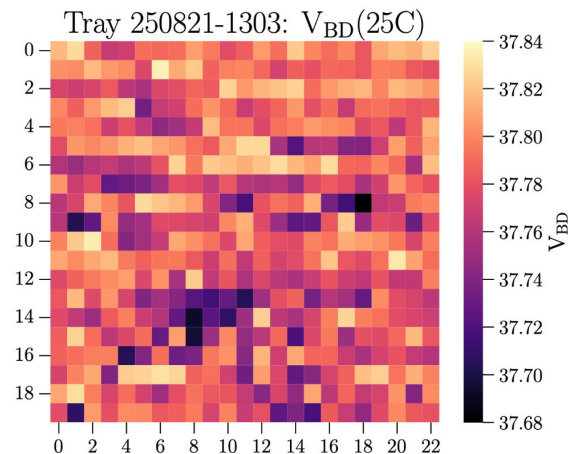
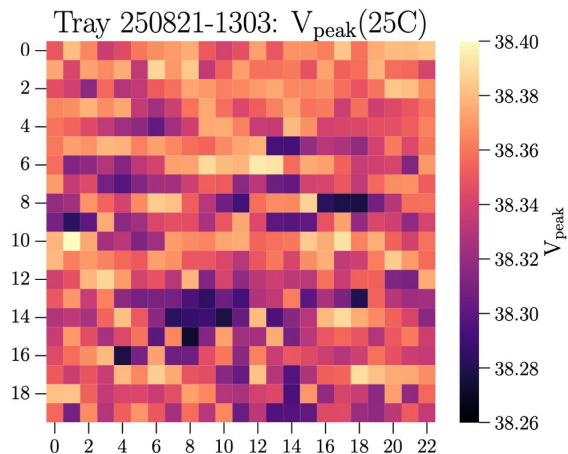
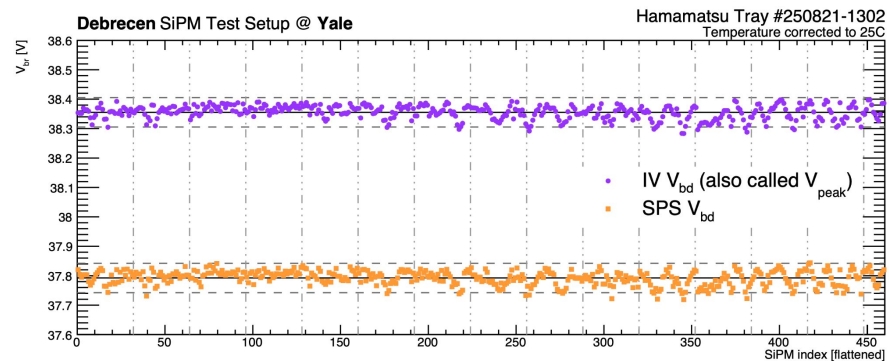
Investigating Deviations: Tray-correlated?



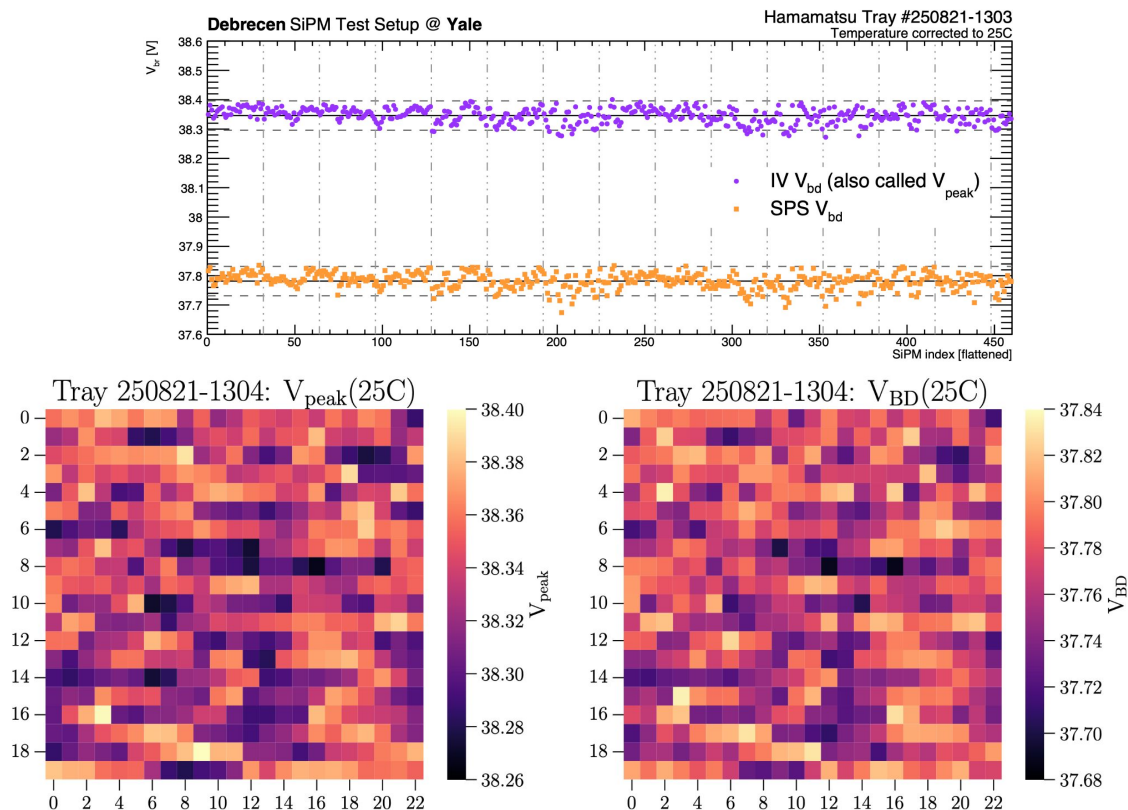
Investigating Deviations: Tray-correlated?



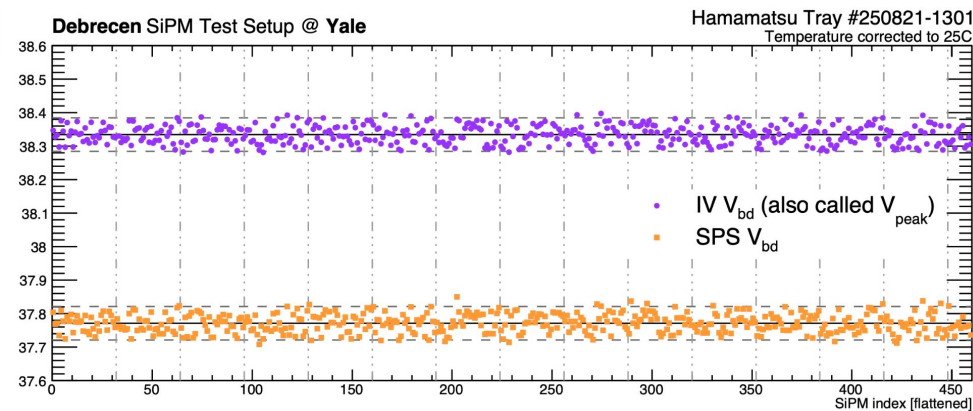
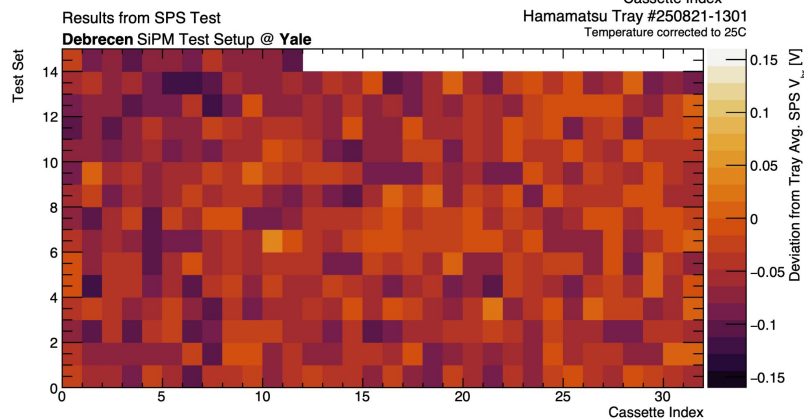
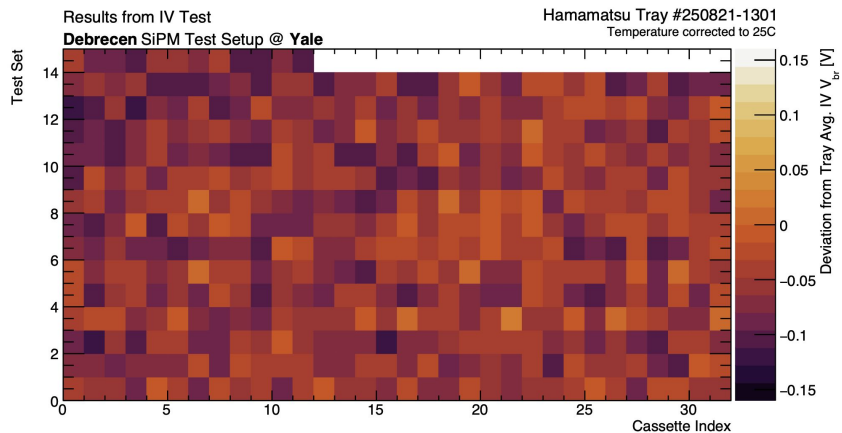
Investigating Deviations: Tray-correlated?



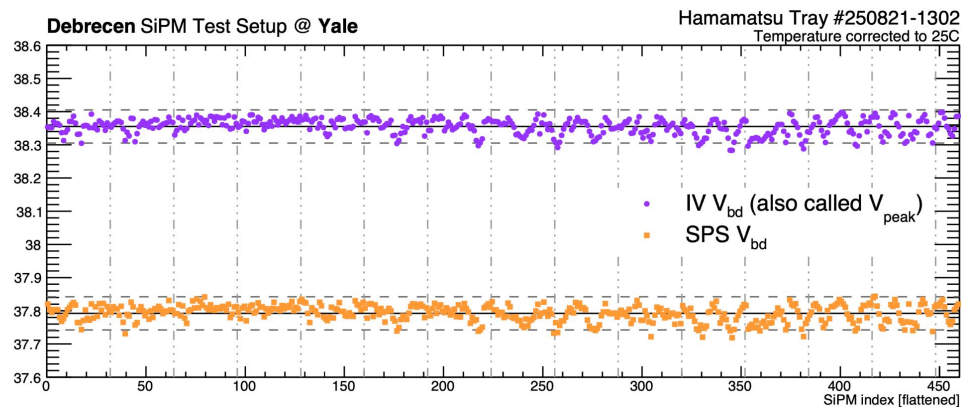
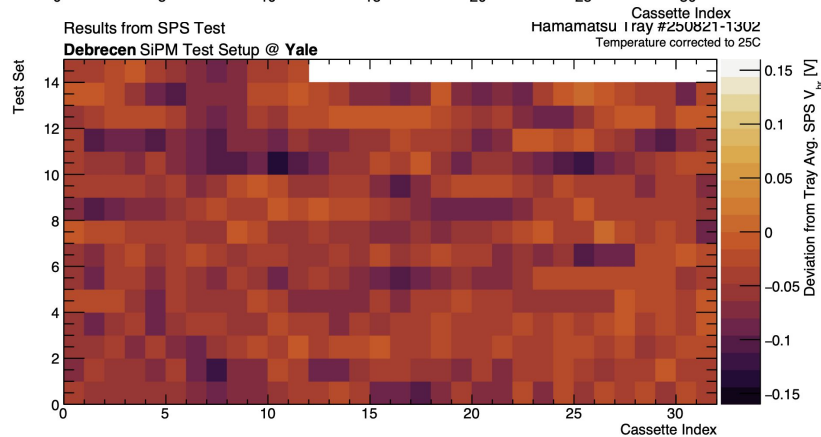
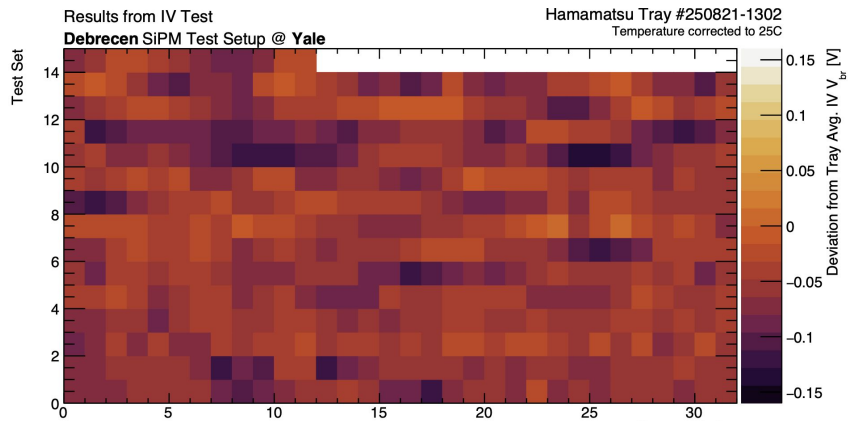
Investigating Deviations: Tray-correlated?



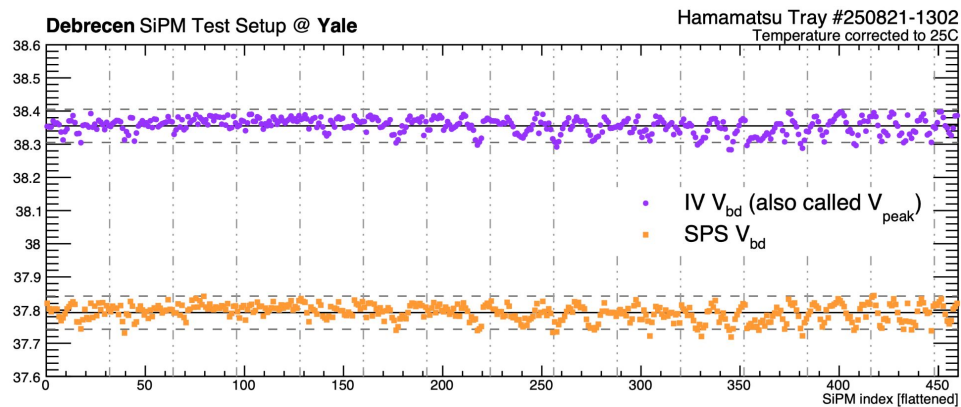
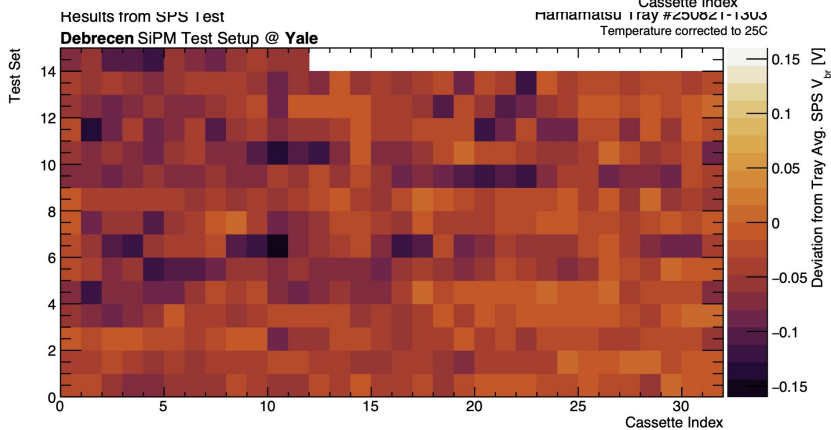
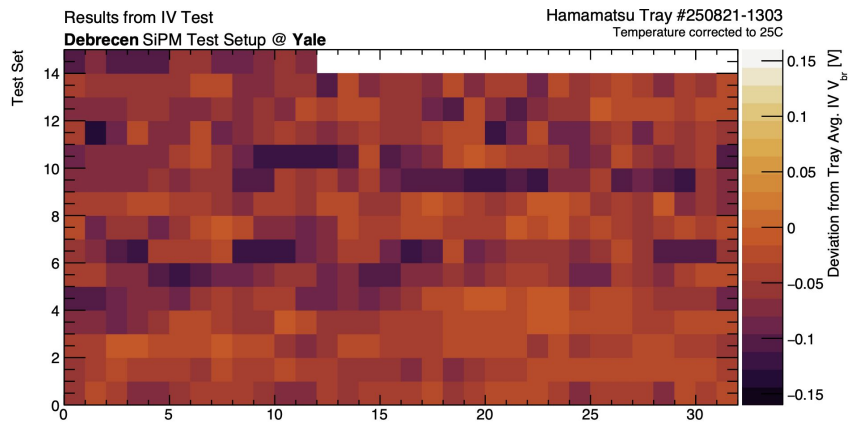
Investigating Deviations: Test-correlated?



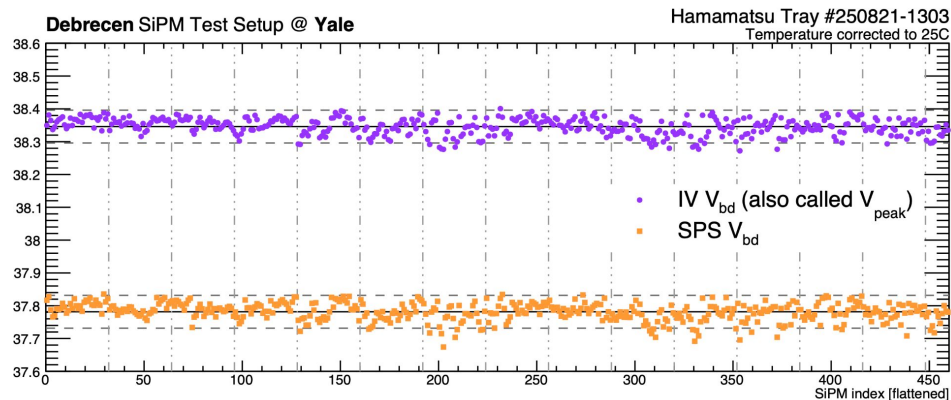
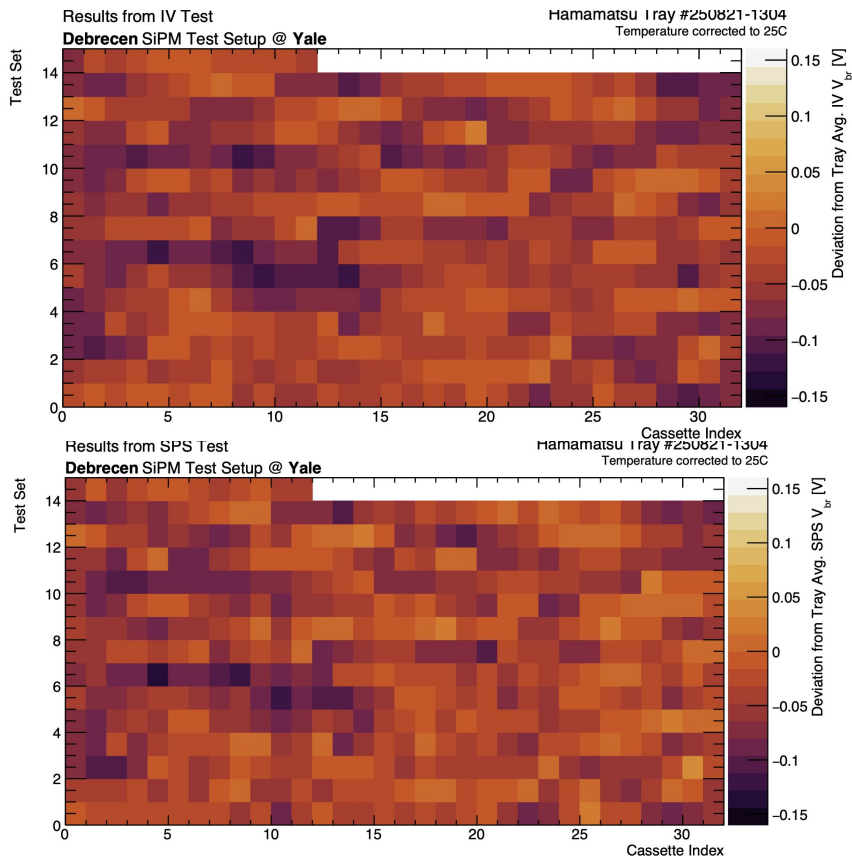
Investigating Deviations: Test-correlated?



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Investigating Deviations: Test-correlated?



Dark Current Results

