



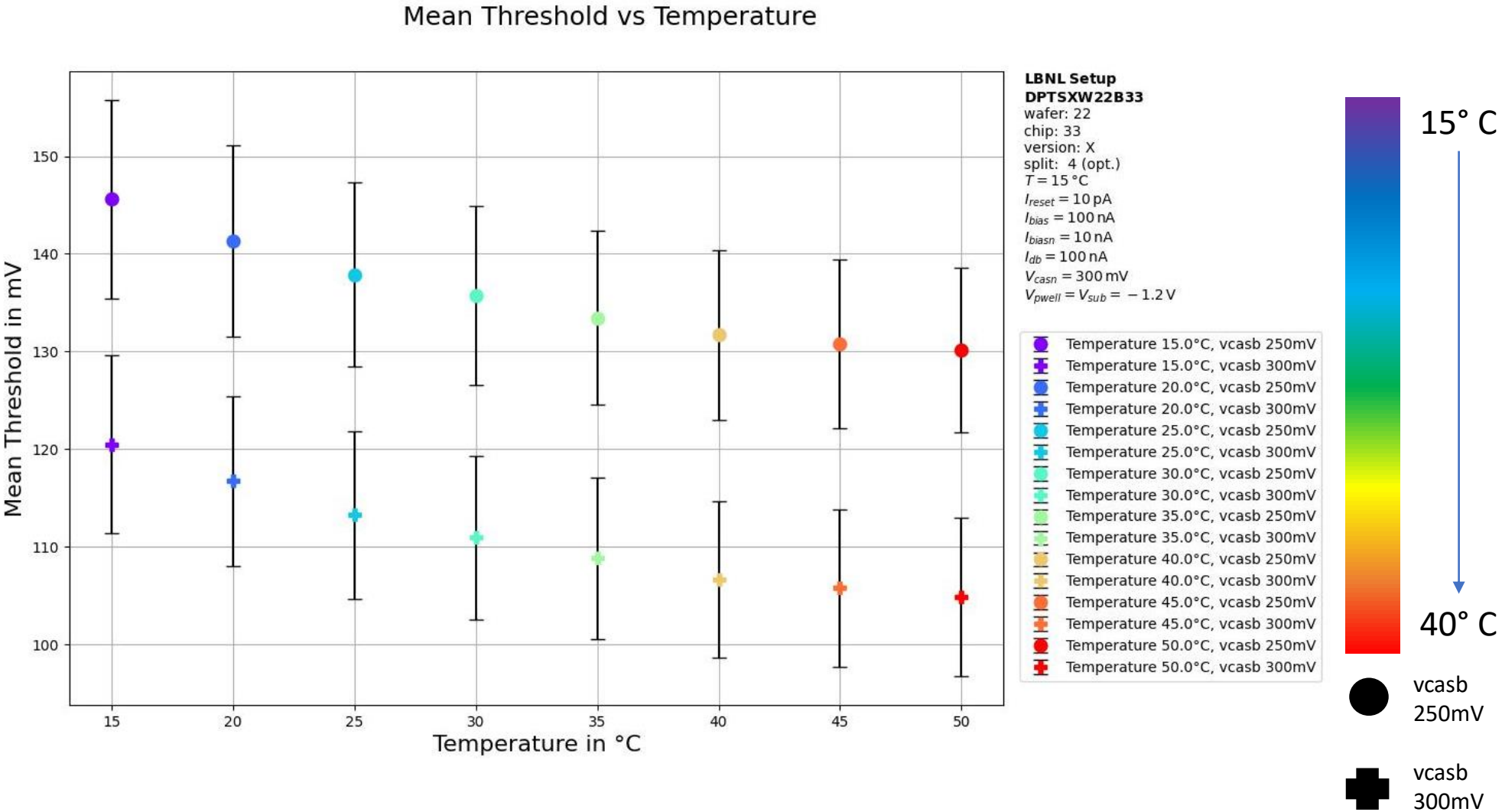
Update temperature-controlled tests with the DPTS



Mean Threshold

-> Mean threshold
decreases
with increasing
temperature

-> Not Linear



Fake Hit Rate vs temperature

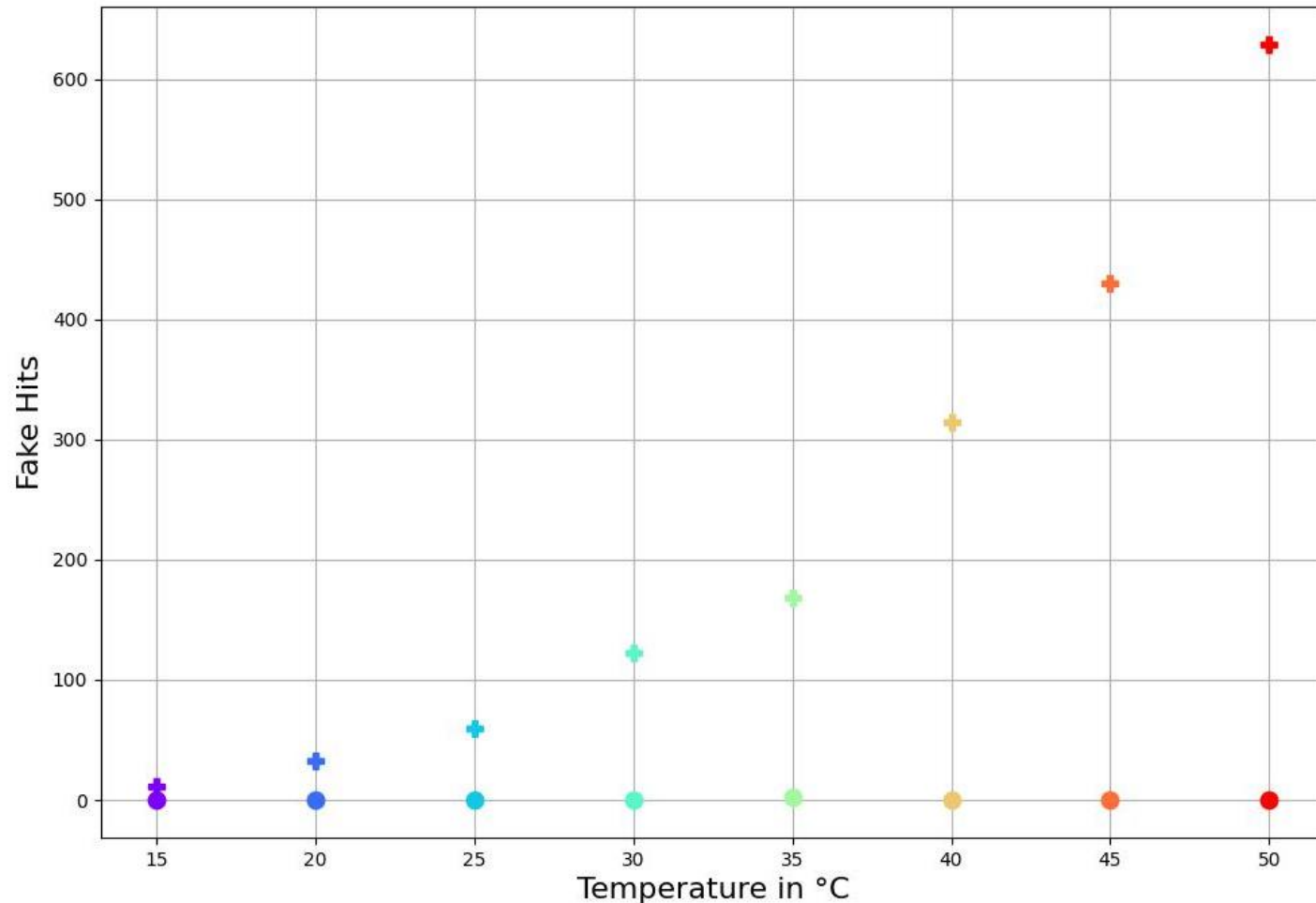


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Fake Hits vs Temperature for Scan with $n = 100000$

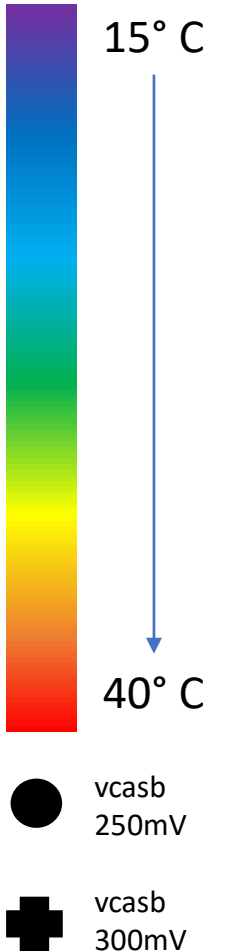
-> Fake Hit Rate
increases
with increasing
temperature

-> Non-Linear
increase



LBNL Setup
DPTSXW22B33
wafer: 22
chip: 33
version: X
split: 4 (opt.)
 $T = 15^\circ\text{C}$
 $I_{\text{reset}} = 10\text{ pA}$
 $I_{\text{bias}} = 100\text{ nA}$
 $I_{\text{biasn}} = 10\text{ nA}$
 $I_{\text{db}} = 100\text{ nA}$
 $V_{\text{casn}} = 300\text{ mV}$
 $V_{\text{pwell}} = V_{\text{sub}} = -1.2\text{ V}$

● Temperature 15.0°C, vcasb 250mV
✚ Temperature 15.0°C, vcasb 300mV
● Temperature 20.0°C, vcasb 250mV
✚ Temperature 20.0°C, vcasb 300mV
● Temperature 25.0°C, vcasb 250mV
✚ Temperature 25.0°C, vcasb 300mV
● Temperature 30.0°C, vcasb 250mV
✚ Temperature 30.0°C, vcasb 300mV
● Temperature 35.0°C, vcasb 250mV
✚ Temperature 35.0°C, vcasb 300mV
● Temperature 40.0°C, vcasb 250mV
✚ Temperature 40.0°C, vcasb 300mV
● Temperature 45.0°C, vcasb 250mV
✚ Temperature 45.0°C, vcasb 300mV
● Temperature 50.0°C, vcasb 250mV
✚ Temperature 50.0°C, vcasb 300mV



Vcasb vs Temperature for fixed threshold

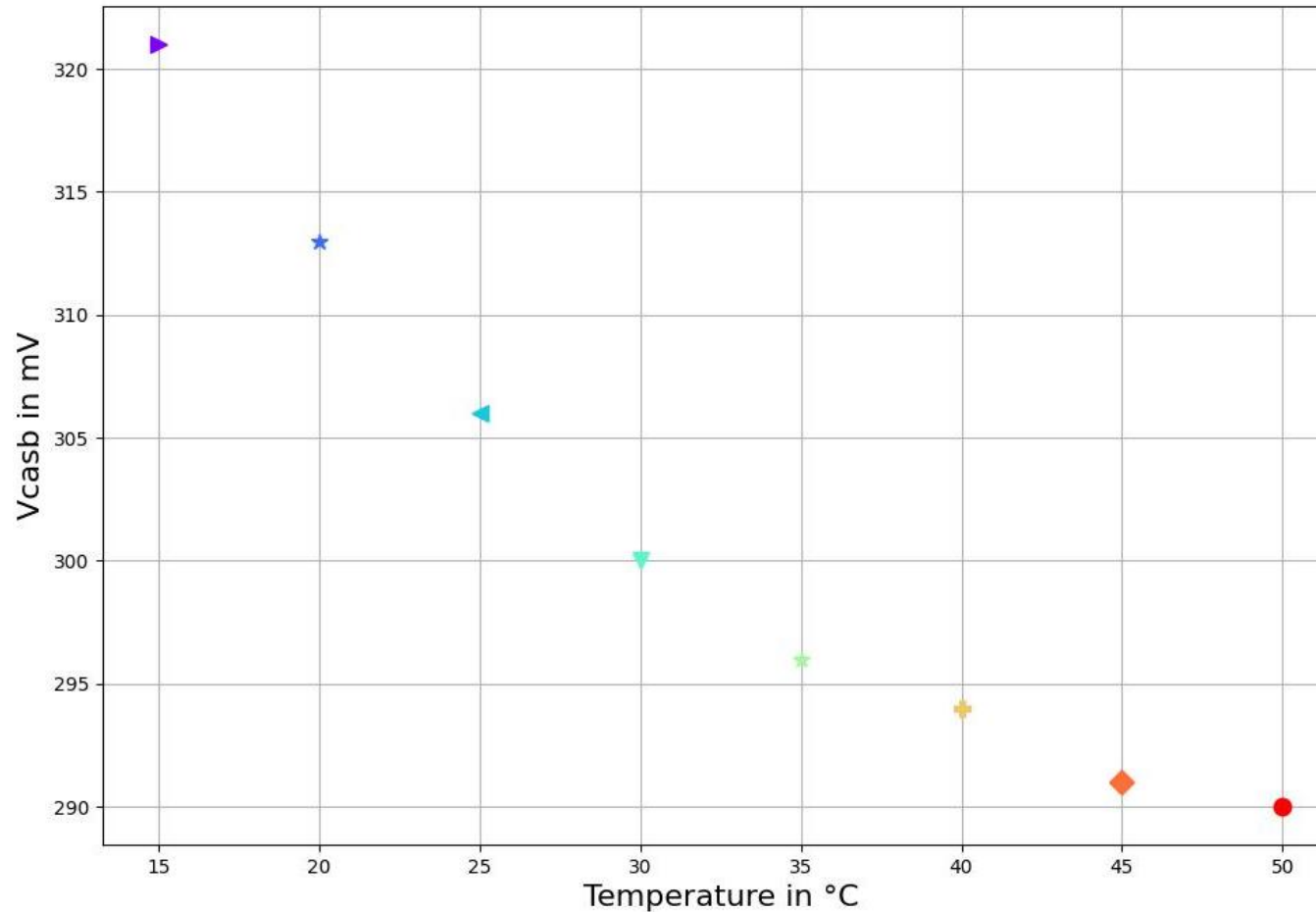


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Vcasb vs temperature for fixed threshold at 110 +/- 1%

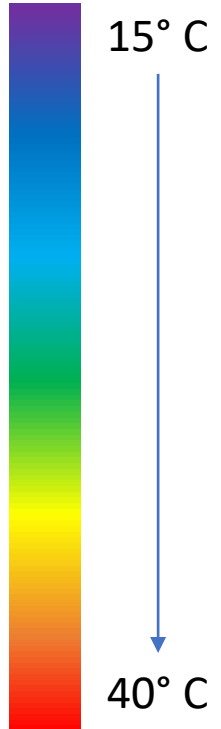
-> Vcasb decreases
with increasing
temperature

-> Nonlinear
towards
Min Value



LBNL Setup
DPTSXW22B33
wafer: 22
chip: 33
version: X
split: 4 (opt.)
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 $I_{\text{bias}} = 100\text{ nA}$
 $I_{\text{biasn}} = 10\text{ nA}$
 $I_{\text{db}} = 100\text{ nA}$
 $V_{\text{casn}} = 300\text{ mV}$
 $V_{\text{pwell}} = V_{\text{sub}} = -1.2\text{ V}$

Temp. 15.0°C, Thresh. 110.5mV
Temp. 20.0°C, Thresh. 110.55mV
Temp. 25.0°C, Thresh. 110.5mV
Temp. 30.0°C, Thresh. 110.38mV
Temp. 35.0°C, Thresh. 110.29mV
Temp. 40.0°C, Thresh. 110.18mV
Temp. 45.0°C, Thresh. 110.3mV
Temp. 50.0°C, Thresh. 109.97mV



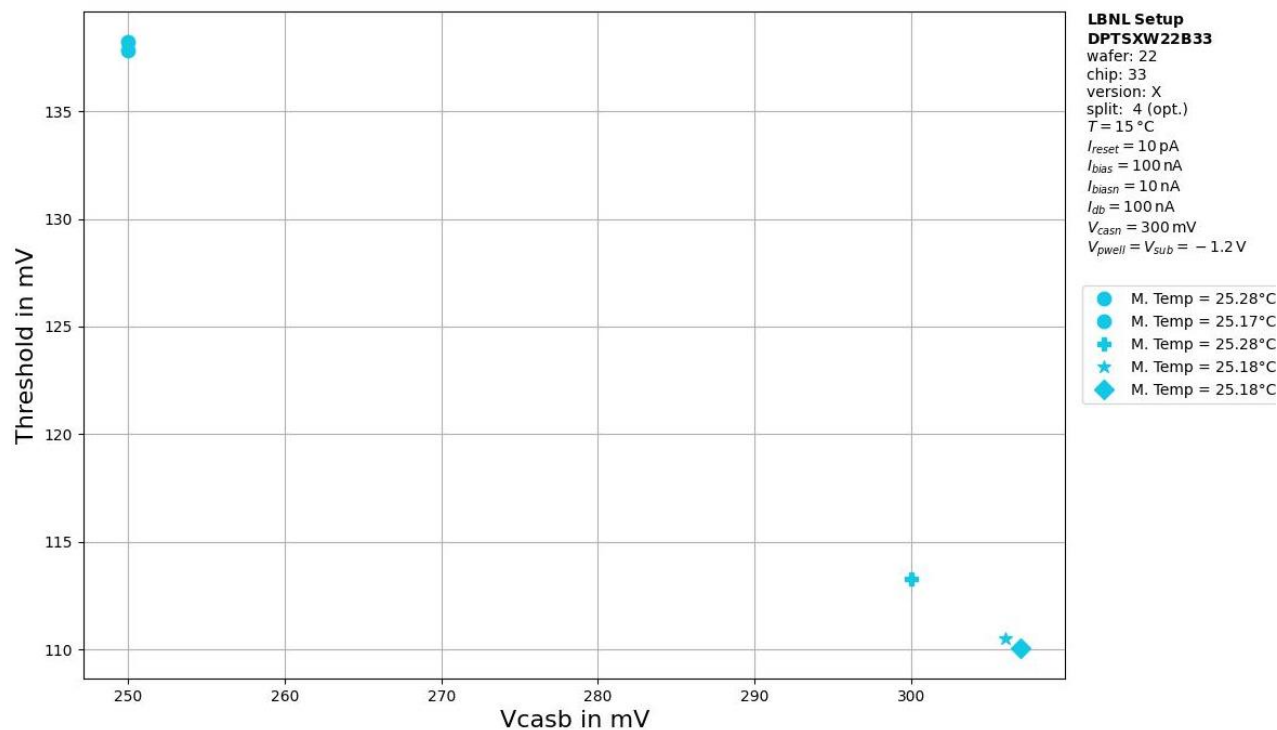
● vcasb
250mV
✚ vcasb
300mV

Threshold vs vcasb

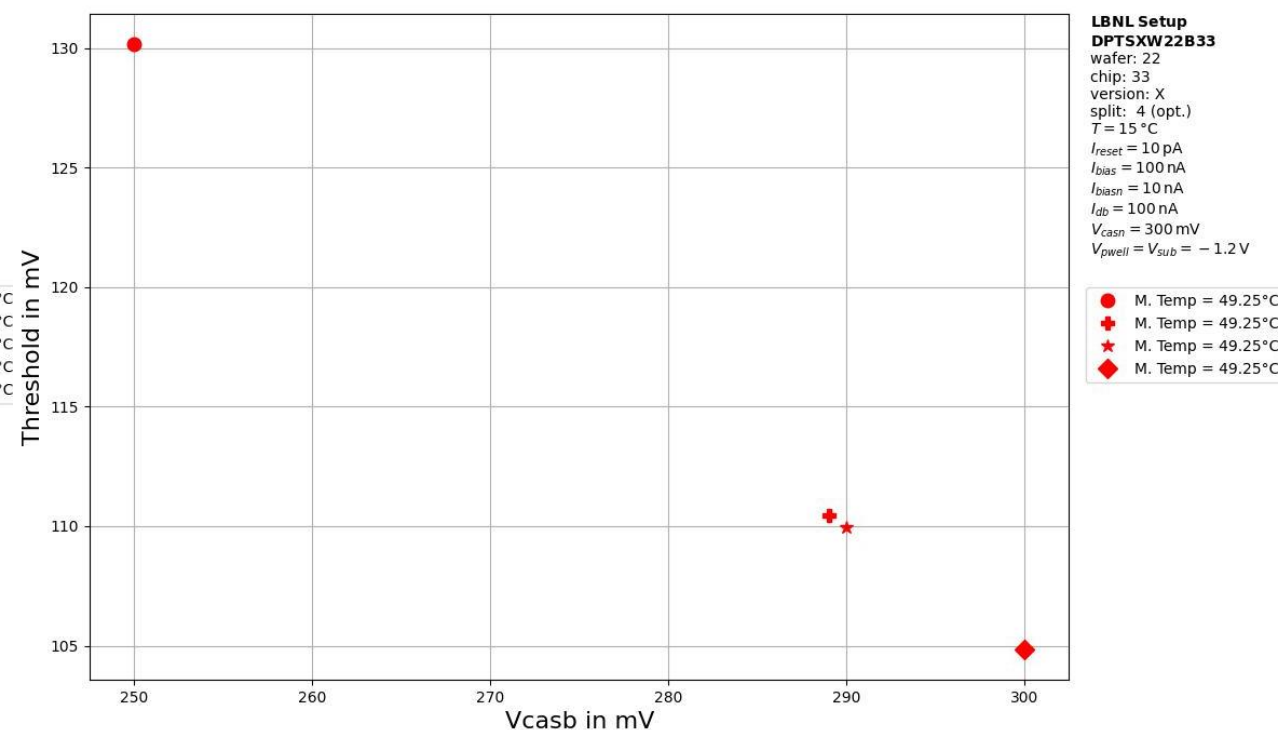


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Threshold vs vcasb at T = 25.0

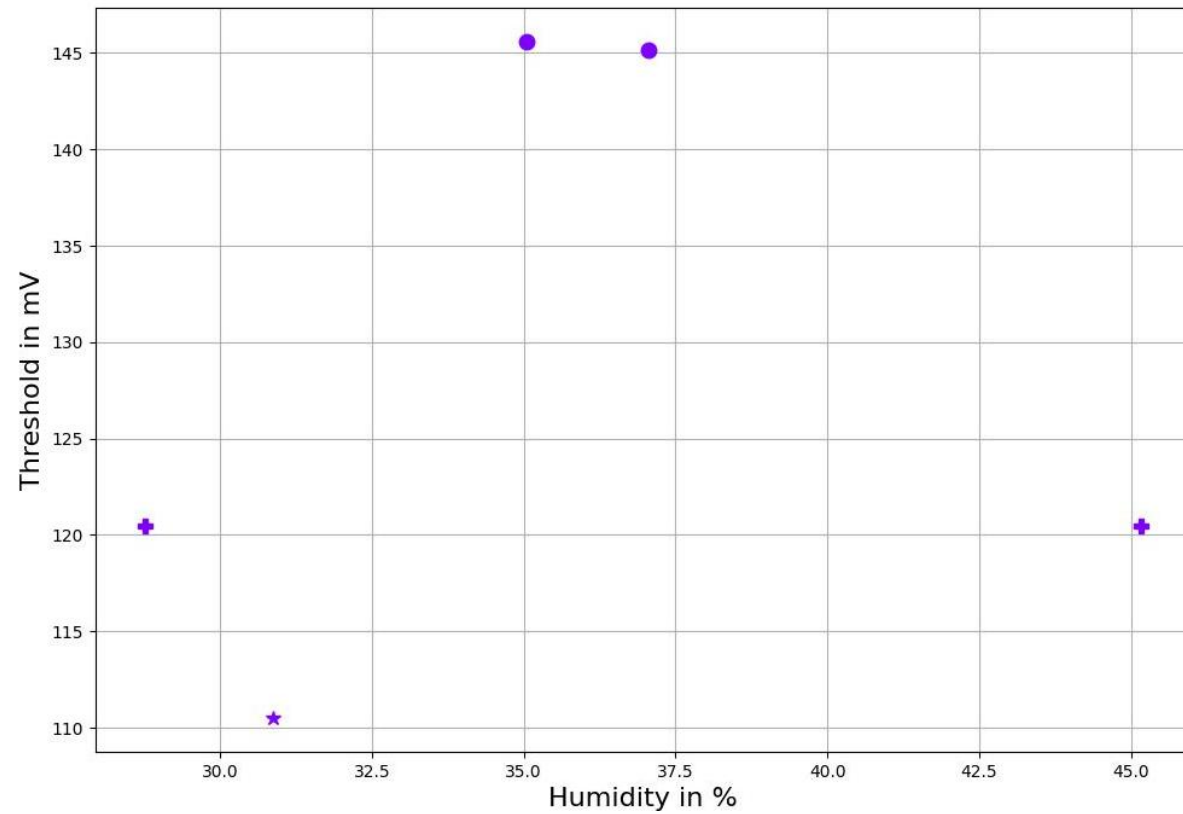


Threshold vs vcasb at T = 50.0

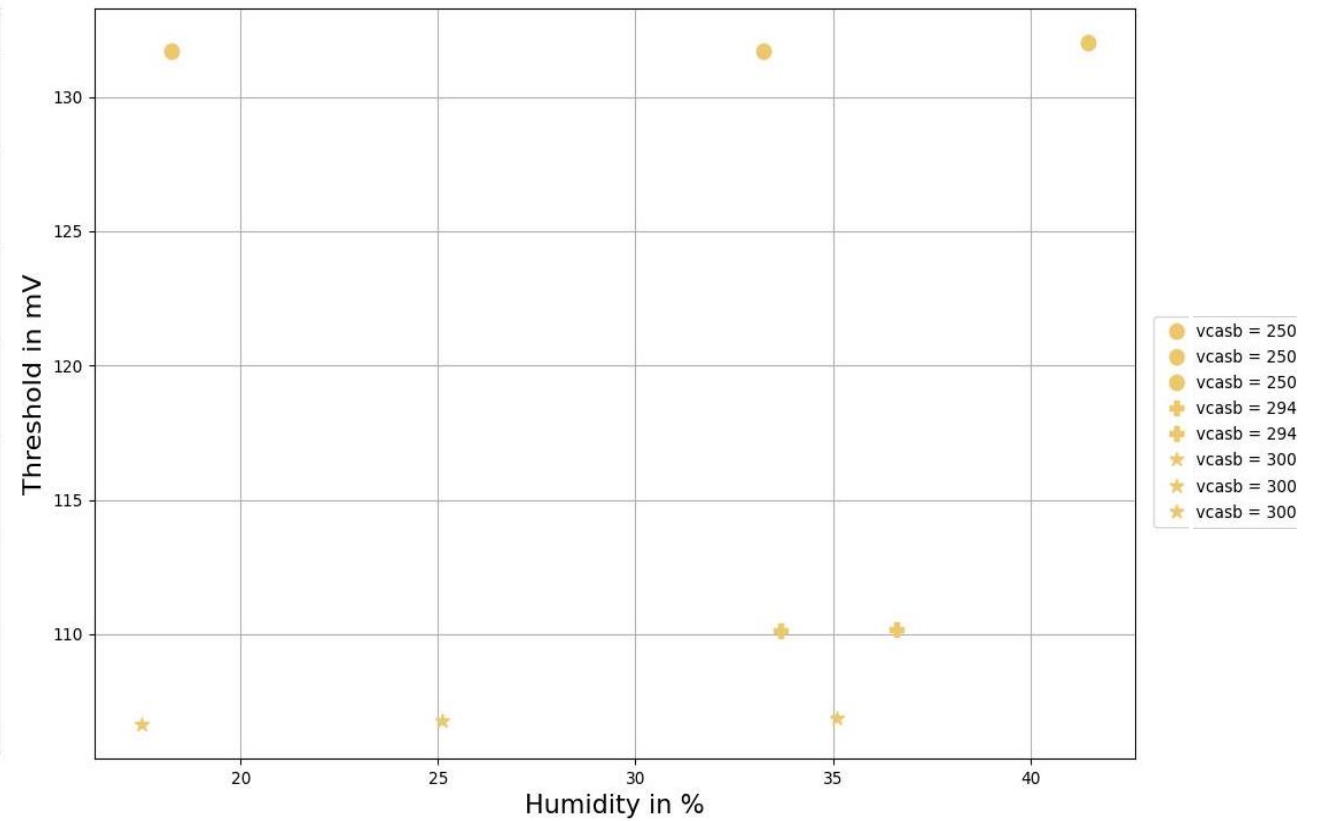


Threshold vs Humidity

Threshold vs Humidity at T= 15.0



Threshold vs Humidity at T= 40.0



Summary

- Temperature dependence is not linear
 - Threshold / v_{casb} decrease towards minimum
 - FHR increases exponentially
- Most likely humidity independent
- Threshold vs v_{casb} is linear at all temperatures

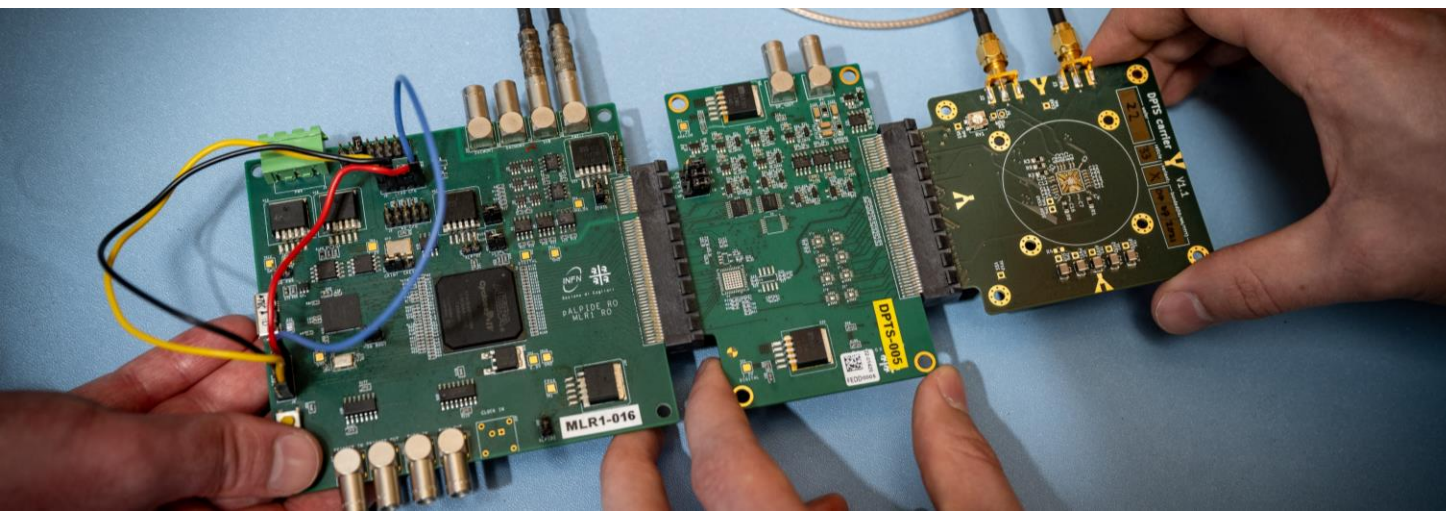
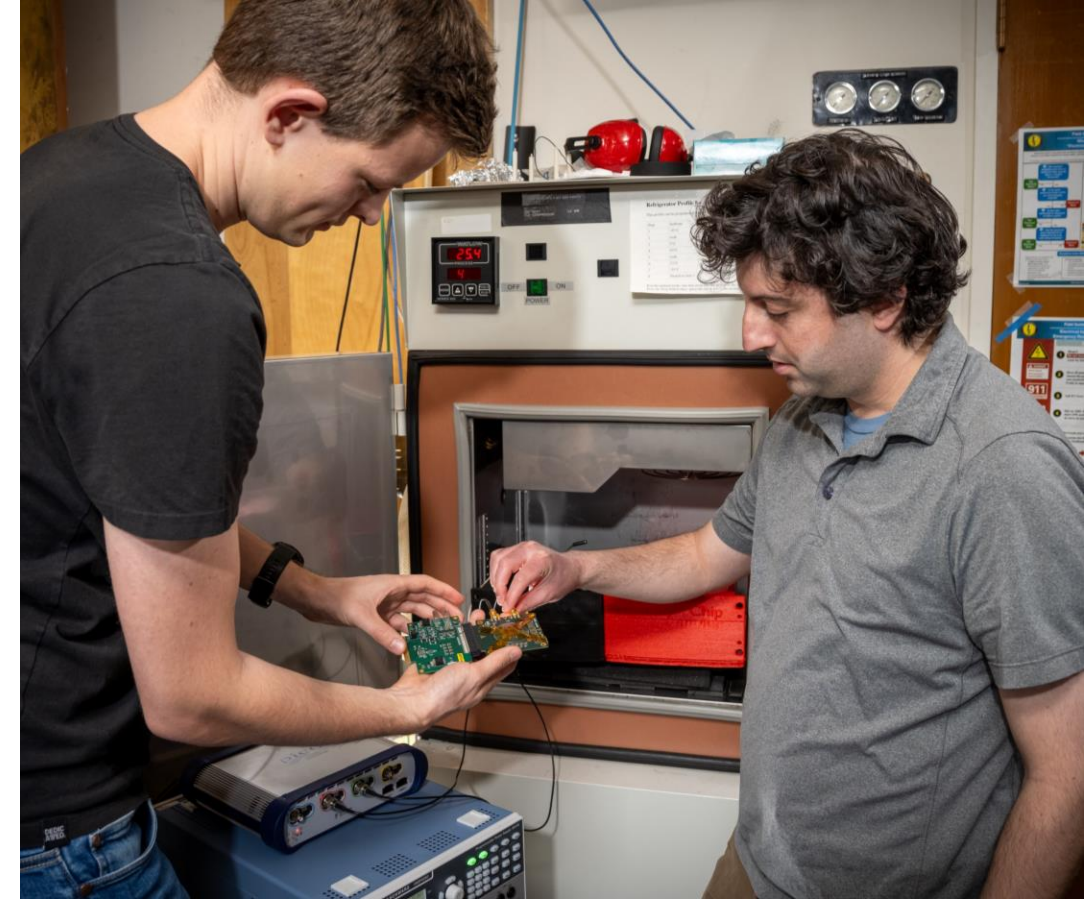
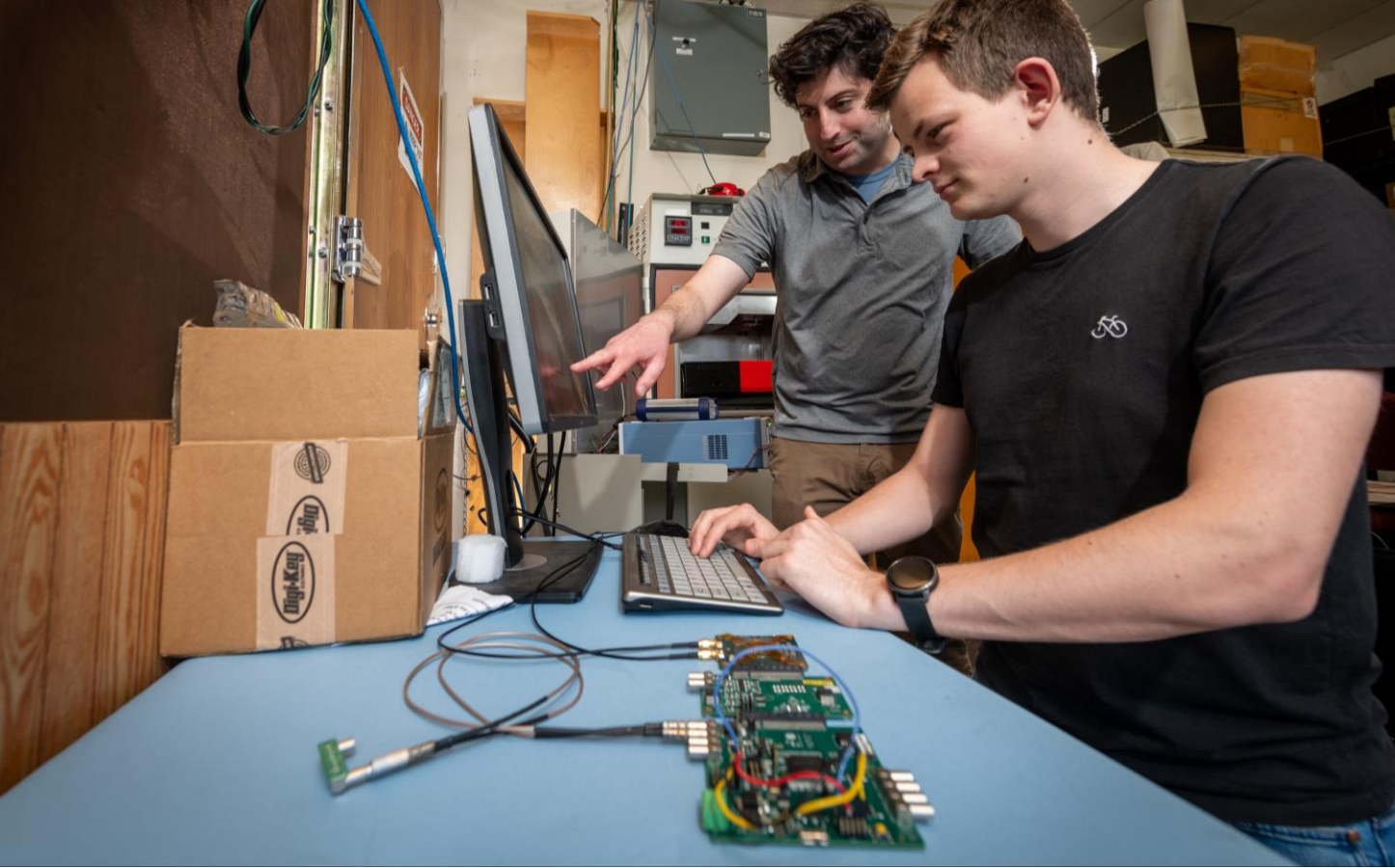


Photo Shoot



Backup