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TaichuPix-2 test results

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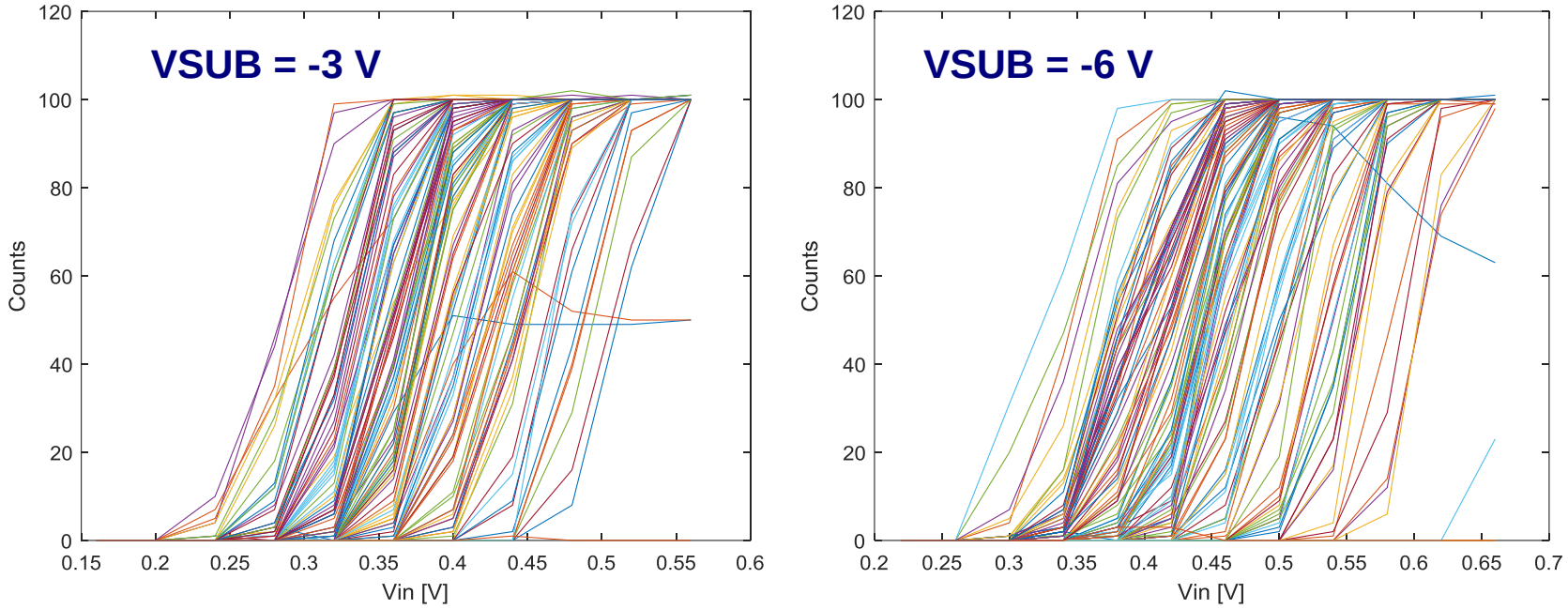
Analog performance with negative VSUB

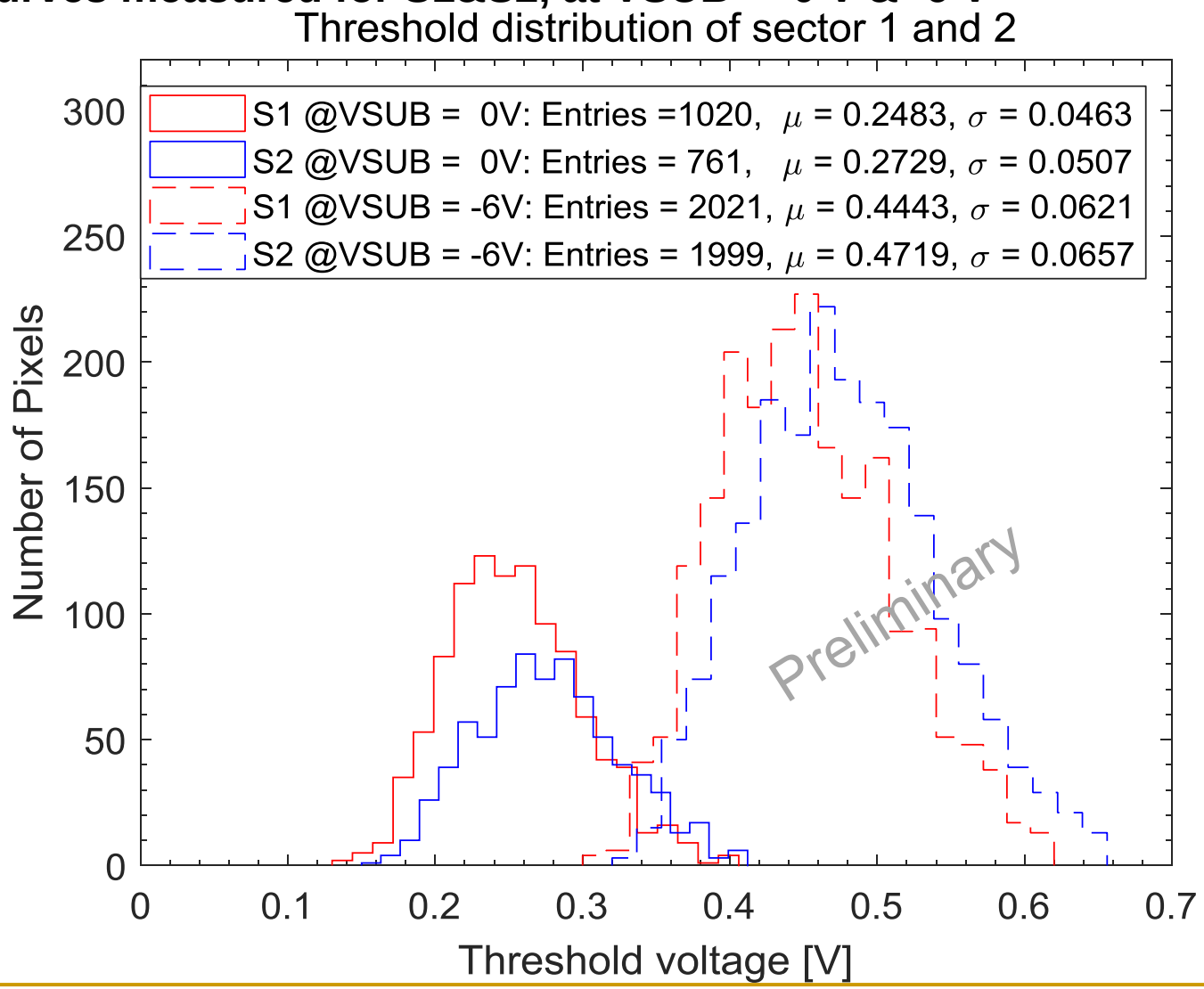
- **When VSUB < 0 V, bias setting needs to be tuned to make the FE in work region**
  - i.e. VRESET & VCASN2 & VCLIP increased, VCASN increased/decreased
  - To keep similar baseline of OUTA, and similar pulse duration

s-curves of 128 pixels in Dbcol <8>

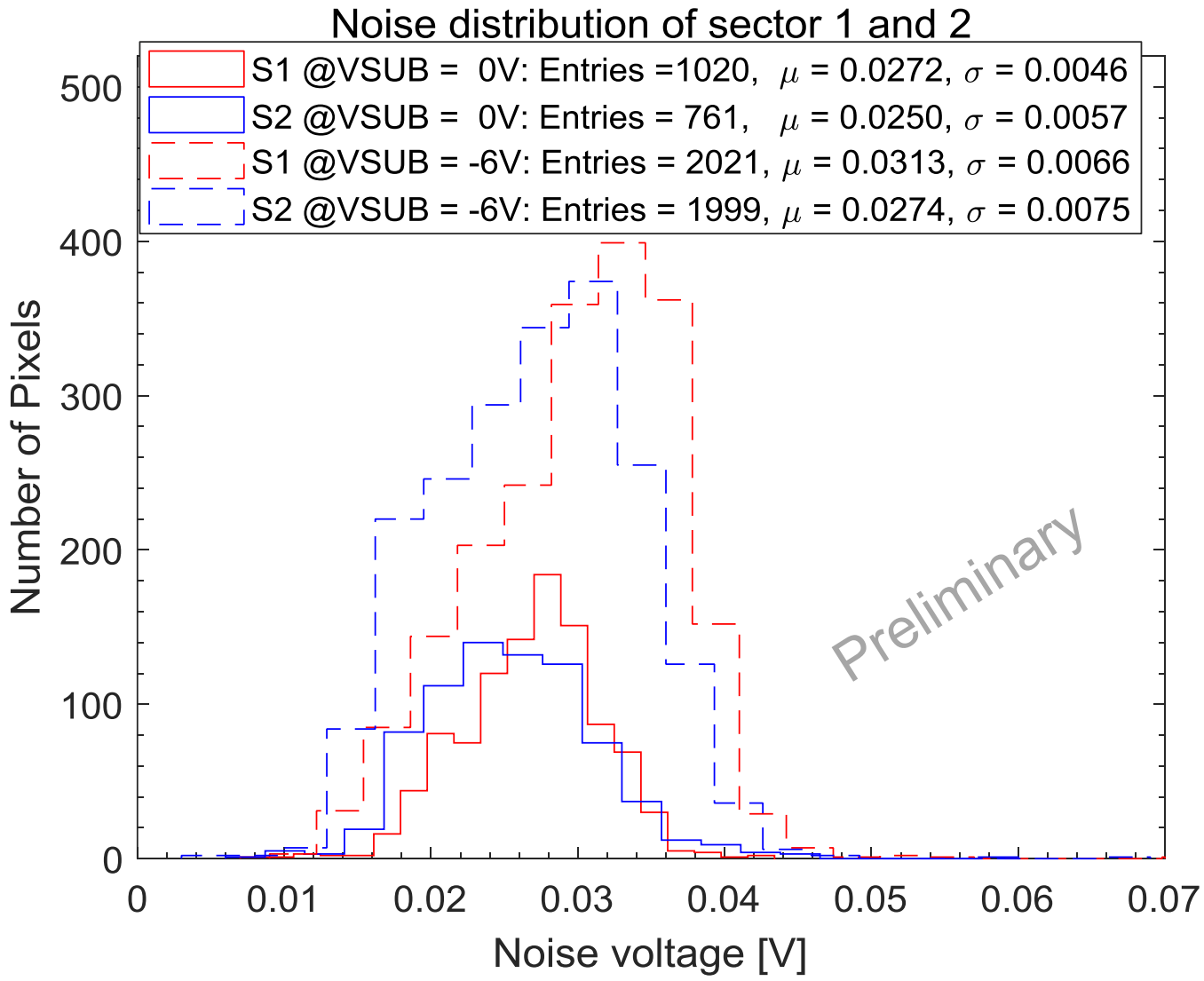


Threshold distribution measured on S1-S2

- **S-curves measured for S1&S2, at VSUB = 0 V & -6 V**



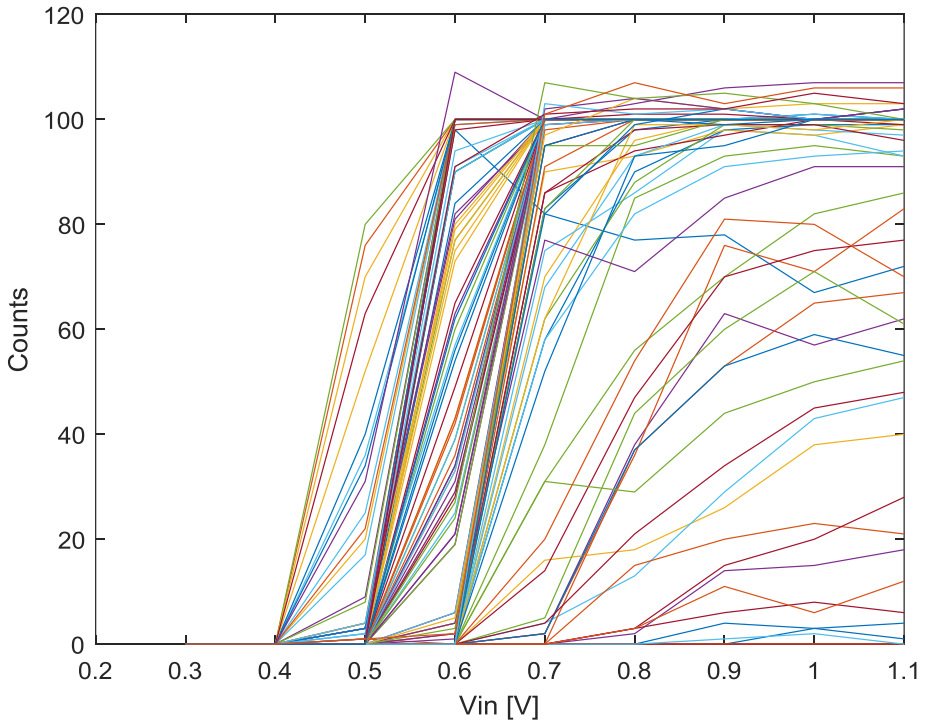
Noise distribution measured on S1-S2



Performance of S3

- **Based on the same bias setting as S1 and S2, many pixels in a column of S3 do NOT work normally**
- **Preliminary tuning on the bias setting did not work, need more investigation**

s-curves of 128 pixels in Dbcol <40>



Discussion on test results

- **S1 & S2 can work normally with negative VSUB**
- **S1 & S2 show higher threshold (~200 mV higher) and higher threshold dispersion (~ 15 mV higher) at VSUB =-6 V than at VSUB = 0V**
  - **Inconsistent with theoretical analysis**
  - Differences induced by the different bias setting were not evaluated
  - Effect of different chip performance was not evaluated
    - This chip shows increased current after the first time test with negative VSUB → performance maybe changed (s-curves @VSUB =GND can not recur at VSUB = 0V)
- **Need to test more chips**