中国科学院高能物理研究所
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TaichuPix-3 test
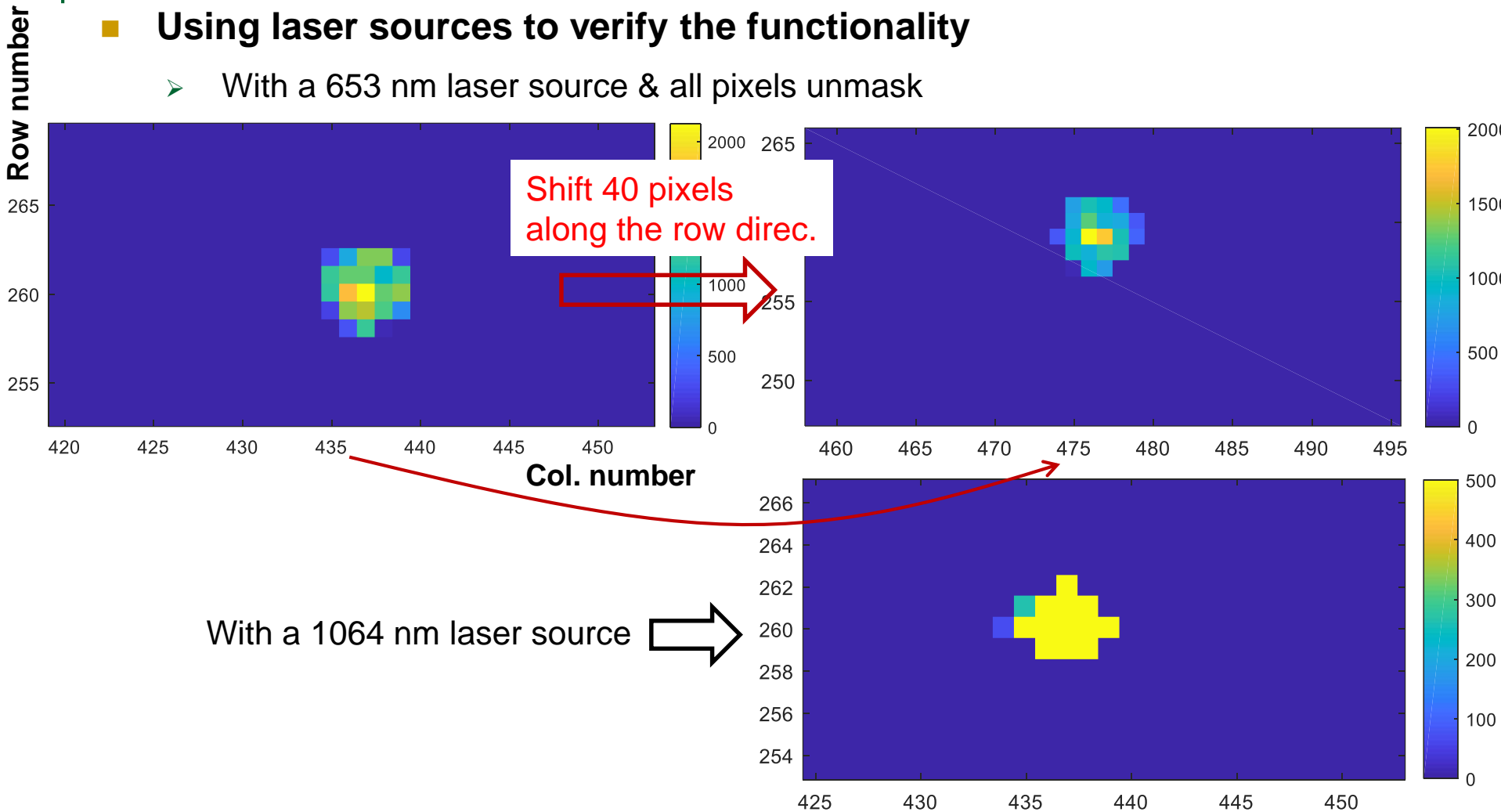
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Laser test

- **Using laser sources to verify the functionality**
  - With a 653 nm laser source & all pixels unmask

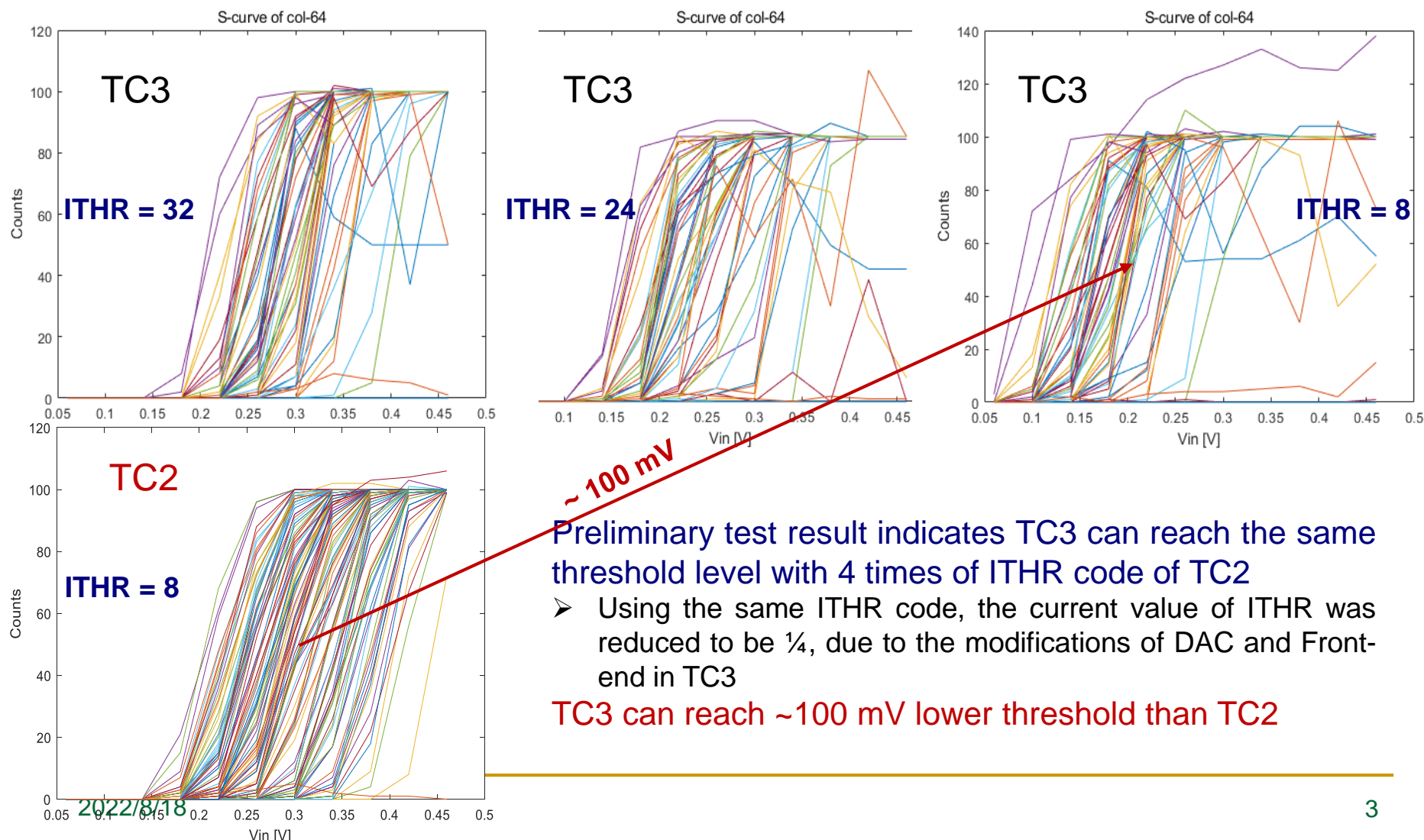Shift 40 pixels along the row direc.

With a 1064 nm laser source

- **Functionality of the full signal chain proved**
  - Sensor+ pixel analog + pixel digital + periphery readout + data interface

Pixel threshold tuning

- **Opening pixel <0:53, 63> with other pixels masked**

  - Perform s-curve scan with different ITHR setting

TC3 — ITHR = 32

TC3 — ITHR = 24

TC3 — ITHR = 8

TC2 — ITHR = 8

~ 100 mV

Preliminary test result indicates TC3 can reach the same threshold level with 4 times of ITHR code of TC2
- Using the same ITHR code, the current value of ITHR was reduced to be ¼, due to the modifications of DAC and Front-end in TC3

TC3 can reach ~100 mV lower threshold than TC2

Some issues

- **Some pixel addresses were read out several times for input once**

	1	2	3	4	5	6	7	8	9
1	1	176	63	1023	0	38	147	52	118
2	1	176	63	1022	0	38	147	52	118
3	1	176	63	1021	0	38	147	52	118
4	1	176	63	1020	0	38	147	52	118
5	1	176	63	1020	0	38	147	52	118
6	1	176	63	1020	0	38	147	52	118
7	1	176	63	1020	0	38	147	52	118
8	1	176	63	1020	0	38	147	52	118
9	1	176	63	1020	0	38	147	52	118
10									

Readout data when input an 'Apulse' signal to pixels <1020:1023, 63>

For each Vin, input 100 times

Pixel <1023, 63>

Pixels <0:53, 63>

pixel <1023, 63> enabled

S-curve of col-64

Pixels <0:53, 63>
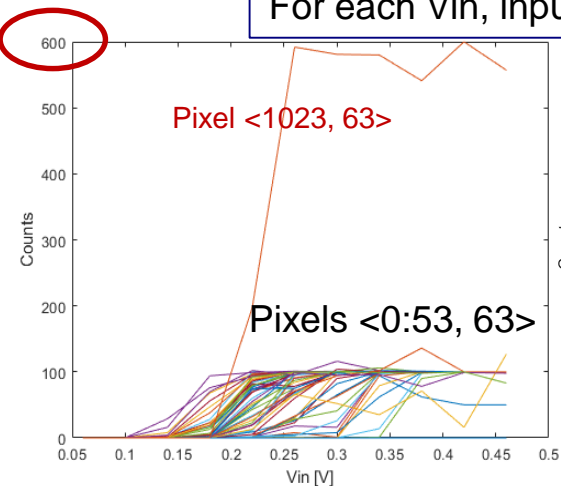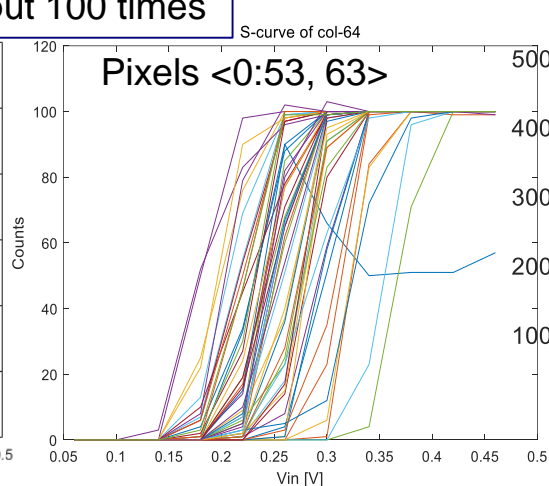
pixel <1023, 63> disabled
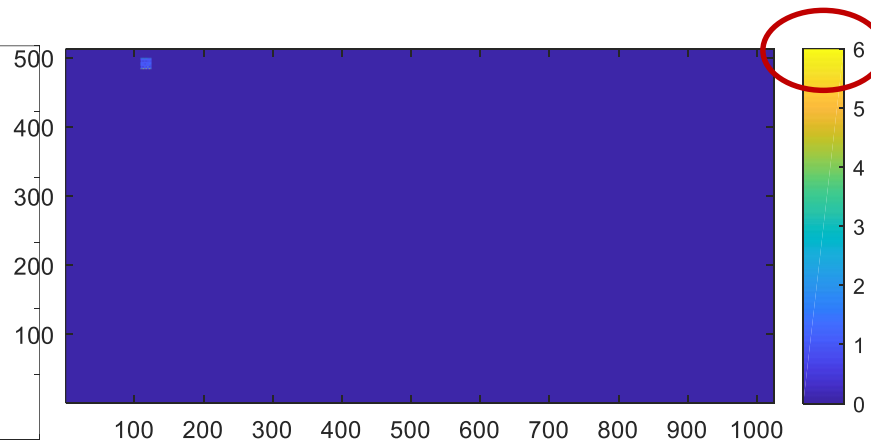
Hitmap @pixels of row<480:495>, col<112:127> open & input test signal once

Following plan

- **Figure out the reason of duplicate reading issue**

- **Mask configuration of pixel array**
  - ➢ Need a program to find noisy pixels and mask them automatically in future

- **Noise & threshold test**
  - ➢ DAC setting tuning
  - ➢ Pixel array configuration for s-curve test