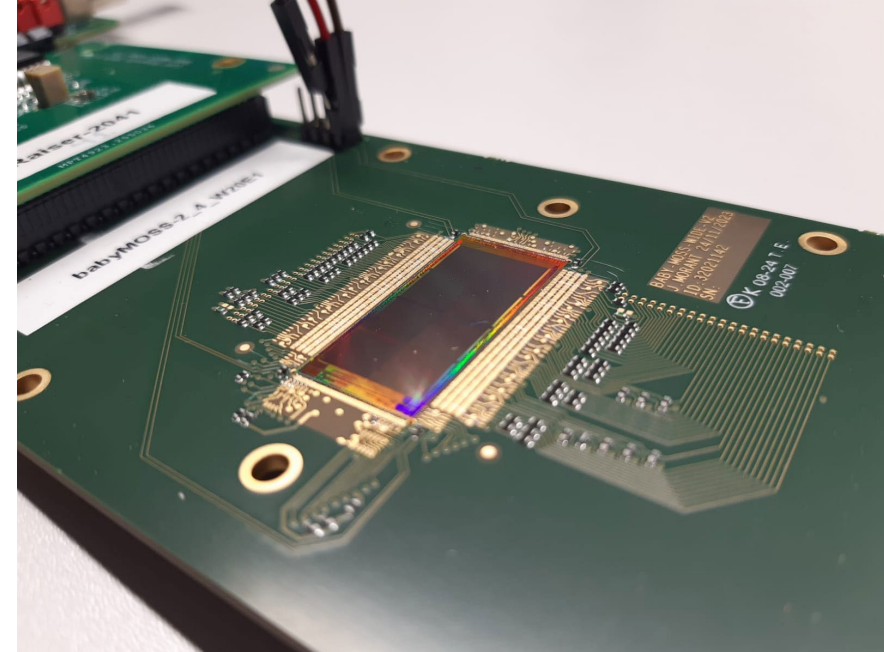




babyMOSS Activities

First Results

Bari

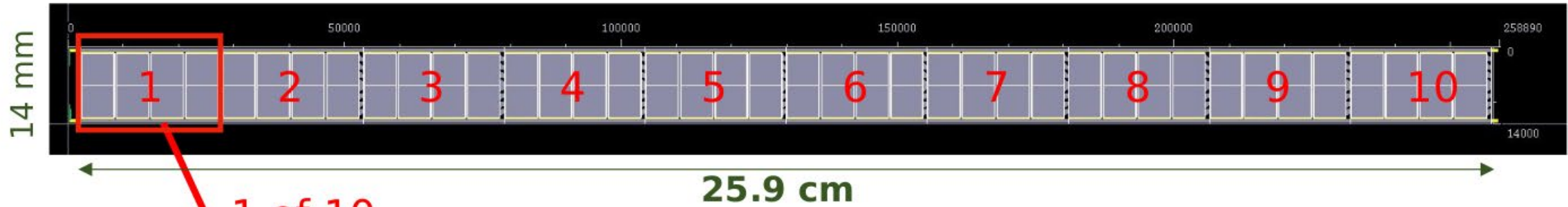


Angelo Colelli, Francesco Barile, Rajendra Patra, Shyam Kumar, Triloki Triloki

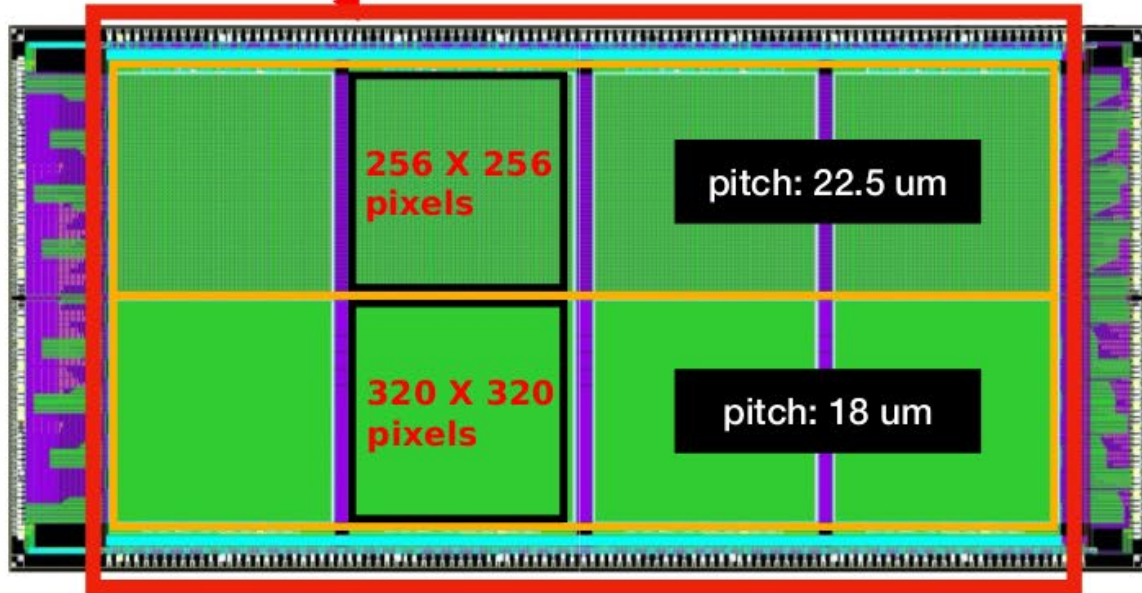
University of Bari and INFN sez. Bari

MOlonolithic Stitched Sensor

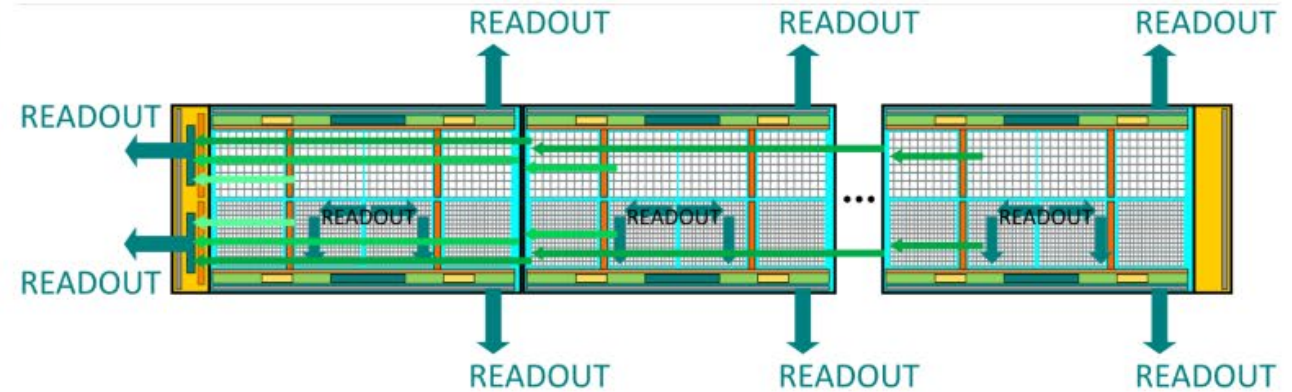
6.72 megapixel



1 of 10

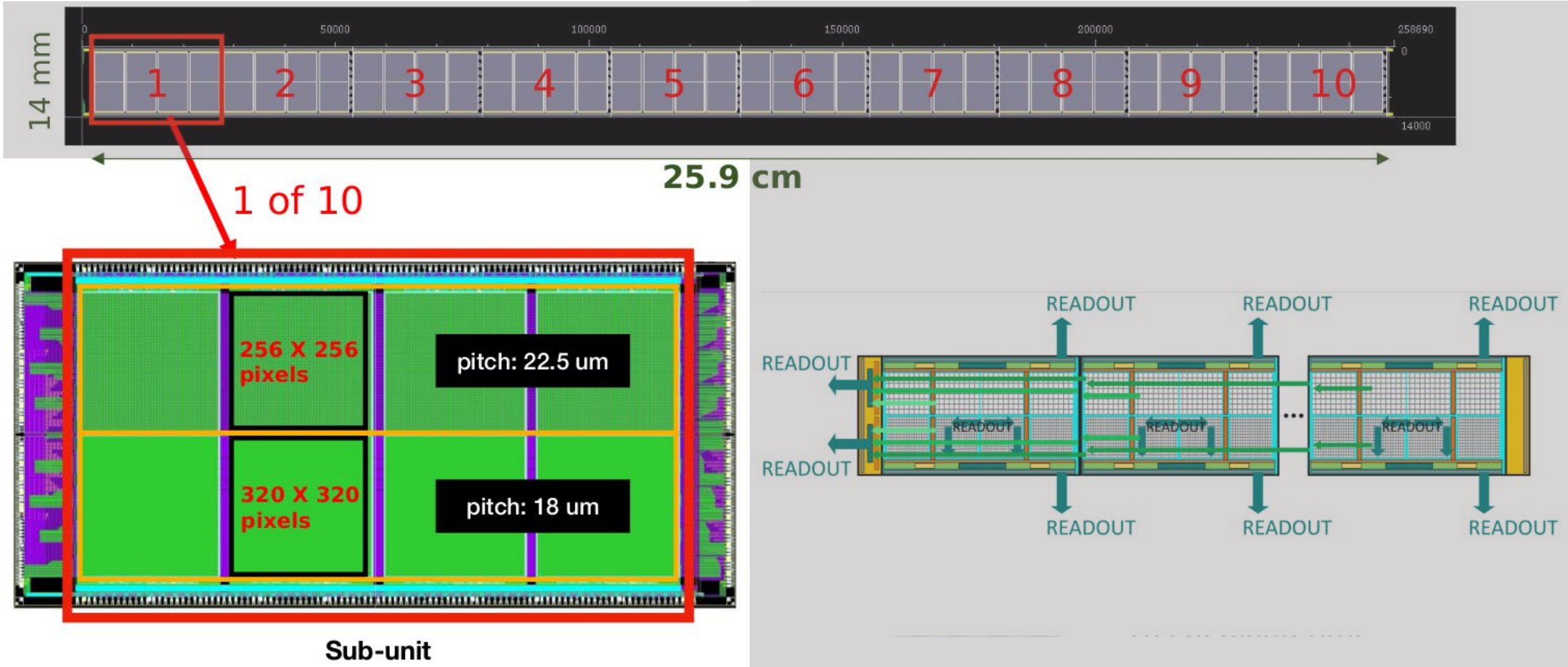


Sub-unit

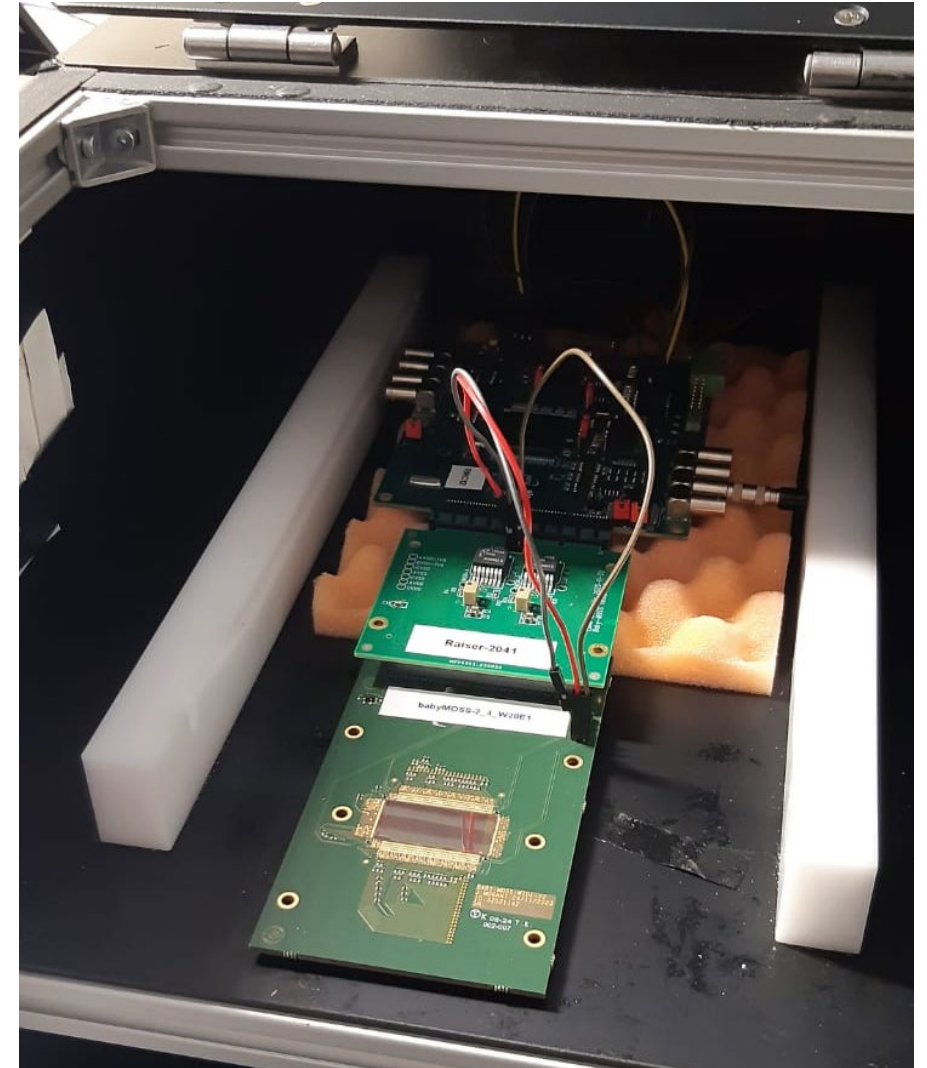
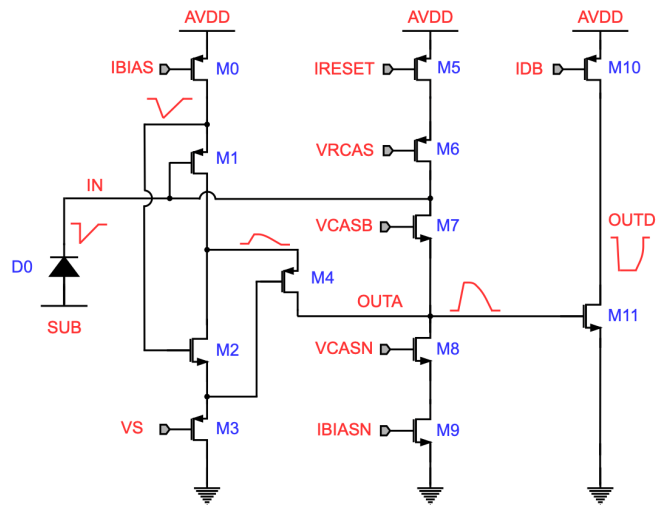
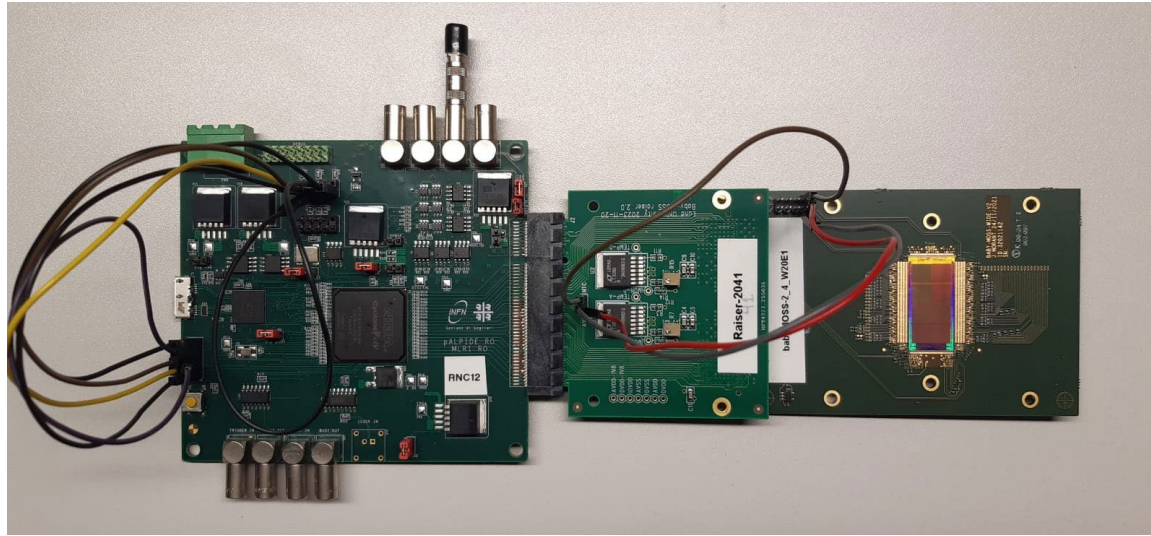


babyMONolithic Stitched Sensor

6.72 megapixel

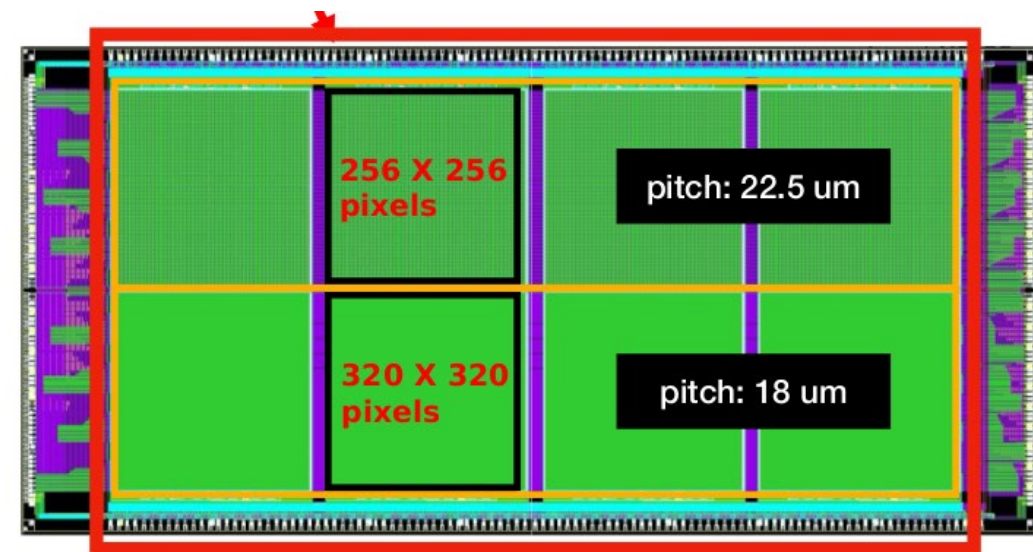


Test System



Measurements

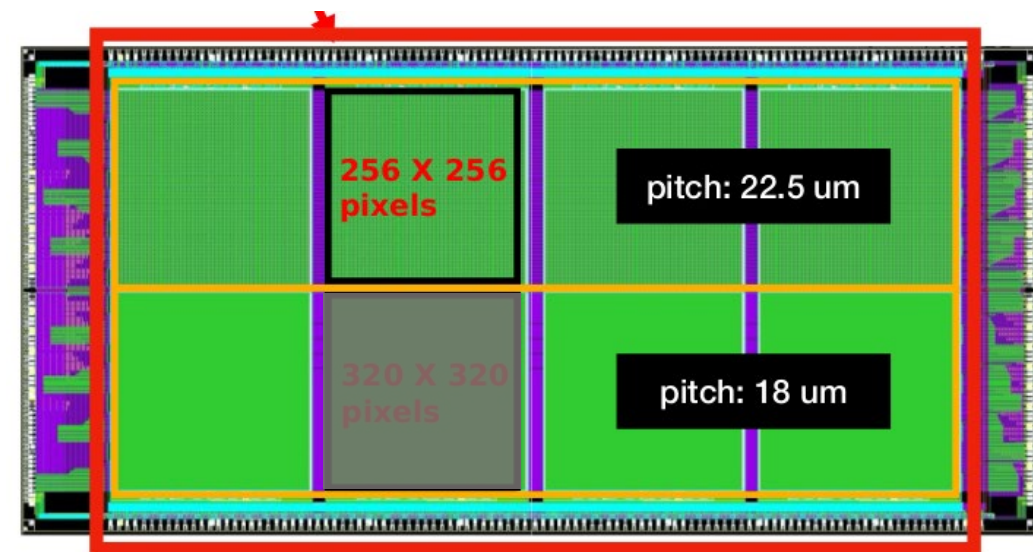
	Scans	babyMOSS-XXXX
Functional Tests	Power on Scan	Ok
	Register Scan	OK
	Shift Register Scan	OK
	DAC Scan	OK
Readout and Pixel matrix Tests	Digital Scan	OK
	Analogue Scan	OK
	FHR Scan	OK
	Threshold Scan	OK
Direct pixels characterization	Source ToT Scan (Time-over-Threshold)	OK



Sub-unit

Measurements

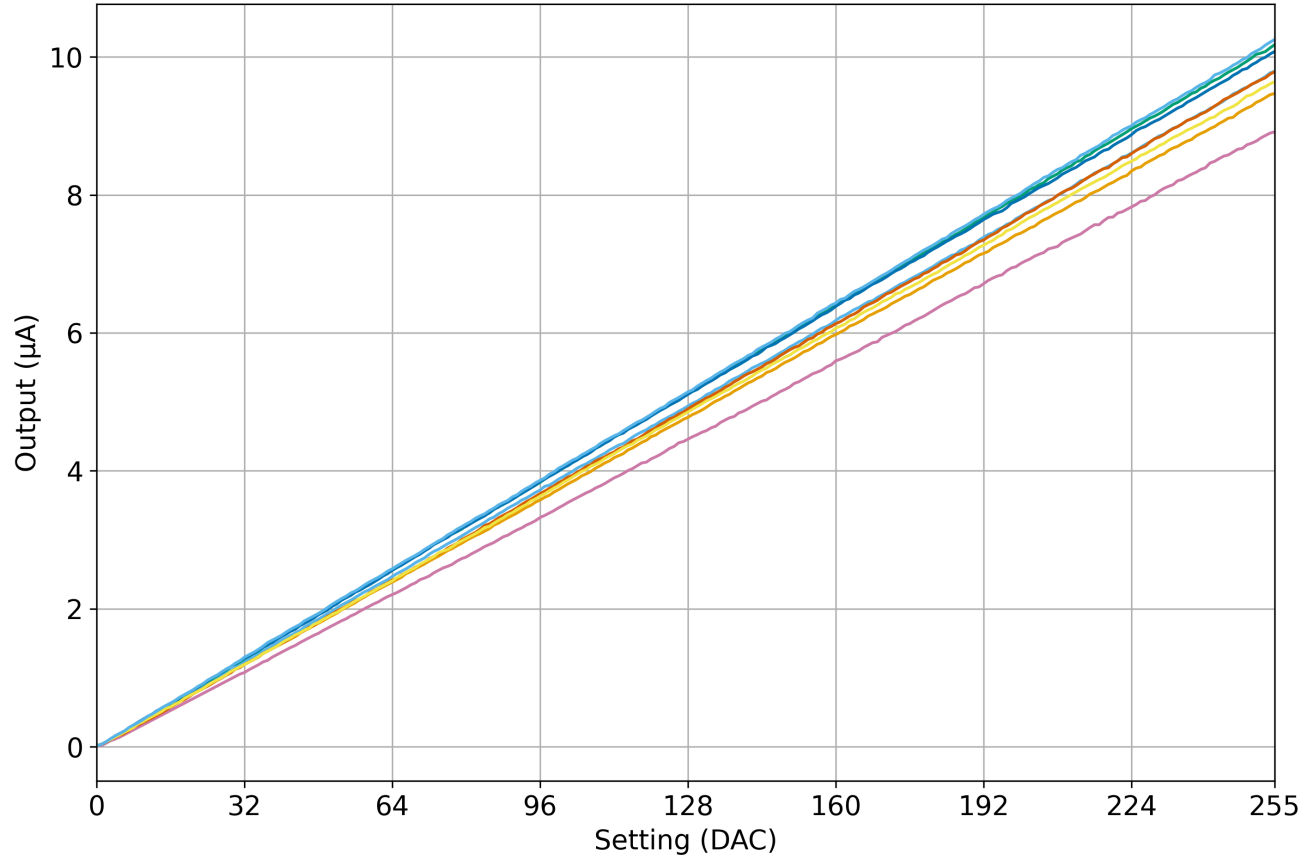
	Scans	babyMOSS-XXXX
Functional Tests	Power on Scan	Ok
	Register Scan	OK
	Shift Register Scan	OK
	DAC Scan	OK
Readout and Pixel matrix Tests	Digital Scan	OK
	Analogue Scan	OK
	FHR Scan	OK
	Threshold Scan	OK
Direct pixels characterization	Source ToT Scan (Time-over-Threshold)	OK



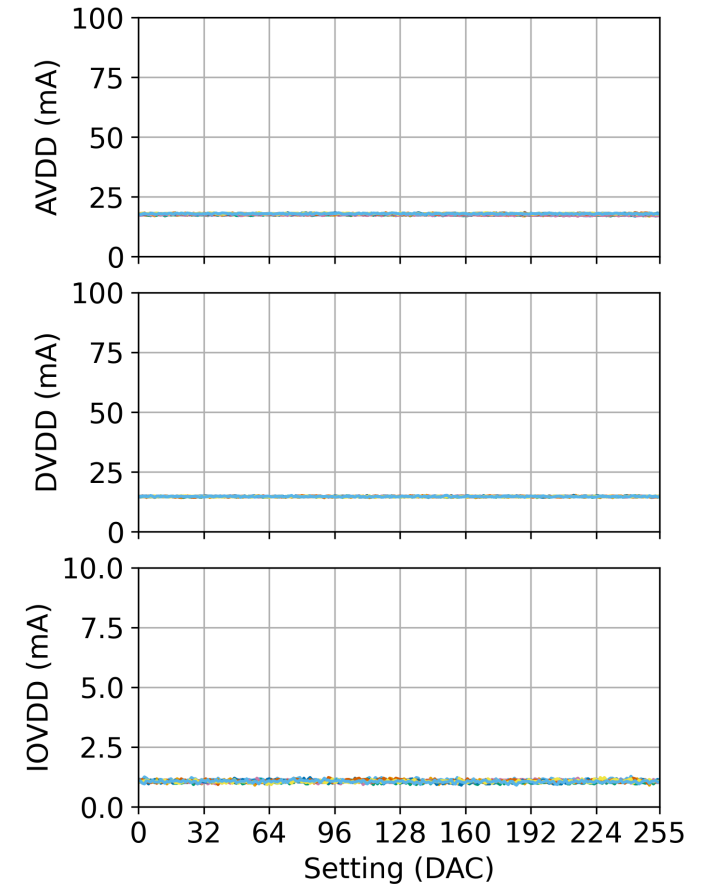
Sub-unit

DAC Scan - babyMOSS

babyMOSS-2_4_W20E1 | IBIASN all units and regions | DacAnalysis

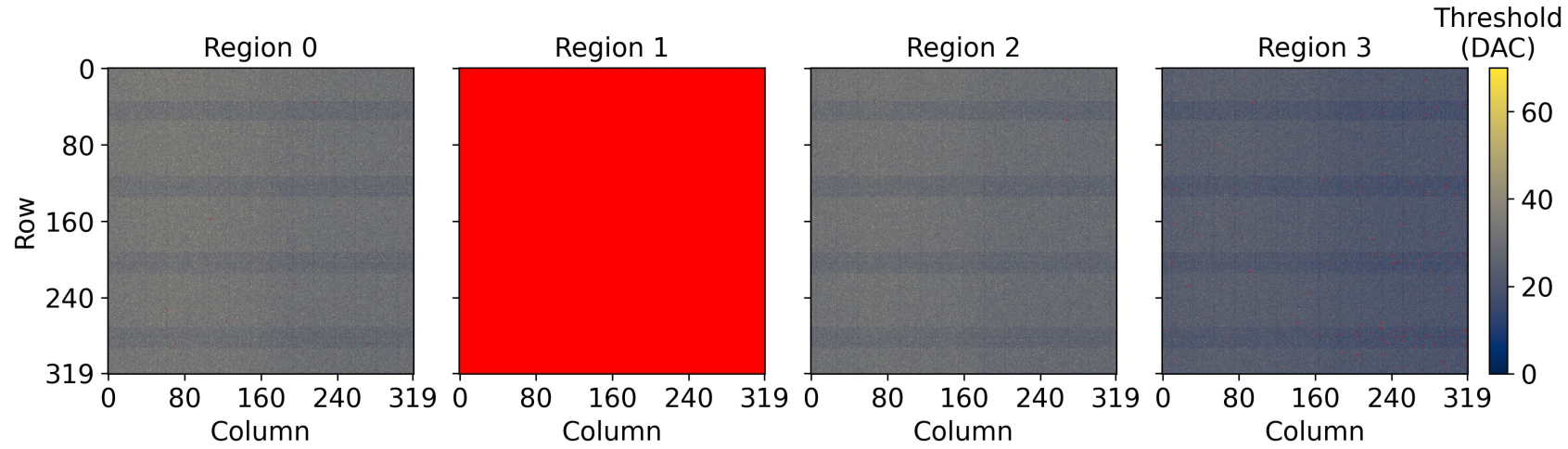


babyMOSS-2_4_W20E1 | DacAnalysis
IBIASN all units and regions currents

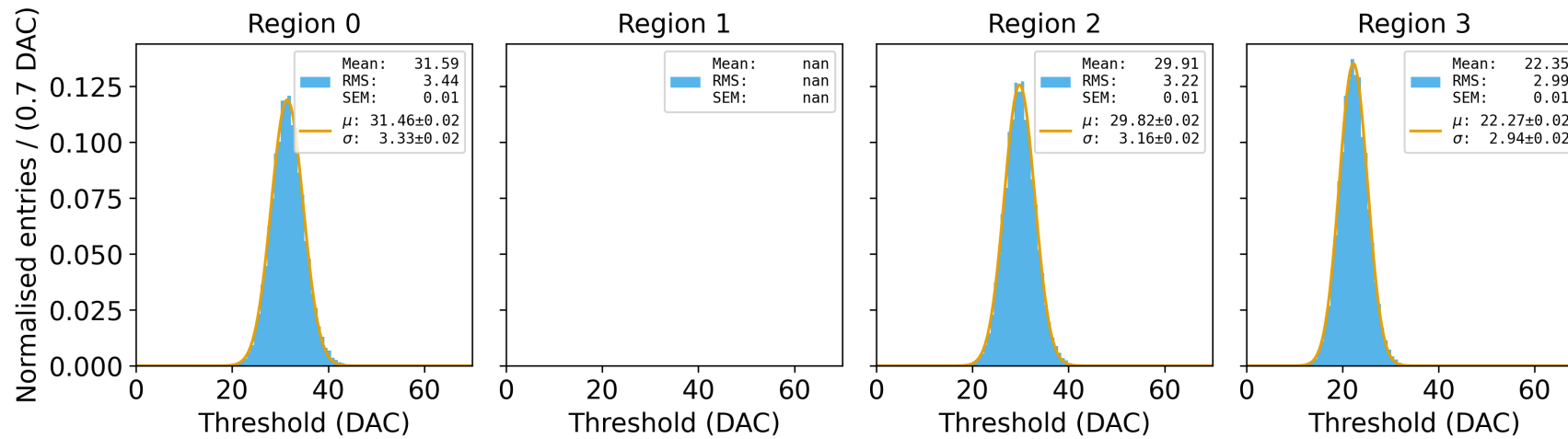


Threshold Scan - babyMOSS

babyMOSS-2_4_W20E1 | bb Threshold map | ThresholdScanAnalysis

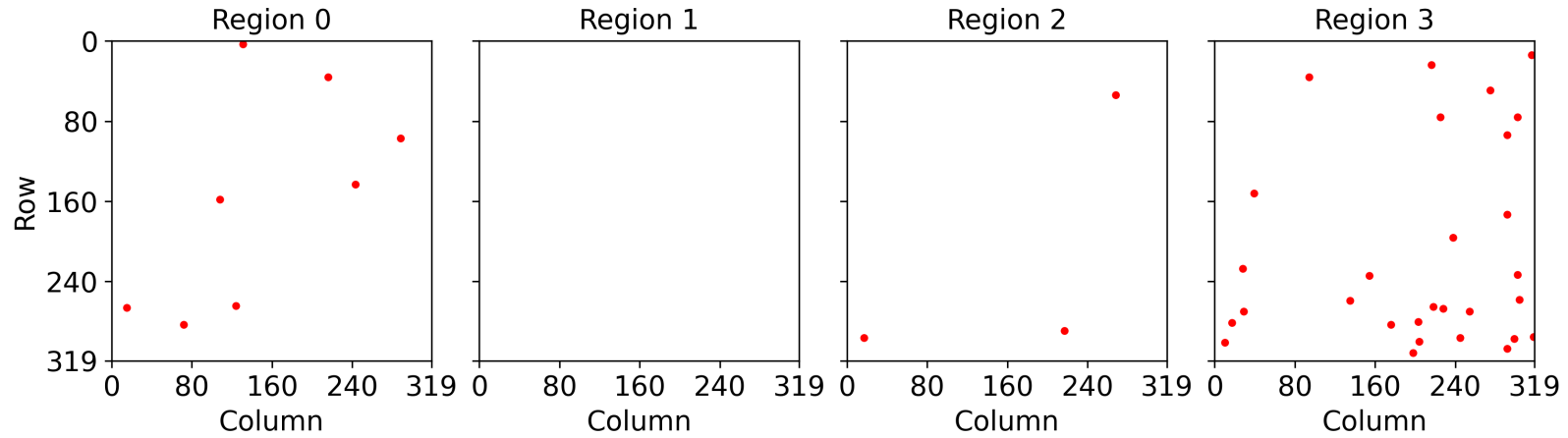


babyMOSS-2_4_W20E1 | bb Threshold distributions | ThresholdScanAnalysis

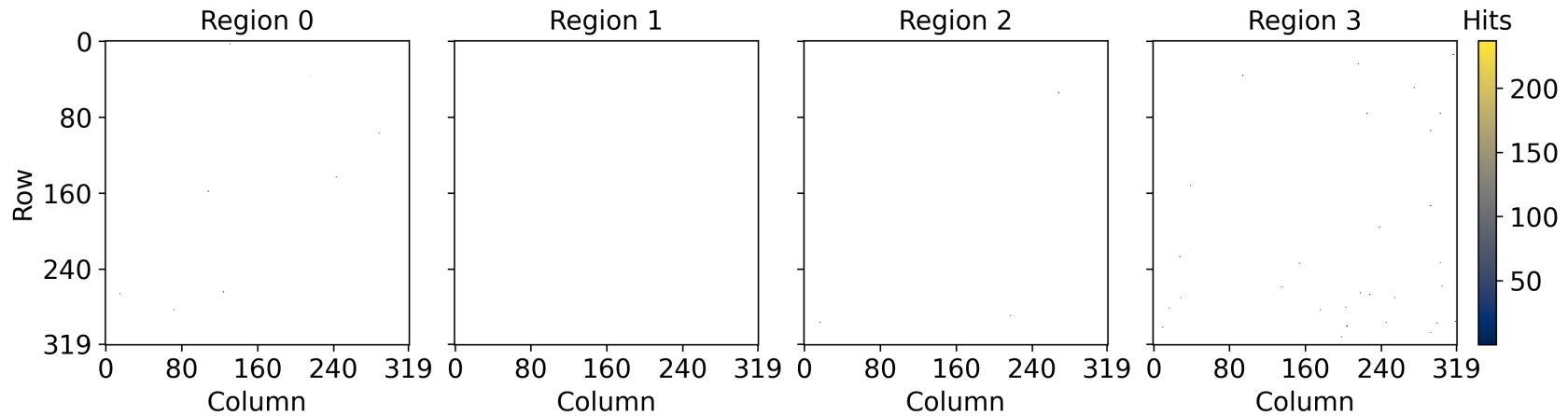


FHR Scan - babyMOSS

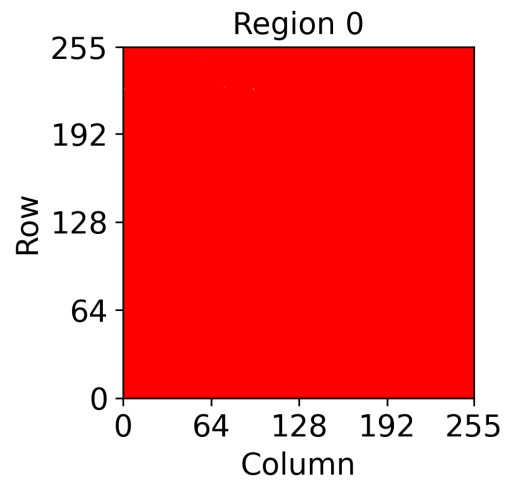
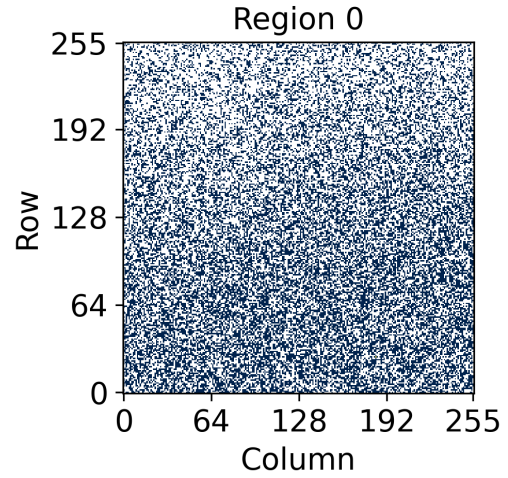
babyMOSS-2_4_W20E1 | BB scatter plot | FakeHitRateAnalysis



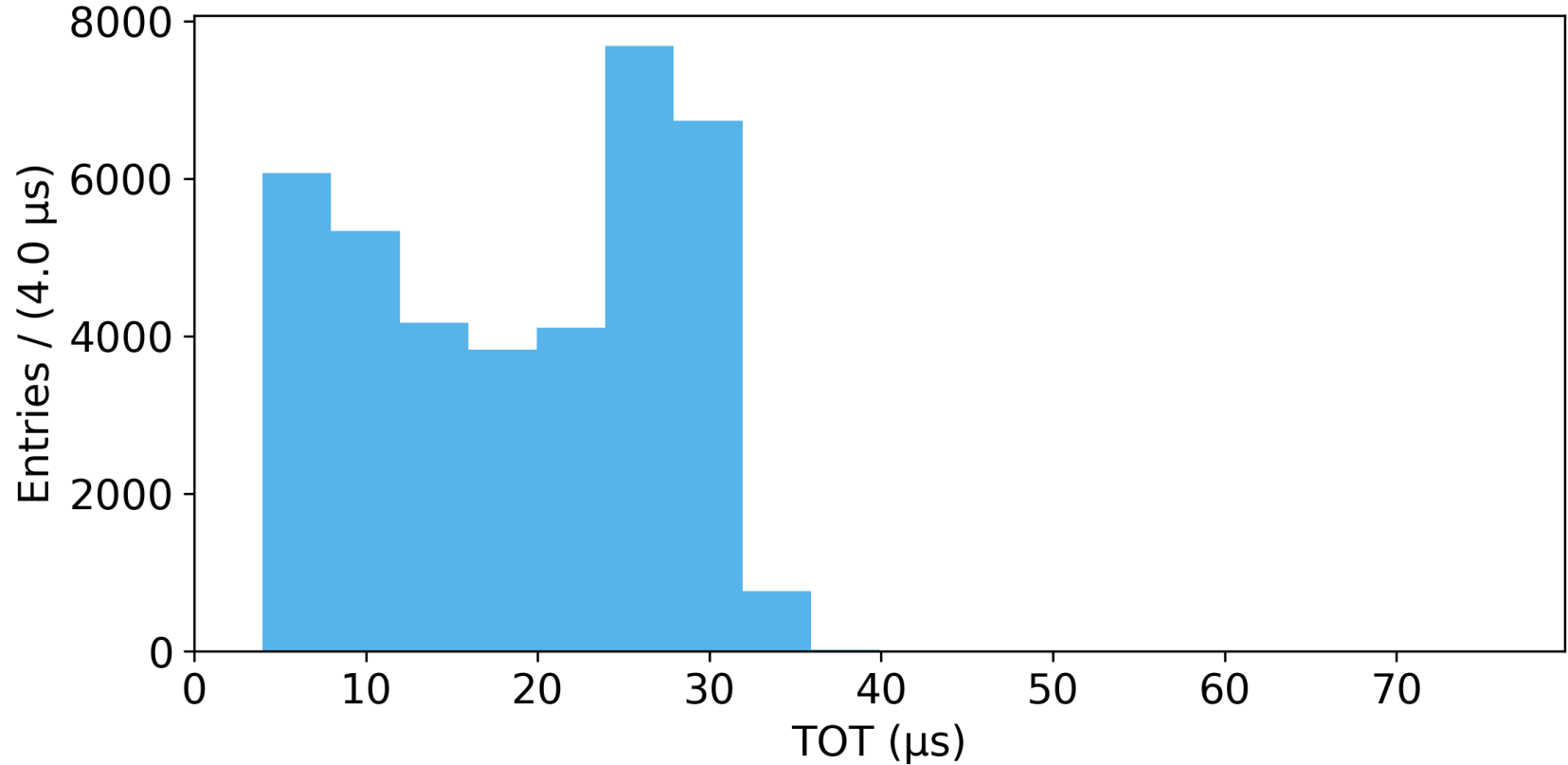
babyMOSS-2_4_W20E1 | BB hitmap | FakeHitRateAnalysis



Source ToT Scan - babyMOSS



babyMOSS-2_4_W20E1 | TOT distribution | SourceTotAnalysis



Summary and Next Steps

- babyMOSS test system in Bari has been assembled
- All the regions except the bb-region1 work fine
- Characterization Activities:
 - Investigation of circuital parameters
 - Calibration with ^{55}Fe source by means of ToT method
 - Energy response

Backup

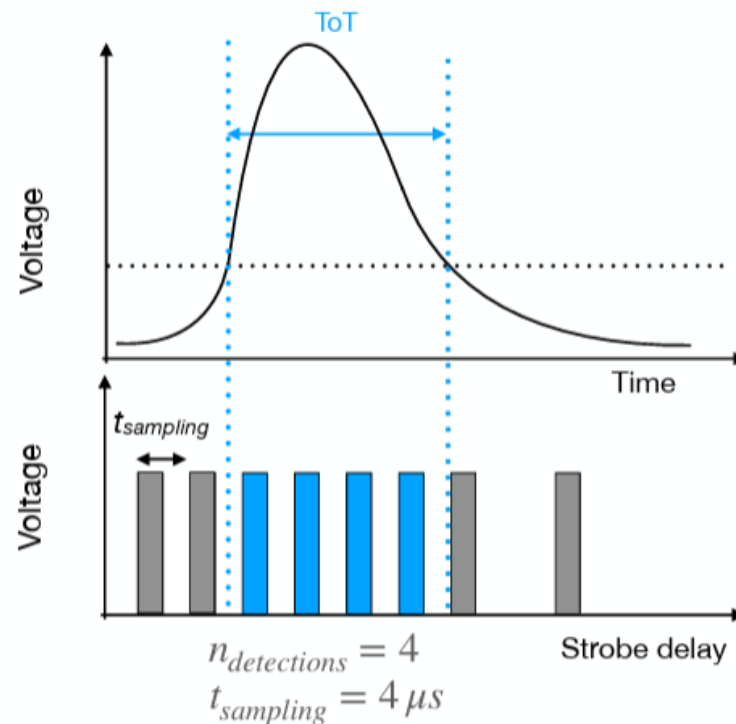
MOSS ToT measurement: Source Scan

Source-scan:

- Provides method to assess ToT event-by-event
- Send a consecutive train of n_{strokes} strobes
- Count number of strobes leading to a hit
- ToT estimated by:

$$ToT = n_{\text{detections}} \cdot t_{\text{sampling}}$$

- t_{sampling} : distance between two strobes



Resolution limitation:

- Command transaction for strobe/ RO takes 42 c.c.
- RO-time depends on hit multiplicity -> need to account for margin
- ▶ Minimum t_{sampling} of $\sim 4 \mu\text{s}$
- ▶ **Limits measurement resolution of the ToT in source scan**

