

  
**ÖAW**  


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RD50 HV-CMOS Meeting

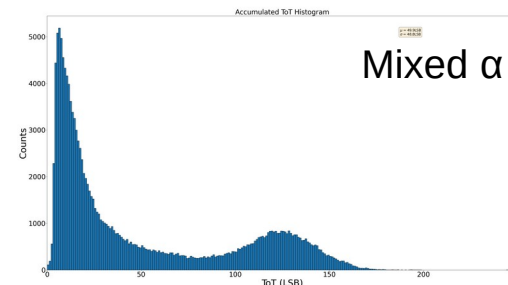
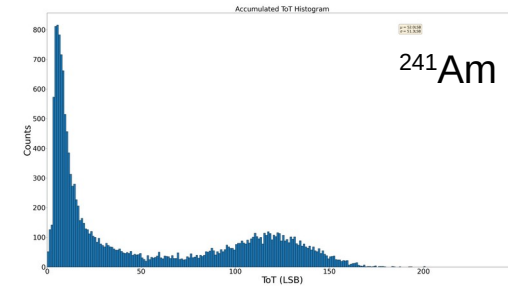
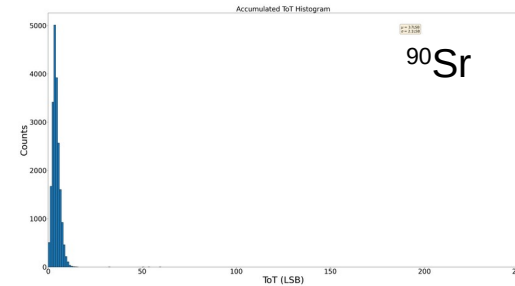
# RD50-MPW4

Update 15/02/2024

**Bernhard Pils**

# Radioactive Sources

- Recorded spectra of various radioactive sources
  - 1)  $^{90}\text{Sr}$   $\beta$
  - 2)  $^{241}\text{Am}$   $\alpha$  5.4MeV
  - 3) Mixed Alpha source
    - $^{241}\text{Am}$   $\alpha$  5.4MeV
    - $^{244}\text{Cm}$   $\alpha$  5.9MeV
    - $^{239}\text{Pu}$   $\alpha$  5.1MeV
- $\alpha$  sources directed to front-side in close proximity O(mm) without plastic protection box
- No difference between 2) and 3) observed
- All sources show main peak at low ToT values ( $\sim 5$  LSB)
- $\alpha$  sources show secondary peak at  $\sim 120$  LSB
  - Possible explanation:
    - 5 LSB peak  $\rightarrow$  signal just makes it over threshold  $\rightarrow$  charge sharing effects with neighboring pixels
    - 120 LSB peak corresponds to charge deposited in one pixel
    - Cluster (-charge) analysis needed and to be done
- Not seeing anything with  $^{55}\text{Fe}$  (neither front nor backside)



# Auto threshold calibration implemented

- Peary got new „makeSensitive“ routine
  - 1) Mask most noisy single pixels
  - 2) Reduce threshold until noise gets significant (~20Hz)
  - 3) Perform S-curve scan (for a few randomly chosen pixels) → set-point for trimDAC tuning
  - 4) Tune trimDACs
  - 5) Reduce threshold with masking
- Lowest possible threshold: 920mV (at 900 mV baseline) ~ 2600e<sup>-</sup>
  - Masked ~40 pixels
  - Masking even more gets us down to ~915mV
    - Unstable (gets noisy when chip gets warm)

