Trimming and VthrComp Study

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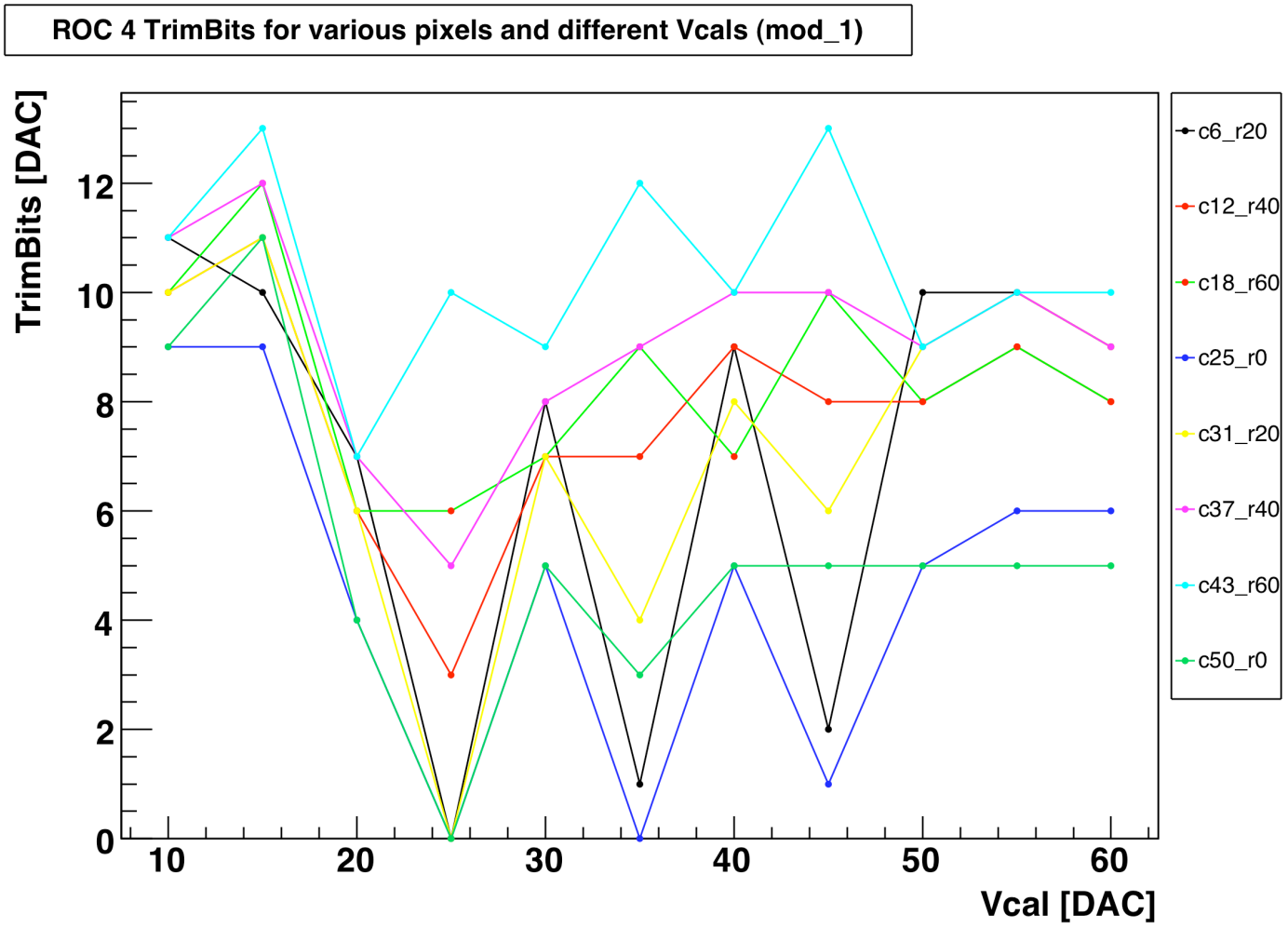
Overview

- Trimming Exercise
  - Study possibility of trimming without Vcal inject
- Procedure
  - Lower threshold until ROCs became too noisy
  - Trim at this level using Vcal inject
  - Begin trimming exercise
- Assumptions
  - Once set, trimming bits characteristics do not change if the threshold is changed
- Assumption tests …

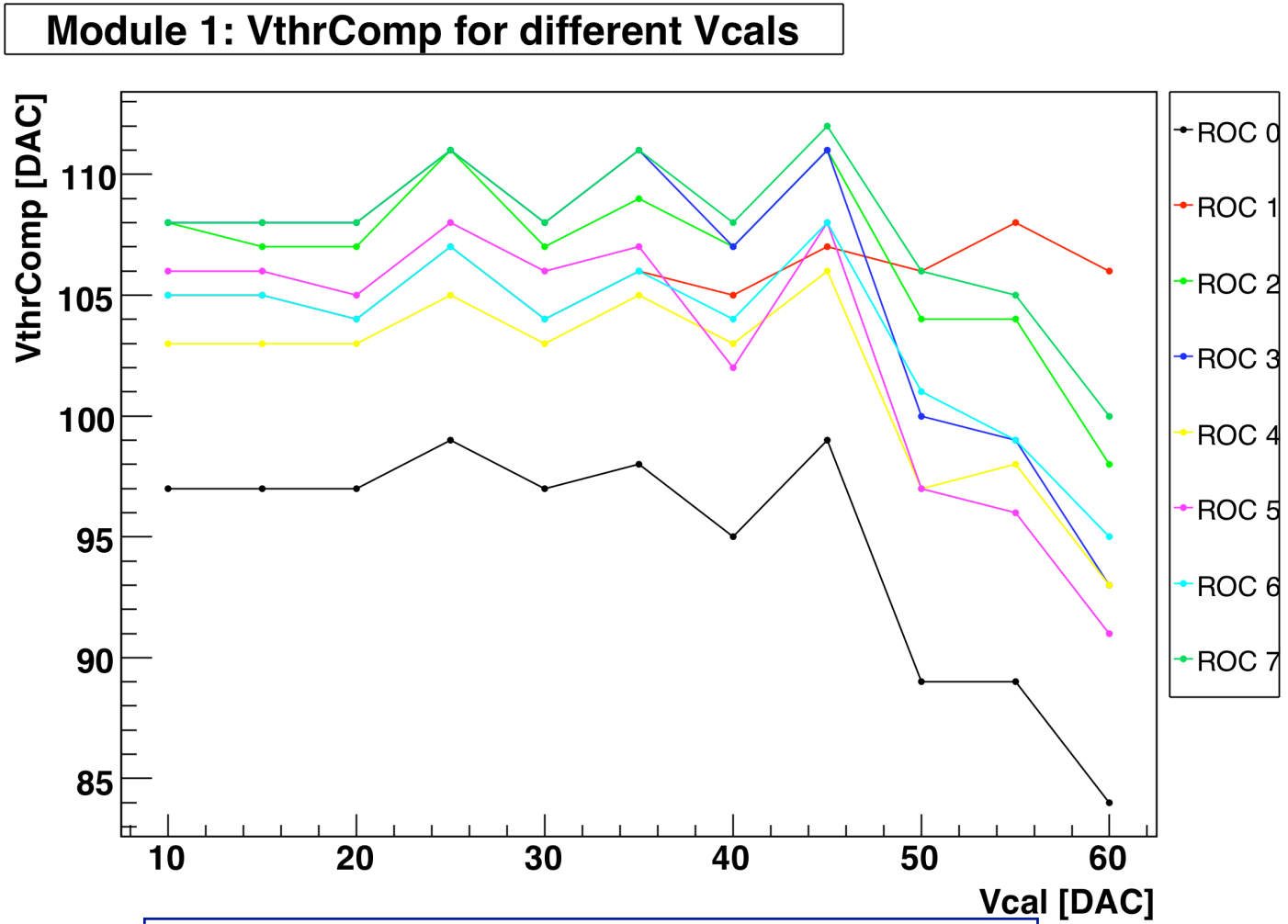
Trim Bits Characteristics Check



Trim bits numbers for different pixels after trimming at different Vcal values

- Showing trim bits for 8 different pixels as function of Vcal inject
  - For ROC 4 on Module 1
    - Blue cool box
- Pixels picked at random
- Same behavior observed in two different modules
- Trim bits change for different Vcals

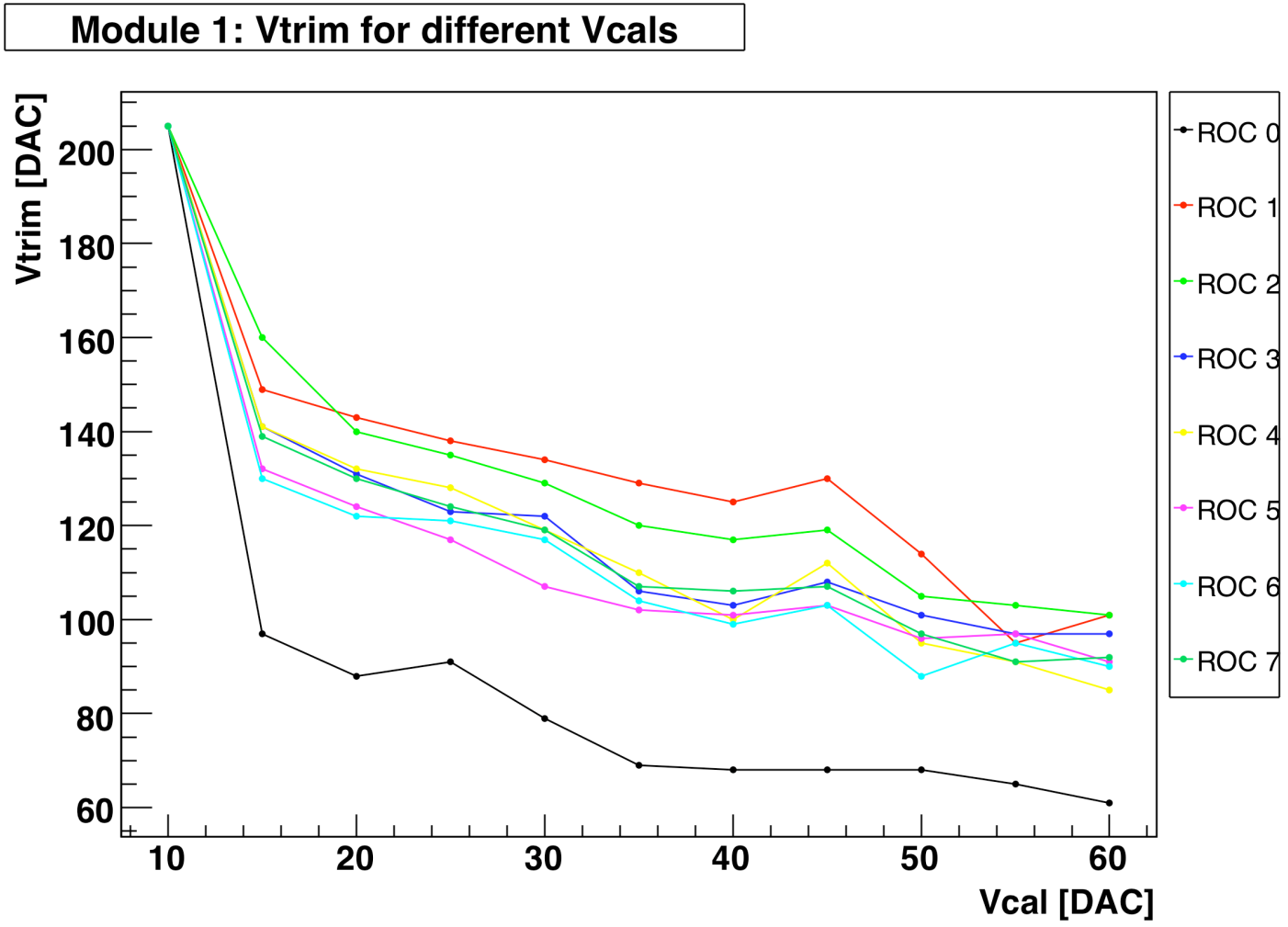
VthrComp Changes



VthrComp changes after trimming at different Vcal values for 8 ROCs in module 1

- Changes expected
  - Global threshold was lowered
- ROC 1 behavior is unexpected
- ROC 0 behavior is noticeably lower relative to other ROCs

Vtrim Changes



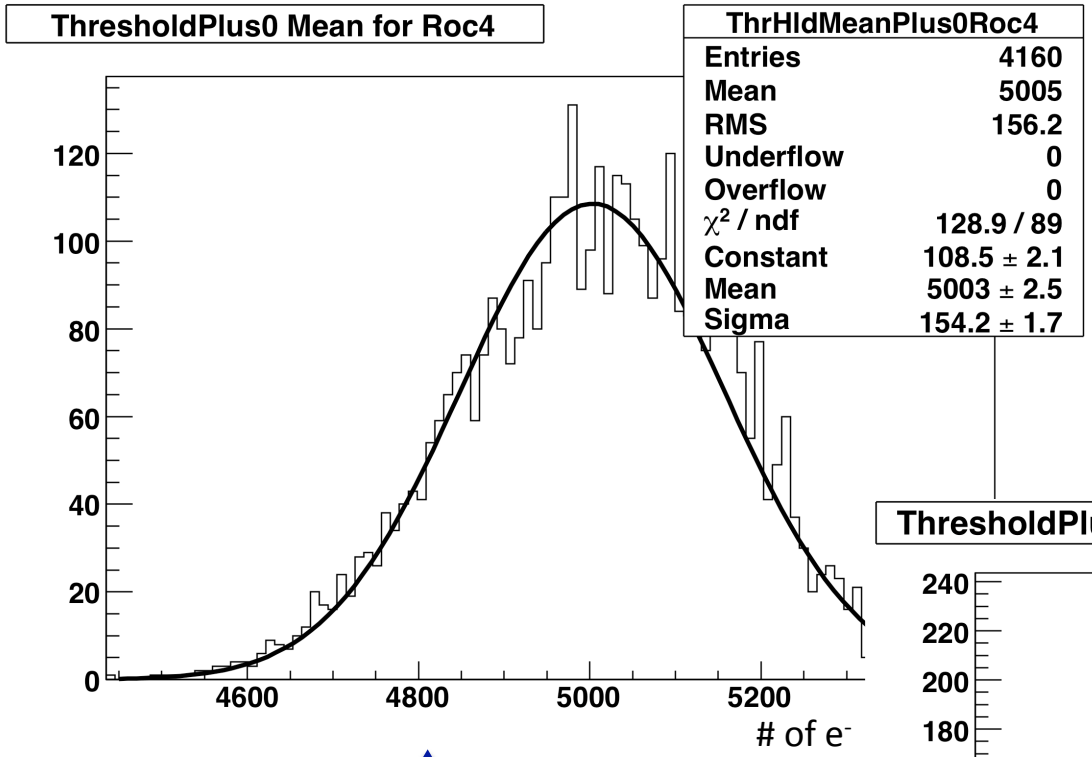
Vtrim changes after trimming at different Vcal values for 8 ROCs in module 1

- Changes expected
  - Global threshold was lowered
- ROC 0 behavior is noticeably lower relative to other ROCs

S-Curve Exercise

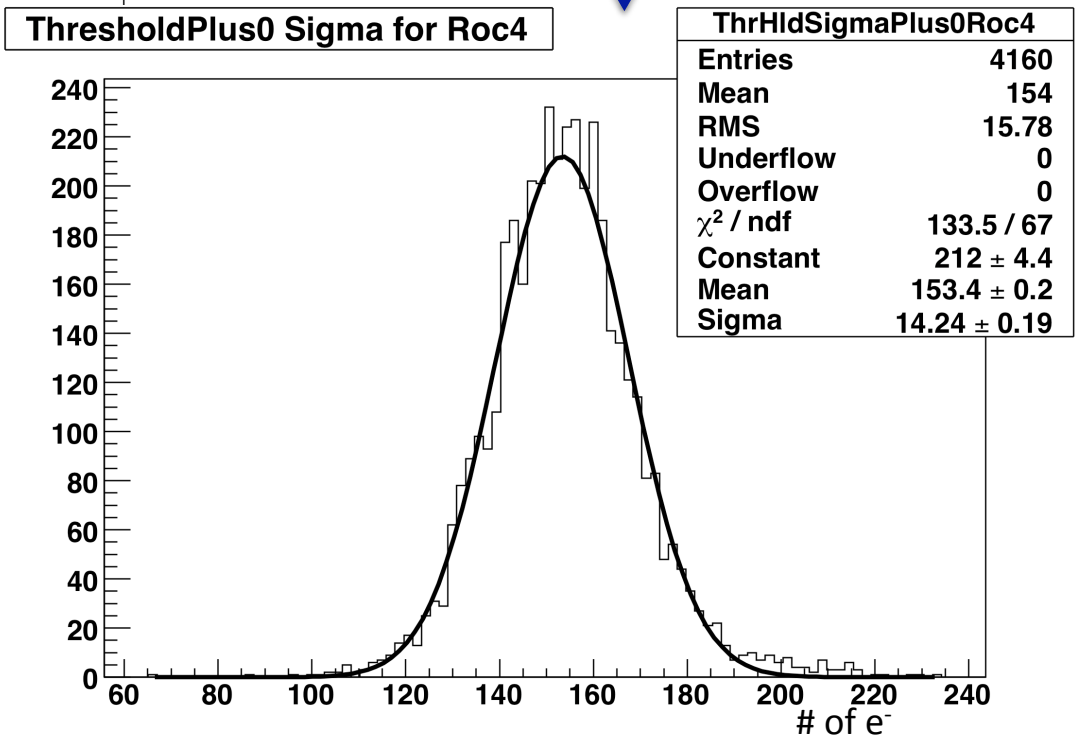
- It was suggested that the Trimming bits changes are of no consequence
- To test this assumption, it was suggested to study the S-Curve behavior at different VthrComp
- Procedure
  - Change the VthrComp after trimming at Vcal 60 and study the S-Curve characteristics
  - This will tell us if the trim bits changes are important

Threshold and Noise

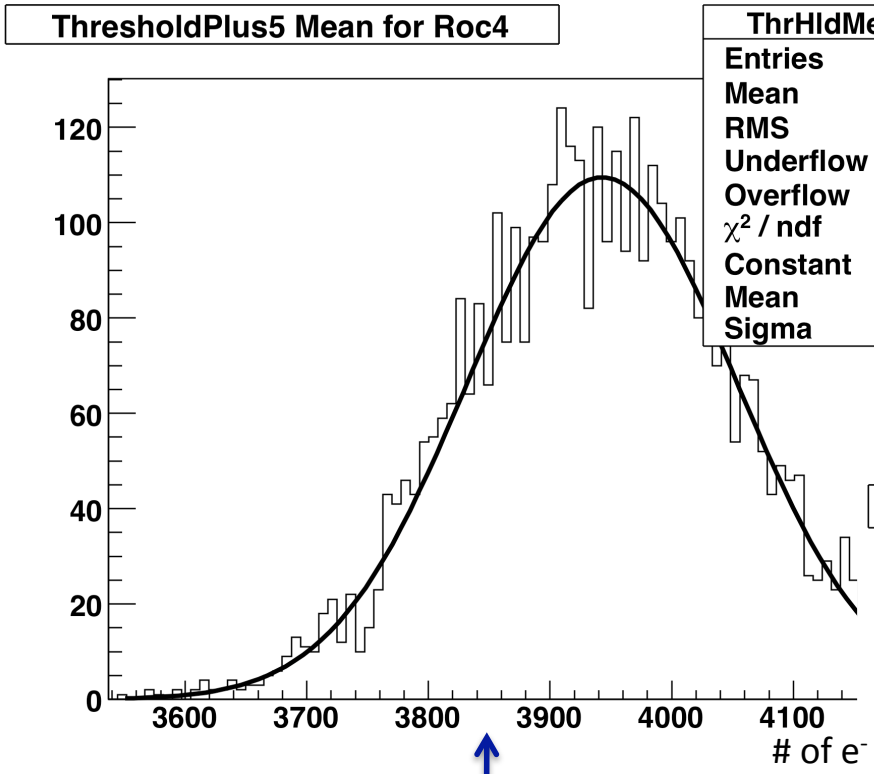


Threshold distribution after trimming at Vcal 60 for ROC 4

Noise distribution after trimming at Vcal 60 for ROC 4

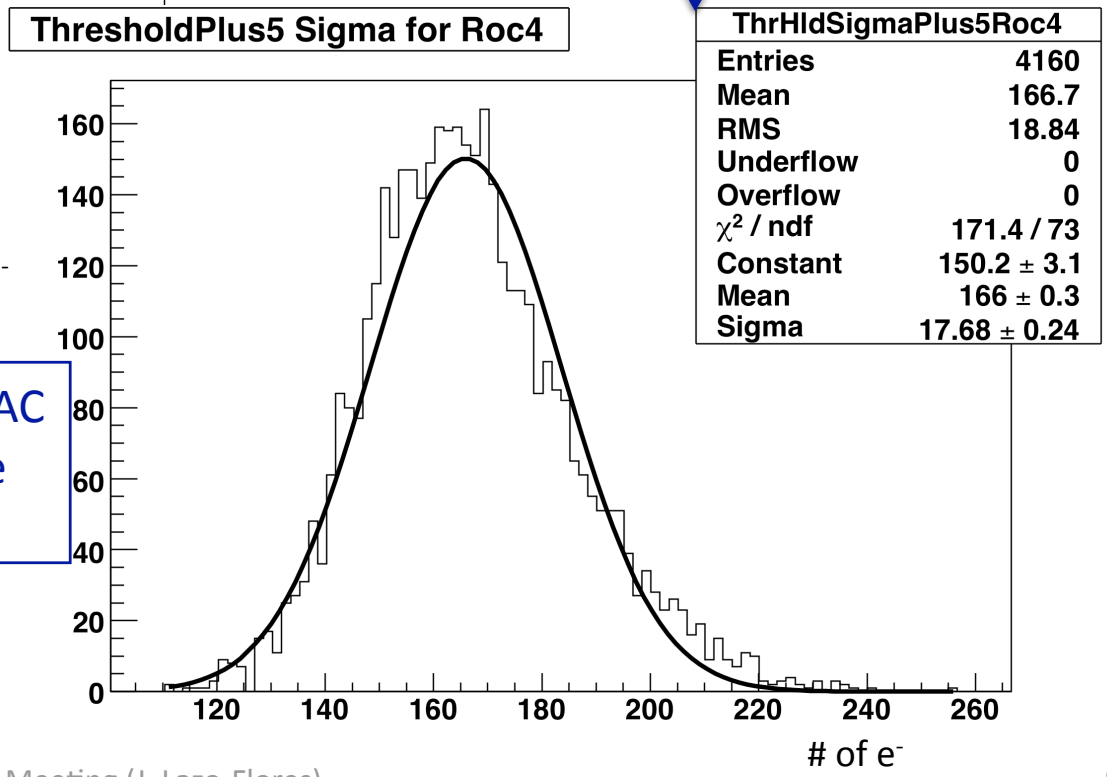


Threshold and Noise

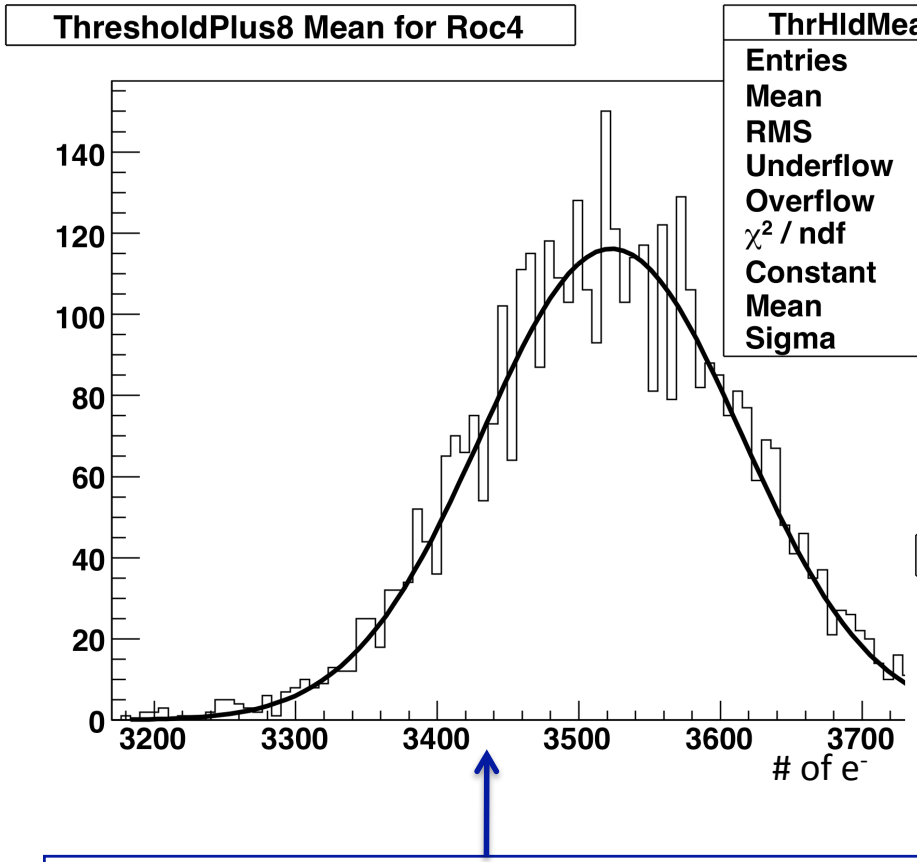


Threshold distribution after adding 5 DAC units from the Vcal 60 trimming value for ROC 4

Noise distribution after adding 5 DAC units after trimming at Vcal 60 for ROC 4

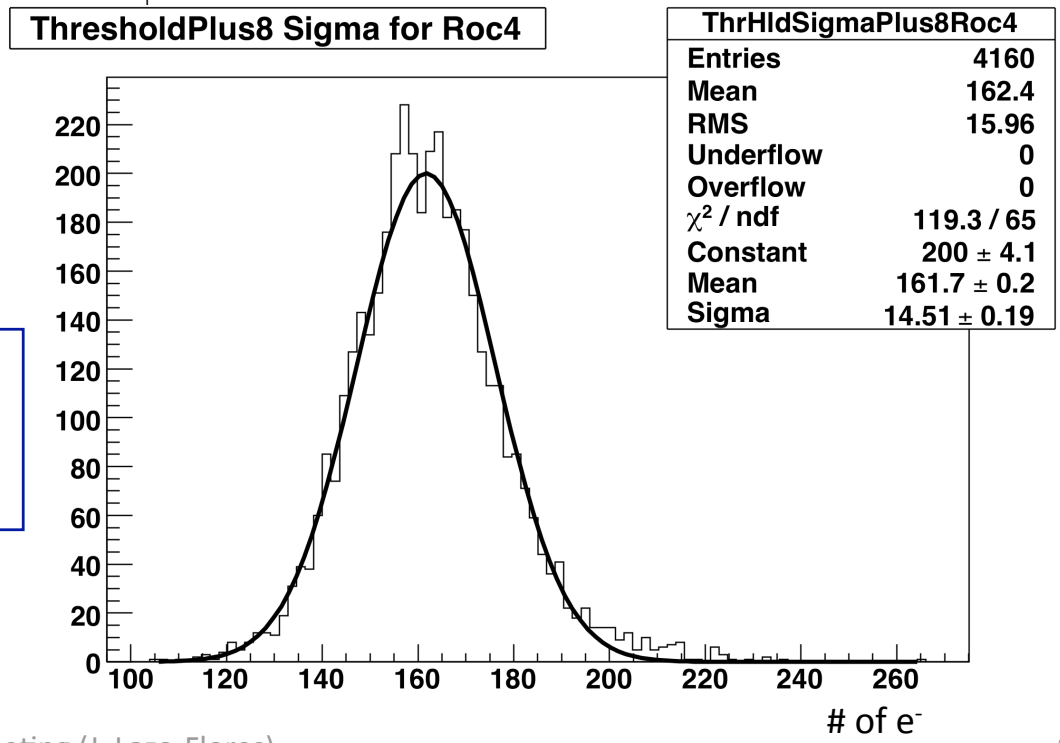


Threshold and Noise

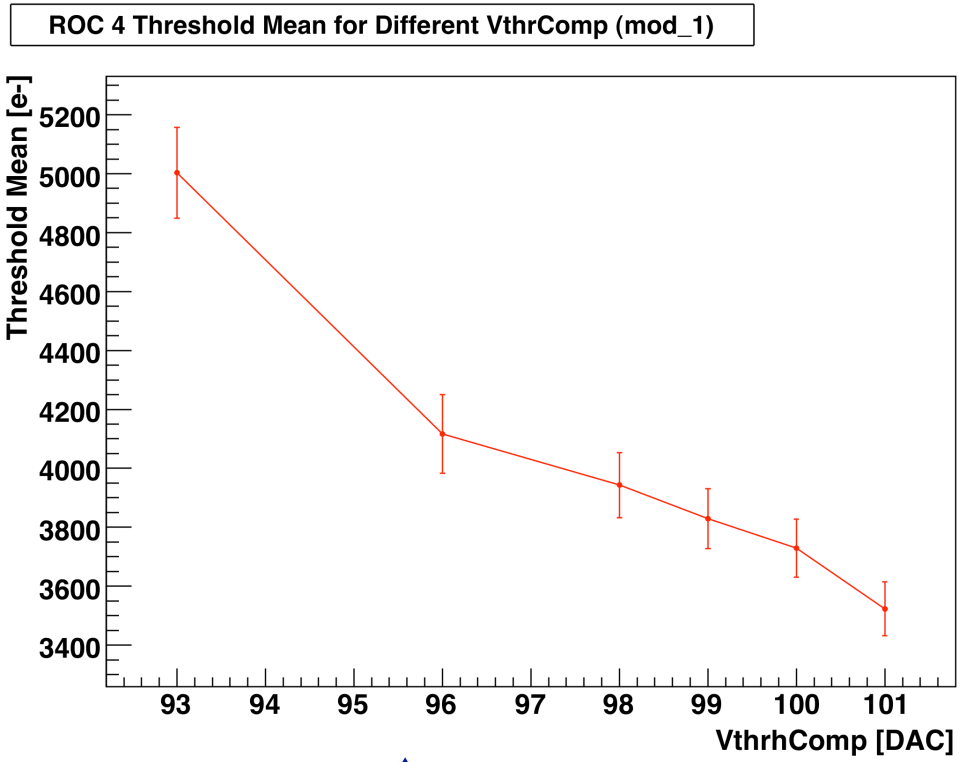


Threshold distribution after adding 8 DAC units from the Vcal 60 tirmming value for ROC 4

Noise distribution after adding 8 DAC units after trimming at Vcal 60 for ROC 4

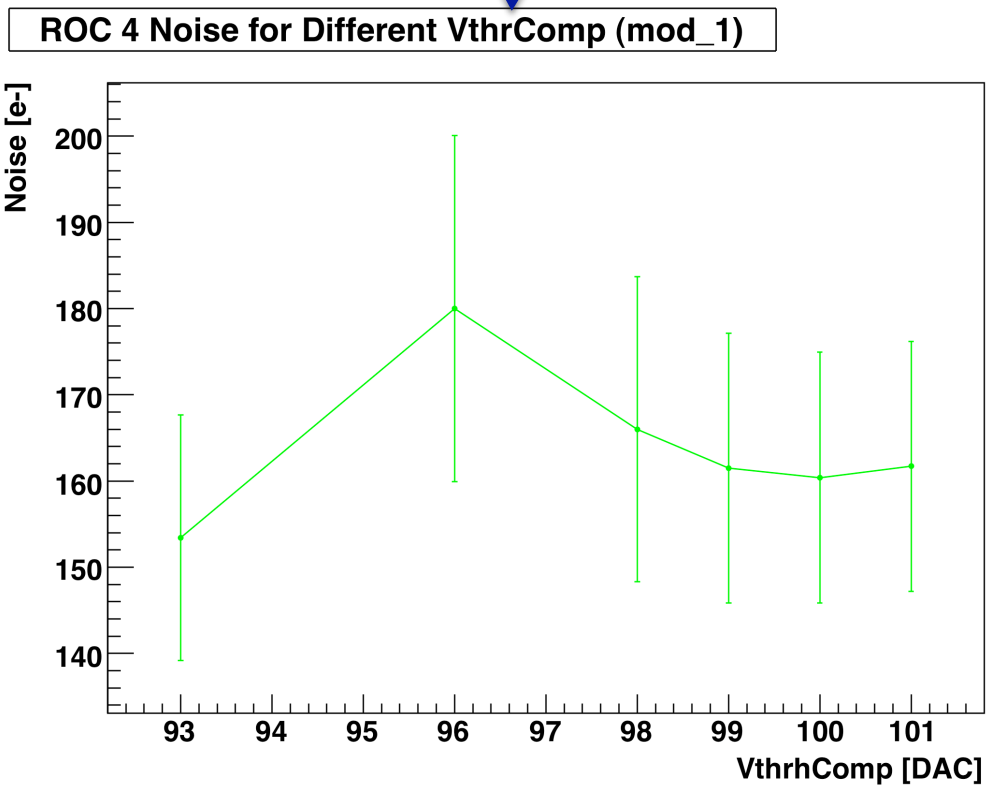


Changes in Threshold and Noise

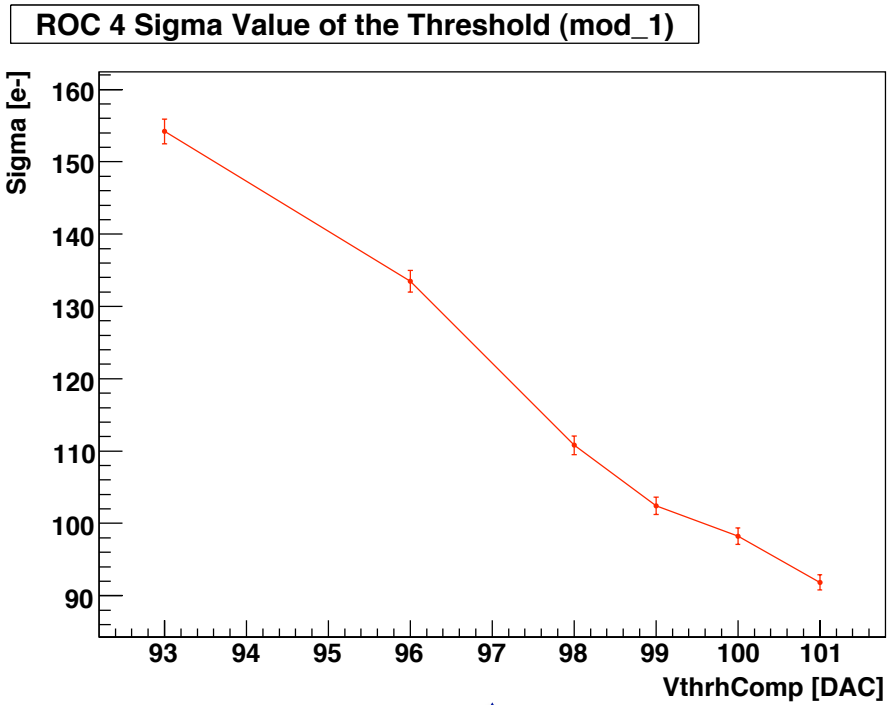


Threshold changes for different VthrComp values

Noise changes for different VthrComp values



Changes in Threshold Sigma and Noise Sigma



Threshold sigma changes for different VthrComp values

Noise sigma changes for different VthrComp values