Motor Systems and Neutron Detection

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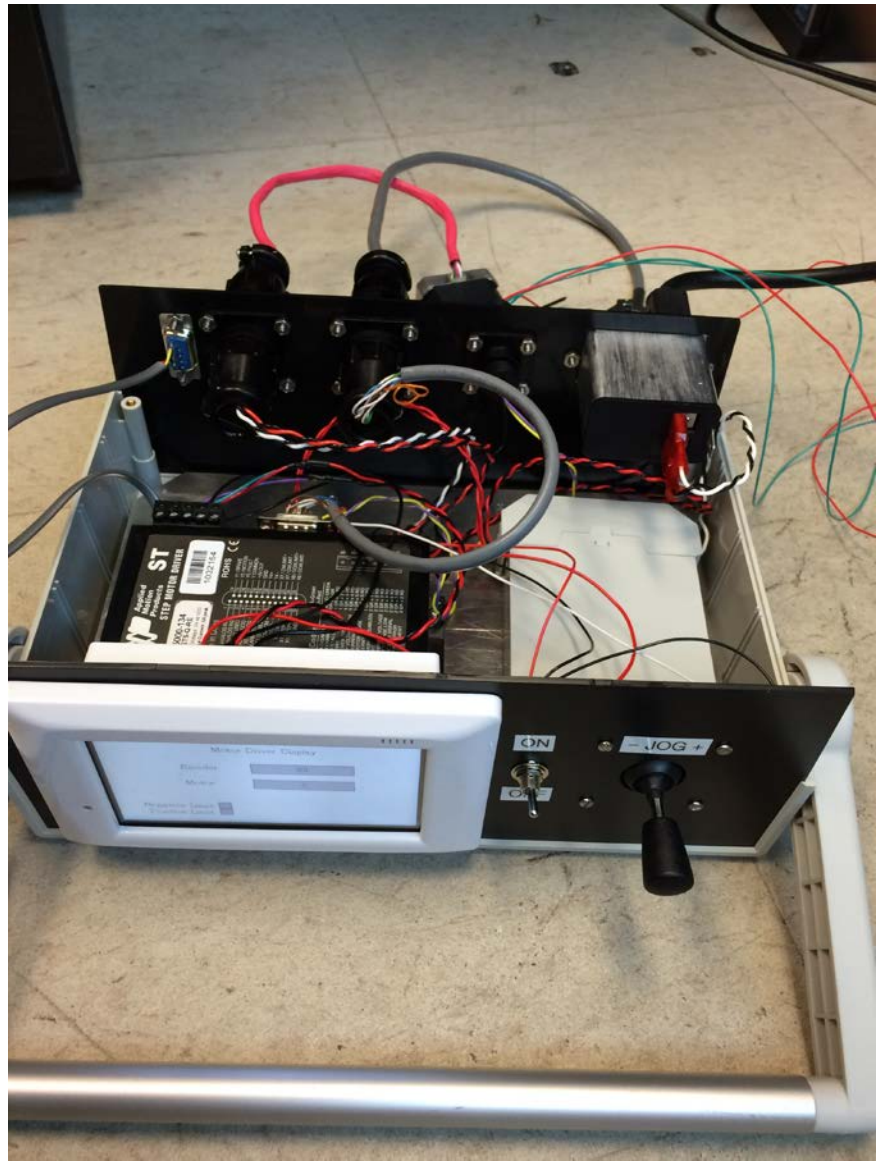
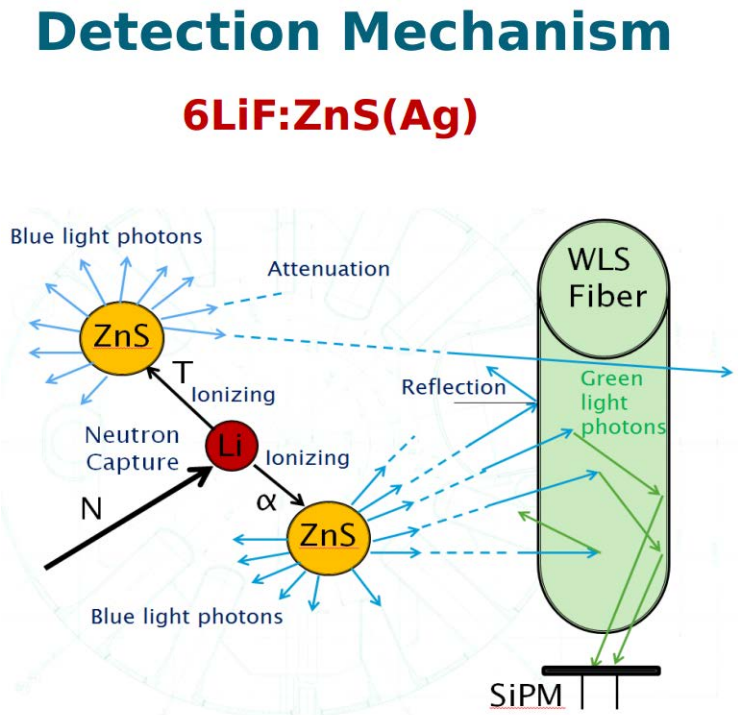
Stepper Motor Control System

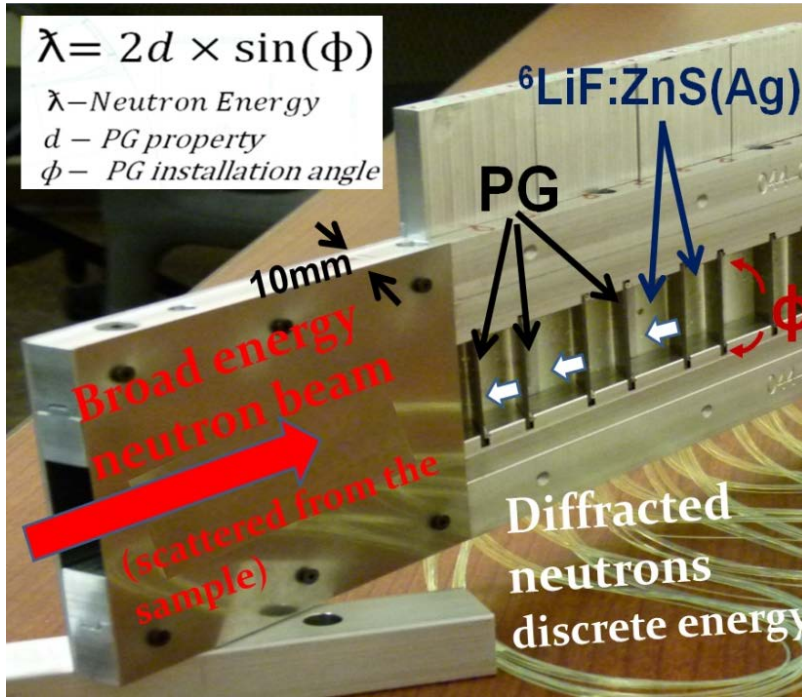
- Components
  - Power Supply
  - Motor
  - Encoder
  - Limits
  - Motor Driver
  - HMI
    - Modbus



CANDOR Neutron Detector

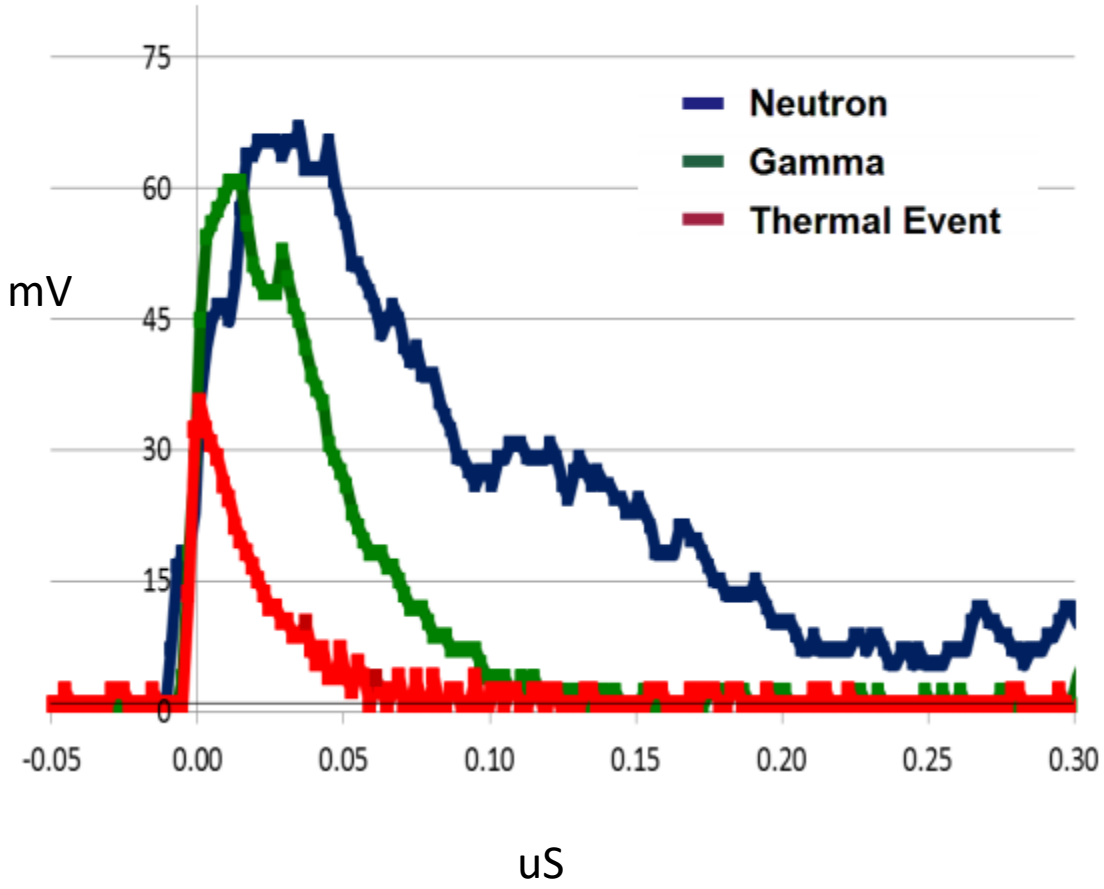
- Helium 3
- Different energies
- Components
  - ZnS/Li-6 Compound
  - WLS Fiber
  - SiPM
  - Preamp
  - Discriminator





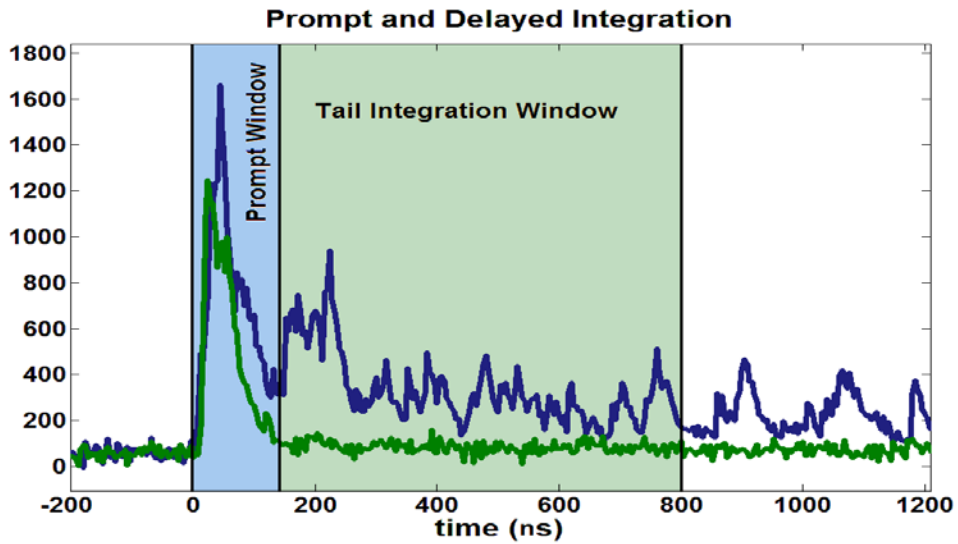
Discrimination

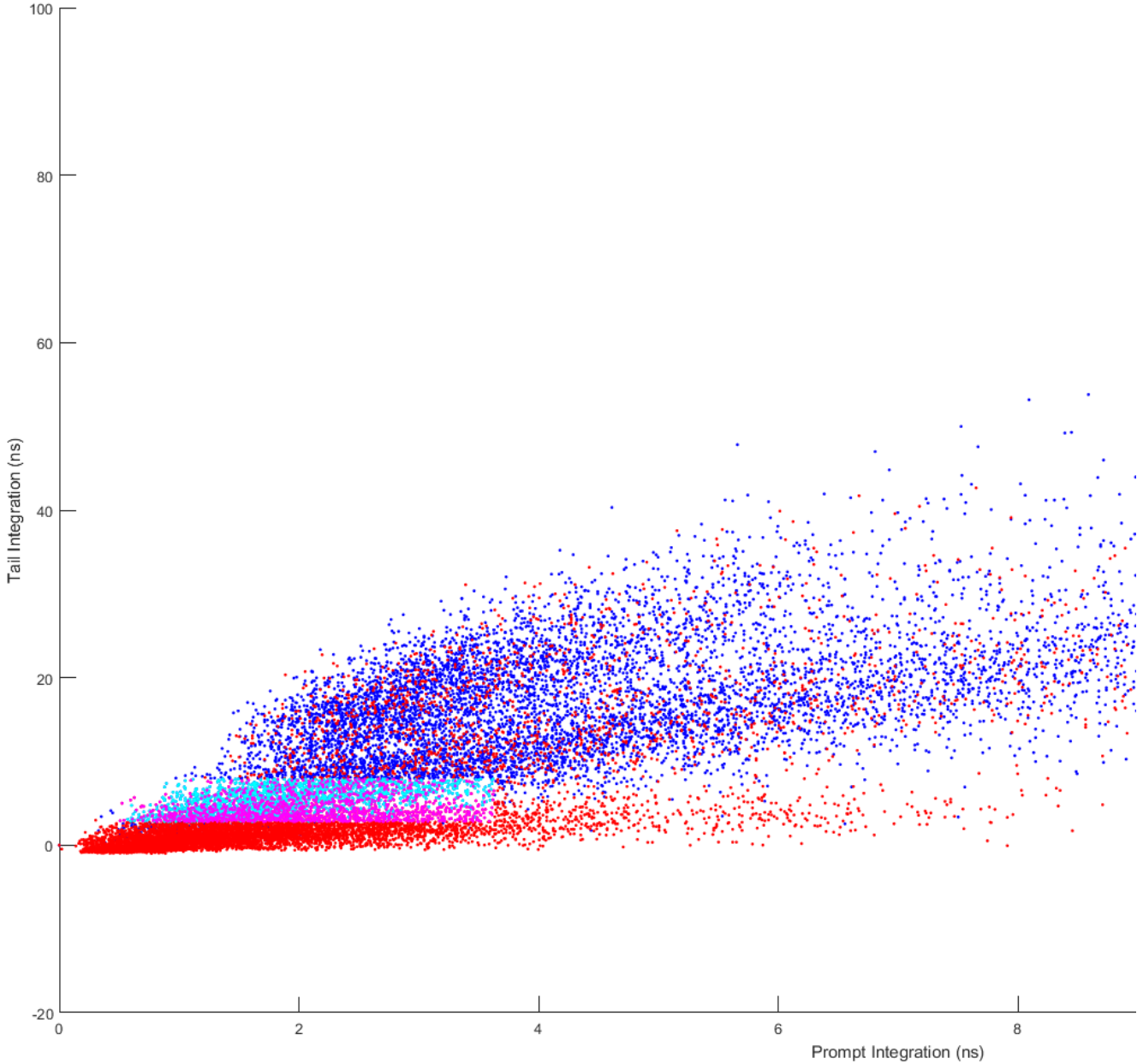
- Neutron vs Gamma vs Thermal Event



ROI

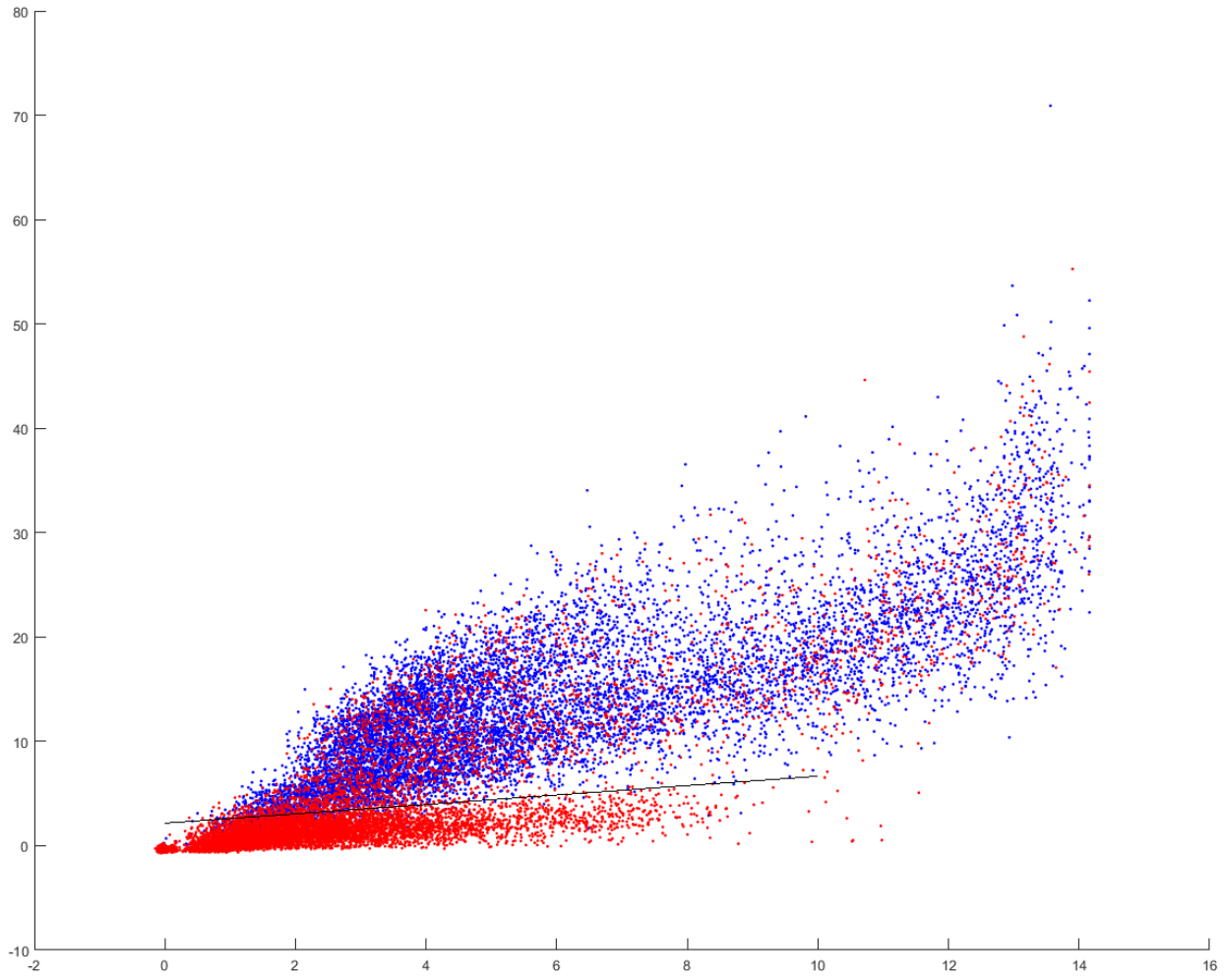
- Prompt window
- Tail window
- Weighting





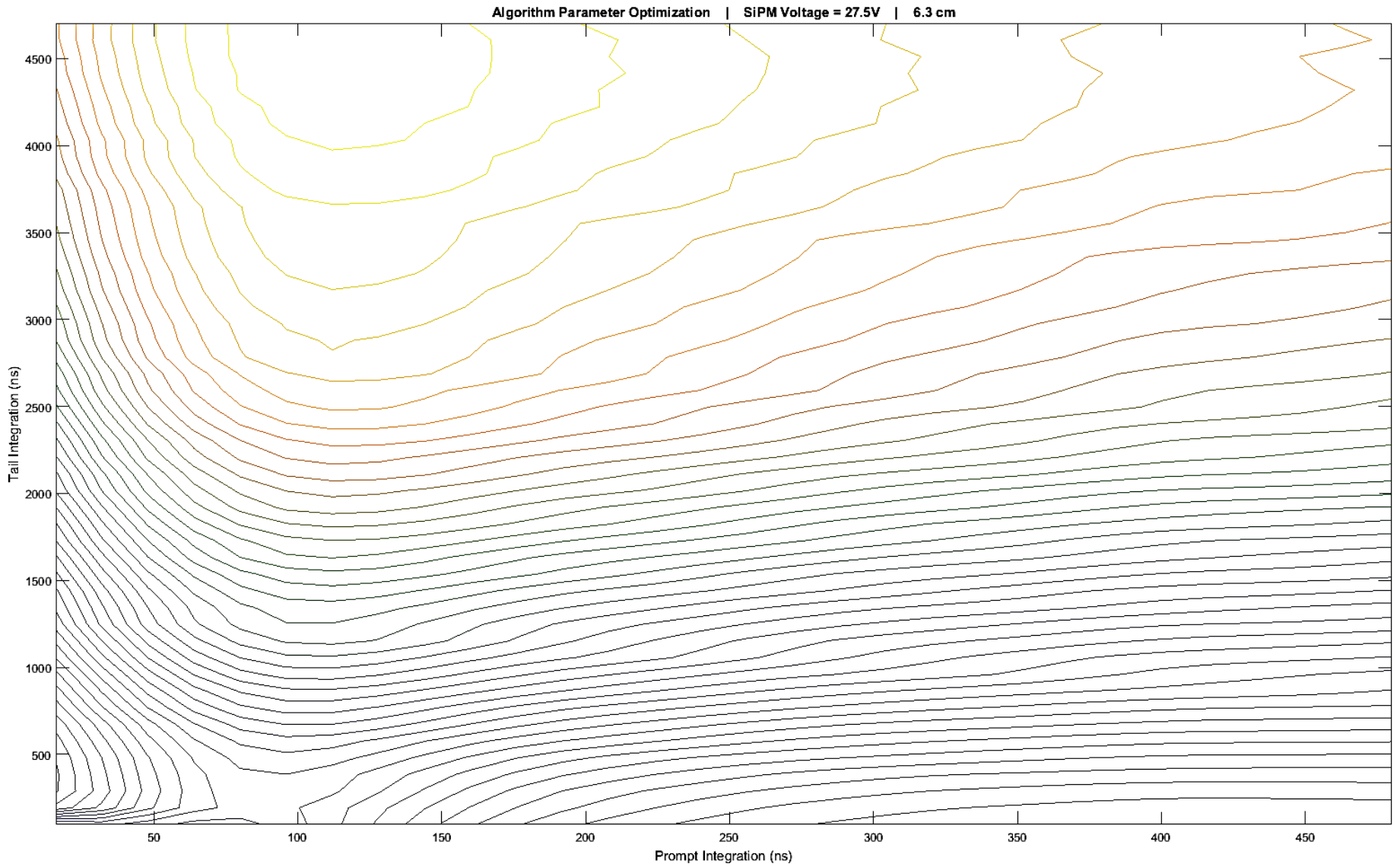
Threshold Study

- SVM
- Noise below threshold



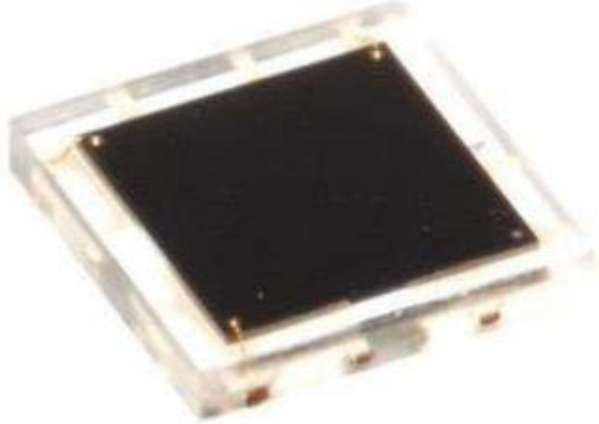
Integration Optimization

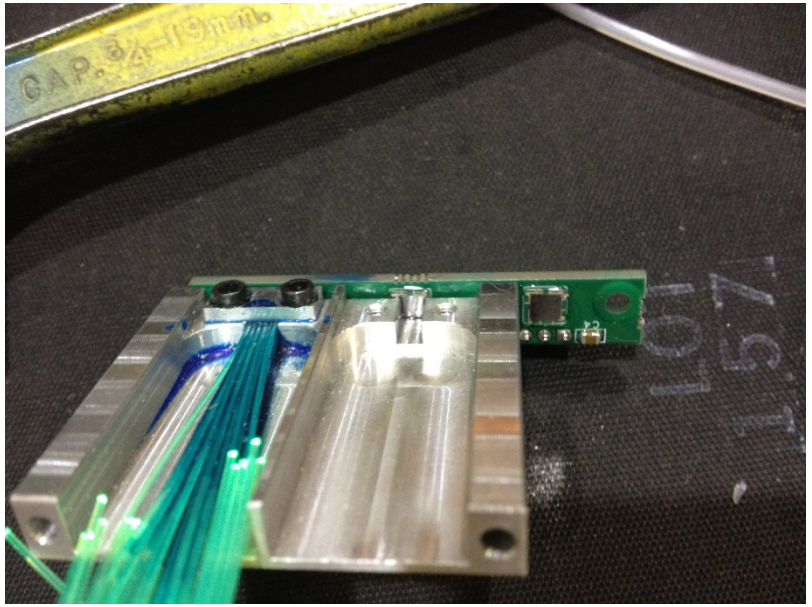
- Plot Tail vs Prompt

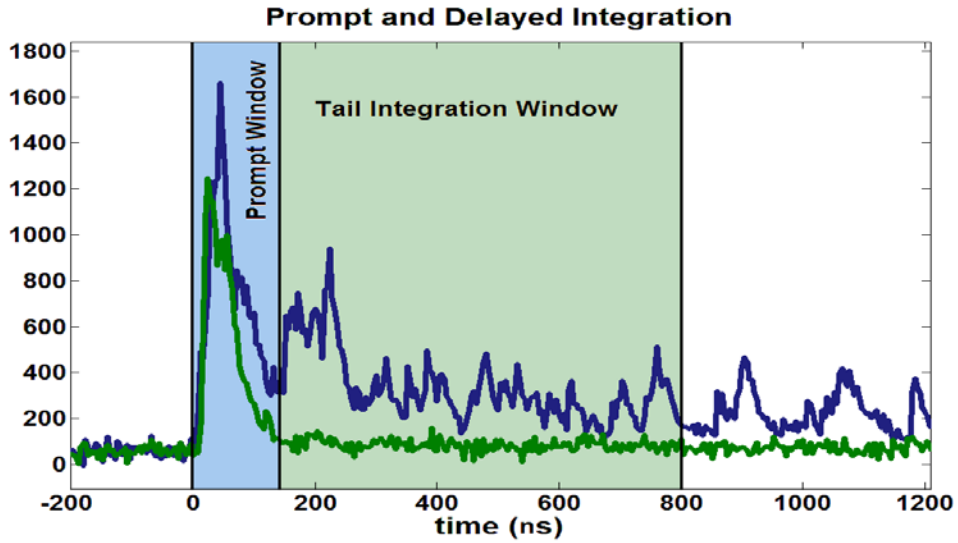


SiPM Overvoltage

- Increase gain
  - Tail signal increase
- Cleaner than Preamp

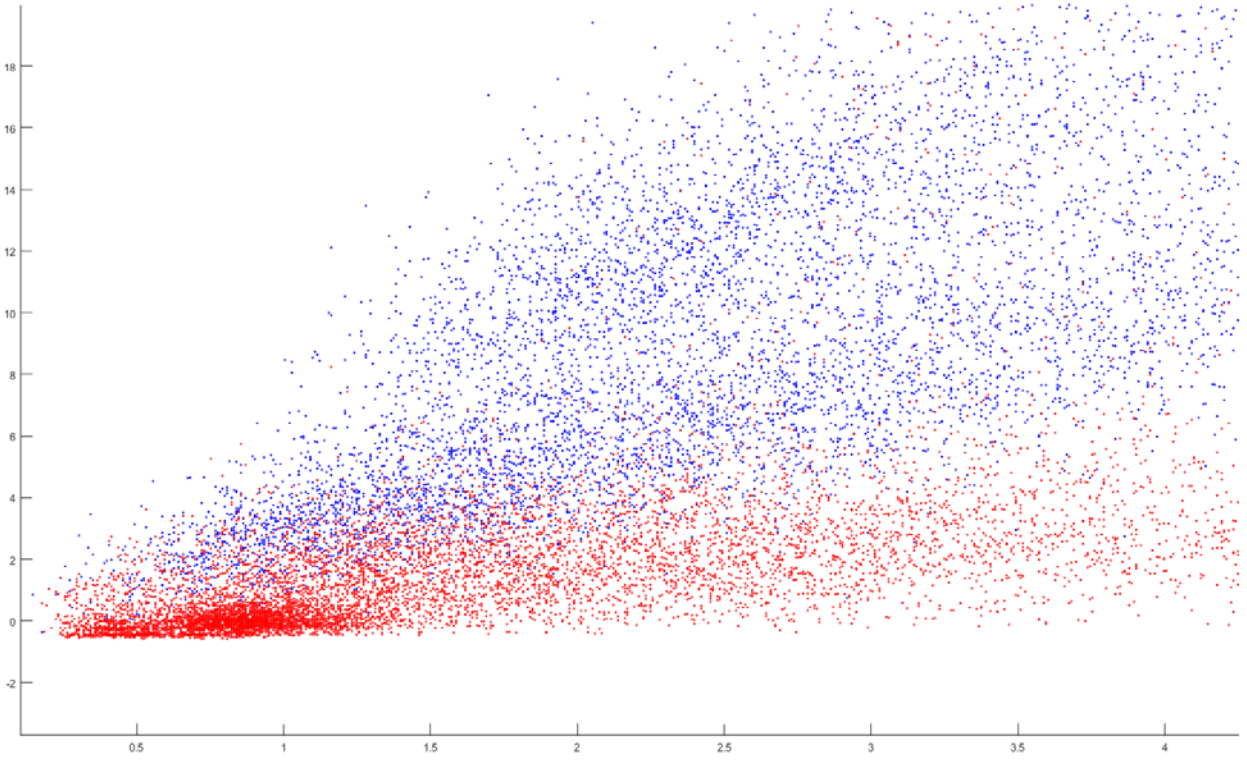




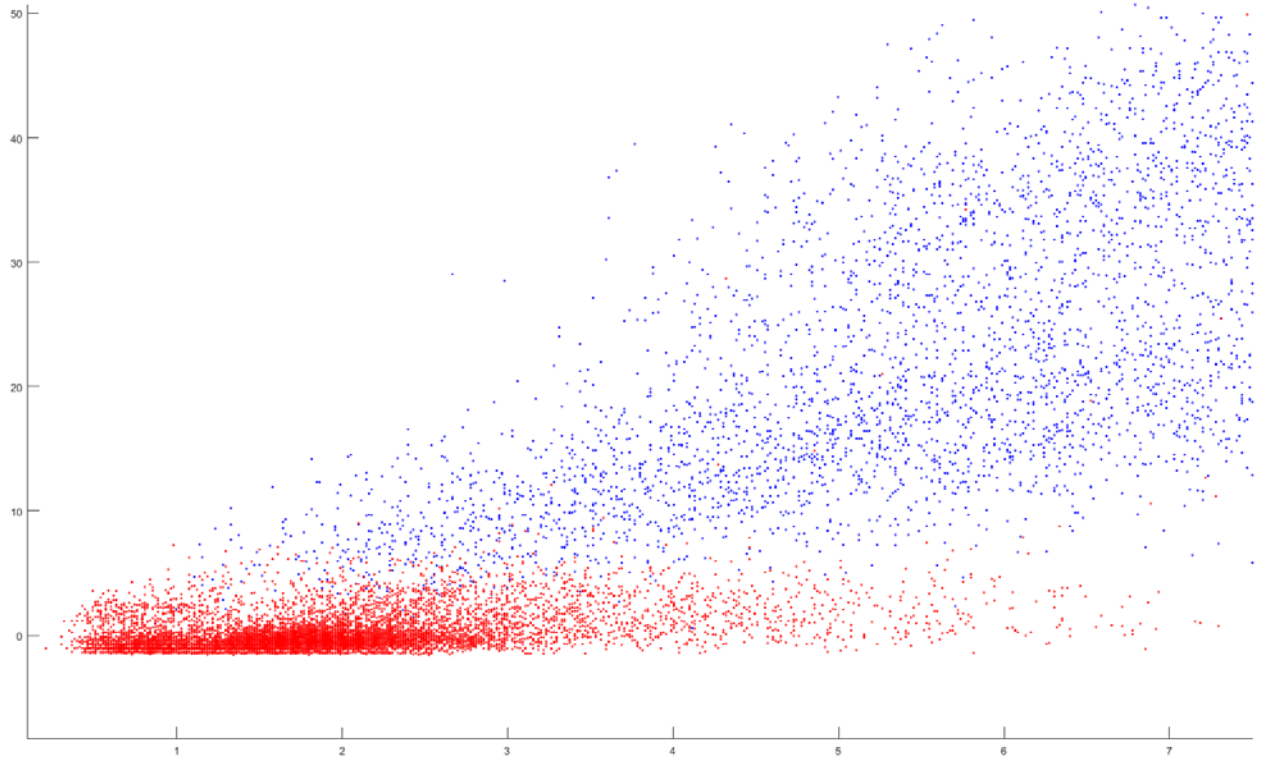


Conclusions

- SiPM Overvoltage study successful



27V



29.5V

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