

Beamtime Recap and First Results

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@HADES-RICH Meeting
GSI Darmstadt 2017-11-21

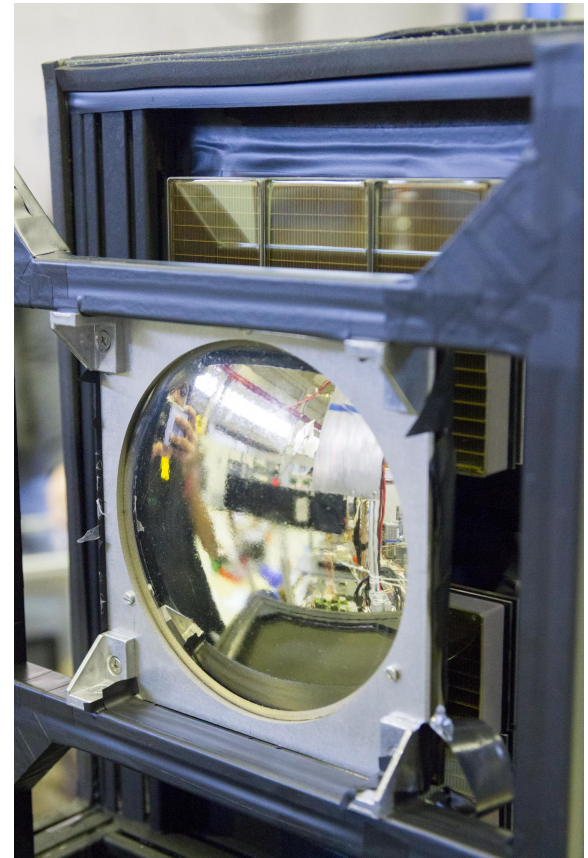
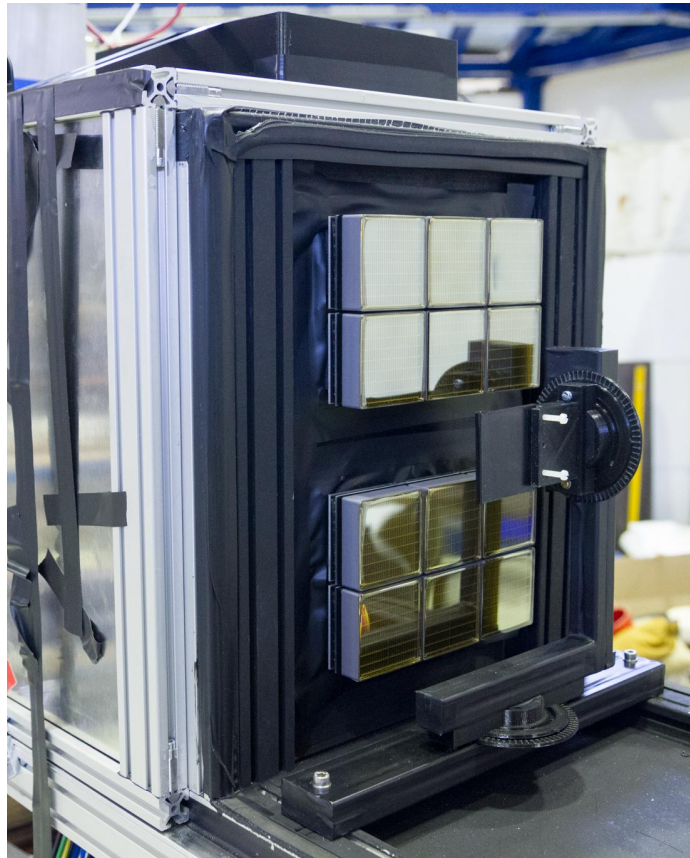
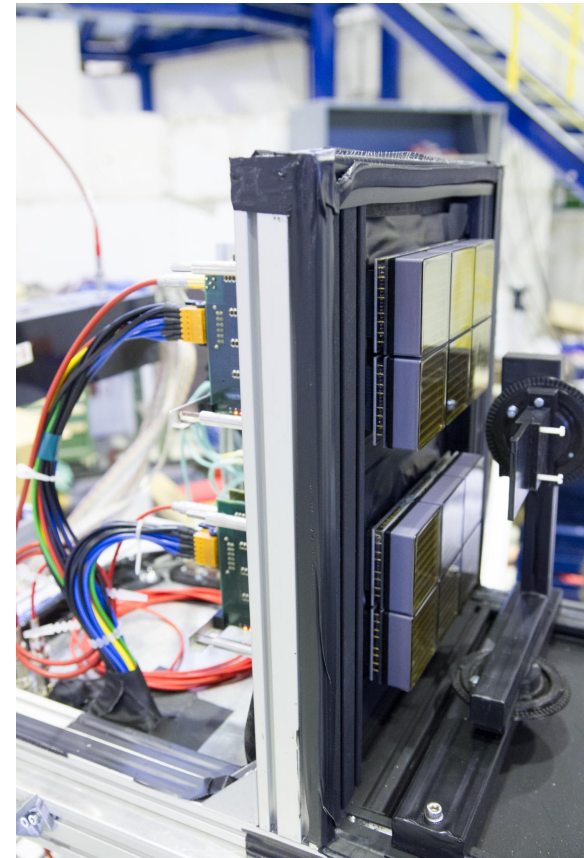


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Recap



The Measurement Setup

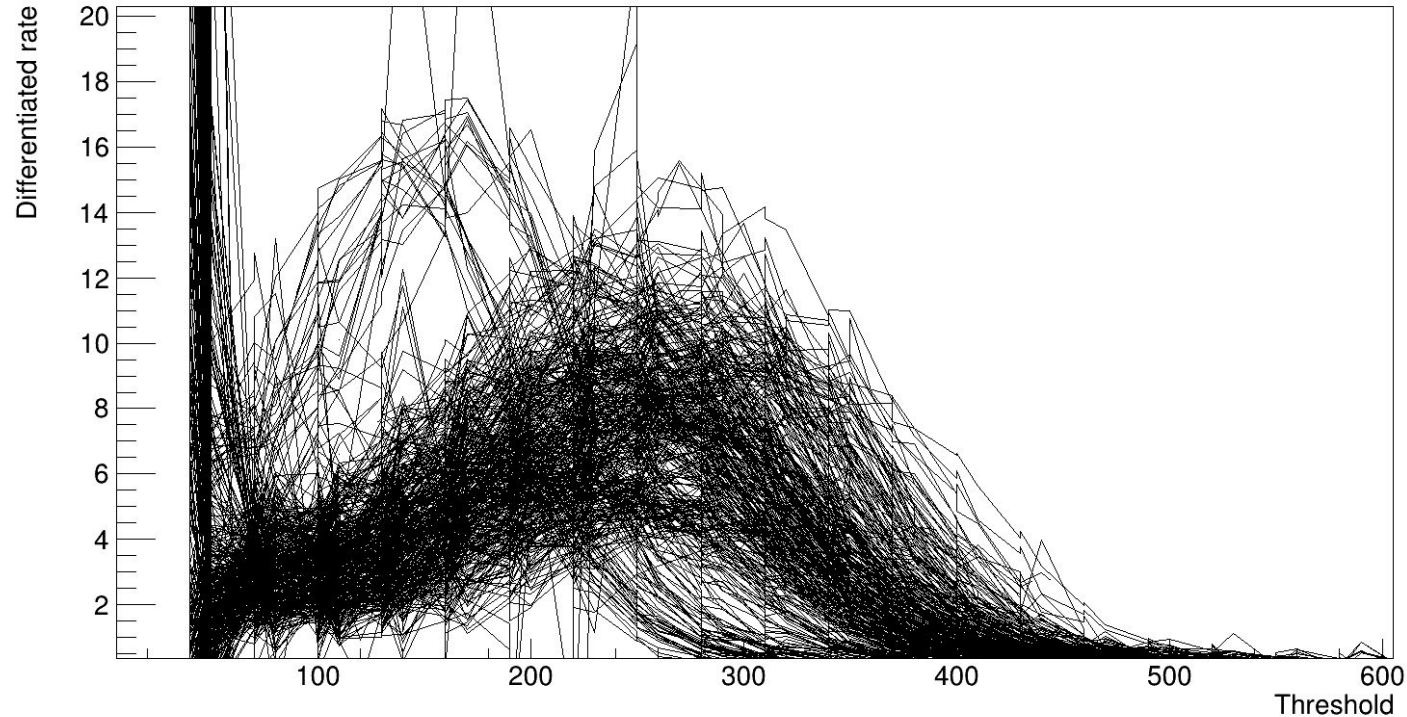


Measurements done

- Thresholdscan with lense setup high rate, parallel beam and
 - Small patch (3.1 cm)
 - Larger patch (3.9 cm) also with lower HV
- First measurements with the new FPGA design with Cherenkov and laser photons
- Thresholdscan with lense setup high rate and
 - Focussed beam
 - Larger Patch (5 cm) and parallel beam
- Thresholdscan with proximity focussing quartz glass using a focussed beam, low energy and rate and
 - New TDC design with longer stretcher
 - Smaller variations in setup
- Thresholdscan with proximity focussing quartz glass using a focussed beam, low energy and rate and **!Correct threshold!**
 - Thresholdscan for different voltages with laser and Cherenkov photons
 - Thresholdscan for WLS-coated / some MAPMTs coated/ no MAPMTs coated using Cherenkov photons
 - Thresholdscans for uncoated MAPMTs using photons from Laser
- Inbetween Thresholdscans using scaler

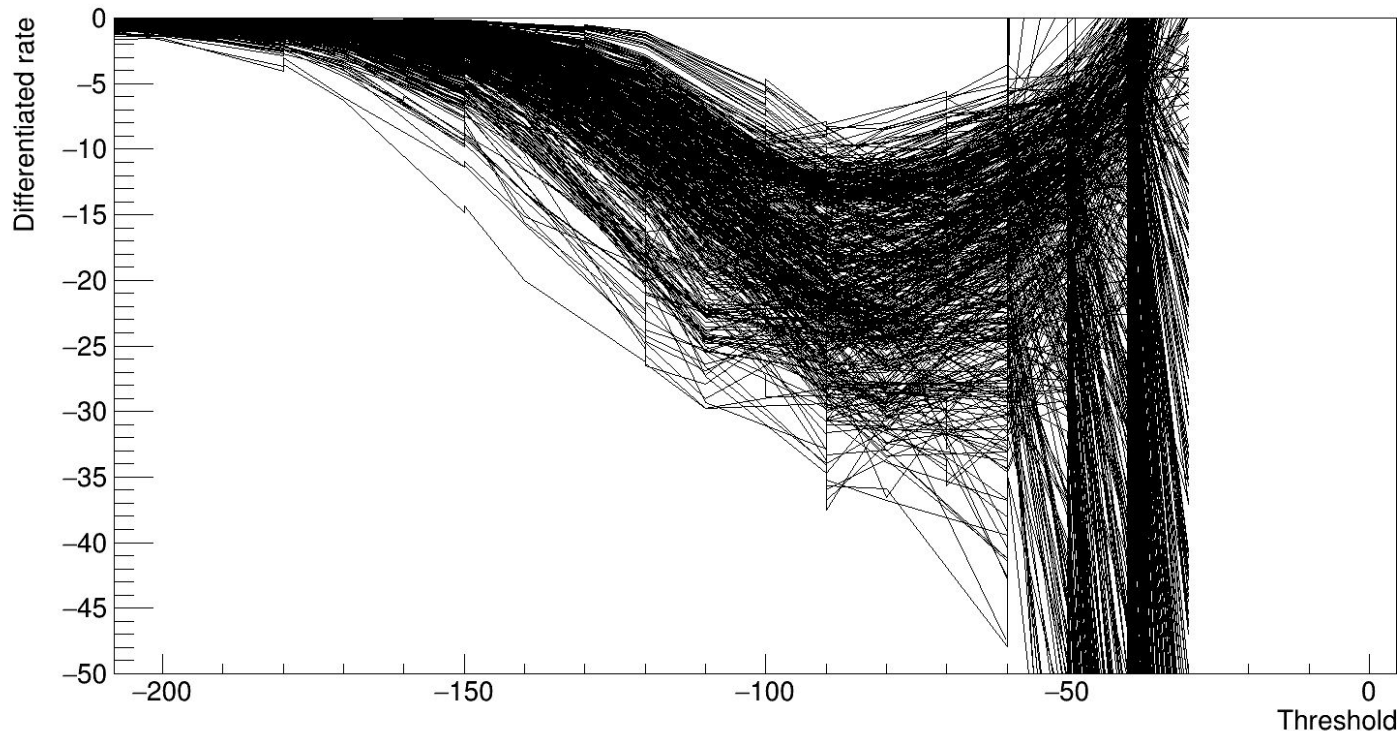
Realization of incorrectly set threshold: Explanation (I)

Differentiated rate graph over baseline of all dirich



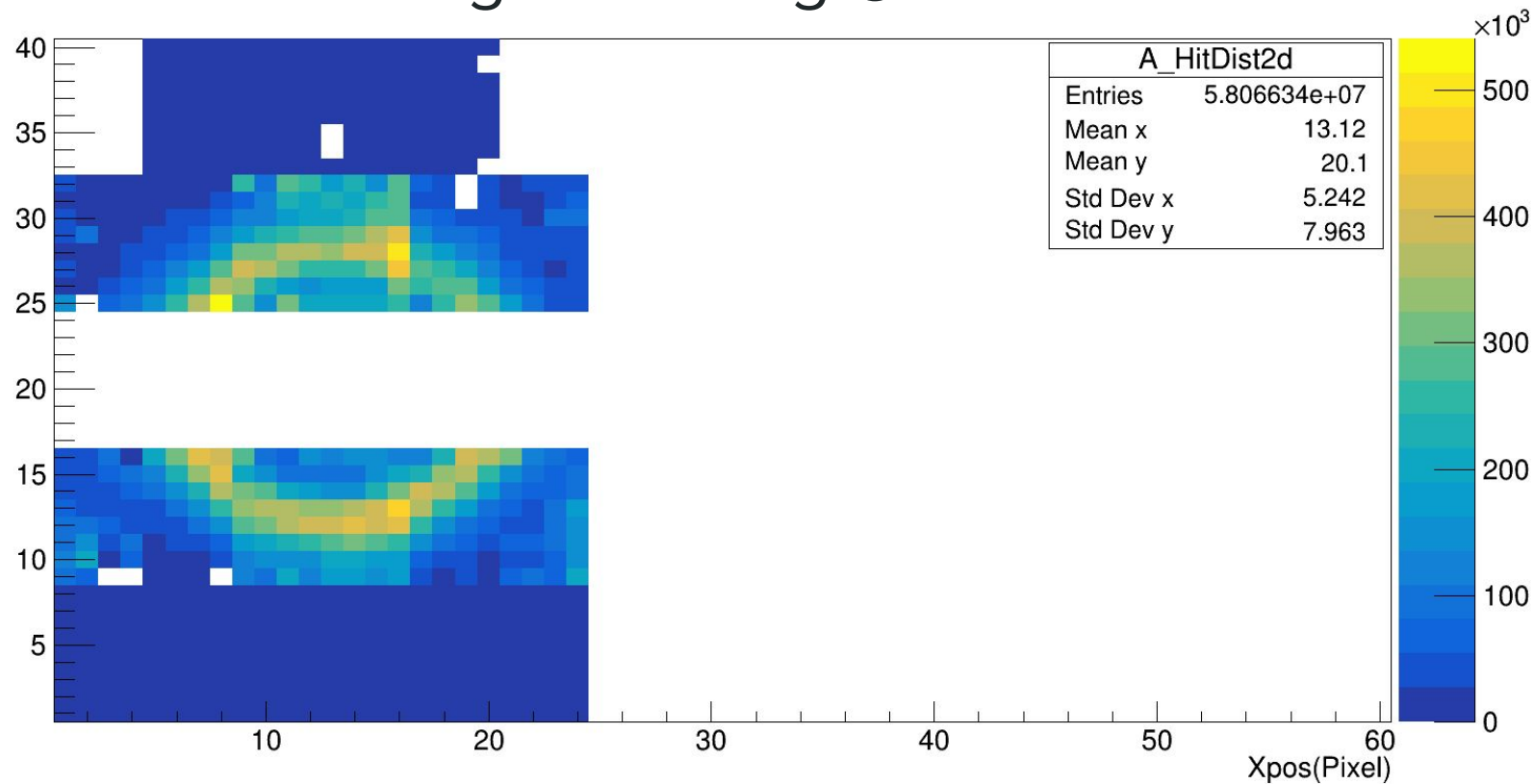
Realization of incorrectly set threshold: Explanation (II)

Differentiated rate graph over baseline of all dirich



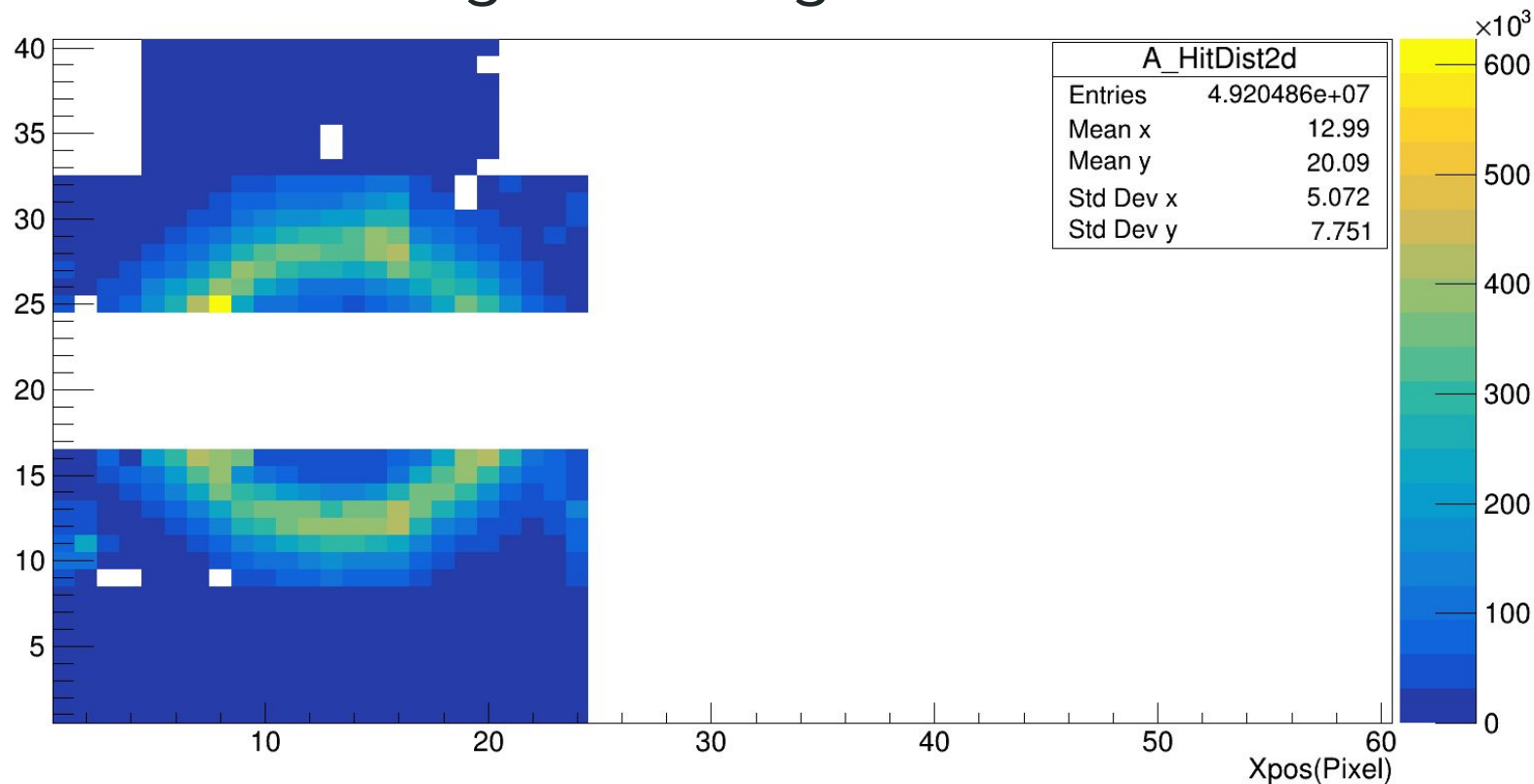
Incorrectly Set Threshold:

Indicators - Integrated Ring @ -30mV Threshold



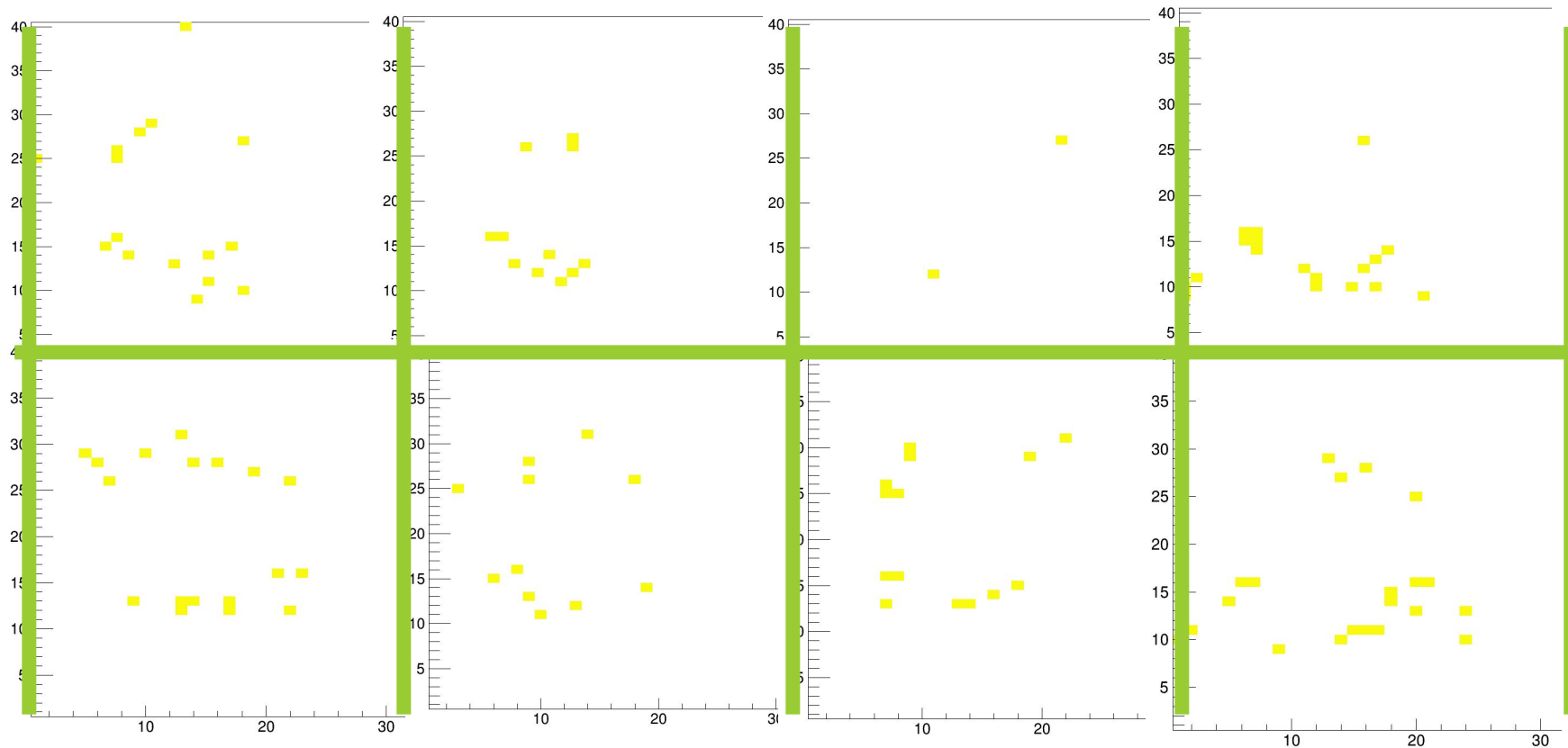
Incorrectly Set Threshold:

Indicators - Integrated Ring @ 30mV Threshold

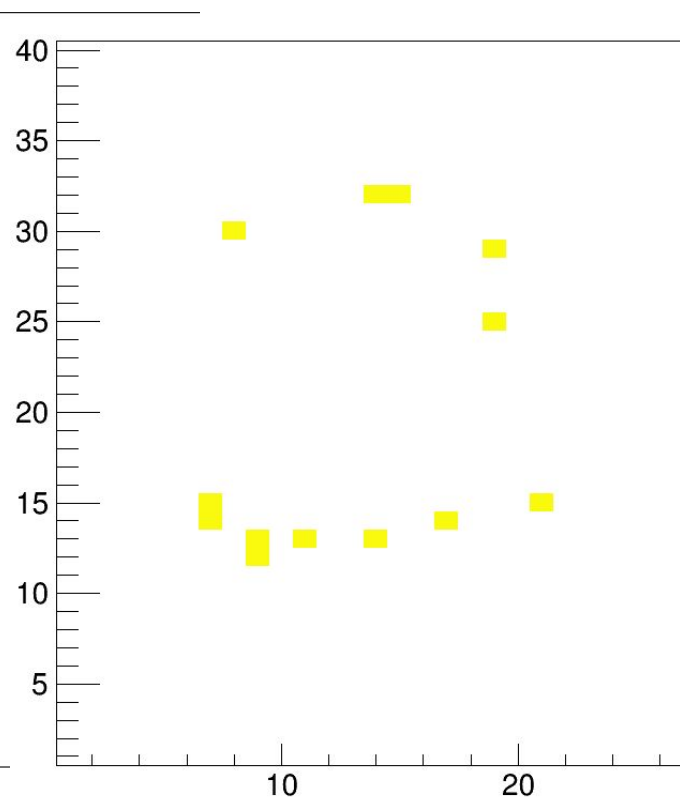
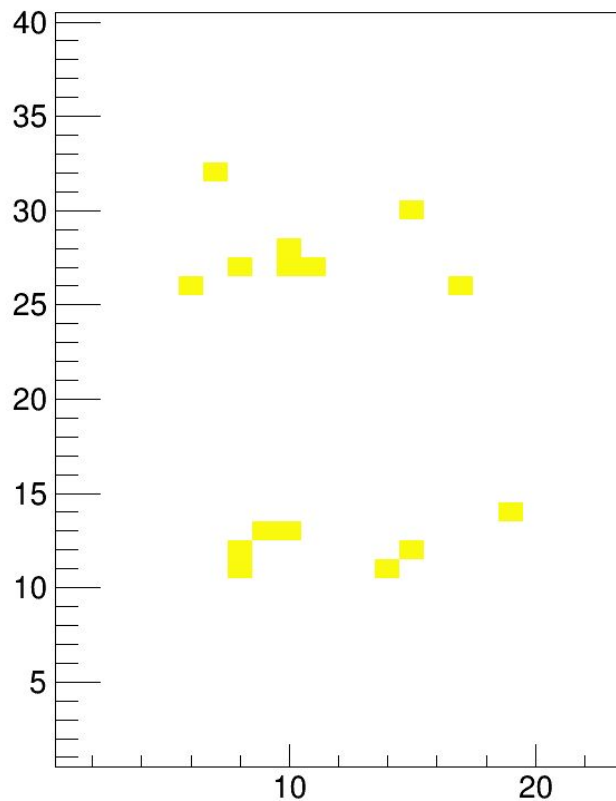
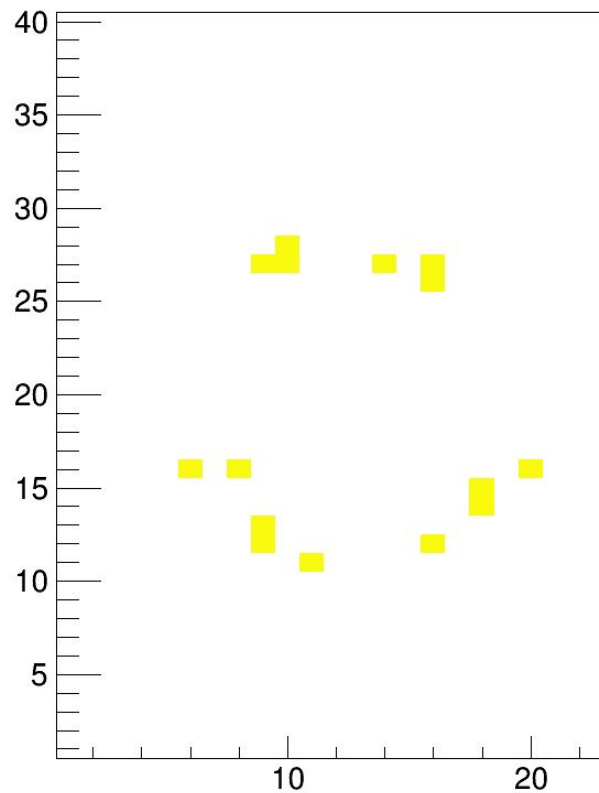


Incorrectly Set Threshold:

Indicators - Single Event Displays @ -30mV

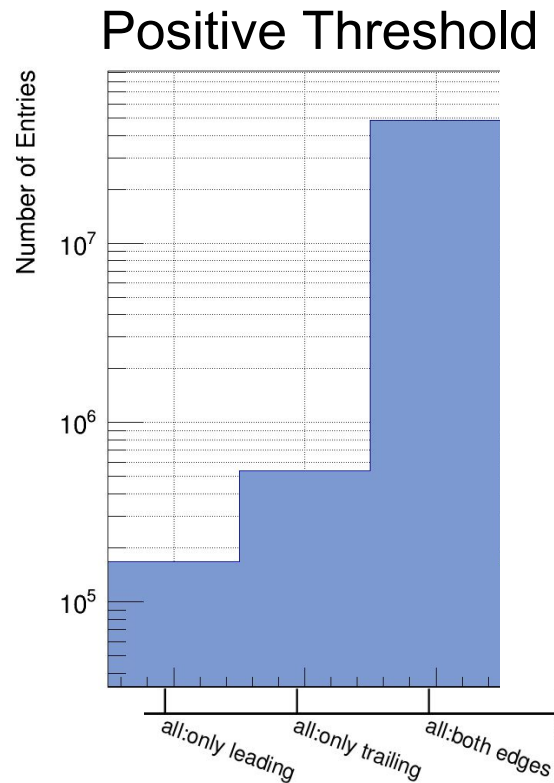
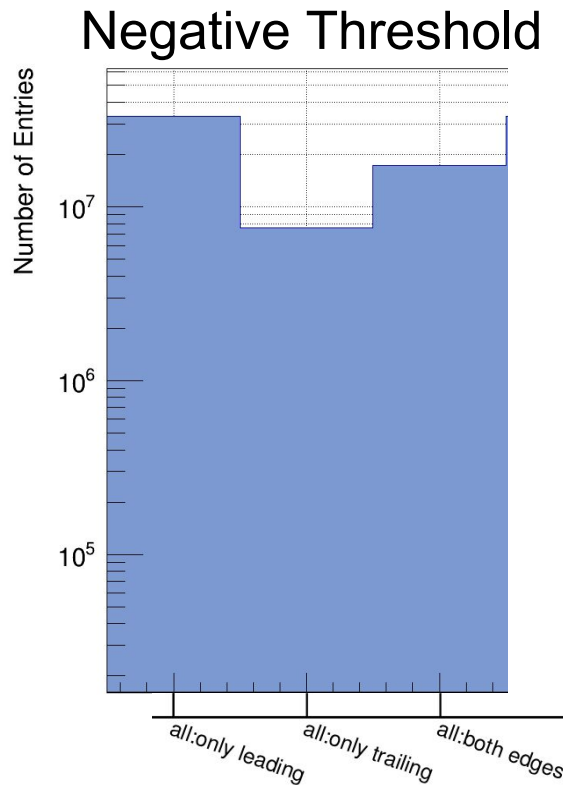


Incorrectly Set Threshold: Indicators - Single Event Displays @ 30mV



Incorrectly set threshold:

Indicators - Number of Incomplete Events

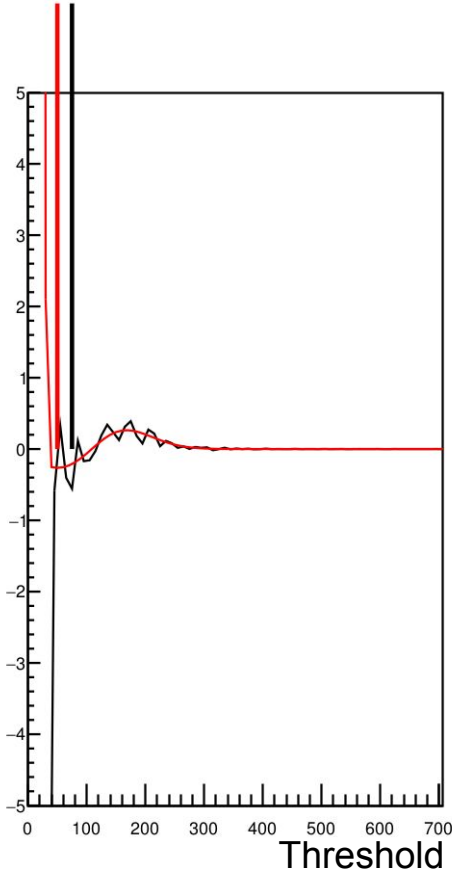
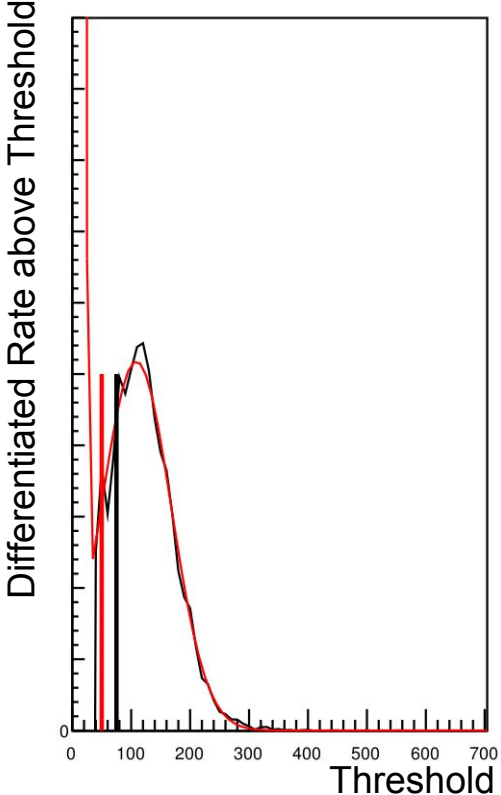
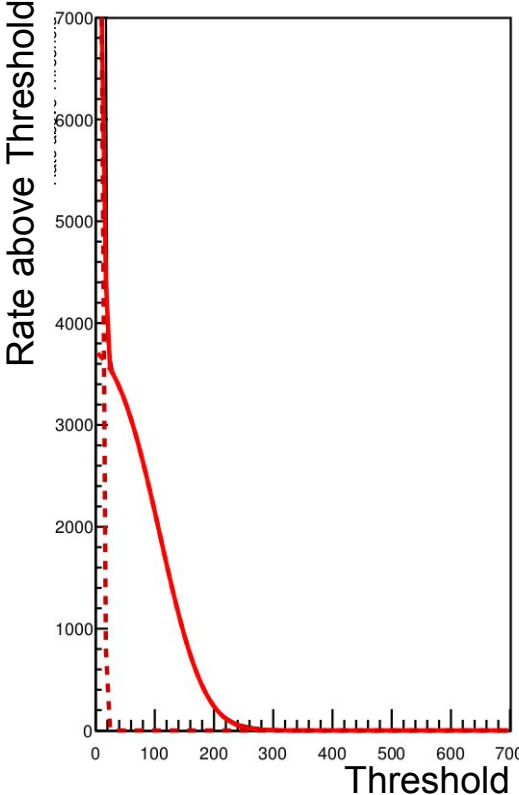


First Results



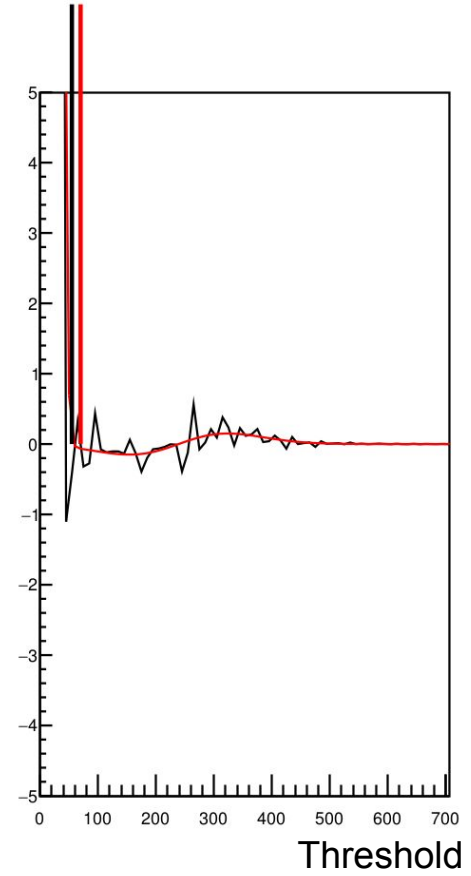
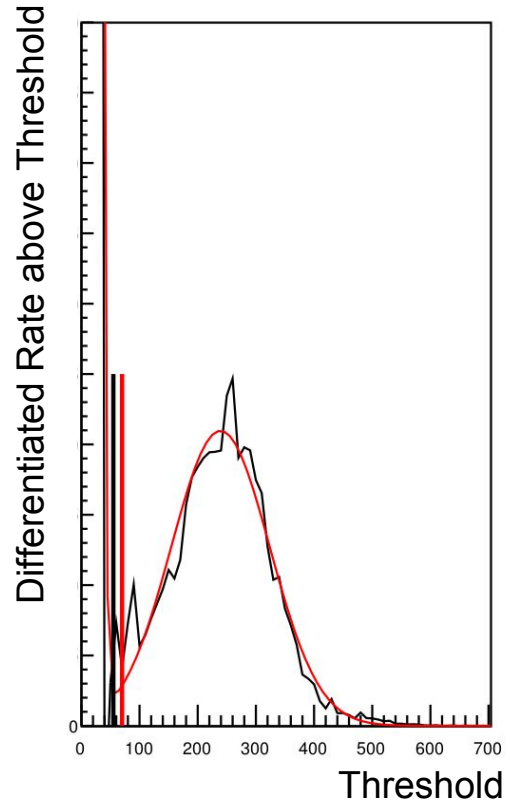
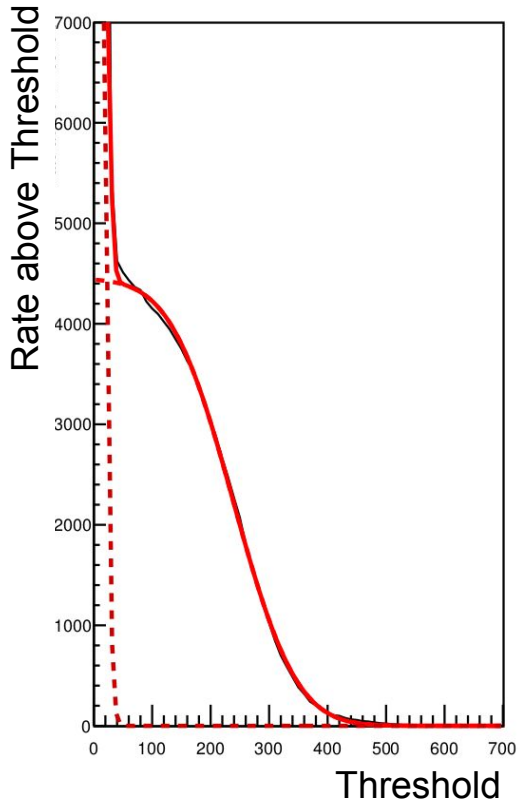
Derivation of Good Threshold @ - 900V

0x1240 22



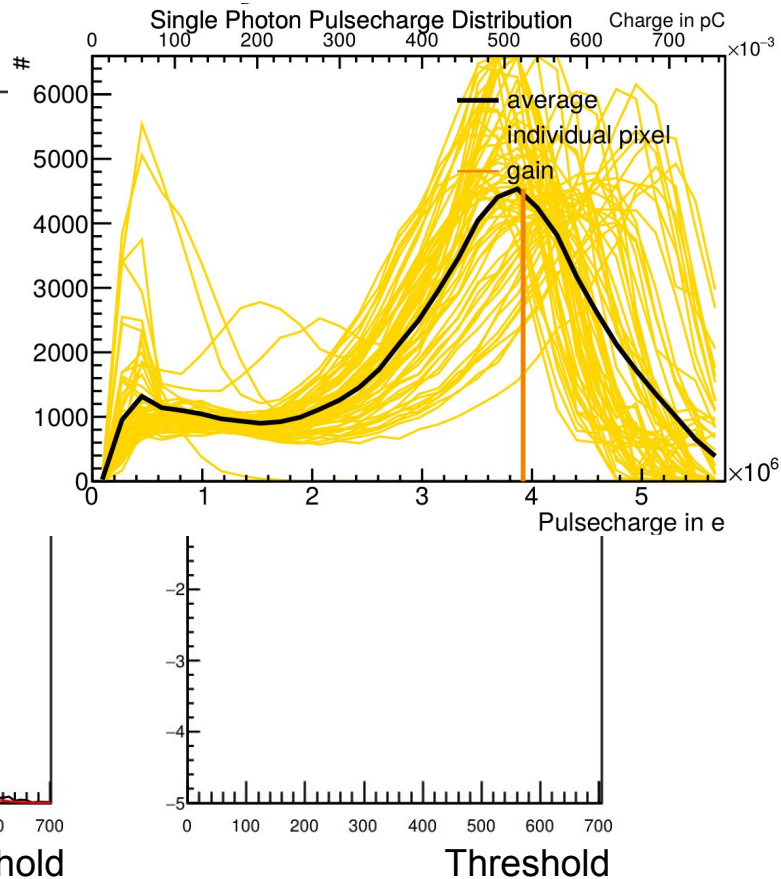
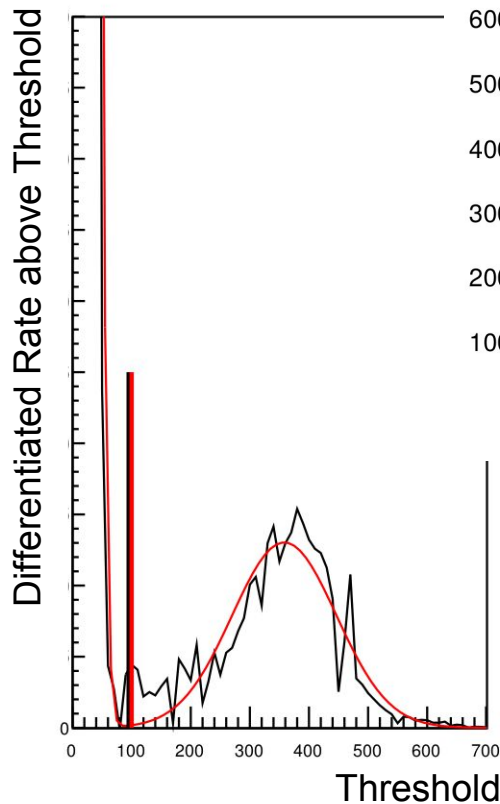
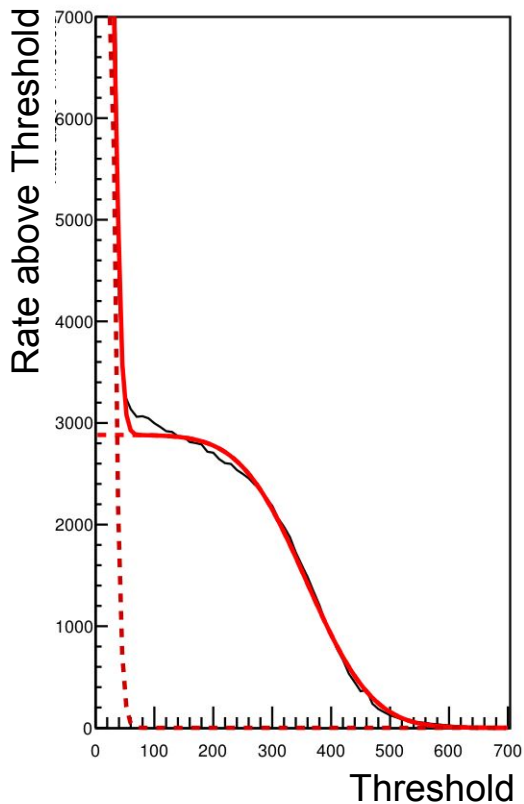
Derivation of Good Threshold @ - 10000V

0x1237 9

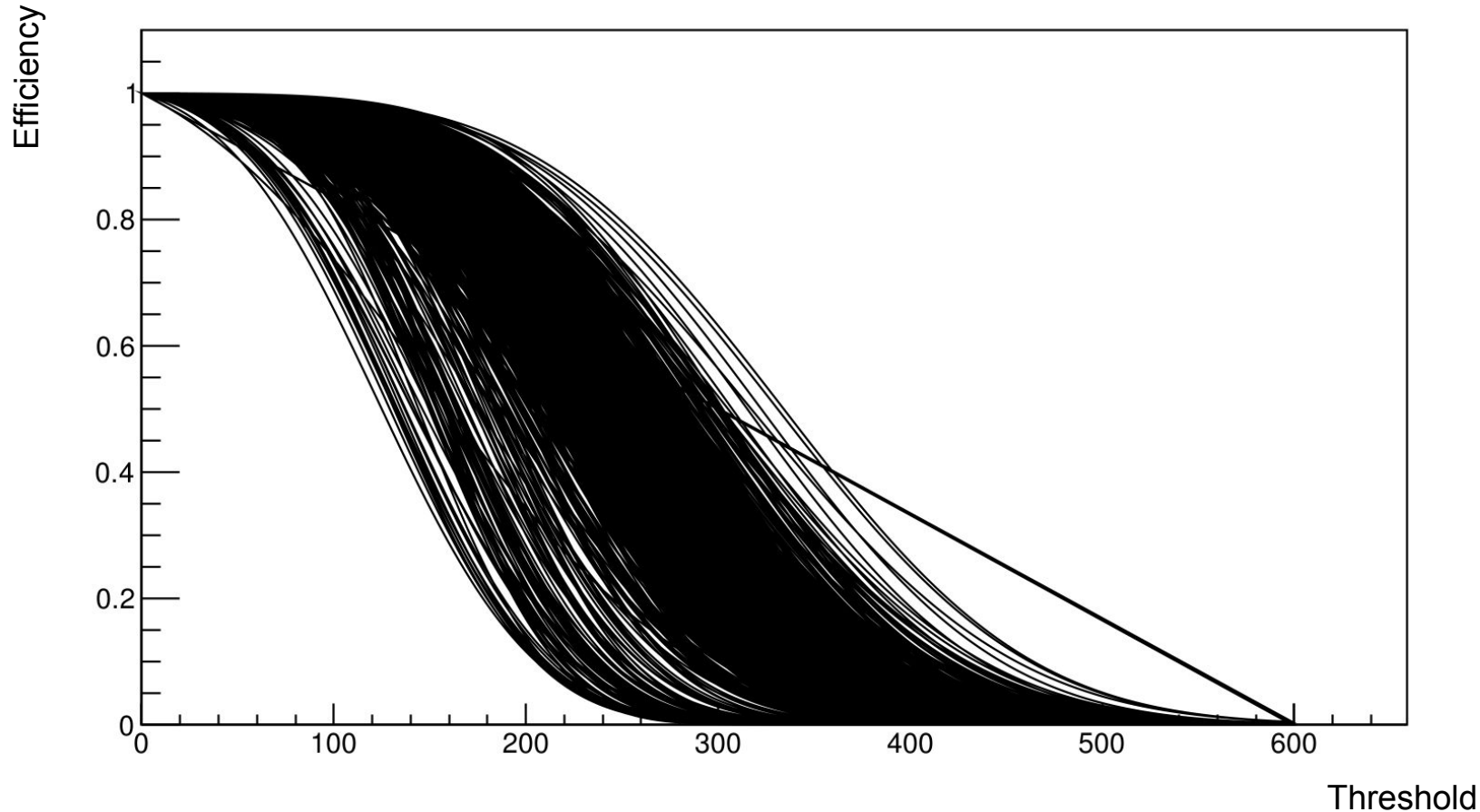


Derivation of Good Threshold @ - 1100V

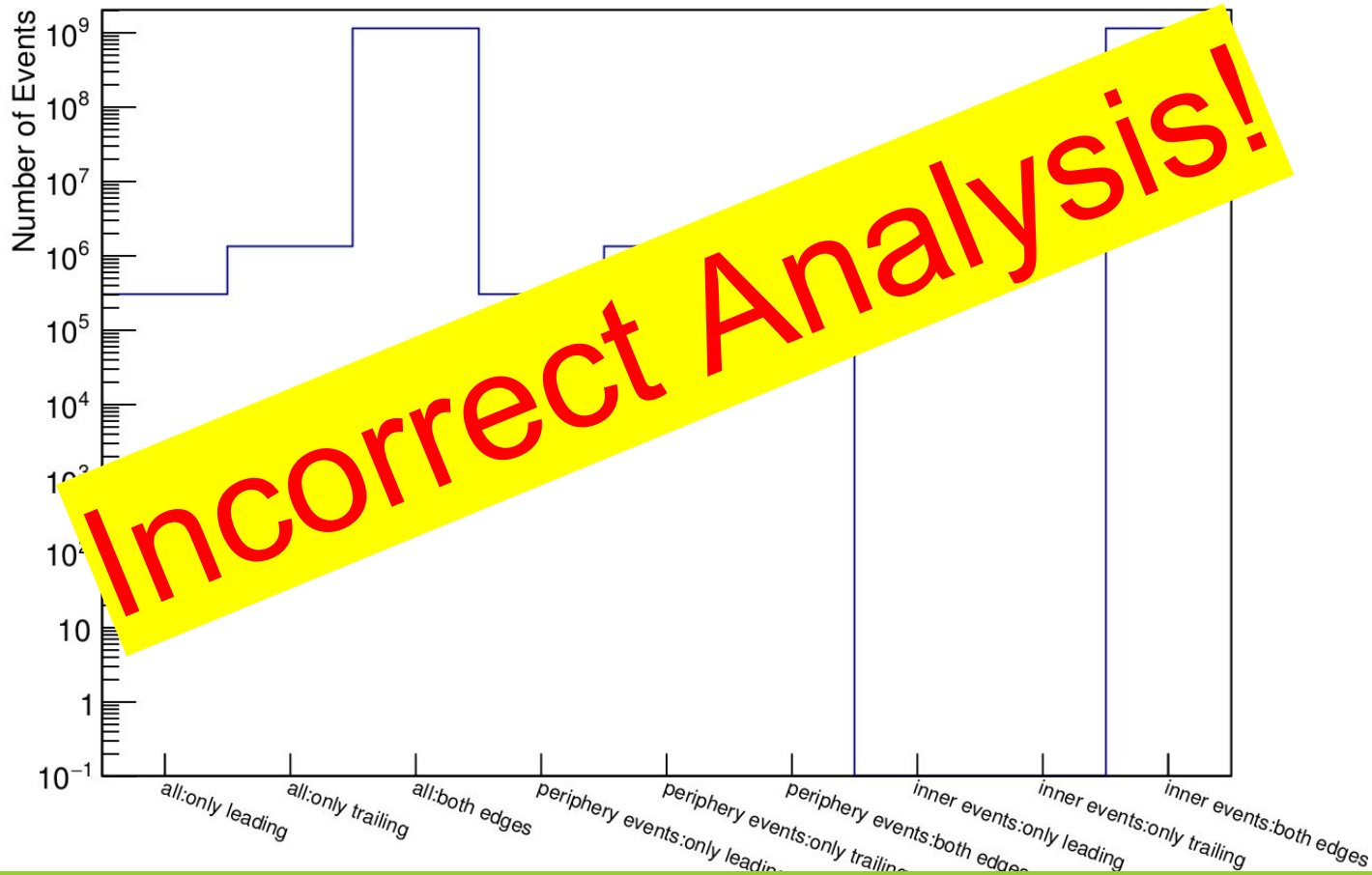
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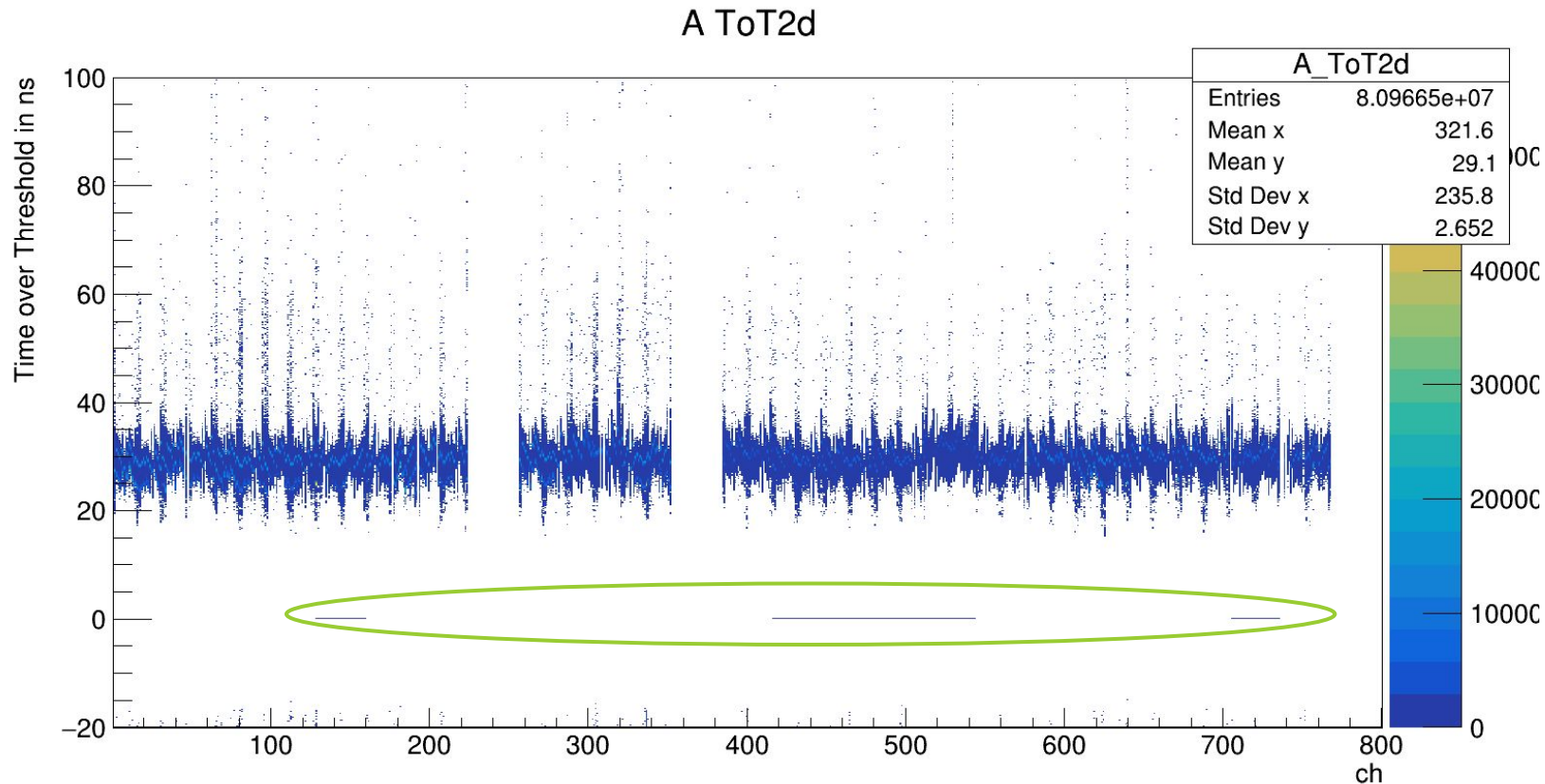
Efficiency of all Channels for Different Thr. @ -1000V



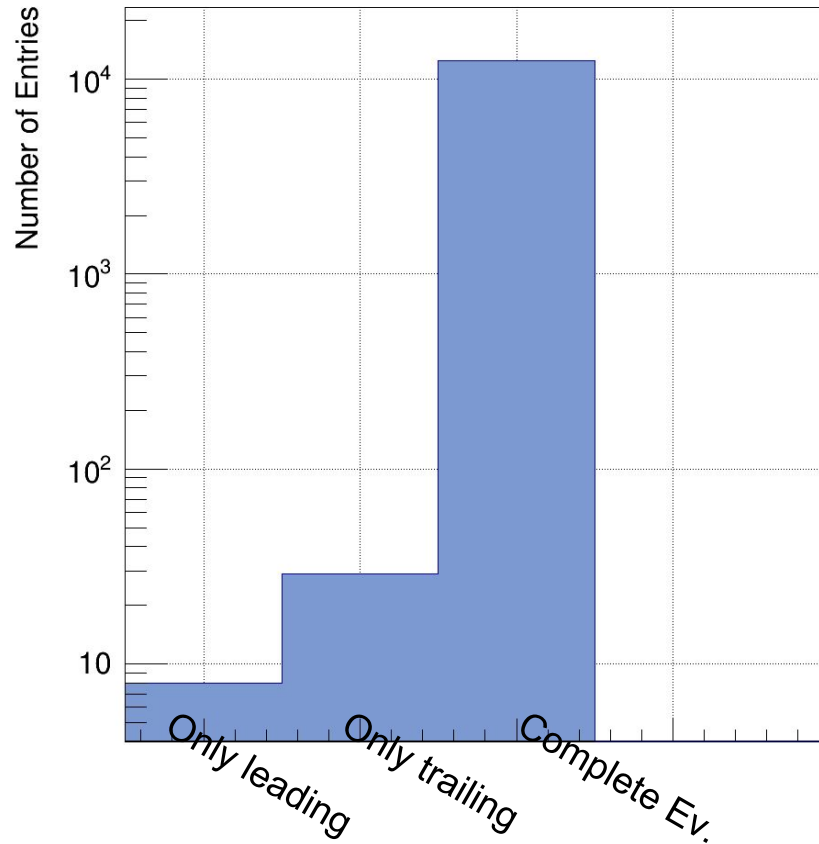
Incomplete Events



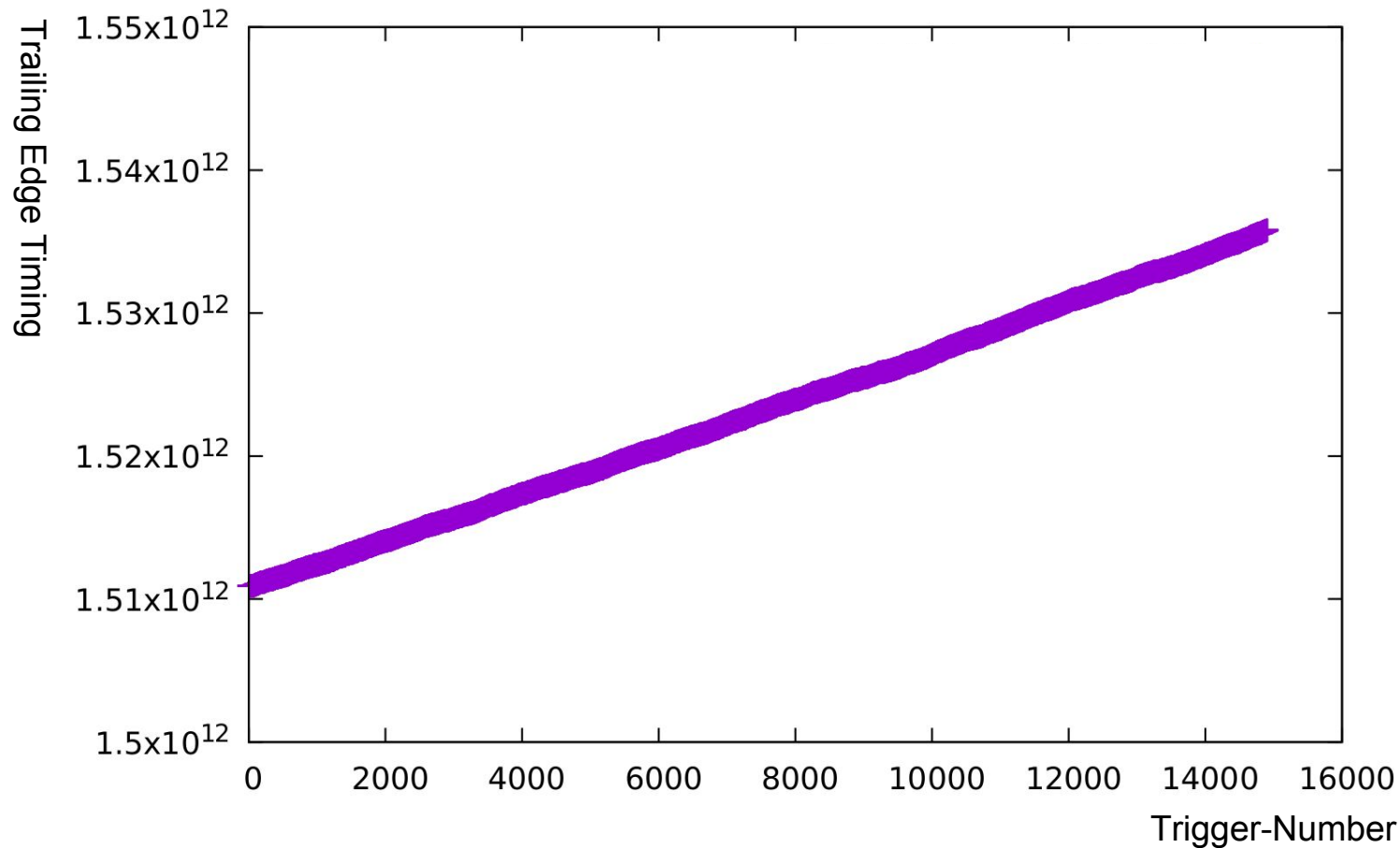
Weird Hits/Events (I)



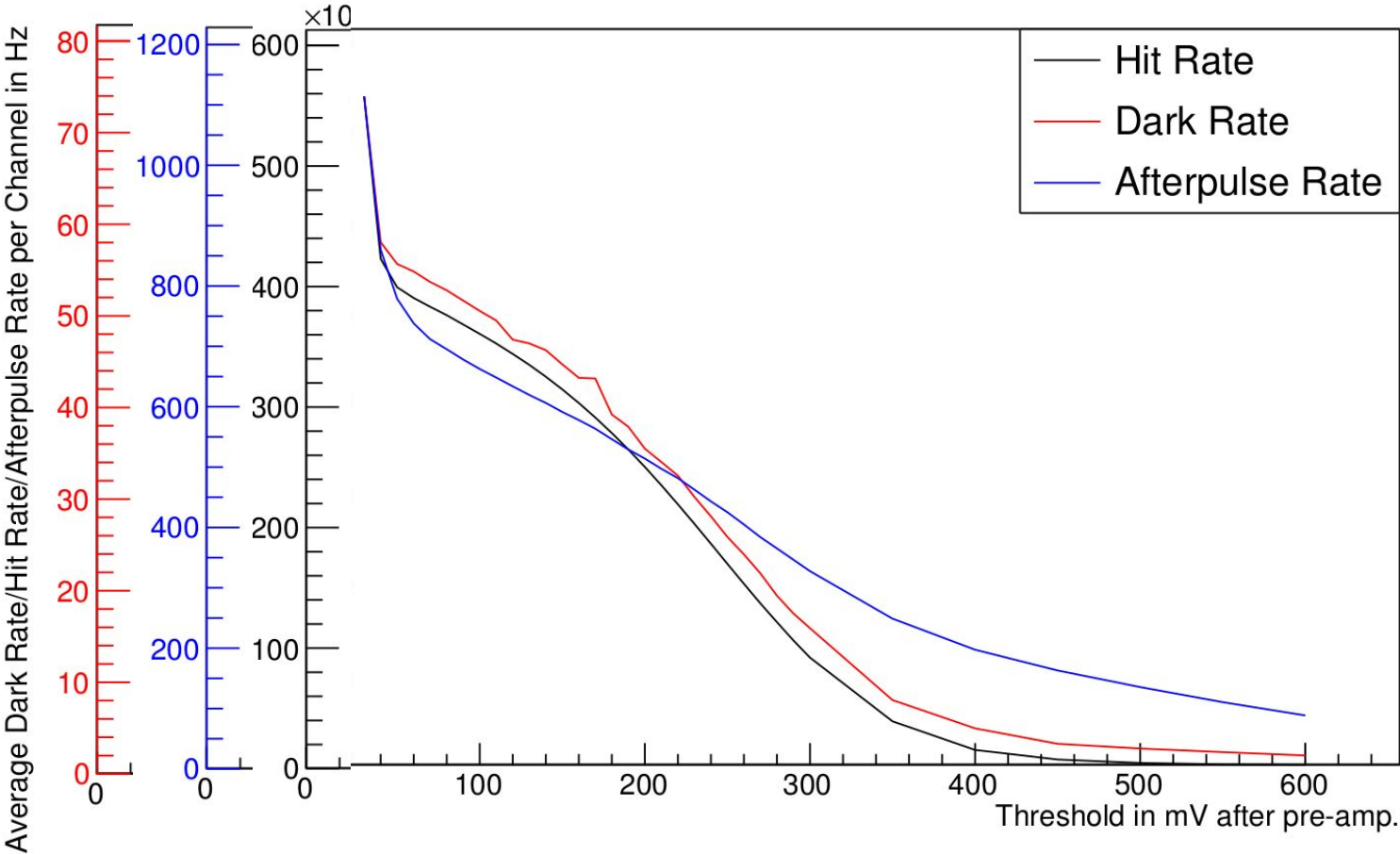
Weird Hits/Events (II)



Weird Hits/Events (III)



Dark rate vs. Threshold



Summary

- Unfortunately most data taken useless
 - But: Full Scans using proximity focussing and WLS MAPMTs available
- First Results show the possibility to derive a good threshold from thresholdscans using the scaler and laserlight only
 - Further lab-measurements needed
- No missing Edges in inner time window
 - Only complete Events
- Still some weird events in datastream
 - Needs further analysis
- From at least a threshold of 70 mV after pre-amp. noise seems to come only from MAPMT

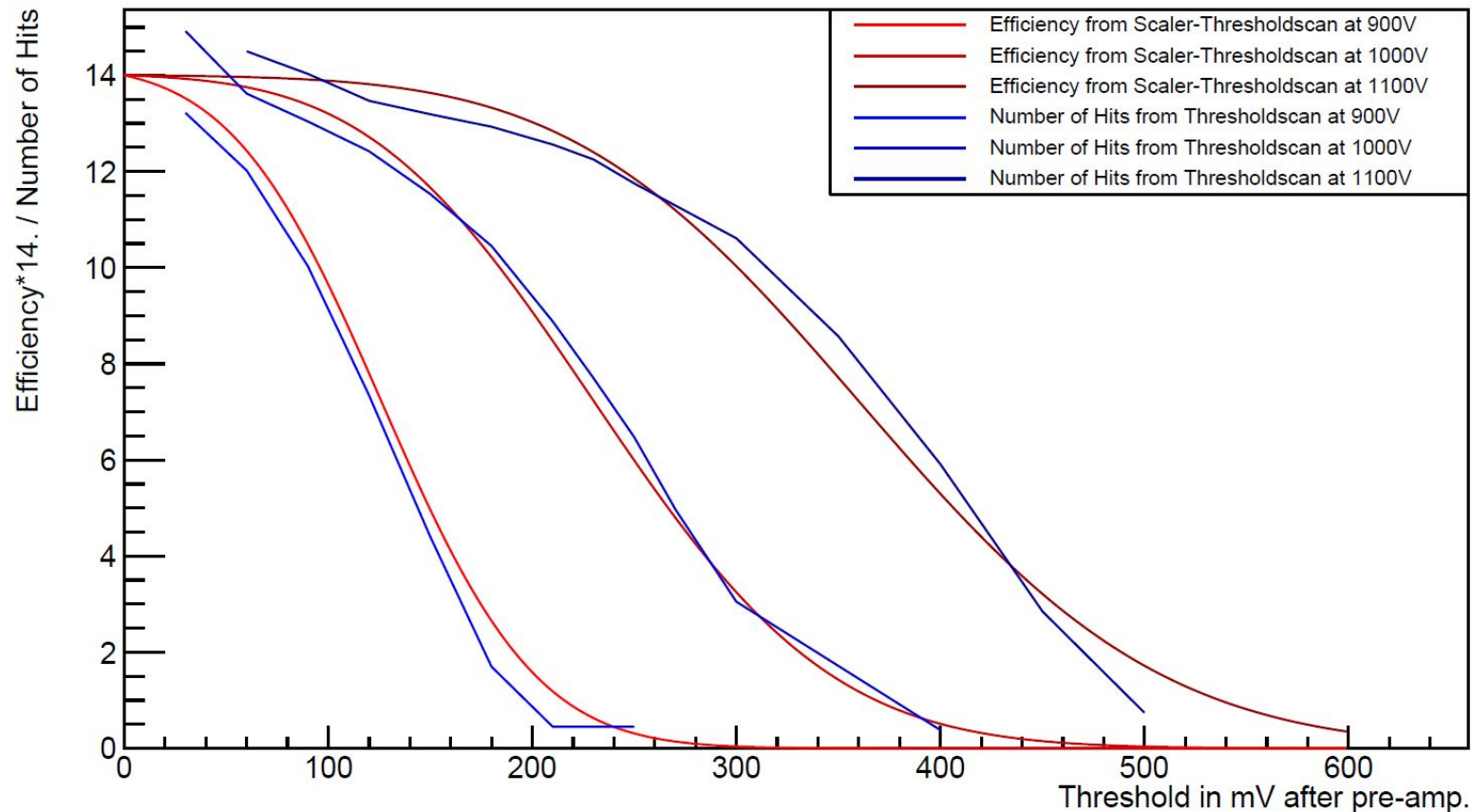
Thank you for your attention



Backup



Threshold vs. Efficiency



Talk Semen: Simulation Results

1.2 GeV/C

