Status Report #14

- ✓ Midterm presentation of B4 thesis
- ✓ ToF: Cosmic-ray
- ✓ ToF: Beam time data analysis

2020. Feb 13 (Thu)

B4 FUJIWARA Tomomasa

ToF: Cosmic-ray

- Check: Bias dependence, cable length dependence

- Bias: taking 3 points

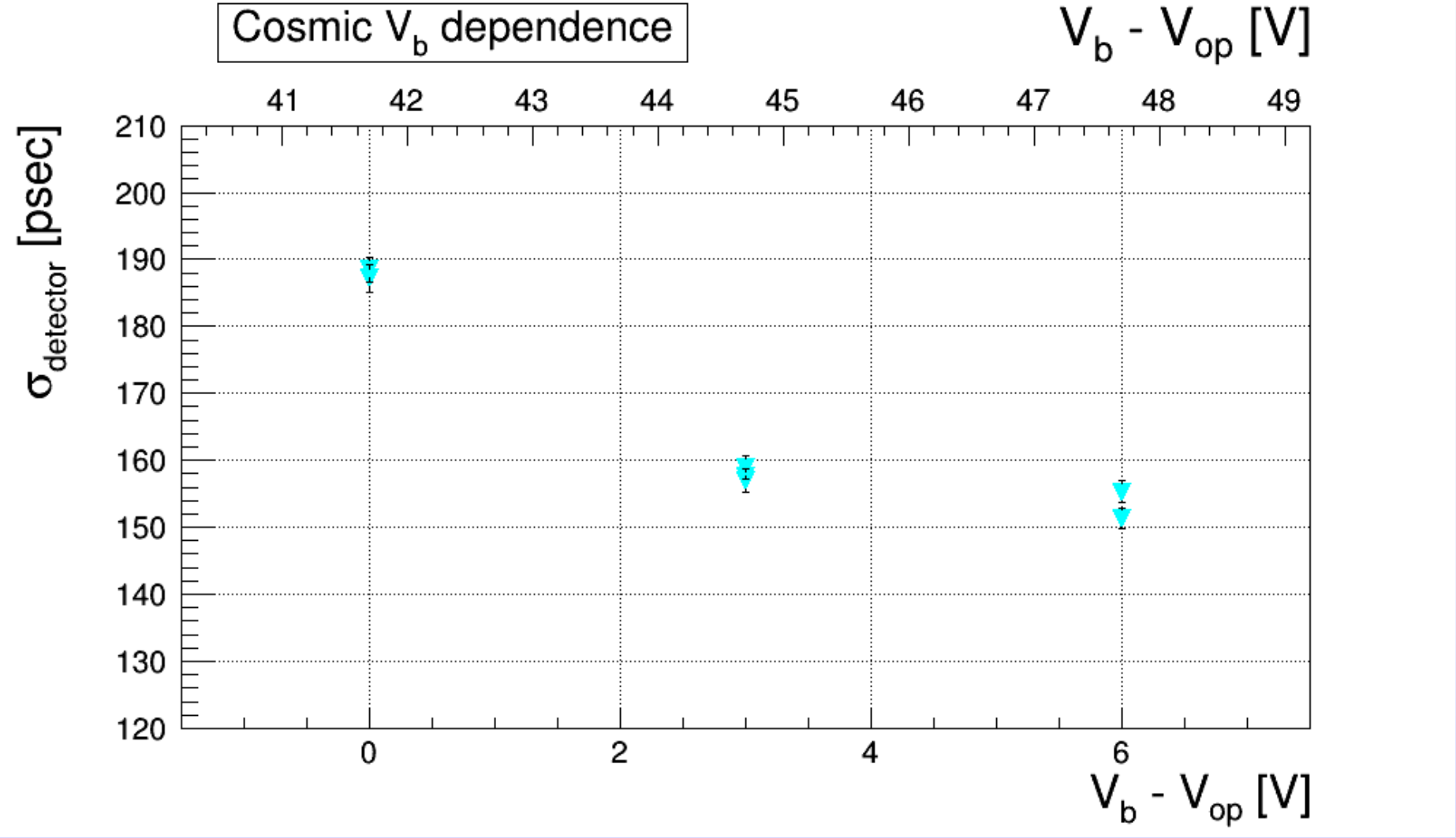
  → 41.7V, 44.7V, 47.7V: +0.0V, +3.0V, +6.0V (from V_{op} = 41.7 V)

- cable length: taking 6 points

  → initial, +6 ns, +12 ns, +16 ns, +48ns, +80ns (Bias: fixed at +3.0 V)

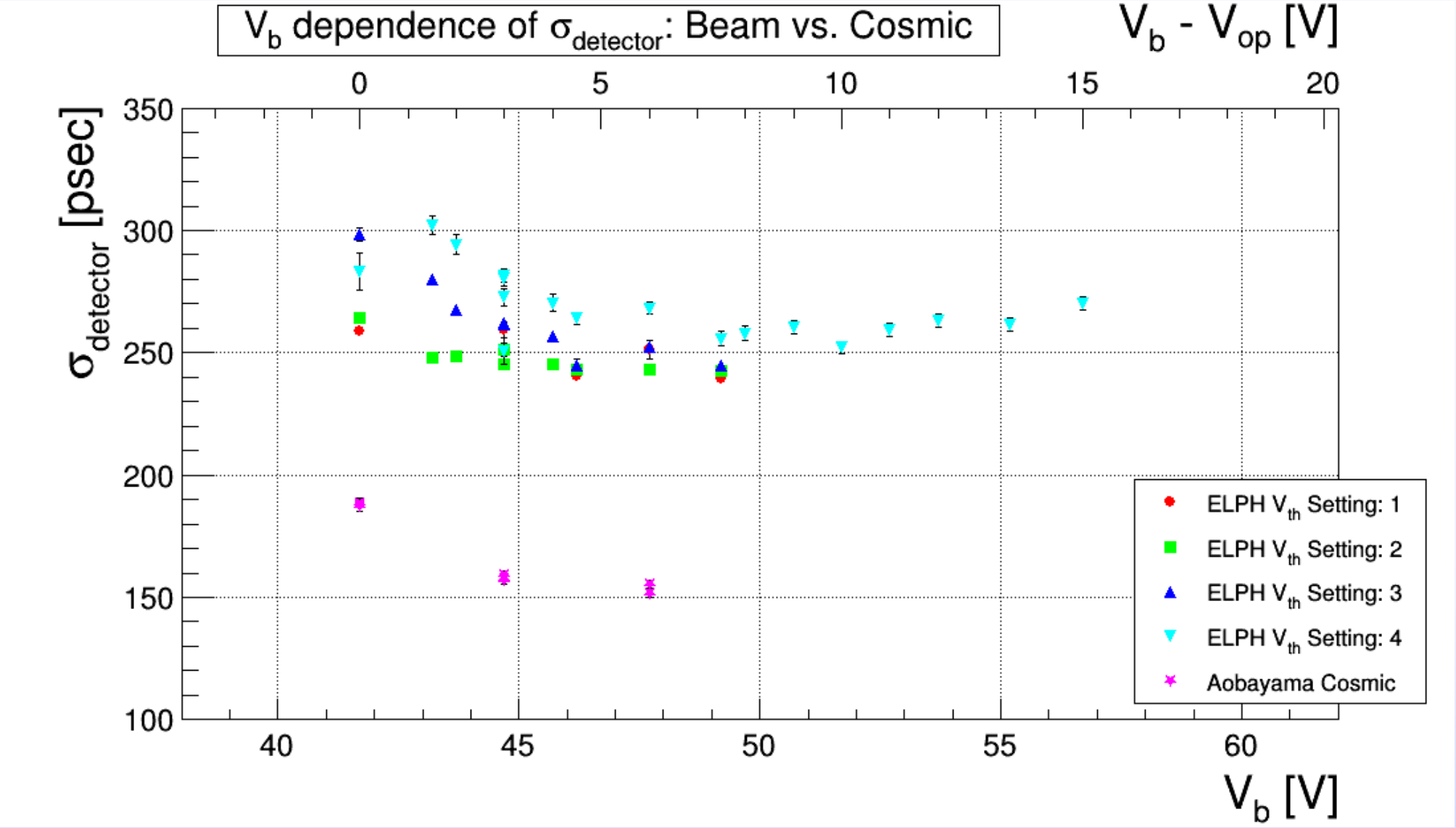
ToF: Cosmic-ray –Result-

- Result: Bias dependence



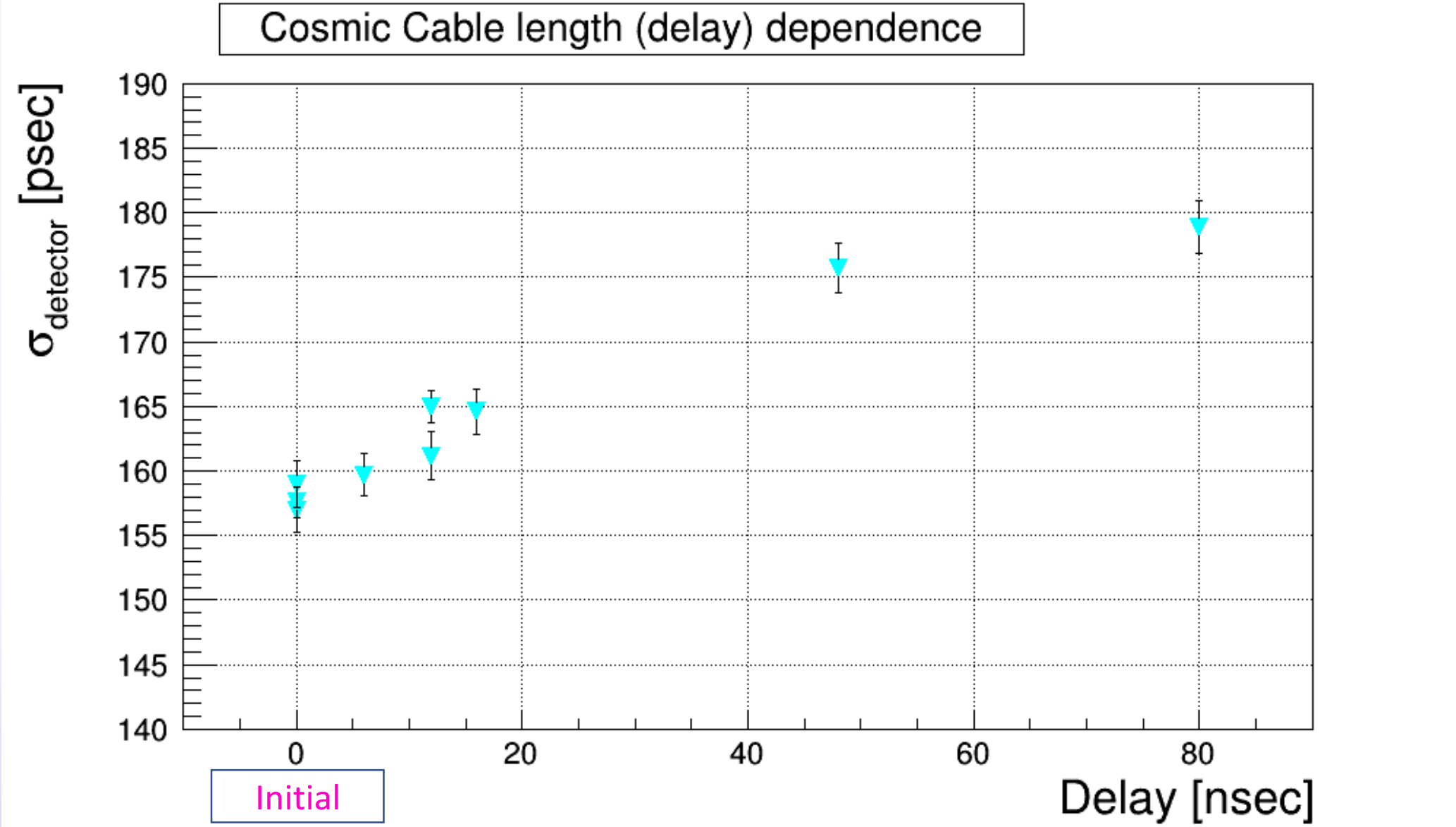
ToF: Cosmic-ray –Result-

- Comparison to data at ELPH



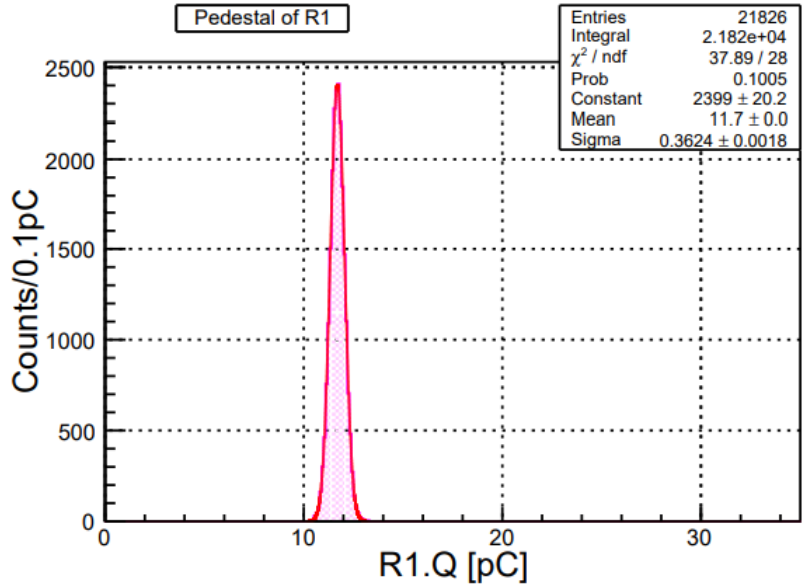
ToF: Cosmic-ray –Result-

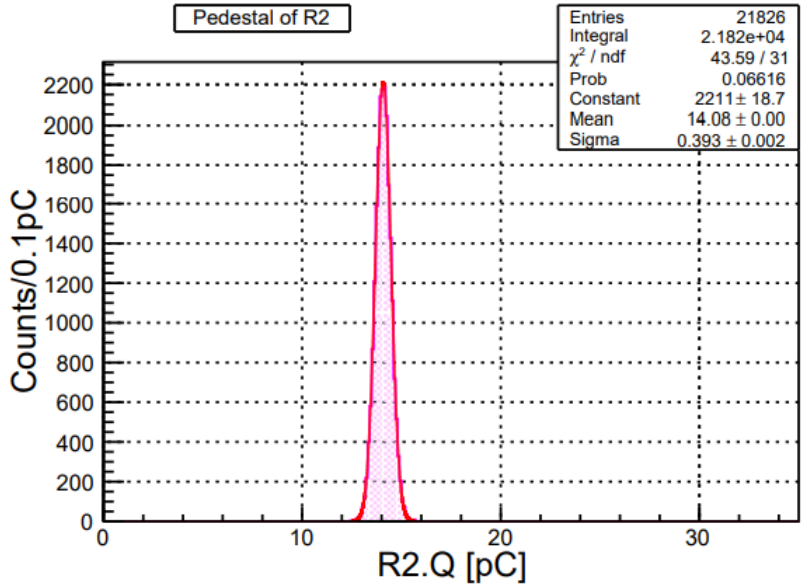
- Result: Cable dependence

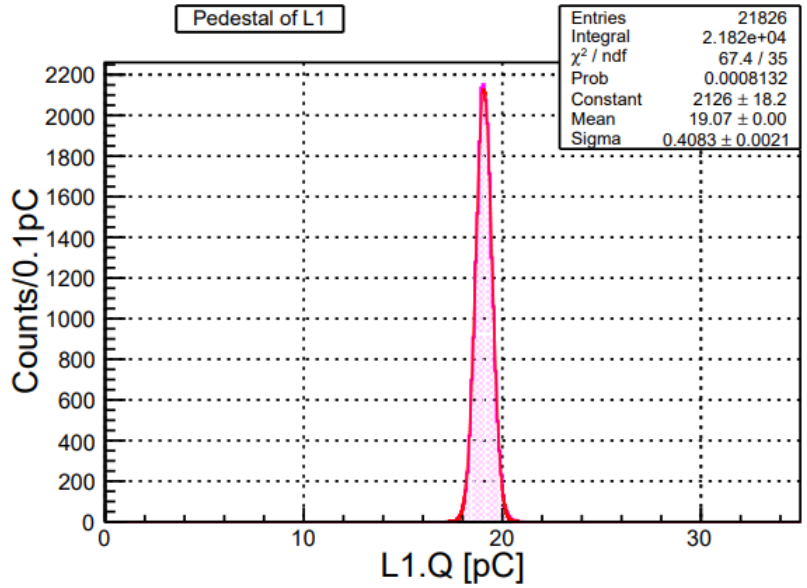


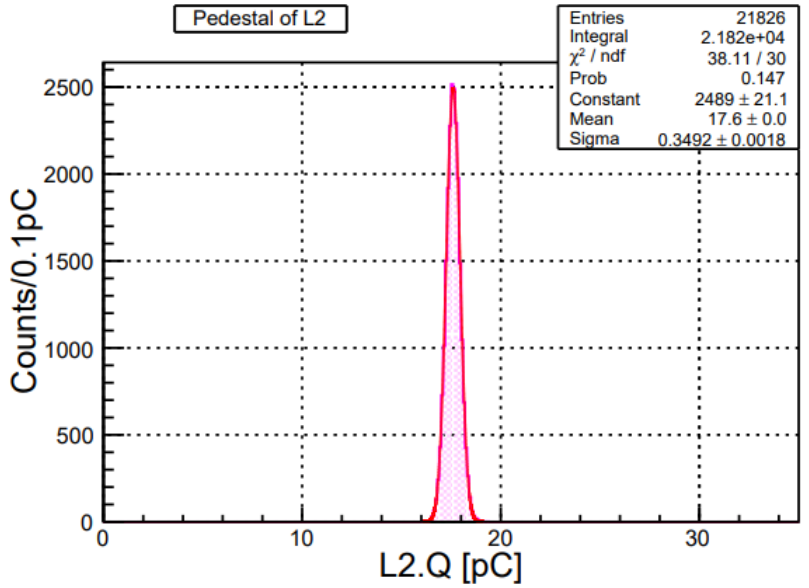
ToF: Cosmic-ray –Pedestal-

- Width: Typically ~4ch



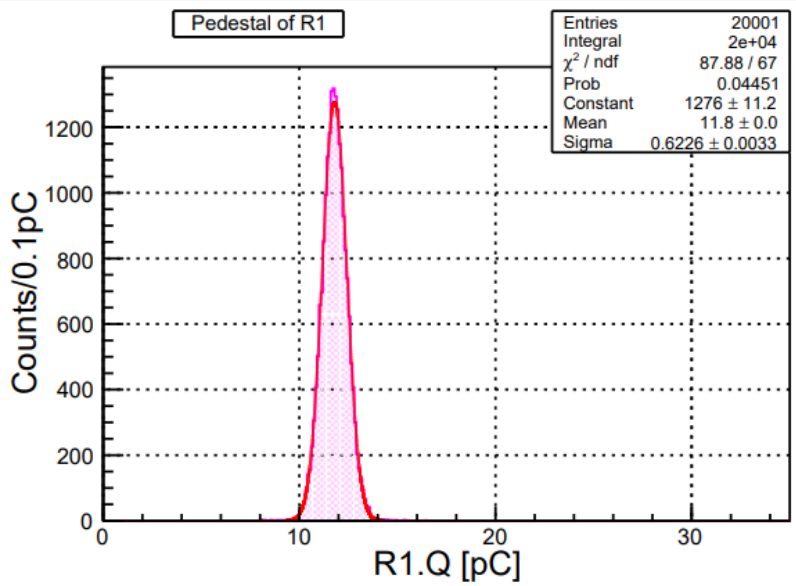


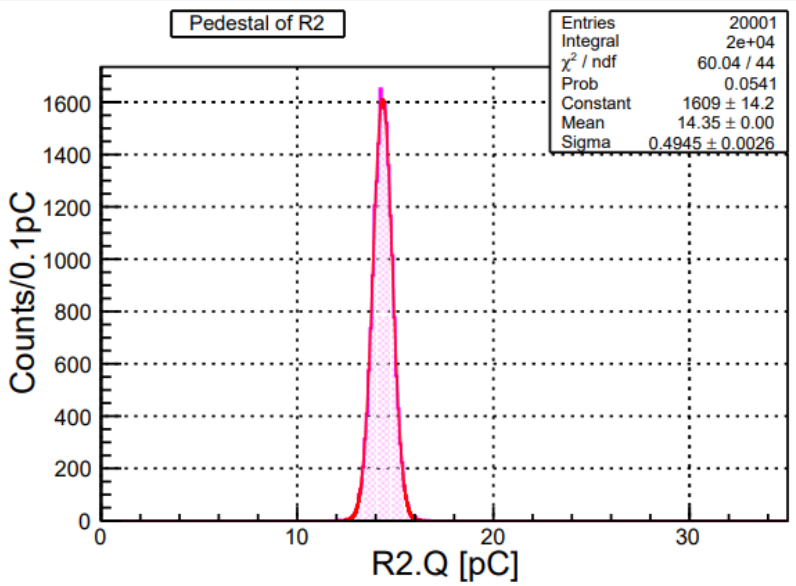


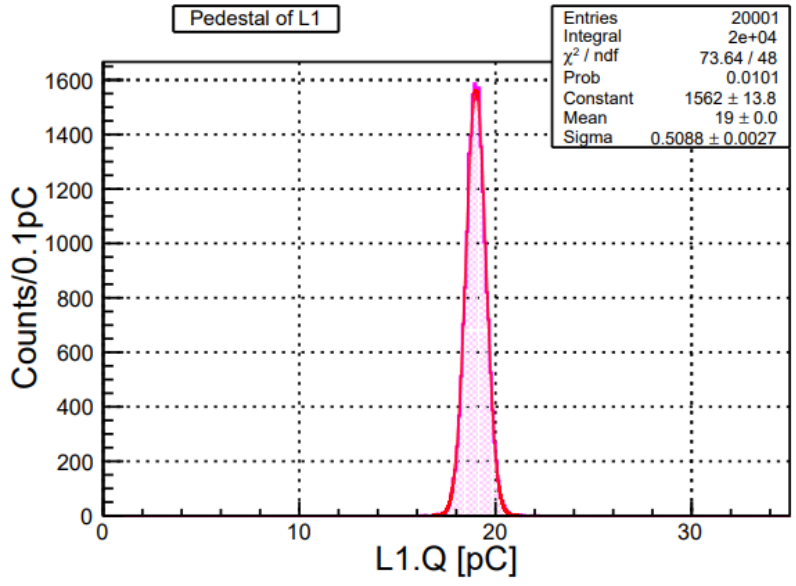


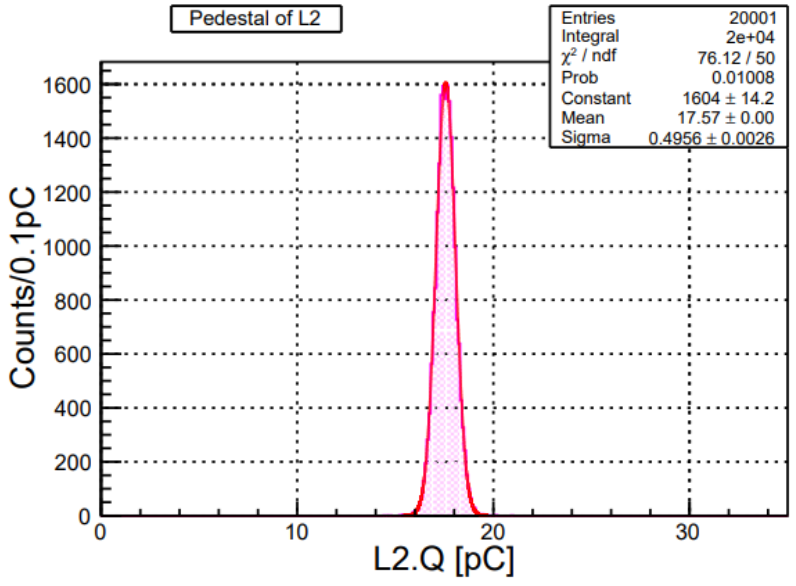
ToF: Cosmic-ray –Pedestal-

- At + 80 ns delay
- Width: ~5 - 6 CH



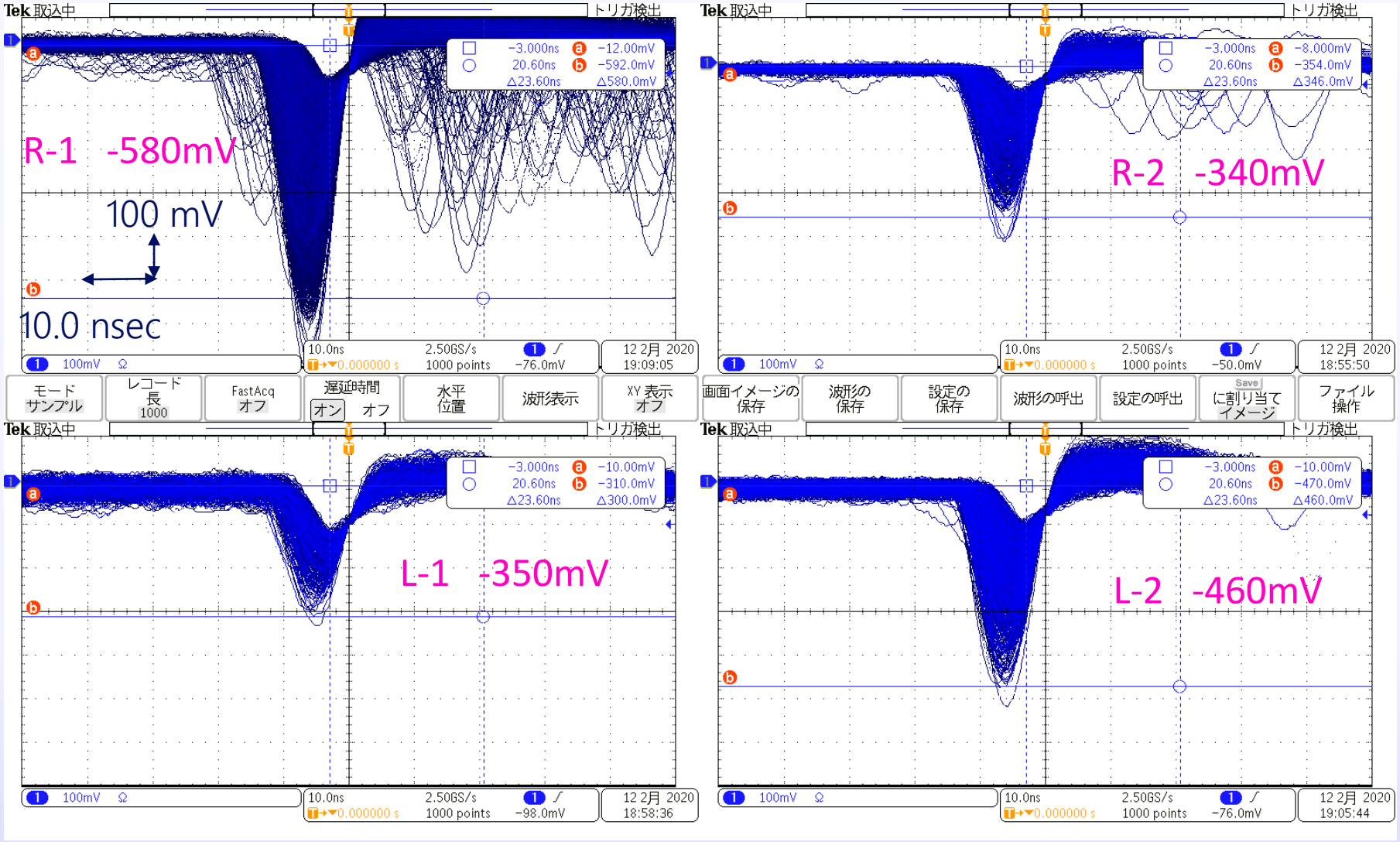






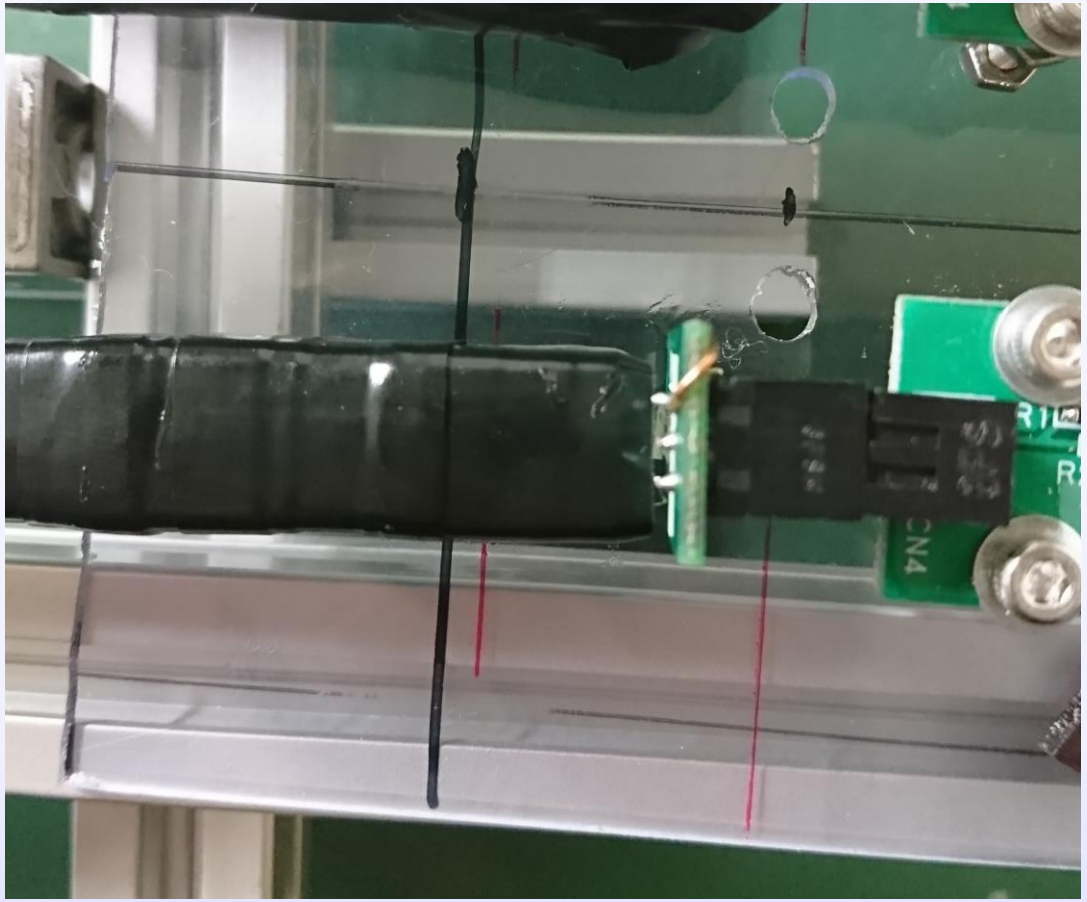
ToF: Cosmic-ray

- Check gain using β-ray source



ToF: Cosmic-ray –connection between scintillator to MPPC-

- Unmounted scintillator & MPPC → Mount scintillators staggered 2~3mm



ToF: Cosmic-ray –connection between scintillator to MPPC-

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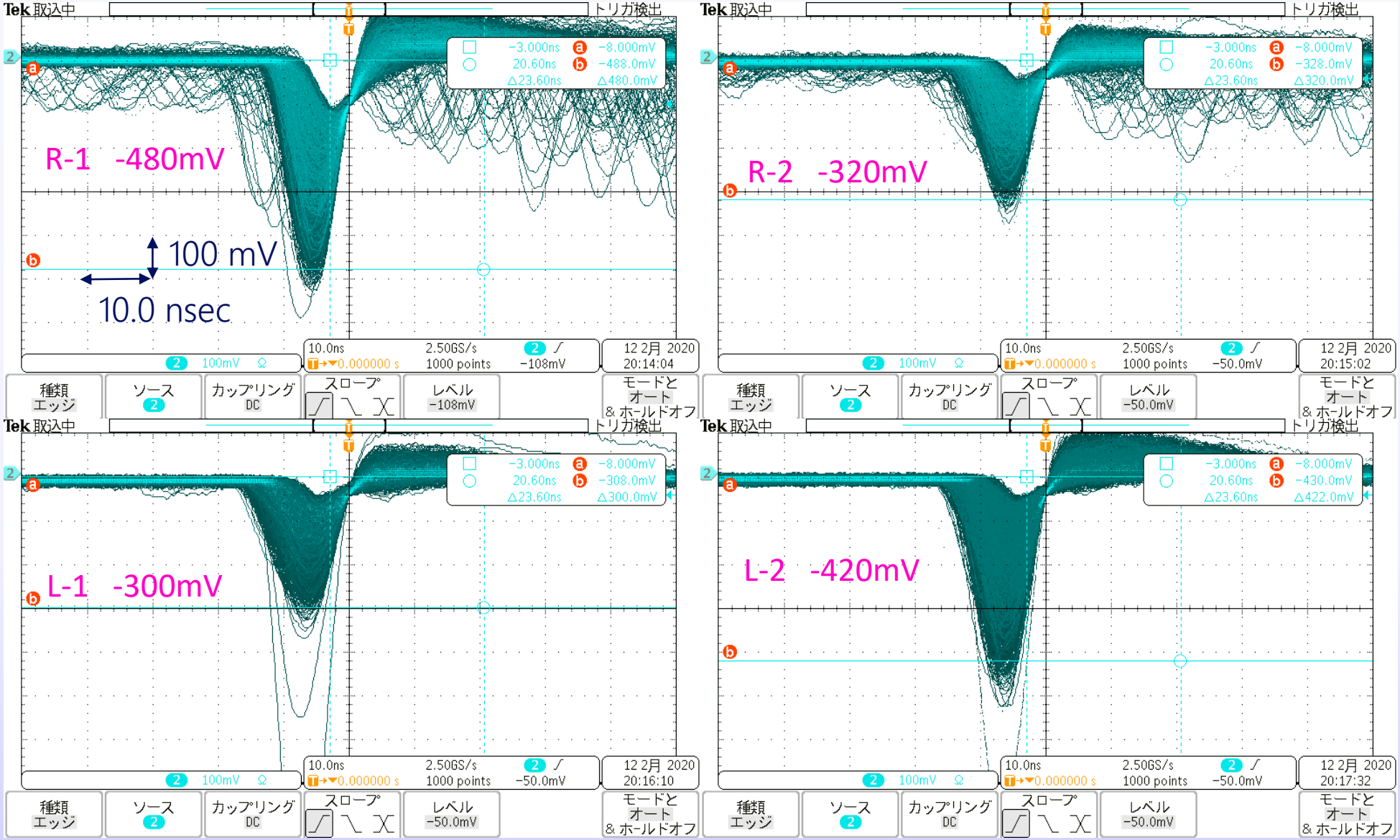
- Check gain using β-ray source



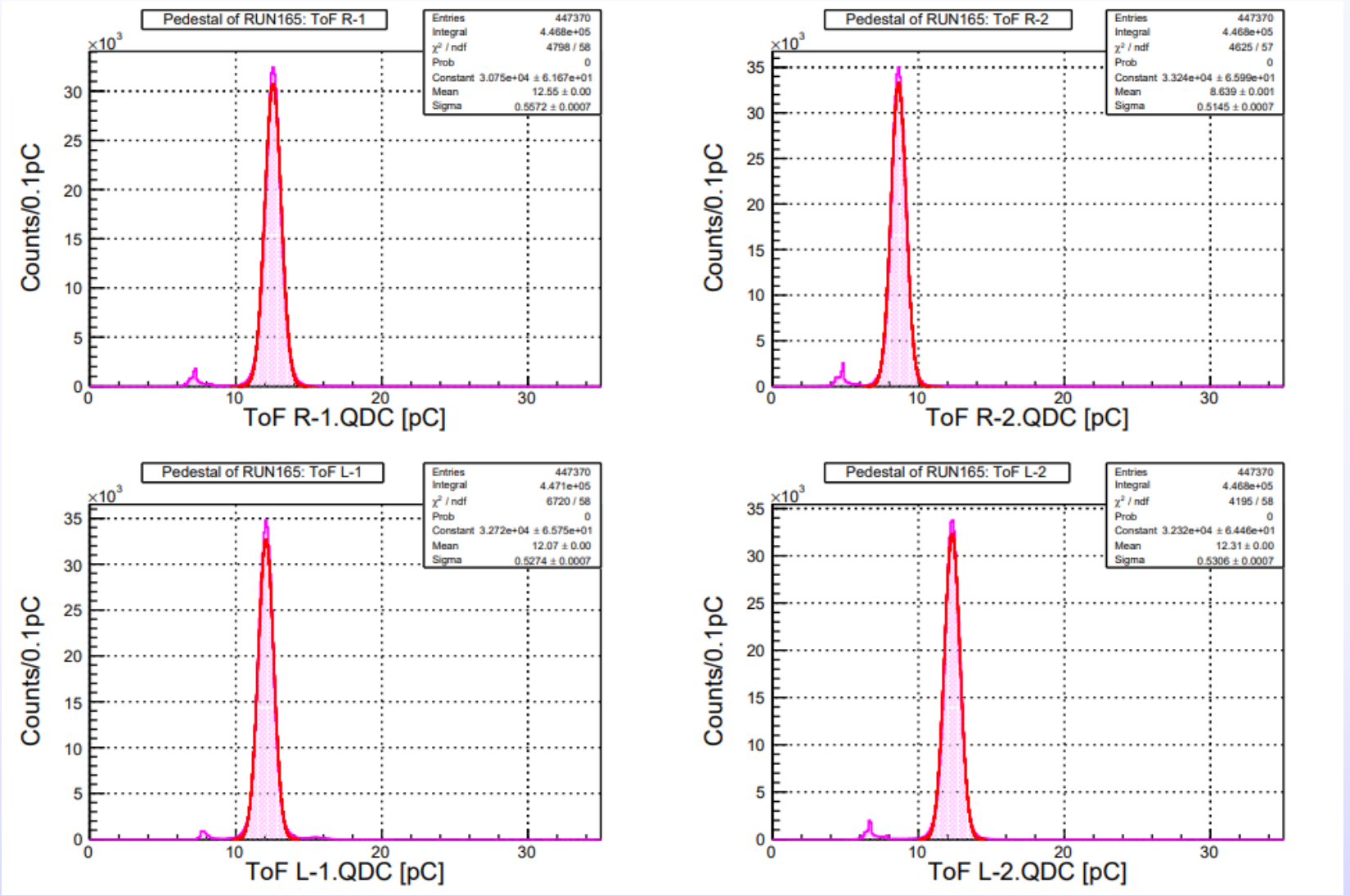
ToF: Beam time data analysis

- Checked Pedestal distribution for V_b=44.7 V run
- Pedestal dist. = QDC with TDC ≦ 0 at all readout

- For run165
- Decision of pedestal value

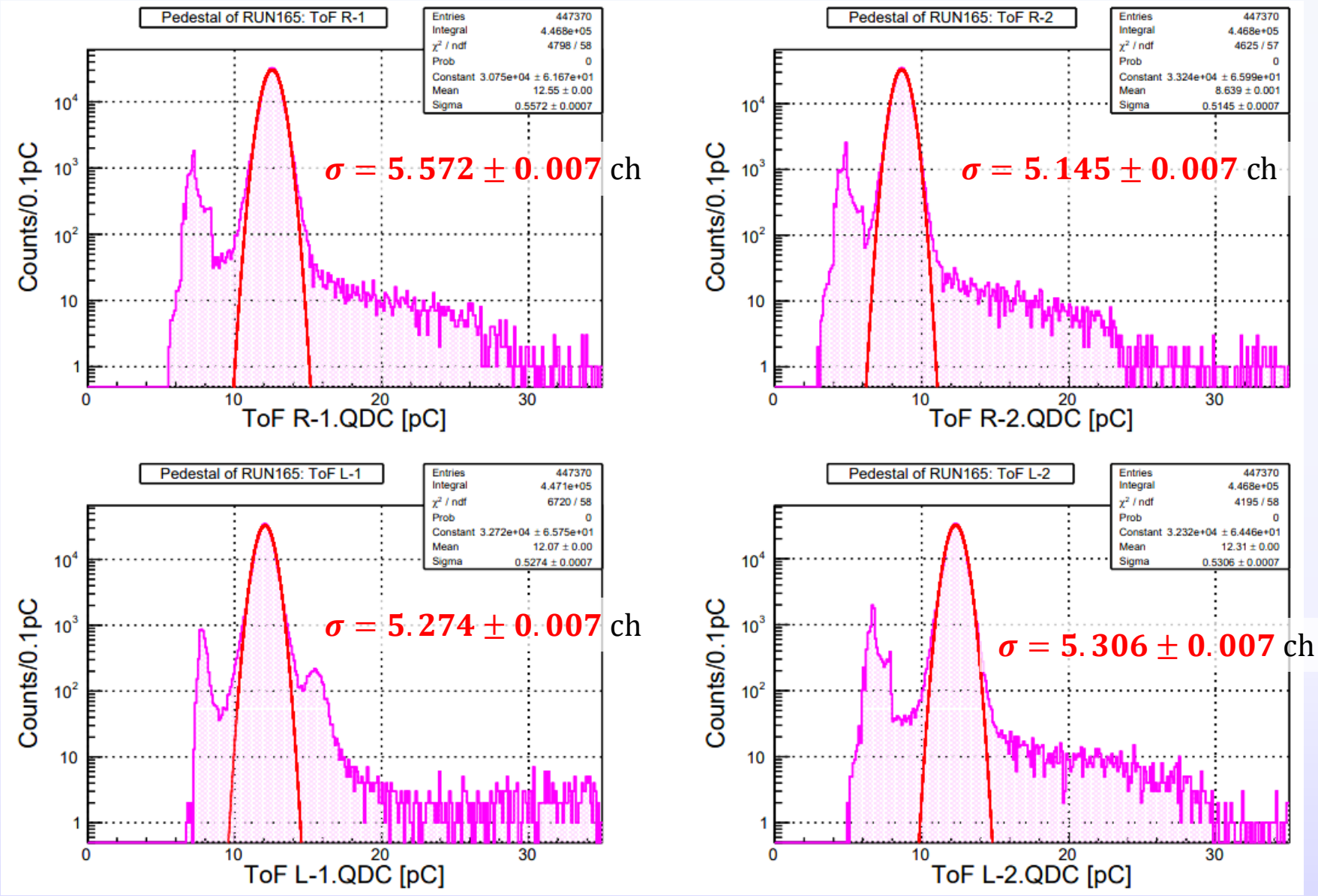
  *Fit with gaussian → μ = pedestal

  σ = width



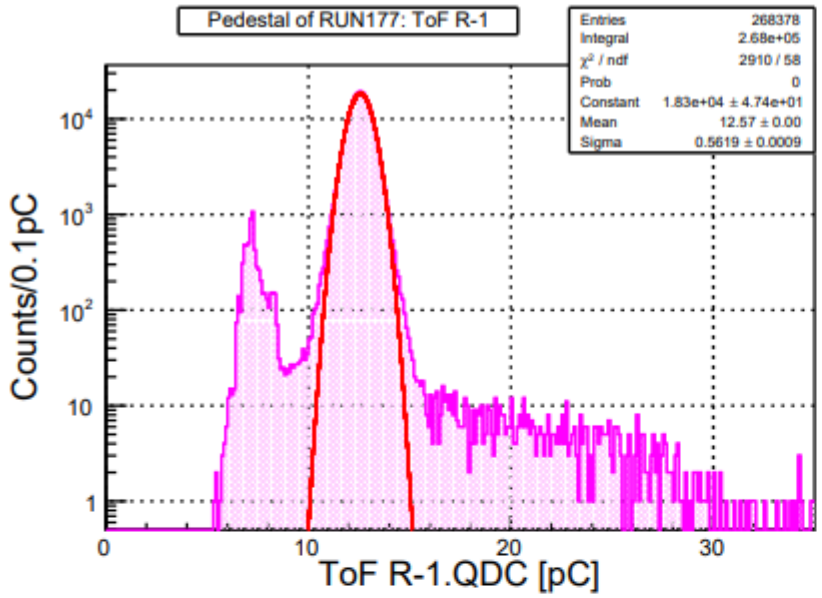
Pedestal dist. of run0165 in log scale

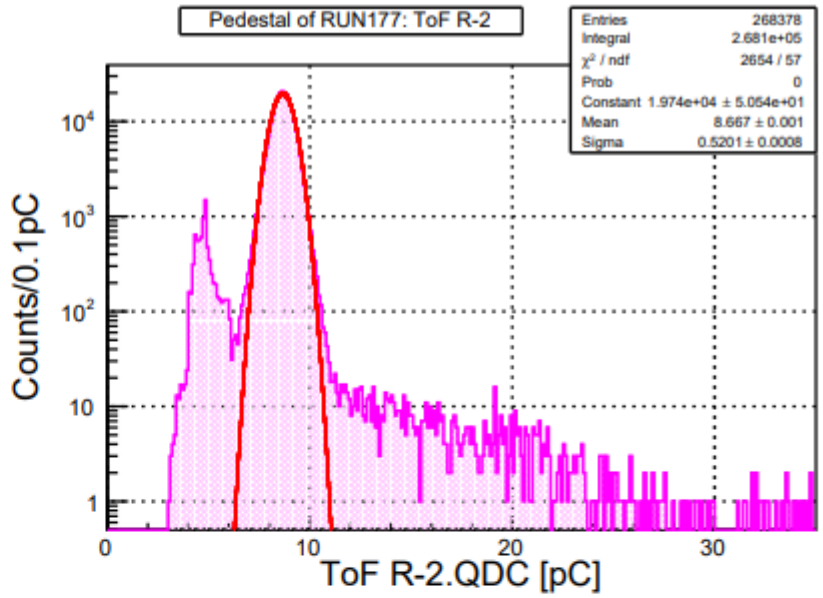
- In log scale
- There are tale distribution

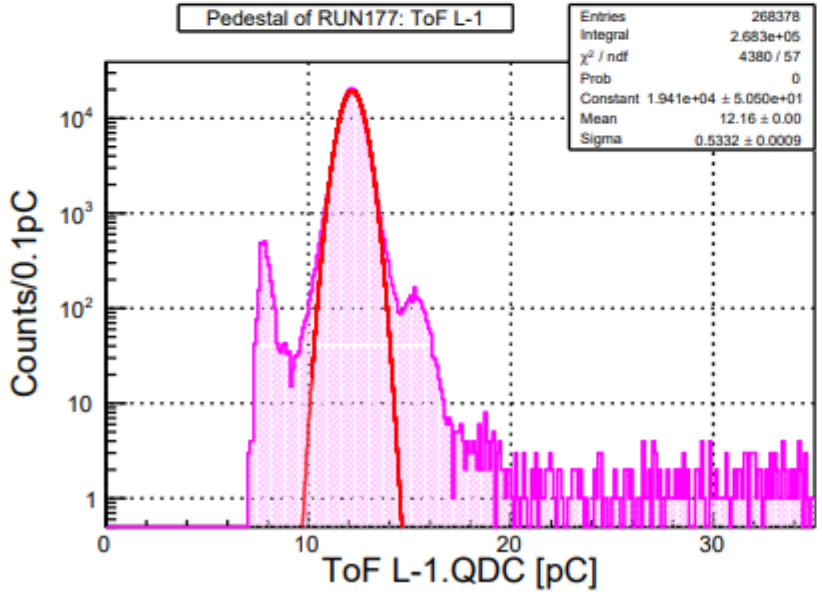


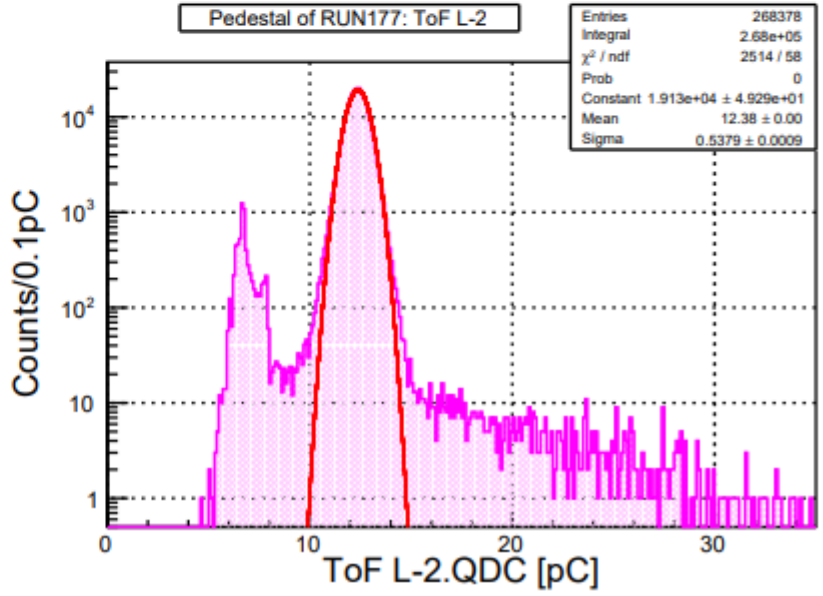
Pedestal dist. of run0177

- run0177



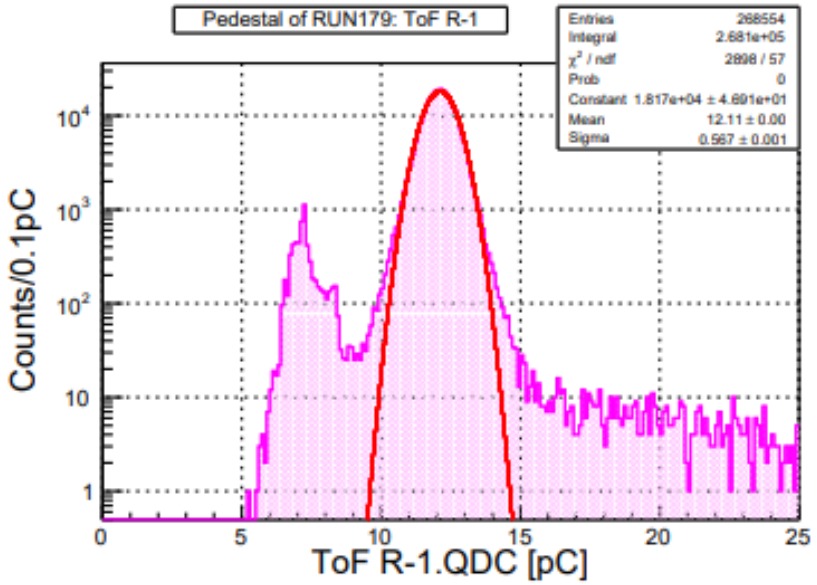


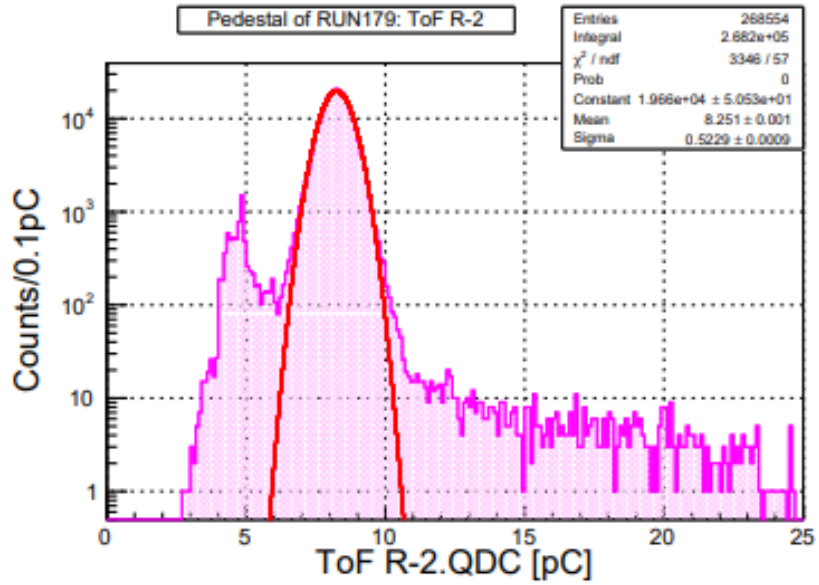


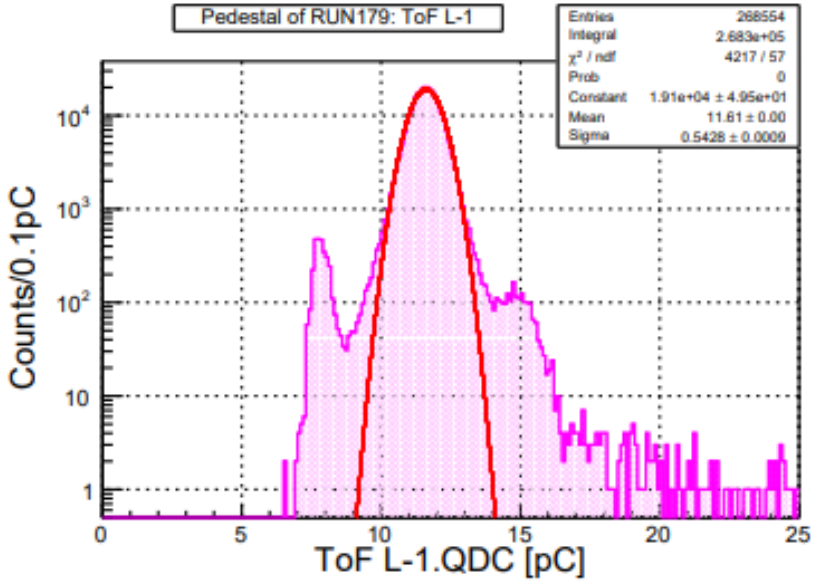


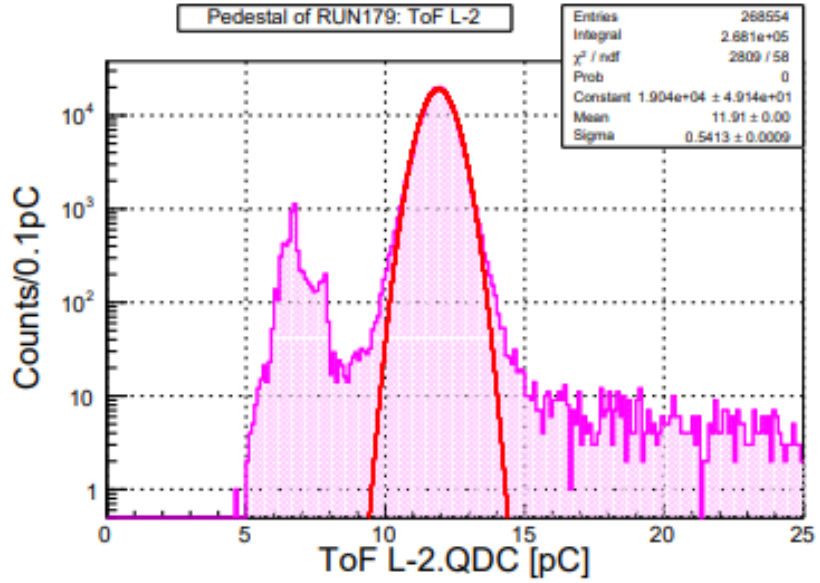
Pedestal dist. of run0179

- run0179



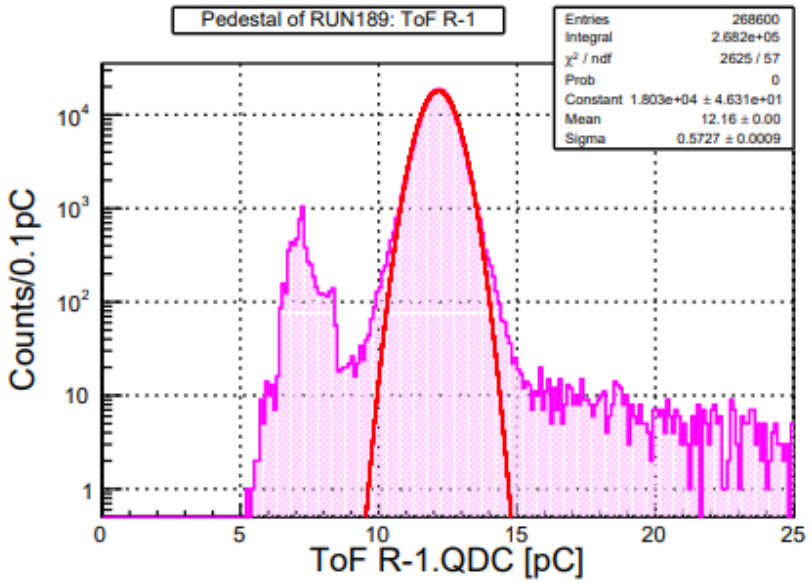


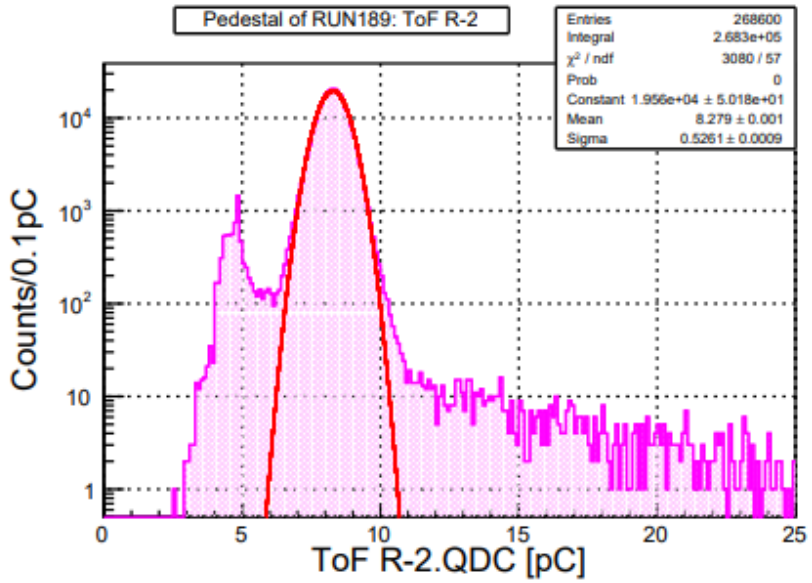


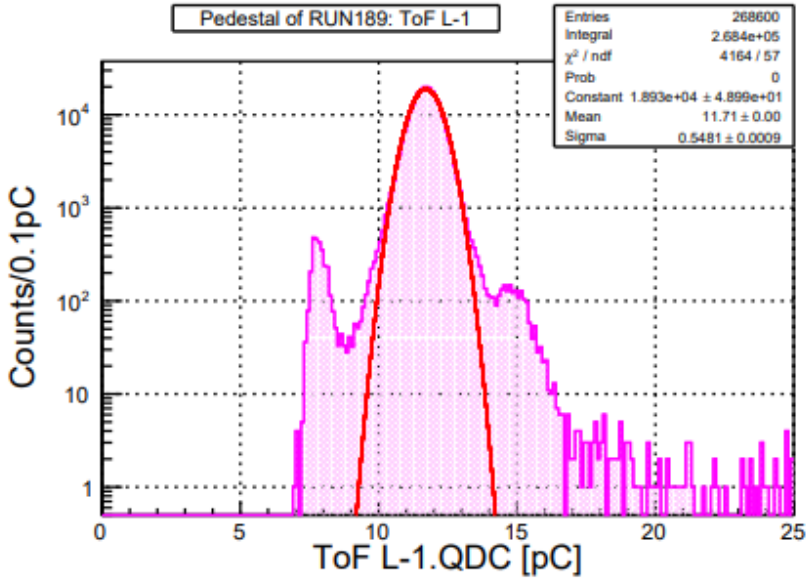


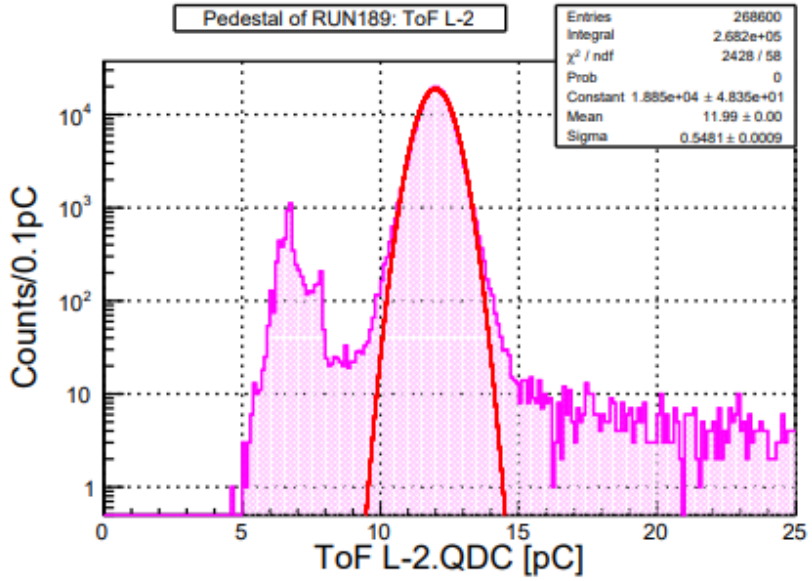
Pedestal dist. of run0189

- Run0189
- For each run, width~5ch







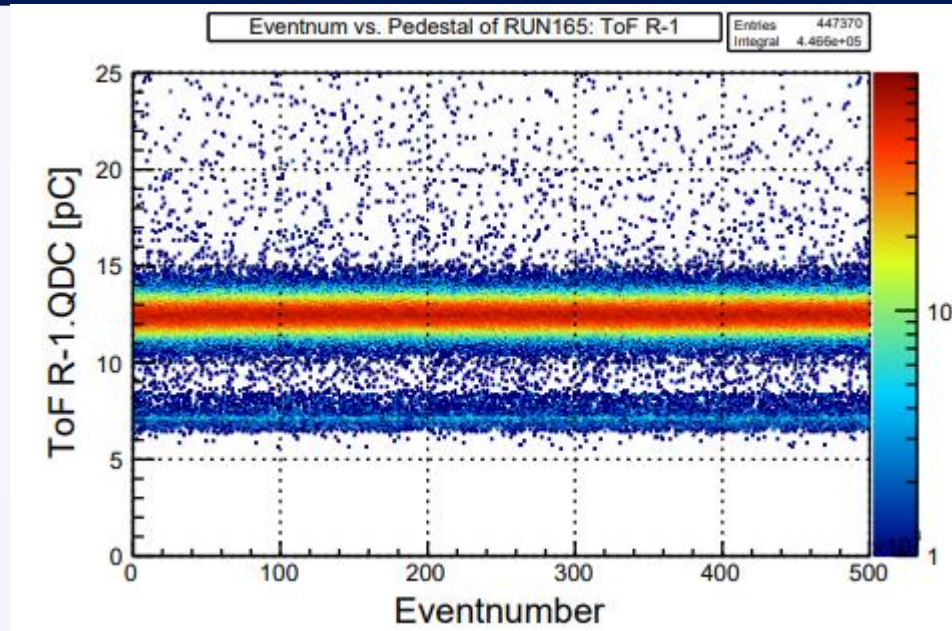


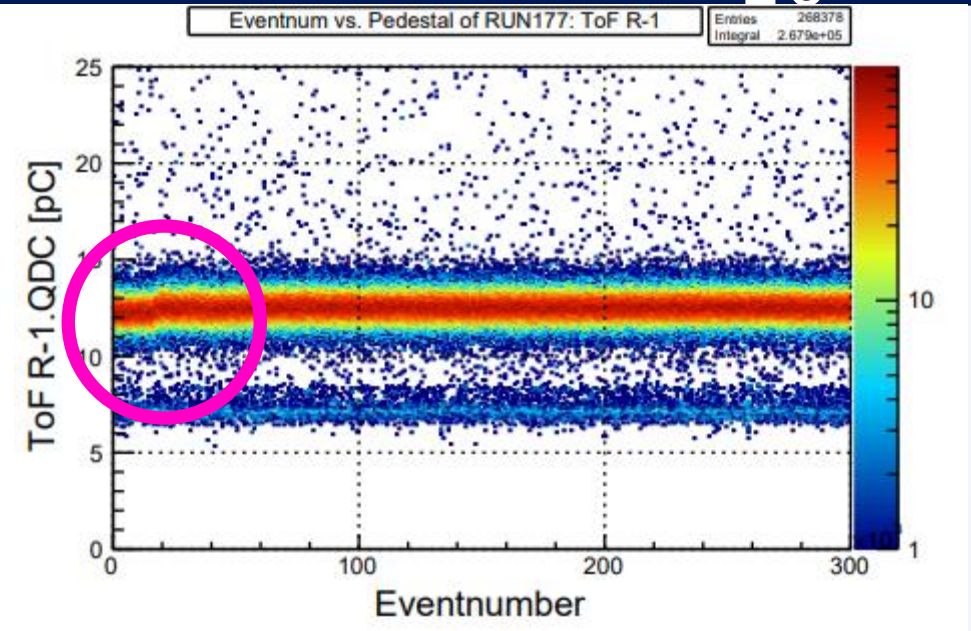
Pedestal vs. Event num.

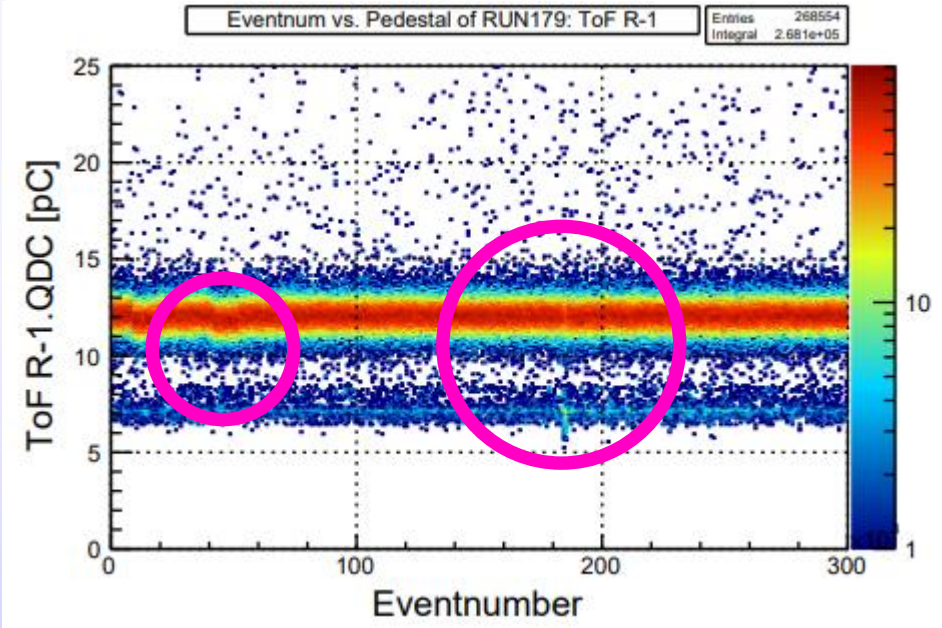
- Only R-1 for simplicity

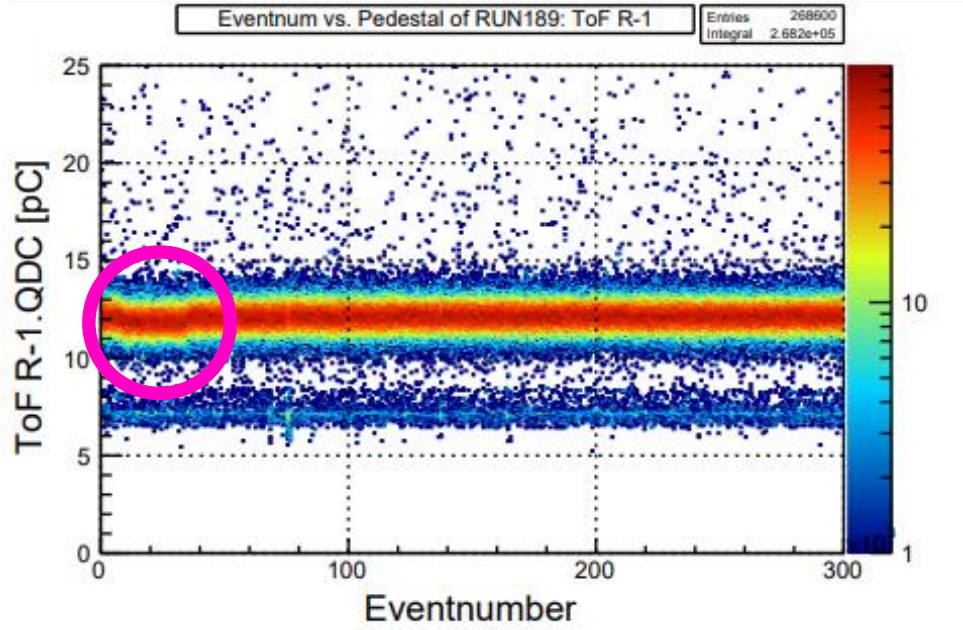
- in 177, 179 and 189

→ strange structure.









To do next

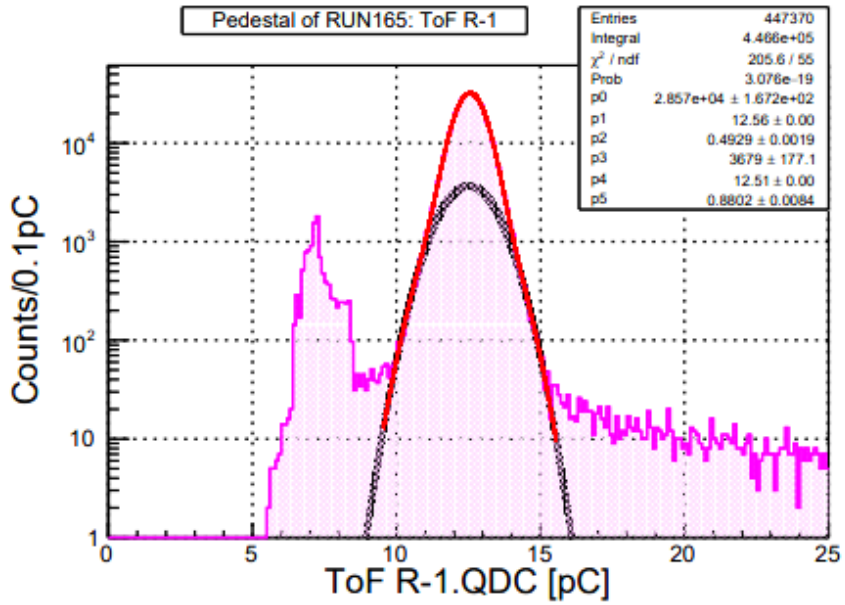
- ToF: continue to taking data with cosmic
- Circuit design: learning CAD

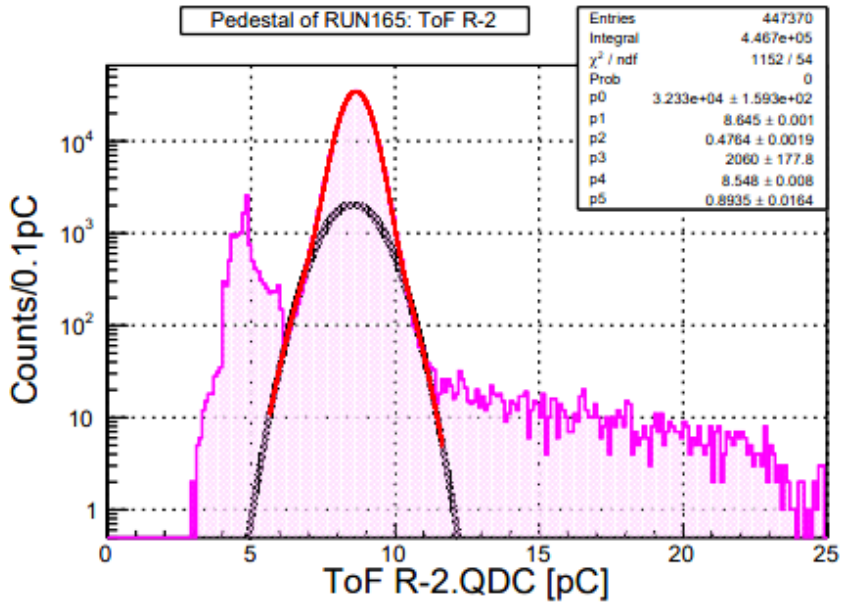
Back up

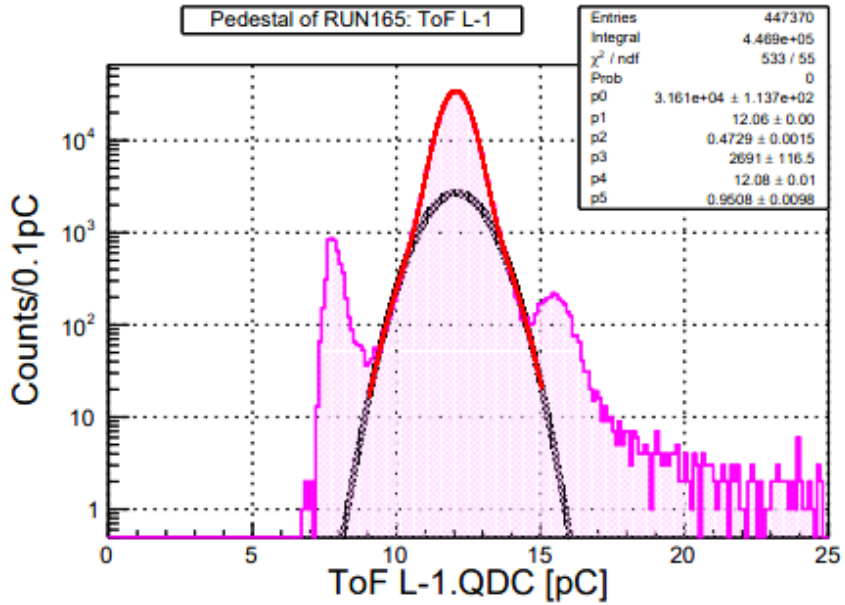

フジワラ
PC
を買う。
第1話

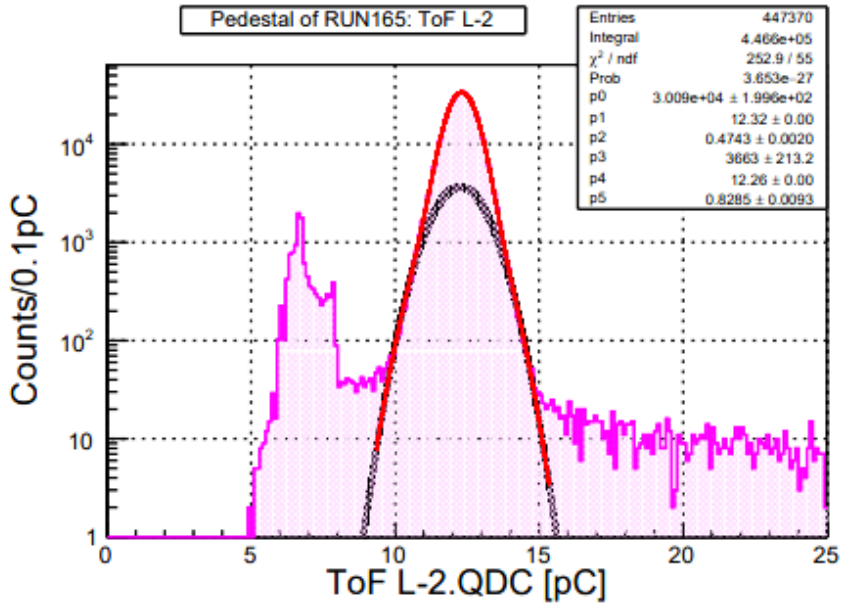
Pedestal dist. of run0165

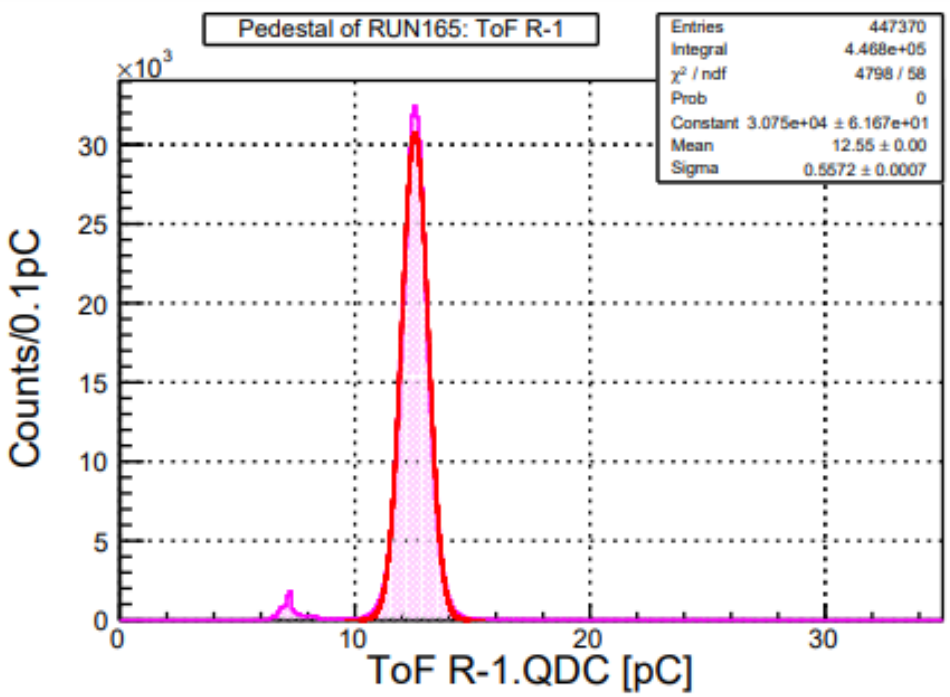
- Fit with double-gaussian
- Subtly not to work out fitting…

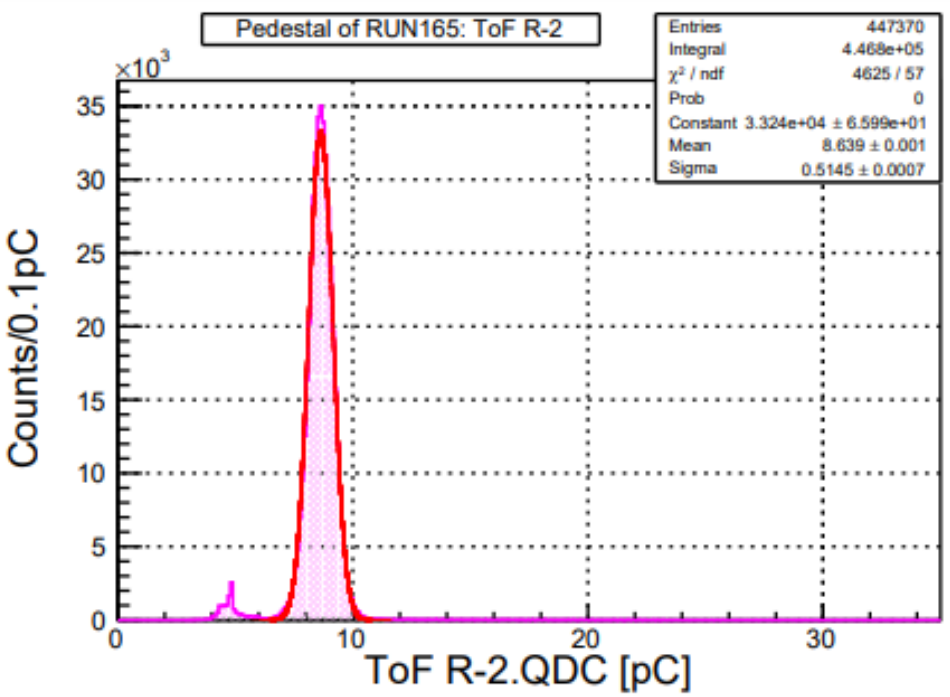


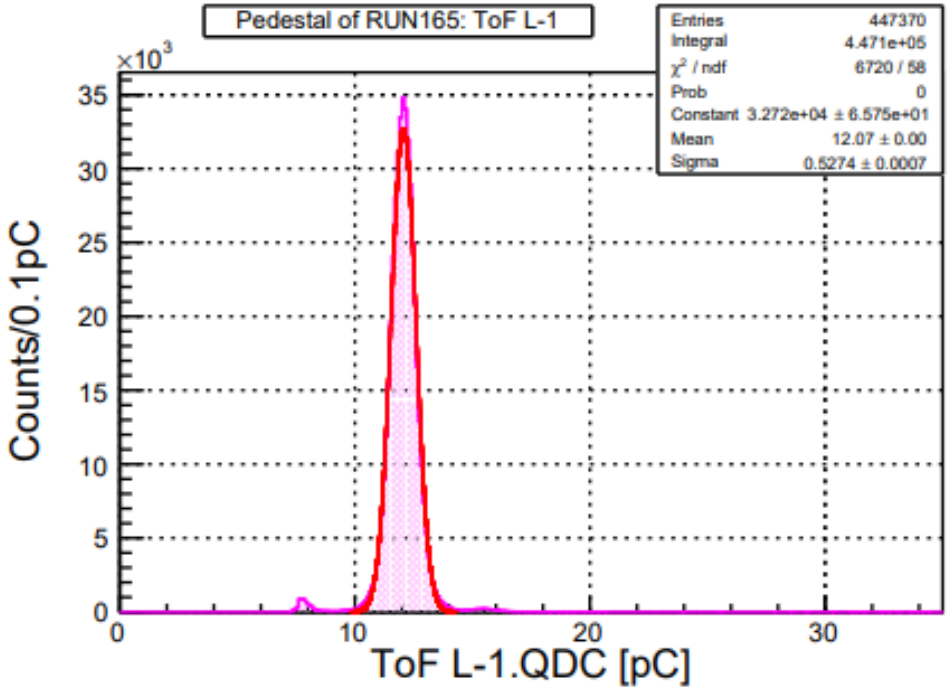


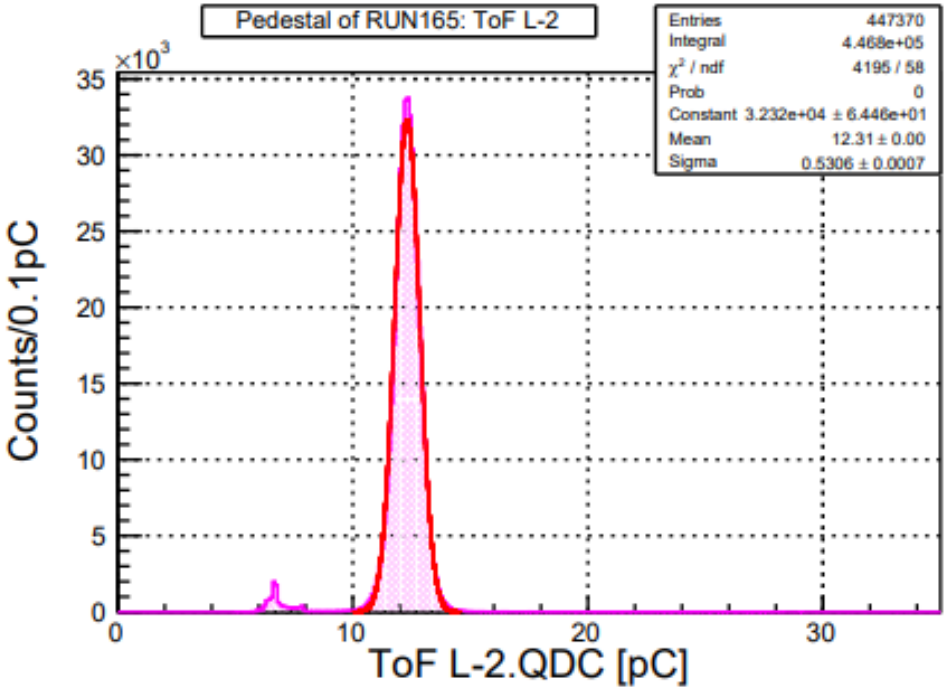


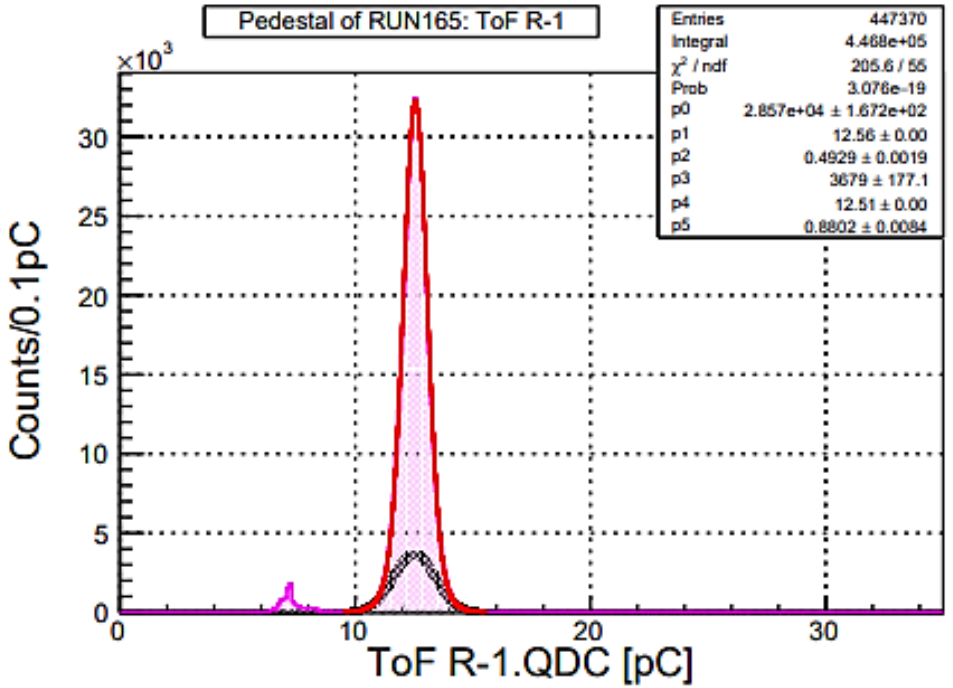


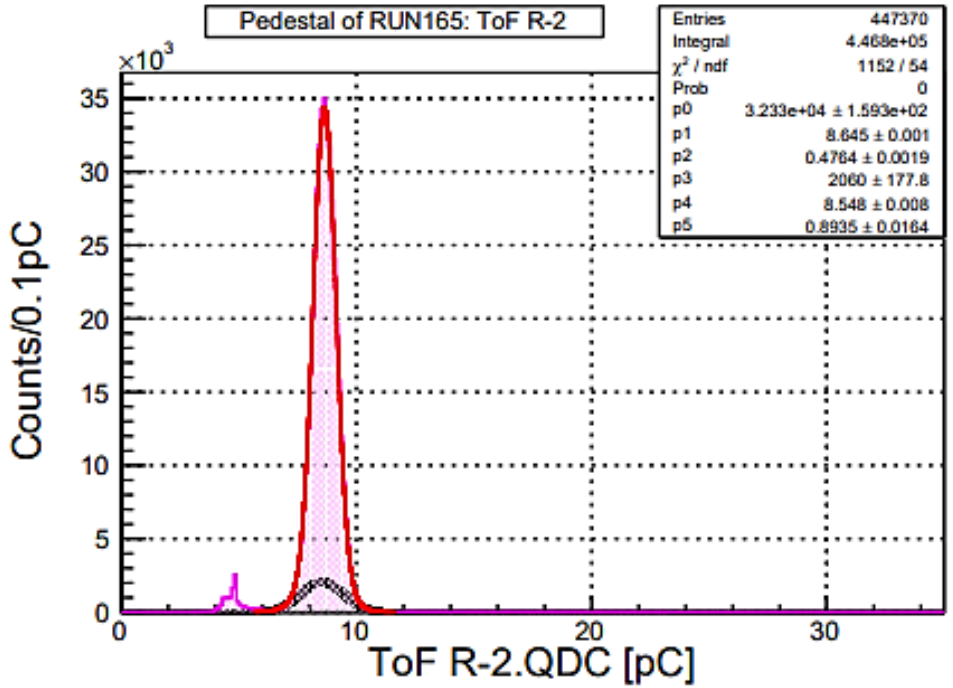

Pedestal of RUN165: ToF R-1
Entries 447370
Integral 4.468e+05
χ² / ndf 4798 / 58
Prob 0
Constant 3.075e+04 ± 6.167e+01
Mean 12.55 ± 0.00
Sigma 0.5572 ± 0.0007
×10³
Counts/0.1pC
ToF R-1.QDC [pC]

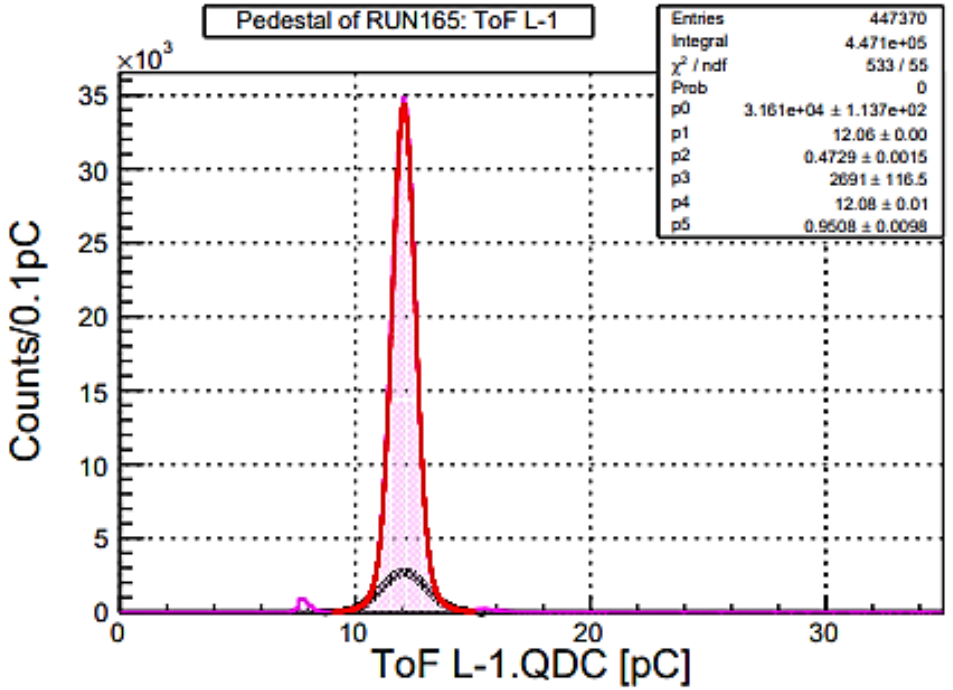

Pedestal of RUN165: ToF R-2
Entries 447370
Integral 4.468e+05
χ² / ndf 4625 / 57
Prob 0
Constant 3.324e+04 ± 6.599e+01
Mean 8.639 ± 0.001
Sigma 0.5145 ± 0.0007
×10³
Counts/0.1pC
ToF R-2.QDC [pC]

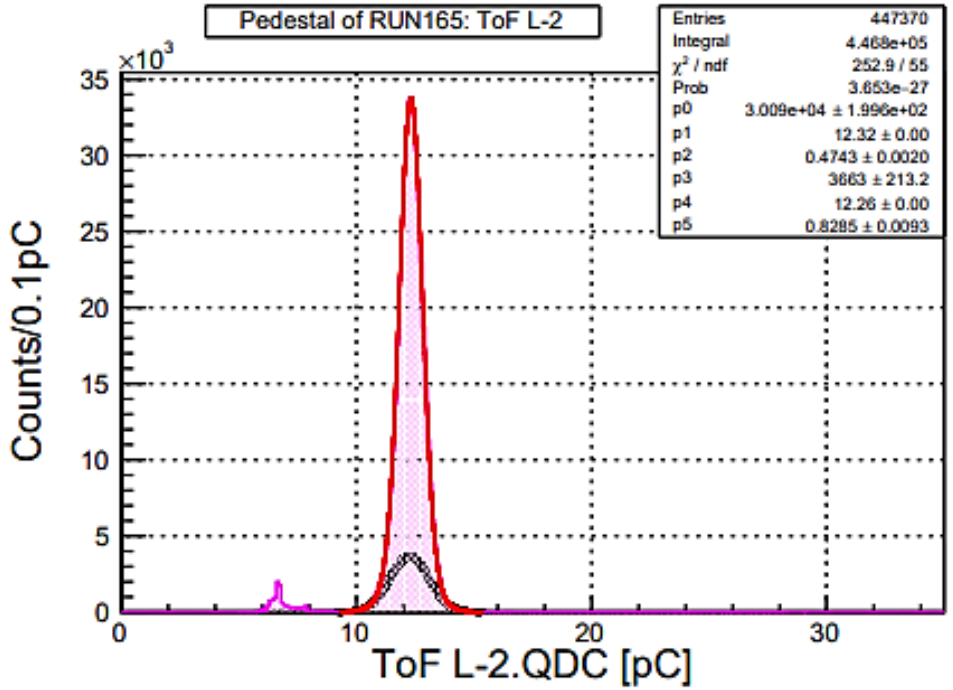

Pedestal of RUN165: ToF L-1
Entries 447370
Integral 4.471e+05
χ² / ndf 6720 / 58
Prob 0
Constant 3.272e+04 ± 6.575e+01
Mean 12.07 ± 0.00
Sigma 0.5274 ± 0.0007
×10³
Counts/0.1pC
ToF L-1.QDC [pC]

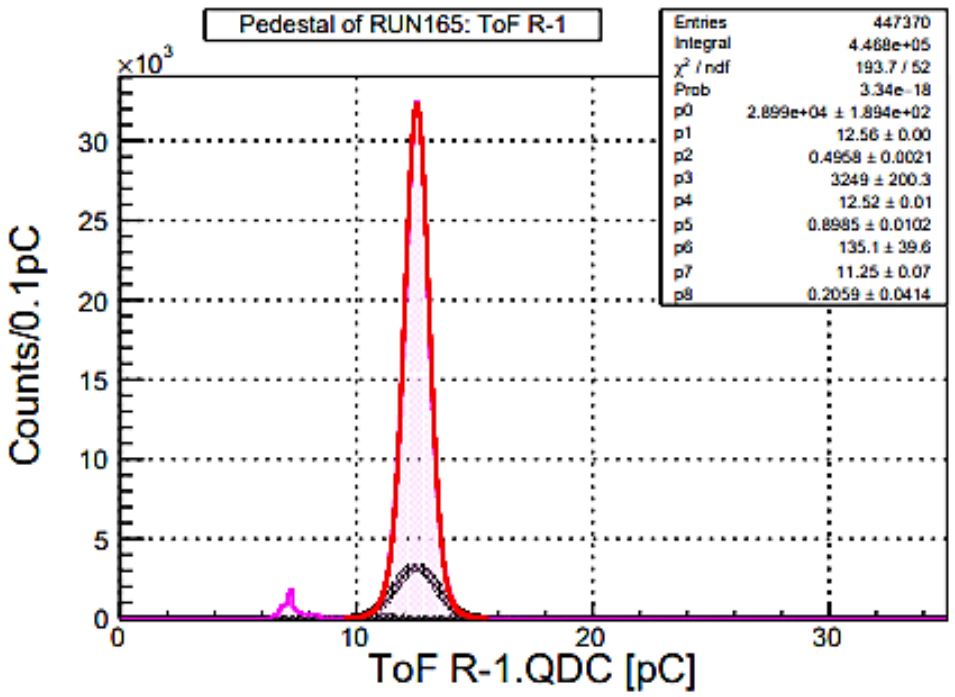

Pedestal of RUN165: ToF L-2
Entries 447370
Integral 4.468e+05
χ² / ndf 4195 / 58
Prob 0
Constant 3.232e+04 ± 6.446e+01
Mean 12.31 ± 0.00
Sigma 0.5306 ± 0.0007
×10³
Counts/0.1pC
ToF L-2.QDC [pC]

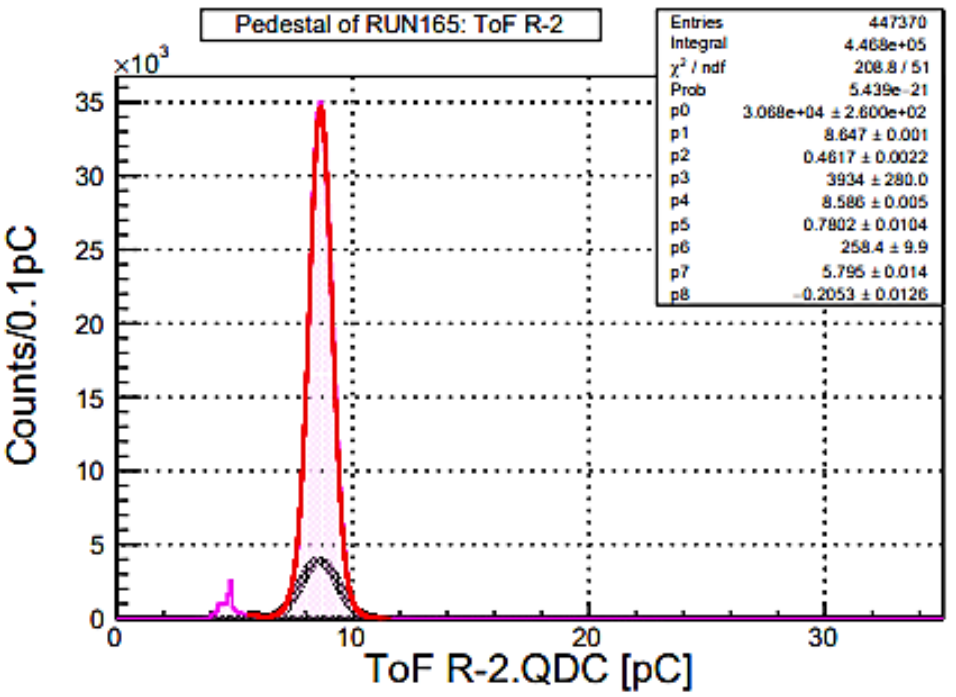

Pedestal of RUN165: ToF R-1
Entries 447370
Integral 4.468e+05
χ² / ndf 205.6 / 55
Prob 3.076e-19
p0 2.857e+04 ± 1.672e+02
p1 12.56 ± 0.00
p2 0.4929 ± 0.0019
p3 3679 ± 177.1
p4 12.51 ± 0.00
p5 0.8802 ± 0.0084
×10³
Counts/0.1pC
ToF R-1.QDC [pC]

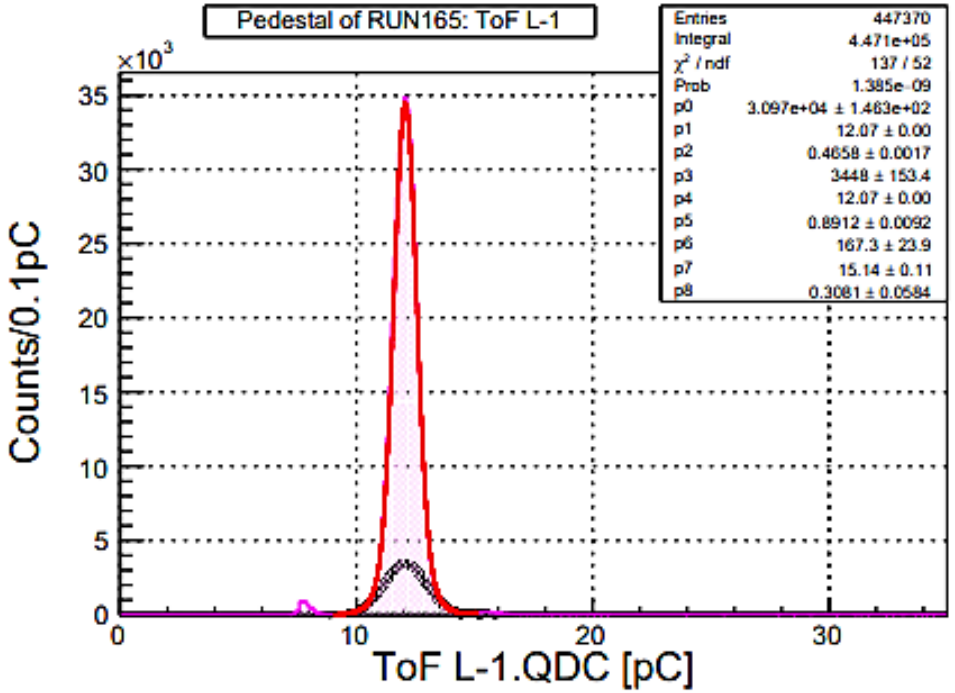

Pedestal of RUN165: ToF R-2
Entries 447370
Integral 4.468e+05
χ² / ndf 1152 / 54
Prob 0
p0 3.233e+04 ± 1.593e+02
p1 8.645 ± 0.001
p2 0.4764 ± 0.0019
p3 2060 ± 177.8
p4 8.548 ± 0.008
p5 0.8935 ± 0.0164
×10³
Counts/0.1pC
ToF R-2.QDC [pC]

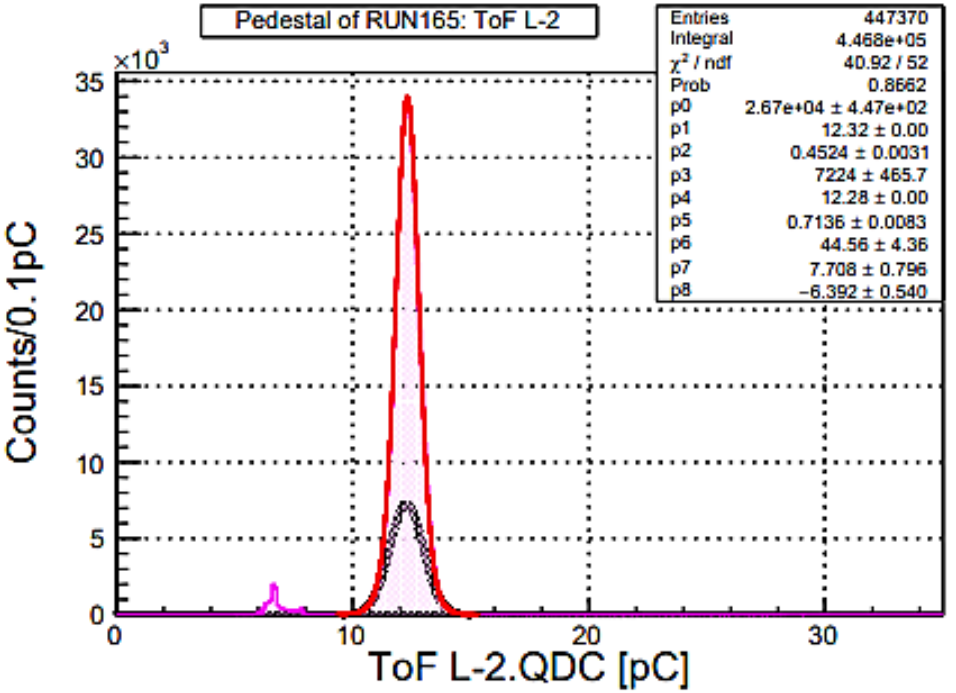

Pedestal of RUN165: ToF L-1
Entries 447370
Integral 4.471e+05
χ² / ndf 533 / 55
Prob 0
p0 3.161e+04 ± 1.137e+02
p1 12.06 ± 0.00
p2 0.4729 ± 0.0015
p3 2691 ± 116.5
p4 12.08 ± 0.01
p5 0.9508 ± 0.0098
×10³
Counts/0.1pC
ToF L-1.QDC [pC]

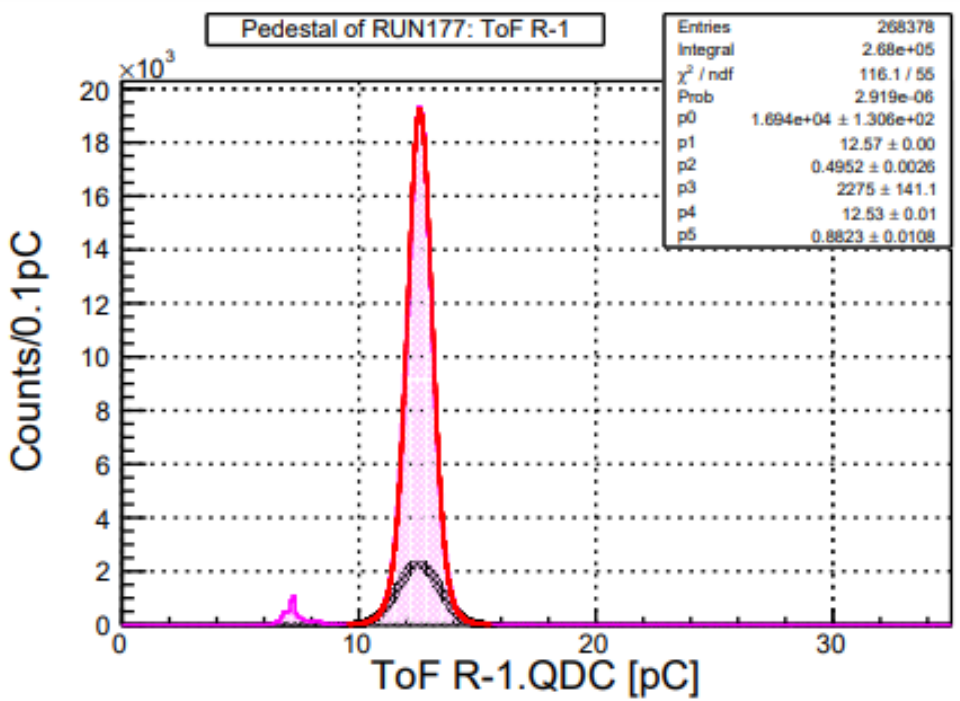

Pedestal of RUN165: ToF L-2
Entries 447370
Integral 4.468e+05
χ² / ndf 252.9 / 55
Prob 3.653e-27
p0 3.009e+04 ± 1.996e+02
p1 12.32 ± 0.00
p2 0.4743 ± 0.0020
p3 3663 ± 213.2
p4 12.26 ± 0.00
p5 0.8285 ± 0.0093
×10³
Counts/0.1pC
ToF L-2.QDC [pC]

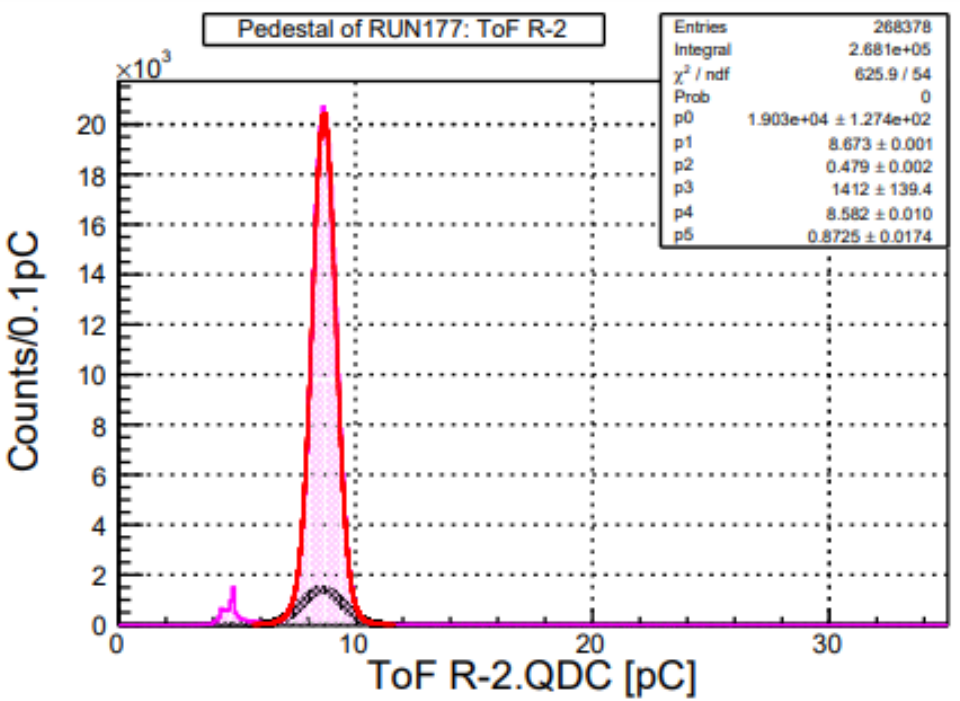

Pedestal of RUN165: ToF R-1
Entries 447370
Integral 4.468e+05
χ² / ndf 193.7 / 52
Prob 3.34e-18
p0 2.899e+04 ± 1.894e+02
p1 12.56 ± 0.00
p2 0.4958 ± 0.0021
p3 3249 ± 200.3
p4 12.52 ± 0.01
p5 0.8985 ± 0.0102
p6 135.1 ± 39.6
p7 11.25 ± 0.07
p8 0.2059 ± 0.0414
×10³
Counts/0.1pC
ToF R-1.QDC [pC]

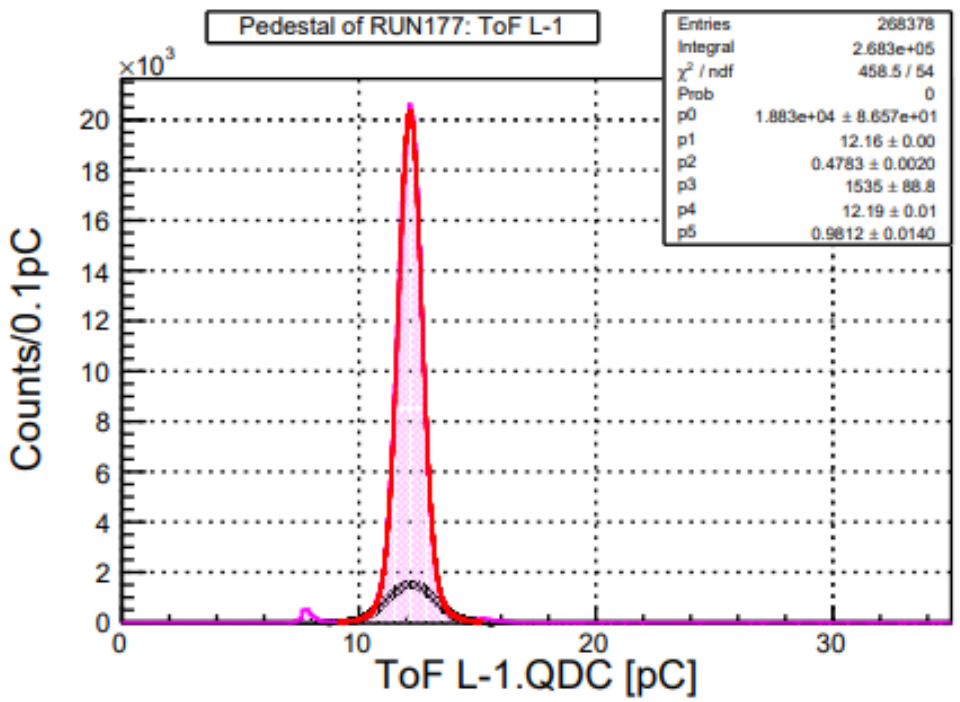

Pedestal of RUN165: ToF R-2
Entries 447370
Integral 4.468e+05
χ² / ndf 208.8 / 51
Prob 5.439e-21
p0 3.068e+04 ± 2.600e+02
p1 8.647 ± 0.001
p2 0.4617 ± 0.0022
p3 3934 ± 280.0
p4 8.586 ± 0.005
p5 0.7802 ± 0.0104
p6 258.4 ± 9.9
p7 5.796 ± 0.014
p8 −0.2053 ± 0.0126
×10³
Counts/0.1pC
ToF R-2.QDC [pC]

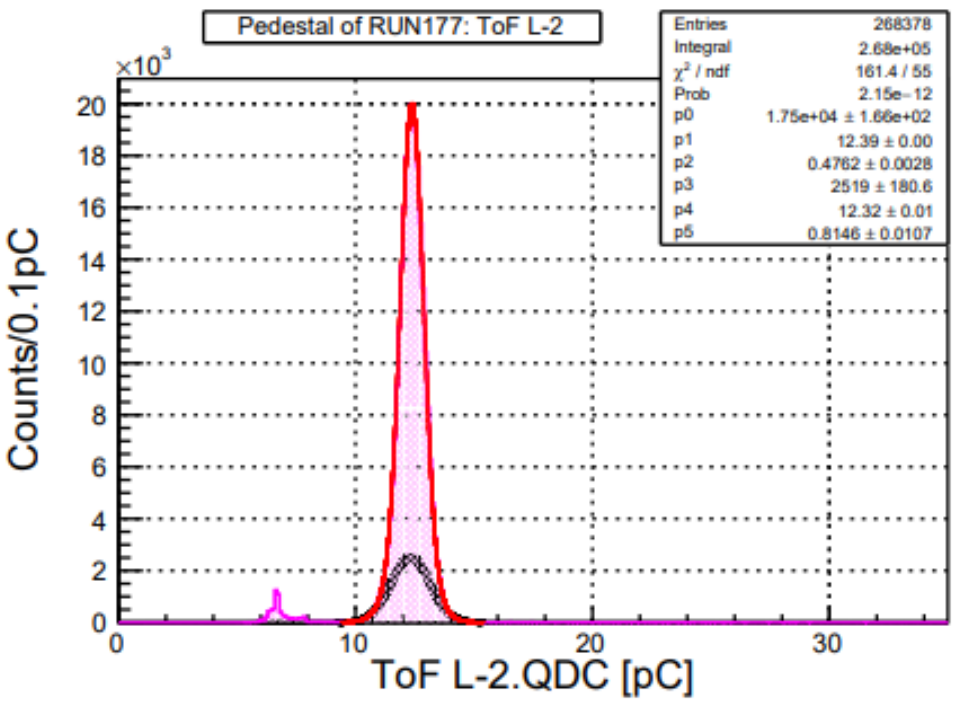

Pedestal of RUN165: ToF L-1
Entries 447370
Integral 4.471e+05
χ² / ndf 137 / 52
Prob 1.385e-09
p0 3.097e+04 ± 1.463e+02
p1 12.07 ± 0.00
p2 0.4658 ± 0.0017
p3 3448 ± 153.4
p4 12.07 ± 0.00
p5 0.8912 ± 0.0092
p6 167.3 ± 23.9
p7 15.14 ± 0.11
p8 0.3081 ± 0.0584
×10³
Counts/0.1pC
ToF L-1.QDC [pC]

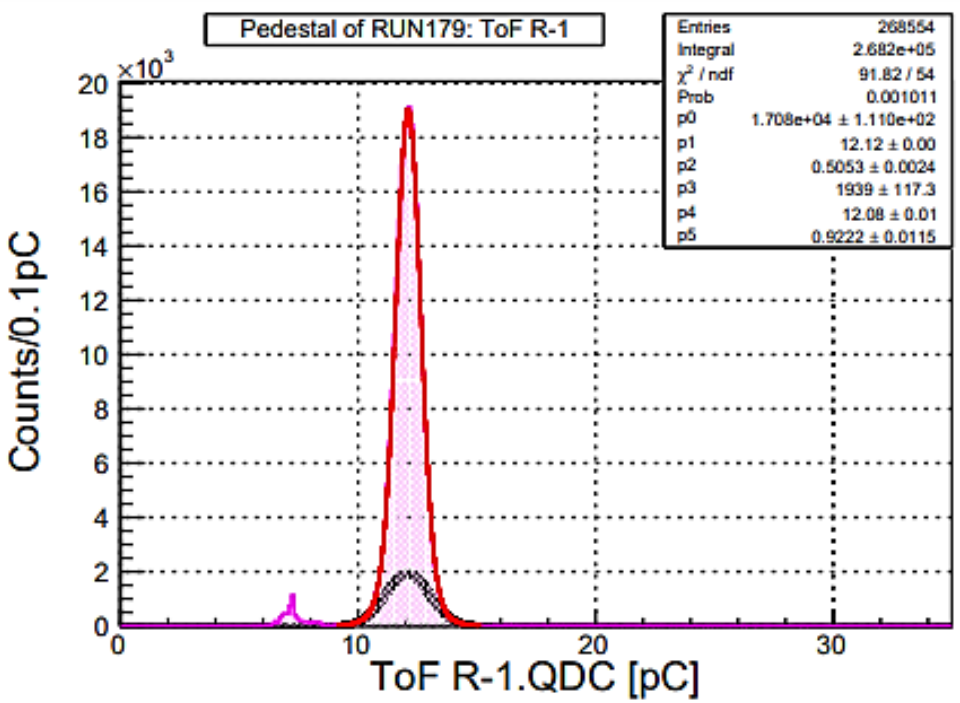

Pedestal of RUN165: ToF L-2
Entries 447370
Integral 4.468e+05
χ² / ndf 40.92 / 52
Prob 0.8662
p0 2.67e+04 ± 4.47e+02
p1 12.32 ± 0.00
p2 0.4524 ± 0.0031
p3 7224 ± 465.7
p4 12.28 ± 0.00
p5 0.7136 ± 0.0083
p6 44.56 ± 4.36
p7 7.708 ± 0.796
p8 −6.392 ± 0.540
×10³
Counts/0.1pC
ToF L-2.QDC [pC]

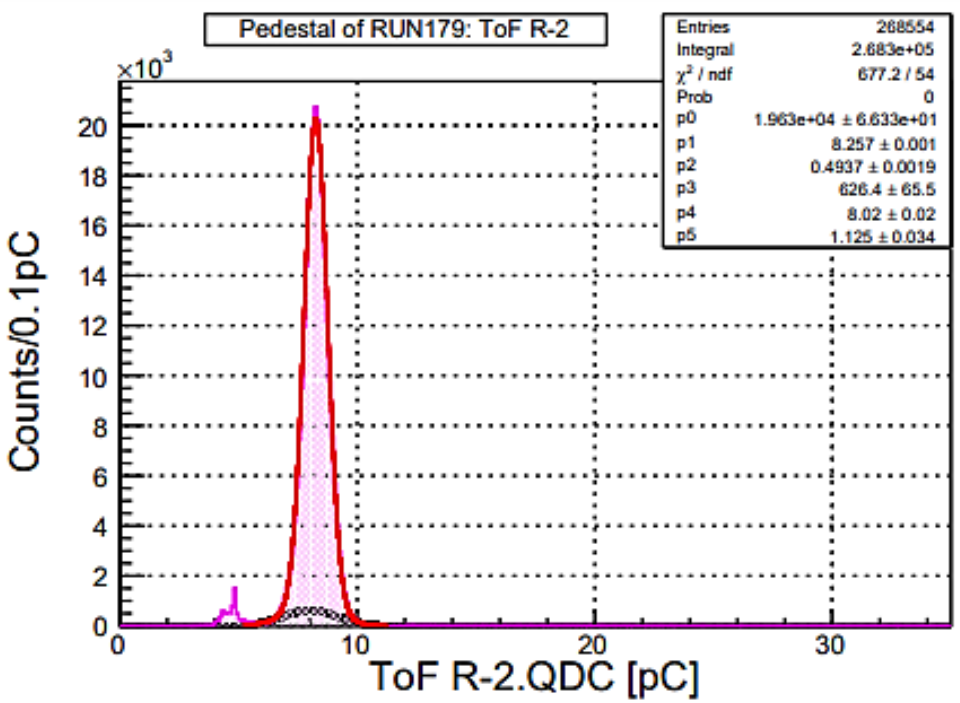

Pedestal of RUN177: ToF R-1
Entries 268378
Integral 2.68e+05
χ² / ndf 116.1 / 55
Prob 2.919e-06
p0 1.694e+04 ± 1.306e+02
p1 12.57 ± 0.00
p2 0.4952 ± 0.0026
p3 2275 ± 141.1
p4 12.53 ± 0.01
p5 0.8823 ± 0.0108
×10³
Counts/0.1pC
ToF R-1.QDC [pC]

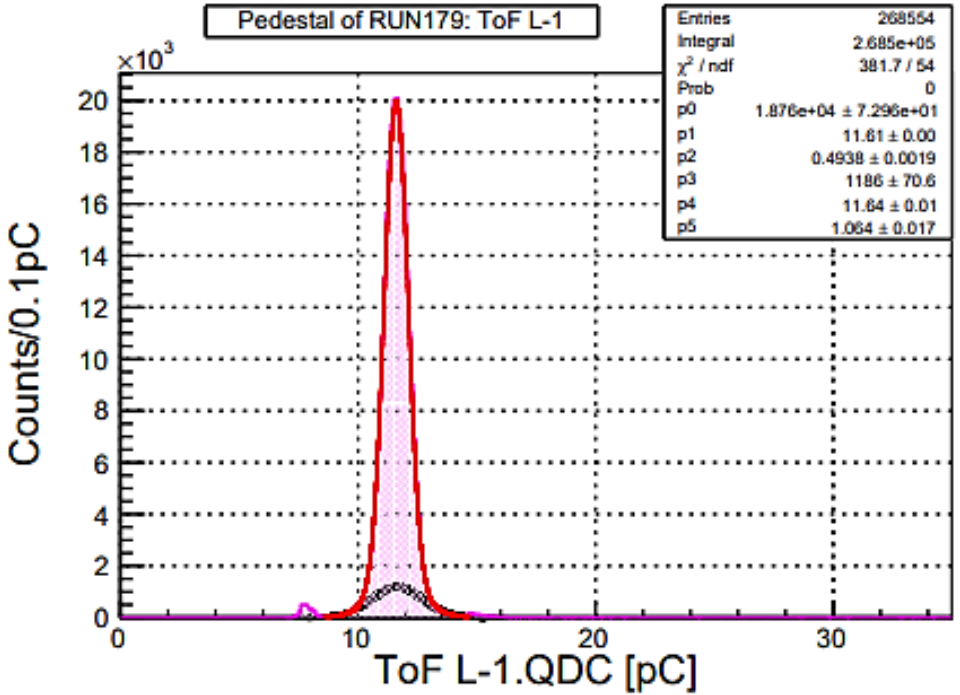

Pedestal of RUN177: ToF R-2
Entries 268378
Integral 2.681e+05
χ² / ndf 625.9 / 54
Prob 0
p0 1.903e+04 ± 1.274e+02
p1 8.673 ± 0.001
p2 0.479 ± 0.002
p3 1412 ± 139.4
p4 8.582 ± 0.010
p5 0.8725 ± 0.0174
×10³
Counts/0.1pC
ToF R-2.QDC [pC]

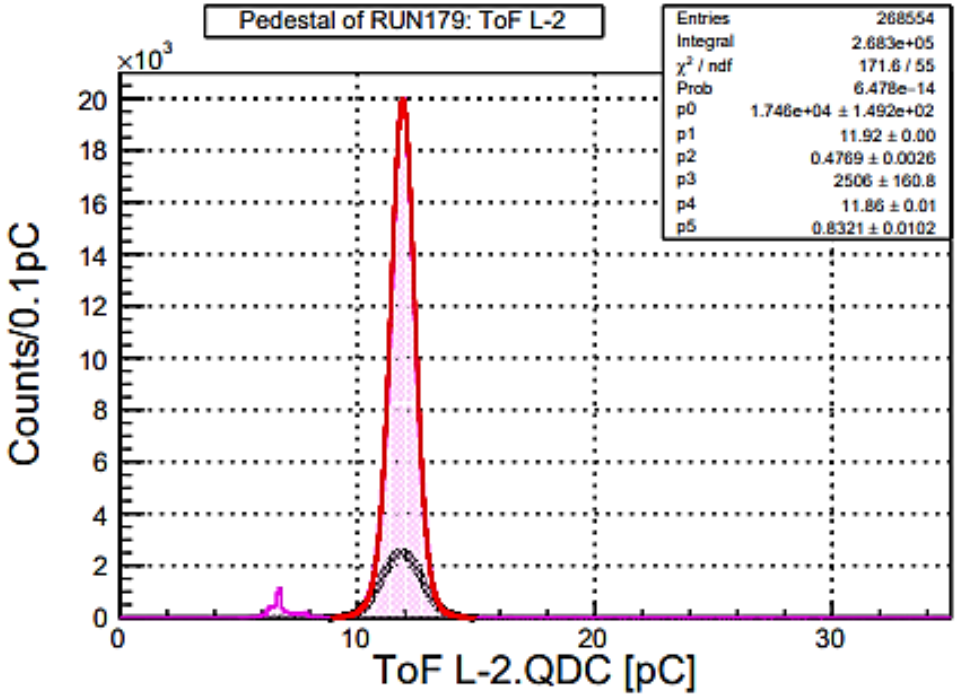

Pedestal of RUN177: ToF L-1
Entries 268378
Integral 2.683e+05
χ² / ndf 458.5 / 54
Prob 0
p0 1.883e+04 ± 8.657e+01
p1 12.16 ± 0.00
p2 0.4783 ± 0.0020
p3 1535 ± 88.8
p4 12.19 ± 0.01
p5 0.9812 ± 0.0140
×10³
Counts/0.1pC
ToF L-1.QDC [pC]

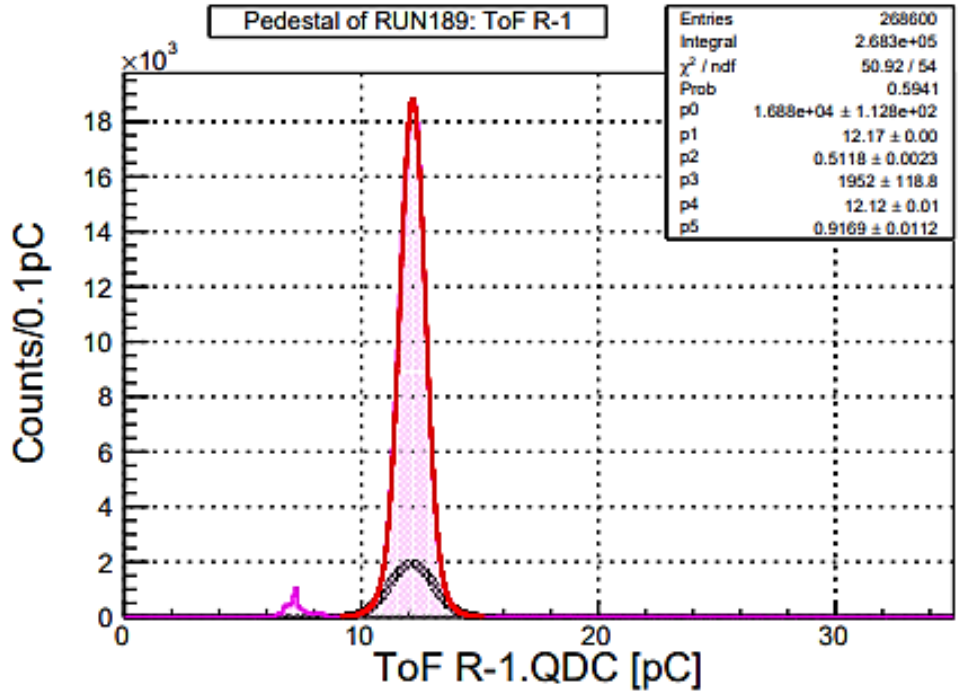

Pedestal of RUN177: ToF L-2
Entries 268378
Integral 2.68e+05
χ² / ndf 161.4 / 55
Prob 2.15e-12
p0 1.75e+04 ± 1.66e+02
p1 12.39 ± 0.00
p2 0.4762 ± 0.0028
p3 2519 ± 180.6
p4 12.32 ± 0.01
p5 0.8146 ± 0.0107
×10³
Counts/0.1pC
ToF L-2.QDC [pC]

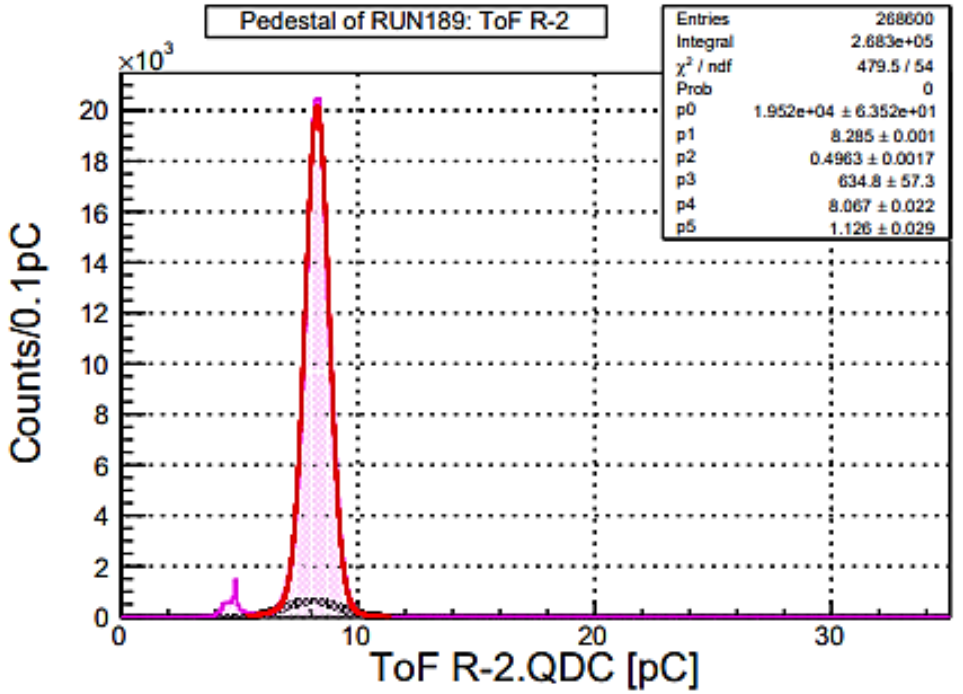

Pedestal of RUN179: ToF R-1
Entries 268554
Integral 2.682e+05
χ² / ndf 91.82 / 54
Prob 0.001011
p0 1.708e+04 ± 1.110e+02
p1 12.12 ± 0.00
p2 0.5053 ± 0.0024
p3 1939 ± 117.3
p4 12.08 ± 0.01
p5 0.9222 ± 0.0115
×10³
Counts/0.1pC
ToF R-1.QDC [pC]

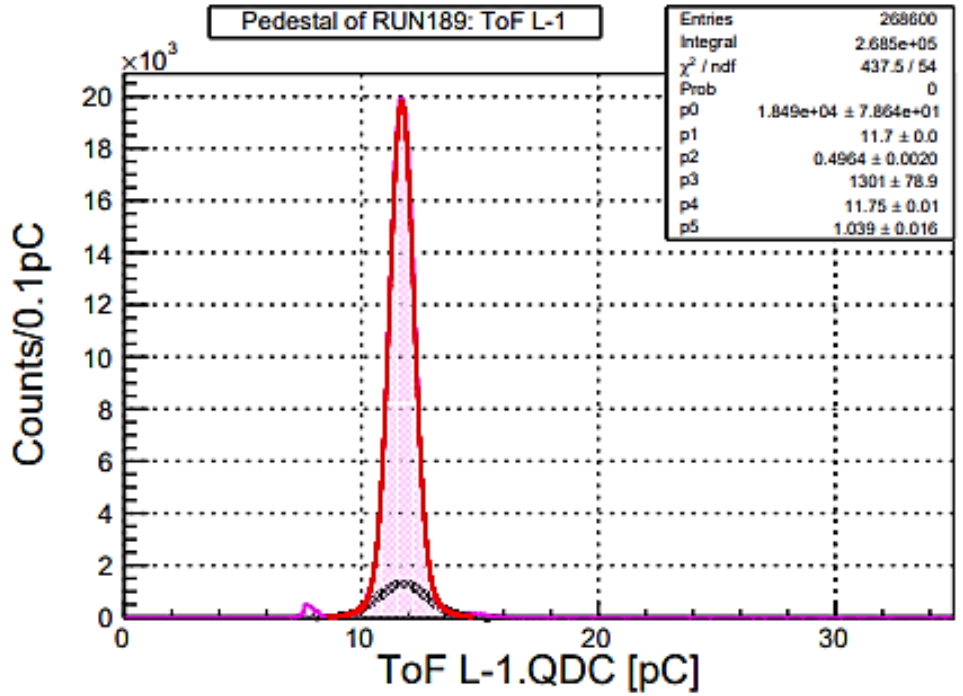

Pedestal of RUN179: ToF R-2
Entries 268554
Integral 2.683e+05
χ² / ndf 677.2 / 54
Prob 0
p0 1.963e+04 ± 6.633e+01
p1 8.257 ± 0.001
p2 0.4937 ± 0.0019
p3 626.4 ± 65.5
p4 8.02 ± 0.02
p5 1.125 ± 0.034
×10³
Counts/0.1pC
ToF R-2.QDC [pC]

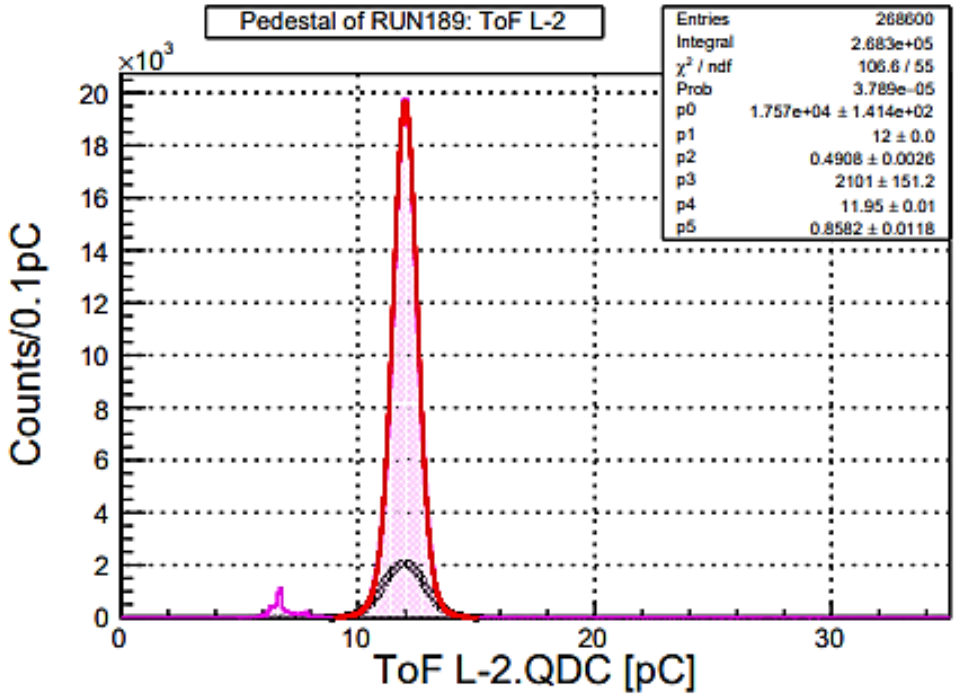

Pedestal of RUN179: ToF L-1
Entries 268554
Integral 2.685e+05
χ² / ndf 381.7 / 54
Prob 0
p0 1.876e+04 ± 7.296e+01
p1 11.61 ± 0.00
p2 0.4938 ± 0.0019
p3 1186 ± 70.6
p4 11.64 ± 0.01
p5 1.064 ± 0.017
×10³
Counts/0.1pC
ToF L-1.QDC [pC]

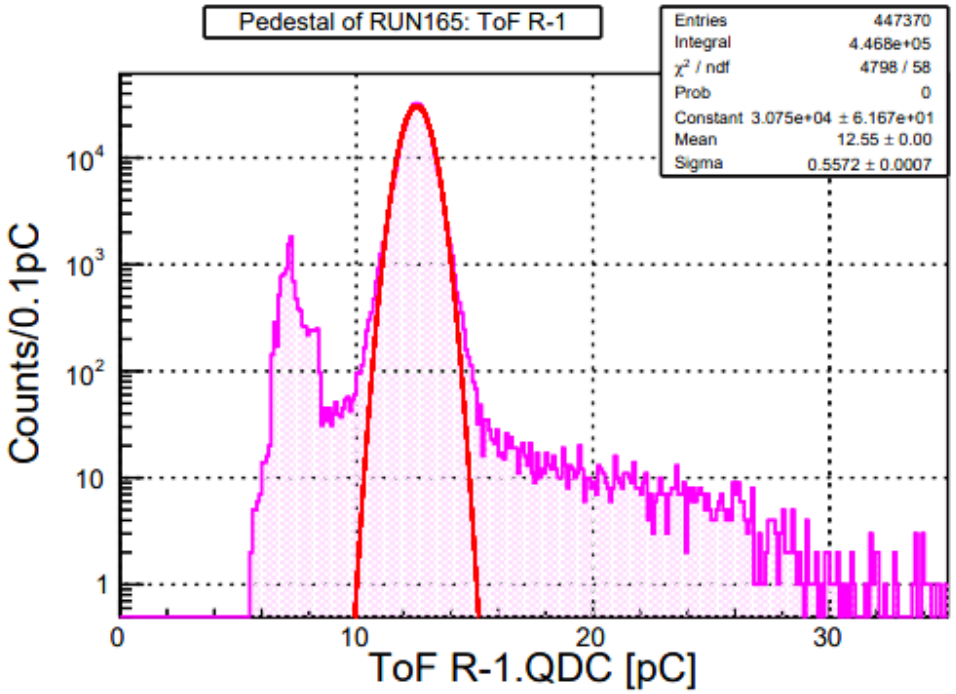

Pedestal of RUN179: ToF L-2
Entries 268554
Integral 2.683e+05
χ² / ndf 171.6 / 55
Prob 6.478e-14
p0 1.746e+04 ± 1.492e+02
p1 11.92 ± 0.00
p2 0.4769 ± 0.0026
p3 2506 ± 160.8
p4 11.86 ± 0.01
p5 0.8321 ± 0.0102
×10³
Counts/0.1pC
ToF L-2.QDC [pC]

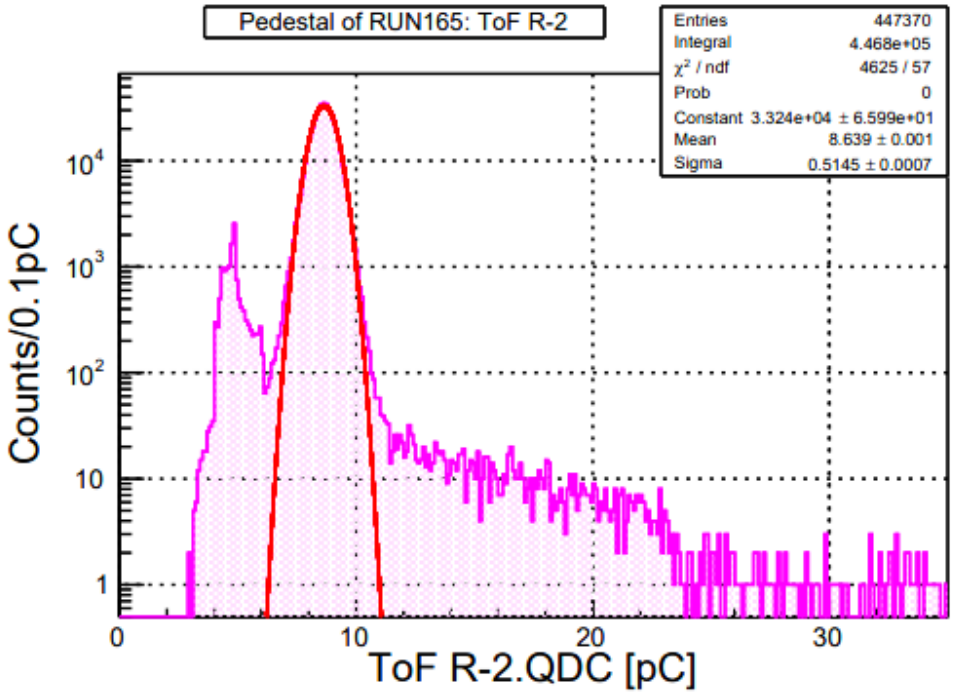

Pedestal of RUN189: ToF R-1
Entries 268600
Integral 2.683e+05
χ² / ndf 50.92 / 54
Prob 0.5941
p0 1.688e+04 ± 1.128e+02
p1 12.17 ± 0.00
p2 0.5118 ± 0.0023
p3 1952 ± 118.8
p4 12.12 ± 0.01
p5 0.9169 ± 0.0112
×10³
Counts/0.1pC
ToF R-1.QDC [pC]

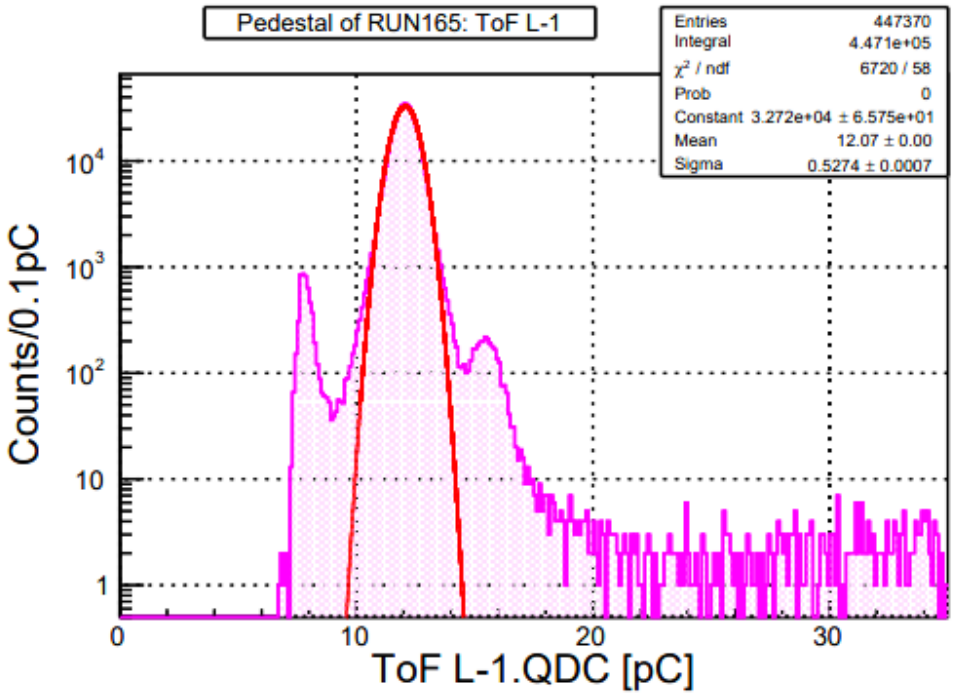

Pedestal of RUN189: ToF R-2
Entries 268600
Integral 2.683e+05
χ² / ndf 479.5 / 54
Prob 0
p0 1.952e+04 ± 6.352e+01
p1 8.285 ± 0.001
p2 0.4963 ± 0.0017
p3 634.8 ± 57.3
p4 8.067 ± 0.022
p5 1.126 ± 0.029
×10³
Counts/0.1pC
ToF R-2.QDC [pC]

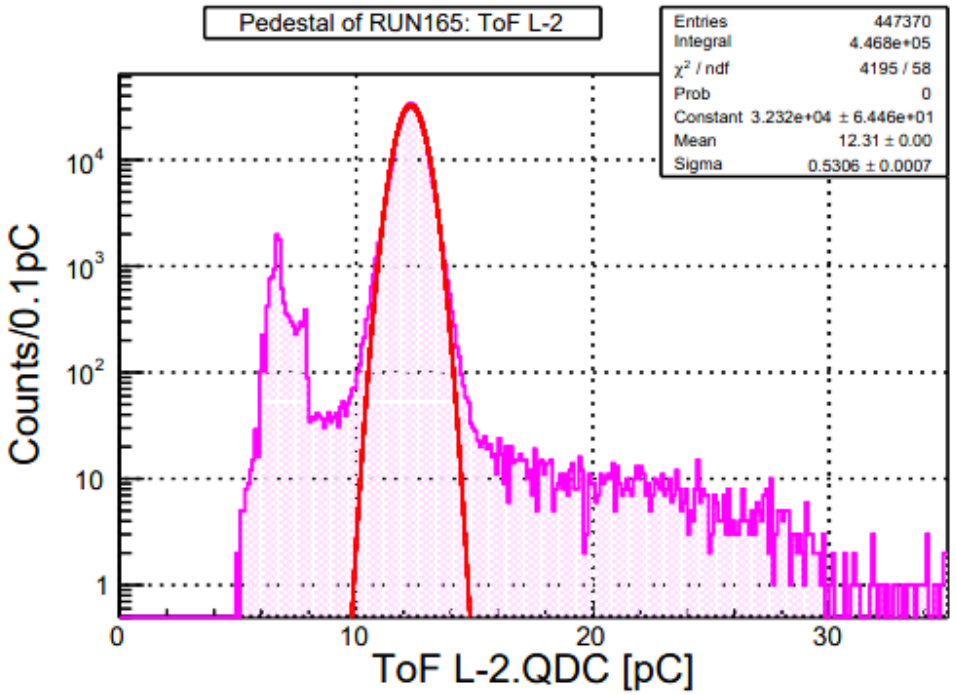

Pedestal of RUN189: ToF L-1
Entries 268600
Integral 2.685e+05
χ² / ndf 437.5 / 54
Prob 0
p0 1.849e+04 ± 7.864e+01
p1 11.7 ± 0.0
p2 0.4964 ± 0.0020
p3 1301 ± 78.9
p4 11.75 ± 0.01
p5 1.039 ± 0.016
×10³
Counts/0.1pC
ToF L-1.QDC [pC]

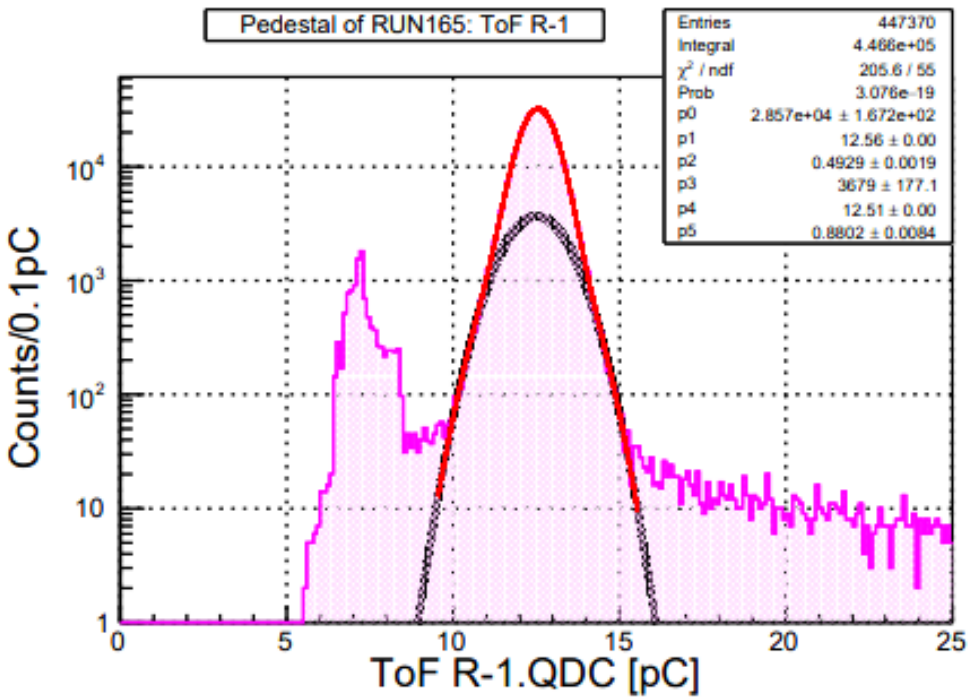

Pedestal of RUN189: ToF L-2
Entries 268600
Integral 2.683e+05
χ² / ndf 106.6 / 55
Prob 3.789e-05
p0 1.757e+04 ± 1.414e+02
p1 12 ± 0.0
p2 0.4908 ± 0.0026
p3 2101 ± 151.2
p4 11.95 ± 0.01
p5 0.8582 ± 0.0118
×10³
Counts/0.1pC
ToF L-2.QDC [pC]

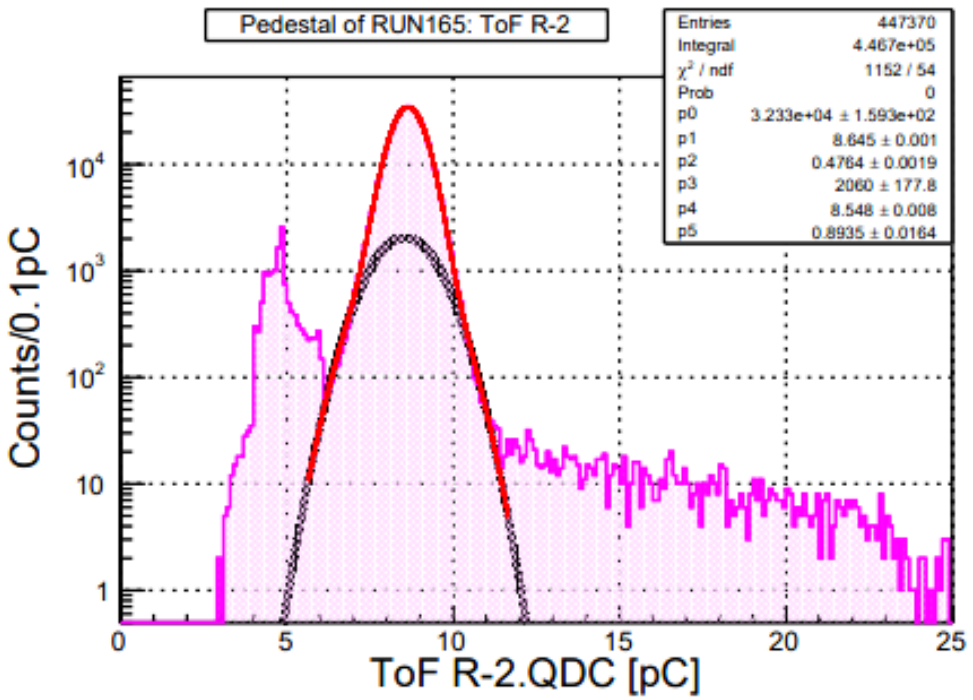

Pedestal of RUN165: ToF R-1
Entries 447370
Integral 4.468e+05
χ² / ndf 4798 / 58
Prob 0
Constant 3.075e+04 ± 6.167e+01
Mean 12.55 ± 0.00
Sigma 0.5572 ± 0.0007
Counts/0.1pC
ToF R-1.QDC [pC]

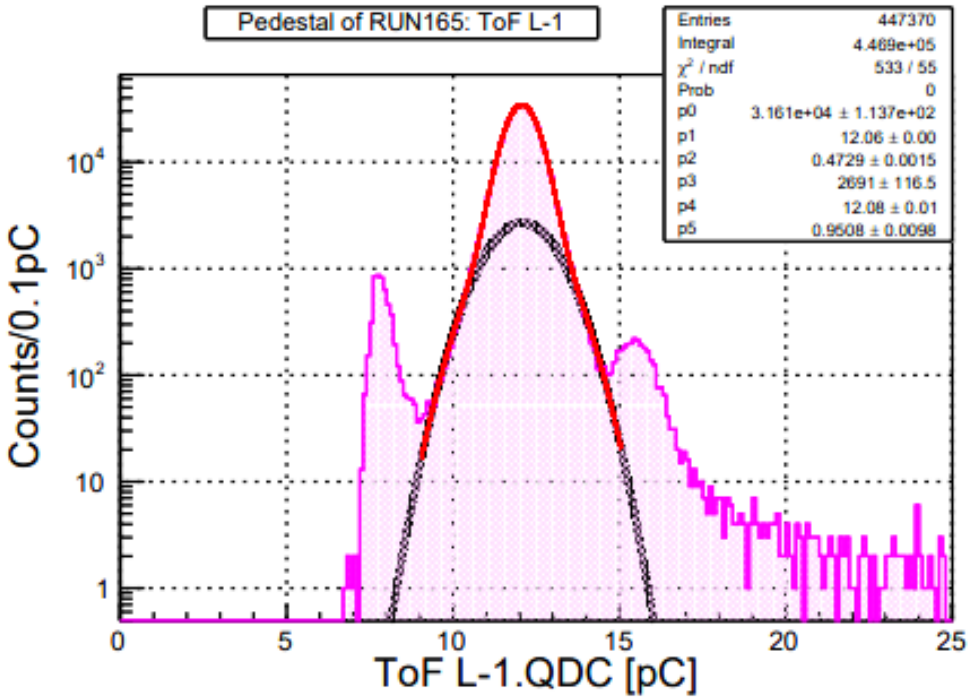

Pedestal of RUN165: ToF R-2
Entries 447370
Integral 4.468e+05
χ² / ndf 4625 / 57
Prob 0
Constant 3.324e+04 ± 6.599e+01
Mean 8.639 ± 0.001
Sigma 0.5145 ± 0.0007
Counts/0.1pC
ToF R-2.QDC [pC]

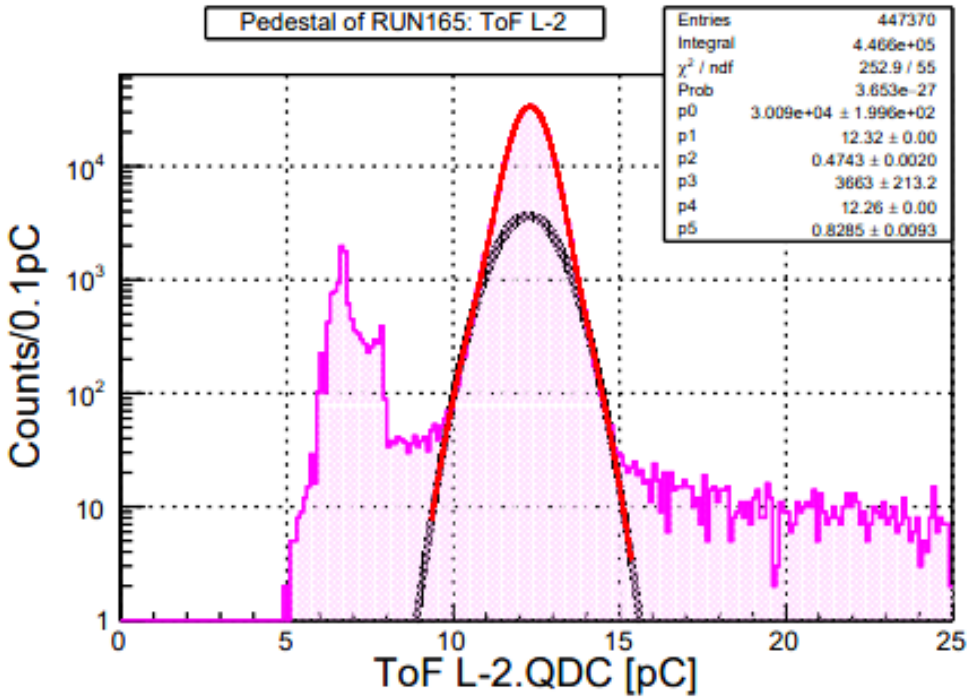

Pedestal of RUN165: ToF L-1
Entries 447370
Integral 4.471e+05
χ² / ndf 6720 / 58
Prob 0
Constant 3.272e+04 ± 6.575e+01
Mean 12.07 ± 0.00
Sigma 0.5274 ± 0.0007
Counts/0.1pC
ToF L-1.QDC [pC]

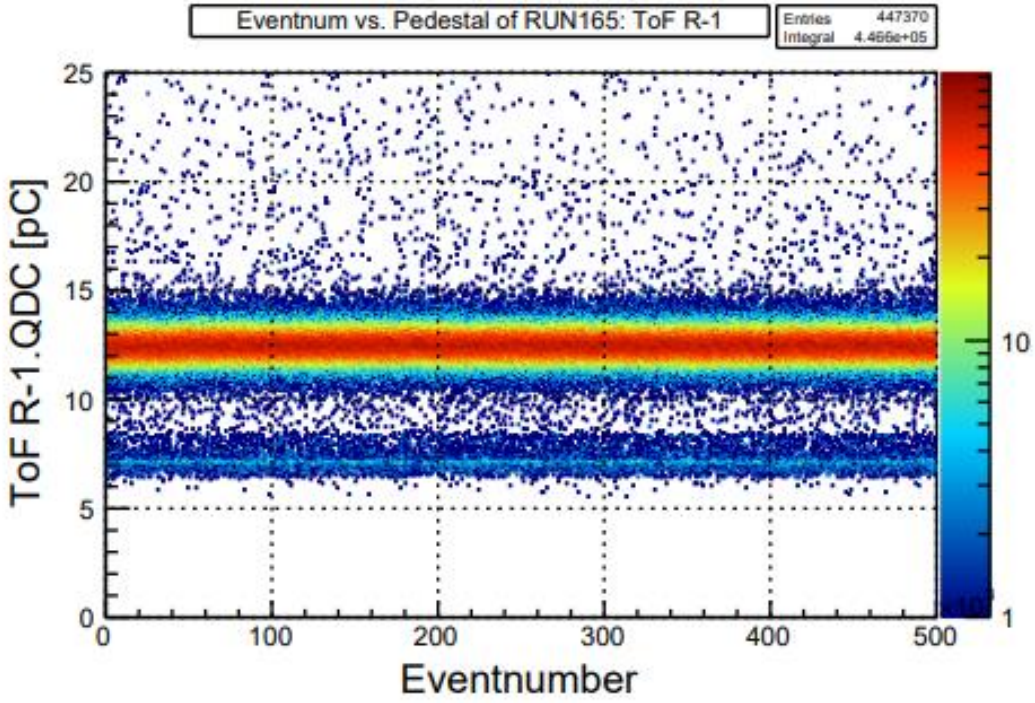

Pedestal of RUN165: ToF L-2
Entries 447370
Integral 4.468e+05
χ² / ndf 4195 / 58
Prob 0
Constant 3.232e+04 ± 6.446e+01
Mean 12.31 ± 0.00
Sigma 0.5306 ± 0.0007
Counts/0.1pC
ToF L-2.QDC [pC]

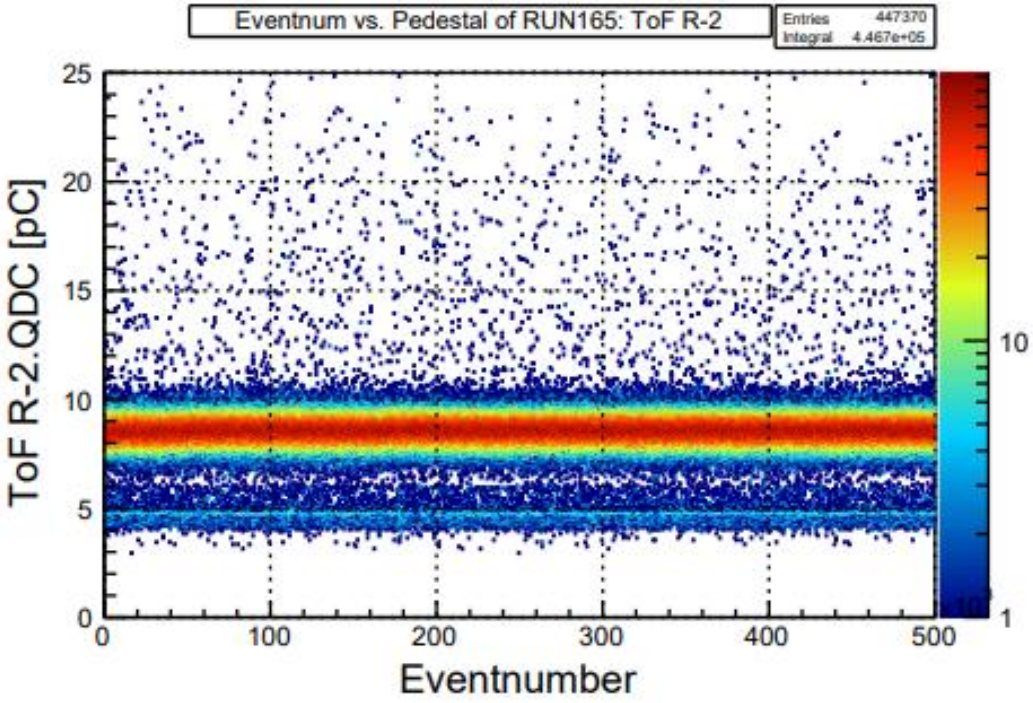

Pedestal of RUN165: ToF R-1
Entries 447370
Integral 4.466e+05
χ² / ndf 205.6 / 55
Prob 3.076e-19
p0 2.857e+04 ± 1.672e+02
p1 12.56 ± 0.00
p2 0.4929 ± 0.0019
p3 3679 ± 177.1
p4 12.51 ± 0.00
p5 0.8802 ± 0.0084
Counts/0.1pC
ToF R-1.QDC [pC]

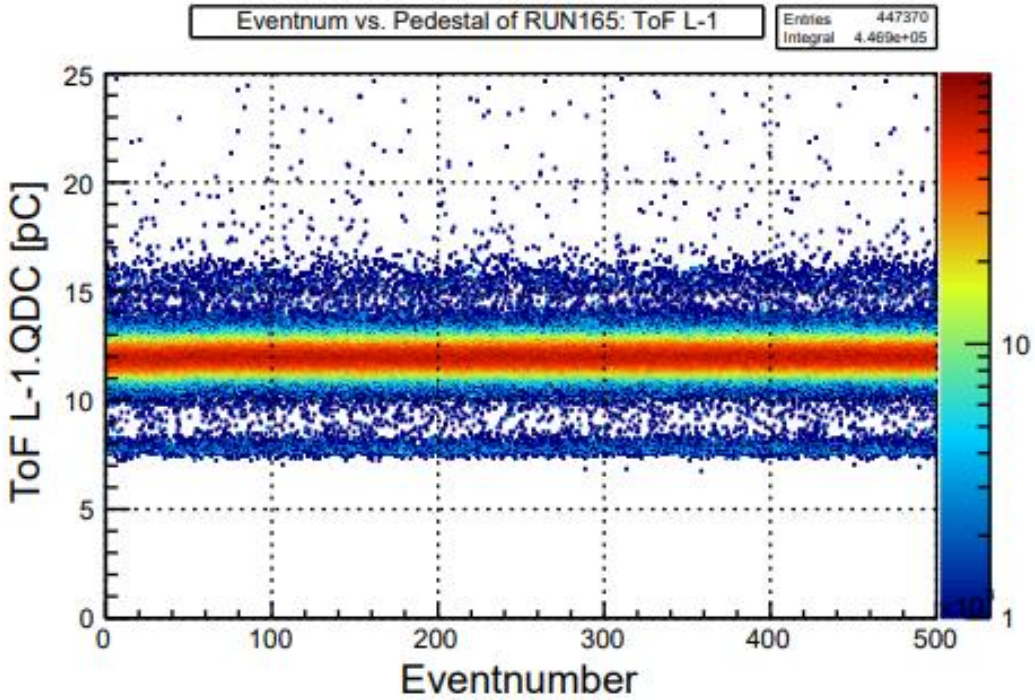

Pedestal of RUN165: ToF R-2
Entries 447370
Integral 4.467e+05
χ² / ndf 1152 / 54
Prob 0
p0 3.233e+04 ± 1.593e+02
p1 8.645 ± 0.001
p2 0.4764 ± 0.0019
p3 2060 ± 177.8
p4 8.548 ± 0.008
p5 0.8935 ± 0.0164
Counts/0.1pC
ToF R-2.QDC [pC]

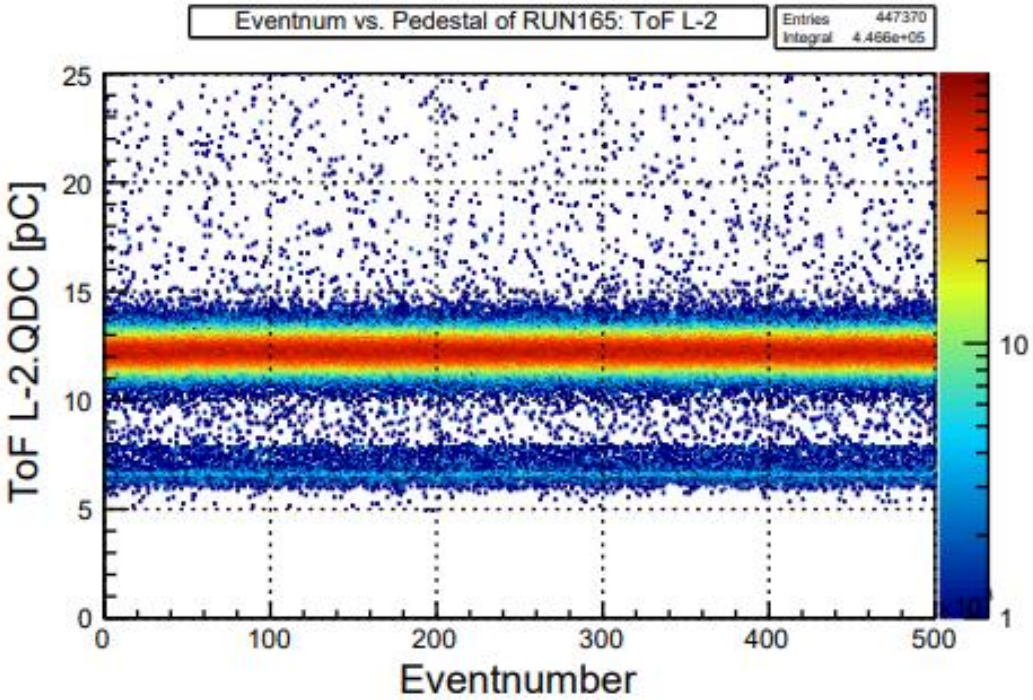

Pedestal of RUN165: ToF L-1
Entries 447370
Integral 4.469e+05
χ² / ndf 533 / 55
Prob 0
p0 3.161e+04 ± 1.137e+02
p1 12.06 ± 0.00
p2 0.4729 ± 0.0015
p3 2691 ± 116.5
p4 12.08 ± 0.01
p5 0.9508 ± 0.0098
Counts/0.1pC
ToF L-1.QDC [pC]

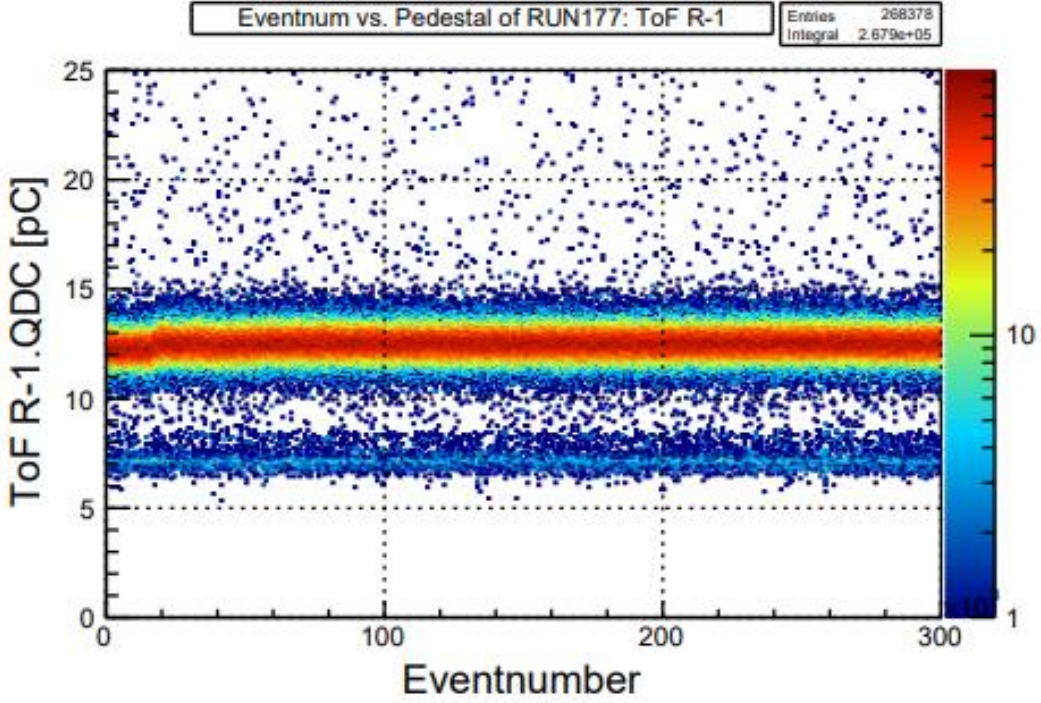

Pedestal of RUN165: ToF L-2
Entries 447370
Integral 4.466e+05
χ² / ndf 252.9 / 55
Prob 3.653e-27
p0 3.009e+04 ± 1.996e+02
p1 12.32 ± 0.00
p2 0.4743 ± 0.0020
p3 3663 ± 213.2
p4 12.26 ± 0.00
p5 0.8285 ± 0.0093
Counts/0.1pC
ToF L-2.QDC [pC]

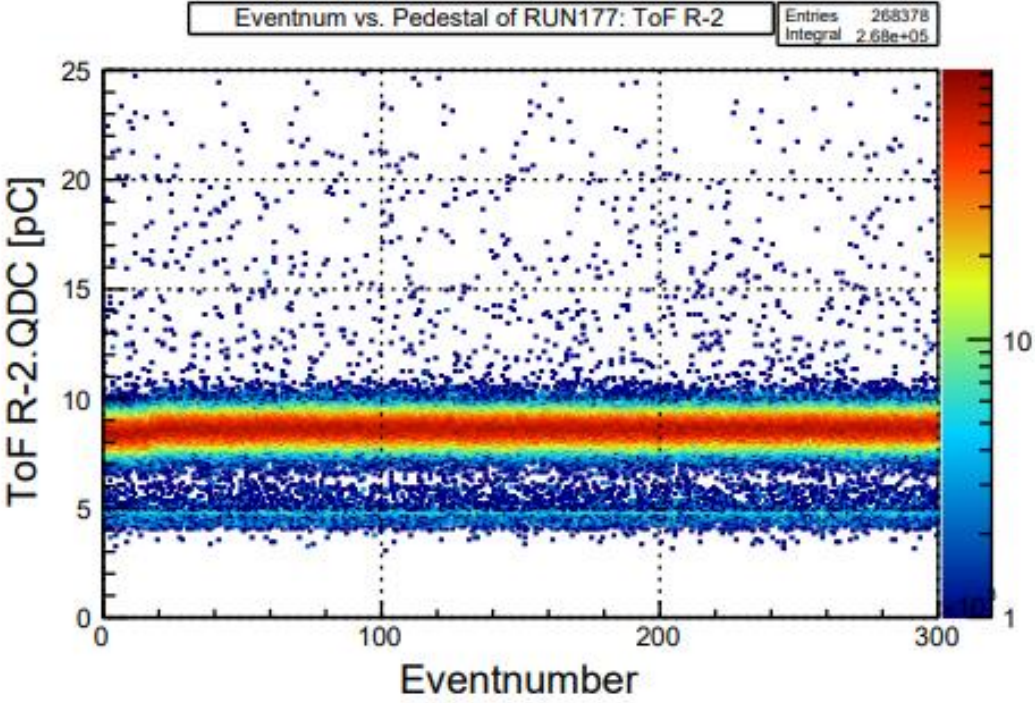

Eventnum vs. Pedestal of RUN165: ToF R-1
Entries 447370
Integral 4.466e+05
ToF R-1.QDC [pC]
Eventnumber

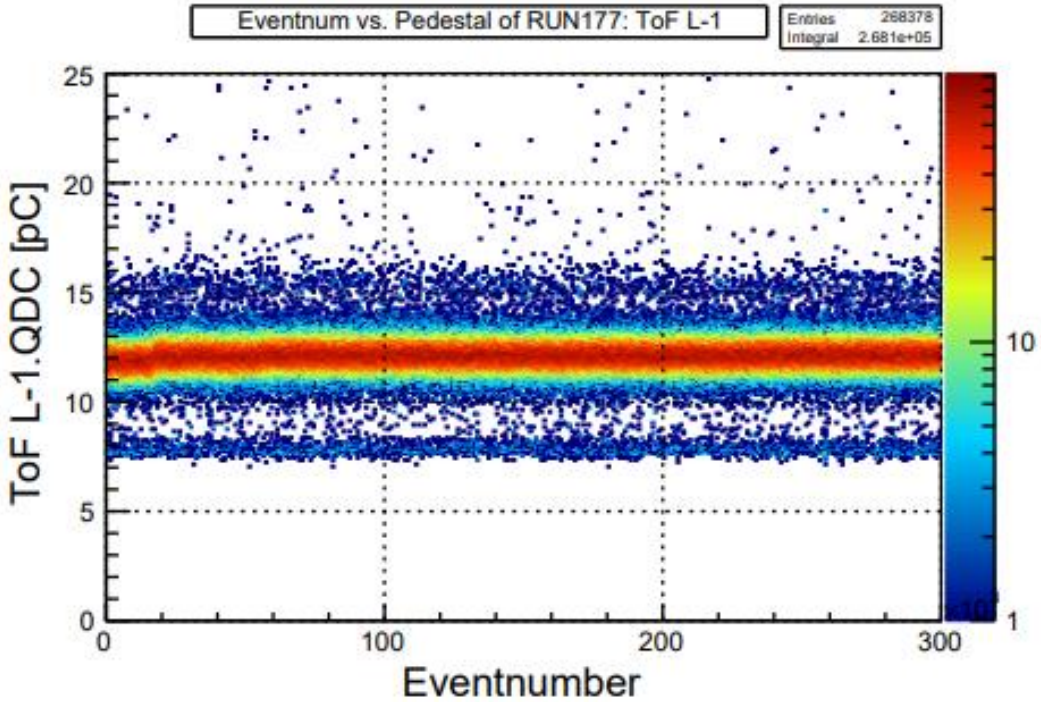

Eventnum vs. Pedestal of RUN165: ToF R-2
Entries 447370
Integral 4.467e+05
ToF R-2.QDC [pC]
Eventnumber

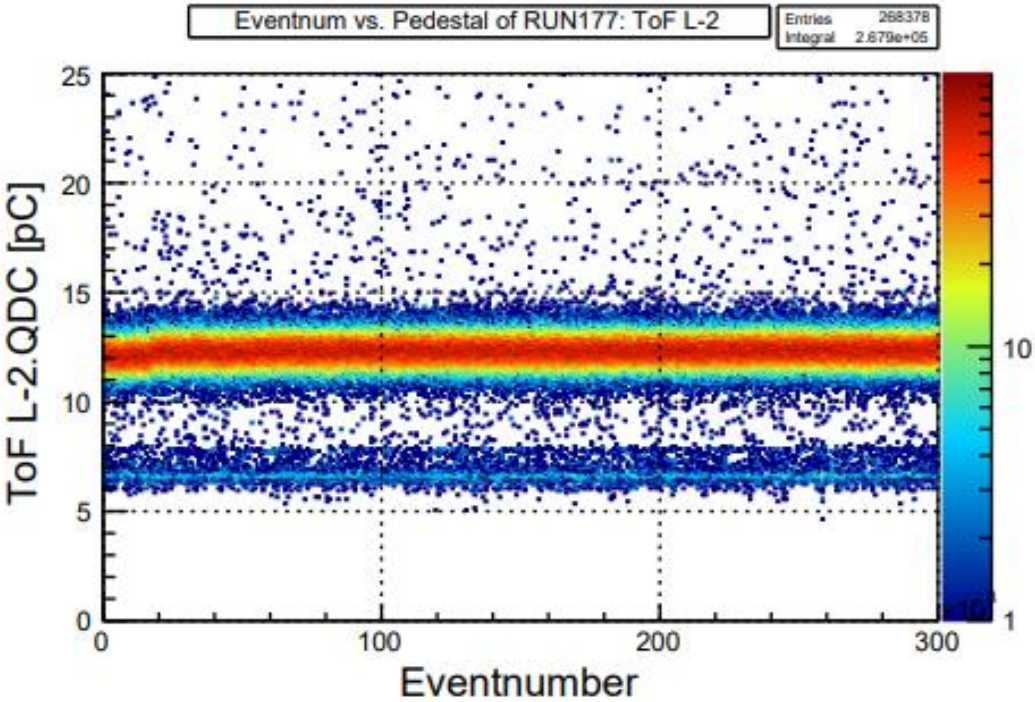

Eventnum vs. Pedestal of RUN165: ToF L-1
Entries 447370
Integral 4.469e+05
ToF L-1.QDC [pC]
Eventnumber

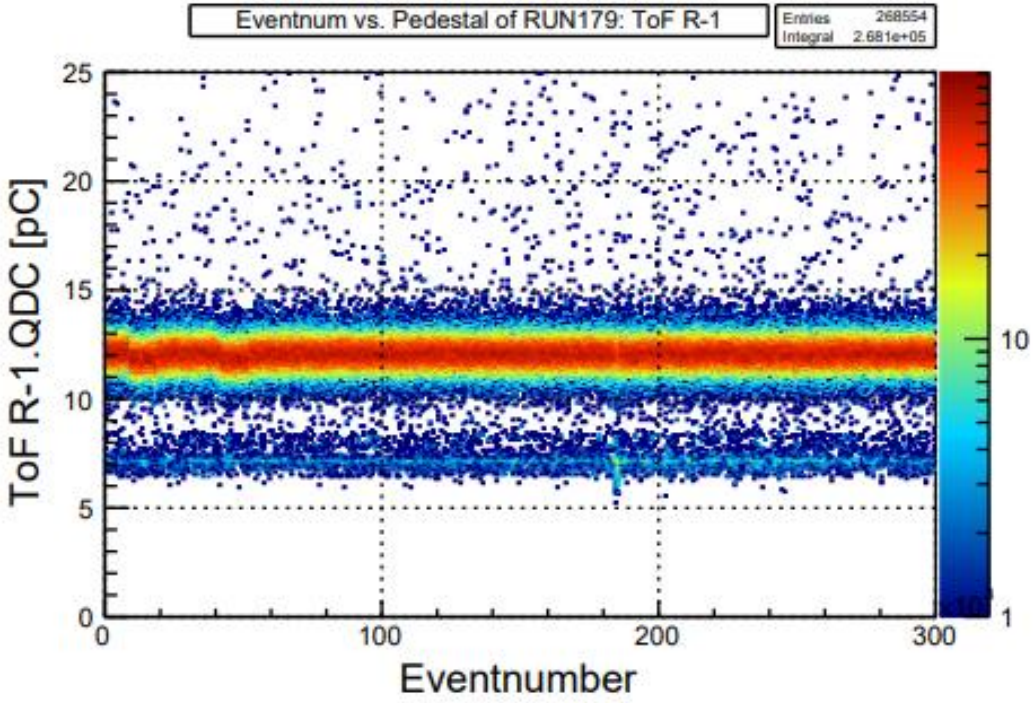

Eventnum vs. Pedestal of RUN165: ToF L-2
Entries 447370
Integral 4.466e+05
ToF L-2.QDC [pC]
Eventnumber

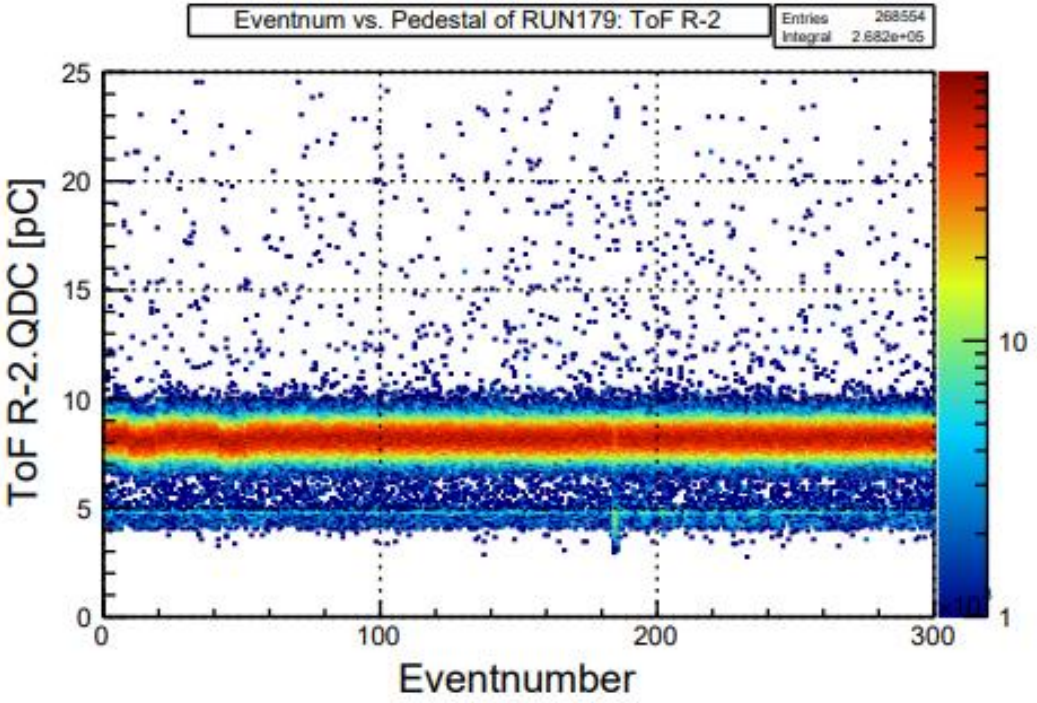

Eventnum vs. Pedestal of RUN177: ToF R-1
Entries 268378
Integral 2.679e+05
ToF R-1.QDC [pC]
Eventnumber

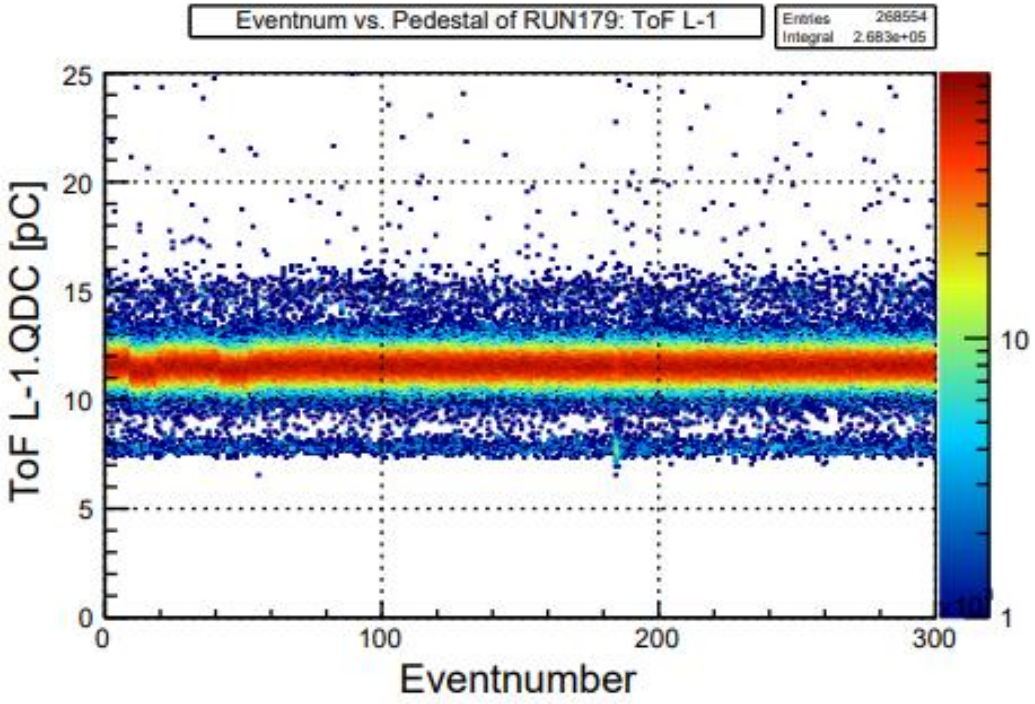

Eventnum vs. Pedestal of RUN177: ToF R-2
Entries 268378
Integral 2.68e+05
ToF R-2.QDC [pC]
Eventnumber

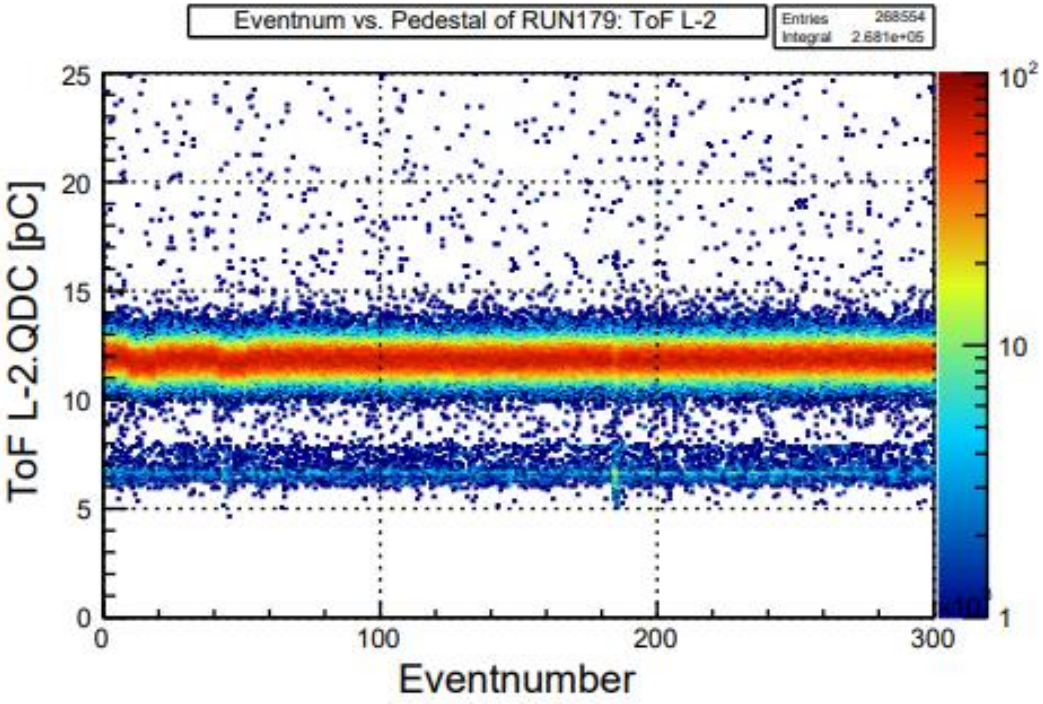

Eventnum vs. Pedestal of RUN177: ToF L-1
Entries 268378
Integral 2.681e+05
ToF L-1.QDC [pC]
Eventnumber

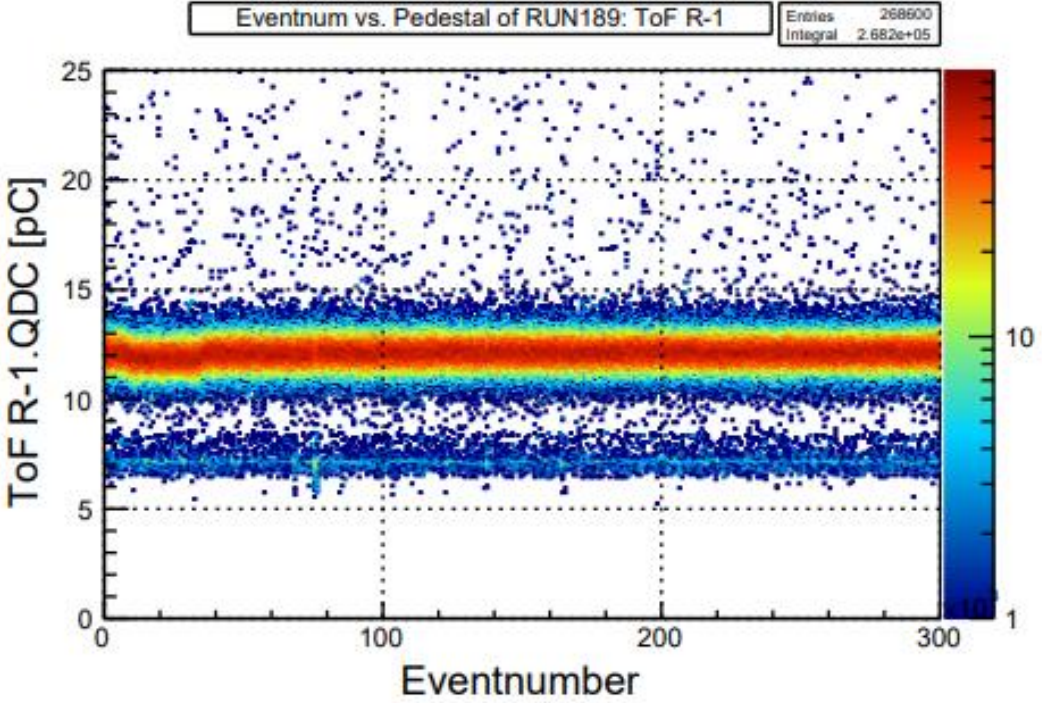

Eventnum vs. Pedestal of RUN177: ToF L-2
Entries 268378
Integral 2.679e+05
ToF L-2.QDC [pC]
Eventnumber

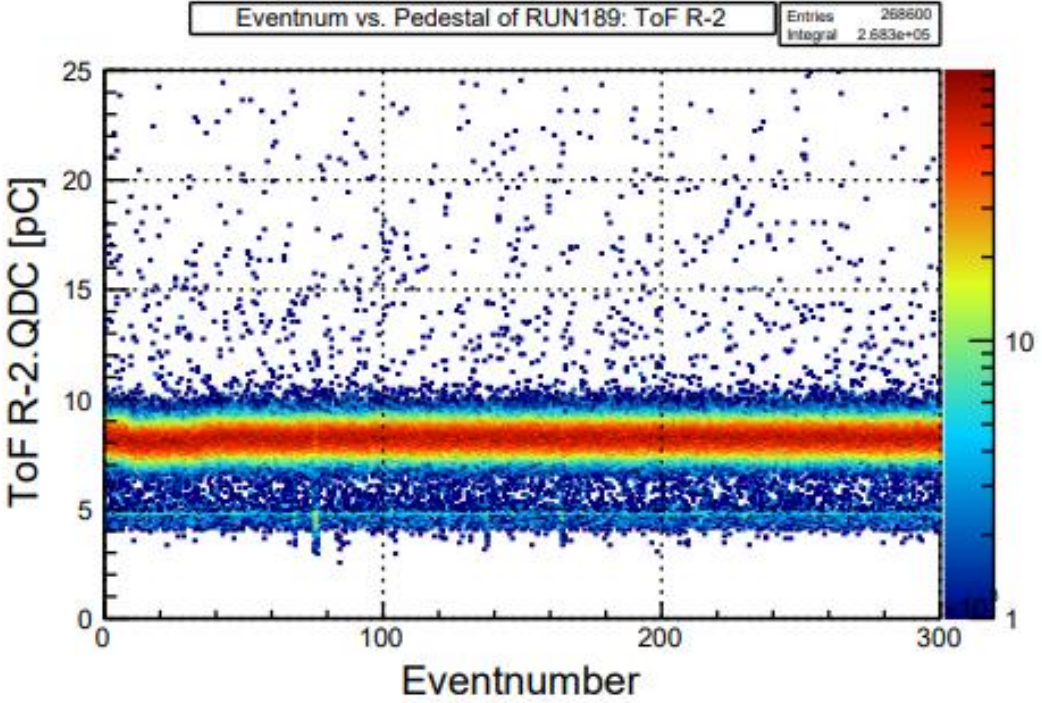

Eventnum vs. Pedestal of RUN179: ToF R-1
Entries 268554
Integral 2.681e+05
ToF R-1.QDC [pC]
Eventnumber

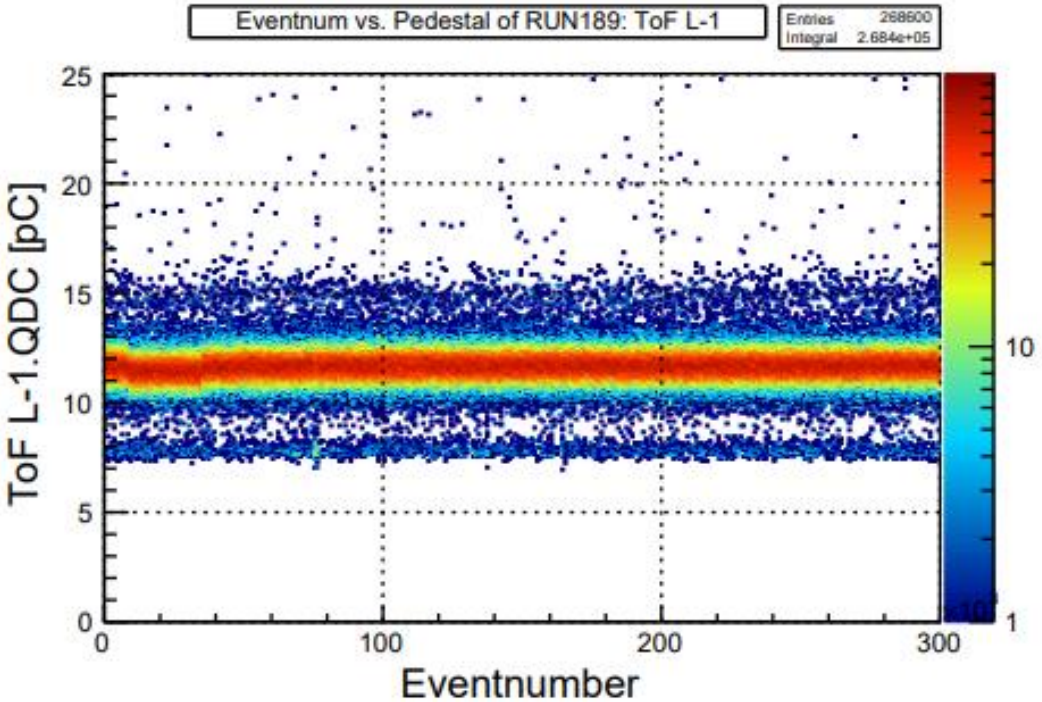

Eventnum vs. Pedestal of RUN179: ToF R-2
Entries 268554
Integral 2.682e+05
ToF R-2.QDC [pC]
Eventnumber

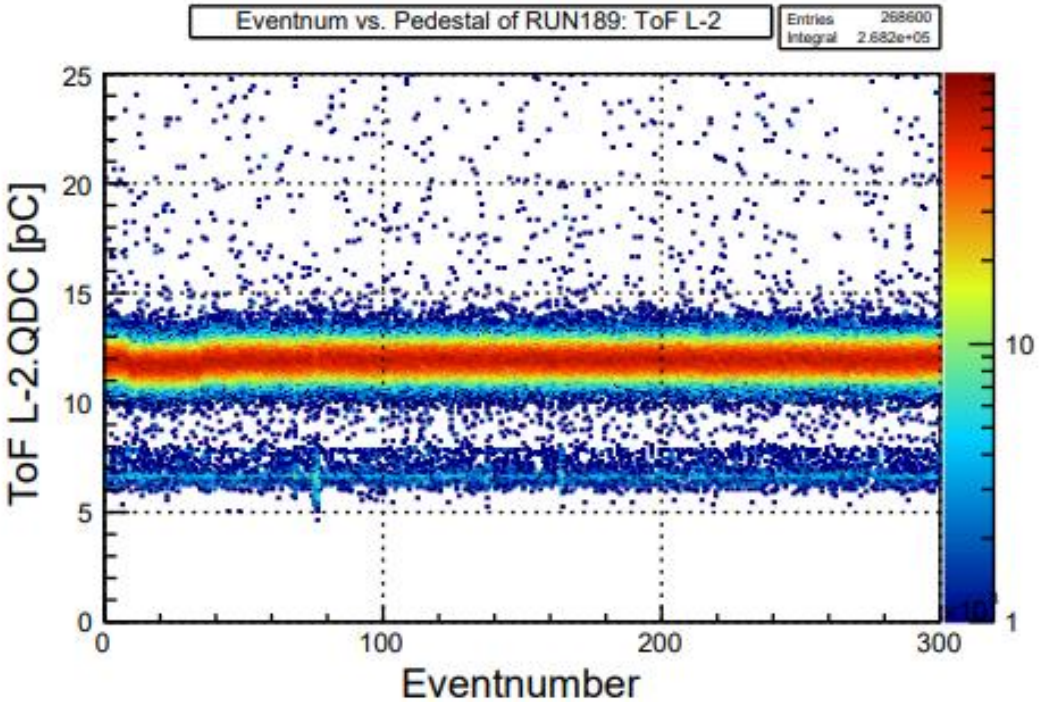

Eventnum vs. Pedestal of RUN179: ToF L-1
Entries 268554
Integral 2.683e+05
ToF L-1.QDC [pC]
Eventnumber


Eventnum vs. Pedestal of RUN179: ToF L-2
Entries 268554
Integral 2.681e+05
ToF L-2.QDC [pC]
Eventnumber


Eventnum vs. Pedestal of RUN189: ToF R-1
Entries 268600
Integral 2.682e+05
ToF R-1.QDC [pC]
Eventnumber


Eventnum vs. Pedestal of RUN189: ToF R-2
Entries 268600
Integral 2.683e+05
ToF R-2.QDC [pC]
Eventnumber


Eventnum vs. Pedestal of RUN189: ToF L-1
Entries 268600
Integral 2.684e+05
ToF L-1.QDC [pC]
Eventnumber


Eventnum vs. Pedestal of RUN189: ToF L-2
Entries 268600
Integral 2.682e+05
ToF L-2.QDC [pC]
Eventnumber