d_2^n BigBite: *Čerenkov* Pedestals

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Big Bite *Čerenkov* Pedestals

When looking at BB *Čerenkov* photo electron yield for beamline side PMTs, the pedestal subtraction seemed to be too large.

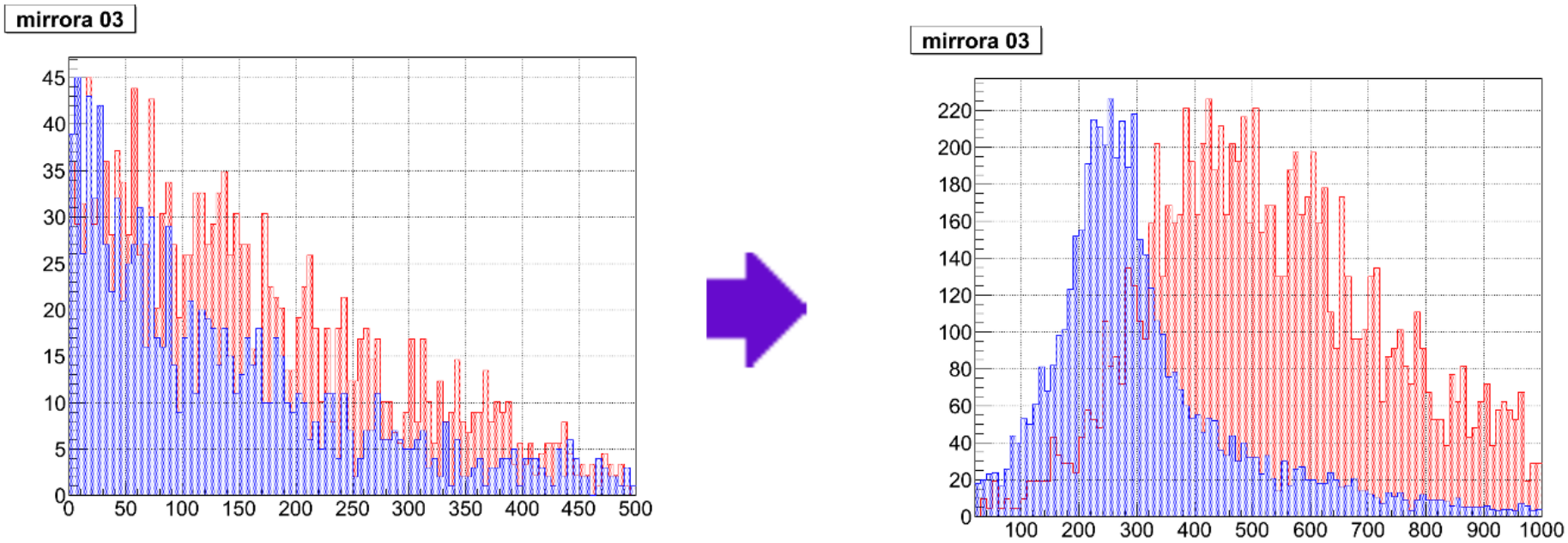

Figure 1: ADC for run 1849 of PMT 3: Ped subtracted and gain corrected (left), Raw (right)

Pedestal Shifts?

- Is the Pedestal shifting? If so how does it look with...
  - LED runs
  - Cosmic runs
  - Low current runs
  - Full current runs
- Two ADC modules used, v792 and 1881
  - How do these look?

Cosmics vs LED

Beam line 1881 ADC

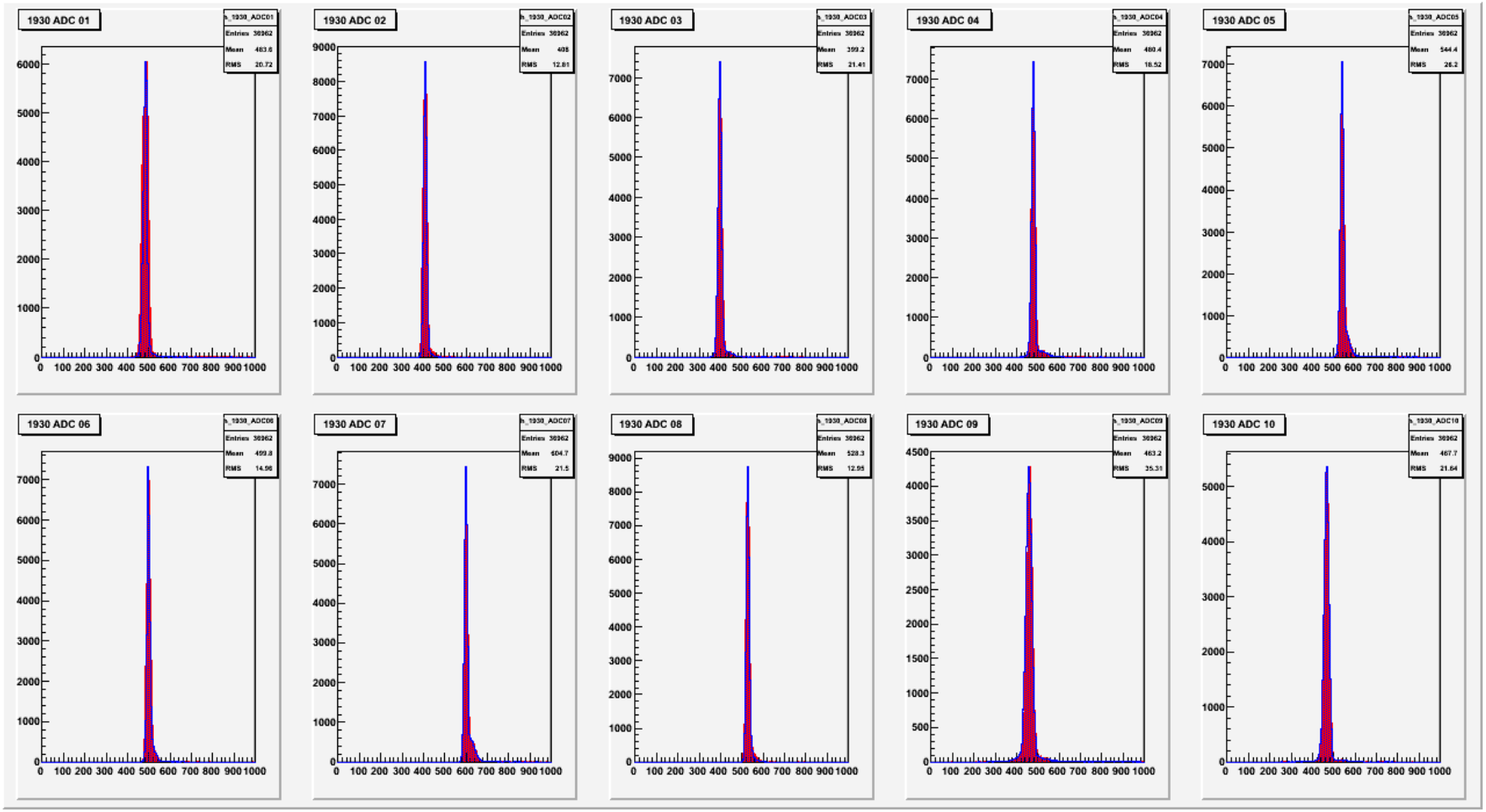

Figure 2: Beam line ADC for cosmic run 1930 (red) and LED run 1829 (blue).

Cosmics vs LED

RHRS line 1881 ADC

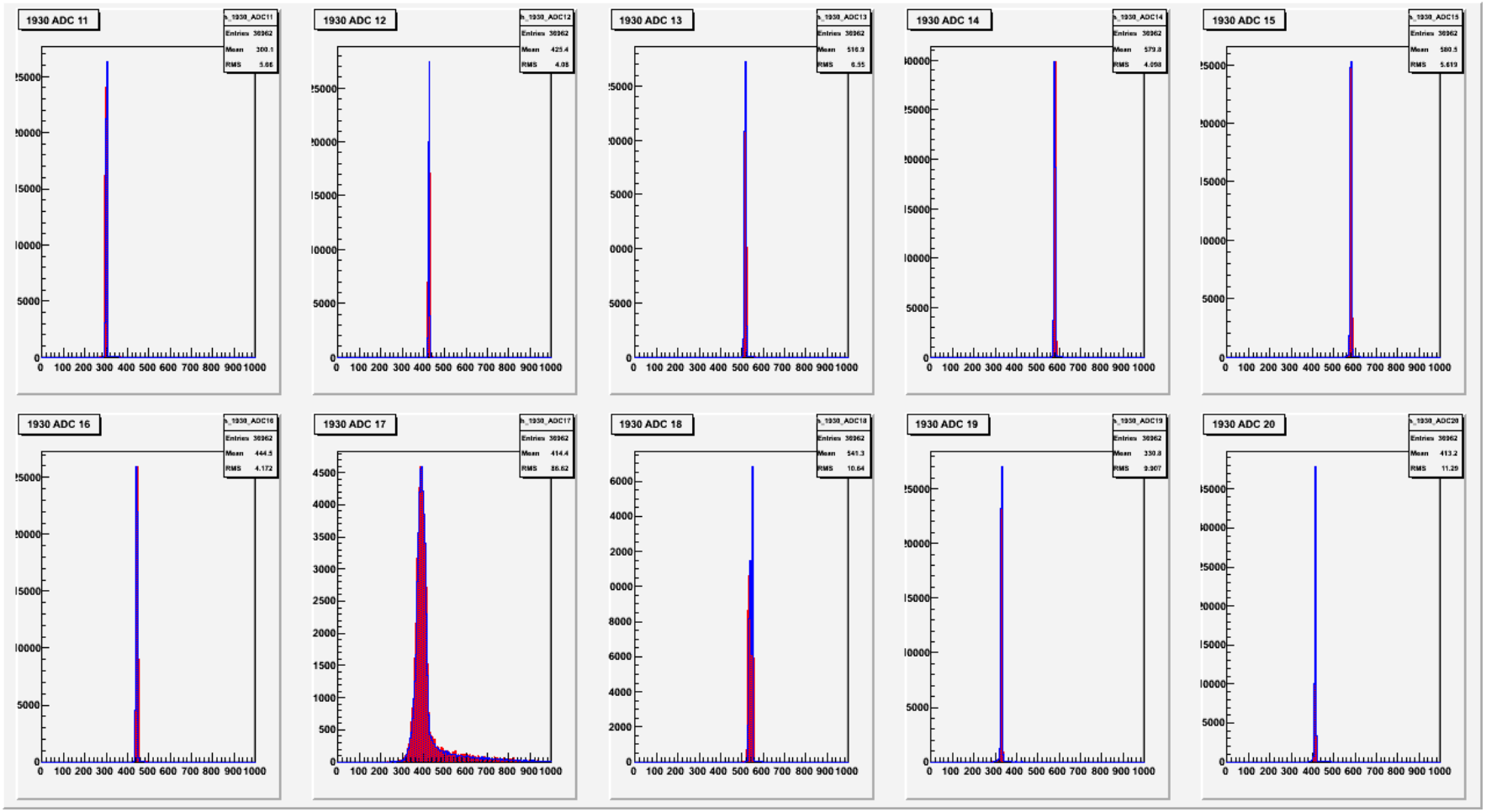

Figure 3: RHRS line ADC for cosmic run 1930 (red) and LED run 1834 (blue).

Low Current vs LED

Beam line 1881 ADC, $\sim 1\mu A$ 5-pass

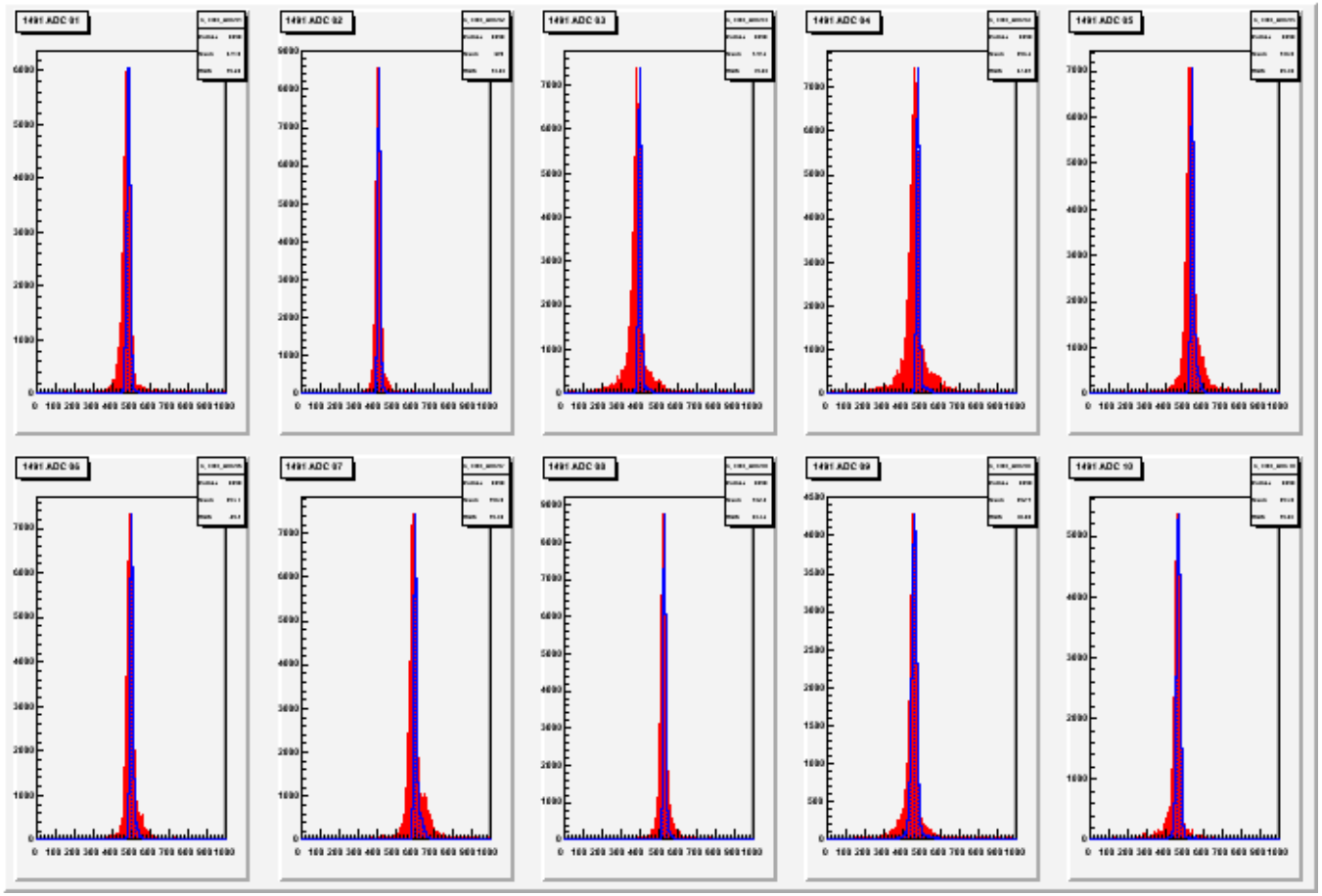

Figure 4: Beamline line ADC for $1\mu A$ run 1491 (red) and LED run 1829 (blue).

Low Current vs LED

RHRS line 1881 ADC, $\sim 1\mu A$ 5-pass

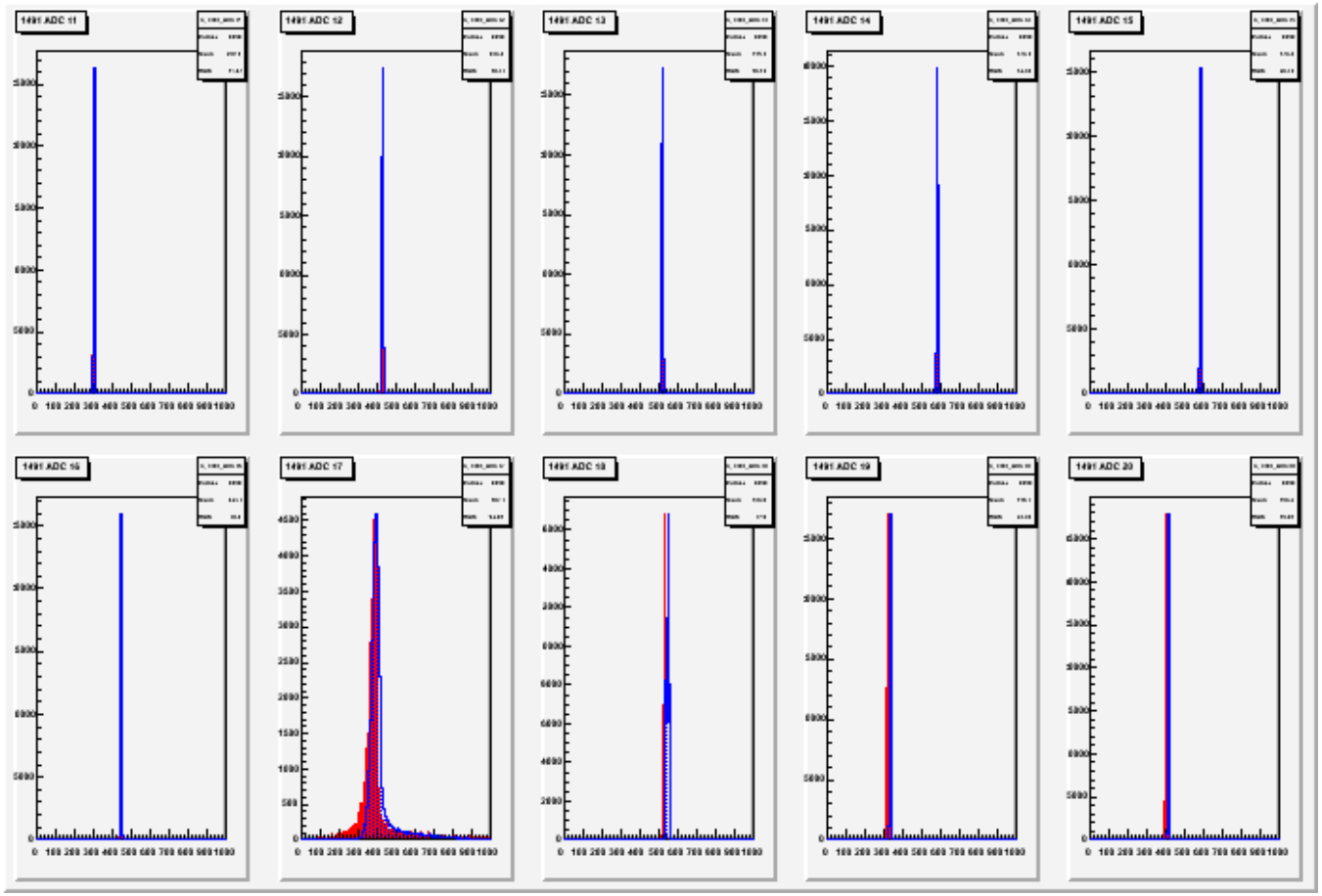

Figure 5: RHRS line ADC for $1\mu A$ run 1491 (red) and LED run 1834 (blue).

Mid Current vs LED

Beam line 1881 ADC, $\sim 8\mu A$ 5-pass

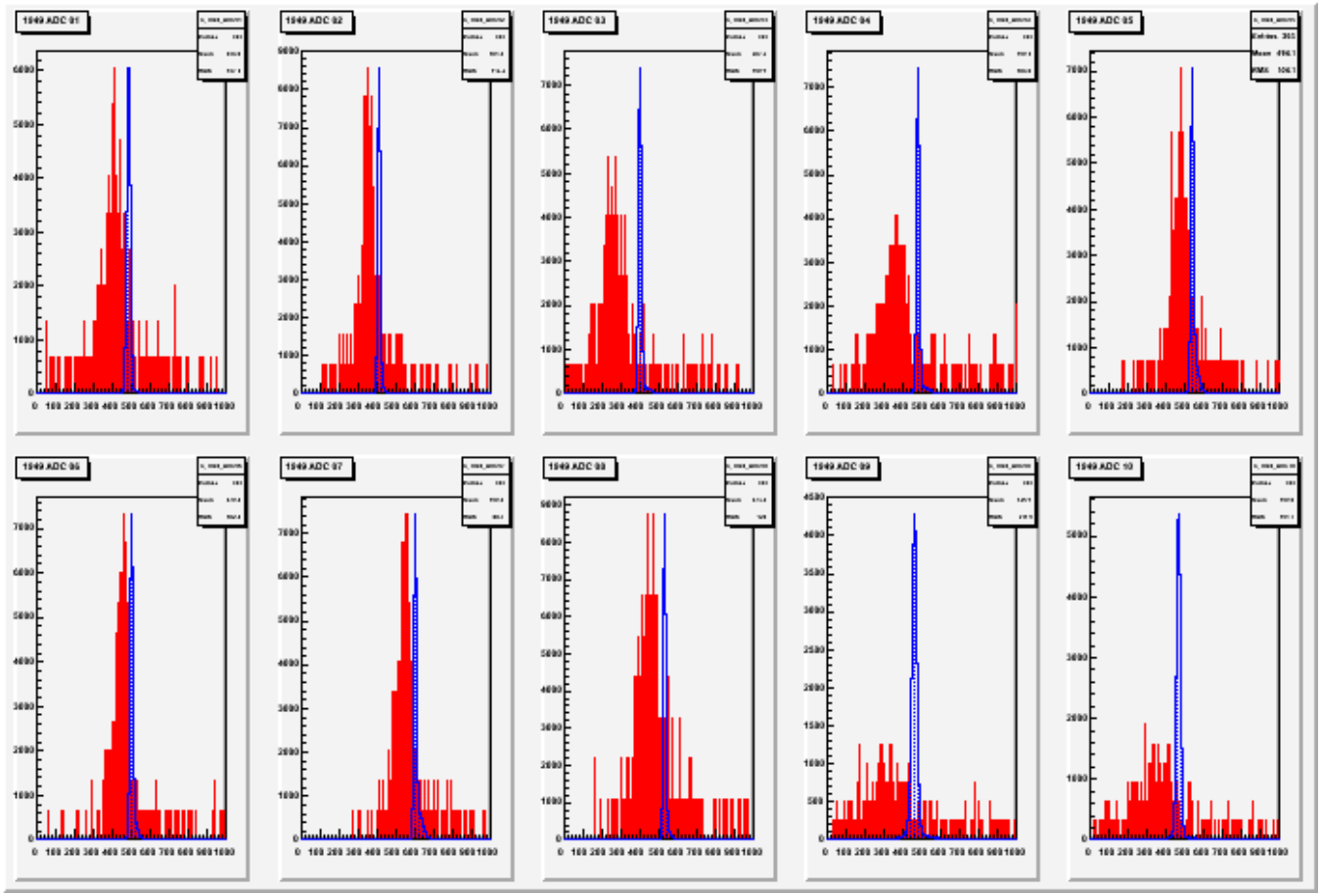

Figure 6: Beamline line ADC for $8\mu A$ run 1949 (red) and LED run 1829 (blue).

Mid Current vs LED

RHRS line 1881 ADC, $\sim 8\mu A$ 5-pass

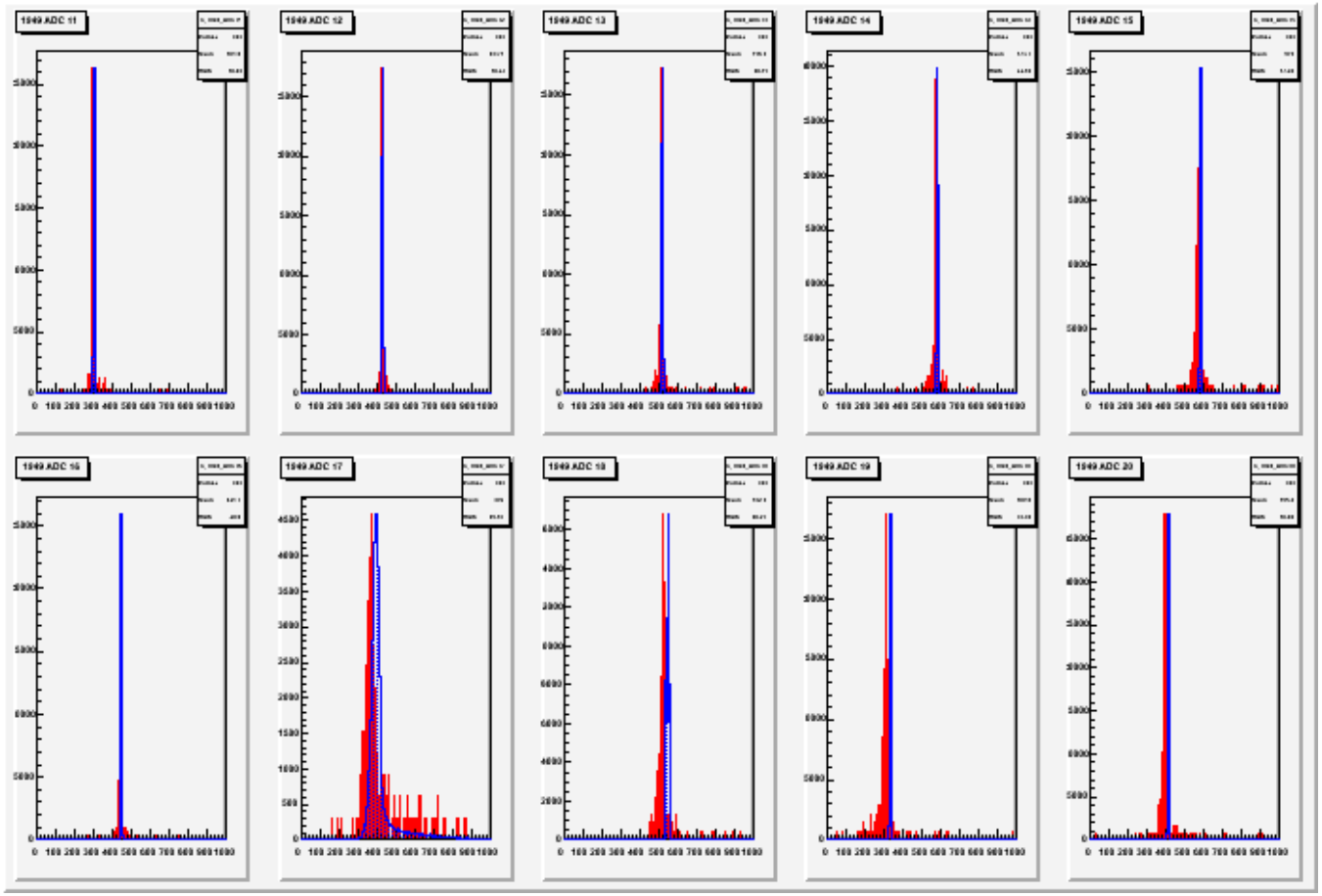

Figure 7: RHRS line ADC for $8\mu A$ run 1949 (red) and LED run 1834 (blue).

Full Current vs LED

Beam line 1881 ADC, $\sim 13\mu A$ 5-pass

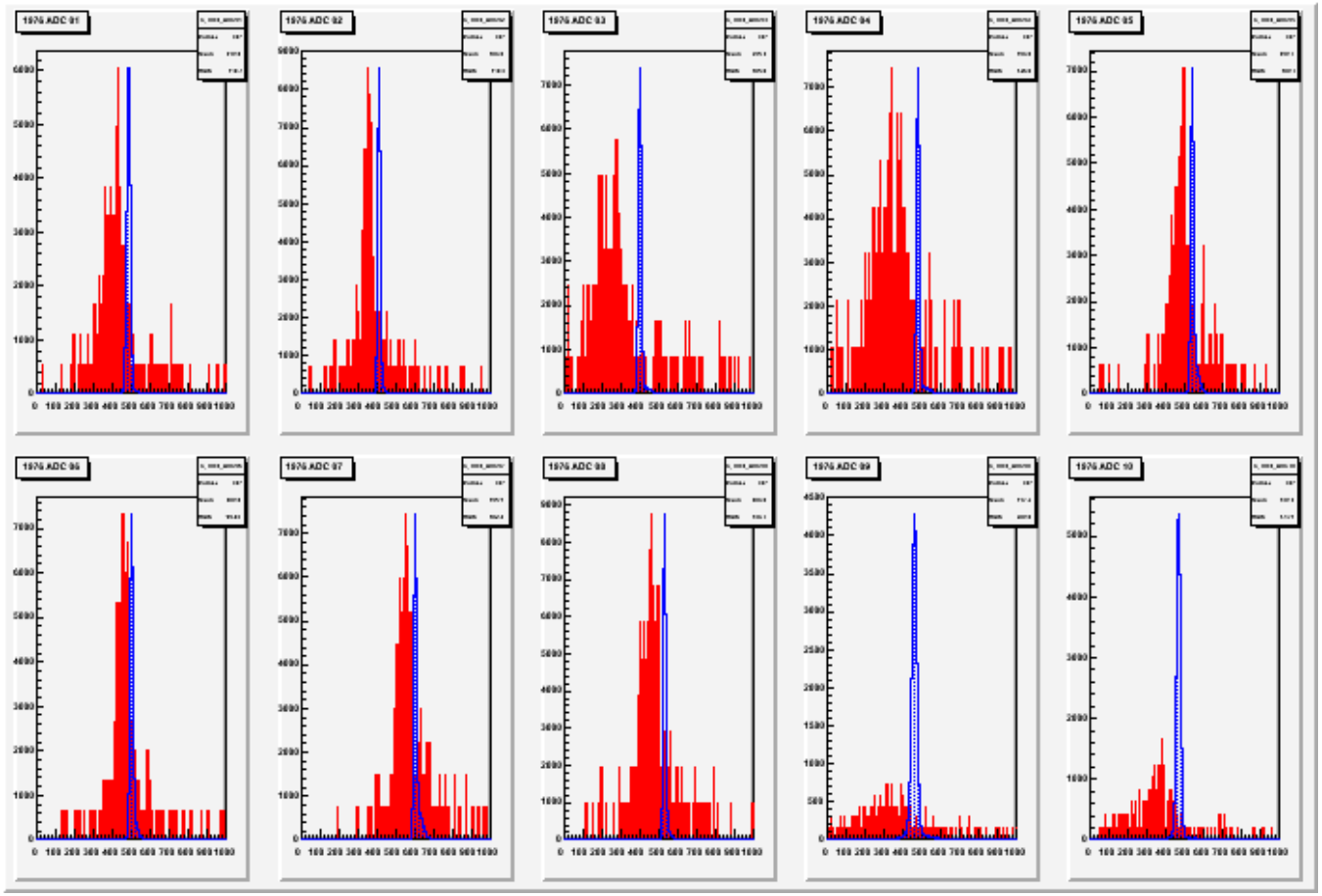

Figure 8: Beamline line ADC for $13\mu A$ run 1976 (red) and LED run 1829 (blue).

Full Current vs LED

RHRS line 1881 ADC, $\sim 13\mu A$ 5-pass

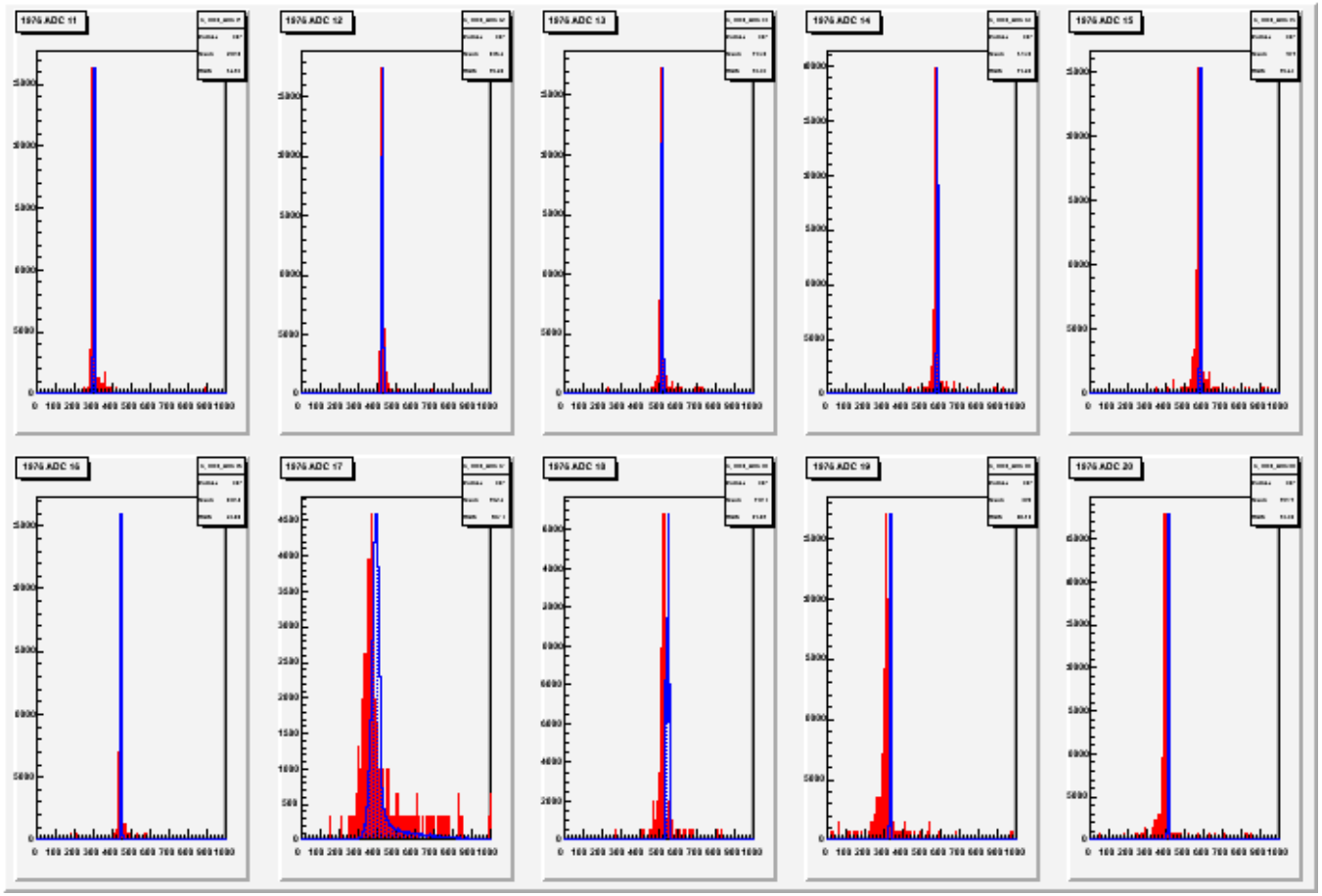

Figure 9: RHRS line ADC for $13\mu A$ run 1976 (red) and LED run 1834 (blue).

Full Current vs LED

Beam line 1881 ADC, $\sim 12\mu A$ 4-pass, PMT 9,10 bypassing 2nd Amp.

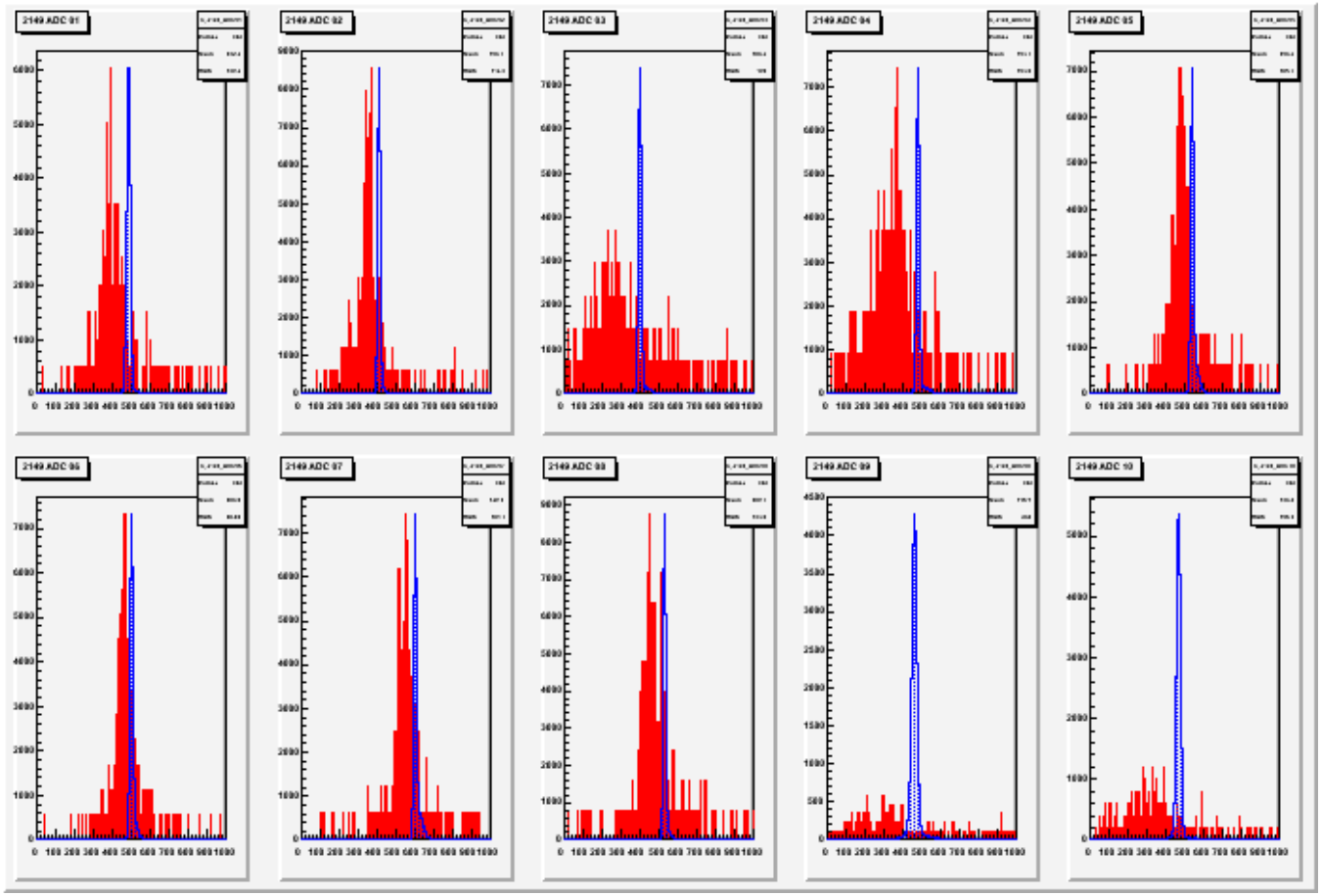

Figure 10: Beamline line ADC for $12\mu A$ run 2149 (red) and LED run 1829 (blue).

Full Current vs LED

RHRS line 1881 ADC, $\sim 12\mu A$ 4-pass

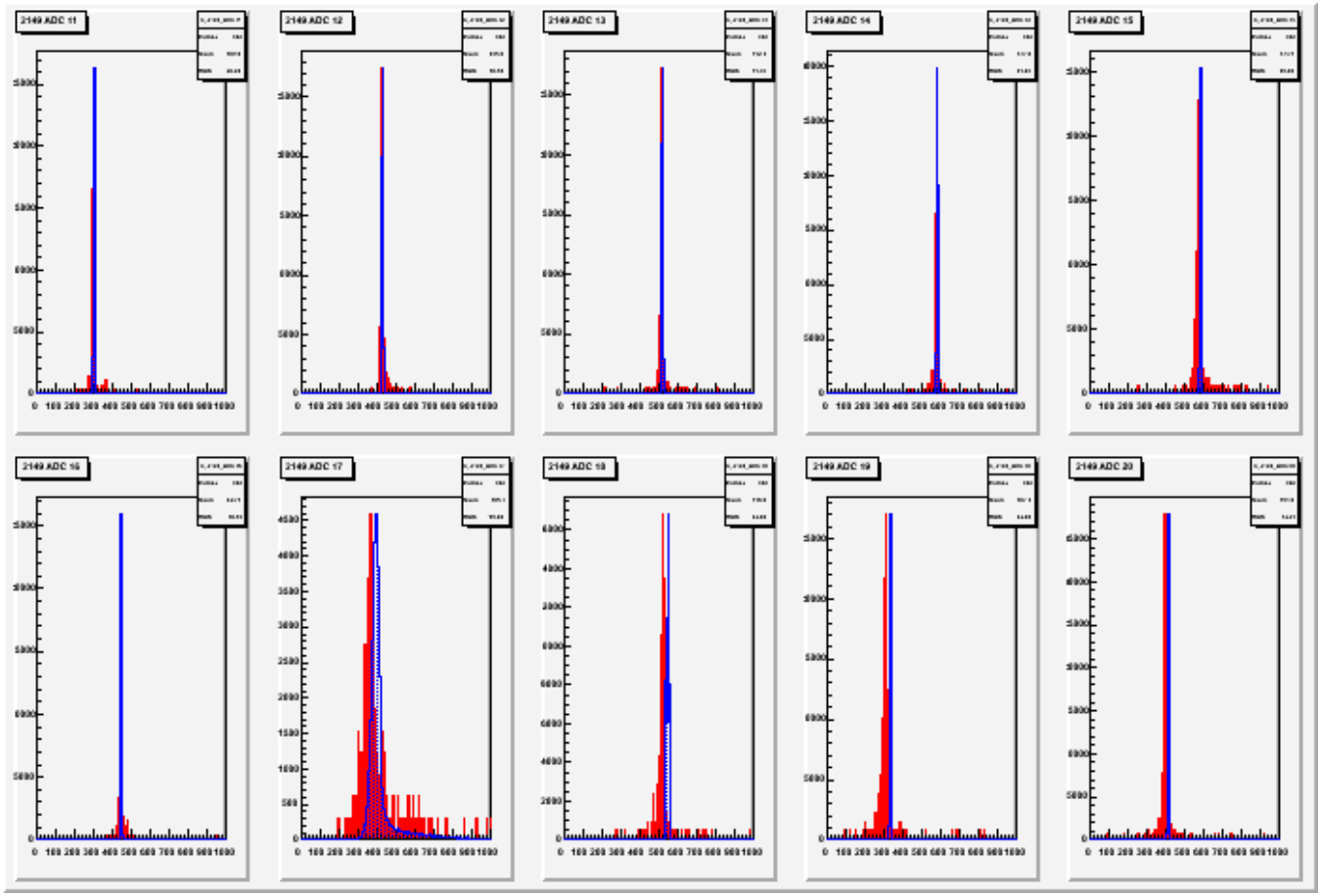

Figure 11: RHRS line ADC for $12\mu A$ run 2149 (red) and LED run 1834 (blue).

1881 ADC Conclusion

- Only beam line side peds shifting with mid-full beam current. So...
  - High rates?
  - Amplifiers?
  - 1881 ADC module?

Now to check out some of the v792 ADC

Full Current vs Cosmic

Beam line v792 ADC, $\sim 10\mu A$ 5-pass

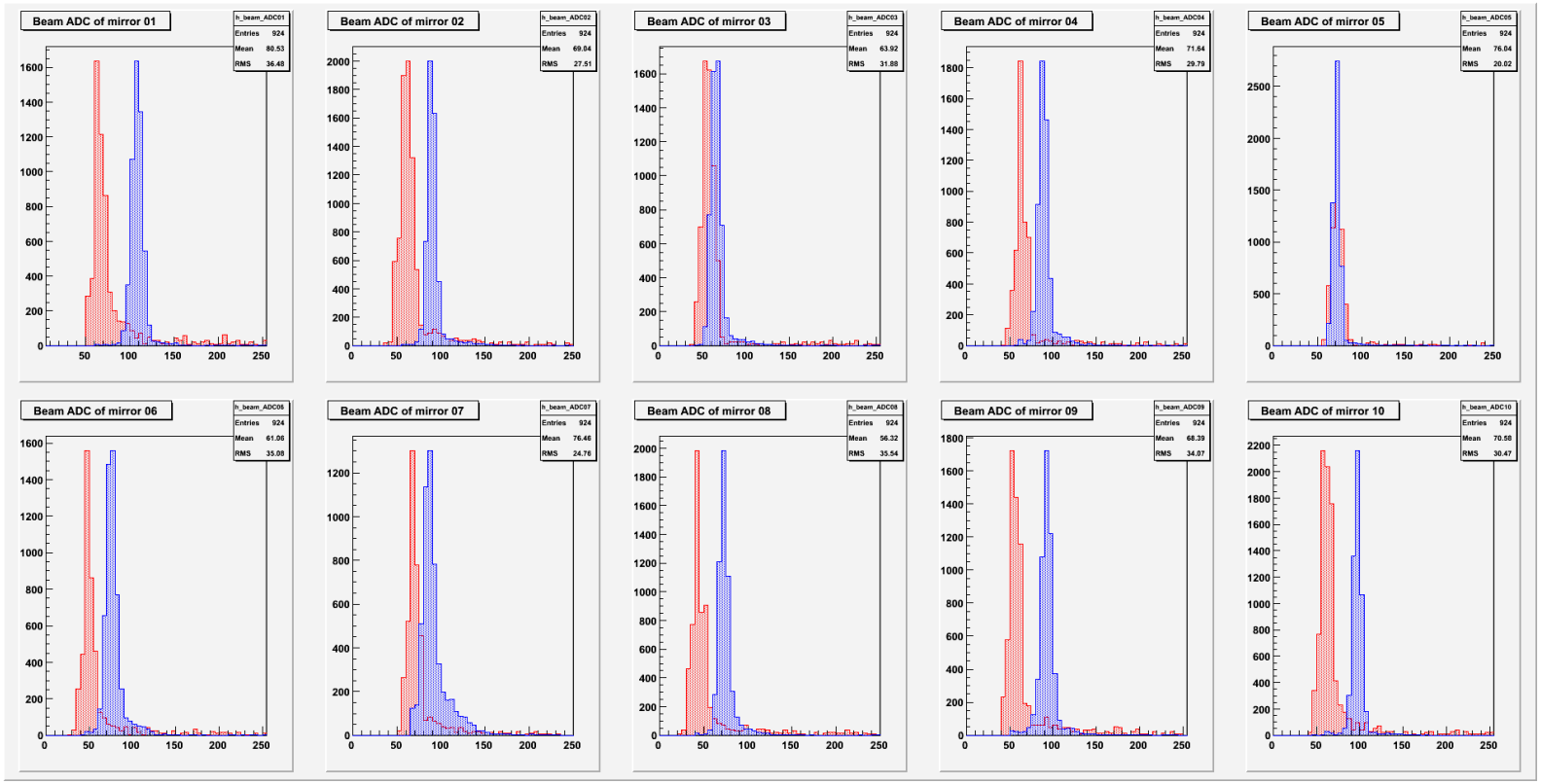

Figure 12: Beamline line ADC for $10\mu A$ run 1314 (red) and cosmic run 1300 (blue).

Full Current vs Cosmic

RHRS line v792 ADC, $\sim 10\mu A$ 5-pass

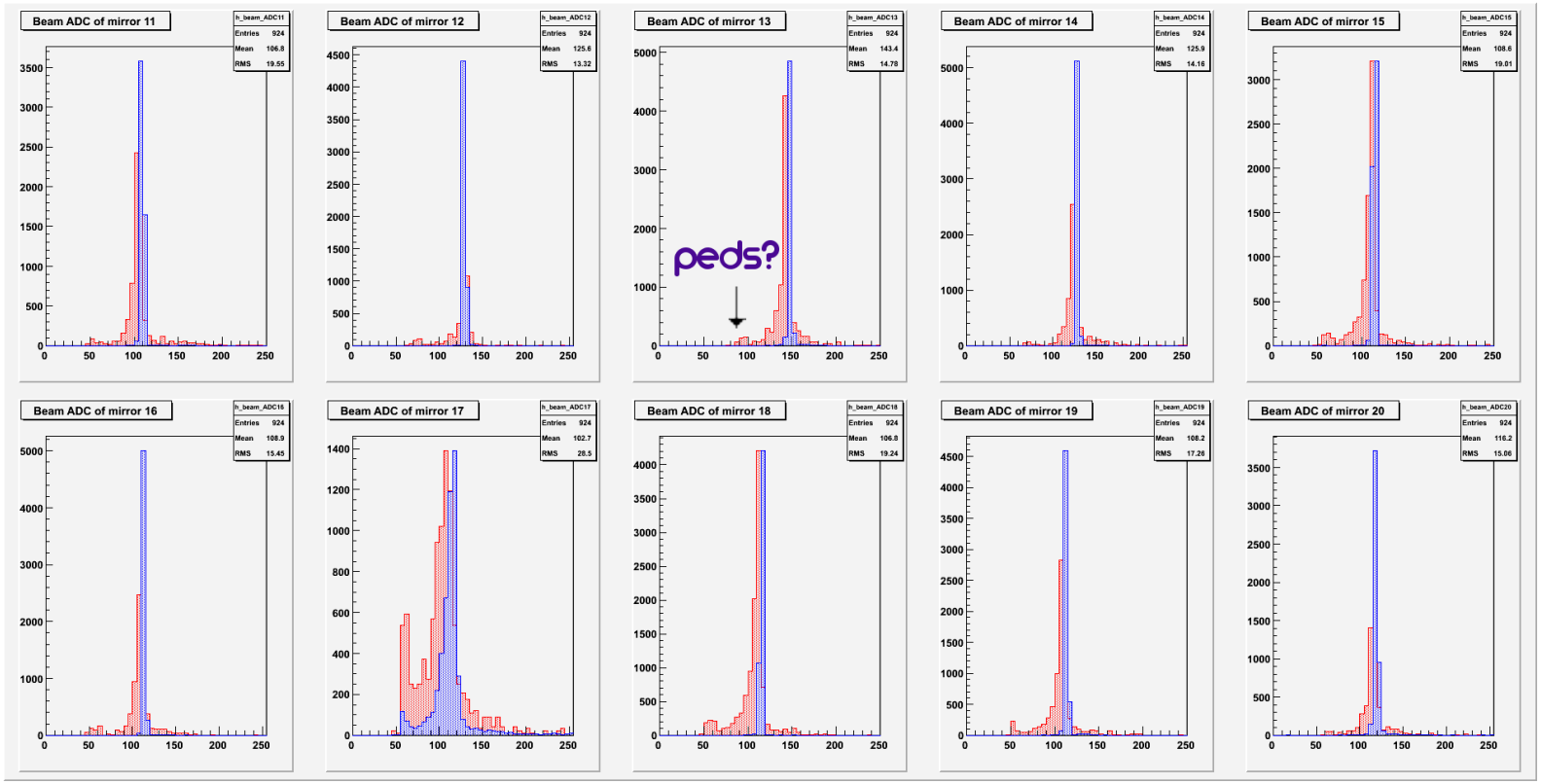

Figure 13: RHRS line ADC for $10\mu A$ run 1314 (red) and cosmic run 1300 (blue).

v792 ADC Conclusion

- Only beam line side peds also seem to shift with high current
- If left most bump, not a ped then RHRS side does not seem to shift

So ped shift due to high beamline rates