

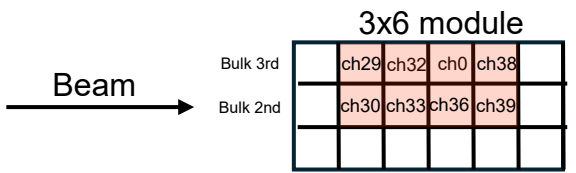
CERN data analysis

Jun Hyung Park, Shin Hyung Kim

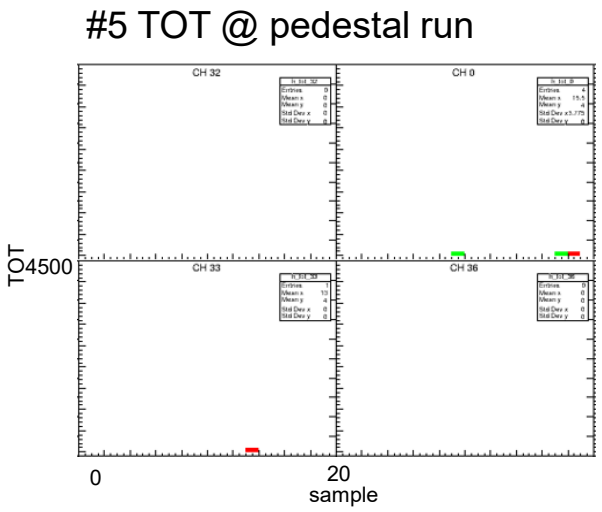
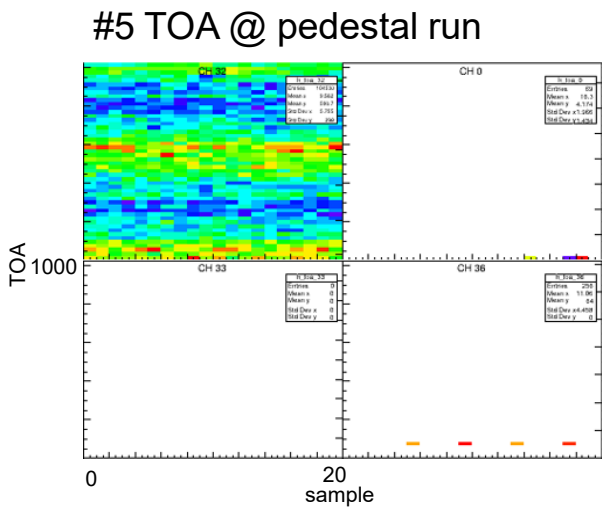
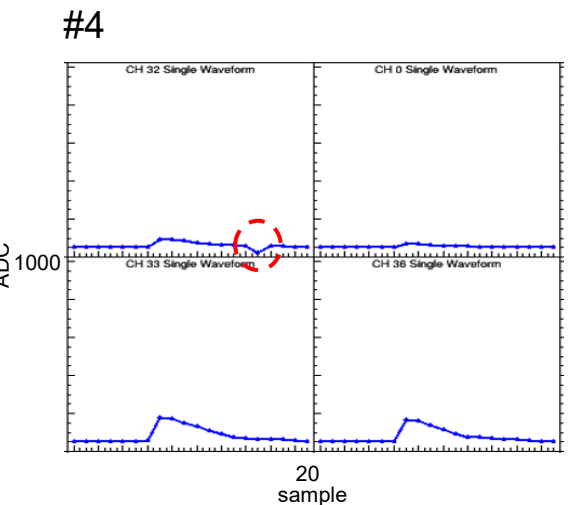
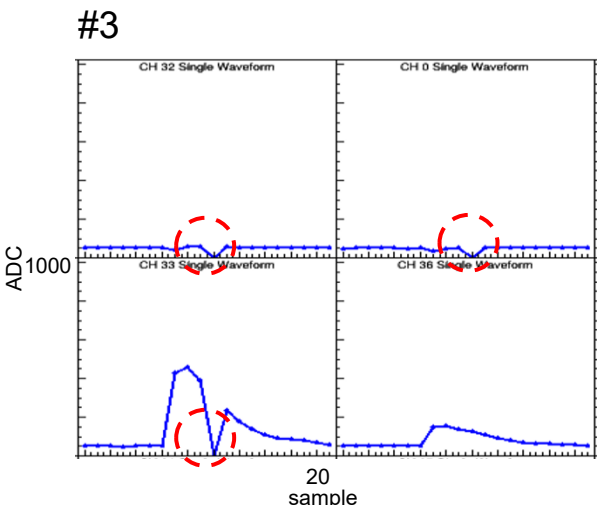
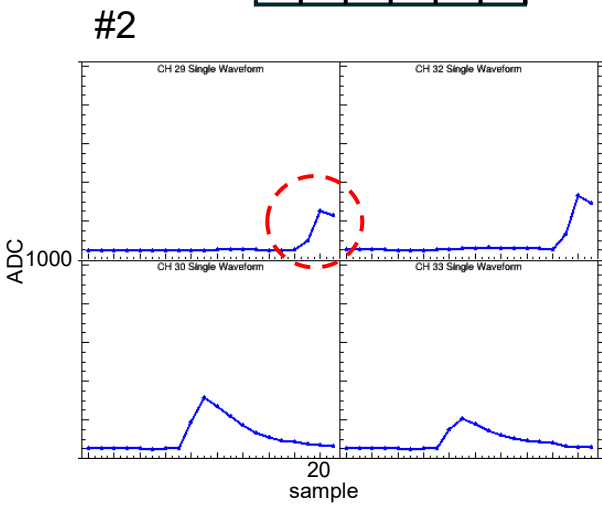
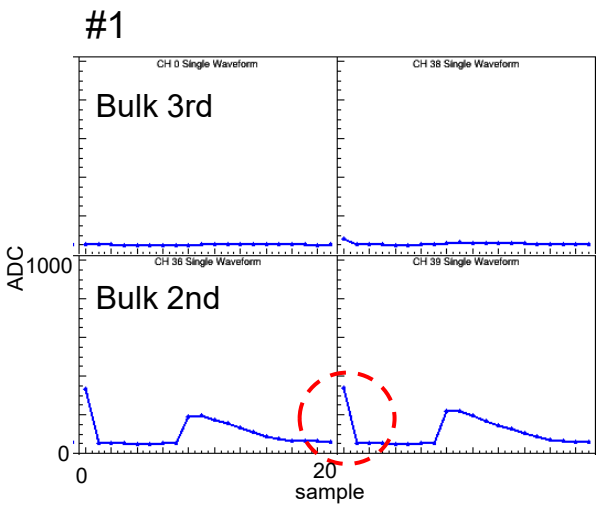
Department of Physics, Kyungpook National University



Data readout issue

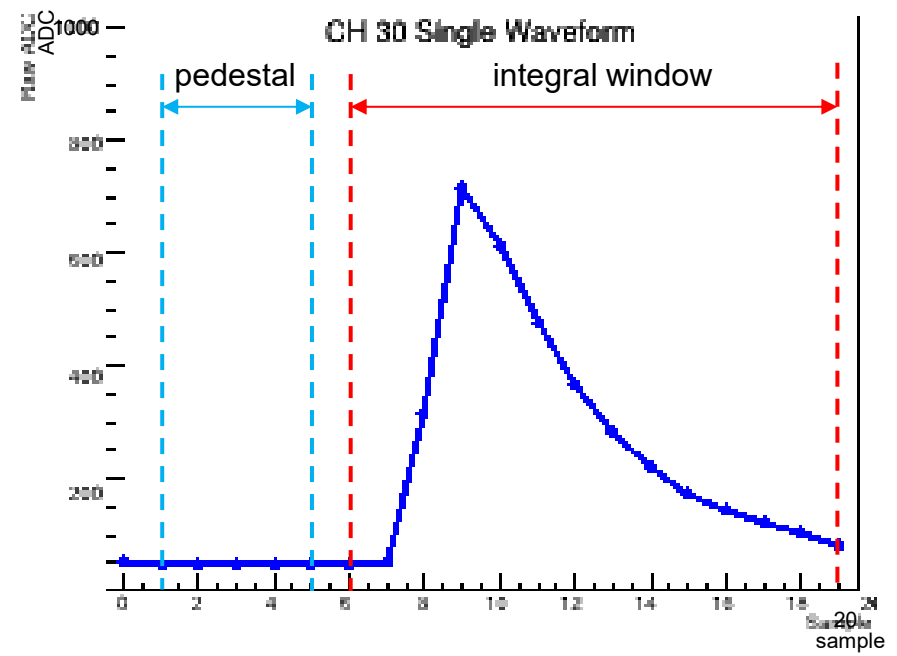
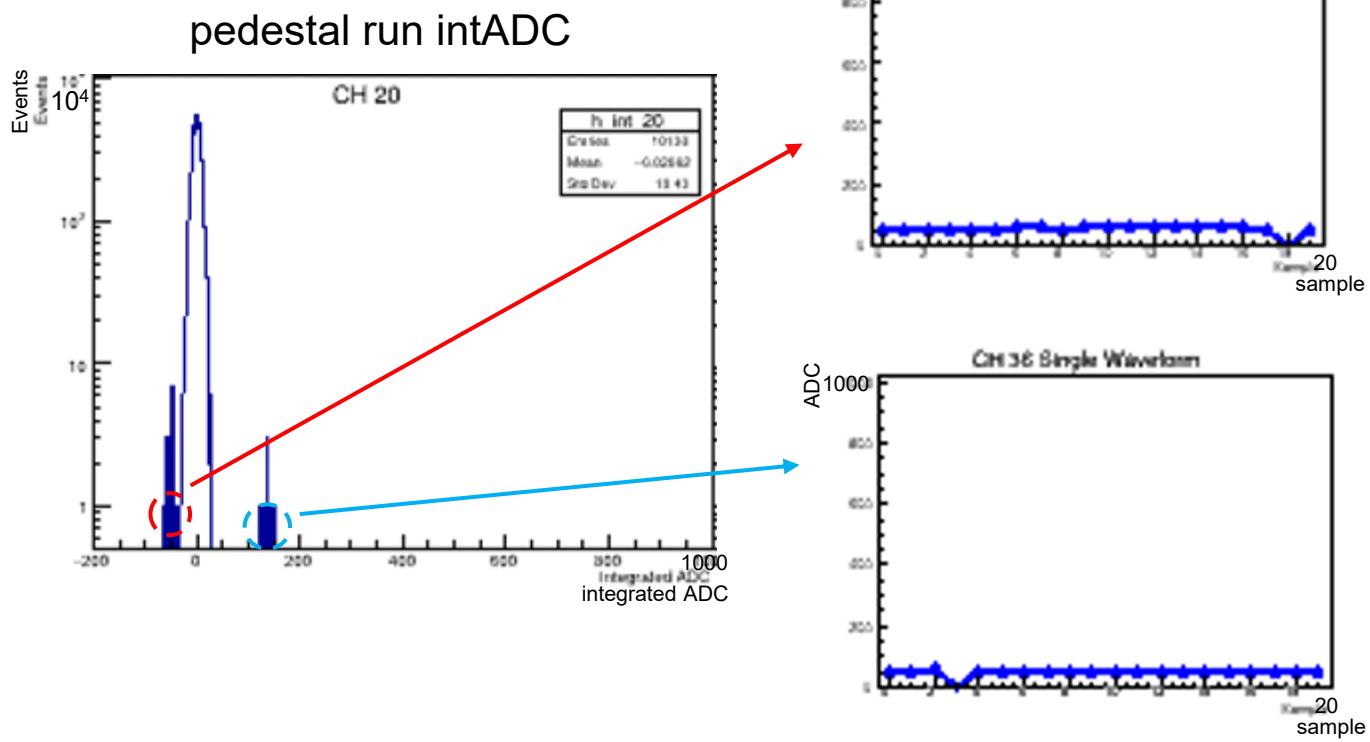


#891, Electron enhanced beam, 3 GeV/c, 2nd bulk , minimum gain



1. Tail of the previous signal appears in the first sample
2. Signal is shifted in time
3. ADC often drops to 0 (ASIC-half level)
4. One sample has ADC ≈ 0 (specific samples in specific channels)
5. TOA/TOT values observed during pedestal runs

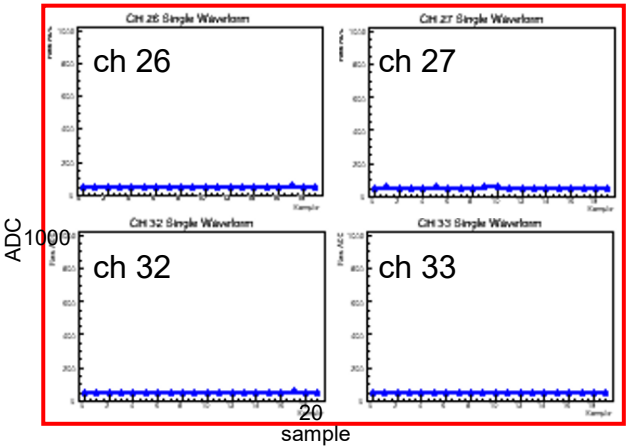
Data readout issue



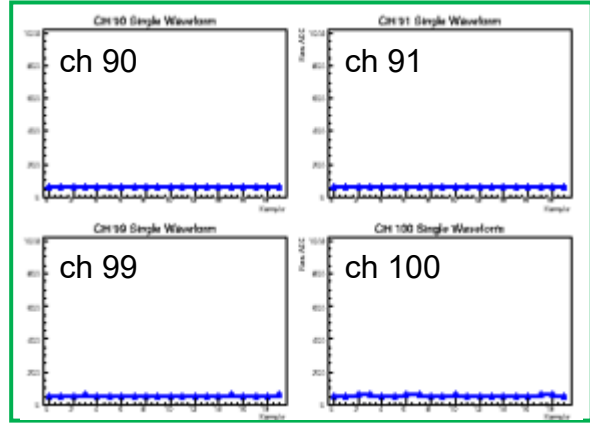
- Pedestal: Average ADC value of samples 1–5
- Integrated ADC: Sum of the pedestal-subtracted ADC values over samples 6–19

Data readout issue

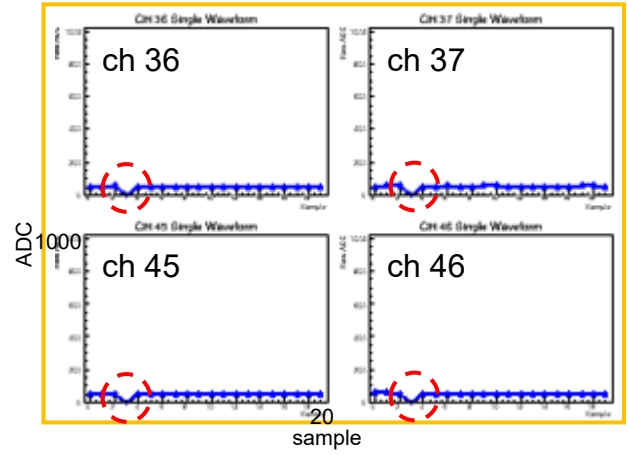
ASIC half 0 (ch 0-35)



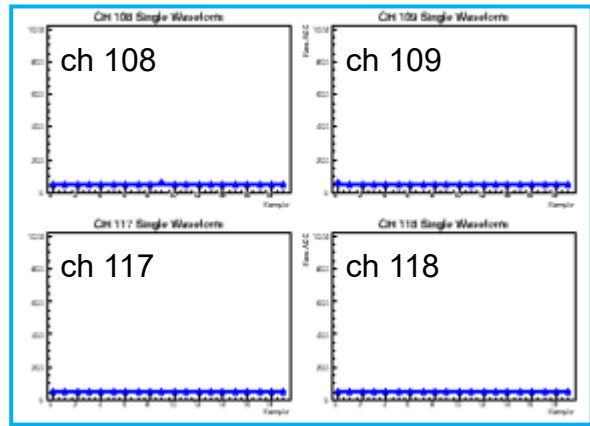
ASIC half 2 (ch 72-107)



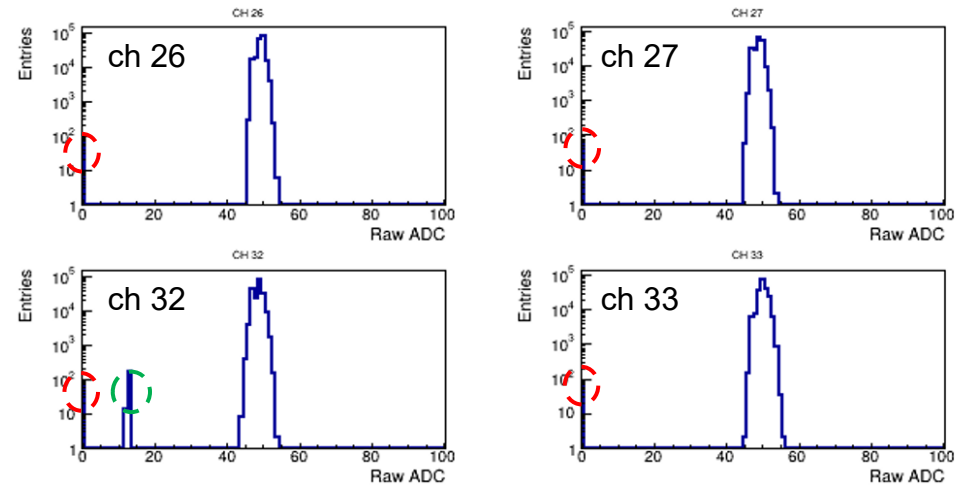
ASIC half 1 (ch 36-71)



ASIC half 3 (ch 108-143)



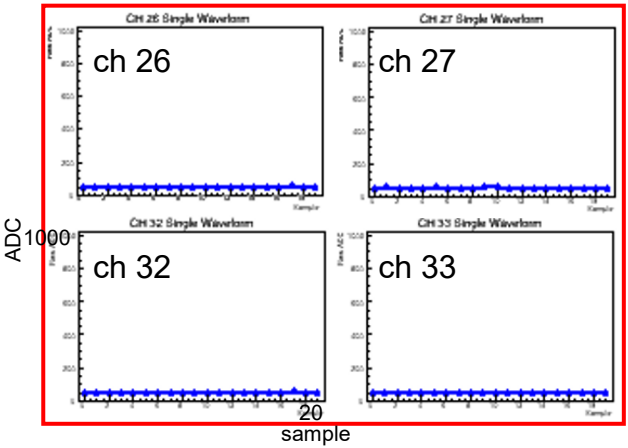
Raw ADC Distribution over All Samples (ASIC half 0)



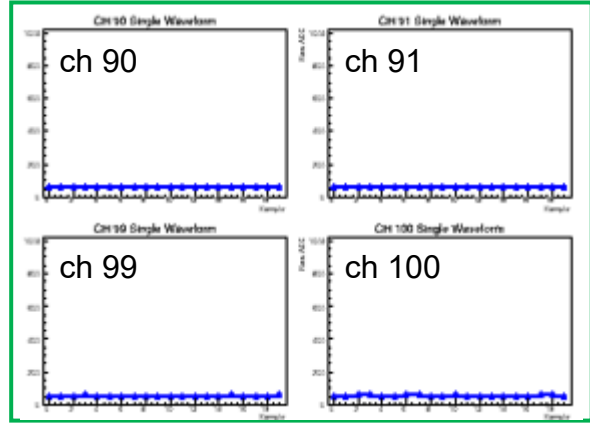
- ASIC-wide ADC drops: ADC values fall to 0
- Single-channel/sample drops: ADC values remain non-zero (e.g., ch 32, sample 15)

Data readout issue

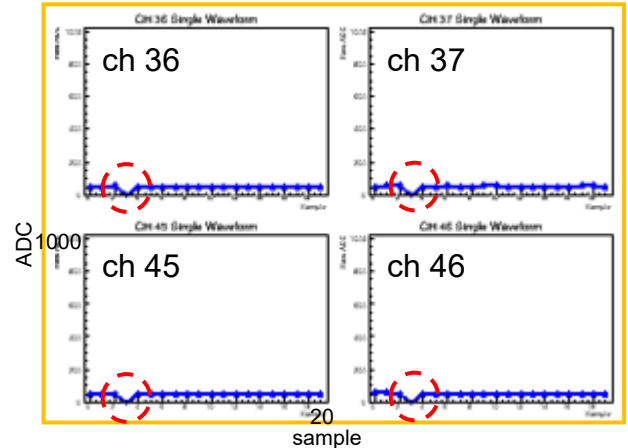
ASIC half 0 (ch 0-35)



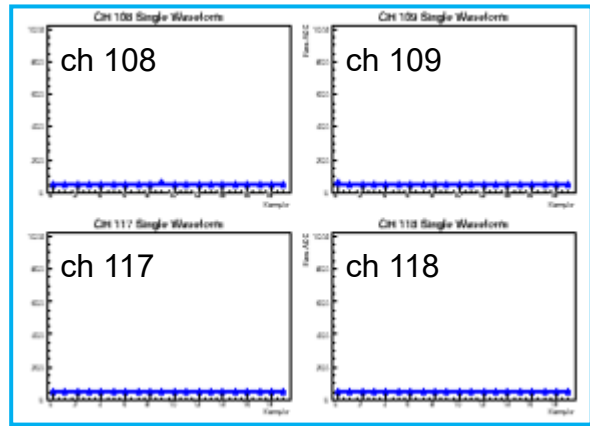
ASIC half 2 (ch 72-107)



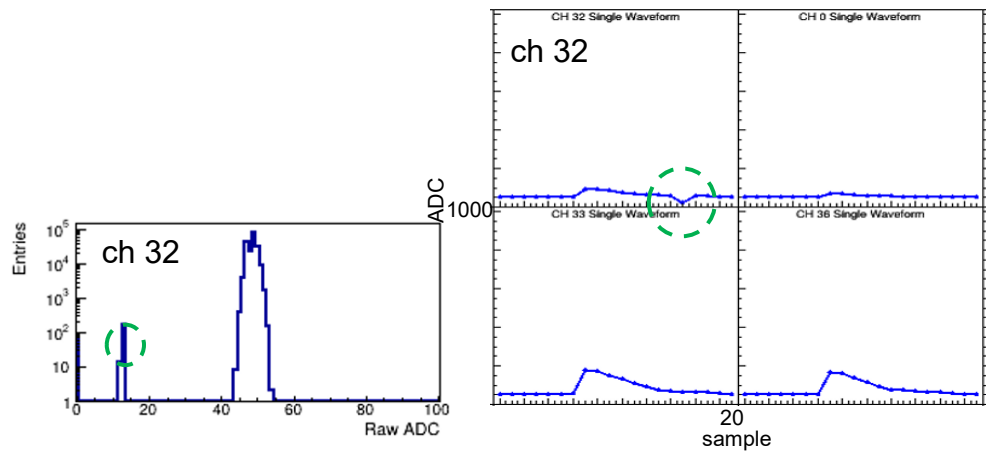
ASIC half 1 (ch 36-71)



ASIC half 3 (ch 108-143)



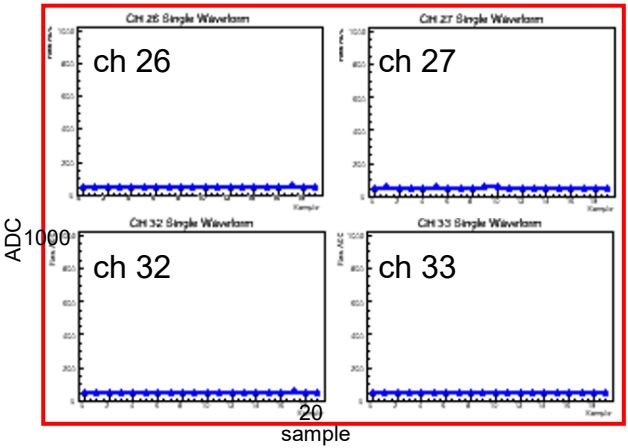
Raw ADC Distribution over All Samples (ASIC half 0)



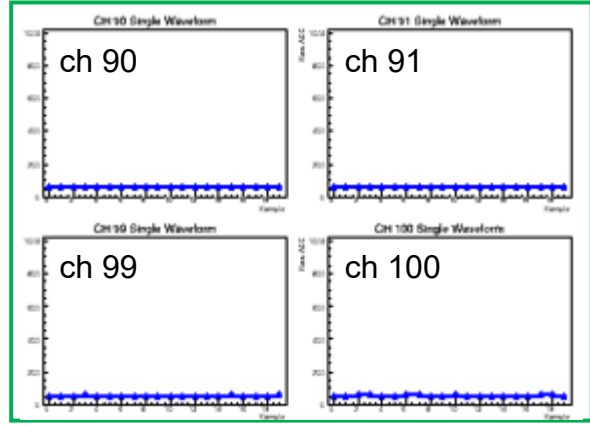
- ASIC-wide ADC drops: ADC values fall to 0
- Single-channel/sample drops: ADC values remain non-zero (e.g., ch 32, sample 15)

Data readout issue

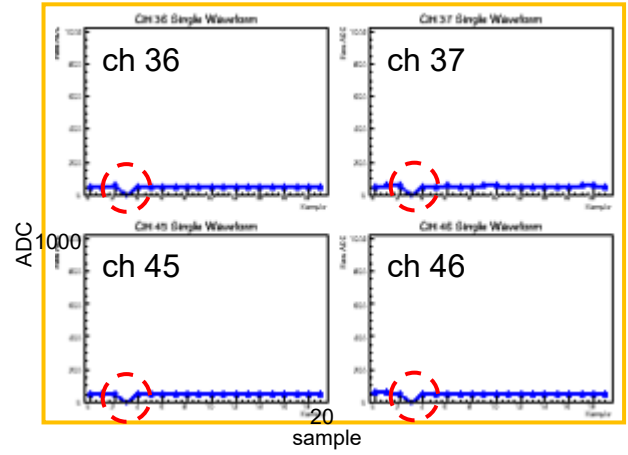
ASIC half 0 (ch 0-35)



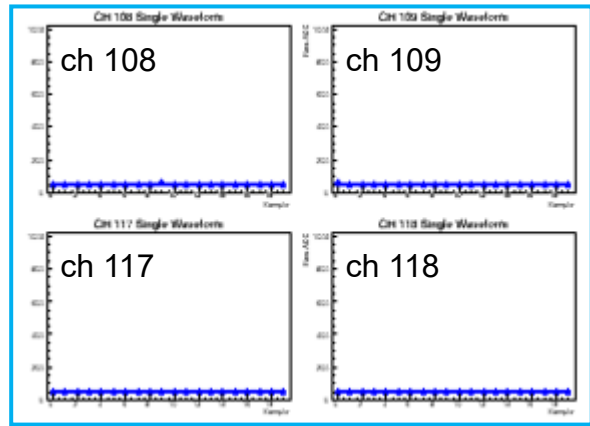
ASIC half 2 (ch 72-107)



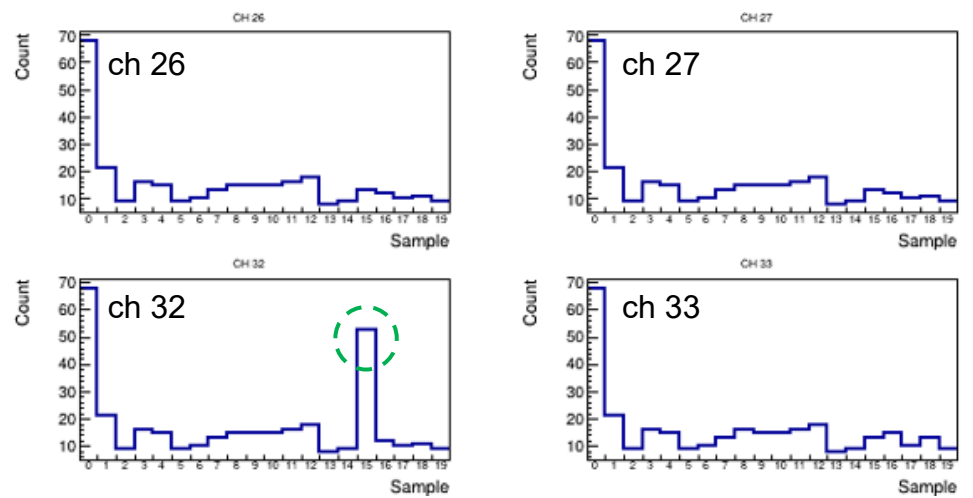
ASIC half 1 (ch 36-71)



ASIC half 3 (ch 108-143)



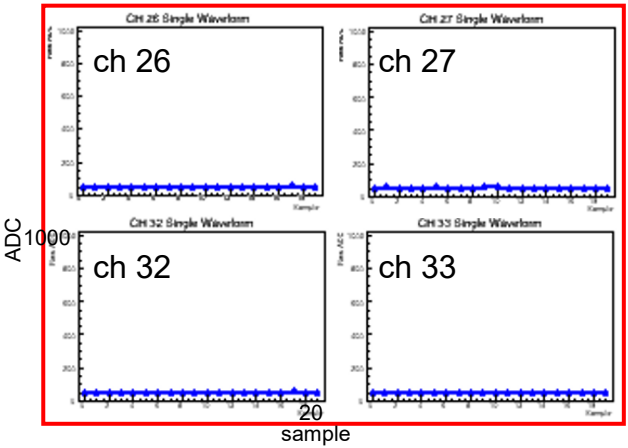
Sample Distribution of Low-ADC Events ($ADC \leq 20$)



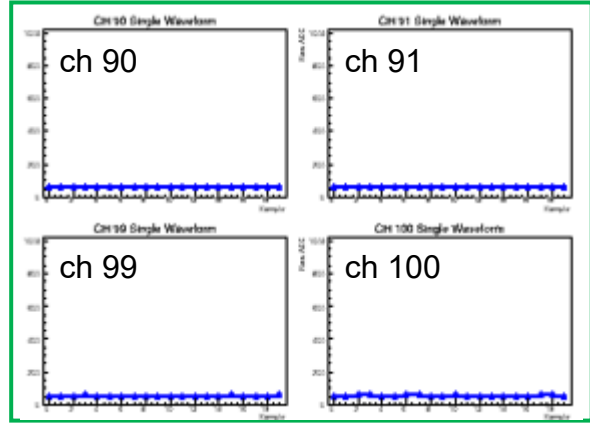
- ASIC-wide ADC drops: ADC values fall to 0
- Single-channel/sample drops: ADC values remain non-zero (e.g., ch 32, sample 15)

Data readout issue

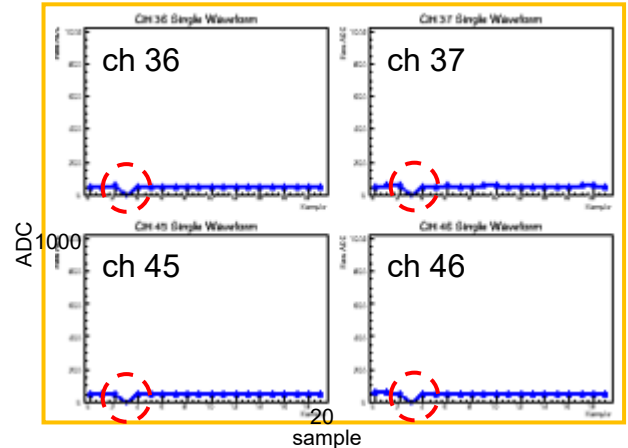
ASIC half 0 (ch 0-35)



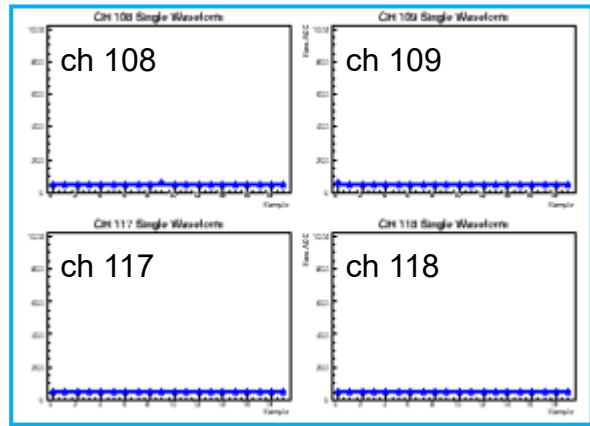
ASIC half 2 (ch 72-107)



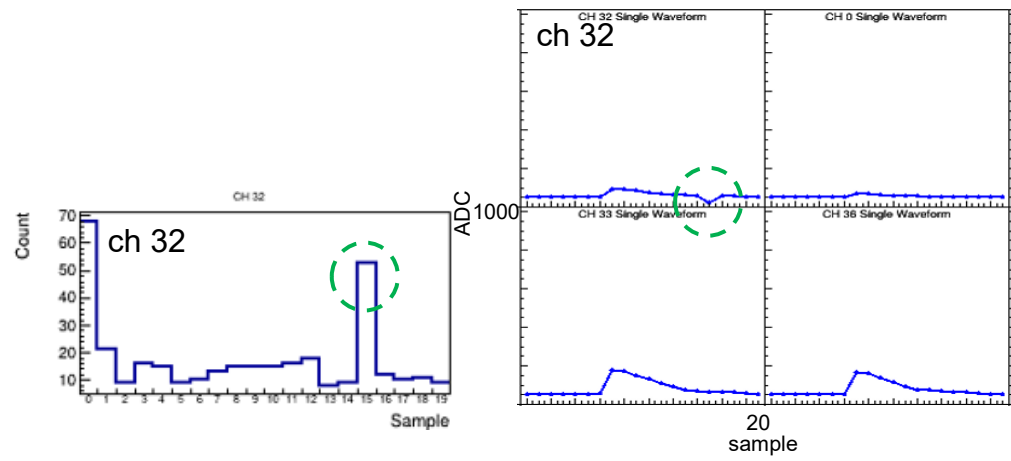
ASIC half 1 (ch 36-71)



ASIC half 3 (ch 108-143)

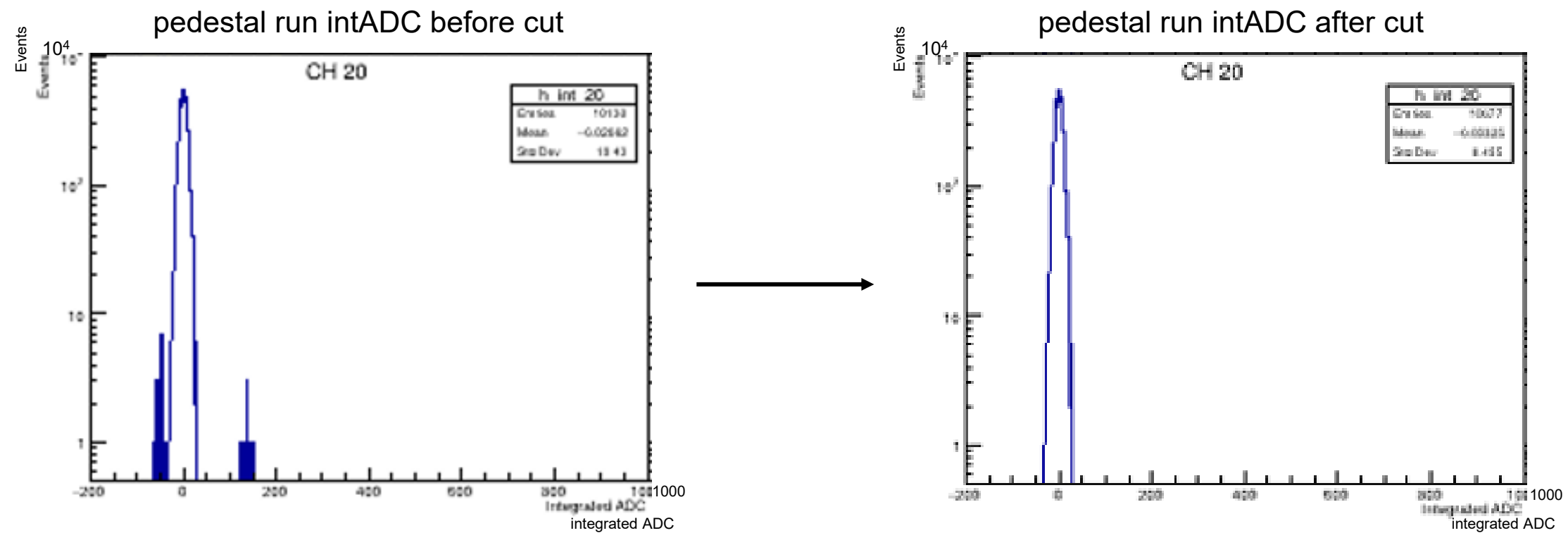


Sample Distribution of Low-ADC Events ($ADC \leq 20$)



- ASIC-wide ADC drops: ADC values fall to 0
- Single-channel/sample drops: ADC values remain non-zero (e.g., ch 32, sample 15)

Data readout issue

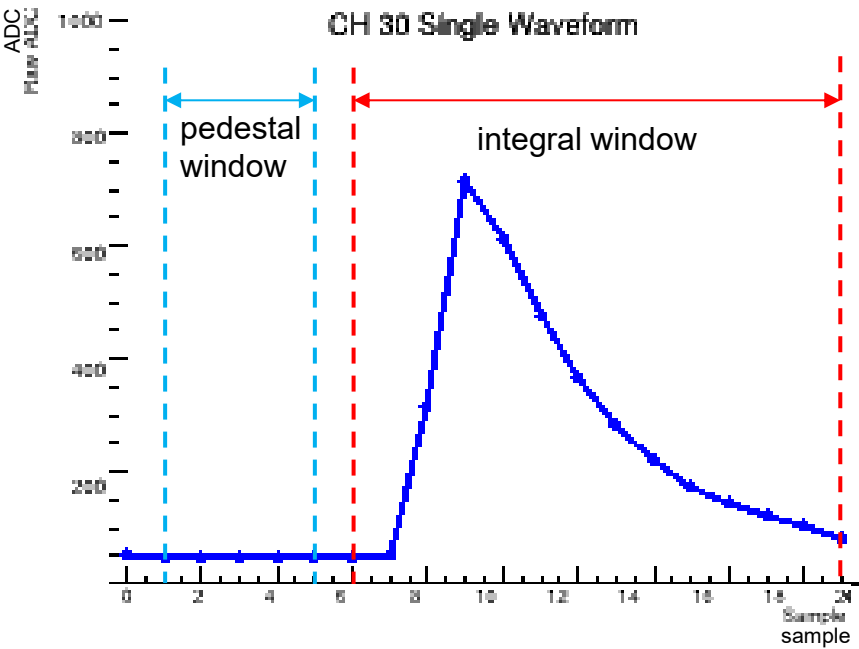
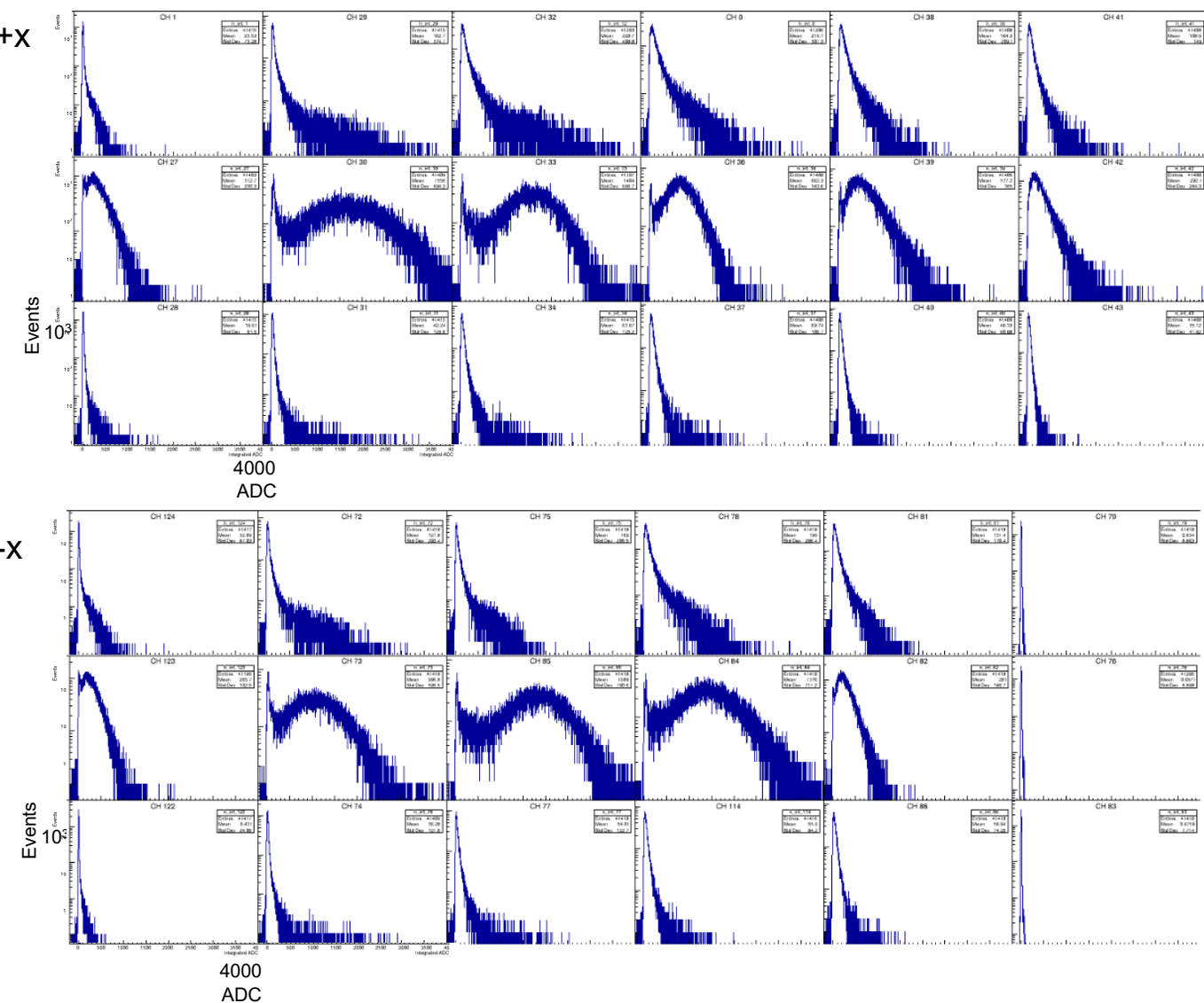


Removing low-ADC events ($\text{ADC} \leq 20$) cleaned up the intADC distribution

CERN data analysis

int ADC

#891, Electron enhanced beam, 3 GeV/c, 2nd bulk , minimum gain



- Pedestal: Average ADC value of samples 1–5
- Integrated ADC: Sum of the pedestal-subtracted ADC values over samples 6–20

Backup

