GRAIN WG meeting

26/07/2024

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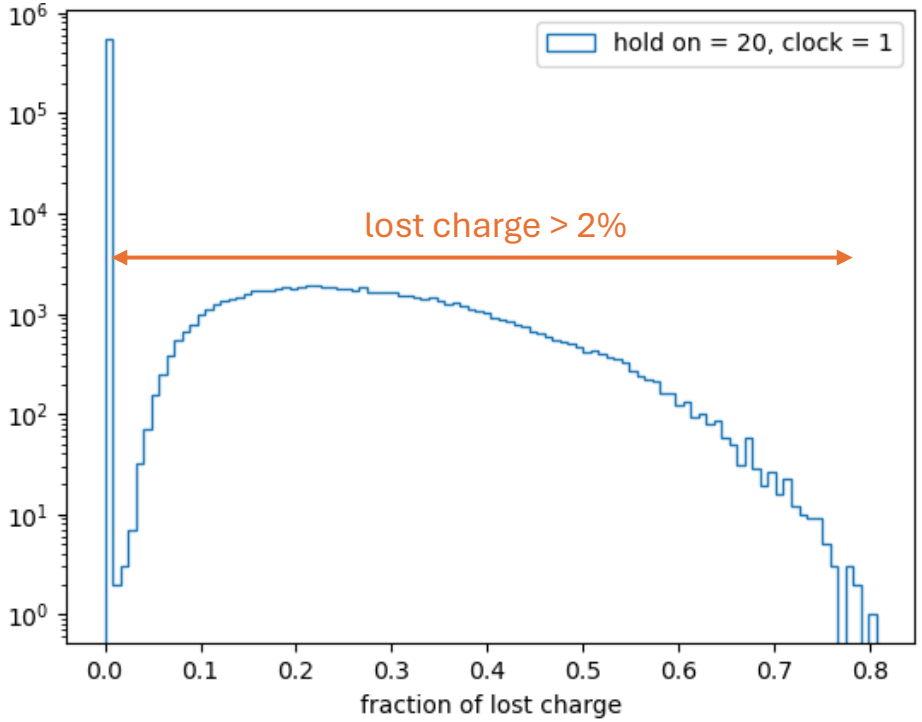
Overview

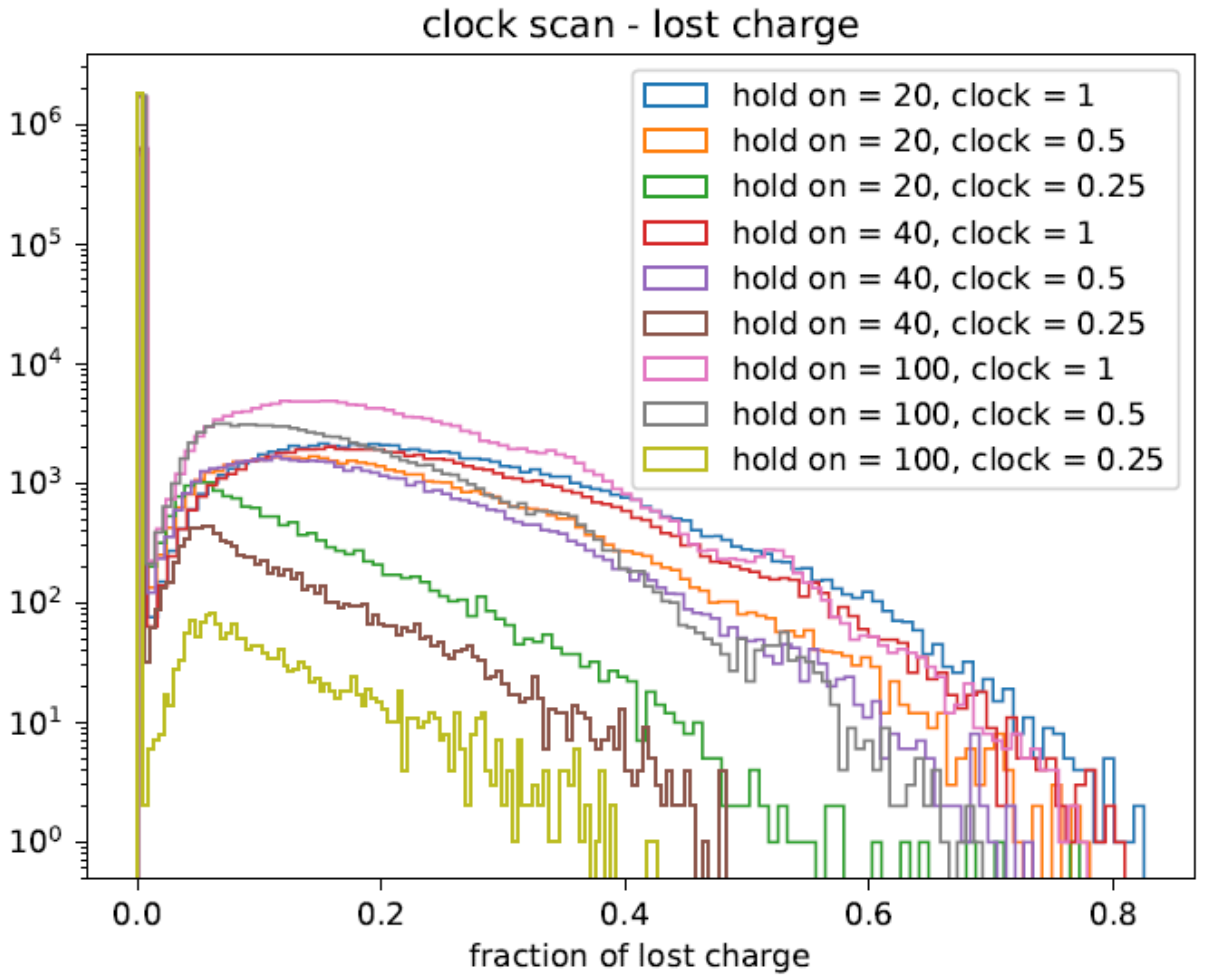
- 120 spill
- SiPM 3x3
- Simulations for
  - clock frequencies x1, x2, x4
  - Rq 500, 1000, 1500, 2000
  - Hold on 20 , 40 (100)

Lost fraction

Fraction of events in which the lost charge was > 2%

$$\text{Lost fraction} = \frac{\text{events with lost charge} > 2\%}{\text{total number of events}}$$

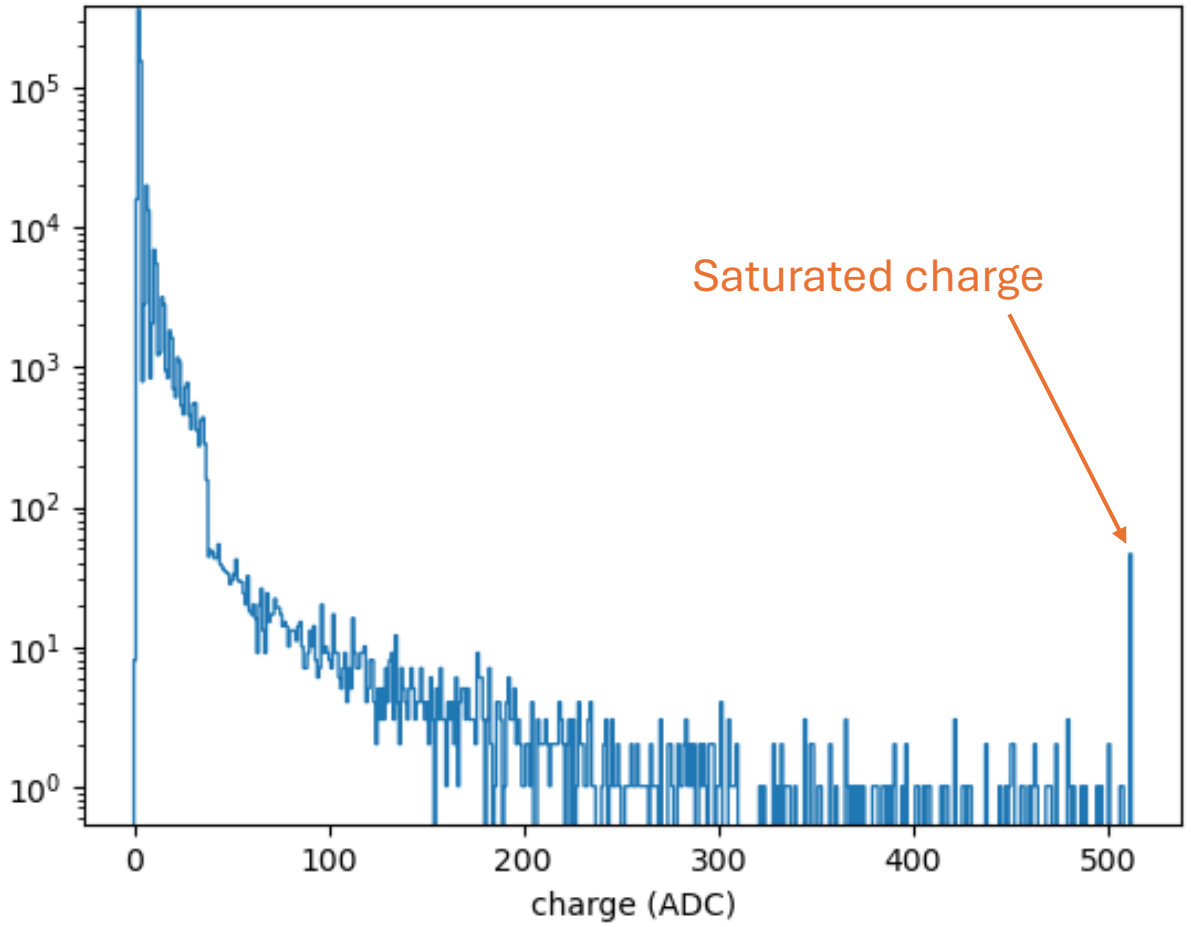




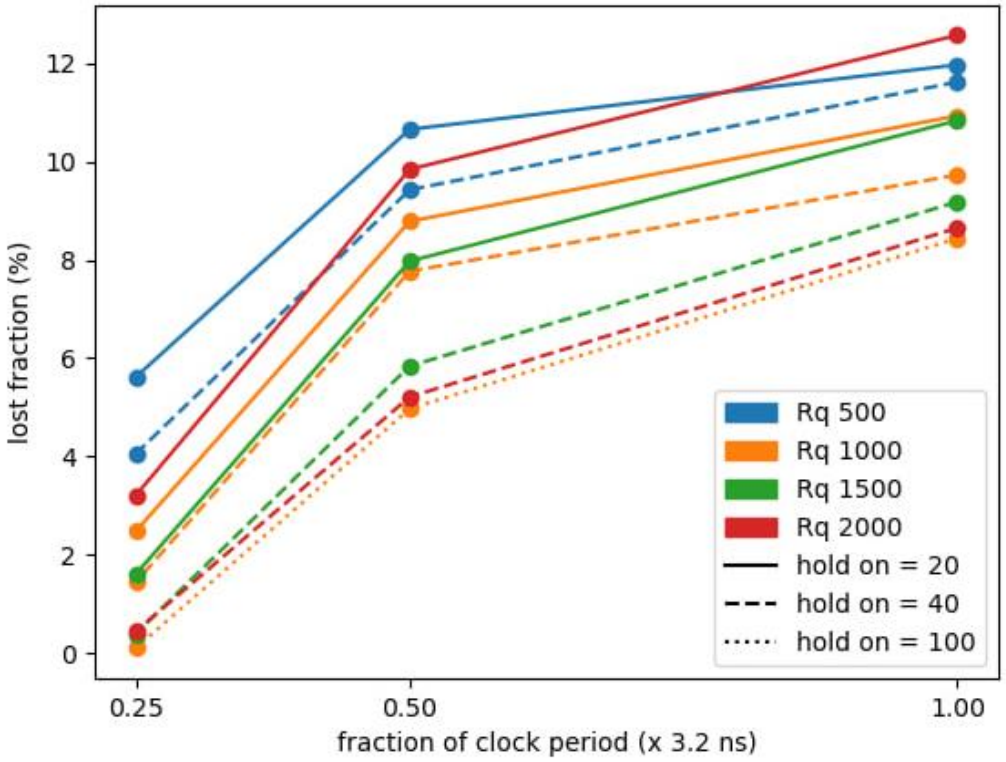
Saturated fraction

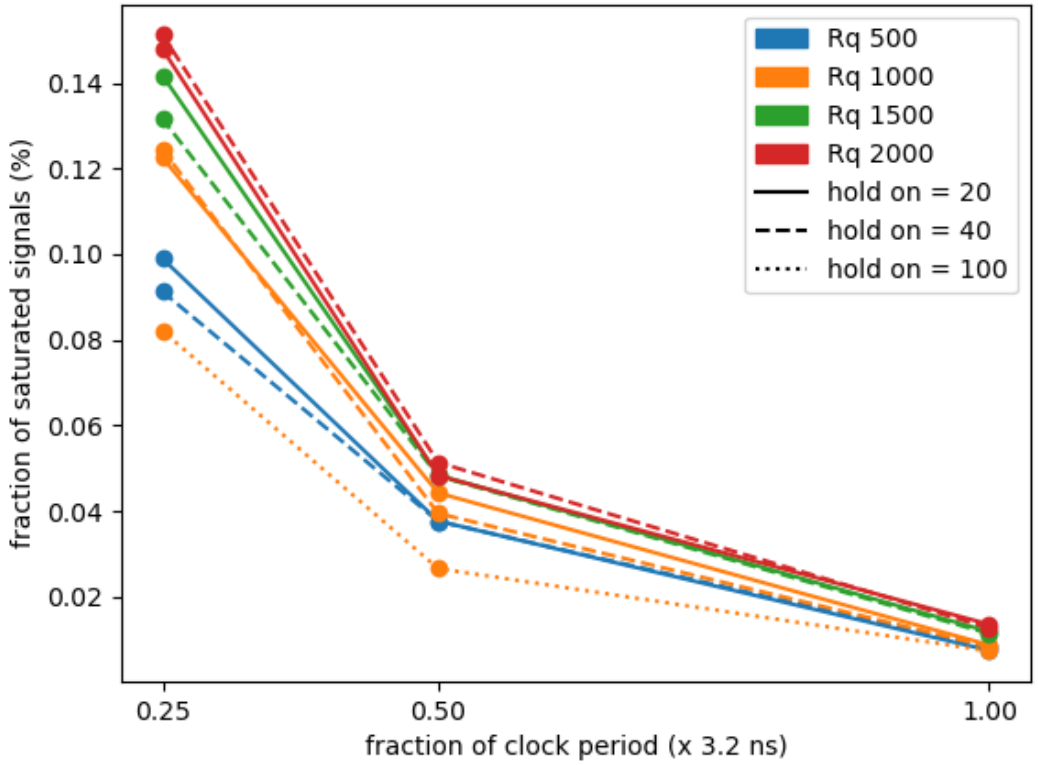
Fraction of events in which the ADC saturated

$$\frac{\text{Number of saturated events (ch==2^9)}}{\text{total number of events}}$$



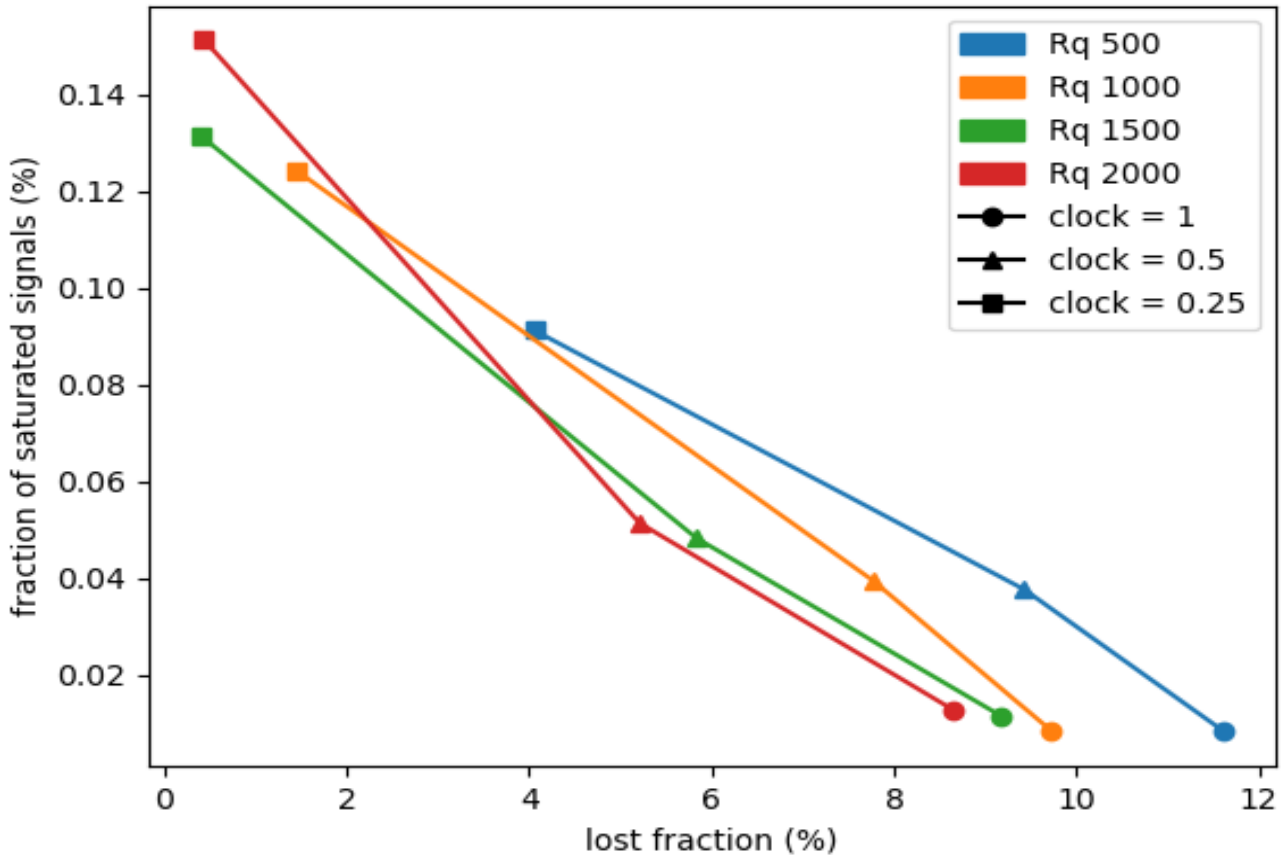
Lost & Saturated fractions - overview



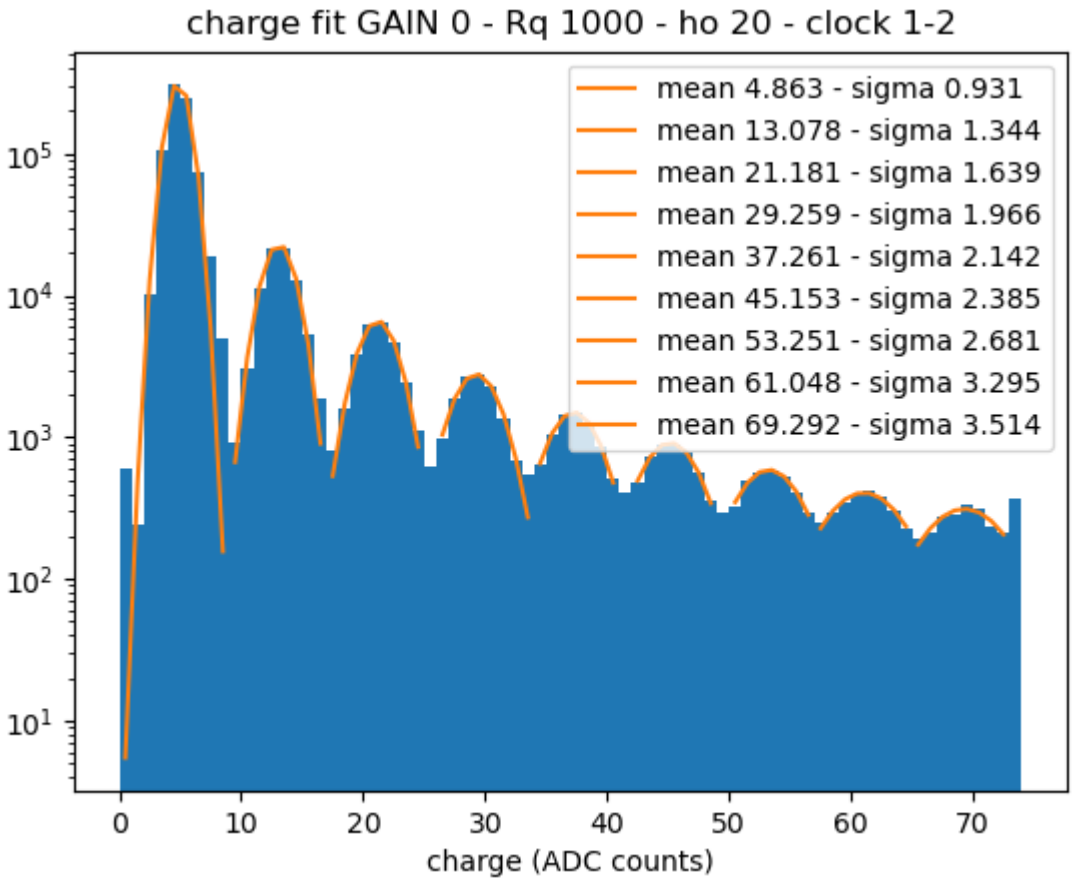


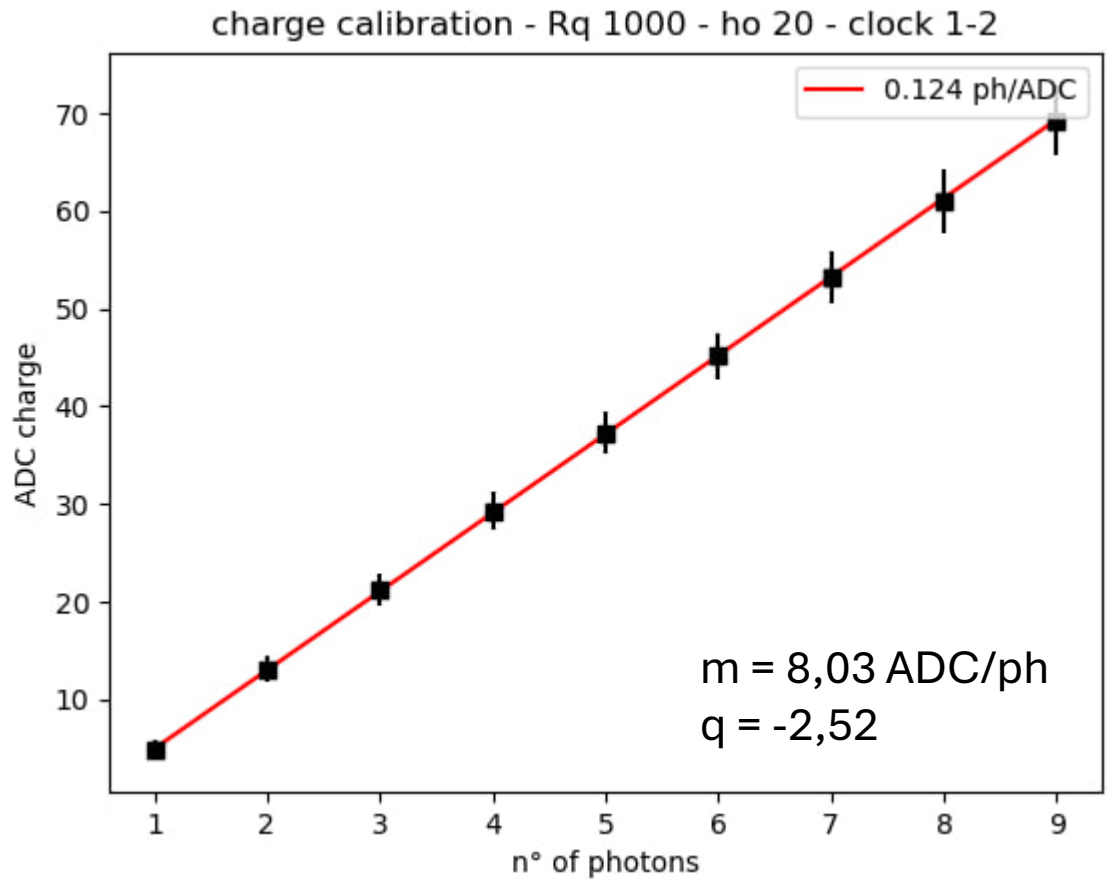
- Clock frequencies x2 and x4 are preferable. The increase in saturation is negligible.
- Higher hold on values give better performances

Saturated vs Lost fractions

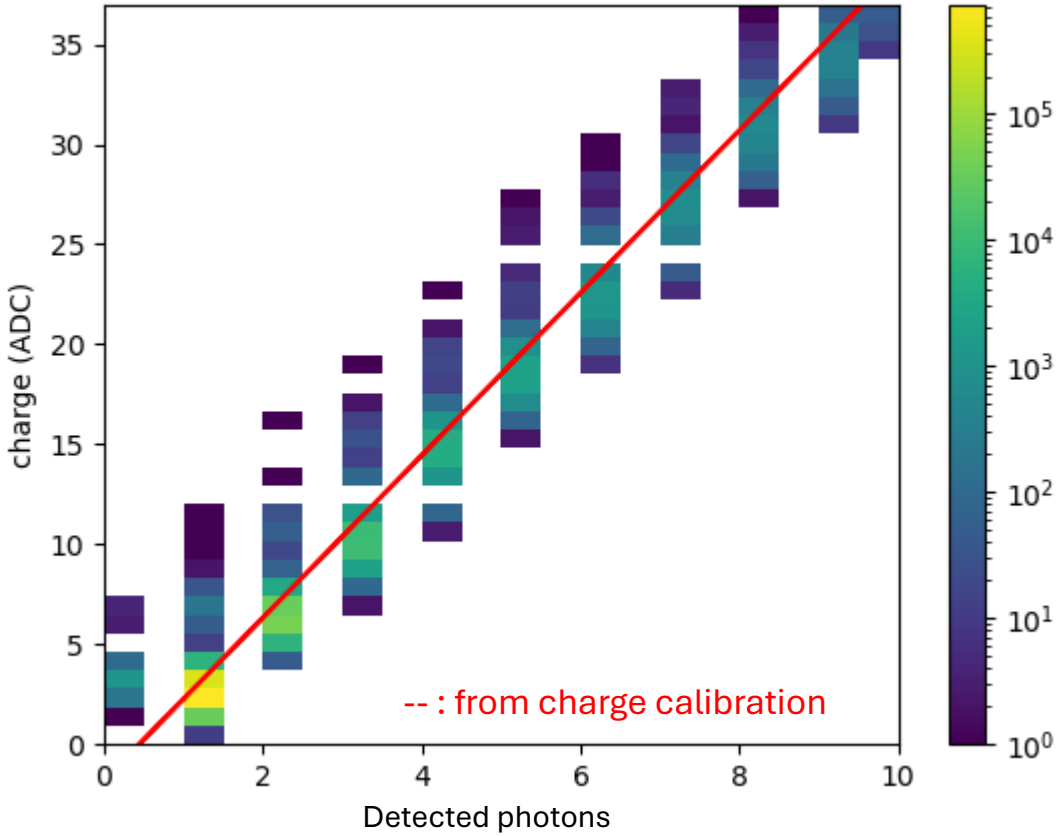


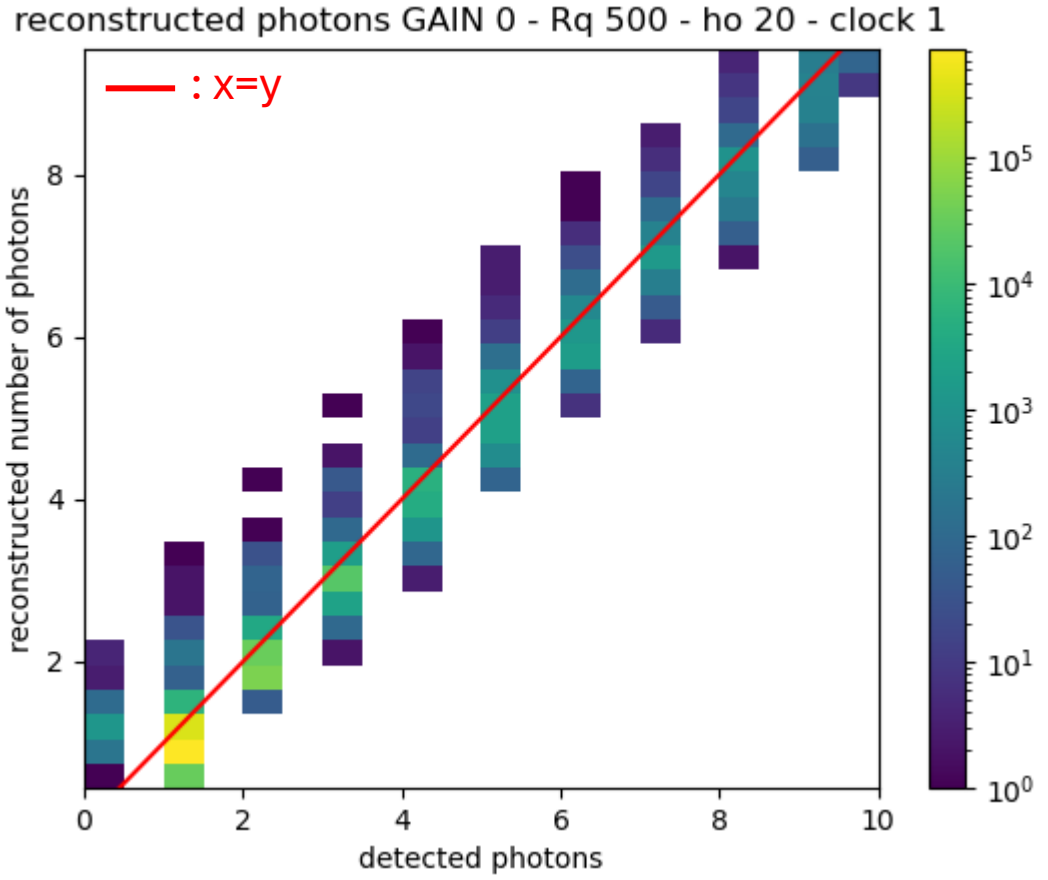
Charge calibration – gain 0





Reconstructed charge – GAIN 0



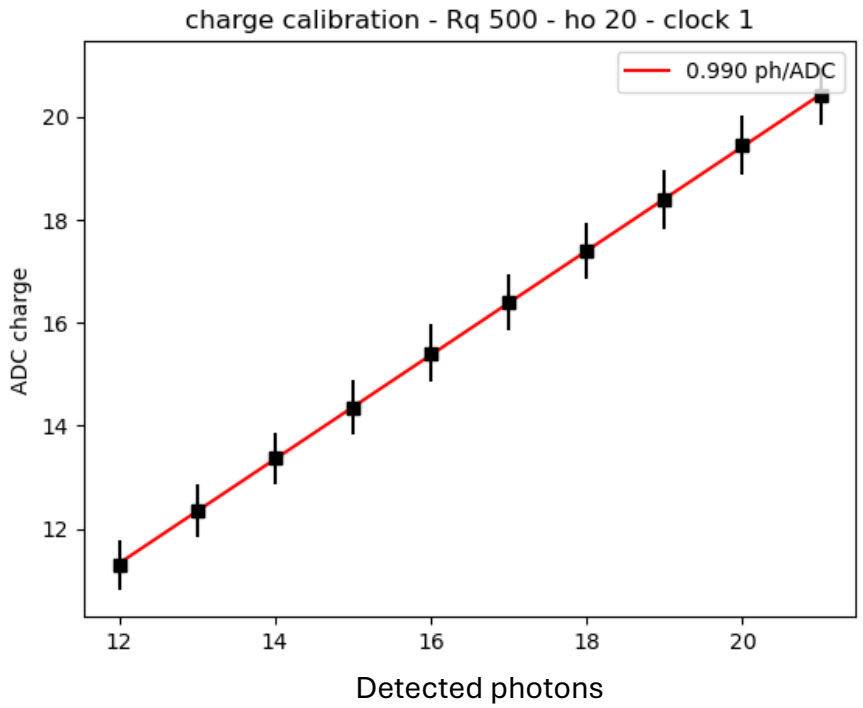


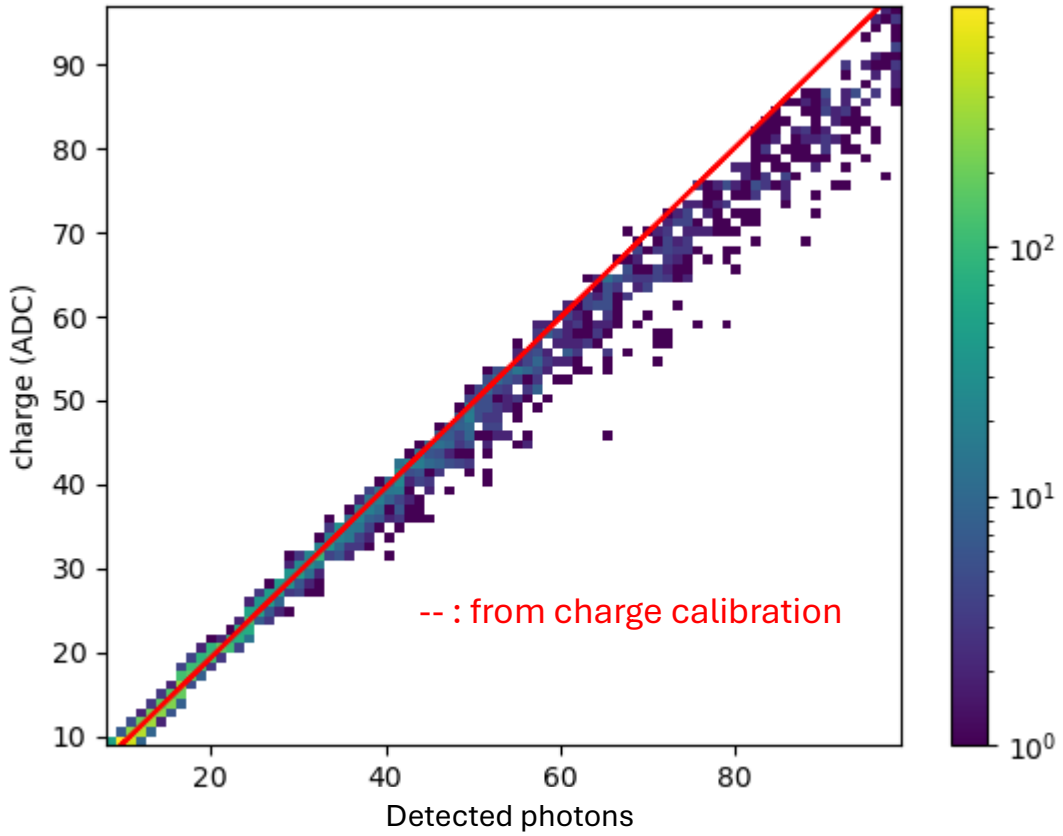
Good linearity for GAIN 0
Good reconstruction capability

Calibration for gain 1

Clock 1

Only the beginning of the distribution was fitted (n° ph <22)

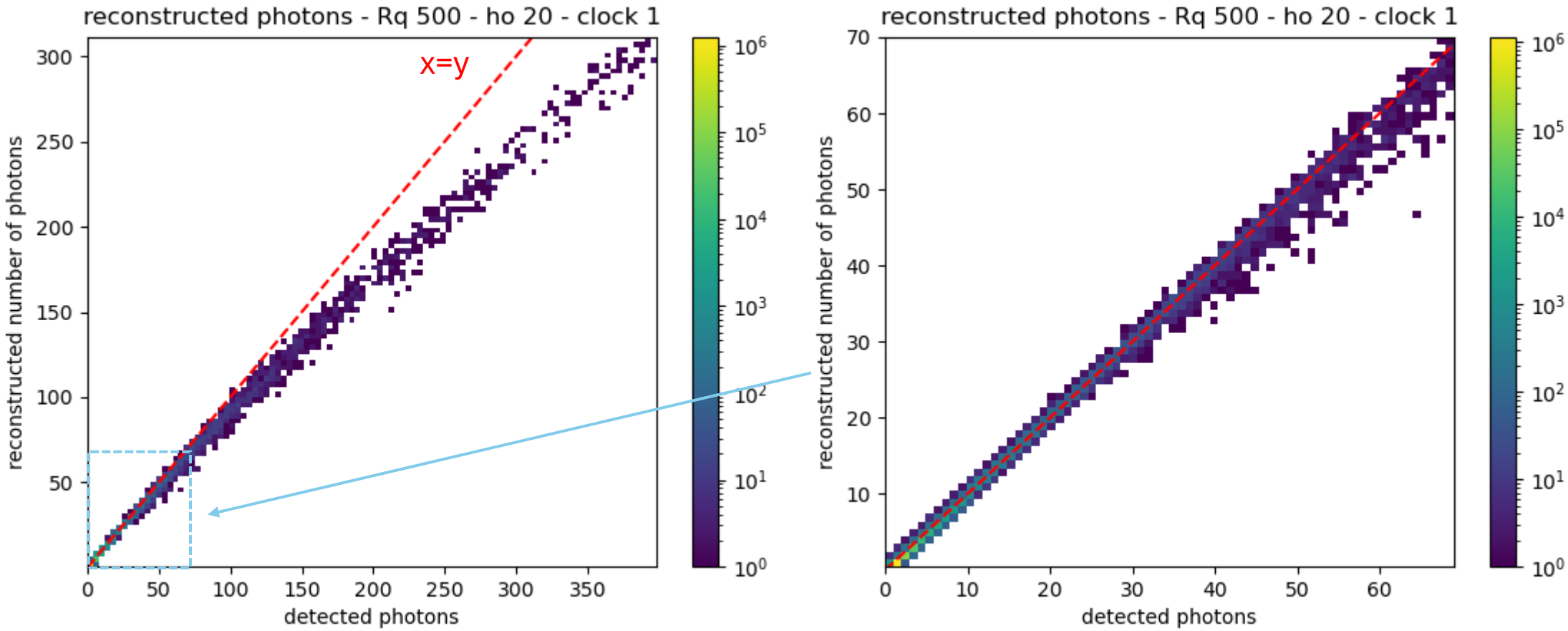




Reconstructed charge

Clock 1

Using calibration for gain 0 and 1, the number of photons is reconstructed from ADC charge



Lost photons

Clock 1

Lost photons wrt MC photons