

Ndlar_flow: current status

Seraphine & Johannes

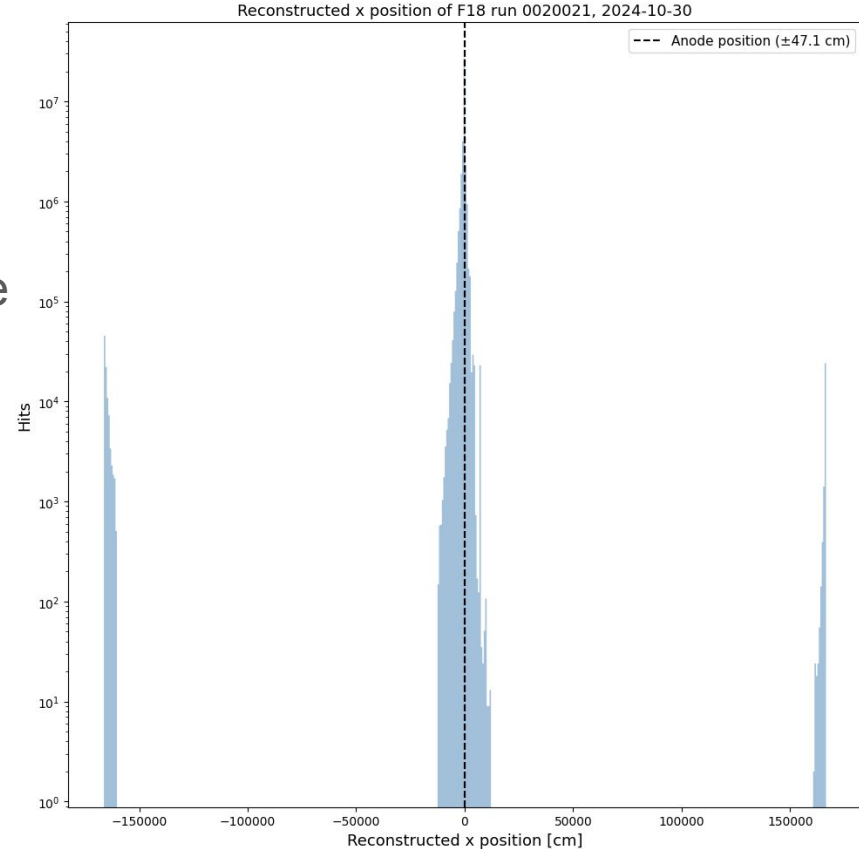
The problem

Goal: Flowing the data from the F18 runs in 2024?

After confirming what the correct pedestal file configuration with Tom is, the process should have worked

But:

- Reconstruction of the charge fails!
- Some charges and energies reconstruct to negative values



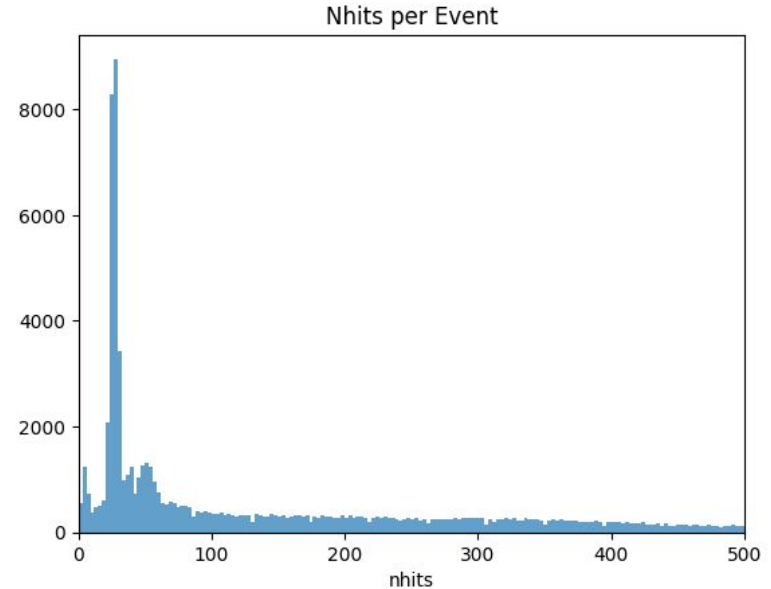
Prelim. info to one dataset

Number of charge hits: 38'889'750

Number of charge events: 92'491

Number of light events: 7'812

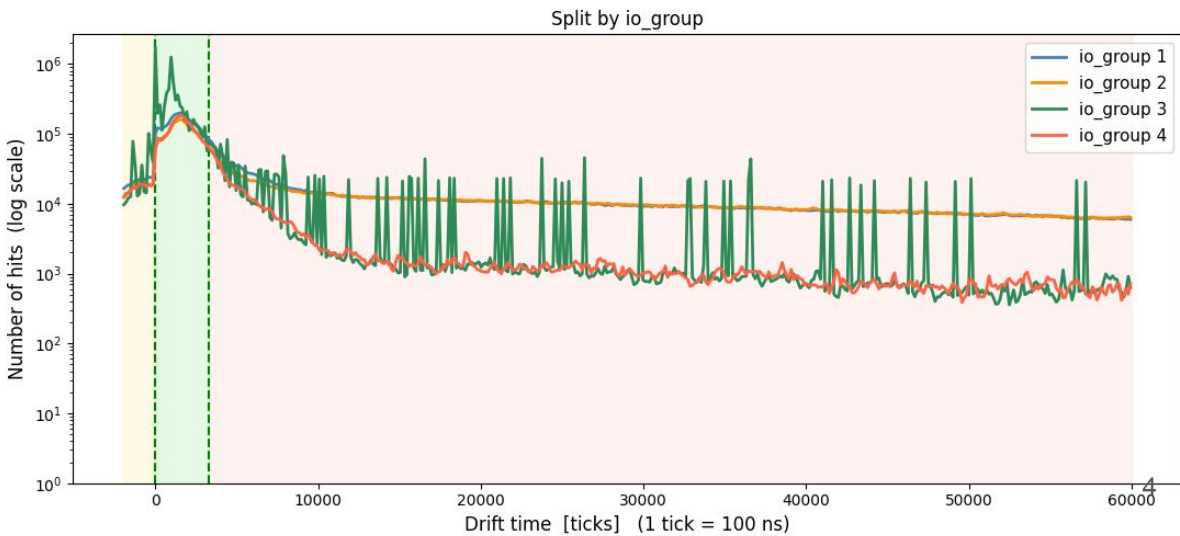
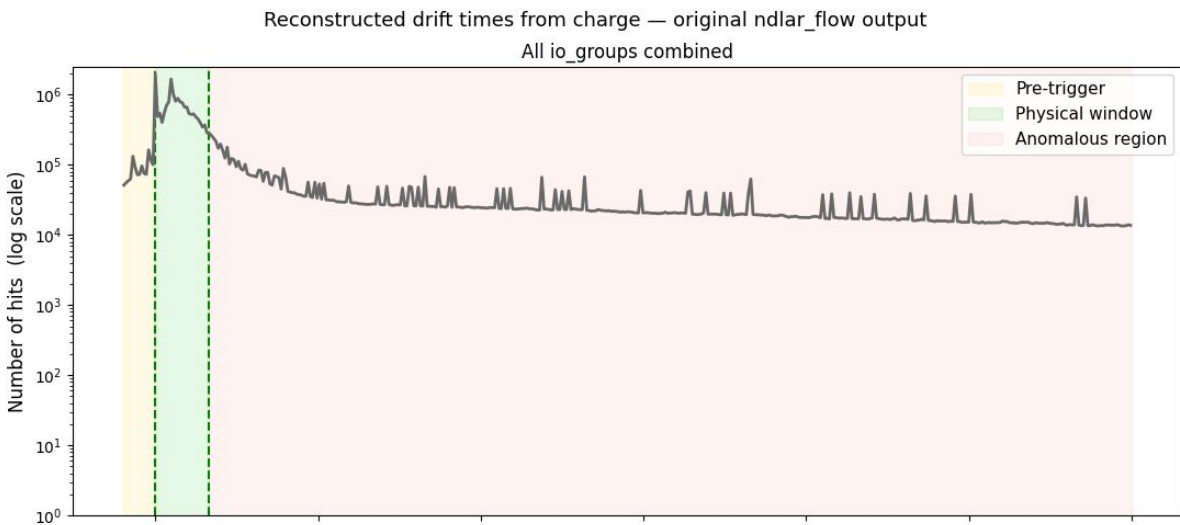
Charge events with light match: 7'390 (8.0%)



Drift times

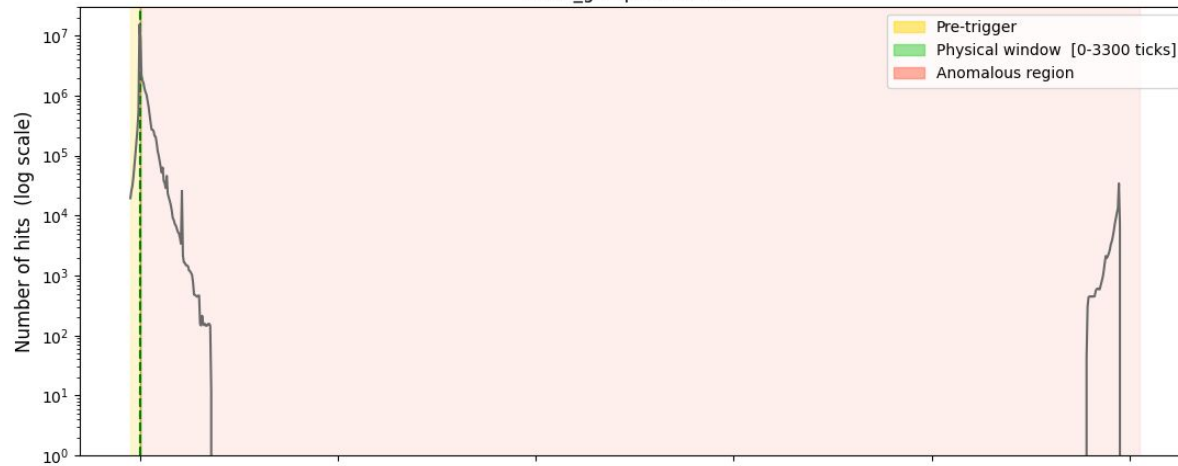
For hits to be physical, the drift time must be within the range $[0, 3300]$ ticks based on electron v_{drift} in argon

→ We see both **negative** drift times and far **too large** drift times outside this window

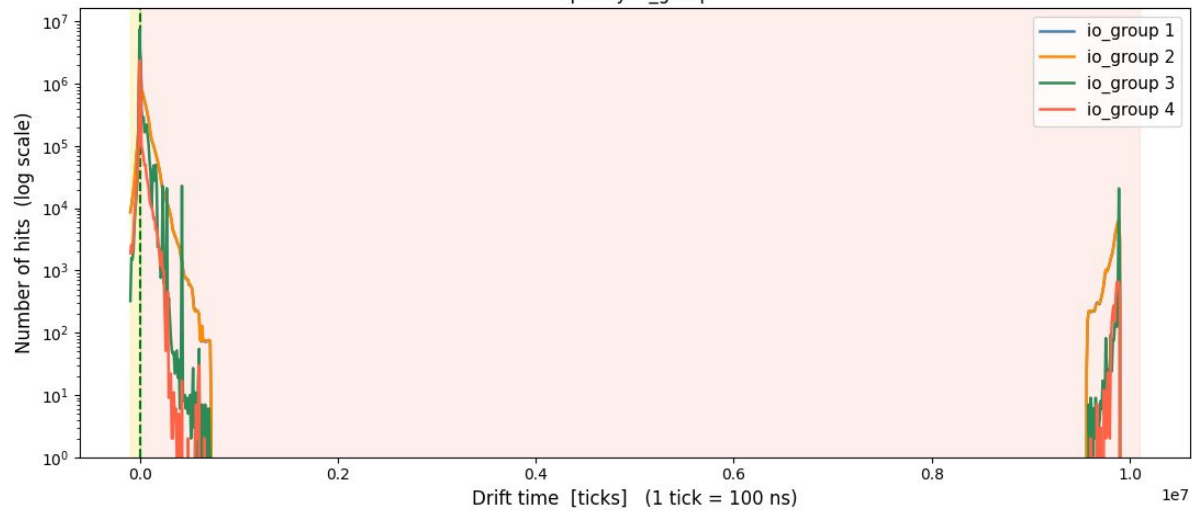


Reconstructed drift times — original ndlar_flow output (full range to 10M ticks)

All_io_groups combined



Split by io_group

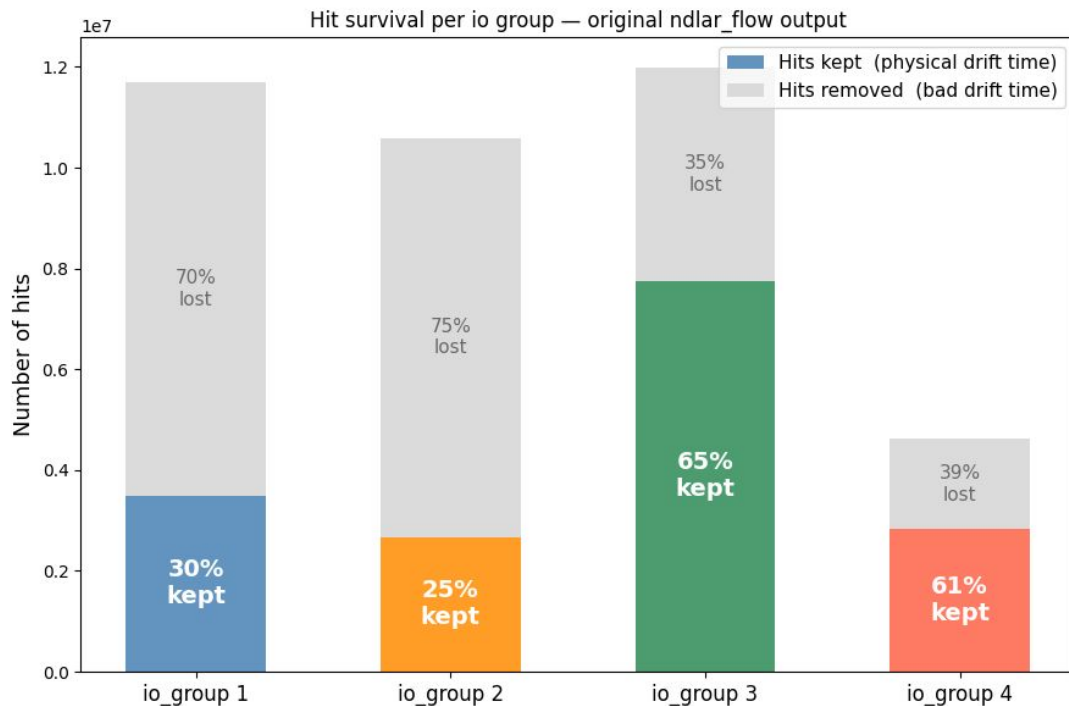


Drift time

If we exclude hits with either negative and too large drift time, this is what is left

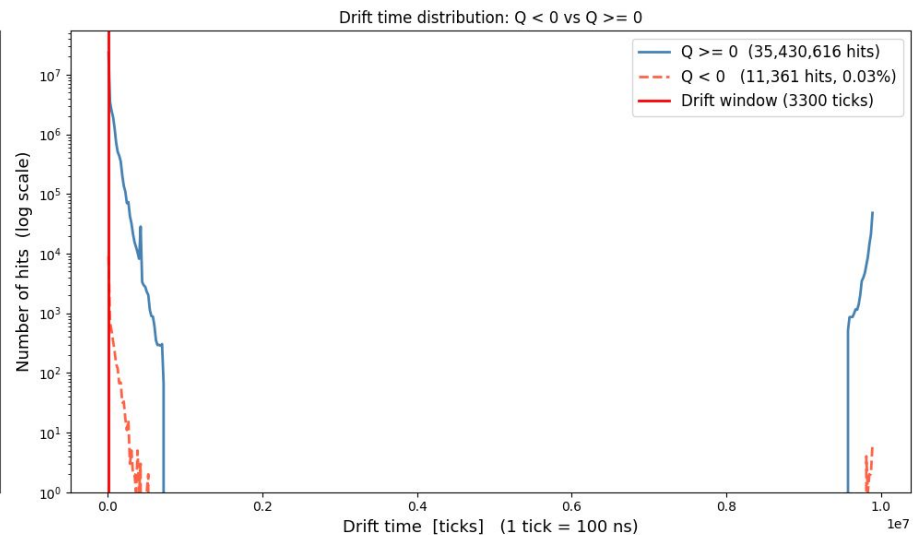
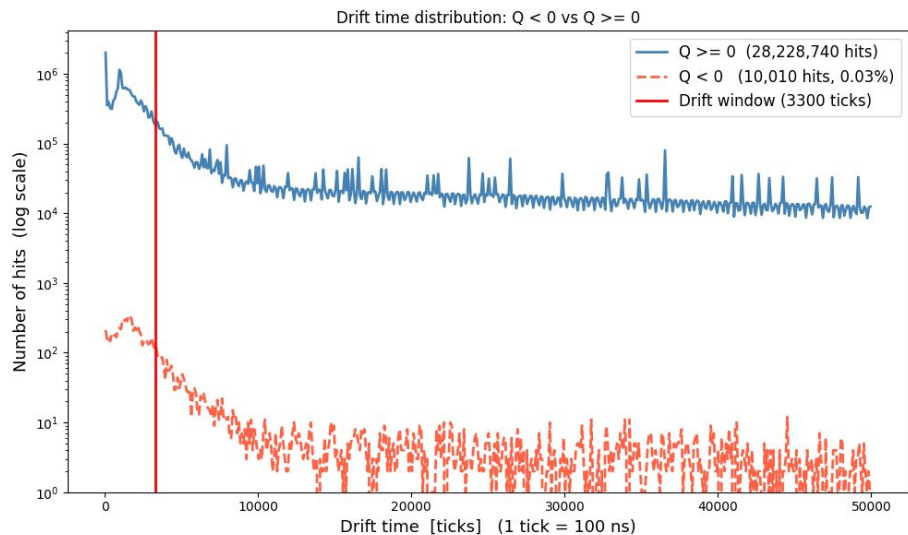
→ There are some differences in the io groups!

Is it because of the nature of our data (gamma from F18 compton scatters only in one TPC)?

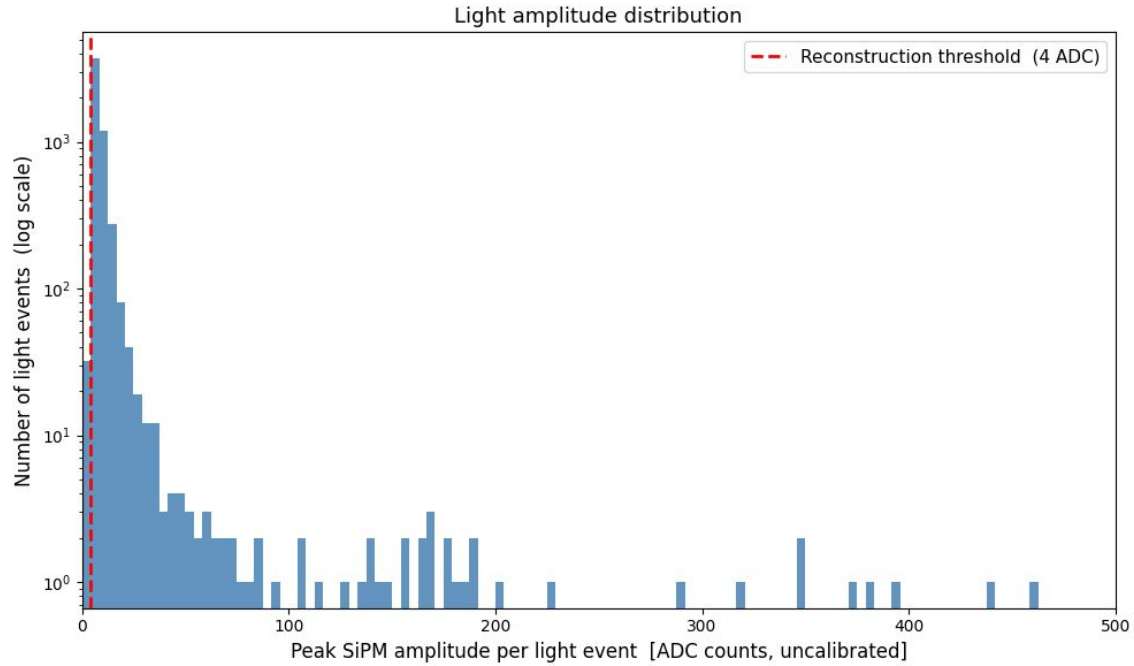


Charge Q

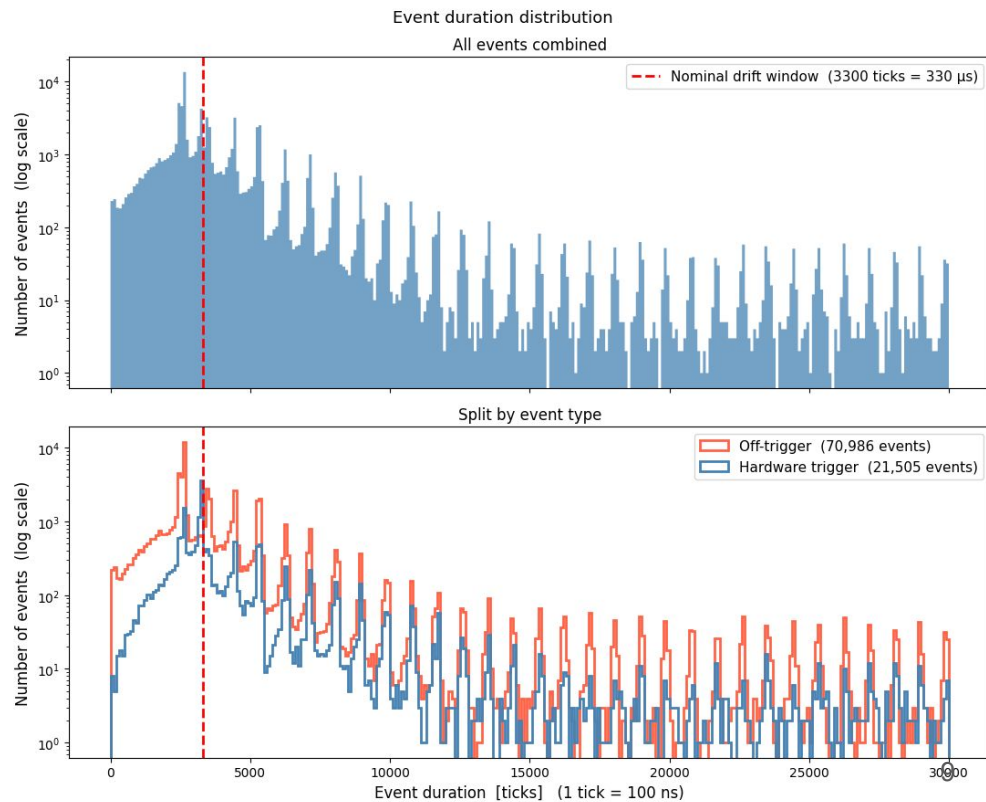
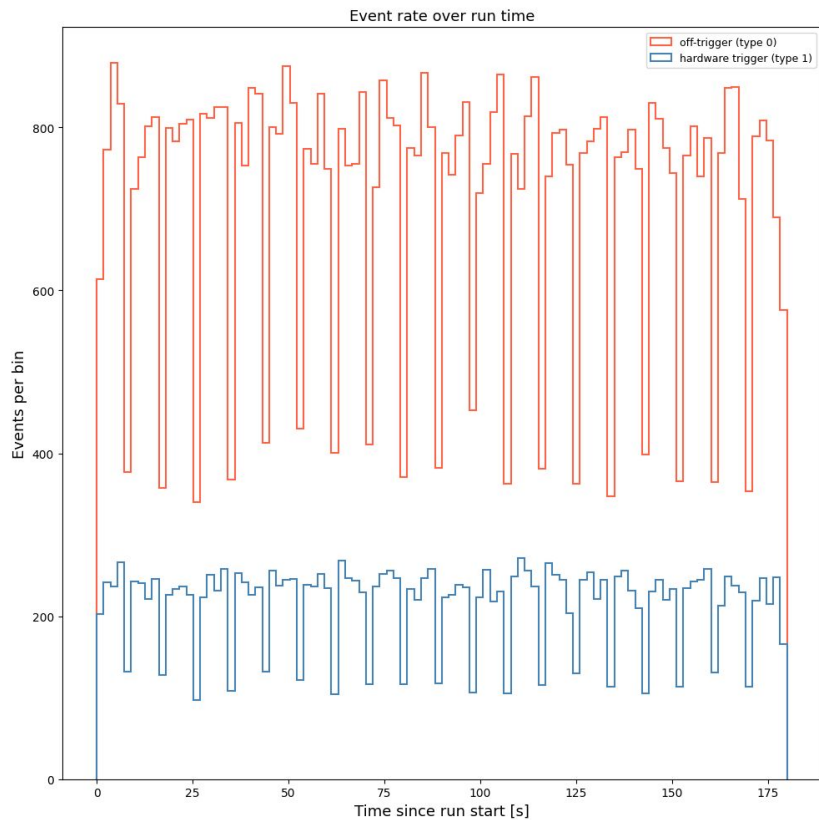
Also negative and far outside of the drift window



Light

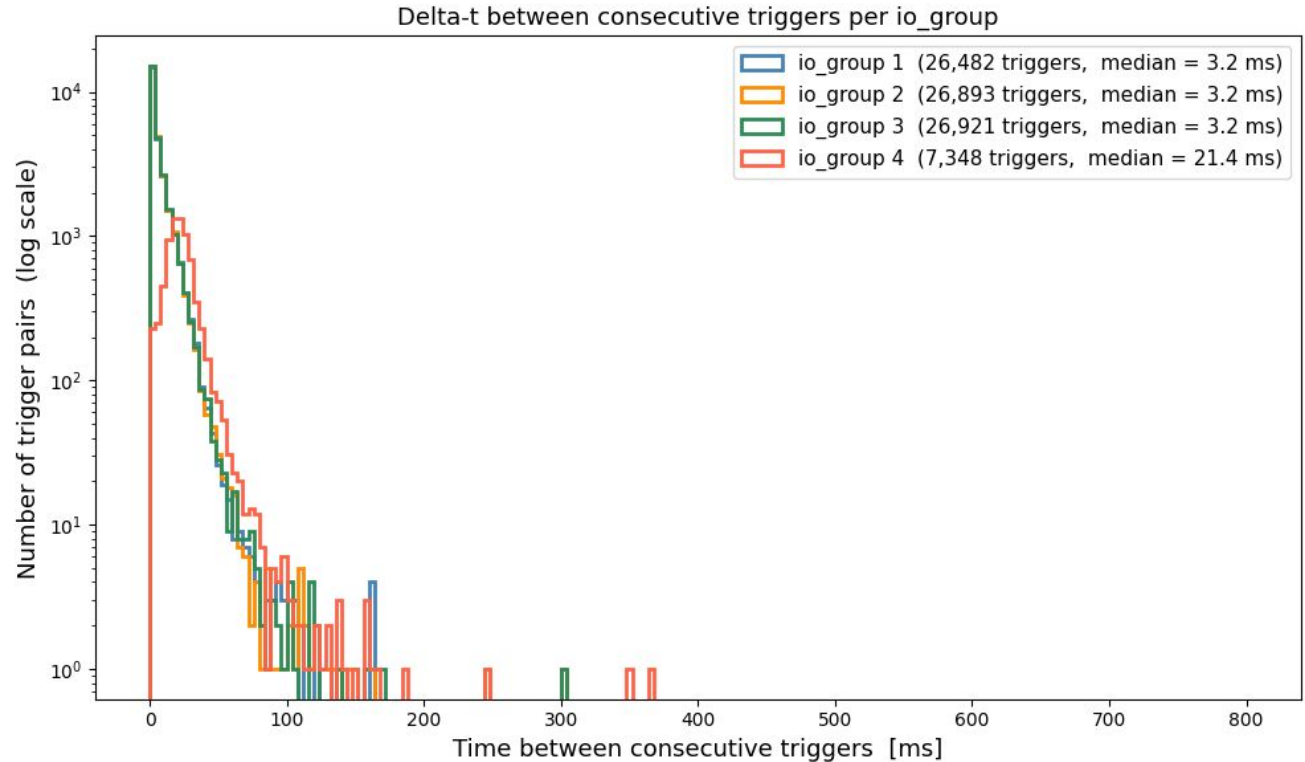


Event rate and duration



Delta_t between triggers

Why does io-group 4 have such a different shape? Do they receive some other signal?

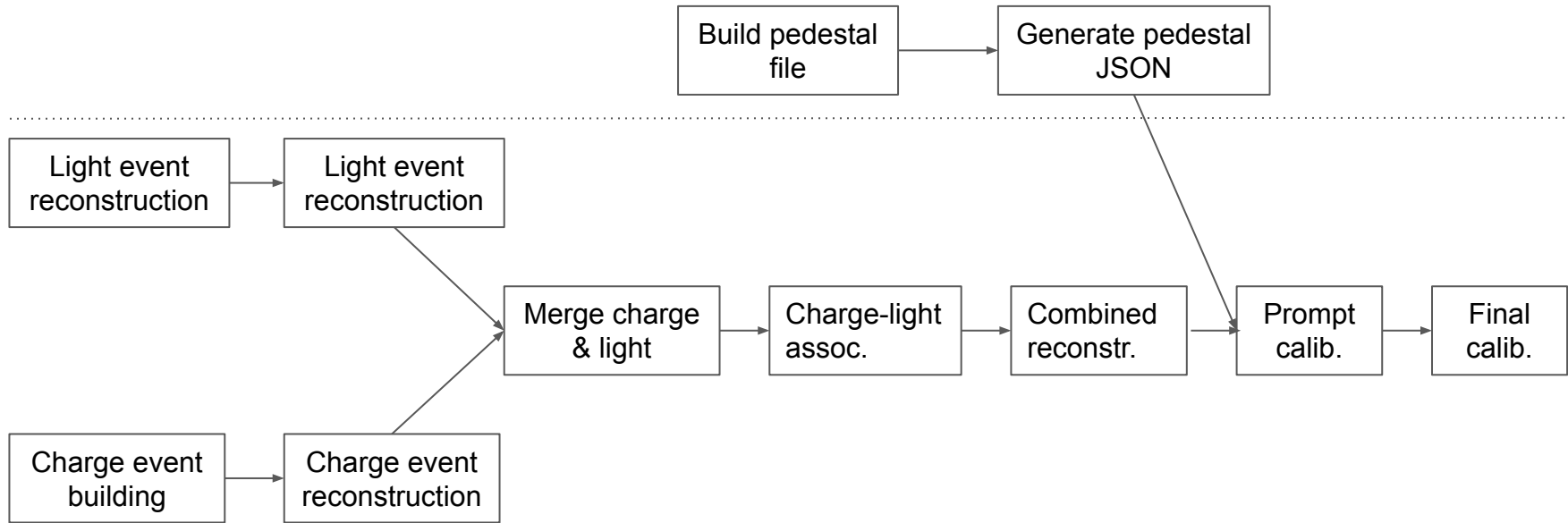


What is the goal?

- Fix ndlar_flow so we can flow any FSD data?
- Optimize ndlar_flow for specific types of events (i.e. low energy events)?
- With whom shall we get in touch to ask for help? Tom?
- Use old version (pre June 2025)?

Backup

Process of ndlar_flow



Hardware-triggered events (blue) are the ones with reliable reconstruction
Off-trigger events (grey) are noise collected between triggers

