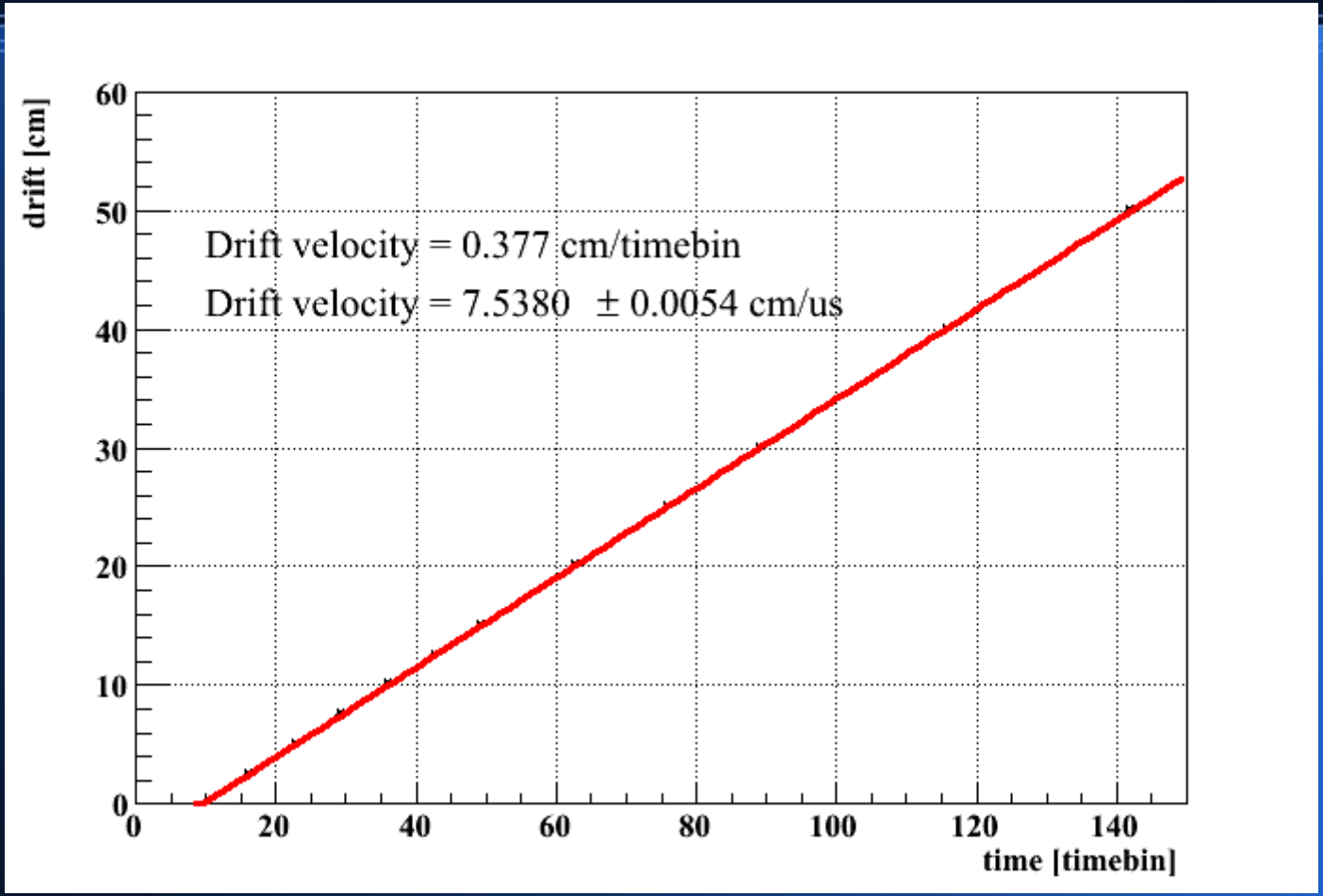
Analysis
Japanese Test Beam 2012

Outline

- Drift velocity
- Pulse shape
- PRF
- Charge loss with drift

Drift velocity



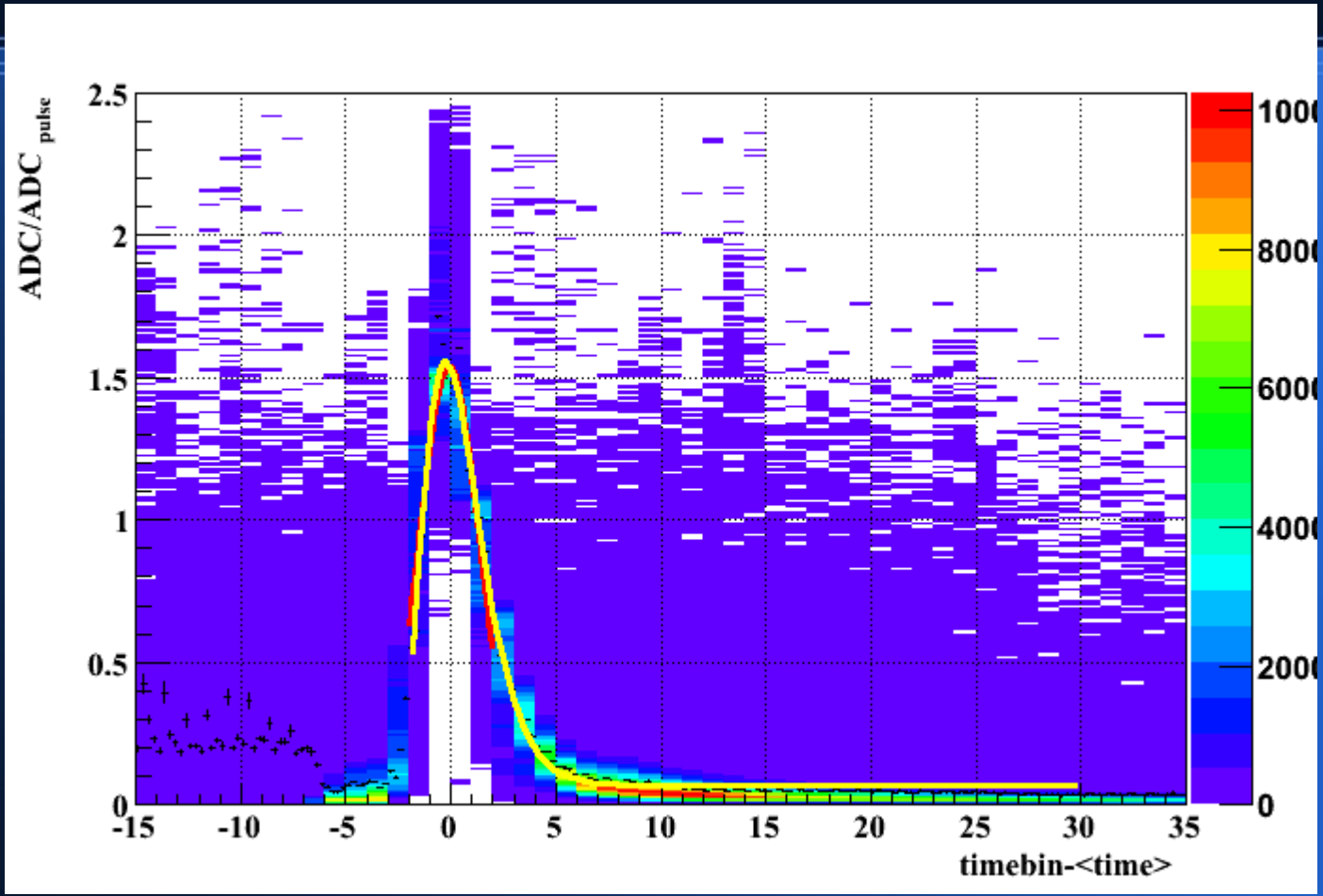
A very quick measurement gives a drift velocity consistent with expectations

Pulse shape

- Average pulses
- Pulse time and charge evaluated around the peak
  - 5 bins around the max
  - all bins above 10% of peak

    => same results
- “freak pulses” ignored (cf Astrid)

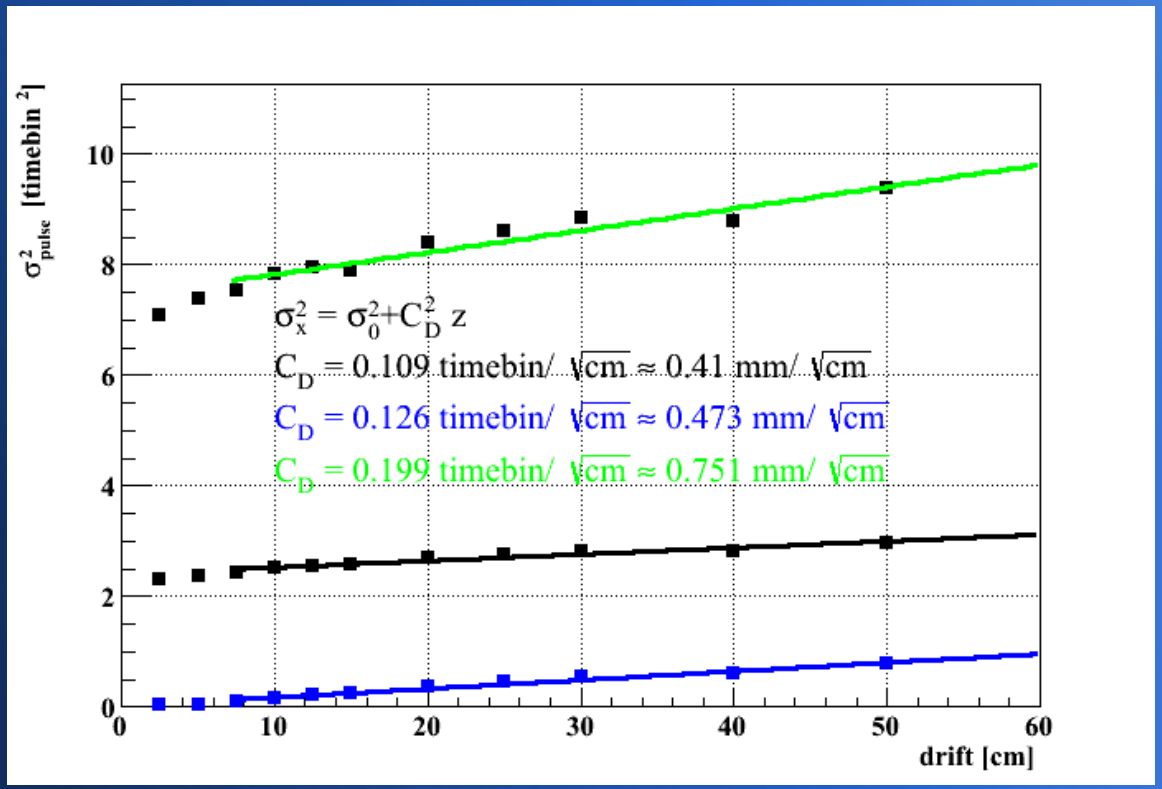
Pulse shape



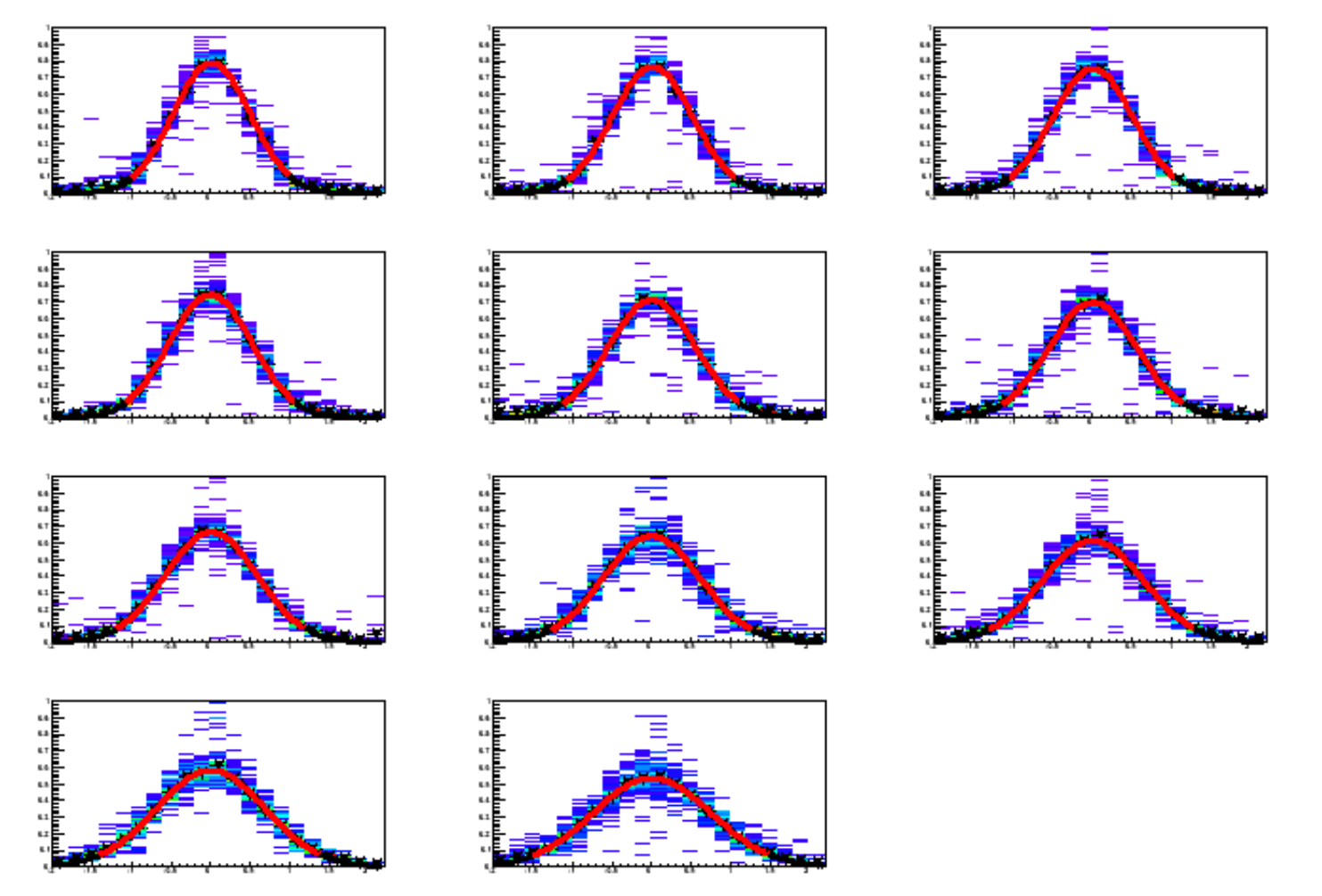
Defined in the same way as PRF
Fitted with Gamma4 function (x^4exp(-4x)+noise)

Pulse width
Longitudinal diffusion

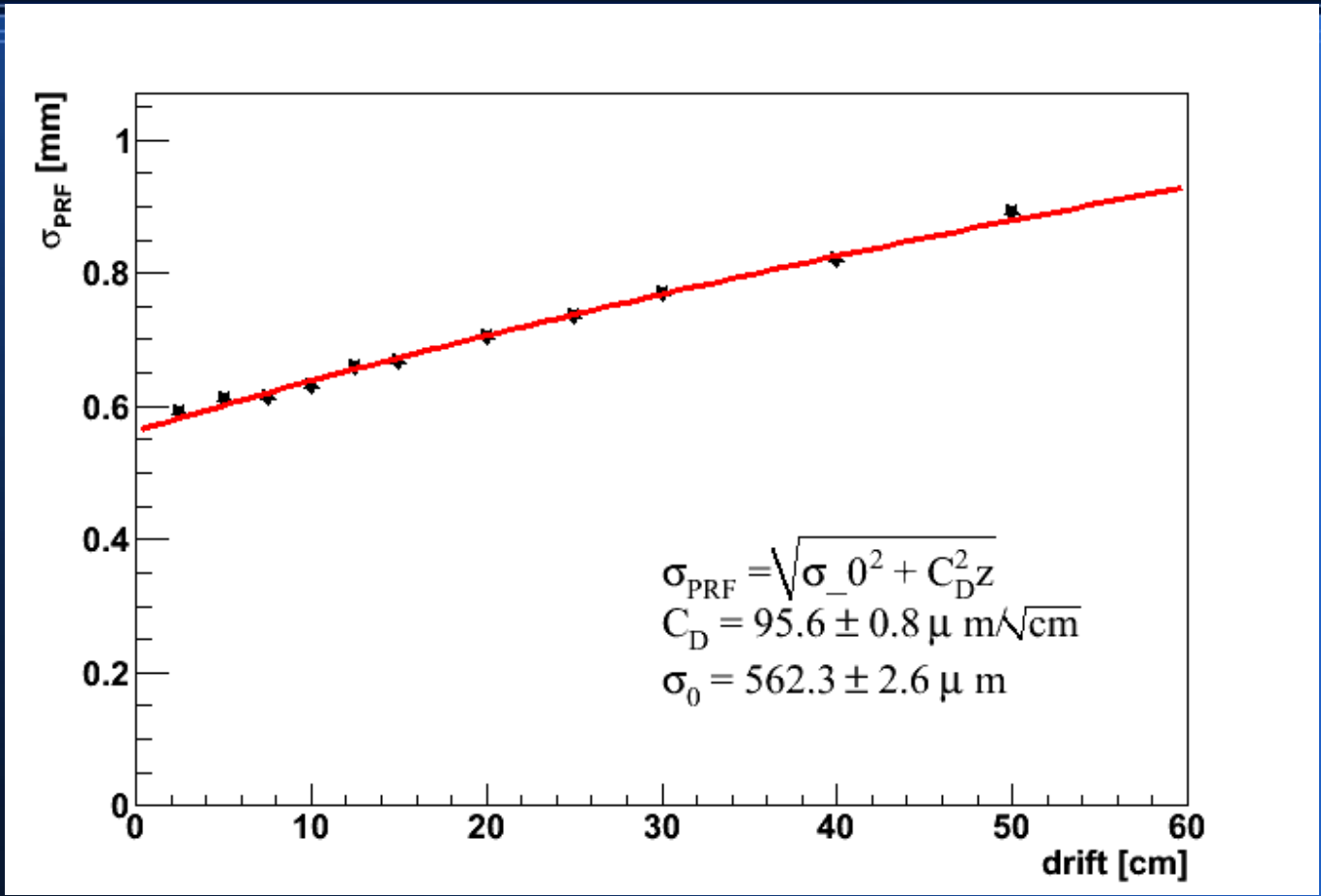
- Pulse width
  - Gaussian fit
  - Gamma4
  - Gamma4*Gaus
- Width increases as expected
- Diffusion difficult to evaluate quantitatively



Pad response function



Pad response function

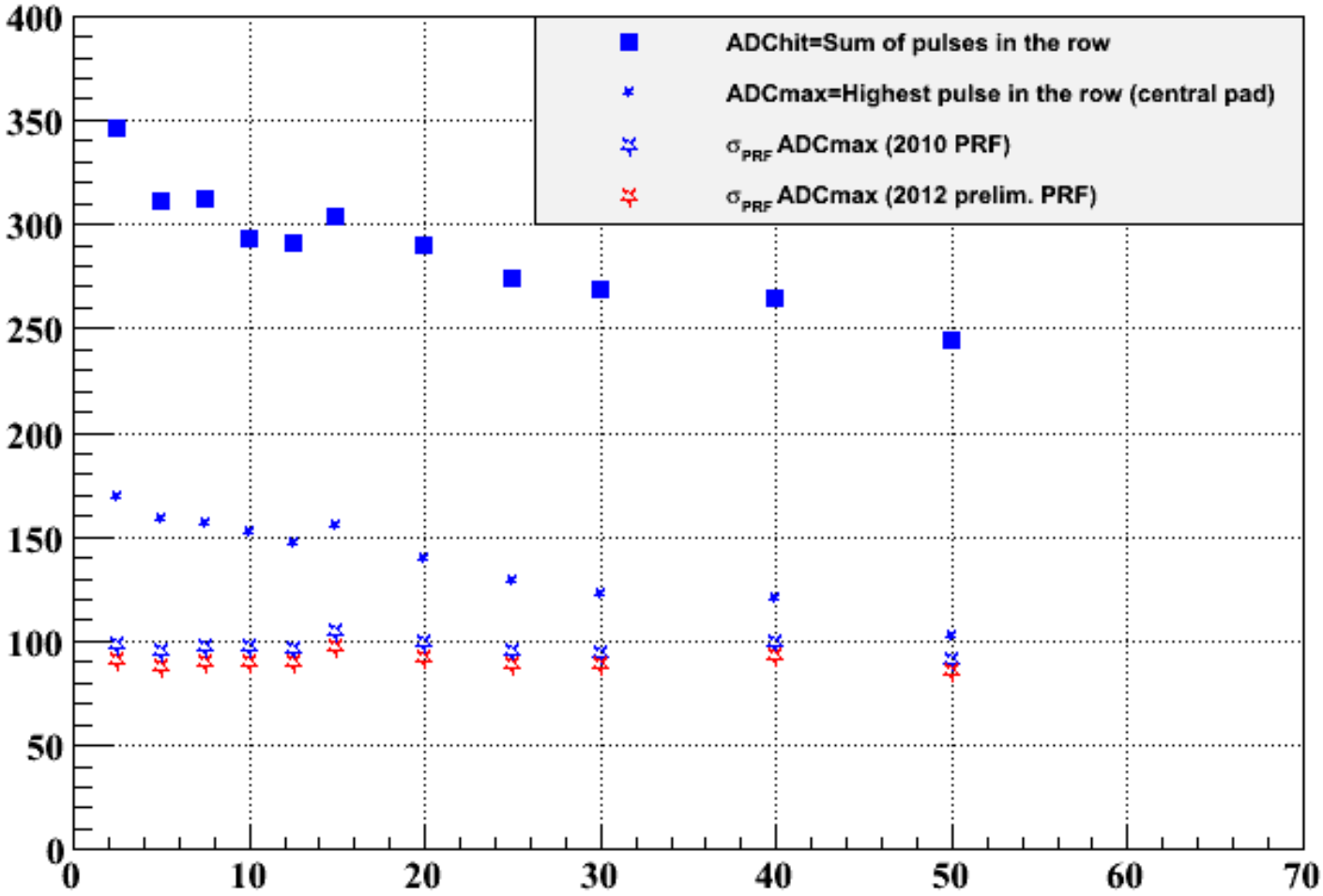


Preliminary result consistent with Magboltz and 2010 data

Charge loss with drift

- We observed charge loss with drift in all runs
- Seems big to be electron absorption
  - Changing the gas flow did not change the effect
- Is it a physical or software effect
  - Important for Neffective

Charge loss with drift
From raw data



Charge loss with drift

- From raw data:
  - ADCsum (~hit charge) shows the effect
  - ADCmax (~central pad charge) decreases more (as expected from diffusion)
  - σ_{PRF}ADCmax (correcting for diffusion) is flat
- Indication that charge is lost in the tails of the hit
  - too much noise, too low gain
  - How can we confirm that?

Conclusion

- Test beam analysis ongoing
- Pulse shapes look OK
  - Longitudinal diffusion difficult to measure
- PRF looks reasonable (very preliminary result)
  - Diffusion consistent with expectations
- Charge seems to be lost in tail of wide clusters
  - Needs to be confirmed
  - Can it be corrected? Is it necessary?