

TB21 Data Analysis

GaAs sensor Anton 1

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Quick summary

Sensors

- Si: C74, C75
- GaAs: “**anton**”, “yan” (w/ traces)
- GaAs: BeamCal (traceless)

Sensor's readout data loss

- HV short circuit (3% surviving rate)
- Extra 2 us delay after the beam
(unsuccessful synchronisation to the telescope; more event loss)

First look onto the ones

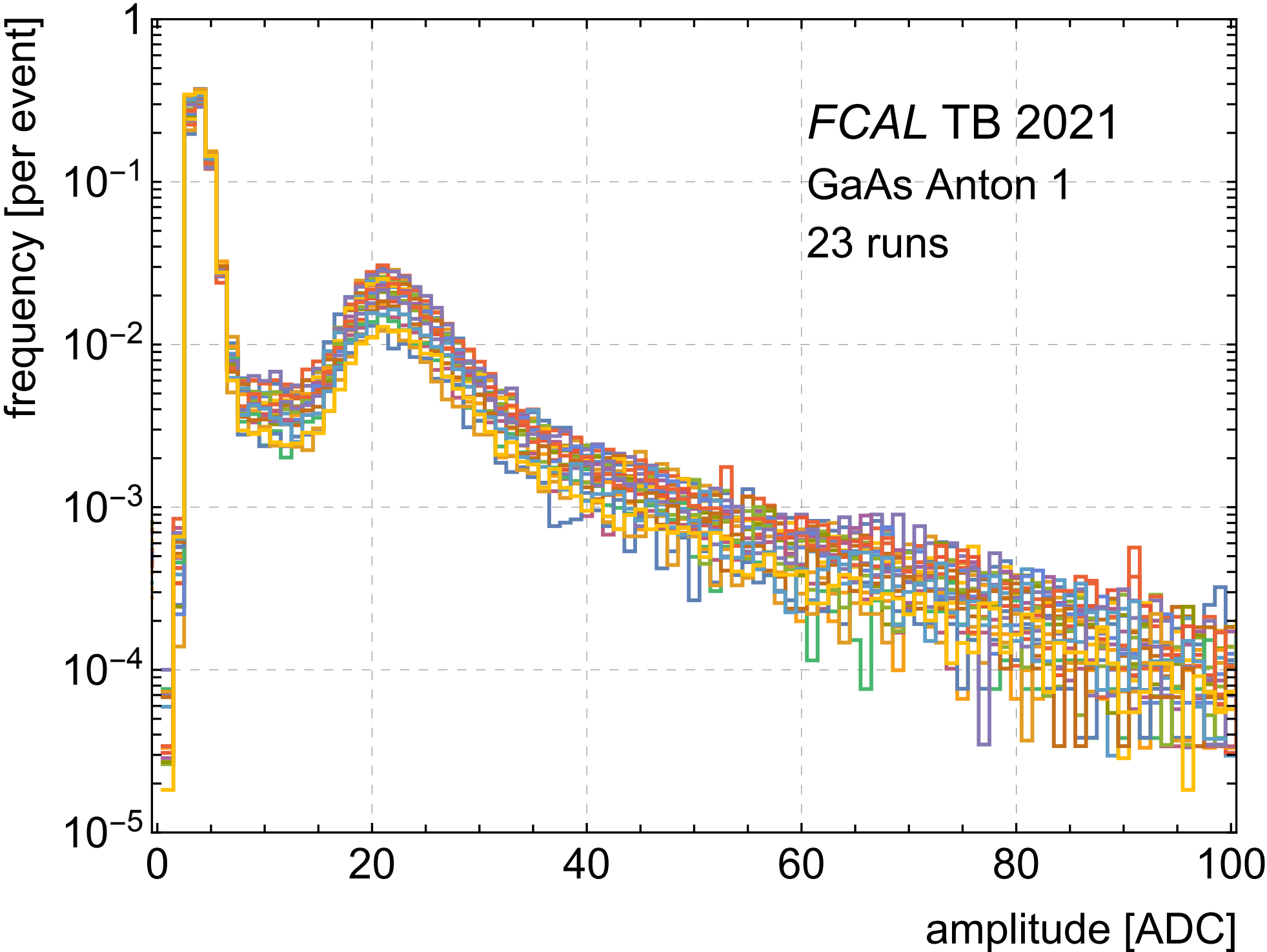
- with only one sensor plane
- without W plates

Multiple hits on one channel within the same events

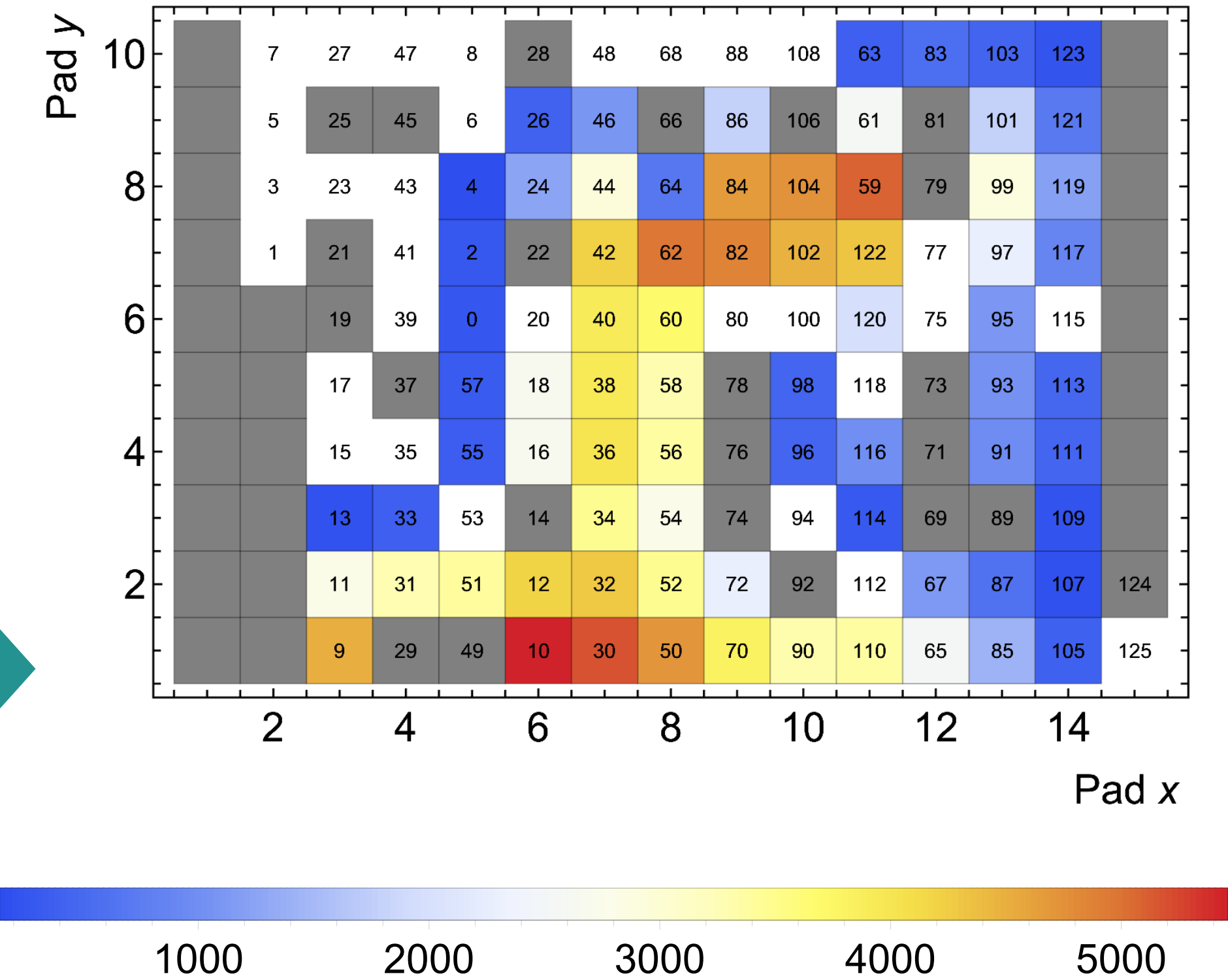
Time (ns)	Event 718833	Event 953973
-150	{}	{}
-100	{}	{}
-50	{}	{}
0	{}	{64: 50}
50	{62: 24, 82: 8}	{}
100	{}	{}
150	{82: 25}	{64: 25}

- Event selection: with only one channel has amp higher than 10
- Channel selection: showing the shape of Landau peak

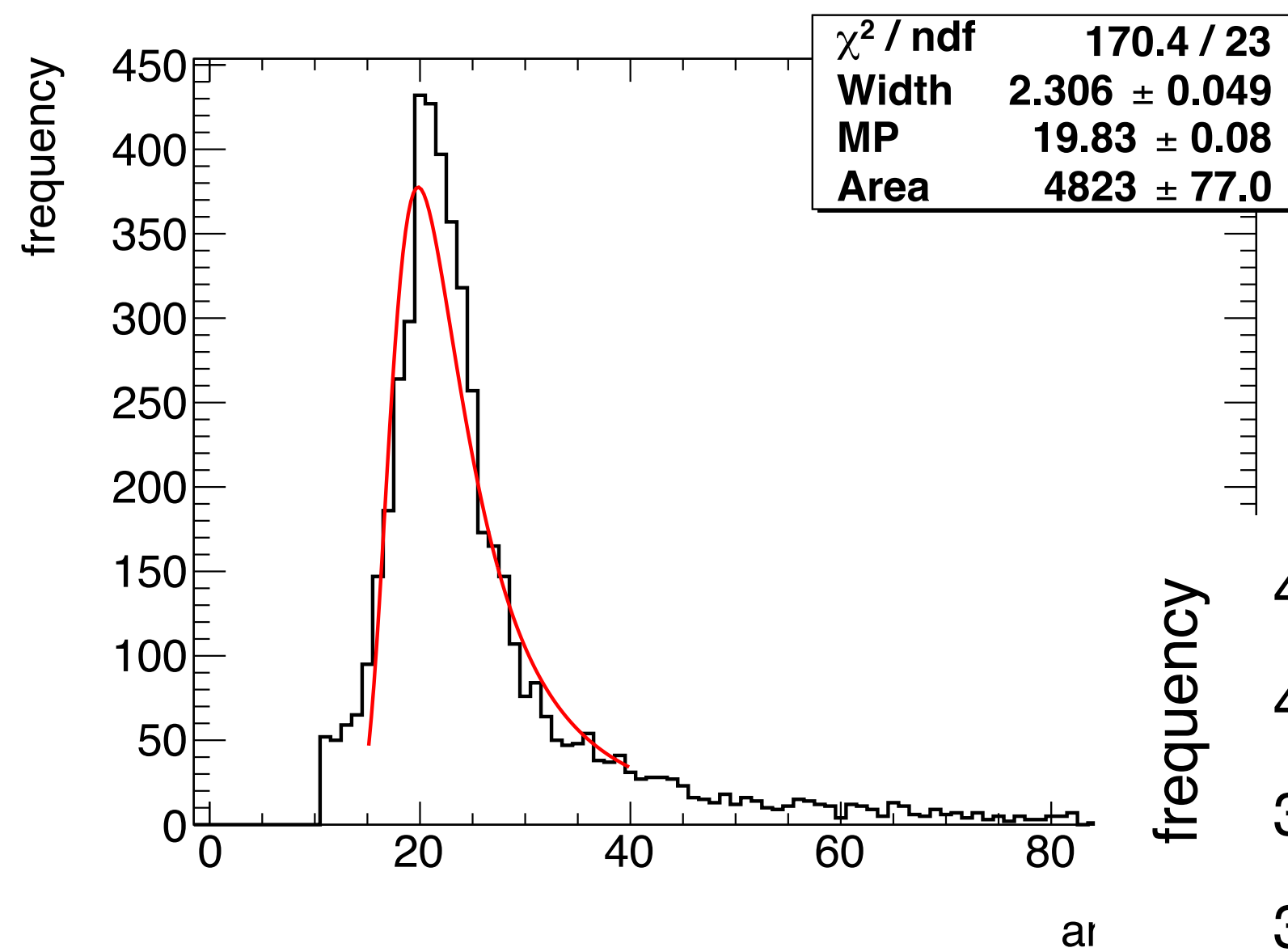
ADC frequency over “all” channels



Frequency of hit amplitude for all channels
unified by non-empty event number

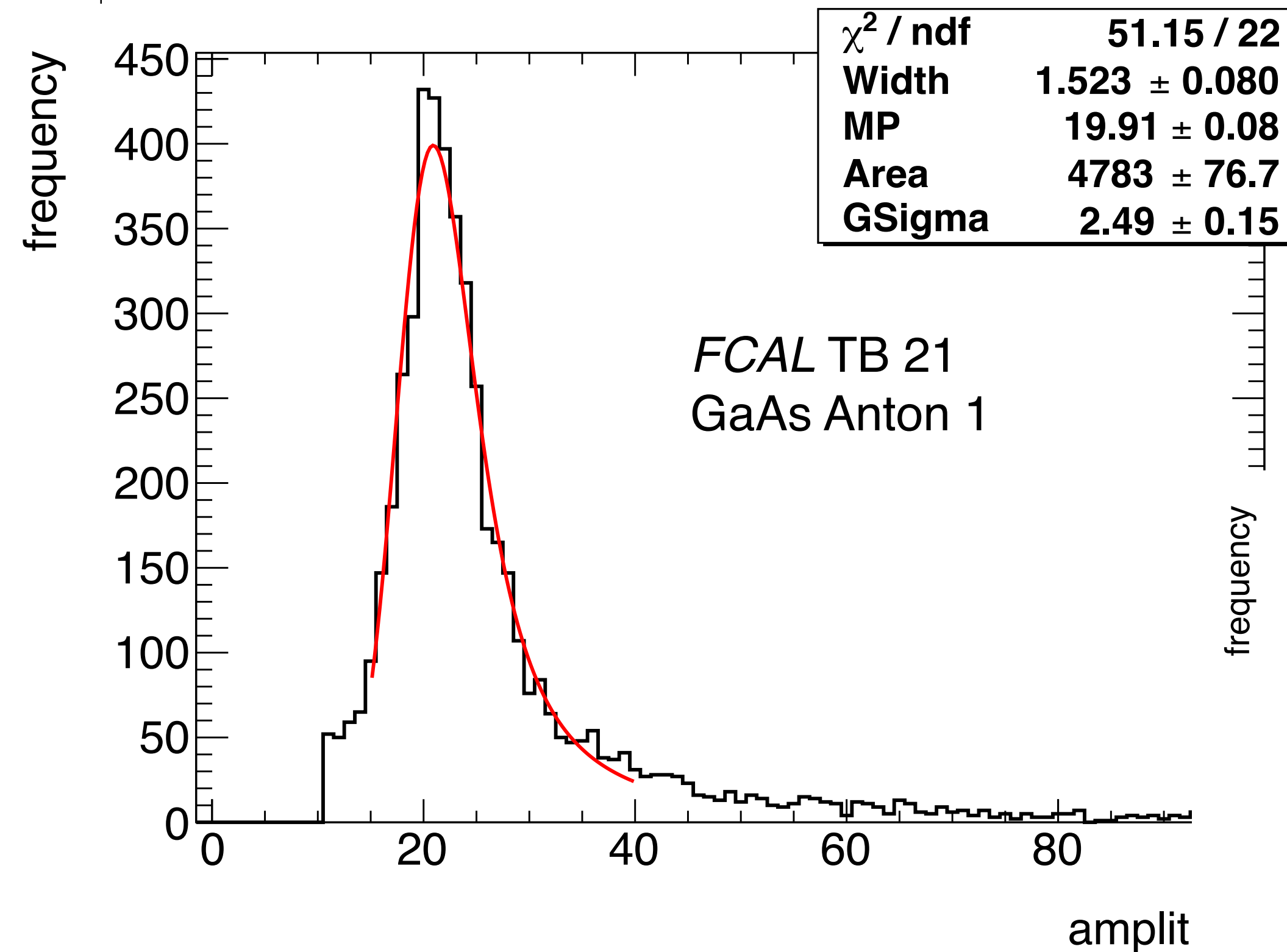


Mapping and hit frequency of Anton1 on ASIC 0
for Runs 650 to 38 (in total 23 runs)



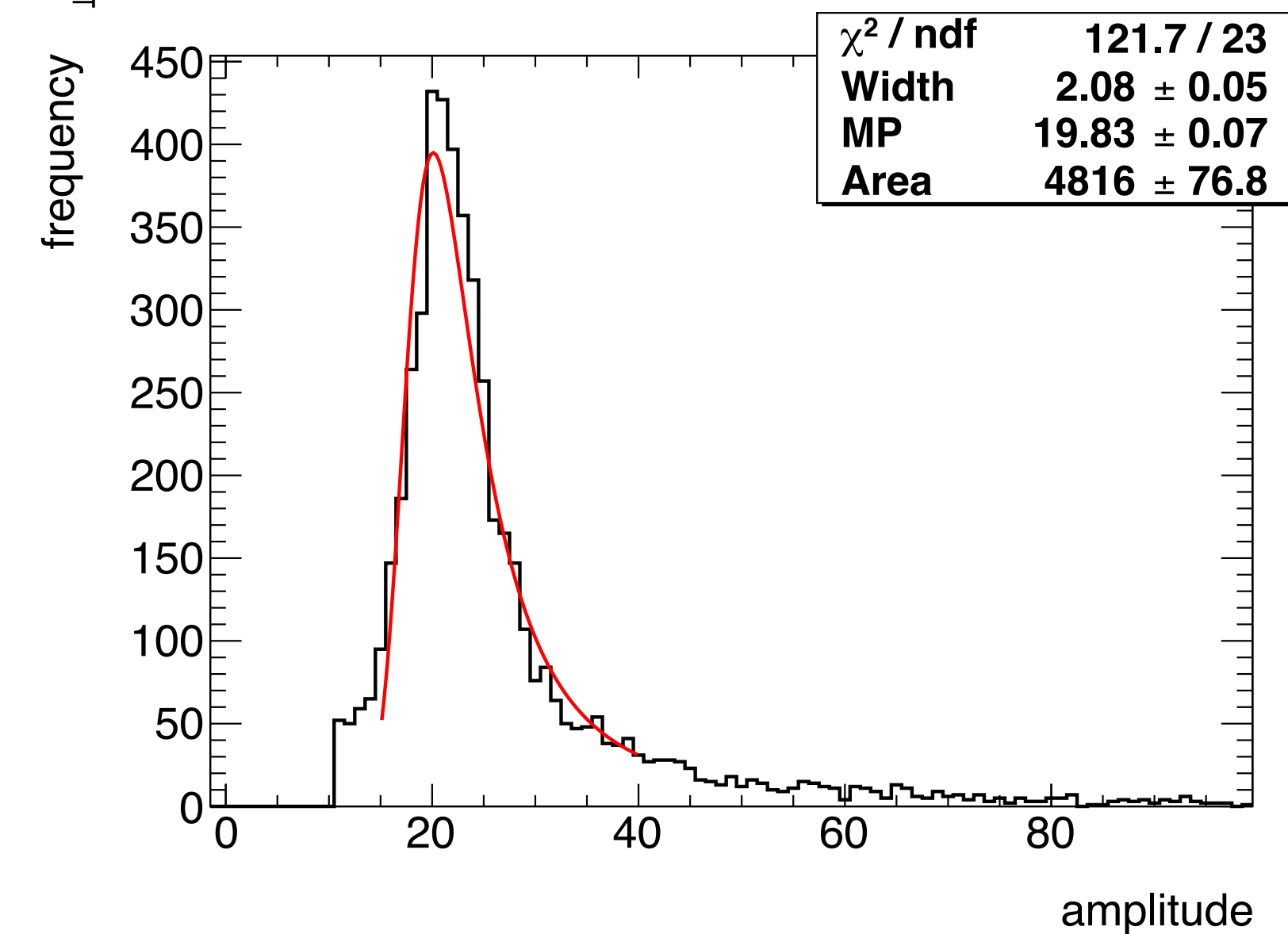
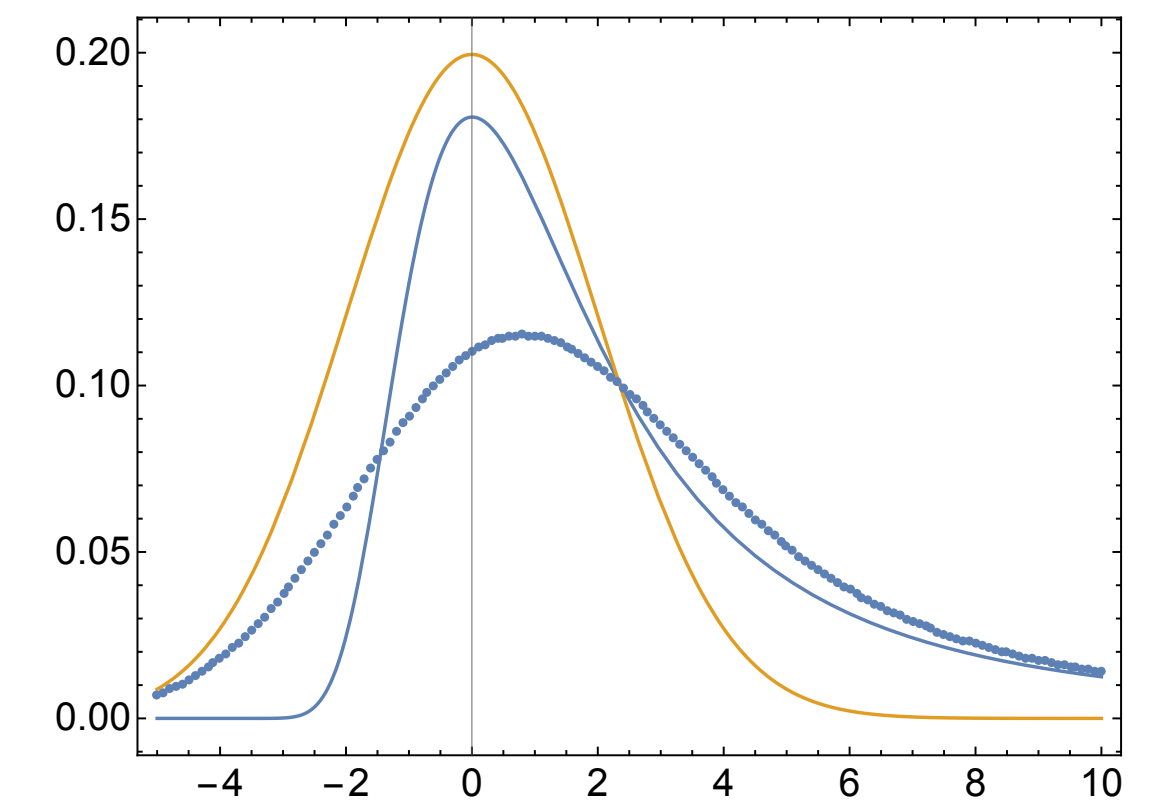
Landau only

Channel 59



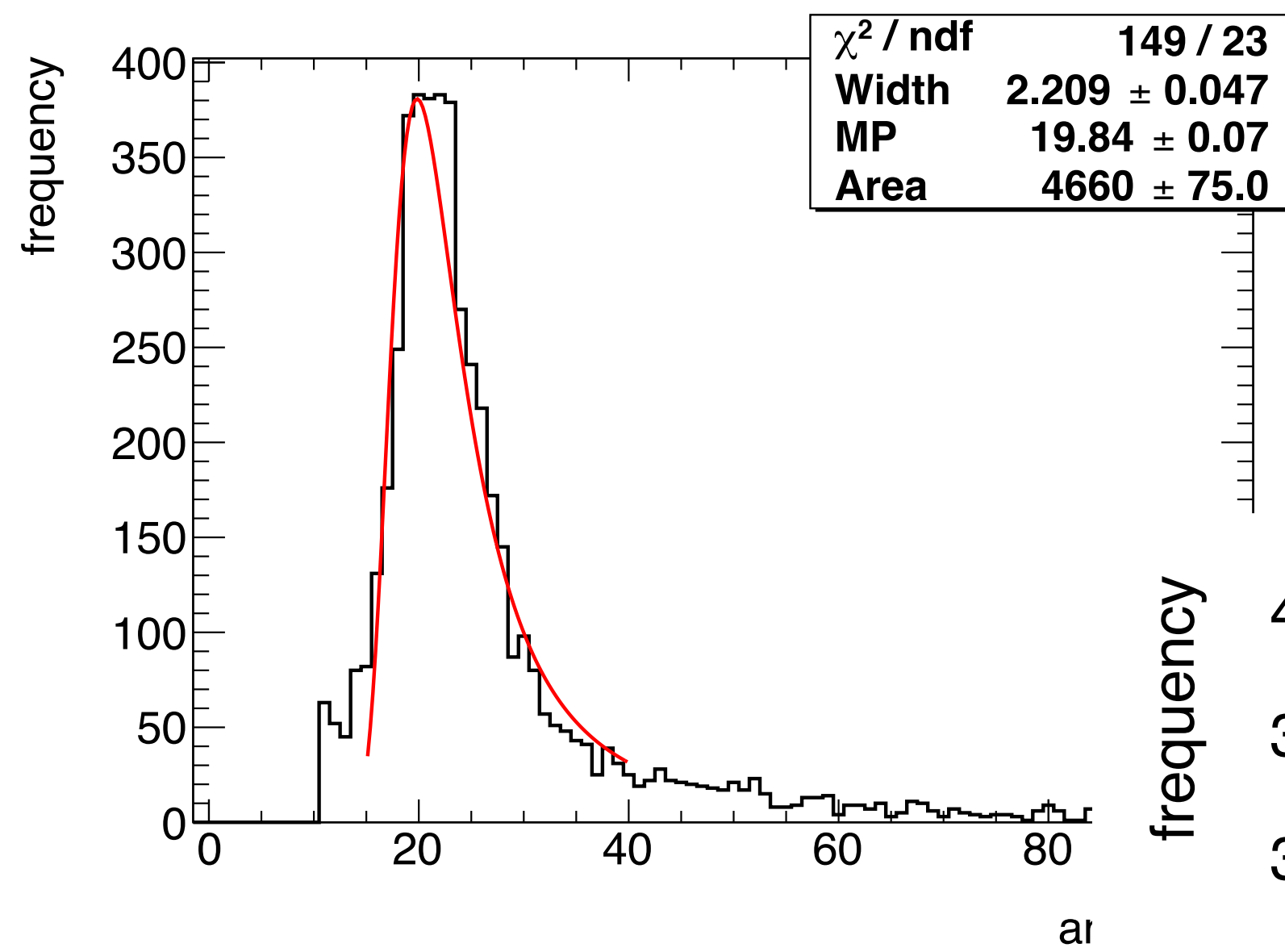
FCAL TB 21
GaAs Anton 1

Landau (x) FreeGaussian



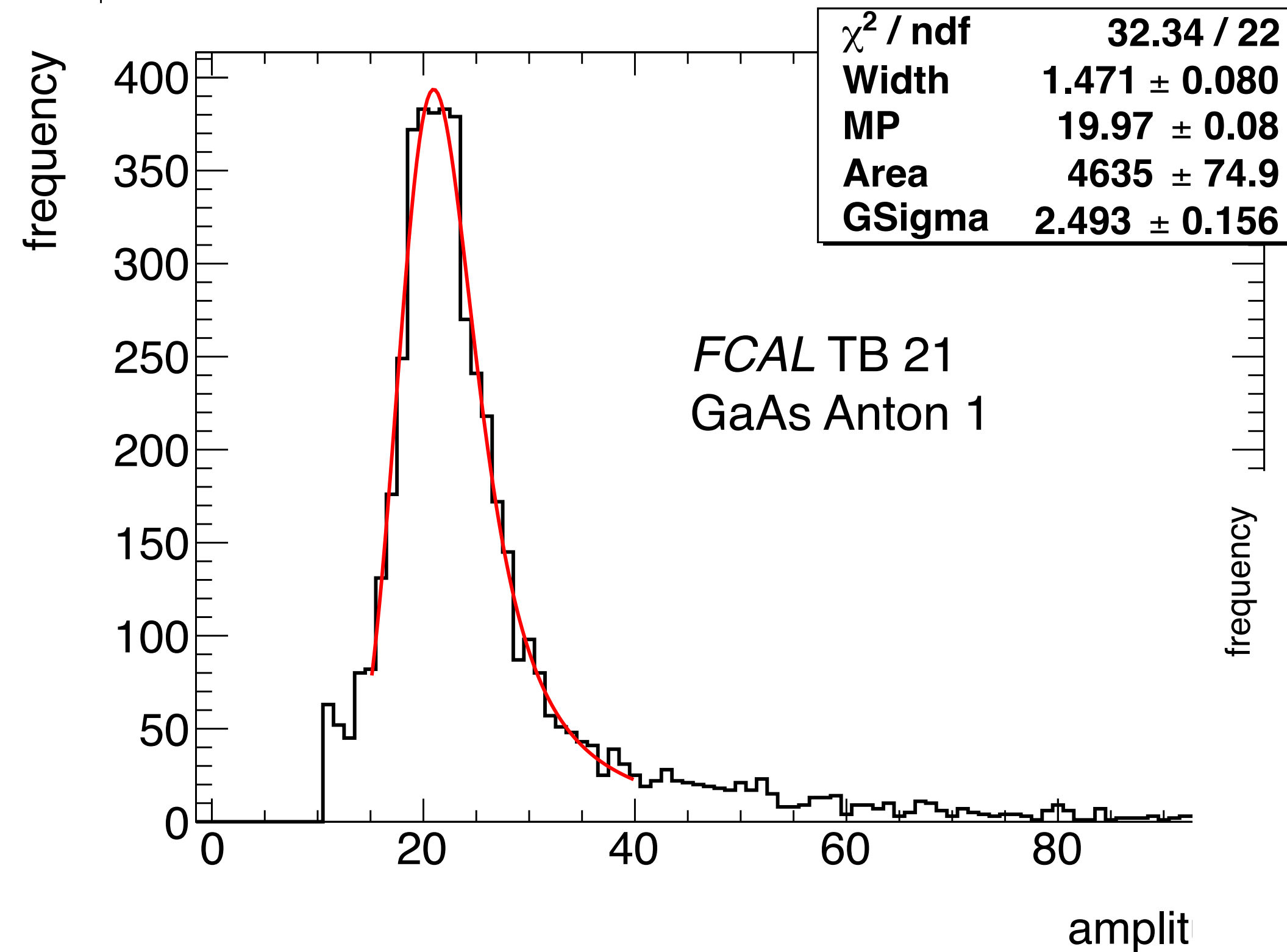
Landau (x) PedestalGaussian

- MPV shifted by the convolution
- Fitted Gaussian sigma > pedestal



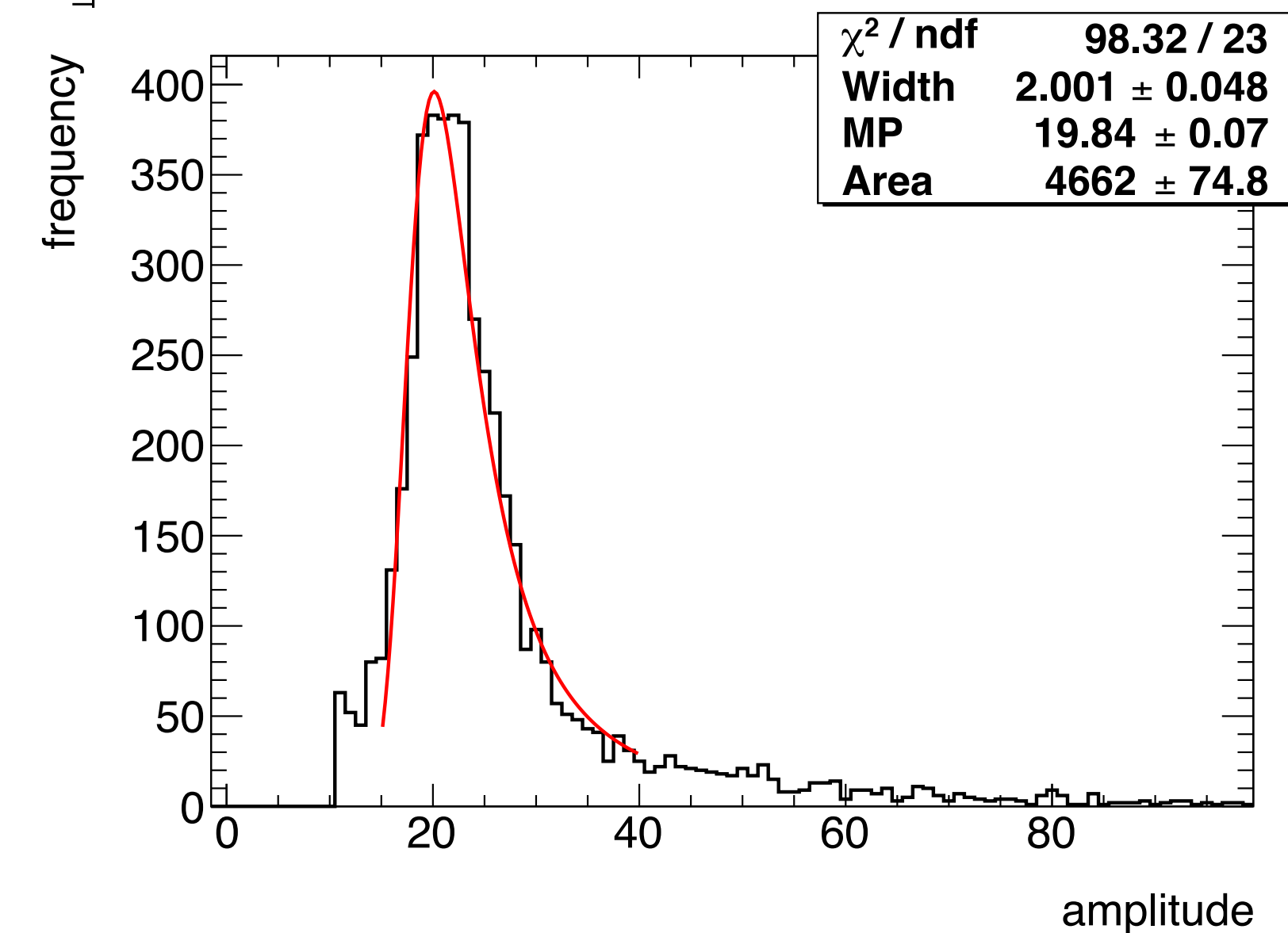
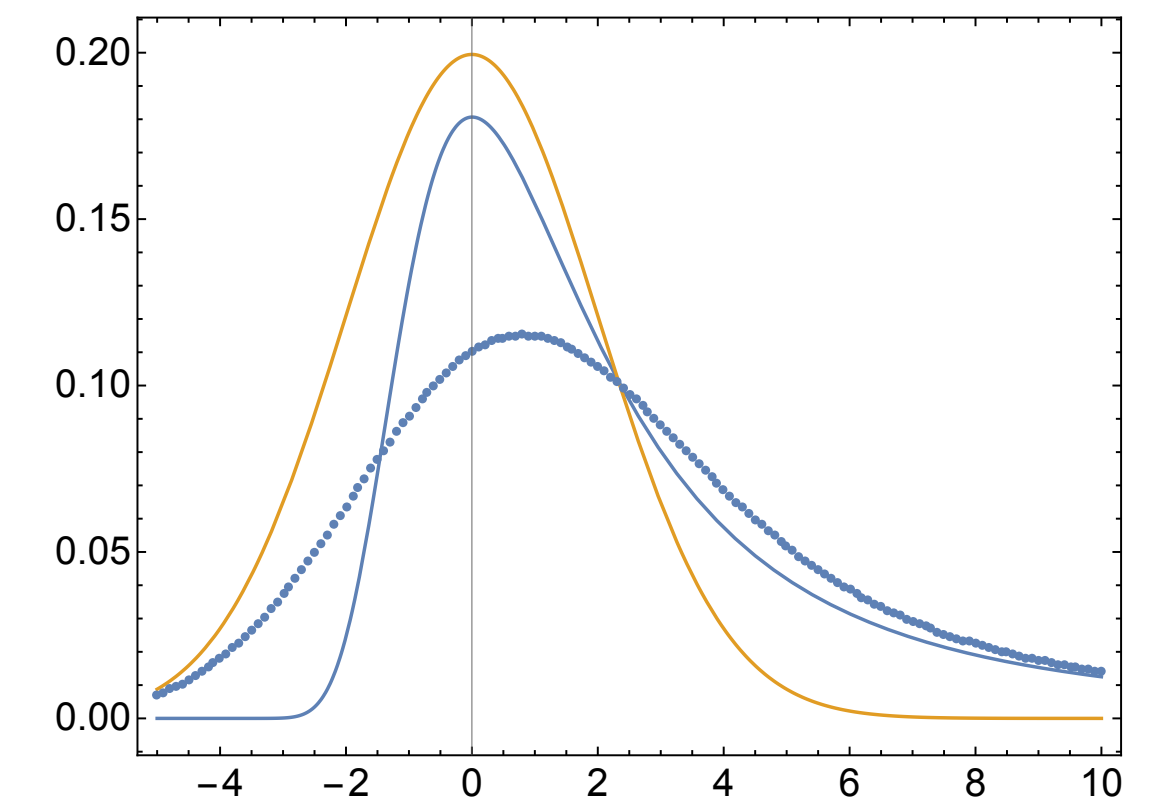
Landau only

Channel 62



FCAL TB 21
GaAs Anton 1

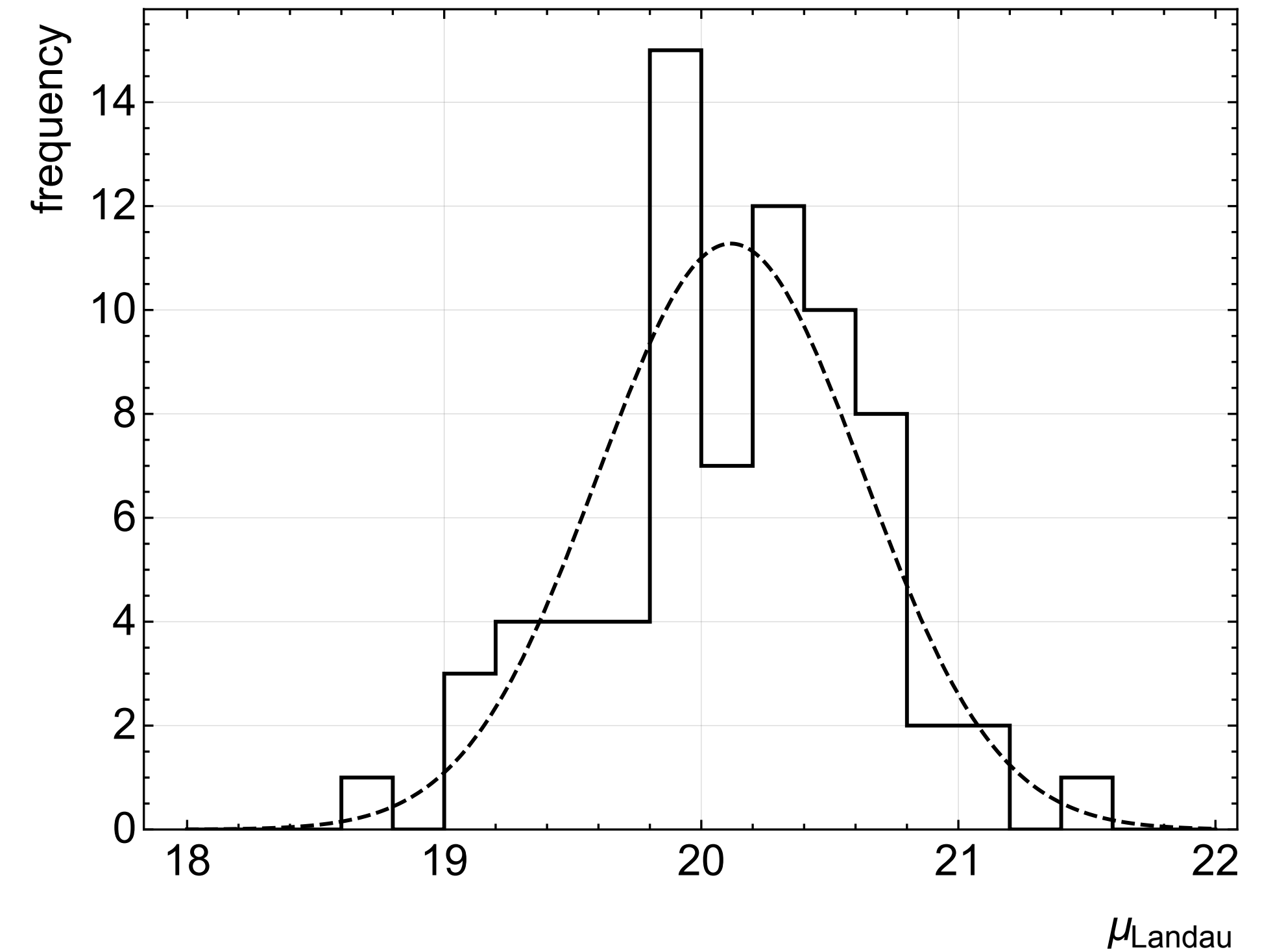
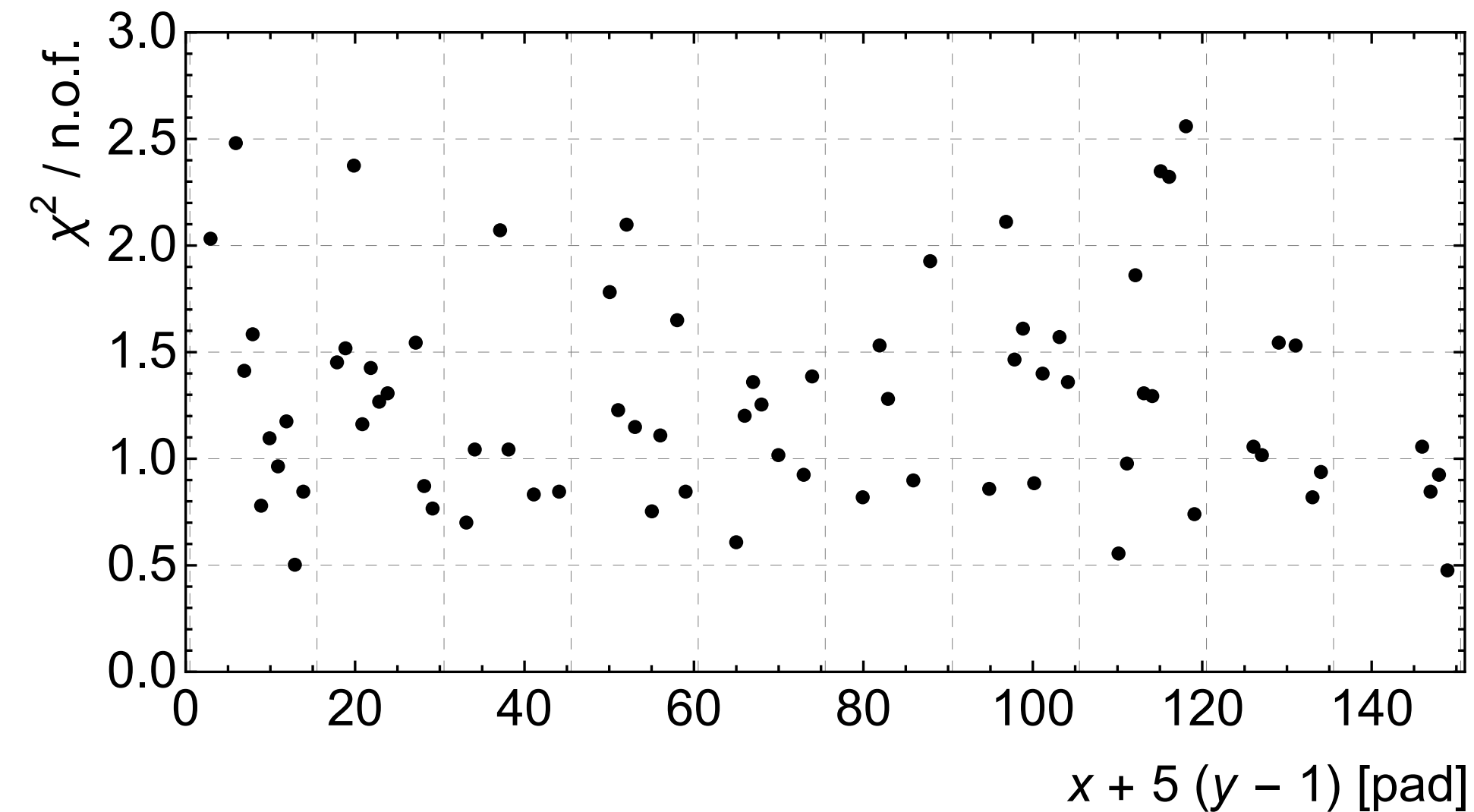
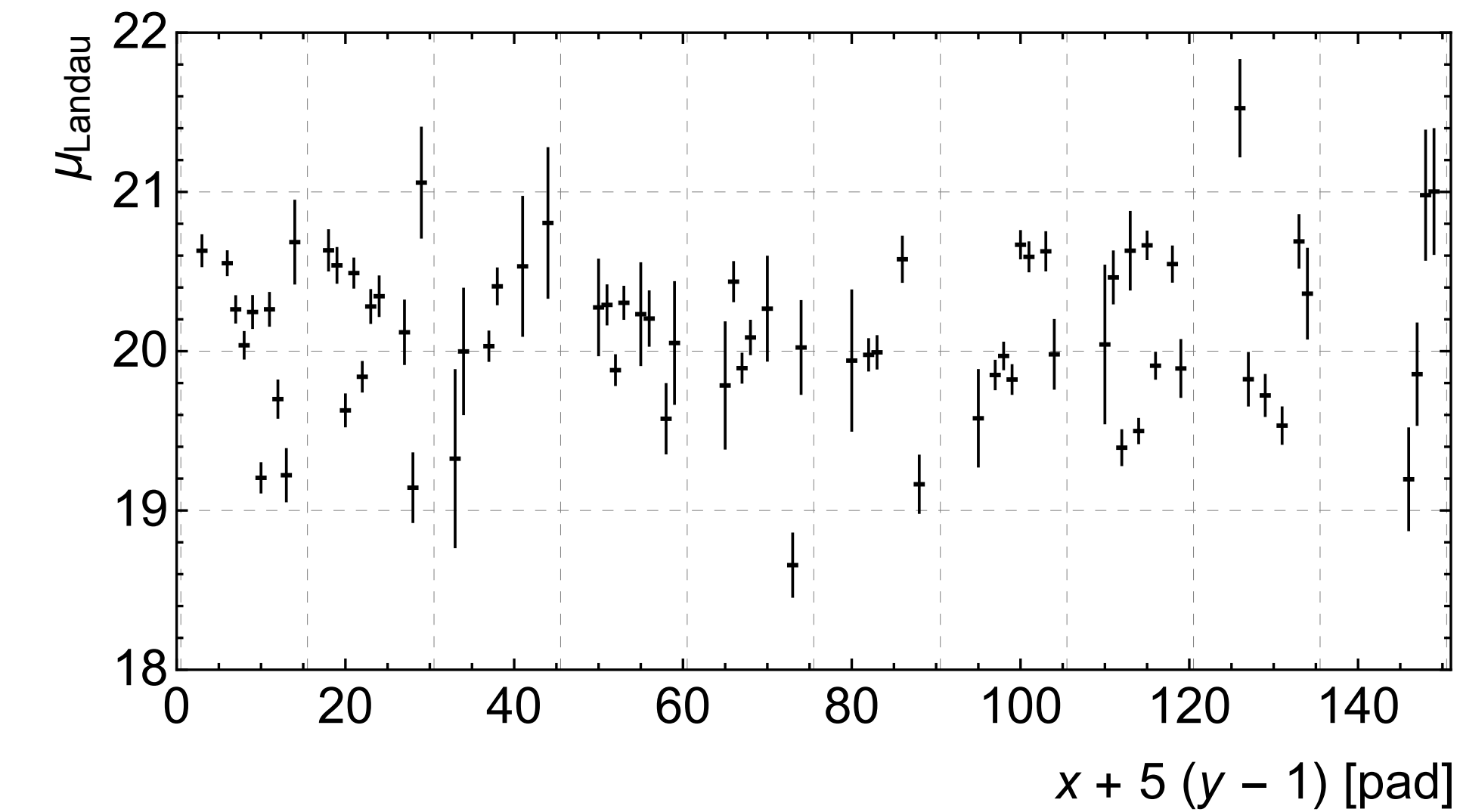
Landau (x) FreeGaussian



Landau (x) PedestalGaussian

- MPV shifted by the convolution
- Best fitted Gaussian sigma > pedestal

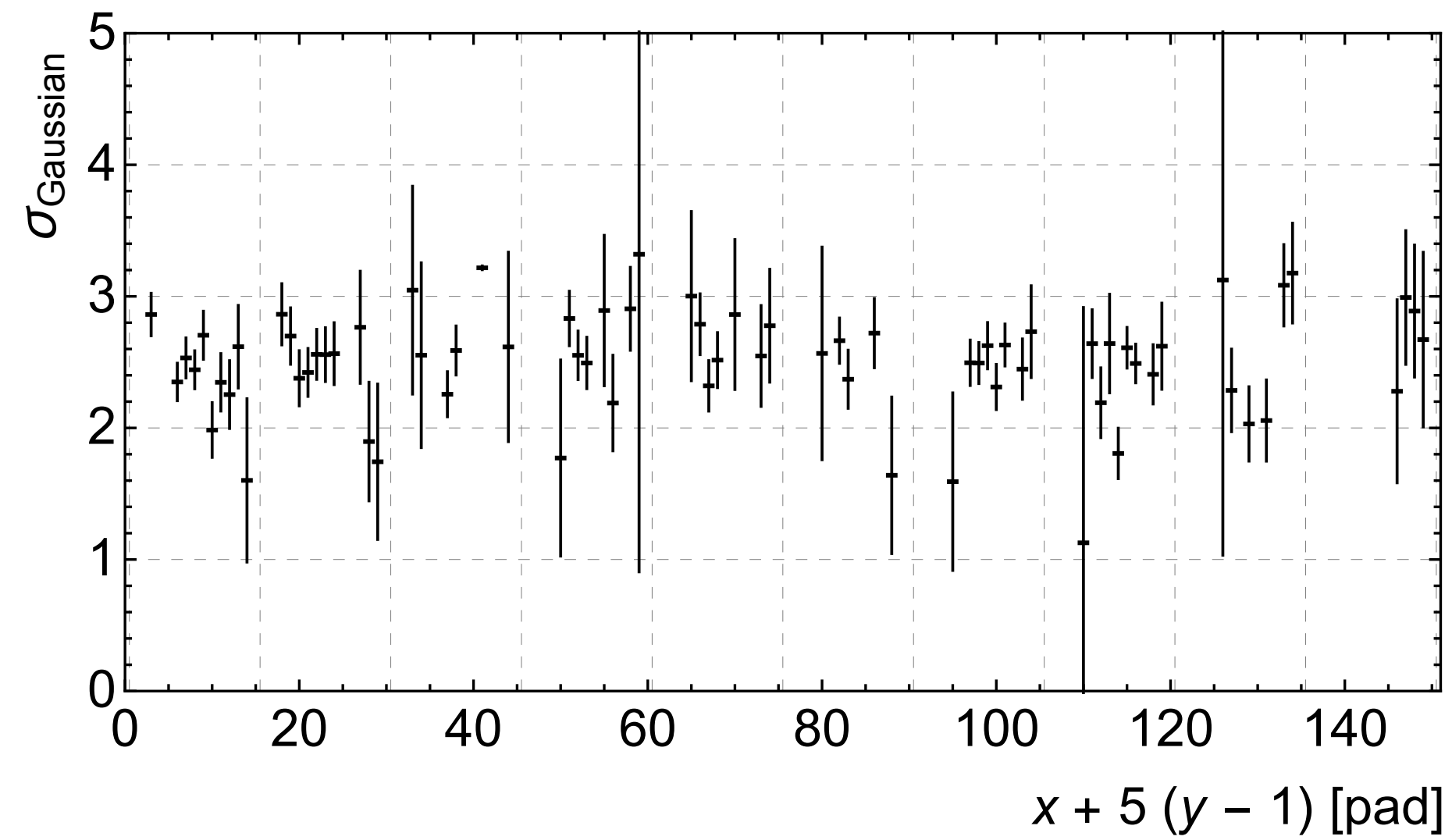
“MPV” among channels



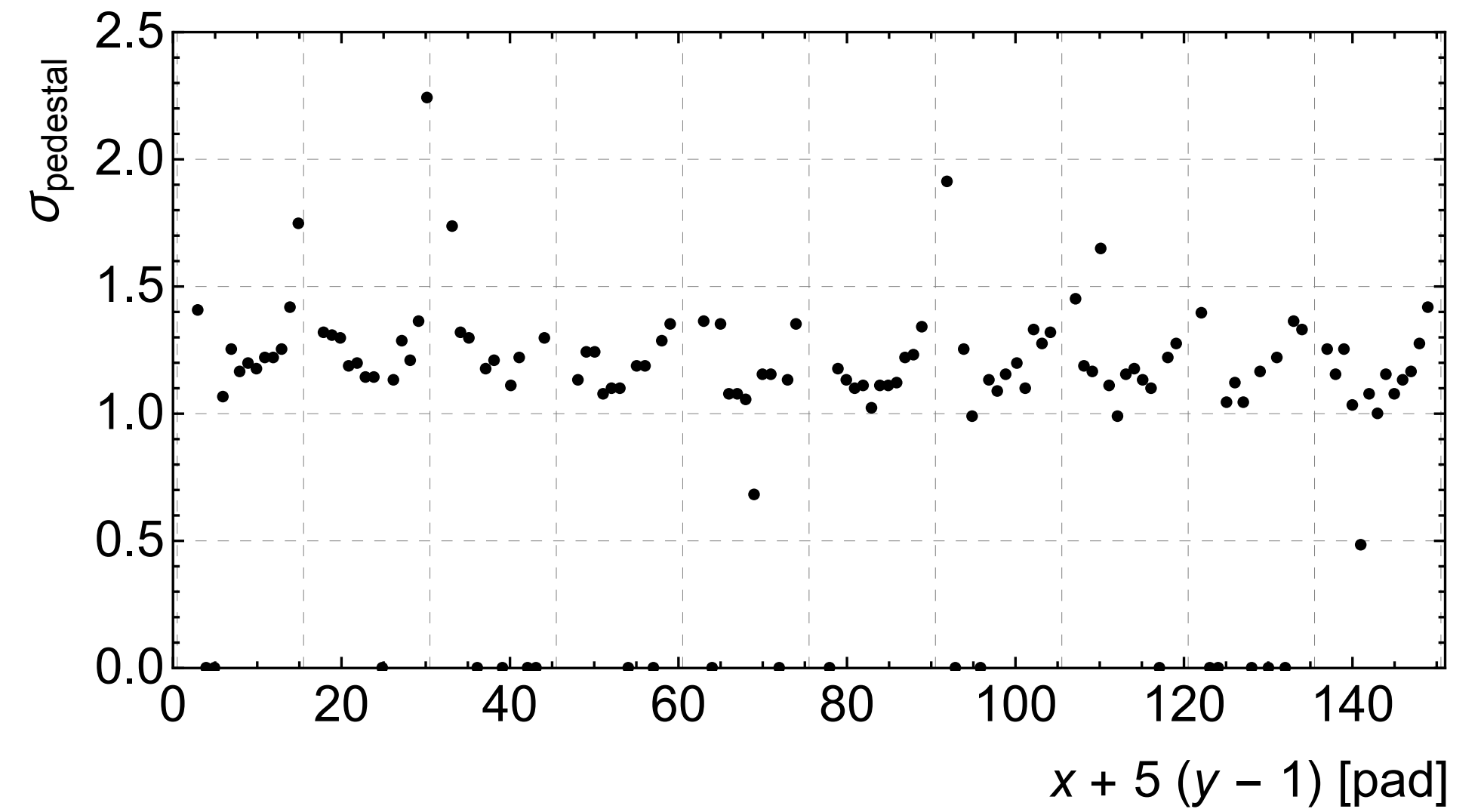
$\mu = 20.1, \text{ sigma} = 0.516$

- 73 (out of 125) channels available
- Fitting range (15, 40); n.o.f. = 22
- Larger Gaussian sigma gives acceptable χ^2

Fitted Gaussian sigma



Fitted sigma



Pedestal sigma (before runs)

- Extra disturbance?