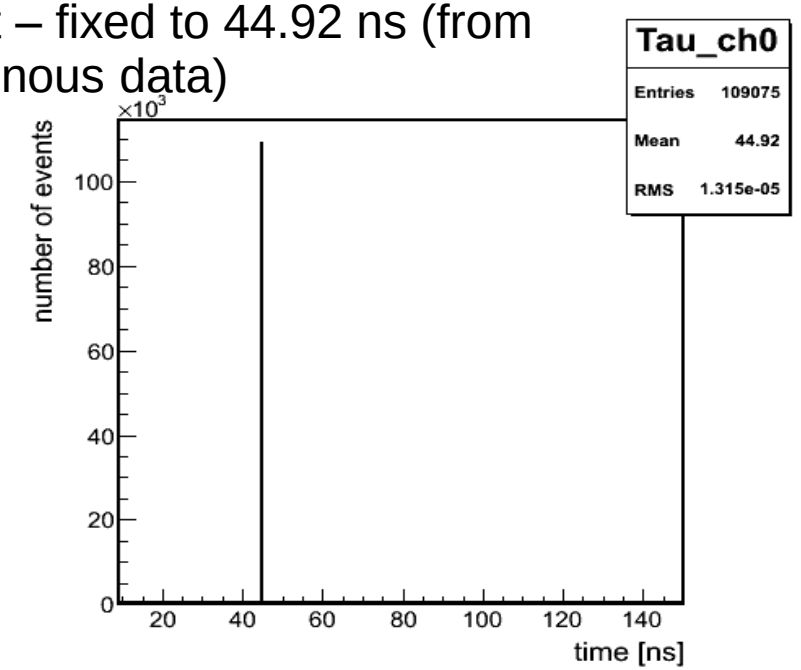
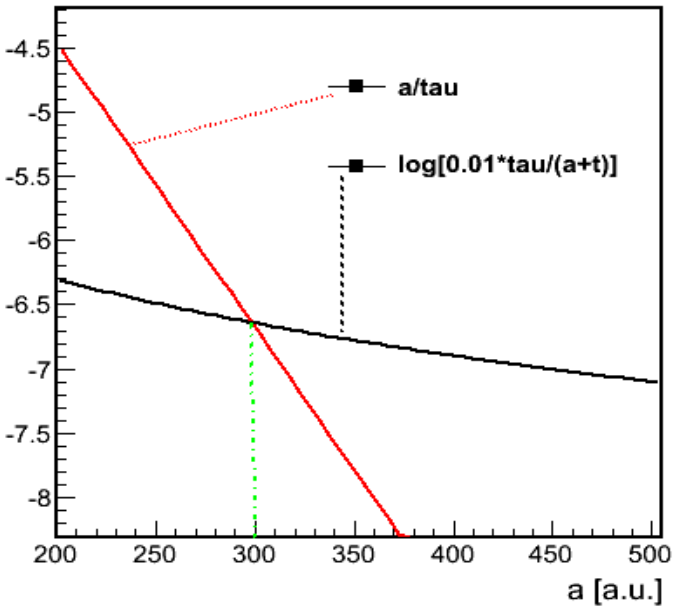
SNR estimation using fixed shaping time extracted from synchronous data

Eliza Teodorescu

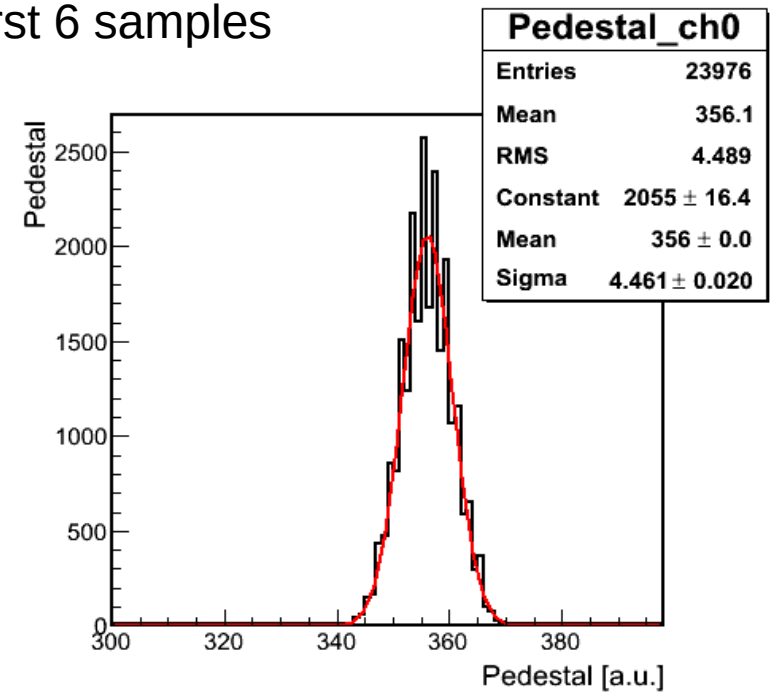
Tau plot – fixed to 44.92 ns (from synchronous data)



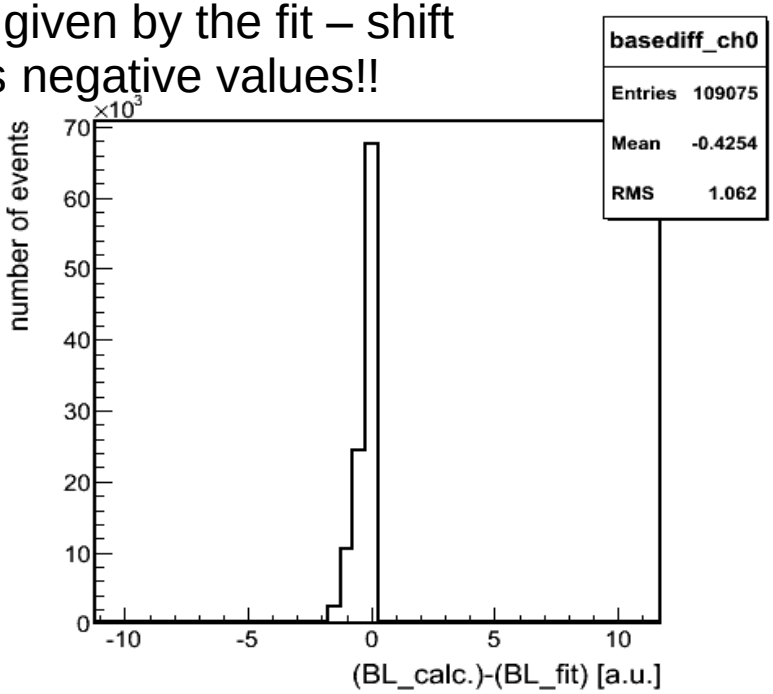
Integration window ~300 ns



Pedestal distribution – integrated over the first 6 samples



Difference between calculated BL and BL given by the fit – shift towards negative values!!

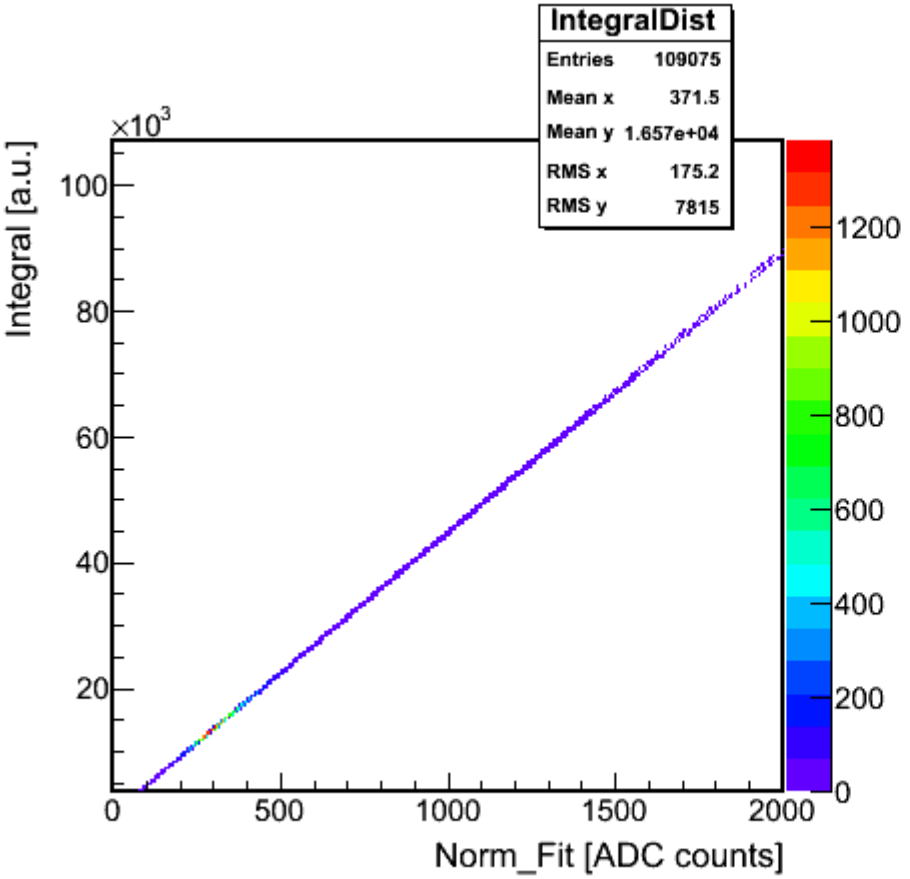


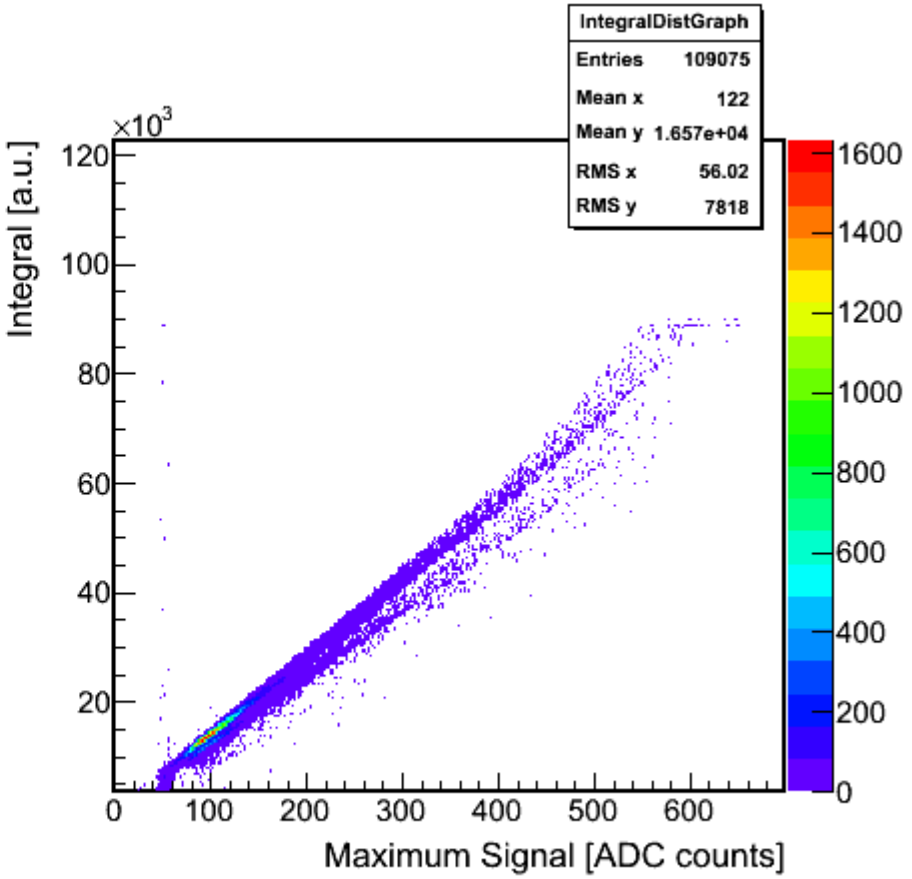
Correlations between the integral and the amplitude

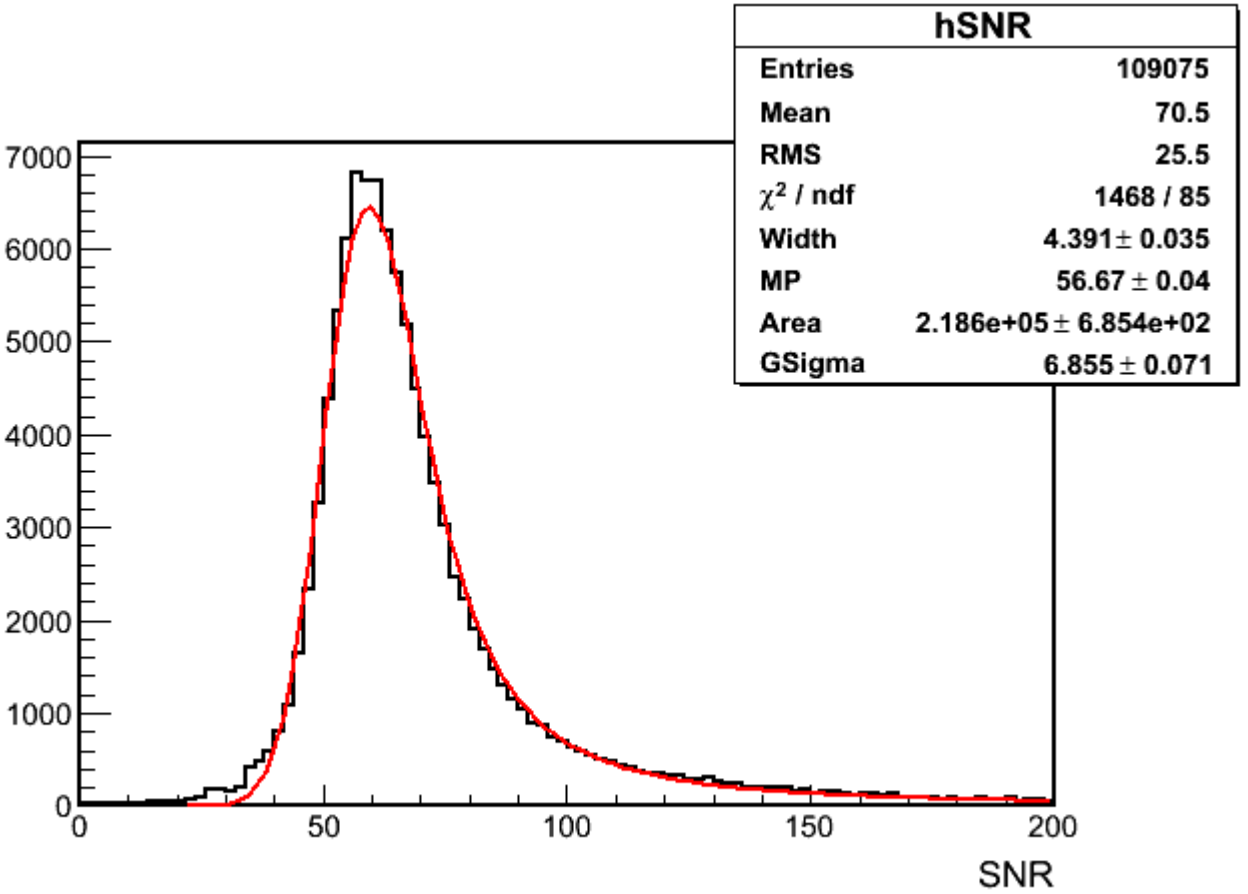
Left: amplitude is given by the fit

Right: amplitude is extracted directly from dat a

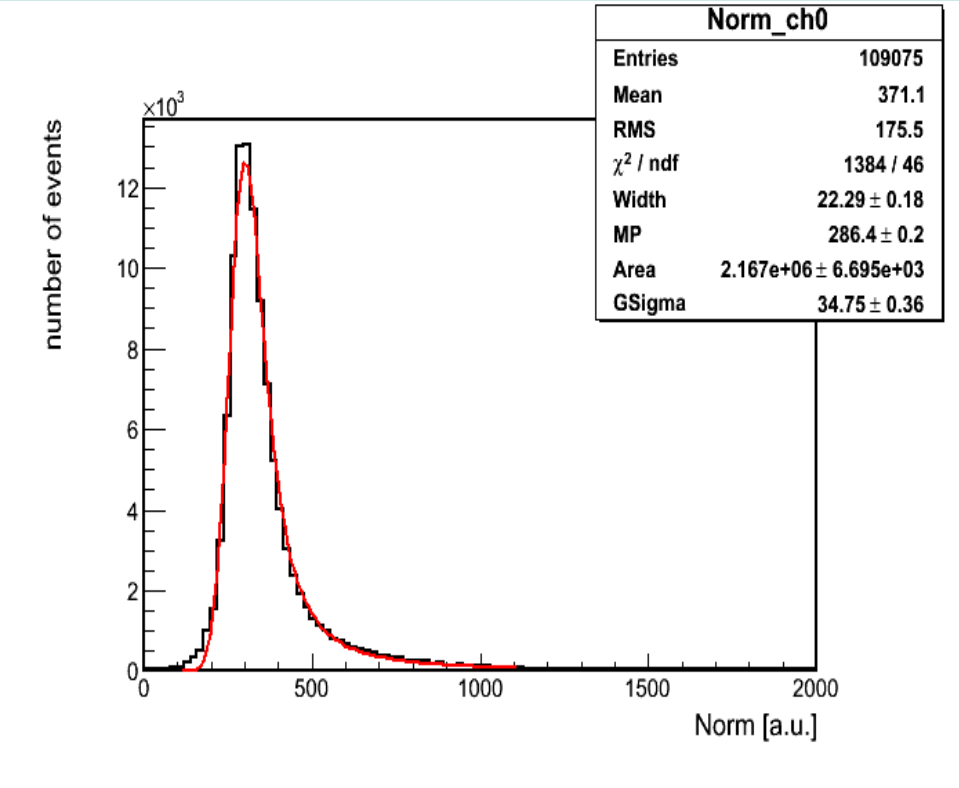
Integral is calculated in the 300 ns integration window





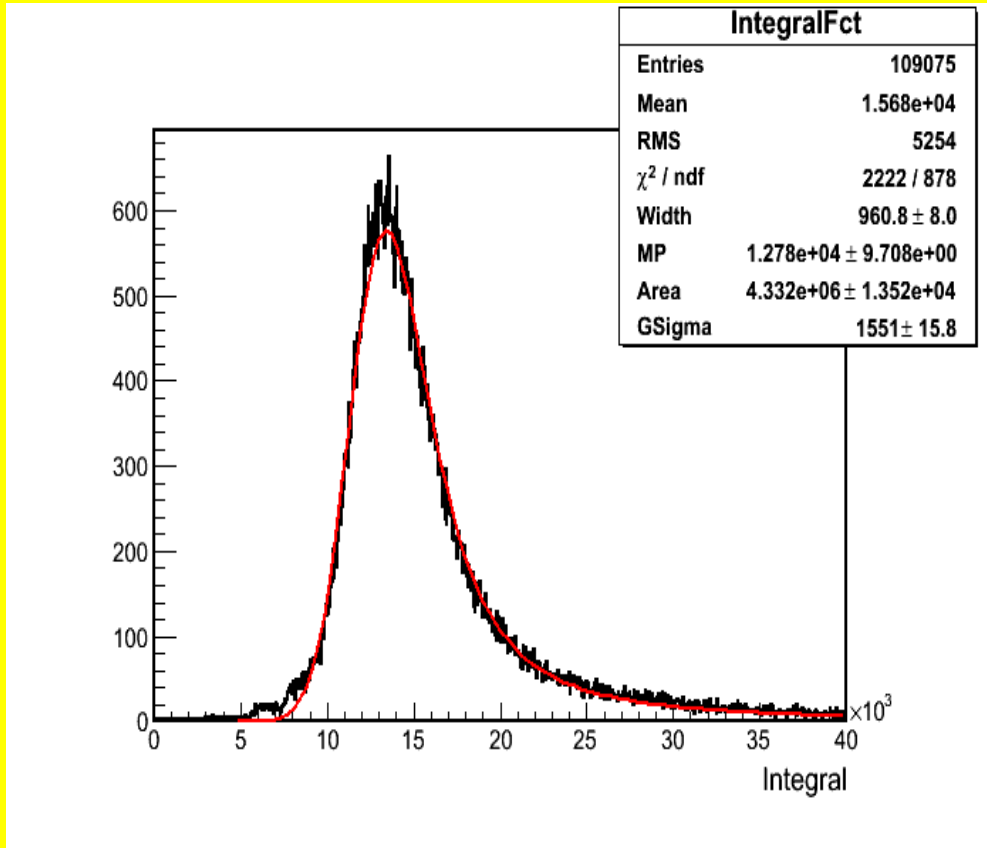

hSNR
Entries 109075
Mean 70.5
RMS 25.5
χ² / ndf 1468 / 85
Width 4.391 ± 0.035
MP 56.67 ± 0.04
Area 2.186e+05 ± 6.854e+02
GSigma 6.855 ± 0.071
7000
6000
5000
4000
3000
2000
1000
0
0
50
100
150
200
SNR

SNR = 56.67



MPV_Signal_Size (Area)= MPV_Norm*Tau =286*44.92 = 12847.12 ADC_counts*ns =256.94 ADC_counts*sample

SNR = 256.94/4.461 = 57.6

MPV_Integral (Area)= 12780 ADC_counts*ns =255.6 ADC_counts*sample

SNR = 255.6/4.461 = 57.3