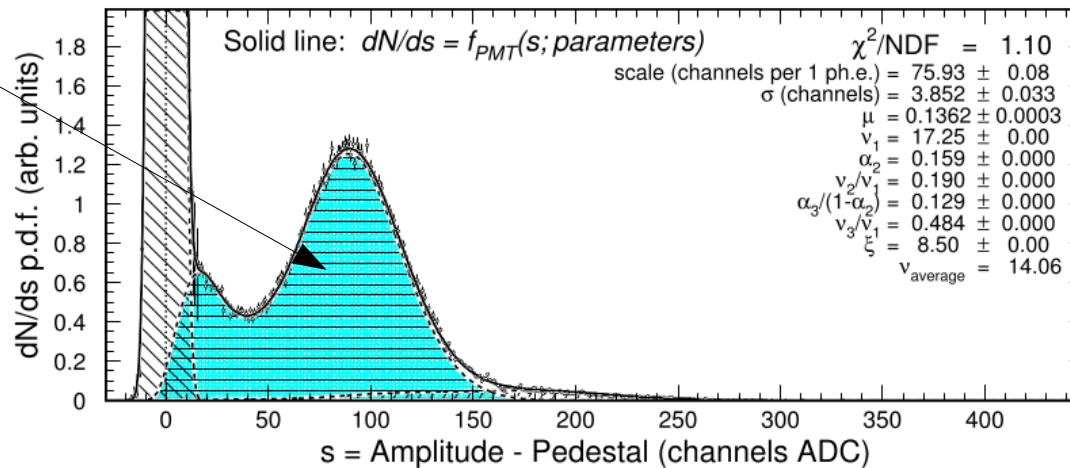# Characteristic fit of the ADC spectrum from CLAS12

Single photoelectron contribution in blue
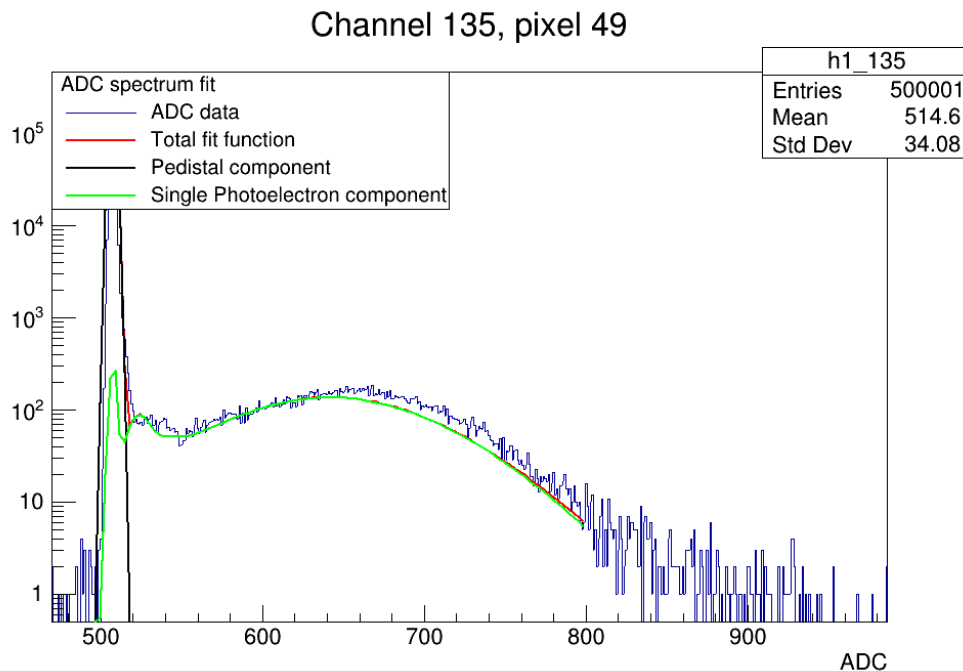

(c) Hamamatsu H12700 MAPMT GA0133, HV = 1050 V.

$$f(a; \mathbf{d}) = \sum_{n=0}^{\infty} \left\{ G(a, n; \sigma_{\text{eff}}) \left[e^{-\mu} q_0(n) + \sum_{m=1}^{\infty} P(m; \mu) T(n, m; \mathbf{t}) \right] \right\}.$$

Sum over the number of photoelectrons produced at the first stage of the PMT

Sum over the number of photoelectrons produced at the later stages of the PMT

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First ADC fit of a GlueX DIRC MAPMT using this model

Channel 135, pixel 49

ADC spectrum fit
- ADC data
- Total fit function
- Pedistal component
- Single Photoelectron component

h1_135	
Entries	500001
Mean	514.6
Std Dev	34.08

- The model will be used to extract efficiency of individual channels and gain matching

- Work in progress: general fitting procedure still being worked out

- The model provides a functional form that matches the line shape of the ADC data (shown left).

- Singlephoto electron contribution can be isolated from the total spectrum.