

# UUB Charge and Peak histograms

Mauricio Suárez Durán and Ioana C. Mariş

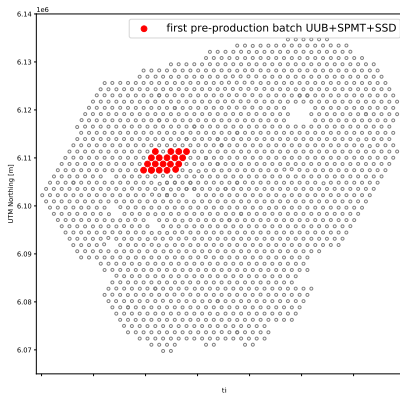
IIHE-ULB

June 23, 2021

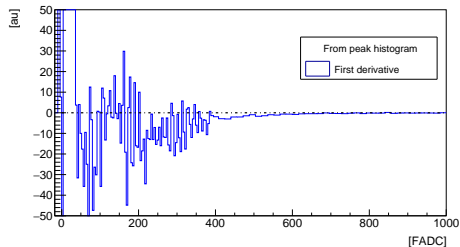
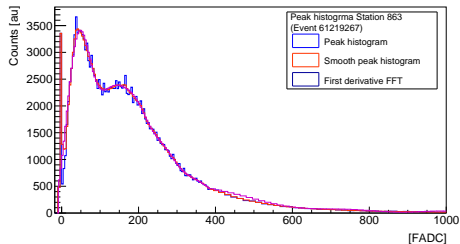


# UUB Charge and Peak histograms

- ▶ Station studied: 863 1222 1219 1211 1740 1743 1221 1223 1217 1747 1741 1745 1818 1851 1729 1735 1746 1819 1791
- ▶ Data from CDAS.
- ▶ Software CDAS, pre-production version.



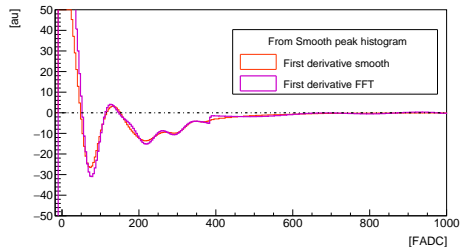
# UUB Peak: Derivating histogram



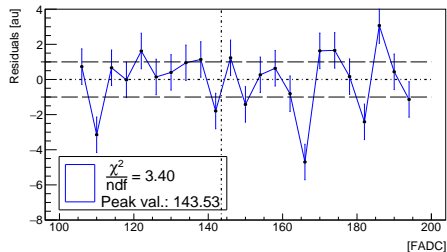
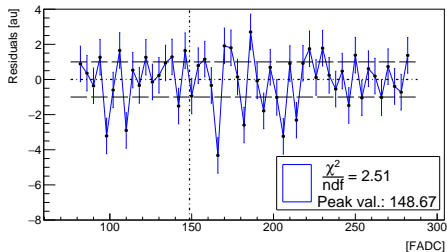
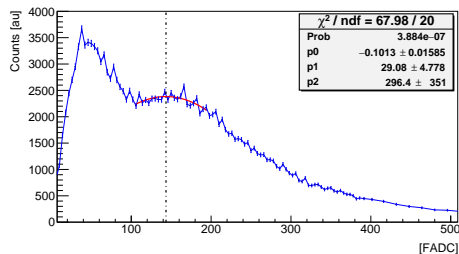
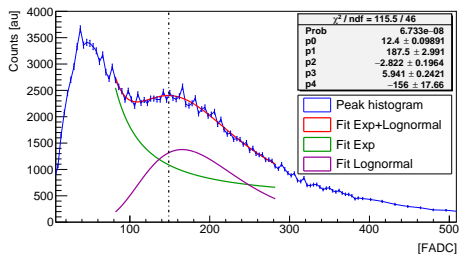
- The algorithm:
1. Smooth/FFT Histogram
  2. Derivating of smooth/FFT Histogram
  3. Identifying Fit range (Slope changes)
  4. Fitting

Two function checked:

- Exp. + Log-normal
- 2nd order polinomial

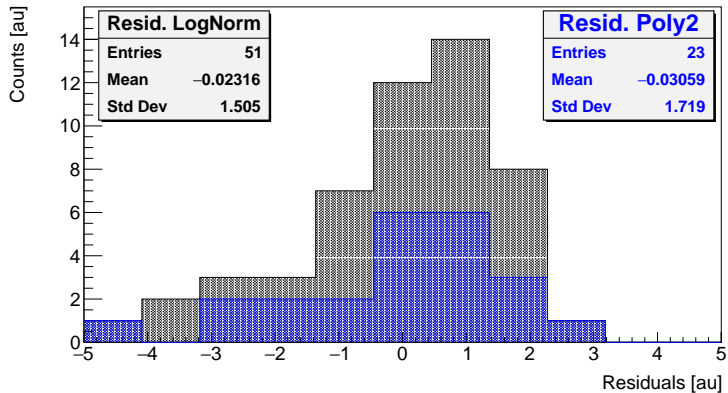


# UUB Peak: Fit and Residuals

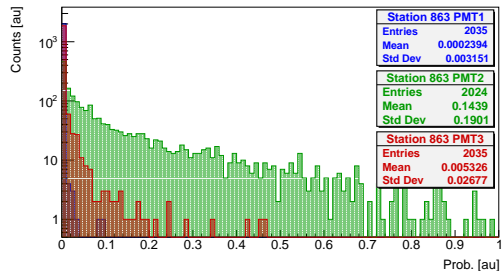
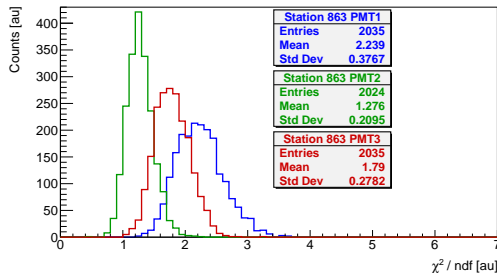


The Exp.+Log-normal fit better than second order polinomium.

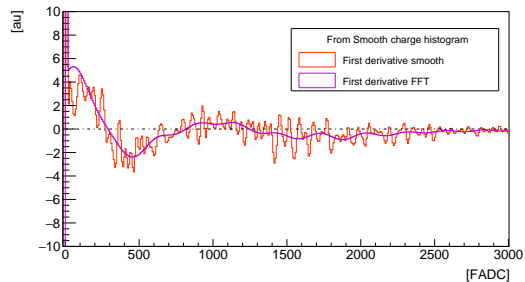
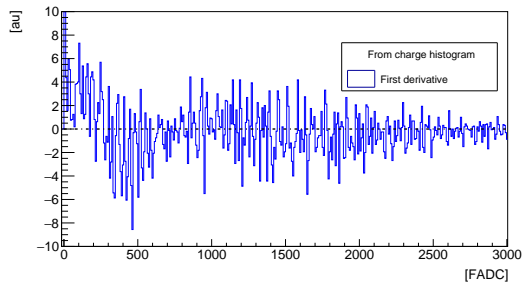
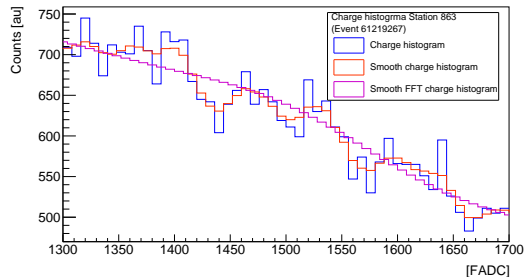
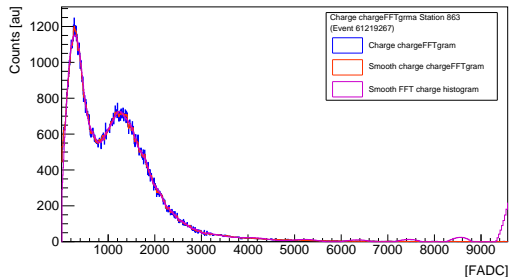
## UUB Peak: Residuals distribution



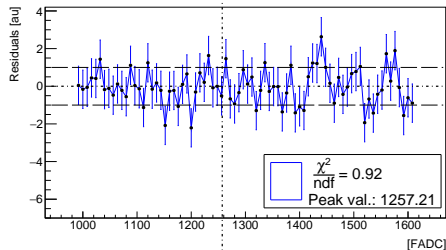
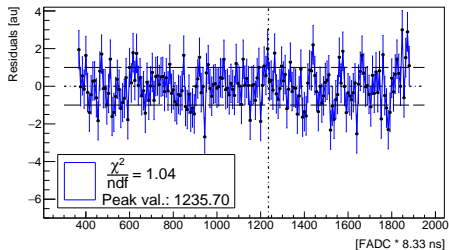
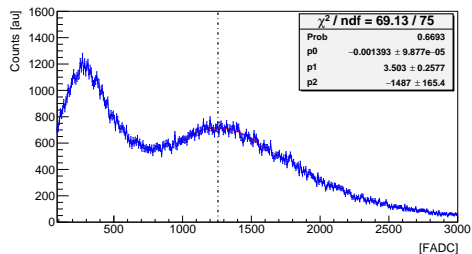
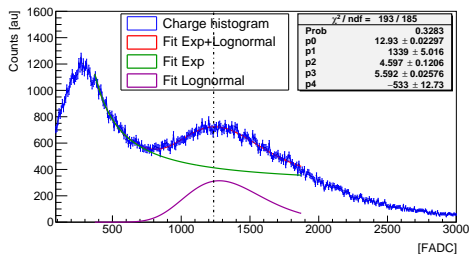
# UUB Peak: applying all histograms St. 863, Chi and Prob. distributions



# UUB Charge: Derivating histogram



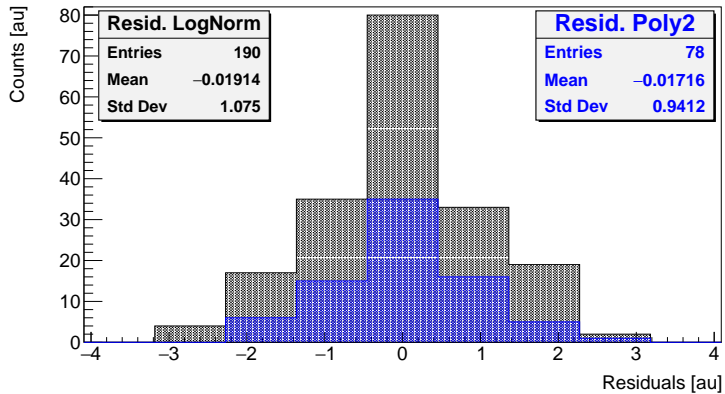
# UUB Charge: Fit and Residuals



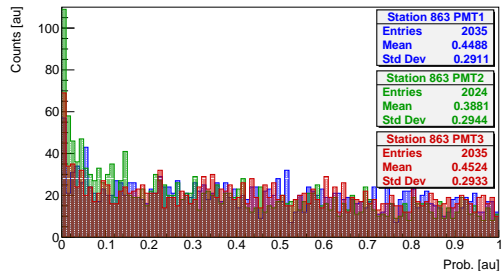
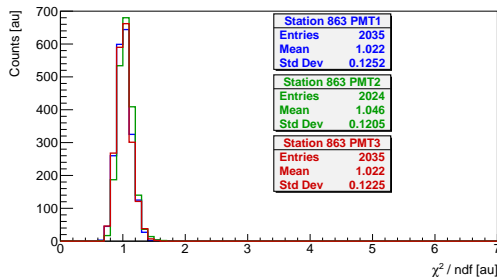
The Exp.+Log-normal fit better than second order polinomial.



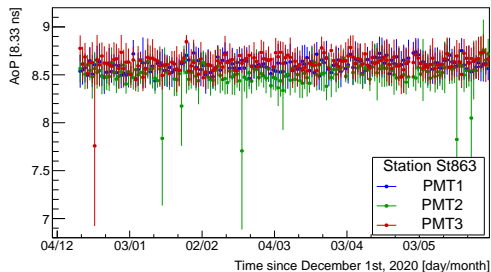
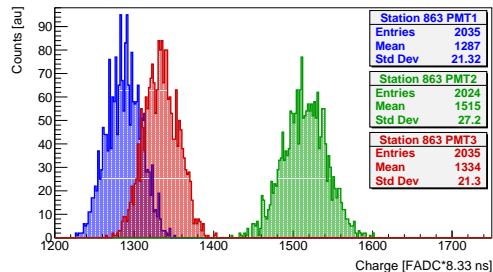
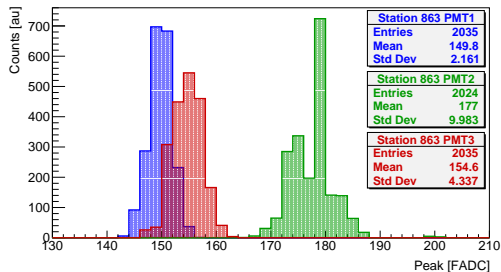
## UUB Charge: Residuals distribution



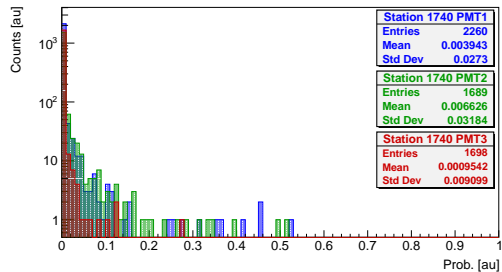
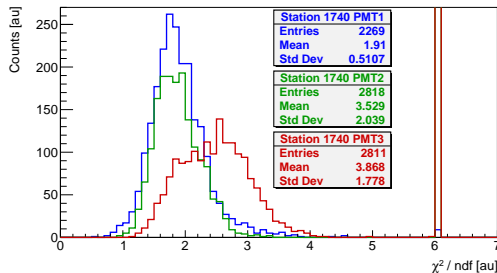
# UUB Charge: applying all histograms St. 863, Chi and Prob. distributions



# UUB AoP Station 863: Peak, Charge and AoP

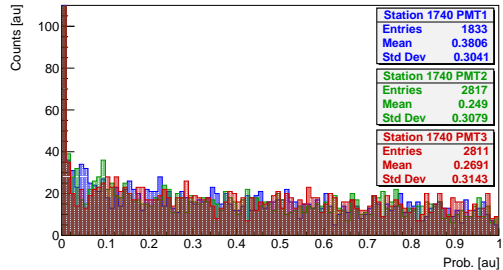
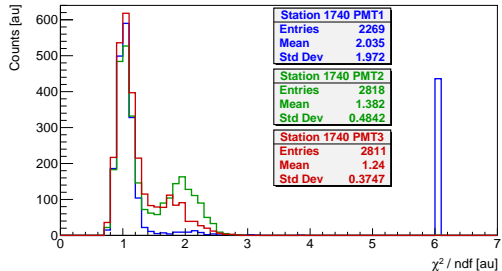


## UUB Peak Station 1740: Chi and Prob. distributions all histograms



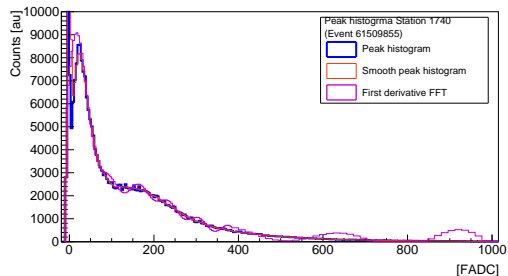
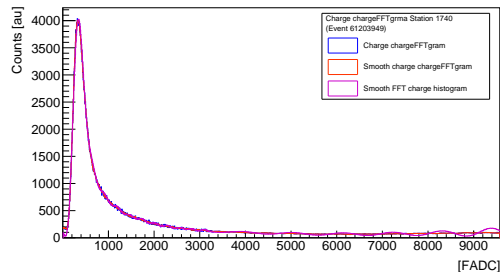
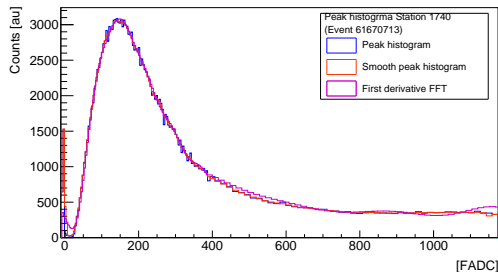
For  $\chi^2 / \text{ndf}$  plot, all histograms with  $\chi^2 / \text{ndf}$  bigger than 6 are counted as 6.

## UUB Charge Station 1740: Chi and Prob. distributions all histograms

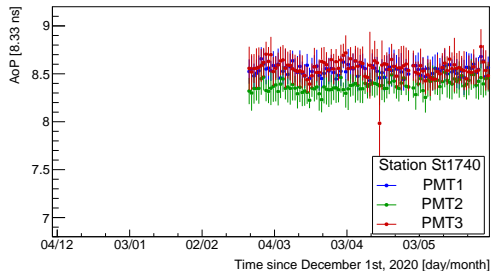
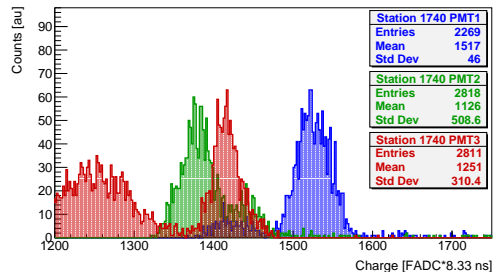
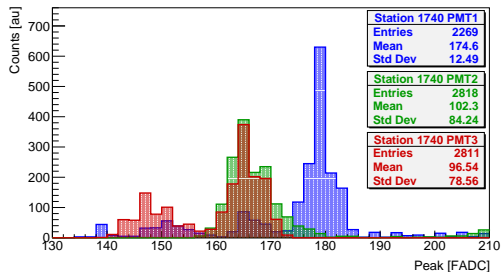


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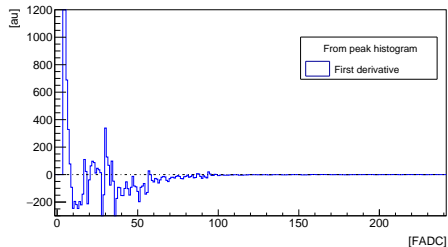
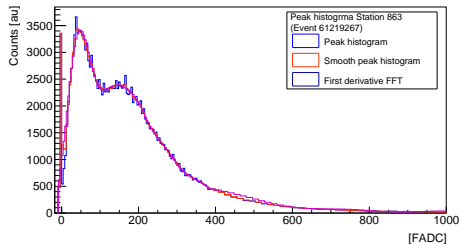
# UUB Station 1740: Failed fit



# UUB AoP Station 1740: Peak, Charge and AoP



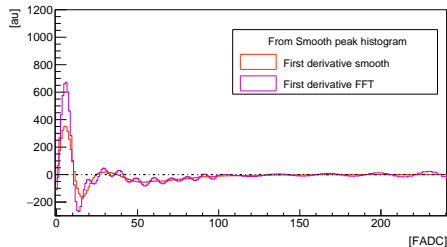
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- The algorithm:
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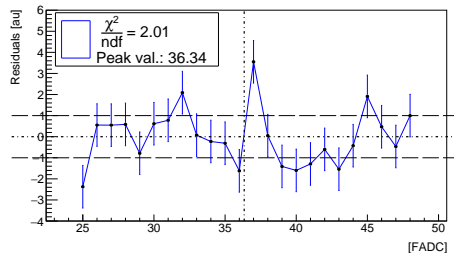
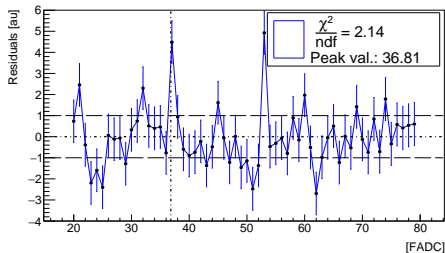
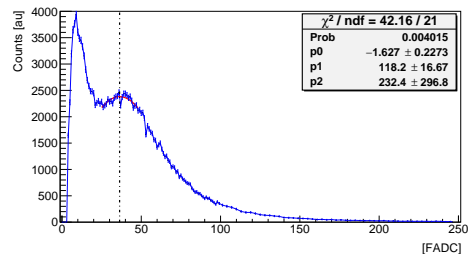
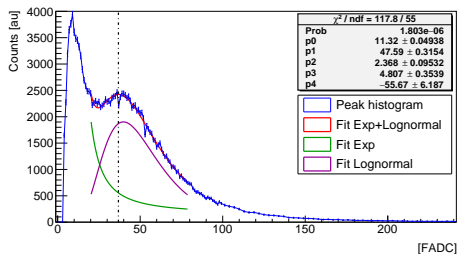
Two function checked:

- Exp. + Log-normal
- 2nd order polinomial



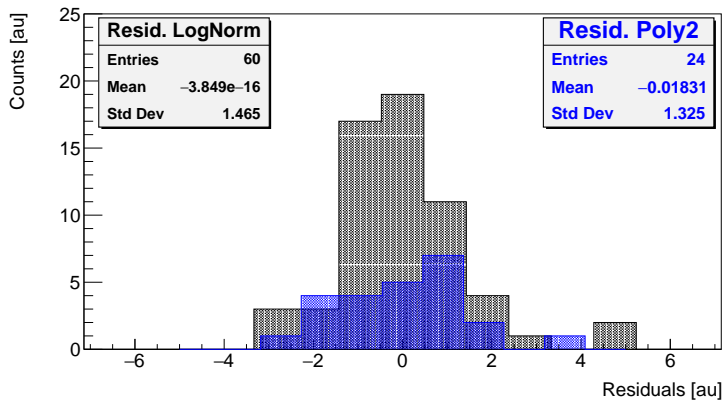


# UB Peak: Fit and Residuals

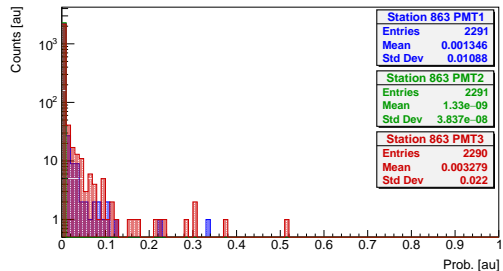
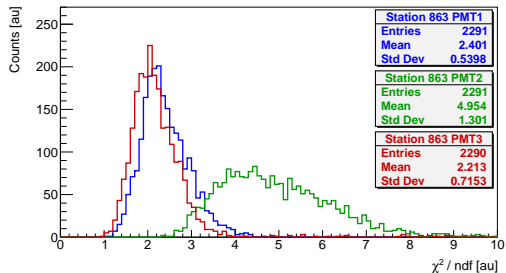


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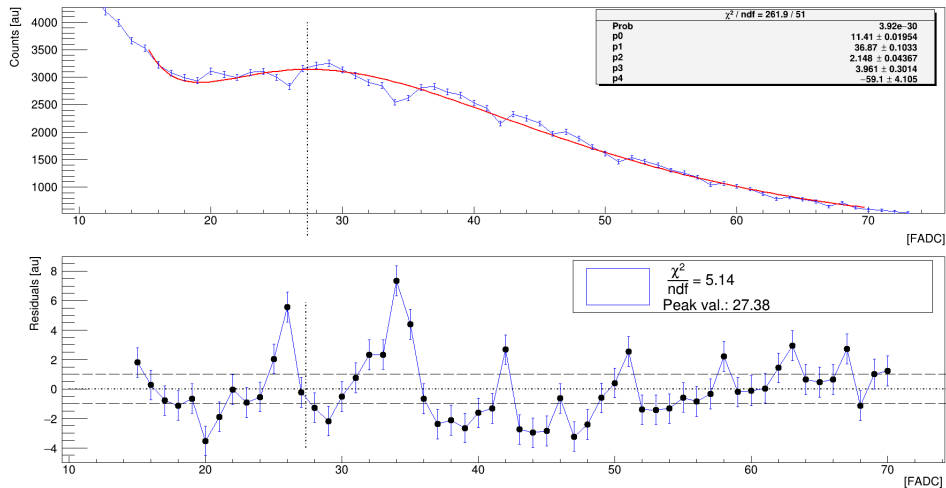
## UB Peak: Residuals distribution



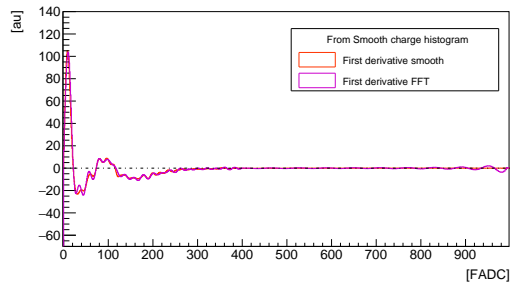
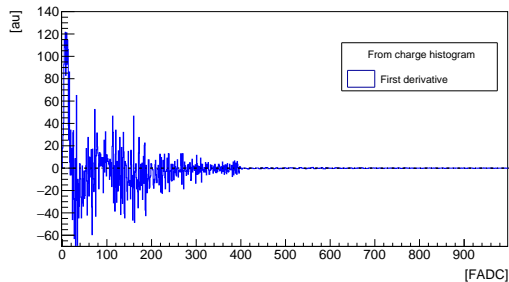
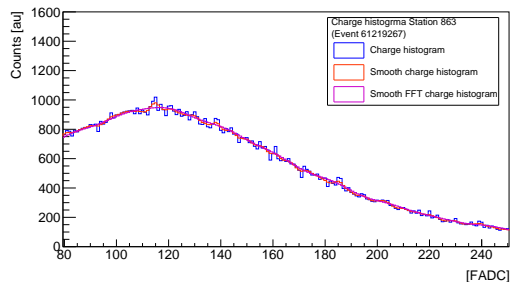
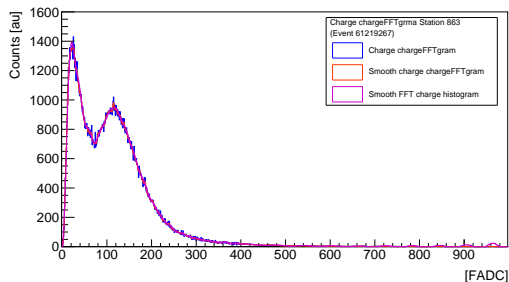
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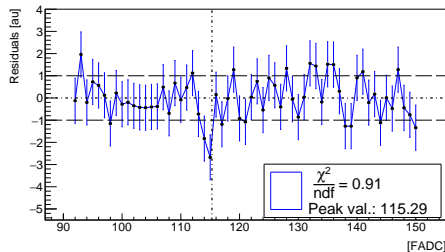
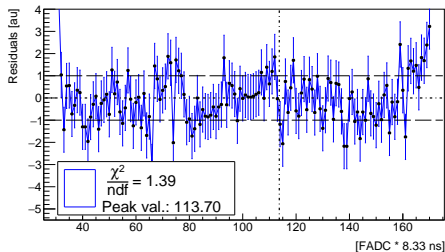
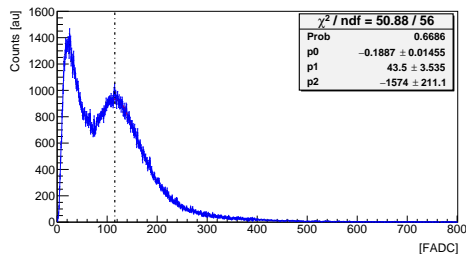
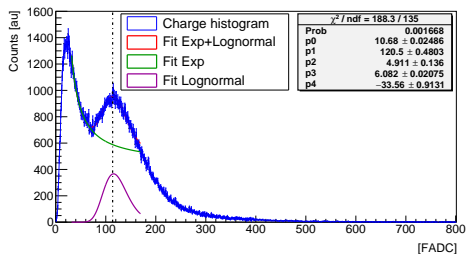
## UB Peak Station 863: Failed fit for PMT2



# UB Charge: Derivating histogram

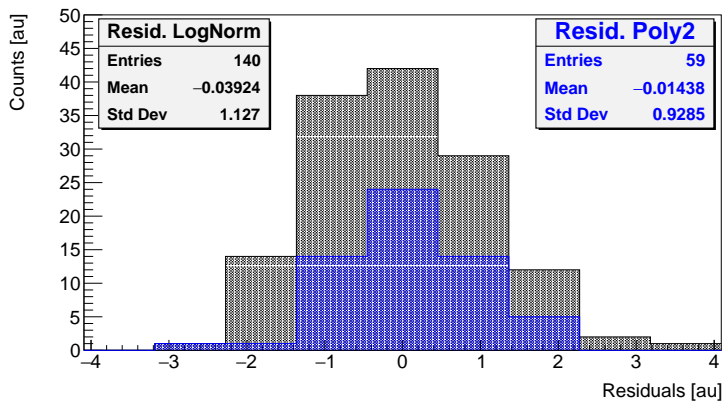


# UB Charge: Fit and Residuals

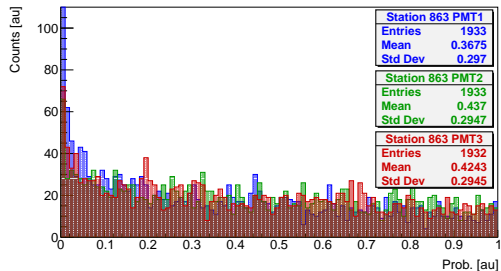
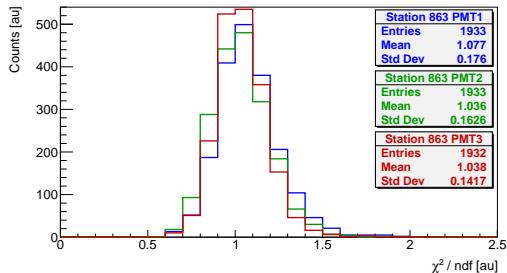


The Exp.+Log-normal fit better than second order polinomial.

## UB Charge: Residuals distribution

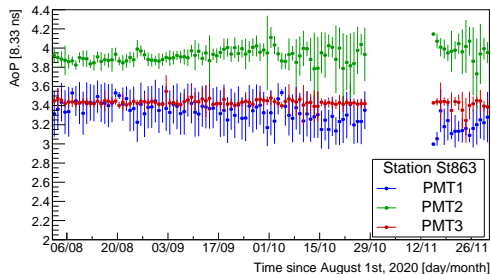
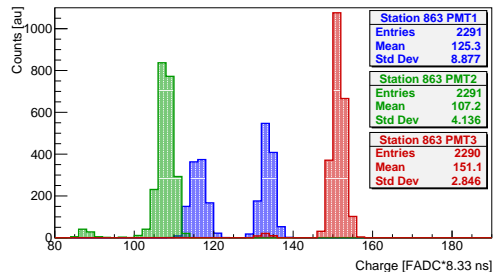
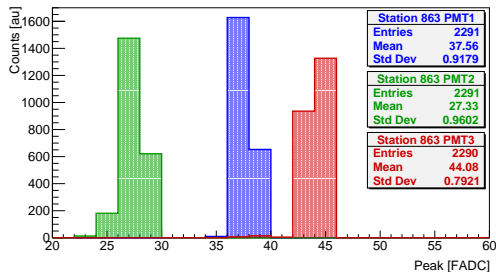


# UB Charge: applying all histograms St. 863, Chi and Prob. distributions

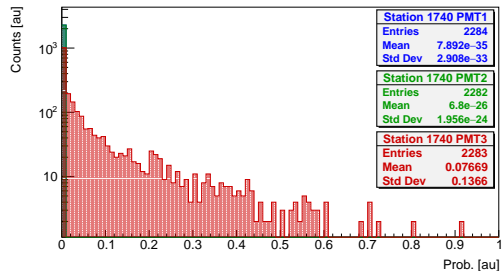
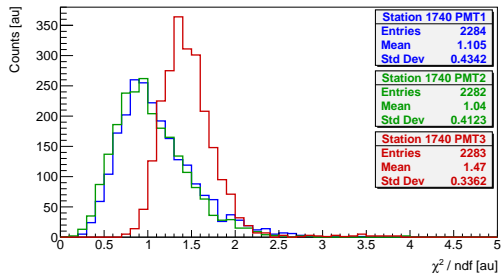




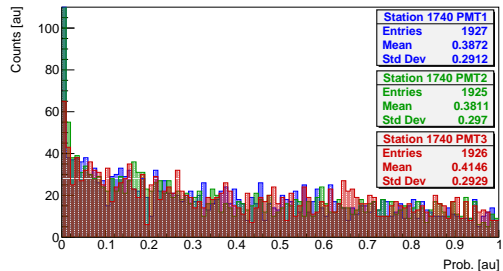
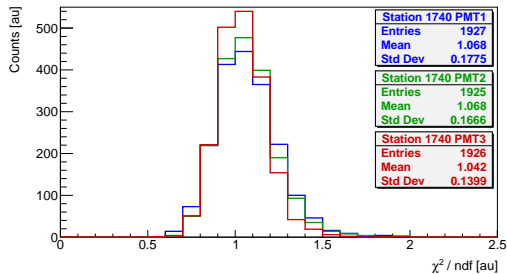
# UB AoP Station 863: Peak, Charge and AoP



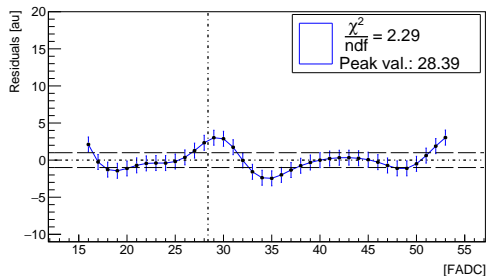
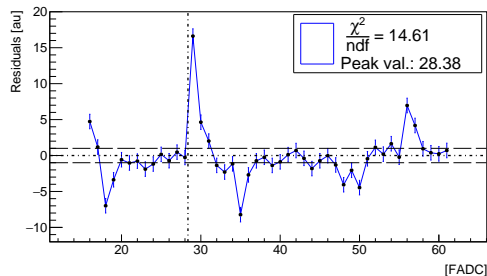
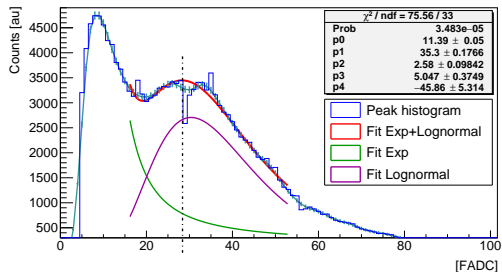
## UB Peak Station 1740: Chi and Prob. distributions all histograms



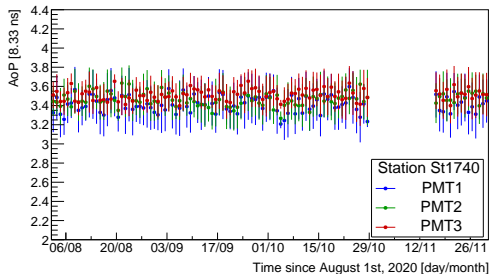
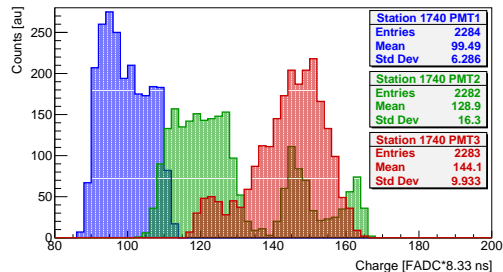
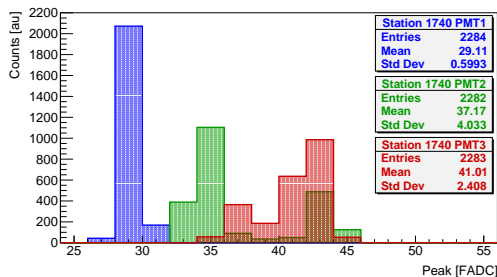
# UB Charge Station 1740: Chi and Prob. distributions all histograms



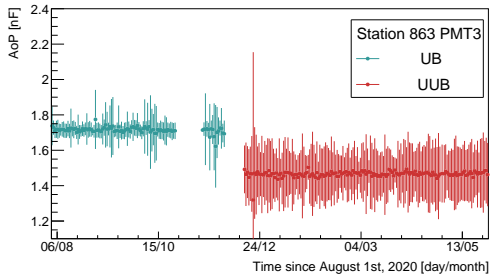
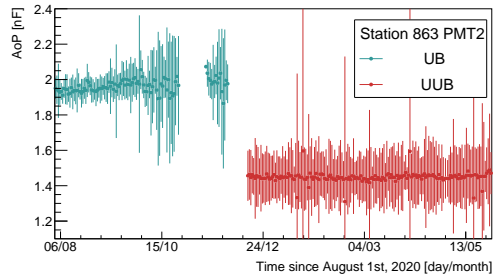
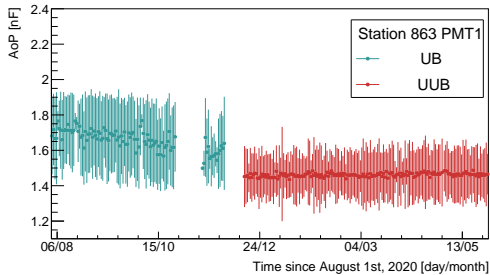
# UB Station 1740: Failed fit



# UB AoP Station 1740: Peak, Charge and AoP



## AoP UB and UUB: Station 863



## AoP UB and UUB: Station 1740

