A Sample Presentation Template Using the LaTeXslides environment.

MIT Department of Physics

Background and Context

- In 1902 ...

- Statement of the Problem

- First Measurements ...

- Fundamentals ...

Test 6" x 2" Figure Created in Xfig

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Theory of χ^2 Fitting

- Summary of Key Physical Relationships - NO LONG DERIVATIONS!

- Assume each data point is drawn from a Gaussian distribution, whose width is the uncertainty, σ_i

- Maximizing the probability of the dataset $\Rightarrow$ Mimimizing χ^2

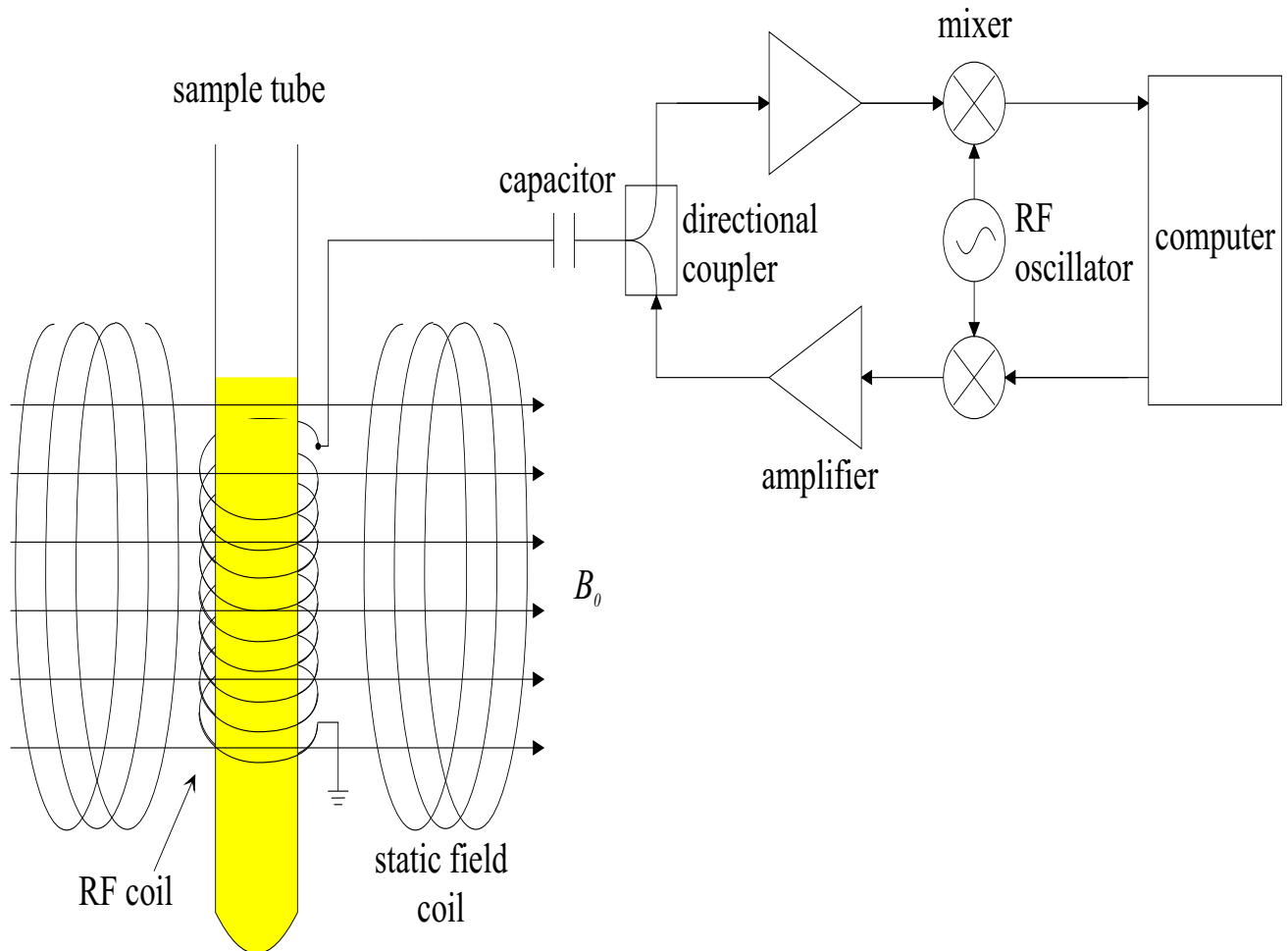$$\chi^2 = \sum \left[\frac{y_i - f(x_i)}{\sigma_i} \right]^2$$

- Degrees of freedom (ν) = Number of data points $-$ Number of parameters

  - Reduced Chi-squared: $\chi^2_\nu = \chi^2/\nu$

  - $\chi^2_\nu >> 1 \rightarrow$ Bad fit

  - $\chi^2_\nu << 1 \rightarrow$ Probably overestimated errorbars on data
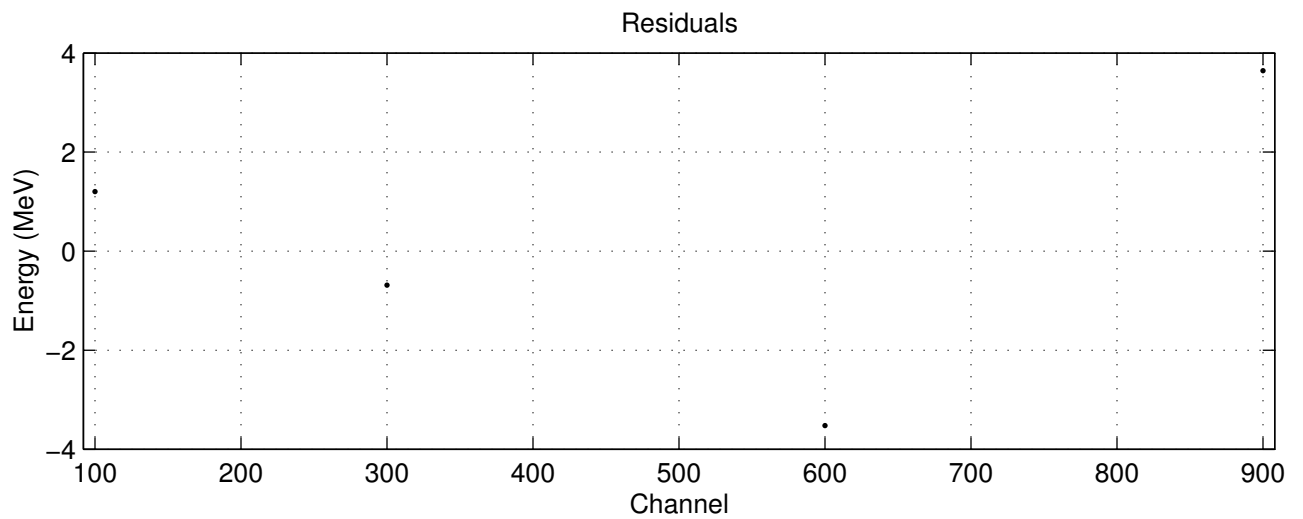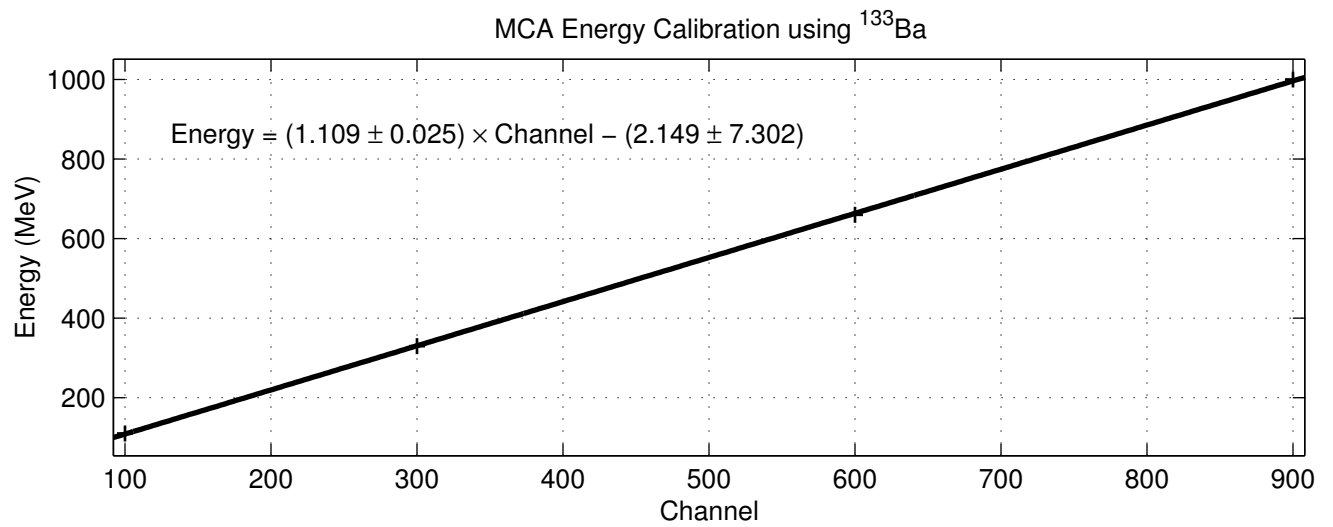
Experimental Apparatus

Sample 7" x 7" Figure Created in Xfig on Athena
See file:/mit/sipb/share/xfig/html/index.html
for the full Xfig Users Manual
Remember to use color with a purpose!!!
Always preview your slides for clarity and readability.
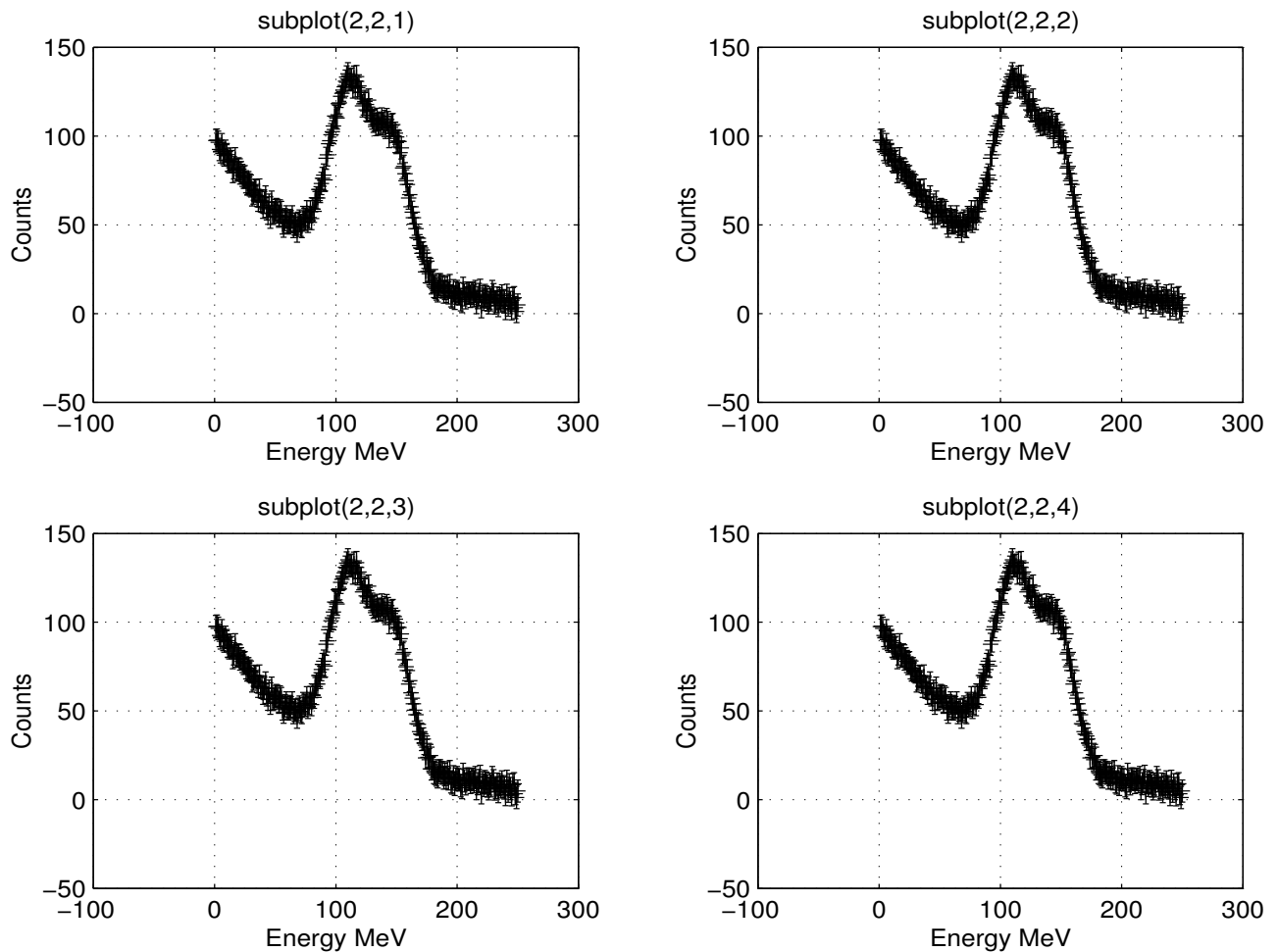
Signal Processing and Analysis

MCA Energy Calibration using ^{133}Ba

Energy = $(1.109 \pm 0.025) \times$ Channel $- (2.149 \pm 7.302)$

Residuals

Raw Data

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Results and Interpretation

- Give results as $x = (y.yy \pm \delta y)10^{zz}$ and compare to known values

- Nonlinear fit to: $y = A\exp(-t/\tau) + C$

- Counting experiment $\rightarrow$ Poisson uncertaintiies $A = 50.5 \pm 0.4$, $\tau = 2.04 \pm 0.02$ μs, $C = 3.88 \pm 0.07$, $\chi^2_\nu = 1.01$

- Description and Analysis of Errors, show how δy is made up, discuss random and systematic contributions.

Conclusions

- Does the data support your conclusions?

- If not, why not (speculate!)