

Foreword

■ The remainder

- ▶ Chapter 3 (Model Fitting) : Fit an espoused model to your dataset
- ▶ Chapter 4 (Tests) : Can you dare to assert that THE espoused model is correct?

■ Objectives of Chapter 3

- ▶ **Better understand the subject, i.e., MLE on model fitting**
- ▶ **Be able to digest more advanced variants easily**
- ▶ **Be able to customize the theory to specific needs in research**

■ The Voyage

Some vague link?

Gaussian Noise

$$f(x) = \frac{1}{\sqrt{2\pi}} e^{-x^2}$$

Mean Square Error
Minimization

■ Fundamental Distinction

Model Fitting

I'm a **believer**.
I firmly believe in the model.

For the observed dataset is contaminated, **we should estimate the unknown parameters.**

Use MLE techniques

Tests

I'm an **atheist**.
I have to verify the model.

For the observed dataset is contaminated, **we should estimate the unknown parameters to give a test.**

Use MLE techniques

■ Revelation?

- ▶ A test with zero false rejection probability of H_0 is **equivalent** to model fitting.
- ▶ For “Goodness of Fit Tests”, ad-hoc methods such as Cramer-Smirnov-Von-Mises Test are often used.