

Physics 421 / PCSE 503

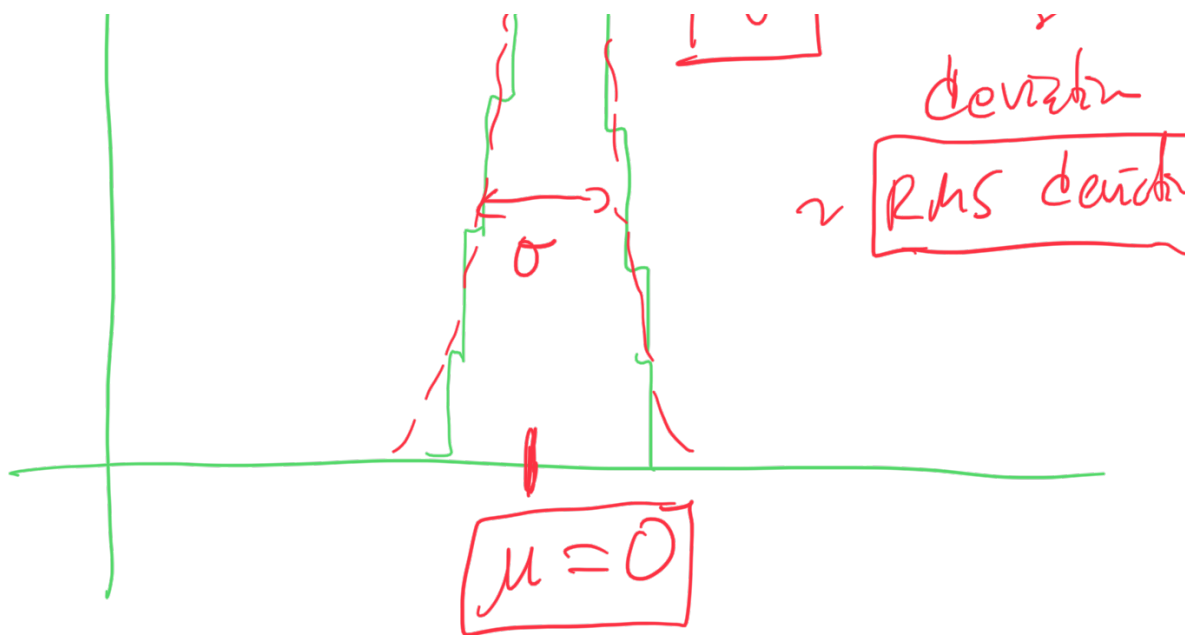
Lecture 14

$$\text{Residual} \equiv I_{\text{data}} - I_{\text{fit}}$$

SK - Polar Vortex

Powerful





If $\mu \neq 0$, systematic
problem
in fit

$$\mu = 2.6 \times 10^{-15}$$

$$\sigma = 3.8 \text{ } ^\circ\text{C}$$

Plotting a Gaussian Fit.

10/1/25

- ① binning
- ✓ ② total amount of data

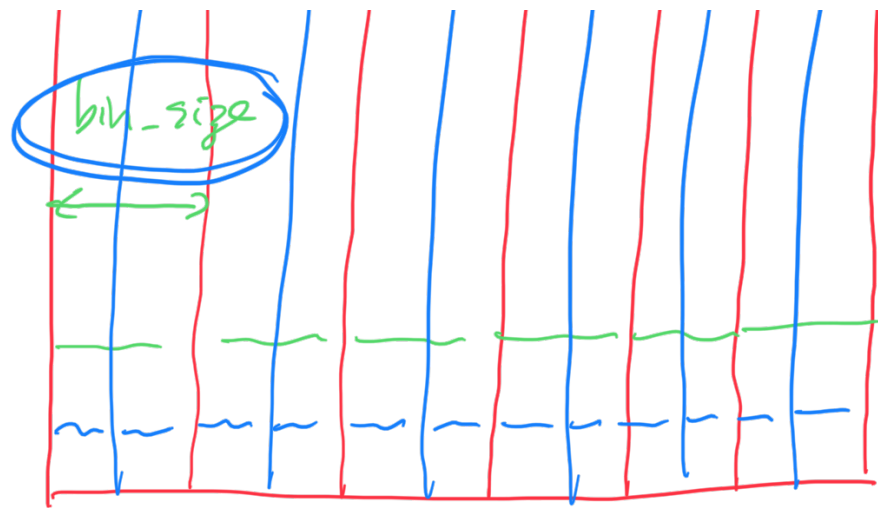
Gaussian (Normalized)

$$P(x) = \frac{N \cdot \text{bin-size}}{\sqrt{2\pi} \sigma} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$

$$\int_{-\infty}^{\infty} P(x) dx = N$$

N data pts.
1000





x_{low}

x_{high}

$$bin_size = \frac{x_{high} - x_{low}}{N_{bins}}$$

Model : 2019 Data. TRAIN

Compare : 2018 Data. TEST

Machine Learning : Training Data

Test data

SKLEARN

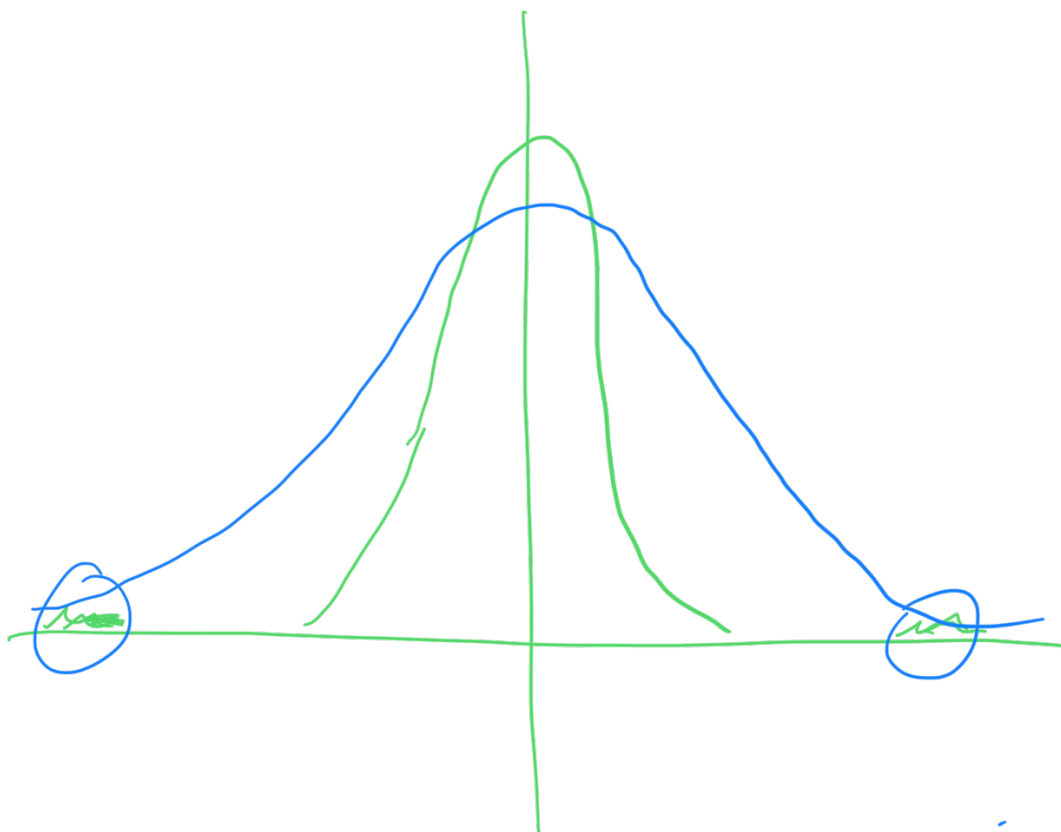
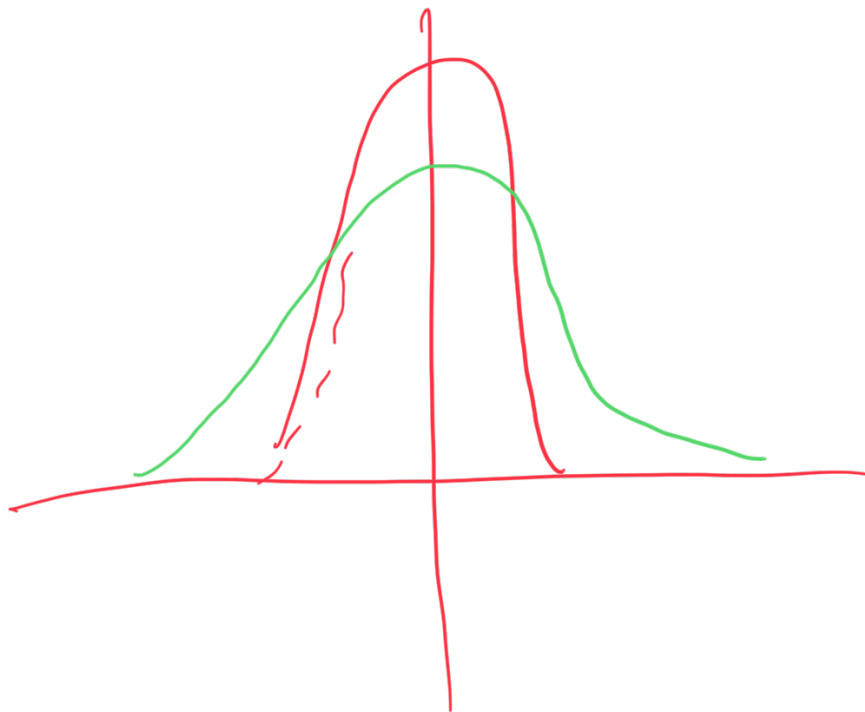
	F_1	F_2	F_3	...	F_n
10000					
10000					
10000					
10000					
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10,000

80% Train,
20% Test

$$\mu = 0.16$$

$$\sigma = 4.16$$



Mean - absolute error



Best estimate of σ ,
taking into account
outliers.



3.10 °C